

From the
PHANTOSCOPE
To the
VITASCOPE
The Machines Chronologically Arranged

Information compiled by
Soterios Gardiakos

June 25, 2011, March 15, 2012, July 7 2012

UNIGRAPHICS INC.
AURORA-KALAMATA
2010

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<http://www.bioscope.biz/>
<http://gardiakos.com/>

UNIGRAPHICS INC
Aurora, Illinois. U.S.A.
Kalamata, Messinia, Greece

Dedicated to Carey Williams

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INTRODUCTION

In 1984 Gene G. Kelkres, (*A forgotten first: The Armat-Jenkins partnership and the Atlanta projection*) in his footnote 1 wrote: "*For example, studies could be pursued by systematically examining the committee reports of the Smithsonian Institution and the Franklin Institute on the Armat-Jenkins invention controversy; by tracing the progressively more sophisticated language and illustrations of the various Jenkins phantoscope, Armat-Jenkins Phantoscope and Armat Vitascope patents and by examining the surviving Jenkins and Jenkins-Armat machines at the Smithsonian Institution, Franklin Institute and George Eastman House/International Museum of Photography*". I have added the post Jenkins-Armat Phantoscope machines made by Jenkins after their split up.

The purpose of this book is not to get in the debate on whether C. Francis Jenkins or Thomas Armat is the inventor of the of the first practical movie projector but to list in a chronological order the machine that were produced by these two men and to illustrate as well as I can these machines.

It is amazing at the openness that the Franklin Institution and private collectors have shown me, without whose willingness to share this information with me would have made this a much poorer book.

I wish to thank Carey Williams and Paul Potash for allowing me to use the photos they have taken of the Vitascope projectors that are illustrated in this book that have never been published before. In these photos we can see details not available before in any publication. I must also thank Sussanah Carroll of the Franklin Institution for arranging to photograph the Phantoscope in their collection especially for this book, detailed views that have not appeared any where before.

ACKNOWLEDGEMENTS

Susanah Carroll, the Franklin Institute, Philadelphia, Pennsylvania, USA

Shannon Perich, Jim Roan, Andrea Hackman, Smithsonian, Washington D.D., USA

Scott S. Taylor, Georgetown University Library, Washington, D.C., USA

Todd Gustavson, George Eastman House, Rochester, NY, USA

Paul Israel, Thomas A. Edison Papers, Rutgers University, Piscataway, NJ, USA

Edward Wirth, Thomas Edison National Historical Park, West Orange, NJ, USA

Carey Williams, Chicago, IL, USA

Paul Potash, Oley, PA, USA

Nick P. Hiley, Kent, England

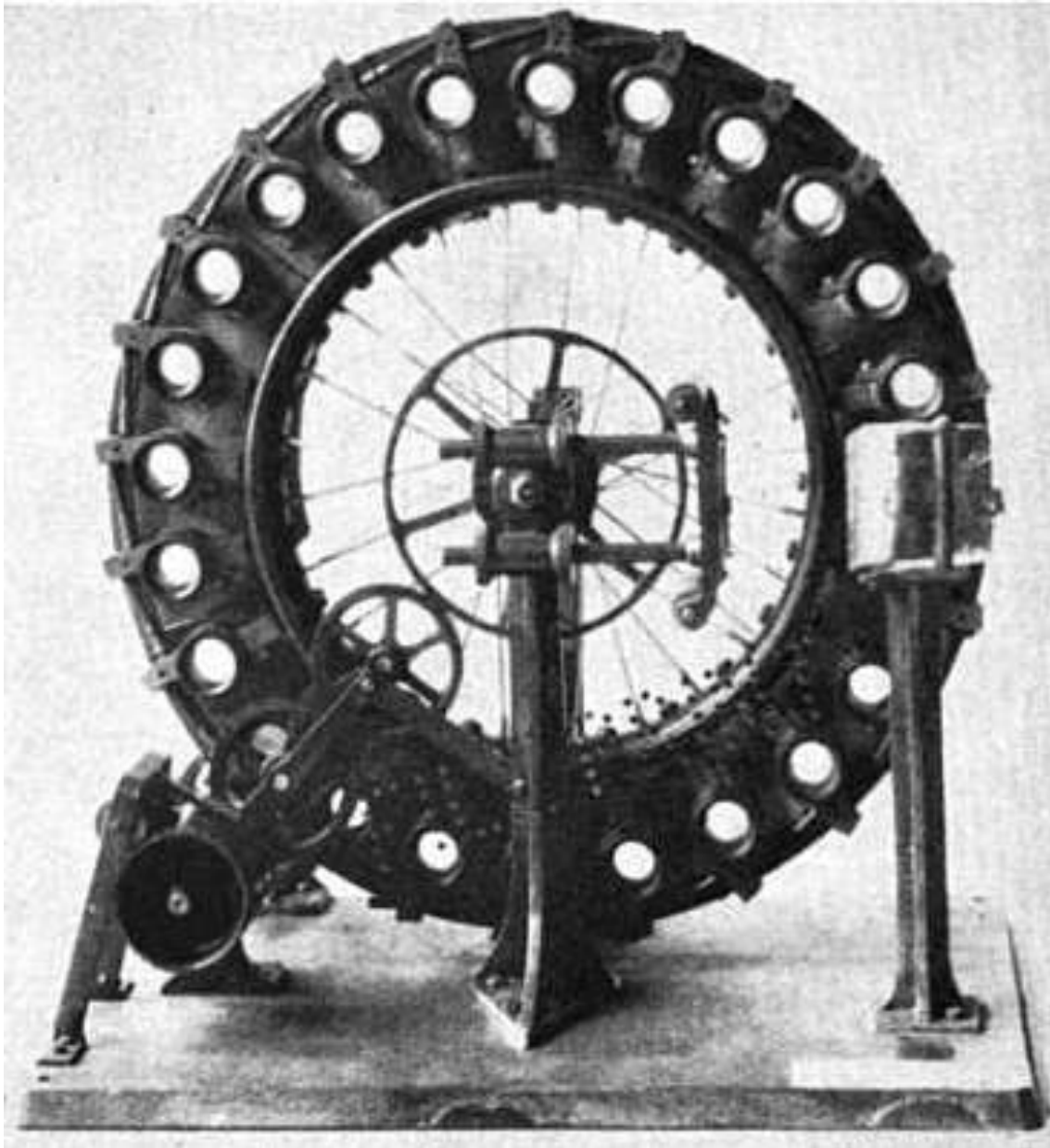
I
JENKINS
PHANTOSCOPE
CAMERA

JENKINS PHANTOSCOPE CAMERA



C. Francis Jenkins
(August 22, 1867 – June 6, 1934)
Source of Photo: Jenkins, *Animated Pictures*, 1898, front piece

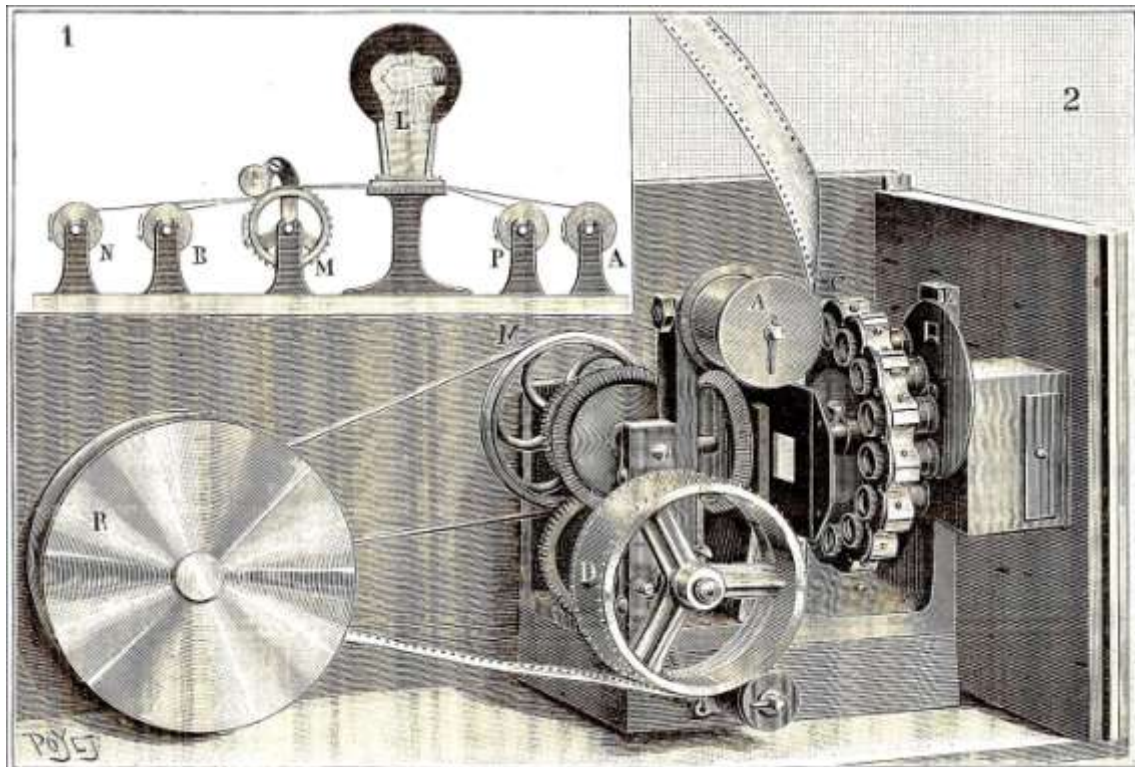
JENKINS PHANTOSCOPE CAMERA



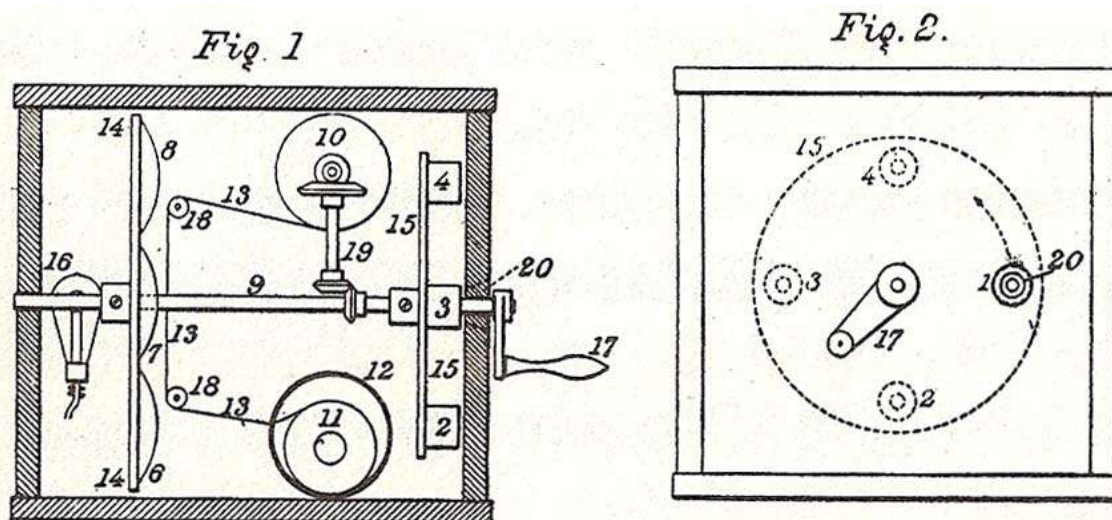
Rotary Lens Camera (Jenkins)

Mina Fisher Hammer, *History of Kodak and its Continuation*, New York, 1940
This was originally donated to the Smithsonian by Jenkins in 1897; it has 24 individual lenses and is two feet in diameter,

JENKINS PHANTOSCOPE CAMERA



Jenkins Multi Lens Camera (no caption in original article)
 La Nature. No. 1289 February 12, 1898 page 168



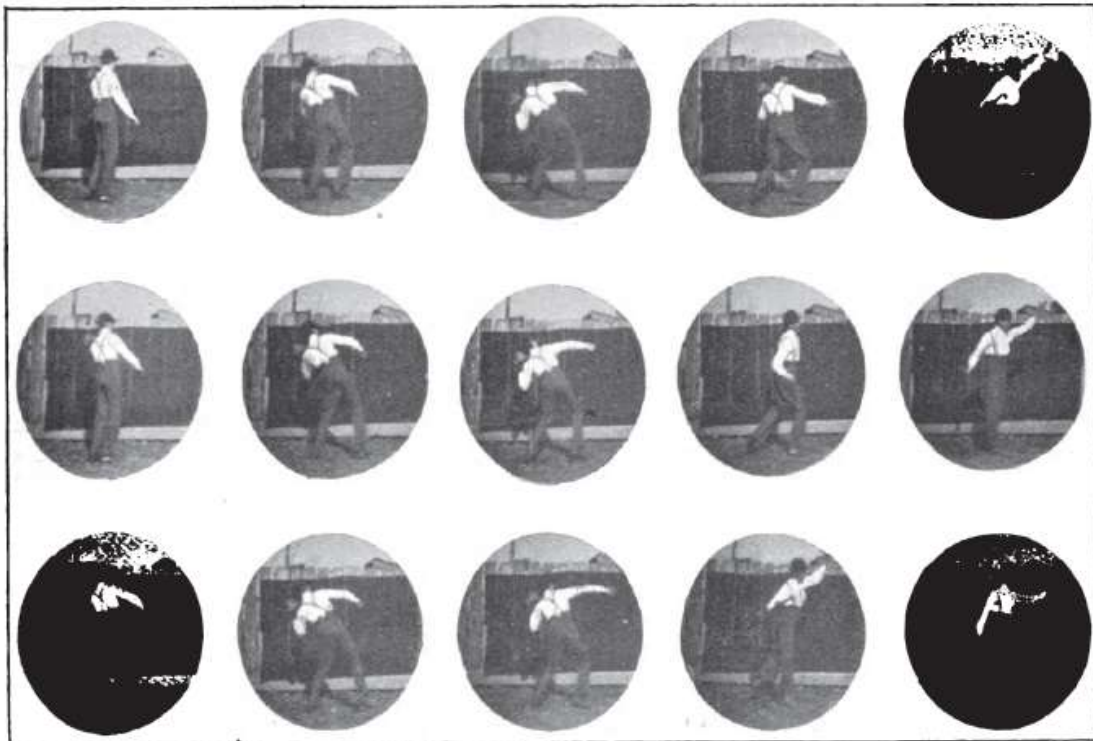
Jenkins' rotary lens camera
 Patent No. 560,800 patented May 26, 1896
 Source: Jenkins, *Animated Pictures*, 1898, page 28

JENKINS PHANTOSCOPE CAMERA



The Phantoscope

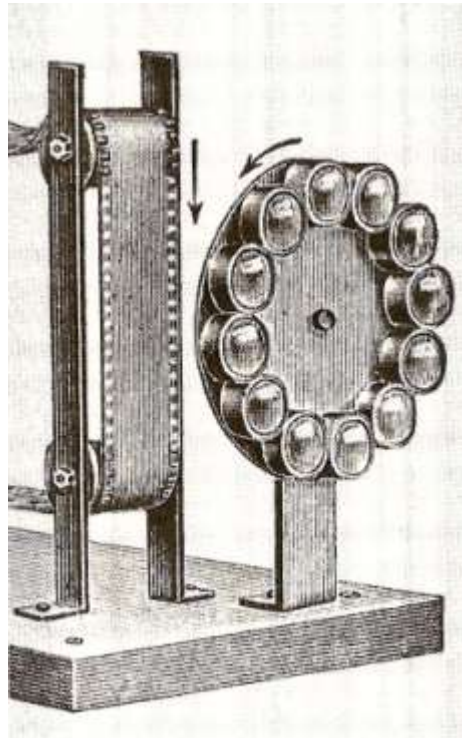
"The latest successful experimenter is Mr. C. F. Jenkins, which he calls the "Phantoscope" Mr. Jenkins, instrument is somewhat similar in its working to Edison's, except that it is small, portable and cheap. Our first illustration will serve to show how compact it is. The dimensions are 5 x 5 x 8 inches, and the weight about 10 pounds. It can be operated by hand, or by a motor for regularity. Of results, we should imagine the latter to be preferable. Our other Illustration gives the photographs produced (slightly reduced)".



Pictures taken with the Phantoscope

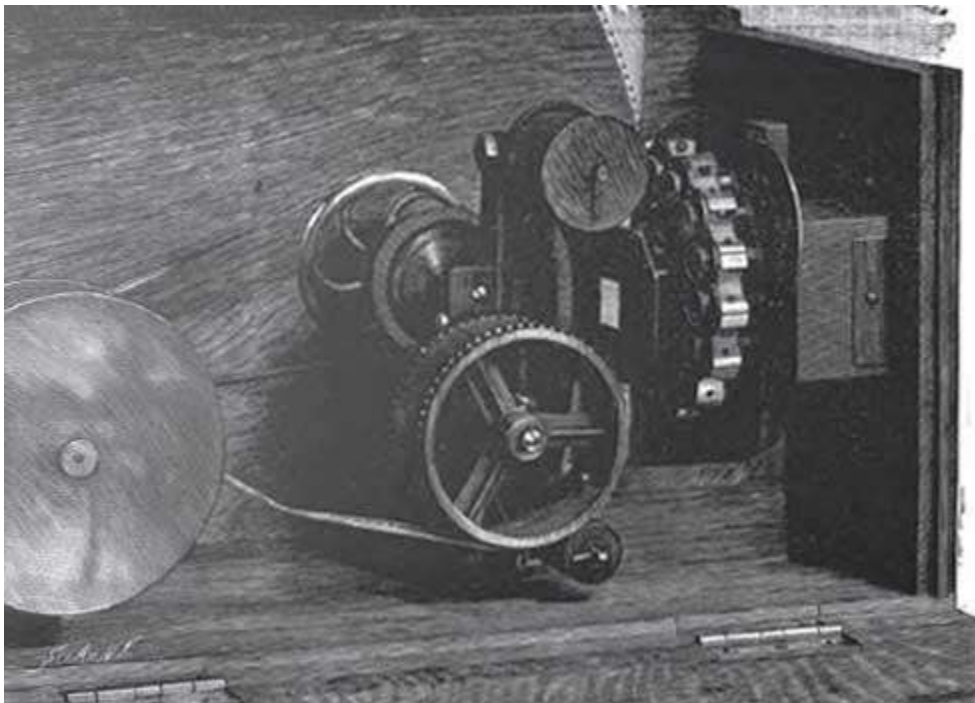
The Photographic Times, Chronophotography, Vol. XXV July 6, 1894 pp. 2-3

JENKINS PHANTOSCOPE CAMERA



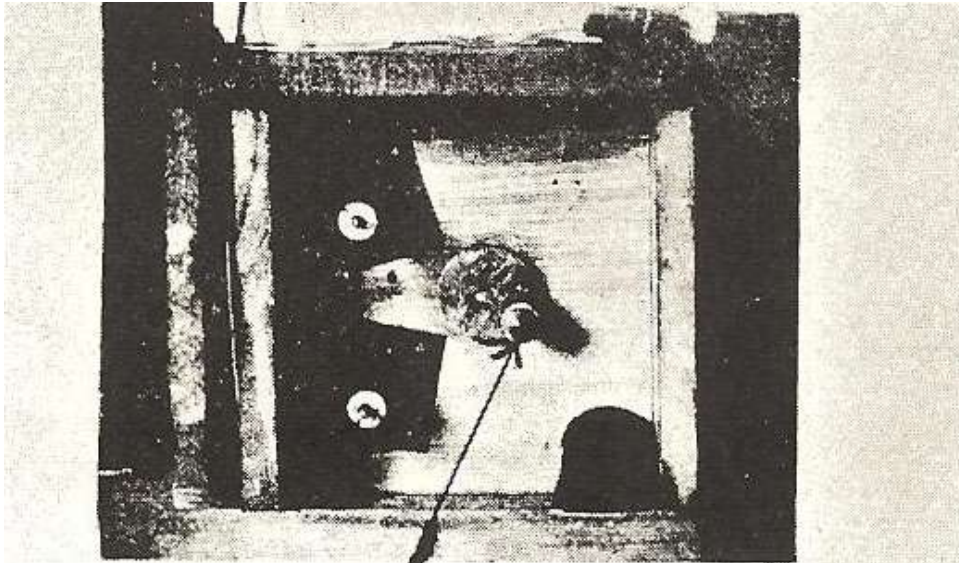
Jenkins Multi Lens Camera

Jurgen Ristow, Vom Geisterbild – Zum Breiteandfilm, Leipzig 1989, page 64



Animated Pictures, 1898

JENKINS PHANTOSCOPE CAMERA



C. Francis Jenkins,
Washington, D.C.

March 13, 1923.

Dear Mr. Jenkins:

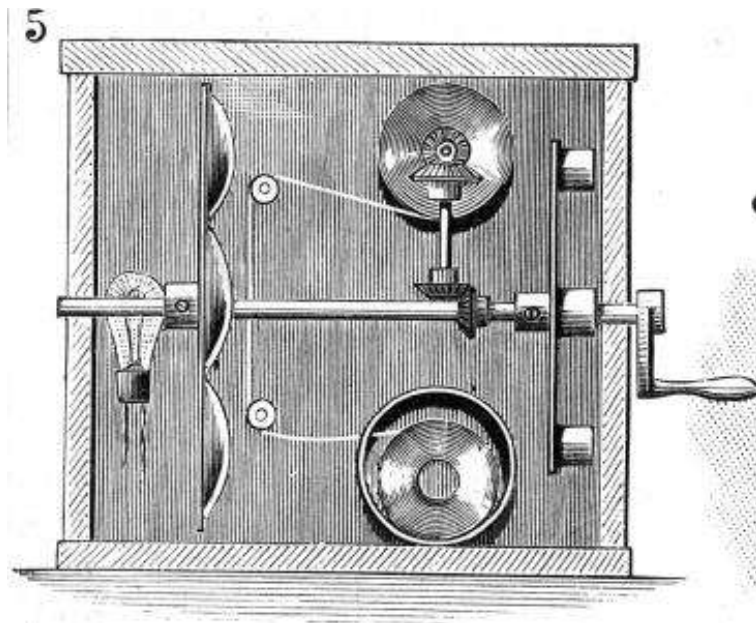
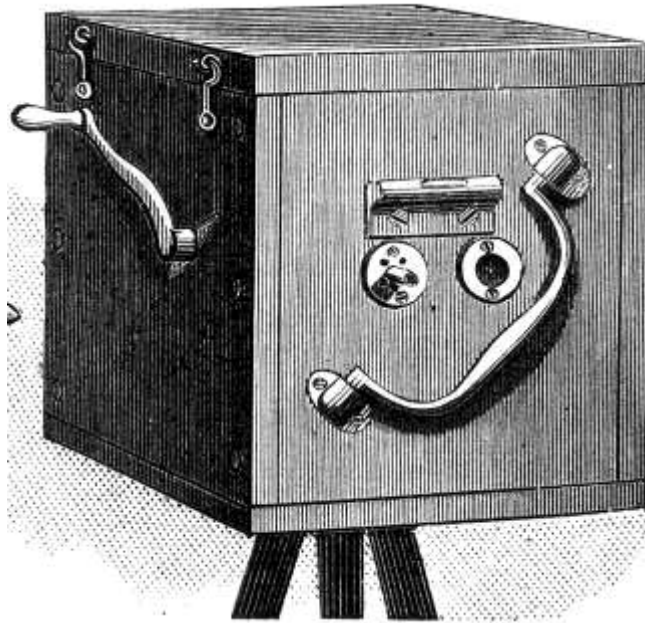
Referring to the attached photograph, I can say that I recollect that when you were living at our house in 1892 you had a camera of which I believe this to be a photograph. I recognize the shape and size of the wooden box, and also the crank pin on the face of the rotating disc. Mrs. Bush says she remembers your giving two little darky boys a nickle each to turn somersault while you photographed them with this camera.

Phil L. Bush

This was one of the first cameras built by Jenkins. It has a crank pin giving the film an intermittent movement behind the lens, later called the "Beater Type"

Source: Source: F. H. Richardson, *What happened in the beginning*, September 1925 Transactions of the SMPE.

[Lubin in] 1896 Purchases a Jenkins camera. [Lubin] Takes [the] first moving pictures of his horse eating hay, and Visits William Rock's Vitascope Theater in New Orleans.
http://en.wikipedia.org/wiki/Siegmund_Lubin



Jenkins Kinetoscope Camera

Source: Scientific American, October 31, 1896 Volume LXXV, No. 18

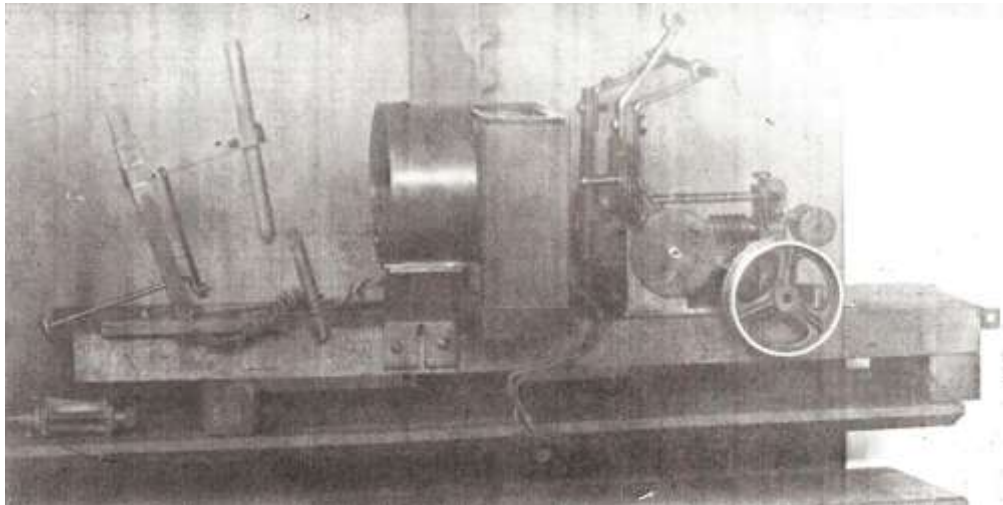
II
JENKINS
PHANTOSCOPE
PROJECTOR

JENKINS PHANTOSCOPE PROJECTOR



Armat Papers, Georgetown University Library

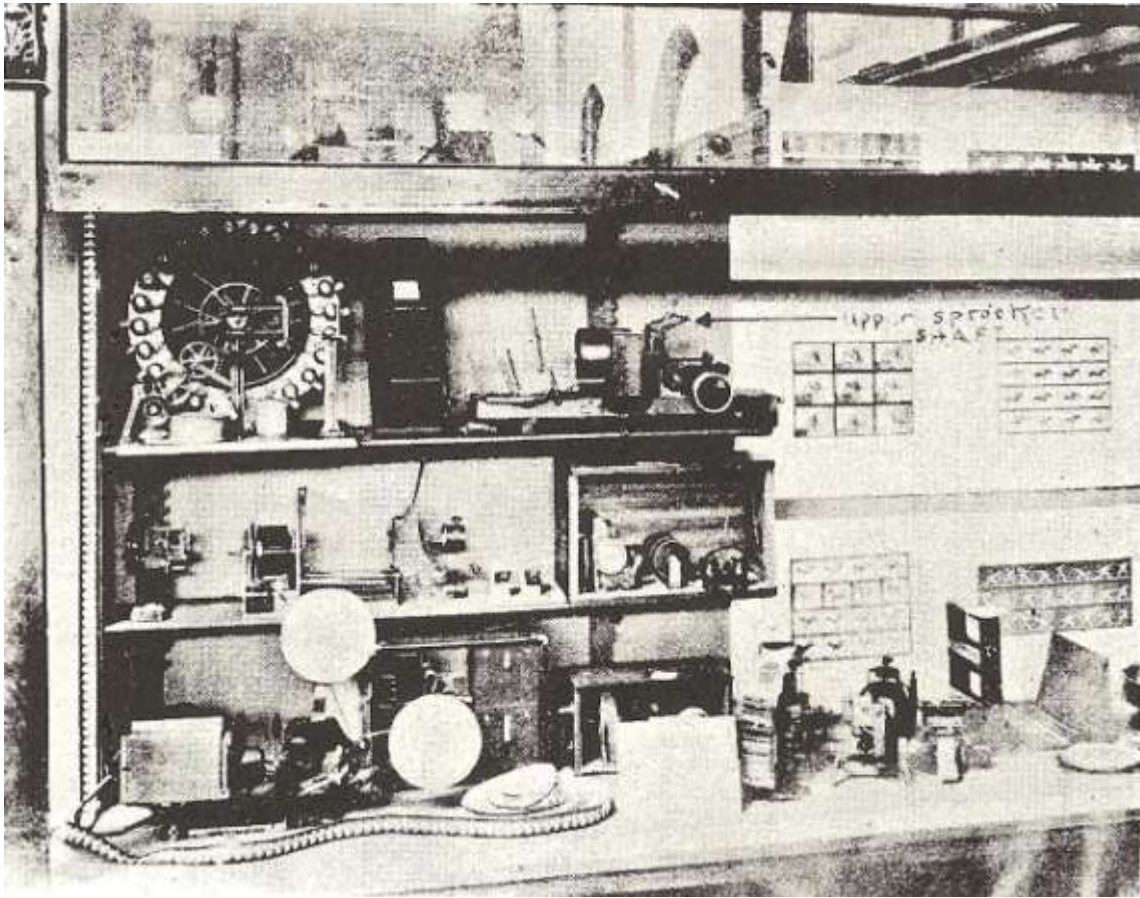
This must be the exhibit at the Smithsonian as the rotary lens camera is still at this institution, note the Phantoscope in the center of this photo, and the writing "UPPER SPROCKET SHAFT" in the next page. It was apparently added after this Phantoscope was returned to Jenkins and added the chain and a large wooden film sprocket. On the lower left hand of the photograph note the 1914 Phantoscope also made by Jenkins. This Phantoscope above was donated to the Smithsonian in 1895⁽¹⁾



Detail of the Phantoscope above, Armat Papers, Georgetown University Library

⁽¹⁾ Jenkins, History of the Motion Picture, October 1920 transactions of the SMPTE

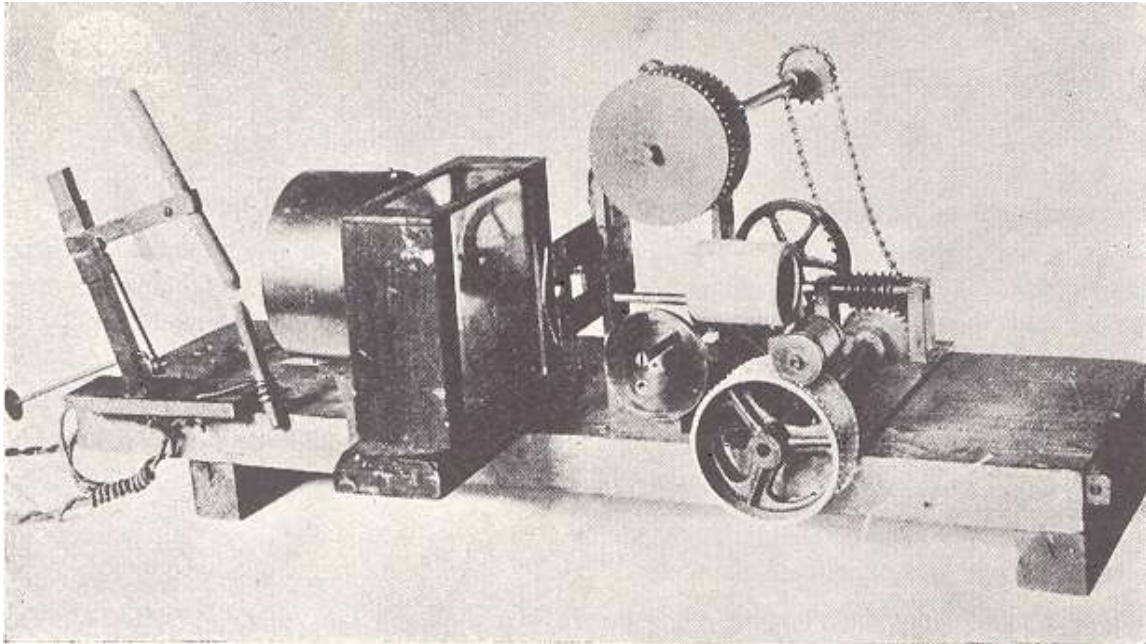
JENKINS PHANTOSCOPE PROJECTOR



A part of the exhibit of apparatus built and used by Mr. Jenkins in the development of motion pictures

Source: Source: F. H. Richardson, *What happened in the beginning*, September 1925 Transactions of the SMPE.

JENKINS PHANTOSCOPE PROJECTOR



THE MACHINE THAT PROJECTED THE FIRST MOTION PICTURE

With this machine Jenkins at Richmond, Indiana projected the first motion picture in the form that we now know it. The machine is now on exhibition in the United States National Museum in Washington D.C.

Homer Croy, *How Motion Pictures are made*, New York, 1918, page 43

The original Jenkins lateral projector

Jenkins, *History of the motion Picture*, October 1920 Transactions of the SMPE

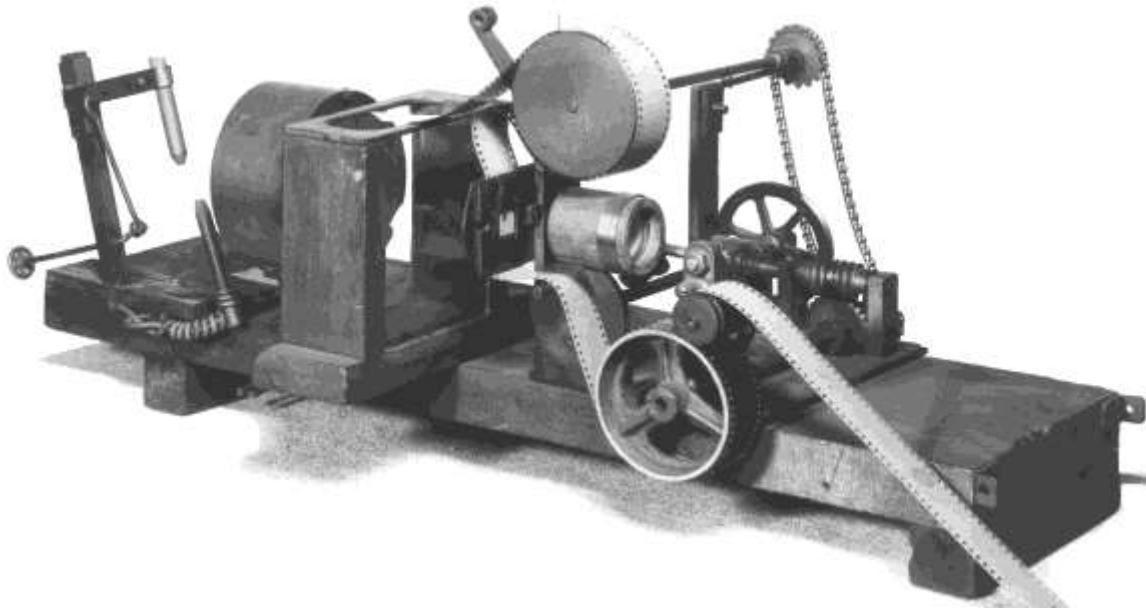
"The Phantoscope Invented by Mr. Jenkins and used in 1893-94".

Source: *History of the Motion Picture*, C. Francis Jenkins, September 1925, Transactions of the SMPE.

"About the same Time [1896?] I made another copy of the original 1894 Phantoscope machine and exhibited before the Franklin Institute, Philadelphia." Jenkins own words

Source: Source: F. H. Richardson, *What happened in the beginning*, September 1925 Transactions of the SMPE.

JENKINS PHANTOSCOPE PROJECTOR

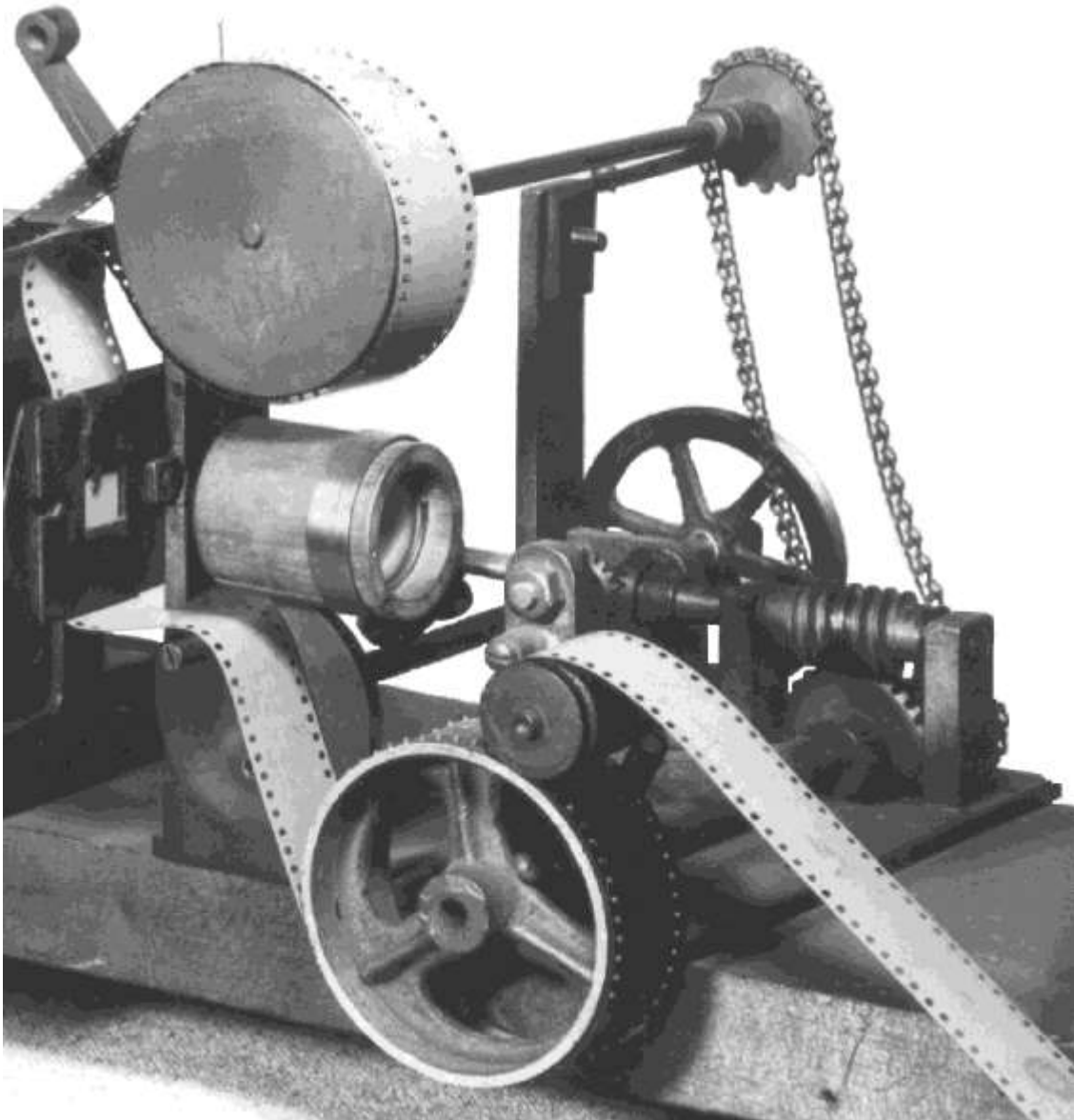


The original Jenkins Phantoscope lateral projector 1893-1894,
In the collection of the Franklin Institute in Philadelphia, Photographed by Gladys Muller

The Phantoscope donated by Jenkins to the Franklin Institution in 1914 refers to his new projector of 1914 and is in no way connected to his first Phantoscope machine made during the period 1893-1894.

The dimensions of the Phantoscope in the Franklin institute are H=11 inches. W=27 Inches., D=15 inches.

JENKINS PHANTOSCOPE PROJECTOR



The original Jenkins Phantoscope lateral projector 1893-1894
In the collection of the Franklin Institute in Philadelphia, Photographed by Gladys Muller

Courtesy Franklin Institute. Susannah Carroll, Curatorial associate at the Franklin Institute, informs me that "From what I can gather so far, the Phantoscope (cat. #938) came to TFI in 1929." It is obvious that the film should be below the dog beater movement and above.

JENKINS PHANTOSCOPE PROJECTOR



The original Jenkins Phantoscope lateral projector 1893-1894
From the Historical and Interpretive Collections of the Franklin Institute,
Philadelphia, PA., photographed at the request of the Author.

JENKINS PHANTOSCOPE PROJECTOR



The original Jenkins Phantoscope lateral projector 1893-1894
From the Historical and Interpretive Collections of the Franklin Institute,
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The original Jenkins Phantoscope lateral projector 1893-1894
From the Historical and Interpretive Collections of the Franklin Institute,
Philadelphia, PA., photographed at the request of the Author.

JENKINS PHANTOSCOPE PROJECTOR



Jennings Phantscpe 1.tif



Jennings Phantscpe 10.tif



Jennings Phantscpe 11.tif



Jennings Phantscpe 12.tif



Jennings Phantscpe 2.tif



Jennings Phantscpe 3.tif



Jennings Phantscpe 4.tif



Jennings Phantscpe 5.tif



Jennings Phantscpe 6.tif



Jennings Phantscpe 7.tif



Jennings Phantscpe 8.tif



Jennings Phantscpe 9.tif

The original Jenkins Phantscpe lateral projector 1893-1894
From the Historical and Interpretive Collections of the Franklin Institute,
Philadelphia, PA., photographed at the request of the Author.

JENKINS PHANTOSCOPE PROJECTOR



Source: Jenkins, *Animated Pictures*, 1898, front piece

This was the medal that was awarded to C. Francis Jenkins in 1897 by the Franklin Institute for his "invention of the Phantoscope, the first successful moving picture projecting apparatus"... This was challenged by Thomas Armat but his challenge was rejected by the Franklin Institute.

The Franklin Institute awarded Jenkins the "Scott Medal as well.

Much controversy surrounds the awarding of this highest honor of the Franklin Institute. For more information look at:

1) Franklin Institute, Contents of CSA #1946 Case File of C. Francis Jenkins Committee on Science and the Arts Cresson Medal 1897 (for the Phantoscope).

<http://www.fi.edu/learn/case-files/jenkins-1946/file.html>

2) Grosser, H. Mark, *The Armat - Jenkins Dispute and the Museums*, Film History, Volume 2, 1988, pp 1-12

3) Georgetown University, Special Collections, "*The Thomas Armat Papers*"

4) Gene G. Kelkres, *A forgotten first: The Armat-Jenkins partnership and the Atlanta projection*, Quarterly Review of Film and Video, Volume 9, Issue 1 Winter 1984 , pages 45 - 58

III
JENKINS & ARMAT
PHANTOSCOPE
PROJECTORS

JENKINS AND ARMAT PHANTOSCOPE PROJECTOR

THE JENKINS-ARMAT AGREEMENT

An agreement, dated March 25, 1895, was entered into with C. Francis Jenkins the party of the first part, which read:

Whereas, the party of the first part has letters patent of the U. S. for a certain invention of his known as the "Phantoscope" also application letters patent on certain new methods of photography, it is agreed that -

First: for and in consideration of one dollar and the immediate construction and subsequent public exhibition and proper promotion by the party of the second part, of a stereopticon projection phantoscope, built in accordance with the principles set forth in the patent application first referred to above, the party of the first part agrees to assign and does hereby assign to the party of the second part an unincumbered [unencumbered] one-half interest in the stereopticon for projecting phantoscope, as distinguished from the cabinet form of the instrument. *Second:* The party of the first part agrees to allow the party of the second part to make films for use upon the phantoscope by the above mentioned photographic principles, but only five such cameras shall be constructed. And the party of the second part agrees to use every reasonable endeavor to preserve in secrecy the general principles upon which such cameras are constructed.

Homer Croy, *How Motion Pictures are made*, New York, 1918, page 46

PROJECTORS MADE UNDER THIS AGREEMENT

- 1) "Continuous-run Kinetoscope-inspired projector was such a failure that both men Knew immediately upon testing that it had to be junked" (Jenkins obtained Patent 1,385,325, July 19, 1921 for a continuous projector, ray Bryan Files)
- 2) "A failure, too, was an attempt at a "gradually accelerated"-speed projector".
- 3) "This third mechanism was a huge, heavy "Boston gear" intermittent movement (in reality, a giant modified Maltese cross with fourteen blades)" also a failure. (Patent 586,953)
- 4) "Jenkins and Armat fixed a beater movement onto their projector and saw immediate Improvement" this either became or led to the Atlanta Cotton states exposition Phantoscope projector. (Patent 673,992, Illustrated in this chapter)

Grosser, H. Mark, *The Armat - Jenkins Dispute and the Museums*, Film History, Volume 2, 1988, p 2

JENKINS AND ARMAT PHANTOSCOPE PROJECTOR

(No Model.)

2 Sheets—Sheet 1.

C. F. JENKINS & T. ARMAT
PHANTOSCOPE.

No. 586,953.

Patented July 20, 1897.

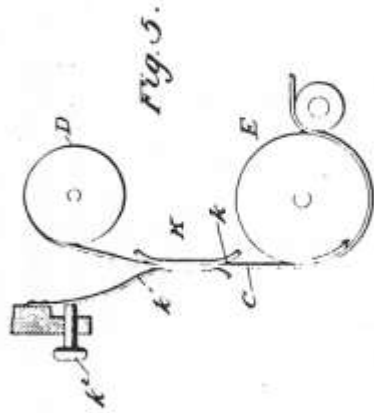


Fig. 5.

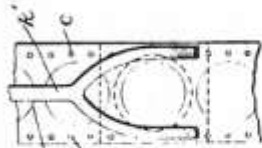


Fig. 6.

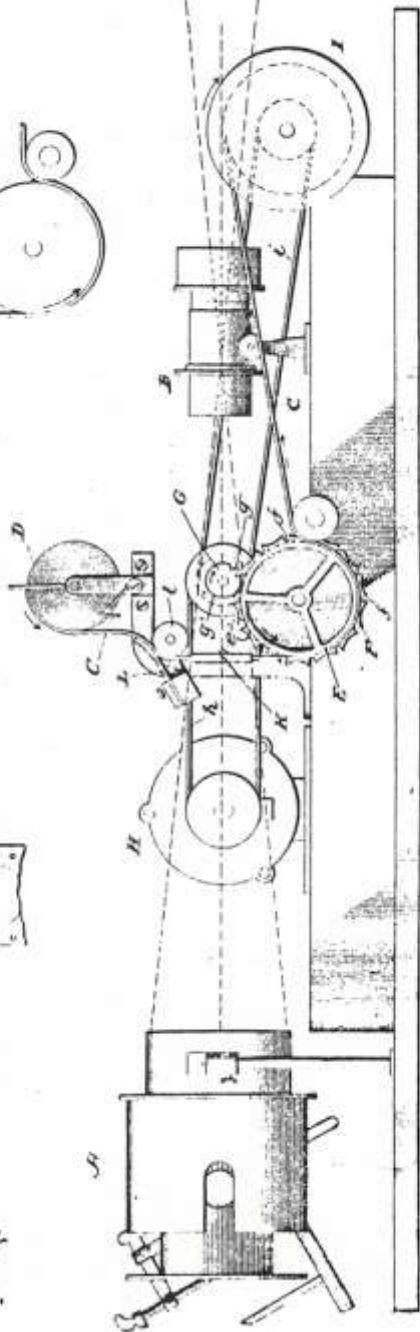


Fig. 1.

Witnesses:
Edw. D. Small
J. M. Criswell.

Inventors:
C. F. Jenkins
Thomas Armat
By *Wm. H. Hays*
Attorney

"The Mutilated Gear Projector"
Jenkins and Armat patent 586.953, July 20, 1897

JENKINS AND ARMAT PHANTOSCOPE PROJECTOR

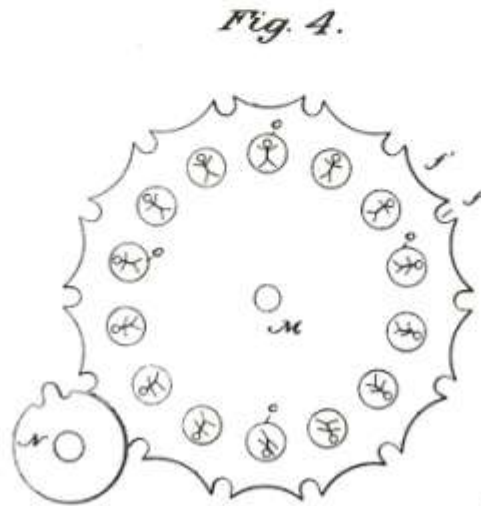
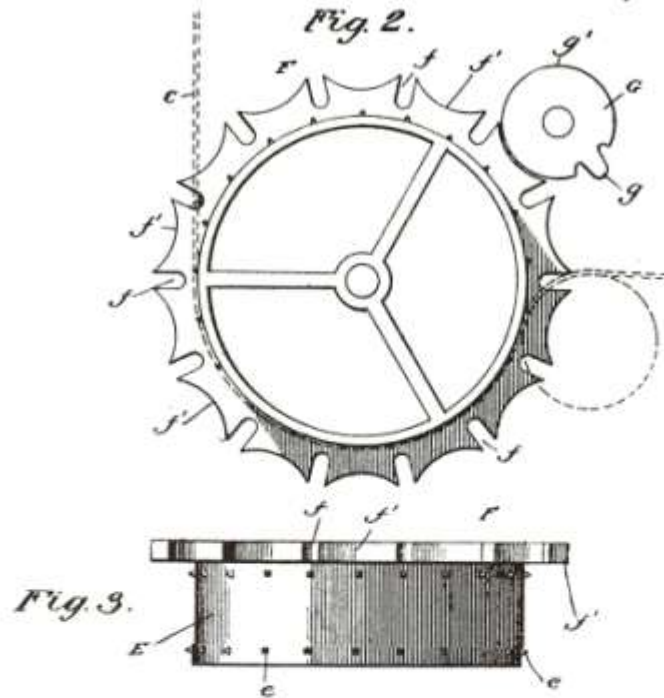
(No Model.)

3 Sheets—Sheet 2.

C. F. JENKINS & T. ARMAT.
PHANTOSCOPE.

No. 586,953.

Patented July 20, 1897.

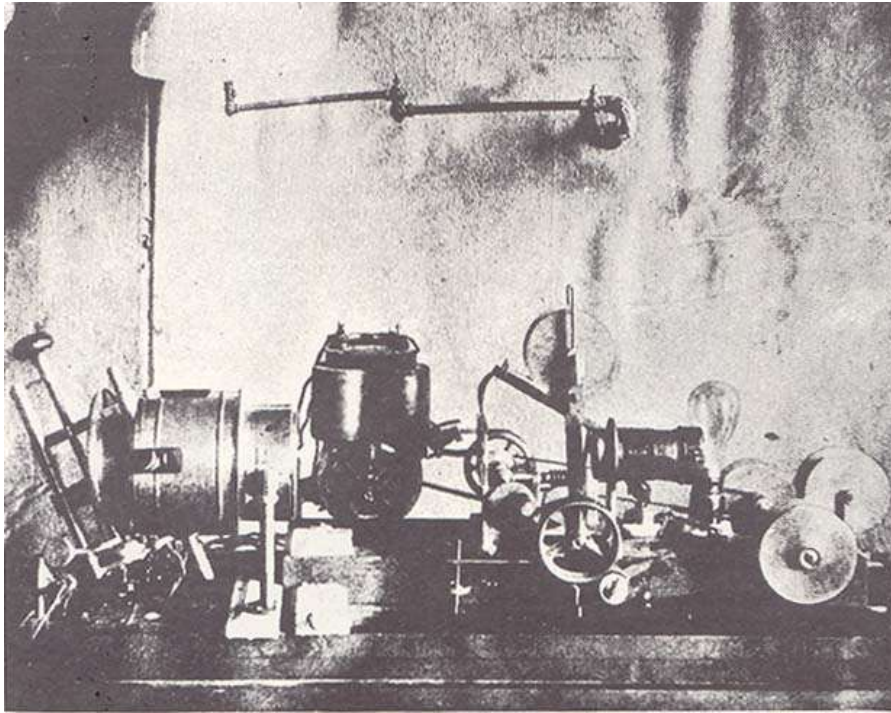


Witnesses
Edw. J. Durrall, Jr.
J. W. Cuswell.

Inventors
C. F. Jenkins
Thomas Armat
By R. B. Smith & Co. Attorneys

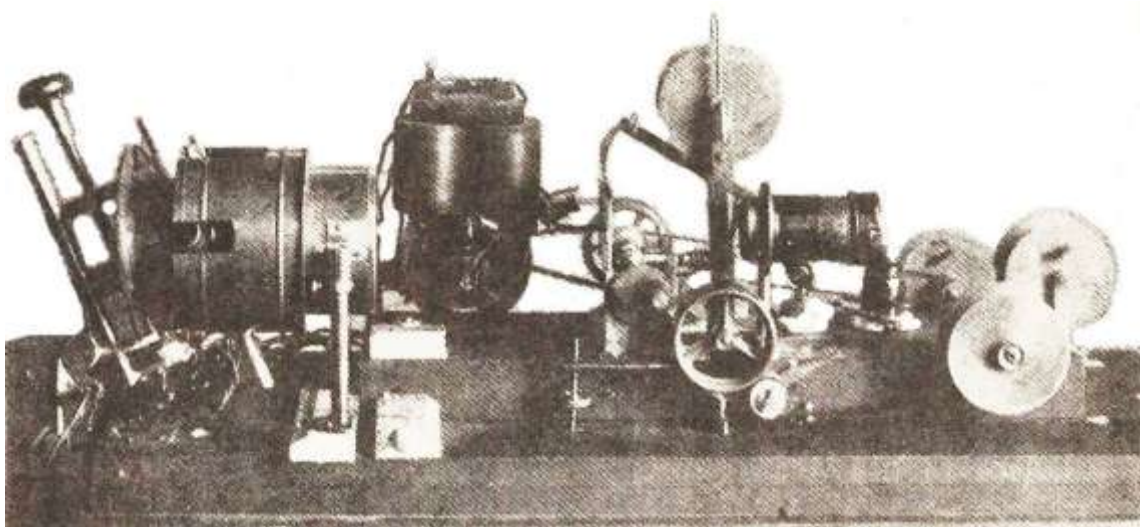
“The Mutilated Gear”
Jenkins and Armat patent 586.953, July 20, 1897

JENKINS AND ARMAT PHANTOSCOPE PROJECTOR



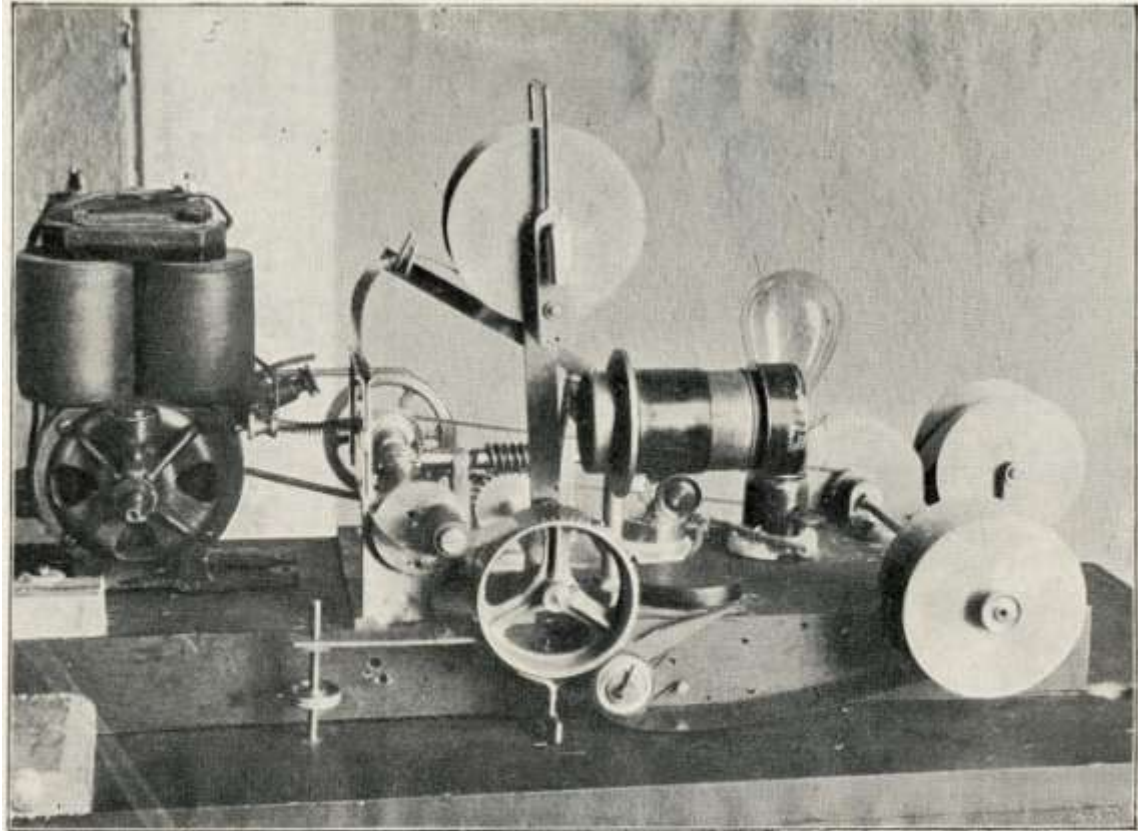
The "Atlanta Exhibition" machine
One of three copies of the Phantoscope taken to the Atlanta Cotton States
Exposition

Source: F. H. Richardson, *What happened in the beginning*, September 1925,
Transactions of the Society of Motion Picture Engineers



Same photo as above outlined and enlarged for easier viewing of details

JENKINS AND ARMAT PHANTOSCOPE PROJECTOR



EARLY FORM JENKINS PROJECTING PHANTOSCOPE

EARLY FORM JENKINS PROJECTING PHANTOSCOPE

C. Francis Jenkins, *Picture Ribbons*, 1897
Courtesy Nick P. Hiley, Kent, United Kingdom

IV
THE
DISPUTED PATENT

THE DISPUTED PATENT

ORIGINAL JENKINS-ARMAT
APPLICATION NOT AVAILABLE
This is a most important missing document

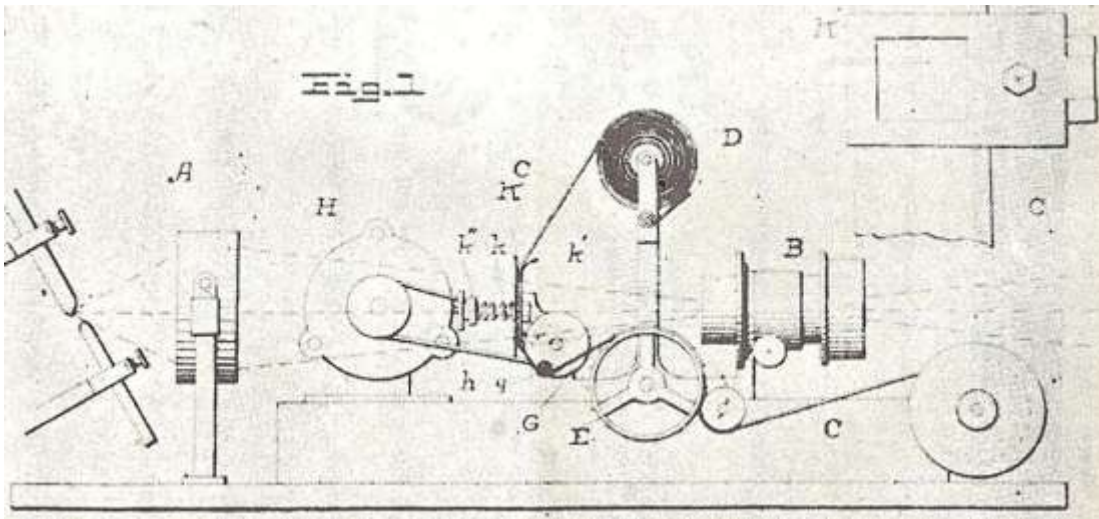
The Joint Jenkins Armat patent application for the beater movement Phantoscope was filed on August 28, 1895

THE DISPUTED PATENT

Although the purpose of this book is not to attempt resolve the issue of the Jenkins-Armat dispute I cannot help myself but try to explain as best as I can how I view this problem that has pitted scholars and museums against each other.

First of all we have to accept the fact that both went to the Atlanta Cotton States exposition with a movie projector called the Phantoscope which used a beater movement. And in Armat's own words "*He thereupon sketched himself substantially what I had sketched but with a slight modification which I recognized as easier to make*" This use of the word "*slight*" is very self serving, but it does clearly show that it was Jenkins who came up with the beater movement. It is this beater movement that was used in the Phantoscope used to project moving pictures at the Atlanta Cotton States exposition. So that the so-called Edison Vitascope was simply a copy of the above stated Phantoscope with the addition of the film loop, generally called the "Latham loop" and an upper feed roller.

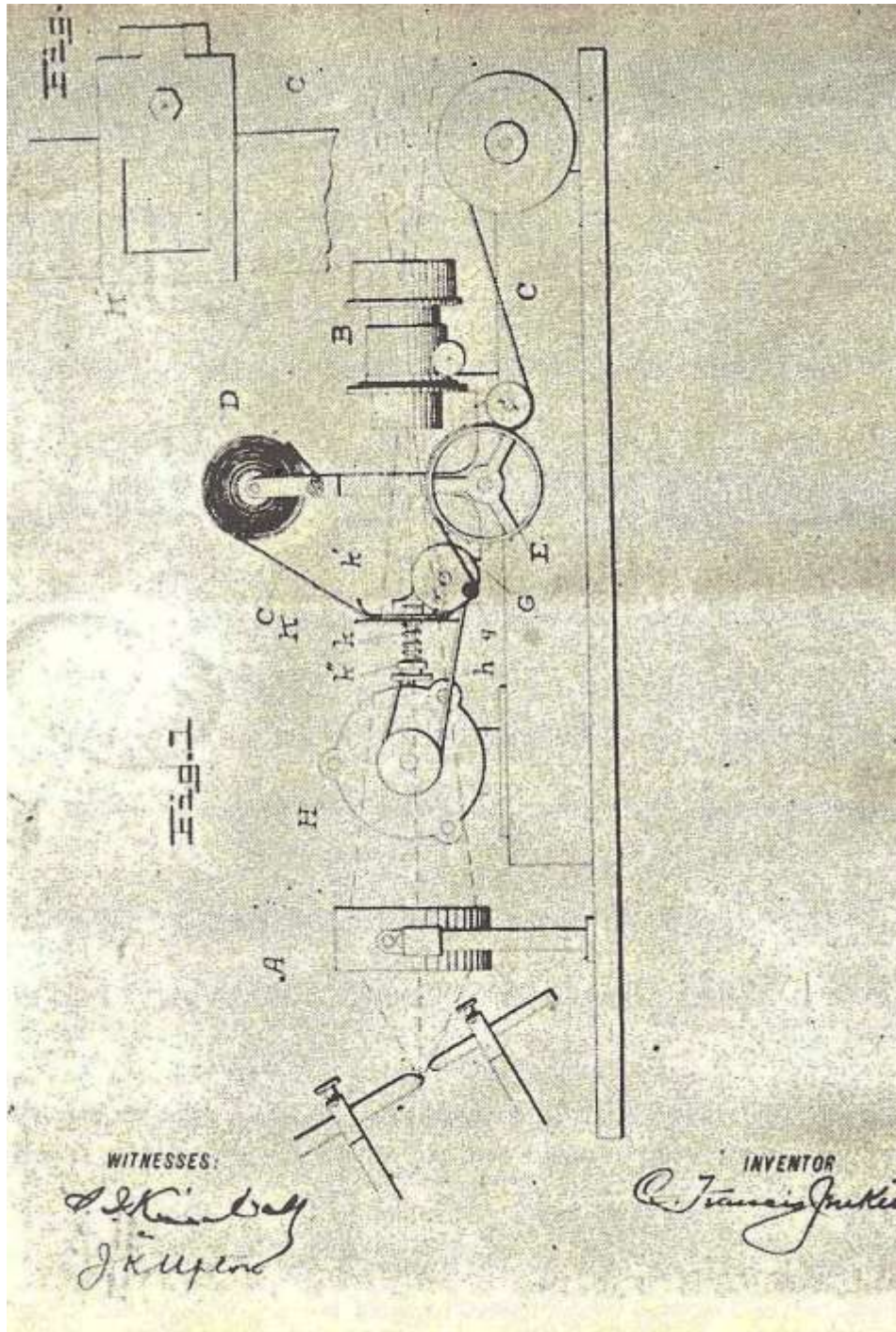
I do not have a copy of the patent application Jenkins and Armat filed jointly but it was filed on August 28, 1895. On November 25 1895 Jenkins filed his solo application. I believe that the name on a patent does not always represent the true inventor of device such as this so that we must clear our minds of the fact that on patent number 673,992 it is called "T. Armat Vitascope" for it is basically a copy of the Phantoscope that was made by Jenkins and Armat. And of course the patent was issued to Armat only because Jenkins sold his share of the invention to Armat, as up to that point Armat had made no assertion that it was his own sole invention.



"The Jenkins Solo Application which was put in interference with the Armat-Jenkins joint application"

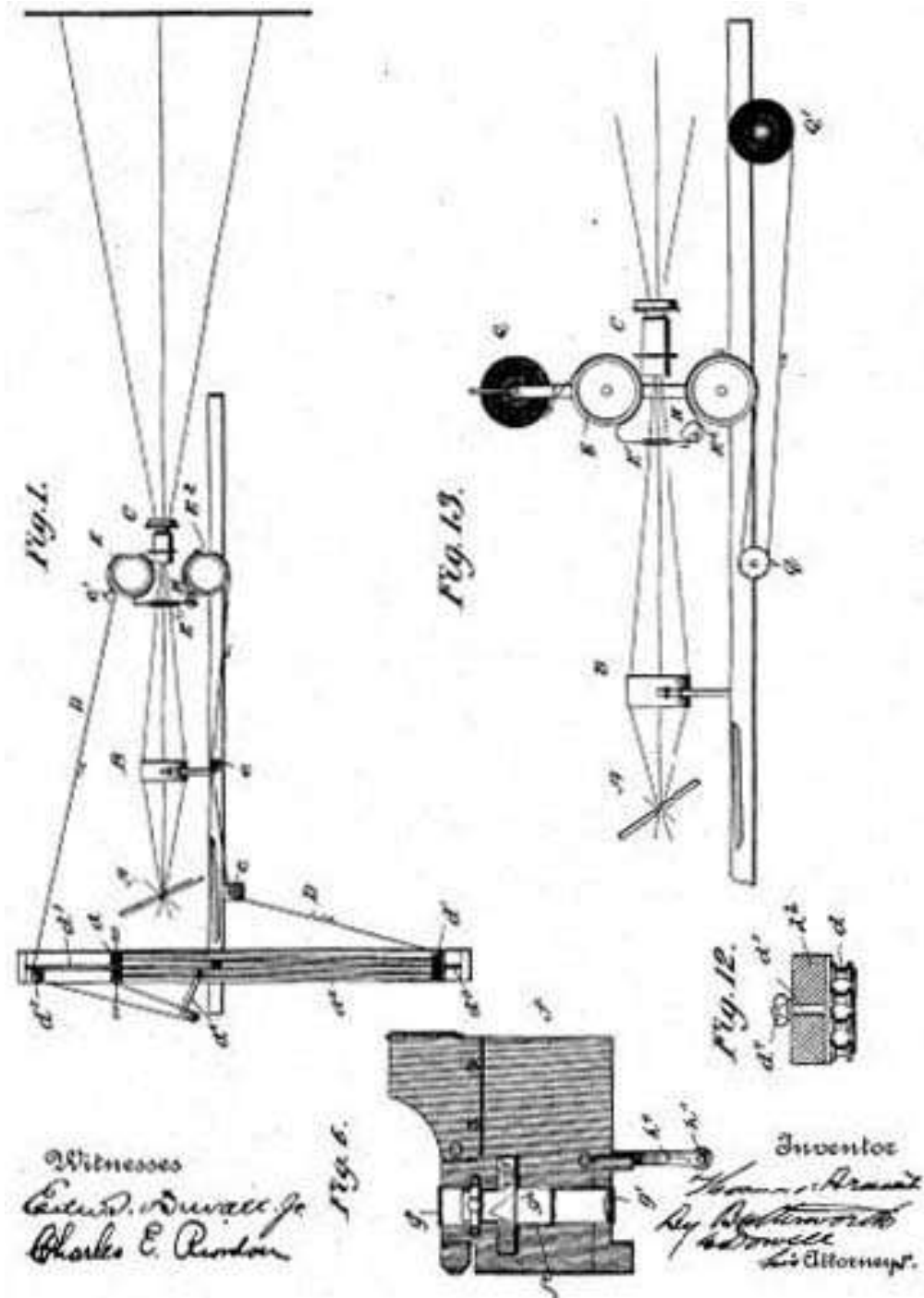
F. H. Richardson, *What Happened in the Beginning*, September 1925 Transactions of the SMPTE

THE DISPUTED PATENT



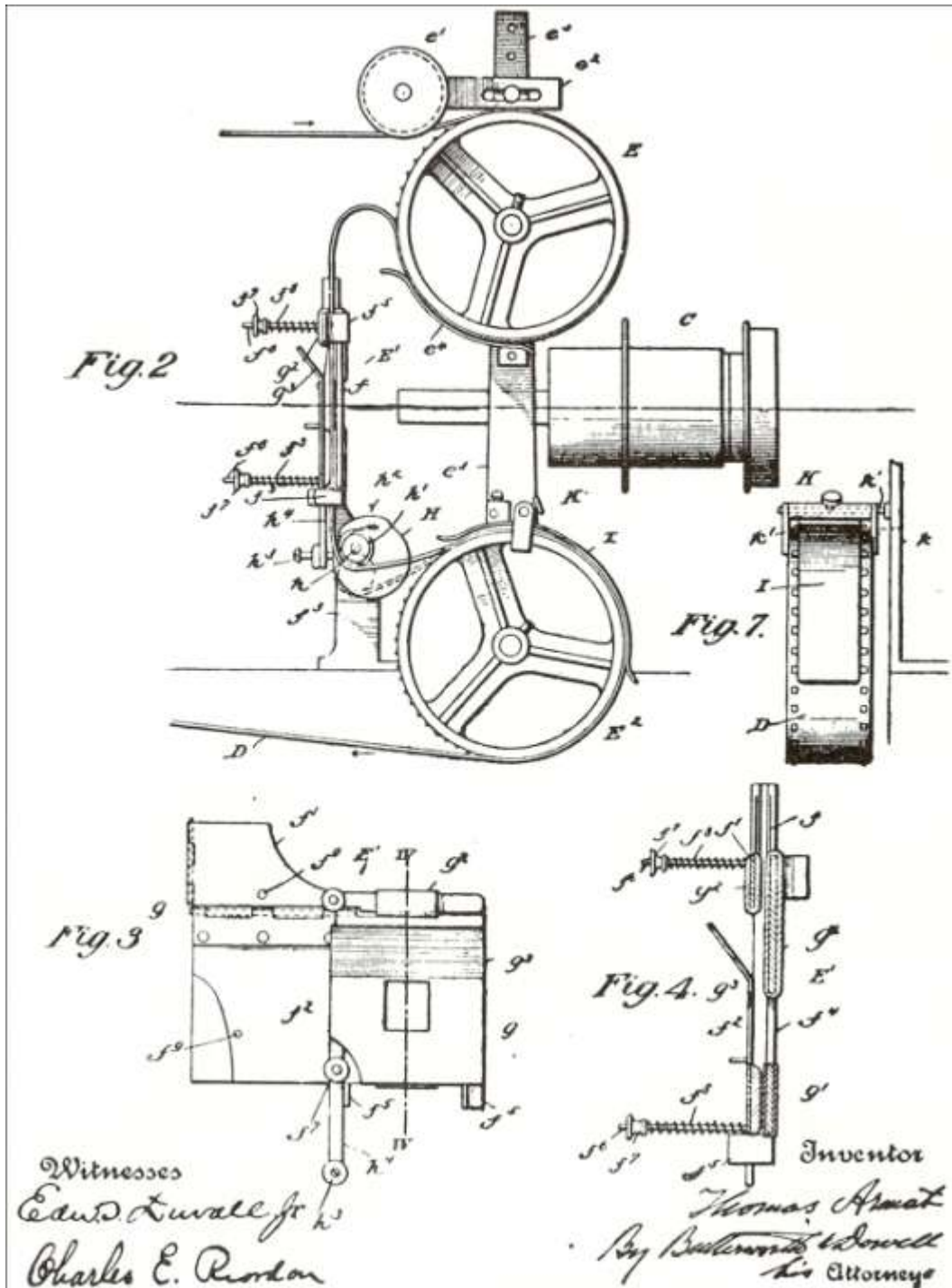
"The Jenkins Solo Application which was put in interference with the Armat-Jenkins joint application", [note that absence of an upper sprocket wheel]
F. H. Richardson, *What Happened in the Beginning*, September 1925 Transactions of the SMPTE

THE DISPUTED PATENT



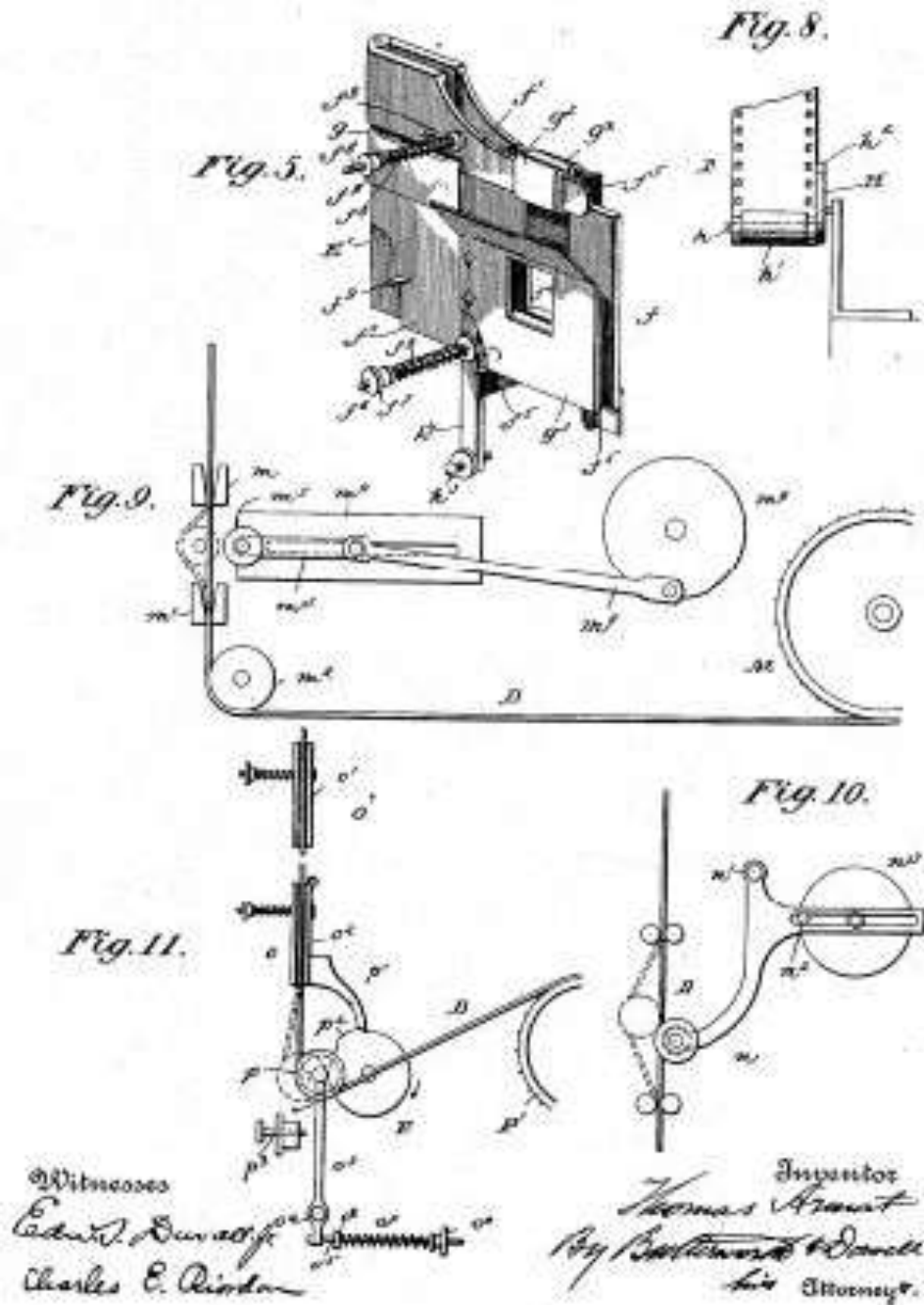
The beater intermittent Phantoscope renamed Vitascope
 T. Armat patent 673,992, patented May 14, 1901, beater movement, the original application was filed in both Jenkins and Armat's names but Jenkins signed his interest away for \$2,000 and dropped his interference claim.

THE DISPUTED PATENT



The beater intermittent Phantoscope renamed Vitascope
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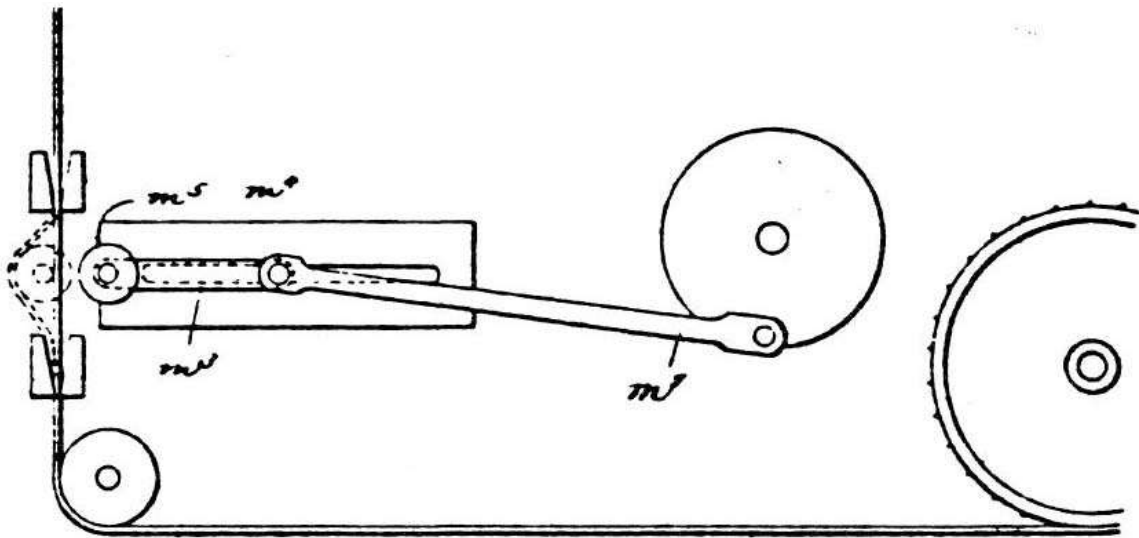
THE DISPUTED PATENT



The beater intermittent Vitascope

T. Armat patent 673,992 Patented May 14, 1901, beater movement, the original application was filed in both Jenkins and Armats names but Jenkins signed his interest away for \$2,000 and dropped his interference claim.

THE DISPUTED PATENT



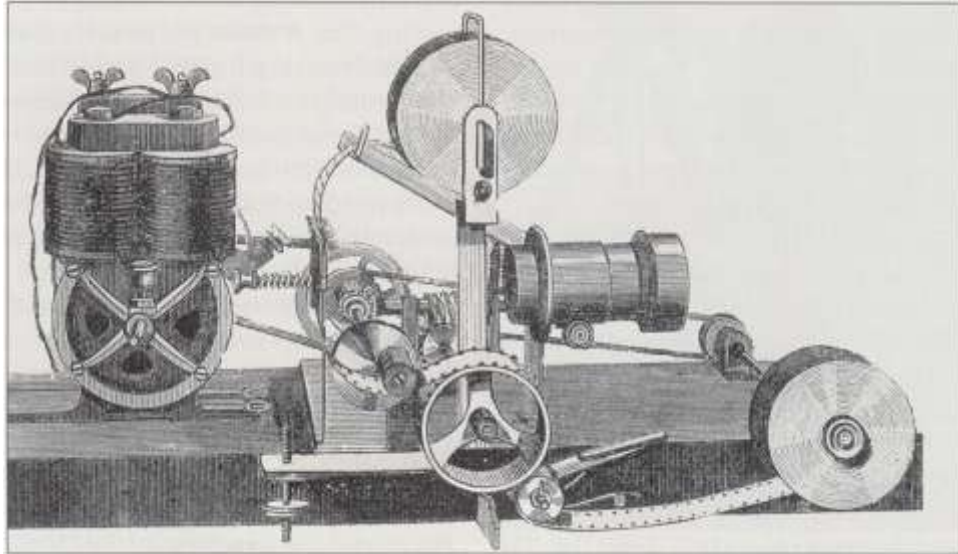
"Armat describes the last crucial "mutual exchange of ideas" between the partners as follows:

I explained to Mr. Jenkins an idea that I had had in my head for some time for giving film itself an intermittent motion without giving any part of the apparatus an intermittent motion. The machine of the patent No. 586,953 gave pictures carrying drum itself together with the film engaging in an intermittent movement which resulted in a great deal of vibration, the moving parts being very heavy, and the machine that I explained to Mr. Jenkins was designed to be an improvement upon the machine. I sketched the machine out on the back of an envelope, and as soon as Mr. Jenkins caught my idea he put his hands up to his head and exclaimed, I have got it!" He thereupon sketched himself substantially what I had sketched but with a slight modification which I recognized as easier to make with the parts we had on hand as a result of previous experiments. What I had in mind in the sketch I made is shown in Fig. 9 in the patent issued to me May 14, 1901, and numbered 673,992. The modification I accepted is shown at H in Fig. 2 of this patent so far as a disk with a pin fastened to the face of same is concerned. We had most of the parts necessary to make such a machine and within a few days afterwards we made a machine, tried it out and found it to be a success.

Gene G. Kelkres, *A forgotten first: The Armat-Jenkins partnership and the Atlanta projection*, Quarterly Review of Film and Video, Volume 9, Issue 1 Winter 1984 , pages 45 - 58

V
POST SPLITUP
JENKINS
PHANTOSCOPE
PROJECTORS

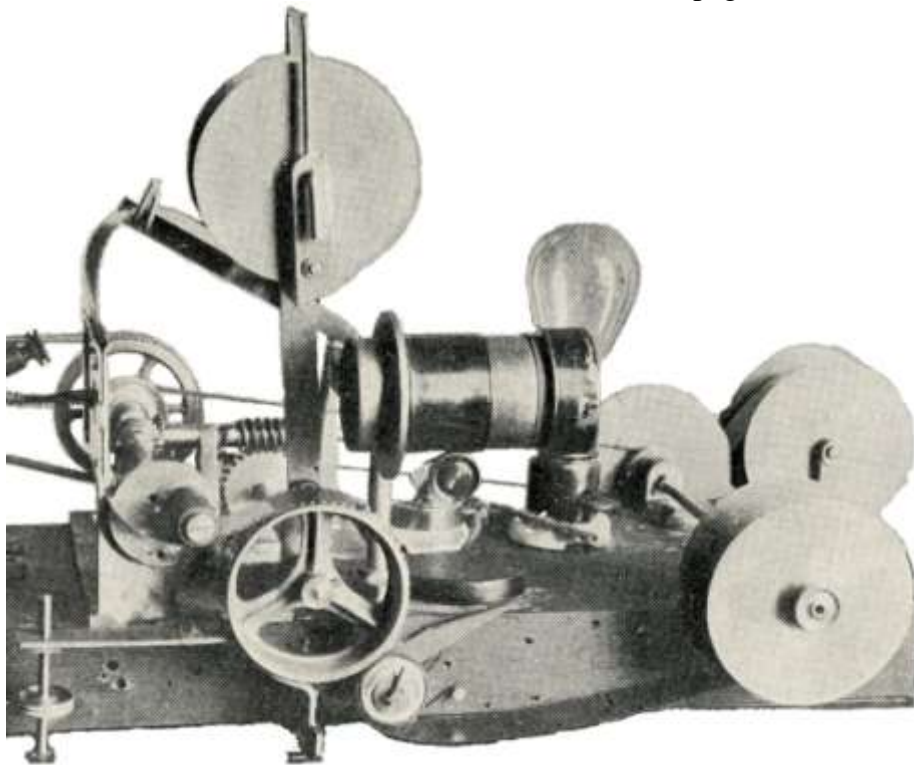
JENKINS PHANTOSCOPE PROJECTORS



“The Jenkins Phantoscope”

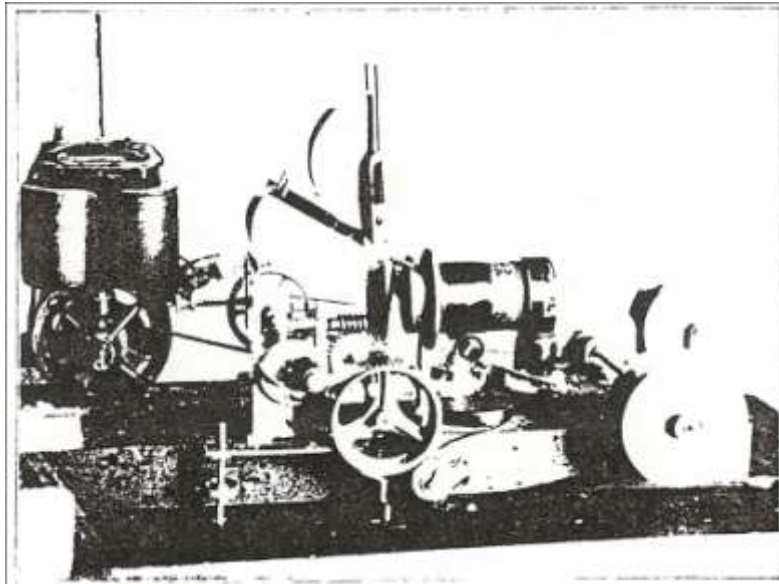
Source: *Scientific American* October 31, 1896, Volume LXXV, No. 18, fig 4

Source: Jenkins, *Animated Pictures*, 1898, page 89

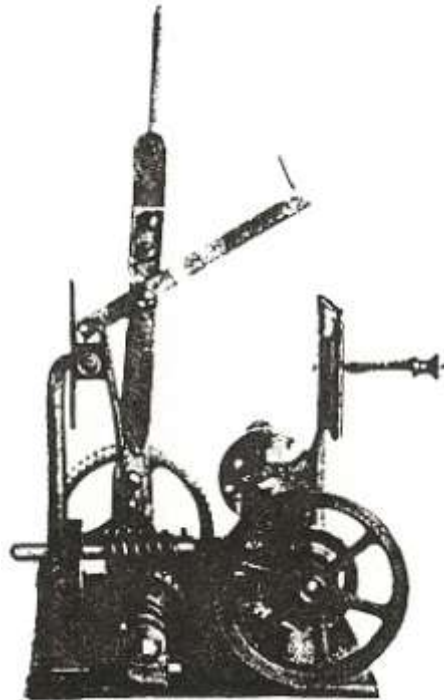


Outlined projector heads of the Phantoscope projector illustrated above
Jenkins, *Picture Ribbons*, 1897, p. 16

JENKINS PHANTOSCOPE PROJECTORS



Machine Threaded



Film feeding mechanism

Note that absence of an upper sprocket wheel.

Source: Catalog dated April 26, 1896 with a letter from Alexander Graham bell addressed to C. Francis Jenkins

JENKINS PHANTOSCOPE PROJECTORS

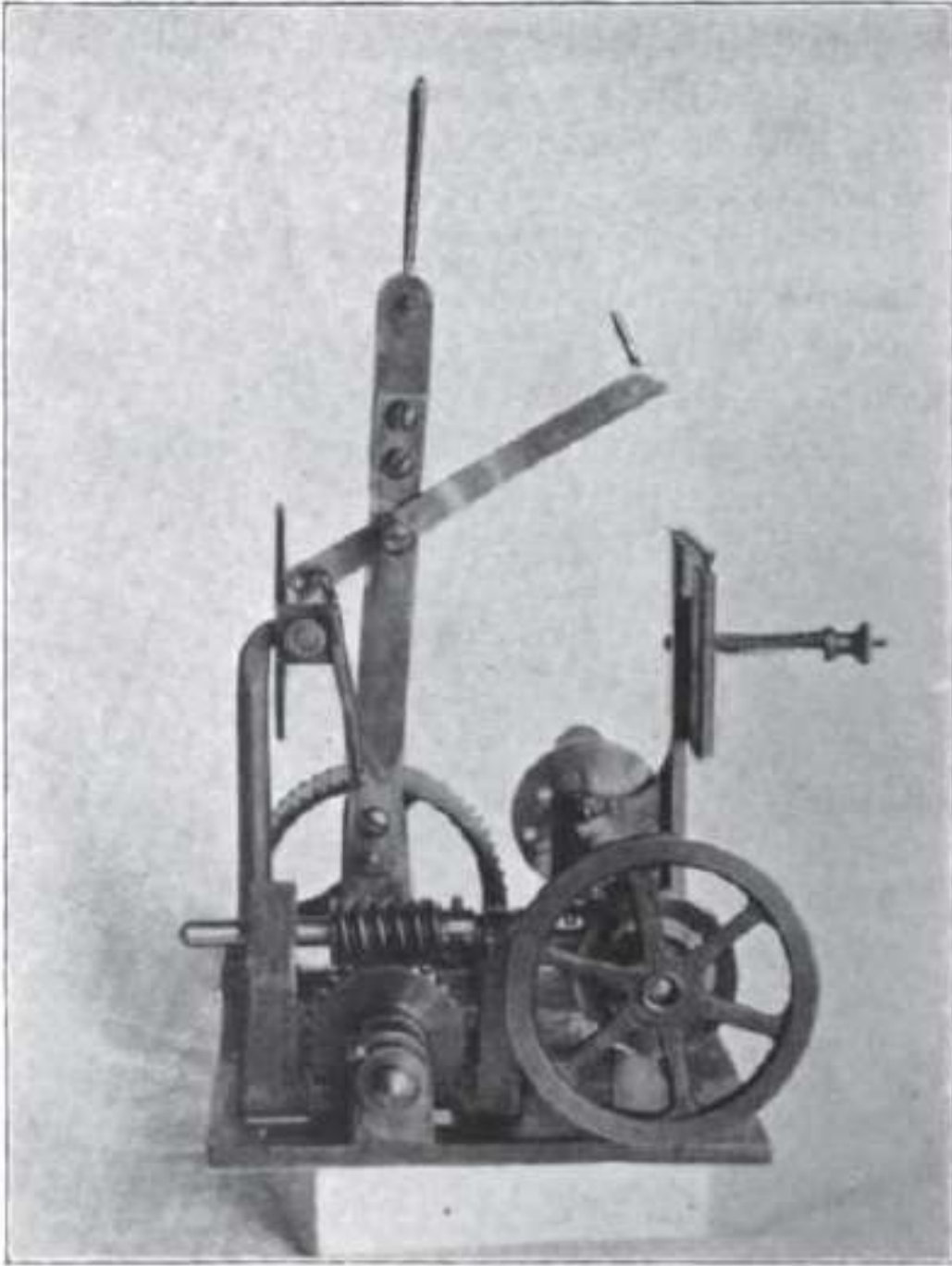
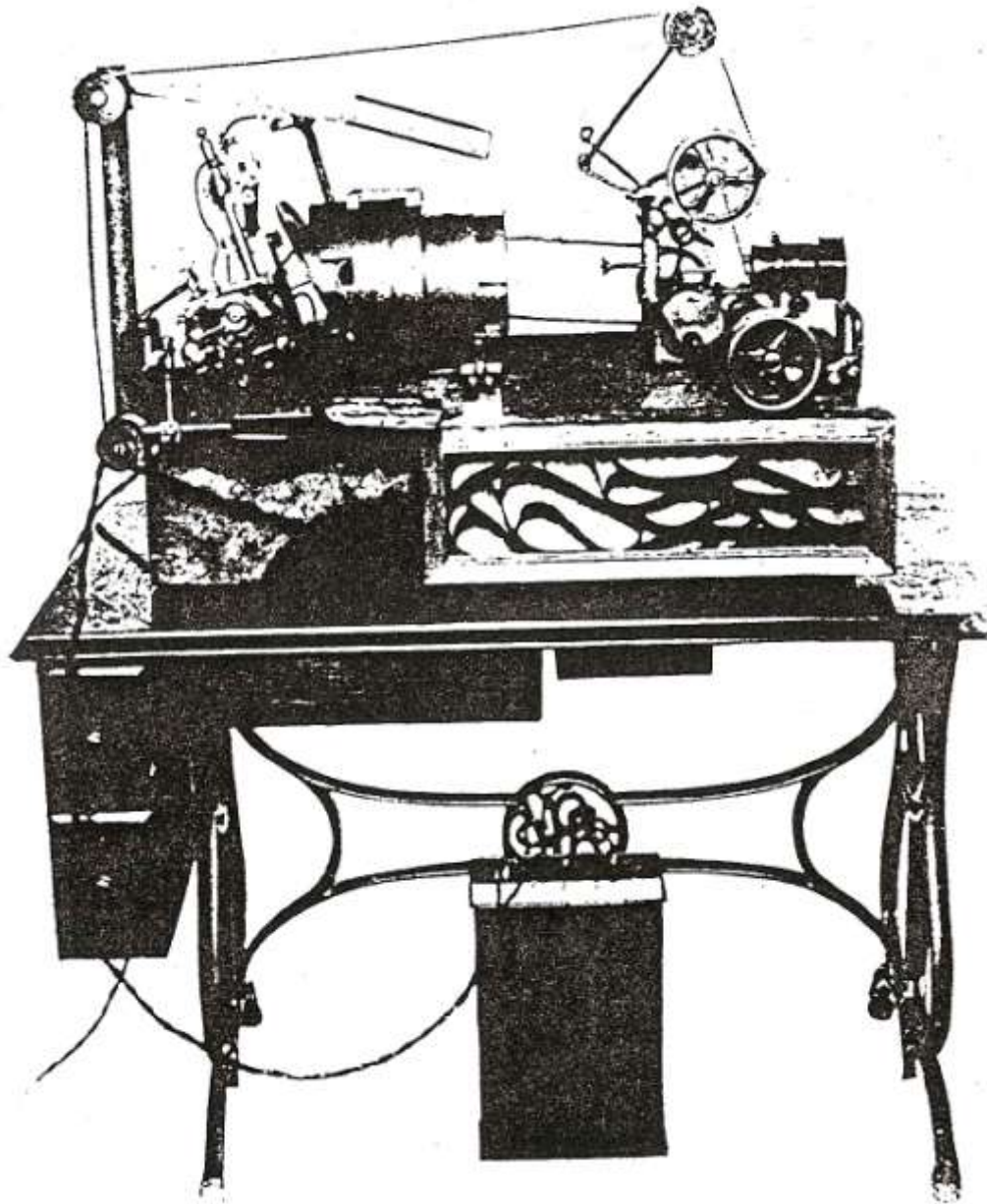


Fig. 2 FILM FEEDING DEVICE

The Photographic Times, Volume XXVIII, May 1896, New York 1896, p.224

JENKINS PHANTOSCOPE PROJECTORS

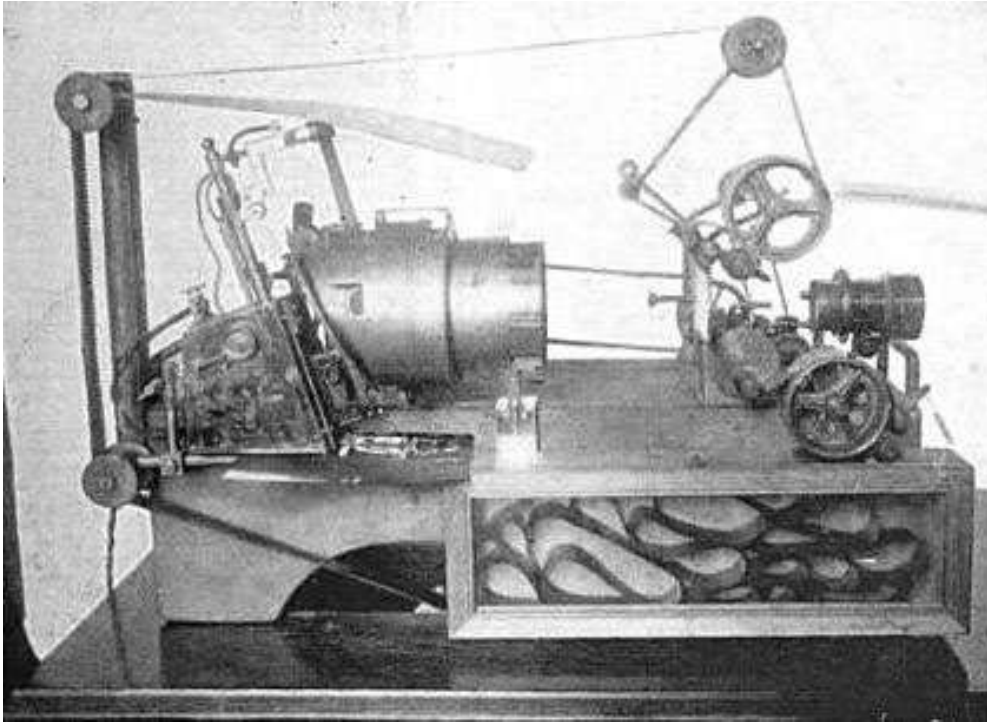


THE PHANTOSCOPE.

In this model the spoolbank mechanism has been replaced by the film being fed into a box and this allowed for continuous play the same as the spoolbank. This is very similar to, if not the same as the first Lubin projector. Jenkins worked closely with Lubin for an extended period of years; note that an upper sprocket wheel has been added

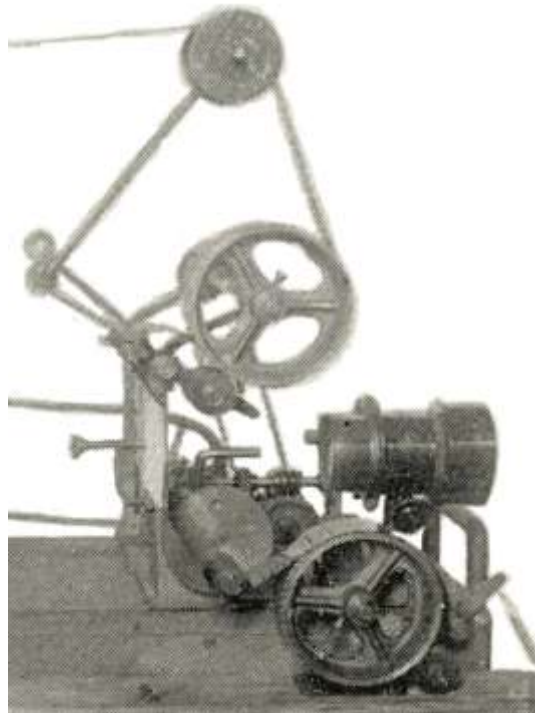
Source: An undated catalog titled THE JENKINS PHANTOSCOPE
(There is a handwritten notation "published July 1896")

JENKINS PHANTOSCOPE PROJECTORS



“A later form of the Jenkins projecting Phantoscope”, note that an upper sprocket wheel has been added

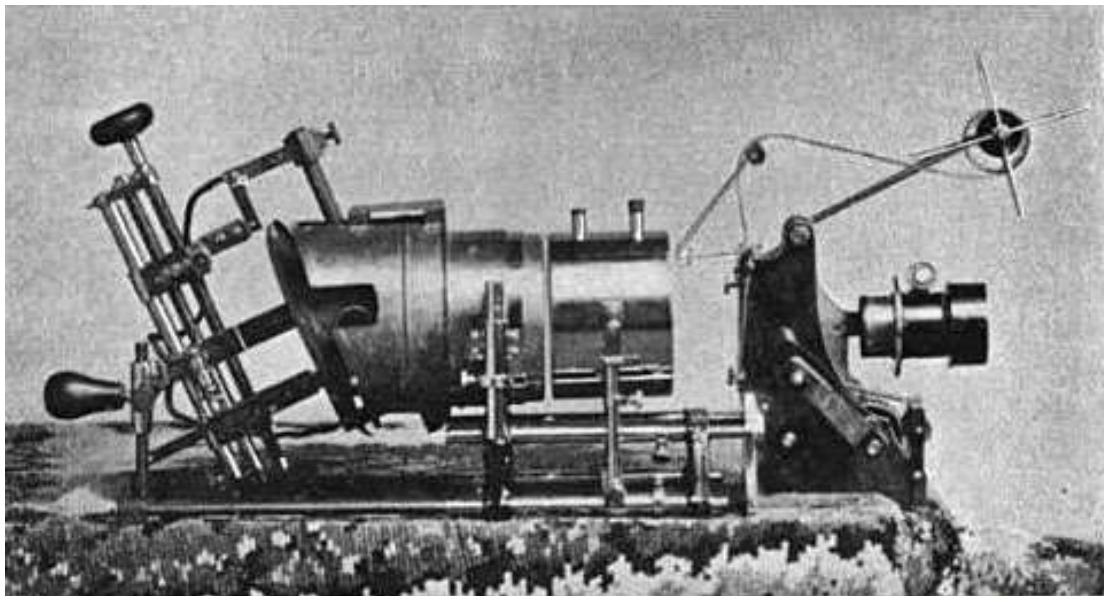
Source: Jenkins, *Animated Pictures*, 1898, page 39



JENKINS PHANTOSCOPE PROJECTORS



Phantascope (Phantoscope) the Einhorn (Unicorn) Press

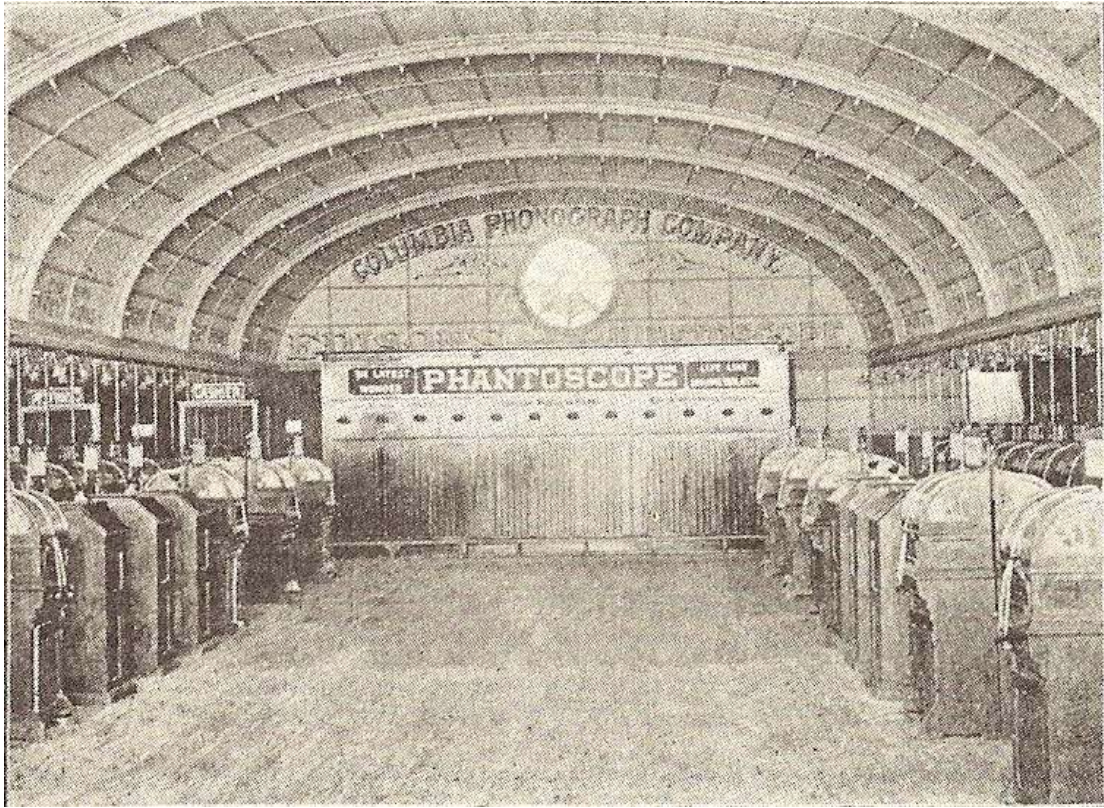


MACHINE FOR PROJECTING ANIMATED PICTURES ON THE SCREEN. The phantascope, latest model, being an attachment for a J. B. Colt & Co. electric lantern.

Appletons' Popular Science Monthly, Vol. LII, November 1897, p. 180

In Jenkins, *Animated pictures*, p. 40, Jenkins states: "The ultimate outcome of experiments to make moving-picture apparatus as an attachment for ordinary magic lanterns is the very simple piece of mechanism shown, being an attachment for a J. B. Colt & Co's lantern." He does not name the projector but was probably either made by him or someone associated with him, so the question is; is this a Phantascope? I think so.

JENKINS PHANTOSCOPE PROJECTORS

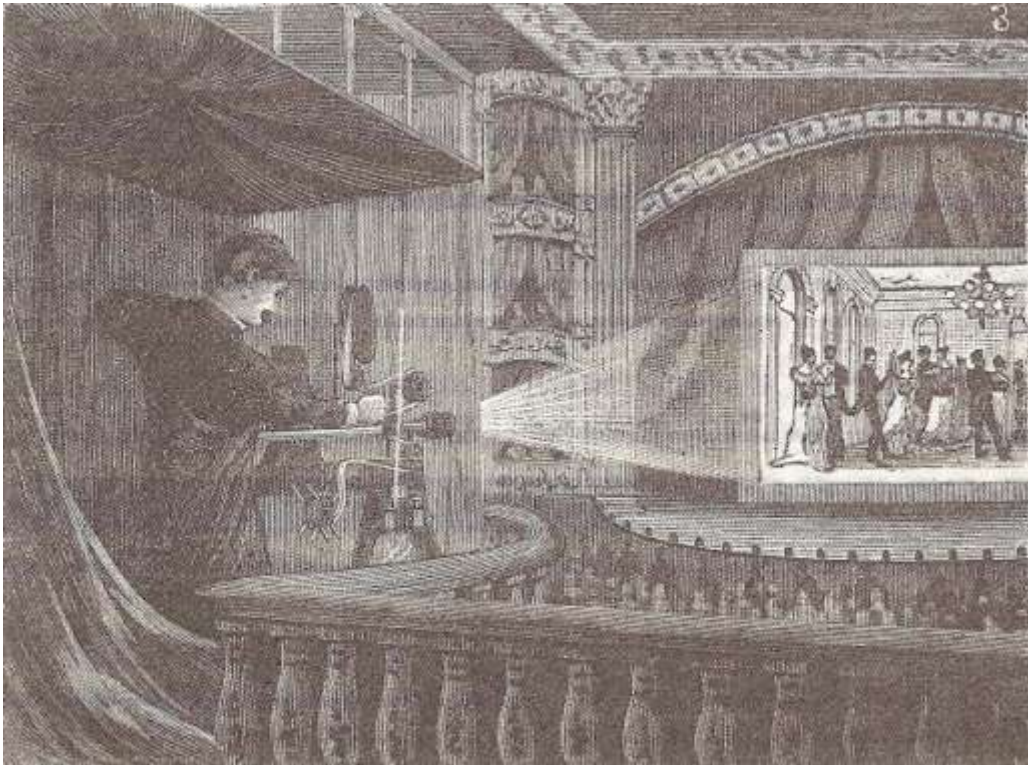


“Jenkins’ slot-action cabinet-life size pictures”

Columbia Phonograph Company where the later Jenkins Phantoscope projected onto a large screen but the viewer still stood up and peered through the opening to view the projected film. This might be considered as an intermediate stage between the peephole machine and full movie house projection. Note the Peephole Machines on either side of the hall, six can be identified as Edison Peephole Kinetoscopes, but who made the other machines is unknown. Might they have been made by Jenkins who worked closely with the Columbia Phonograph Company? Whoever made them none are known to exist today.

Source: Jenkins, *Animated Pictures*, 1898, page 38

JENKINS PHANTOSCOPE PROJECTORS



No caption

The projector is most likely a later Jenkins Phantoscope

Source: Jenkins, *Animated Pictures*, 1898, between page 72 and 73

THE PHANTOSCOPE

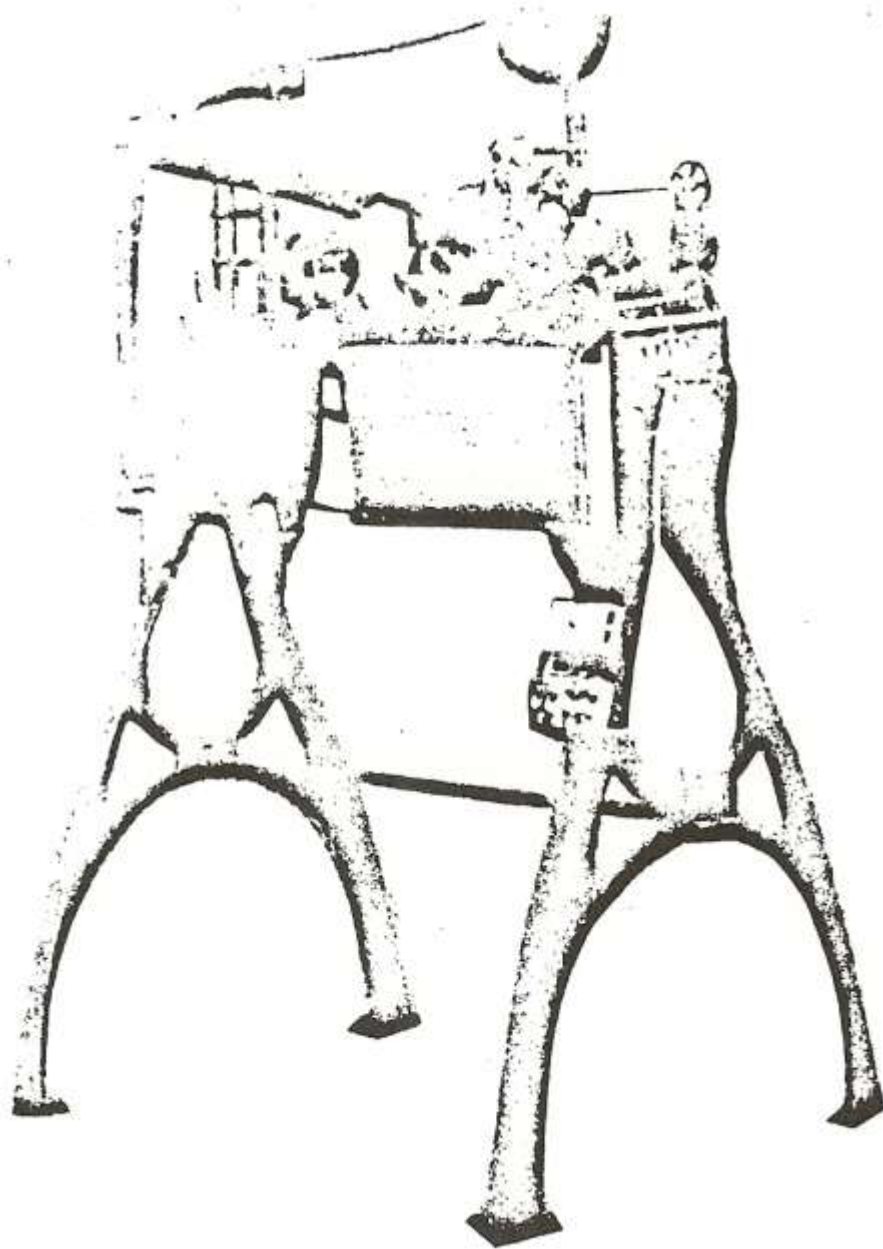
CHICAGO, ILL - At the Imperial Theatre the Phantoscope has proved itself a drawing card. The pictures are all French view and include military scenes and pictures of French street and country life. There is a very large selection, and the films are said to be amongst the most perfect made.

Among some recently invented instruments bought to the notice of Chicagoans a couple of marvelous ones are those which register the changes in a person's emotions. They are the "Kymegraphien" and "the Plethy....graph" of M.sso. The former measures the effect of mental and emotional states upon the chest and the later upon the circulation of the arterial blood.

Source: *The Phonoscope*, Vol. III, No. 1, November 1896, page 12

As can be seen from the above review Jenkins Phantoscope played in a faraway place from his Washington D.C. base. It would be of great interest to know in what other cities the Phantoscope was used after the Jenkins-Armat split up.

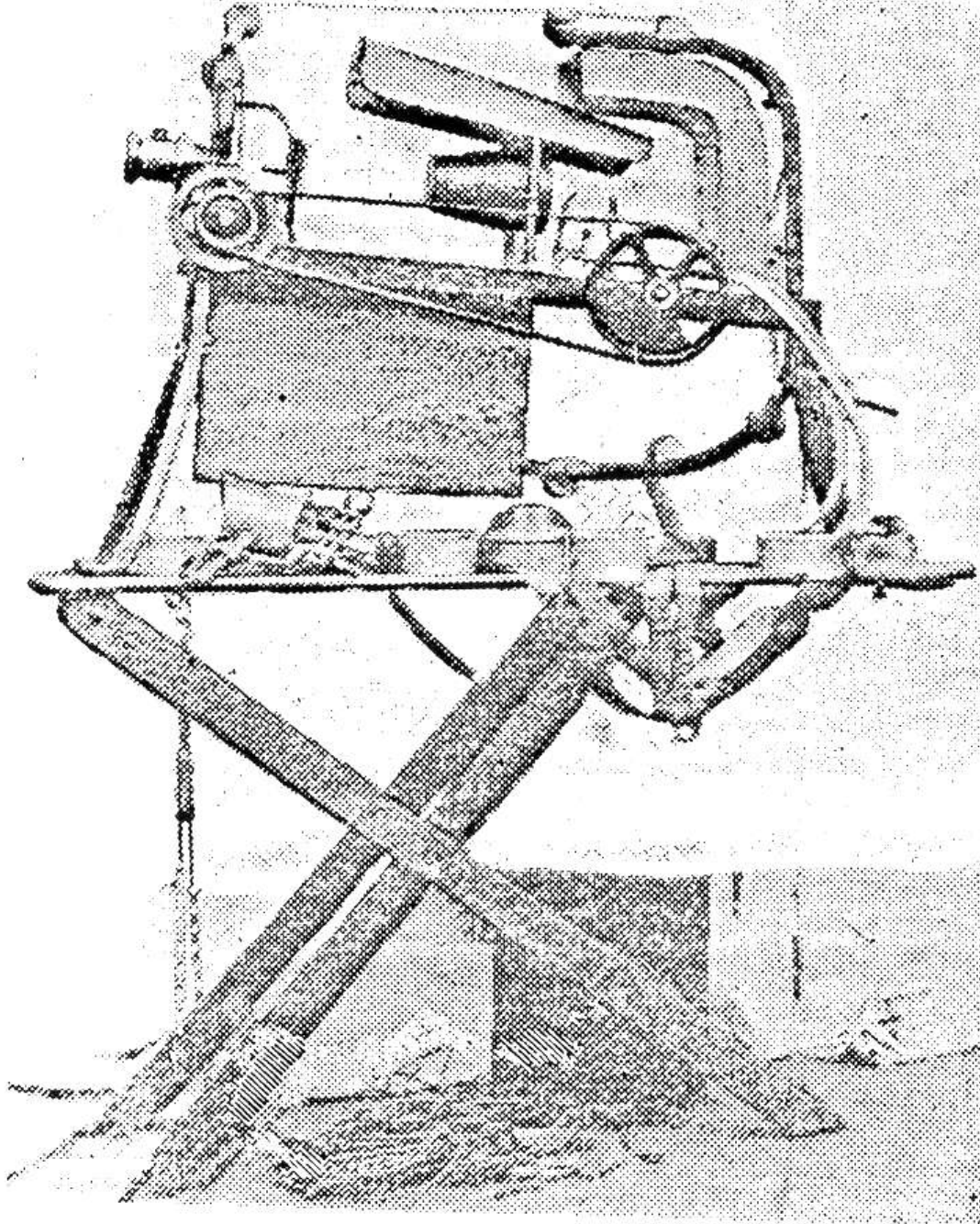
JENKINS PHANTOSCOPE PROJECTORS



This was probably the first Lubin projector made with the help of Francis Jenkins. Note the rectangular film box where the film would collect to run continuously as in a spoolbank. This film box was used in Lubin's first projector. The stand is very similar to the one used by the Armat Vitascope.

Xerox copy: *RAY BRYAN FILES* Museum of the Moving Image, Astoria, New York

JENKINS PHANTOSCOPE PROJECTORS



Lubin Cineograph 1896 model, this was most likely also made with the help of Francis Jenkins and is probably a copy of the Phantoscope; note the rectangular film box and the Colt light housing on the left side of the board.

RAY BRYAN FILES Museum of the Moving Image, Astoria, New York

JENKINS PHANTOSCOPE PROJECTORS

PHOTO NOT AVAILABLE
AT THE PRESENT TIME

Phantoscope in the collection of Charlie Hummel, Wayne, New Jersey

VI
JENKINS LATER
PROJECTORS,
CAMERAS
and other devices

JENKINS LATER PROJECTORS



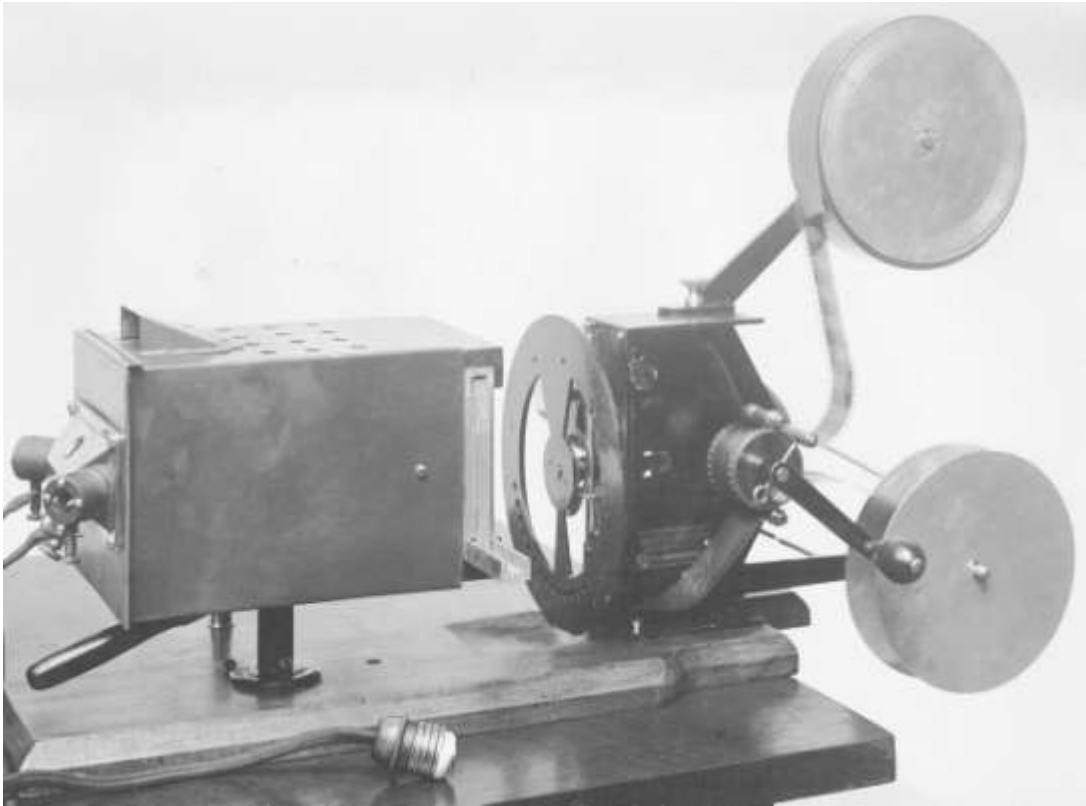
Chronoteine high speed camera
Jenkins, *The Boyhood of an Inventor*

JENKINS LATER PROJECTORS

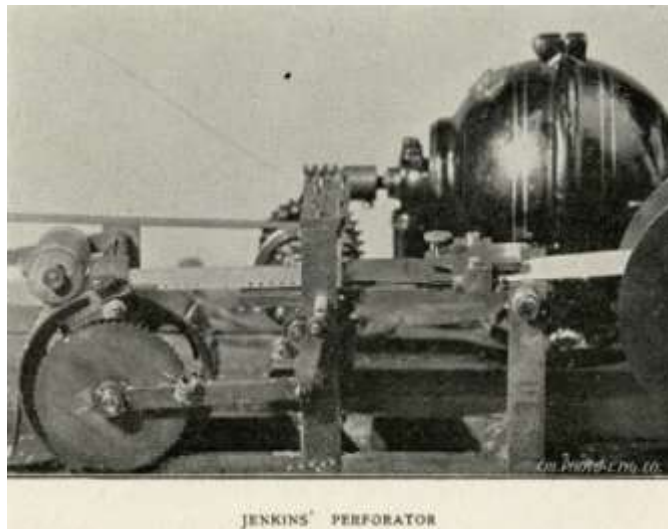


Graphoscope, Collection Soterios Gardiakos

JENKINS LATER PROJECTORS



Another Jenkins Phantoscope circa 1914



Jenkins perforator, Animated Pictures, 1898

JENKINS LATER PROJECTORS



Phantoscope Camera

VII
POST SPLITUP ARMAT
VITASCOPE
PROJECTORS
(Advertised as Edison's
Vitascope)

ARMAT'S VITASCOPE PROJECTOR



Thomas Armat
October 25, 1866 - September 30, 1948

ARMAT'S VITASCOPE PROJECTOR

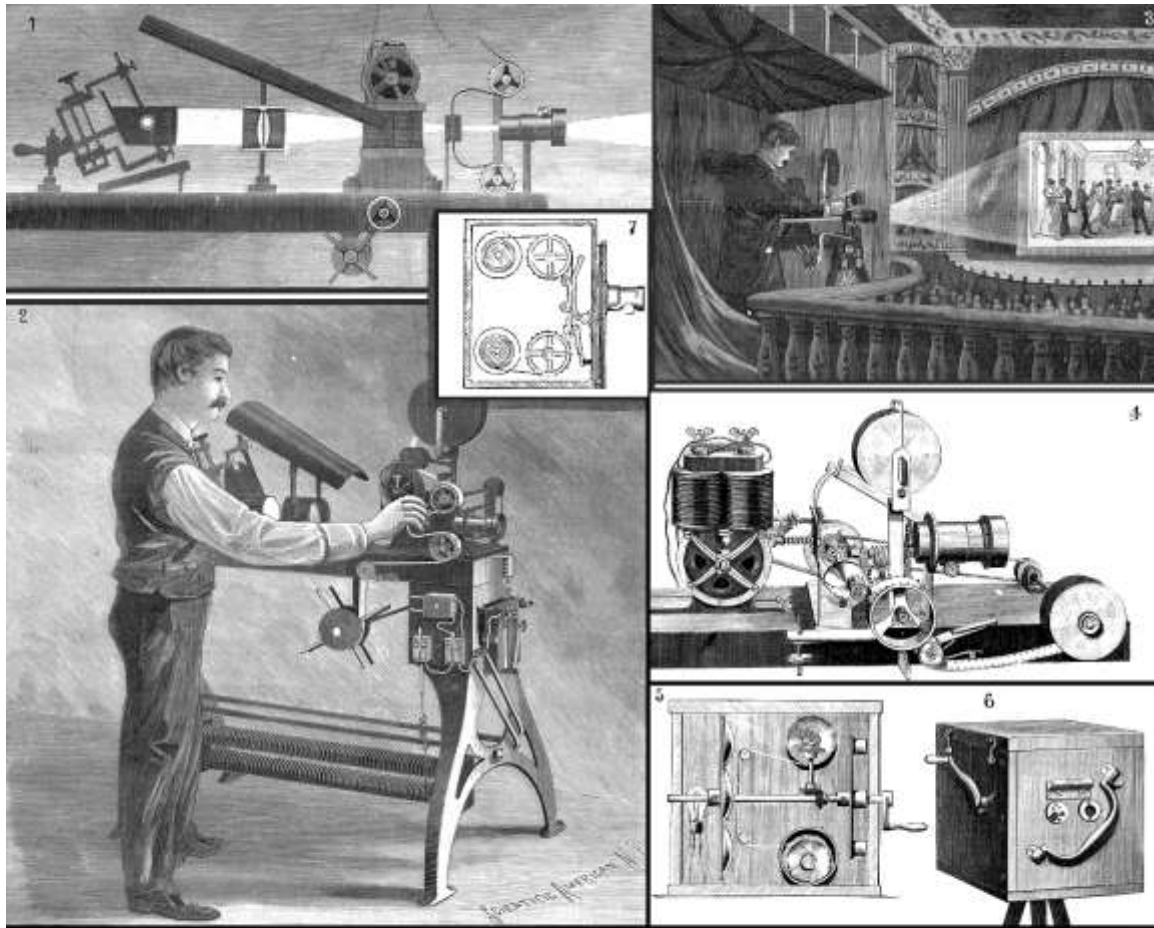
After the Cotton states exposition it is believed that Armat made a revised Phantoscope by adding a sprocket wheel in the upper part of the machine, and therefore used a loop, invented by the Lathams, called the "Latham Loop", in feeding the film, though Jenkins did the same in his post split-up Phantoscope. What other changes Armat made is not clear as I have no detail photographs of the Cotton States Phantoscope to compare with, although the similarities are more obvious than the differences.

Armat had to pay for Frank R. Gammons (of Raff and Gammon, agents for the Peephole Kinetoscope) trip to Washington D.C.. In December 8, 1895, to view Armat's Vitascope. Gammon was impressed enough with this machine and decided his firm should manufacture and market it. Raff and Gammon signed an agreement With Edison's U.S. Phonograph company to manufacture 100 Vitascope projectors. Apparently at some point Raff and Gammon stopped buying the projectors that U.S. Phonograph was making on their behalf and Edison started selling the unpaid machines on his own. Raff and Gammon had created the Vitascope co. which then sued the U.S. Phonograph company for "unfair Competition in Trade" (Circuit court, D. New Jersey. September 4, 1897) in which is stated that the agreement was for the manufacture of 100 machines, though how many were actually made is unknown to me. It is said that "Only 85 Vitascope were made" (1).

It is believed that the George Eastman House machine illustrated in this book was the machine Armat used to demonstrate it to Thomas Edison. This machine used a beater movement, same as the Cotton States exposition Phantoscope. Later Armat made a Vitascope using a Maltese cross movement. The Maltese cross movement was first used by Oscar Messter, in Germany in a projector in 1896.

- (1) Terry Ramsaye, "*Thomas Armat, who Bought Screen to Broadway, Dies*" A magazine article of unknown source with a hand written "1948" in the Ray Bryan files.

ARMATS VITASCOPE PROJECTOR



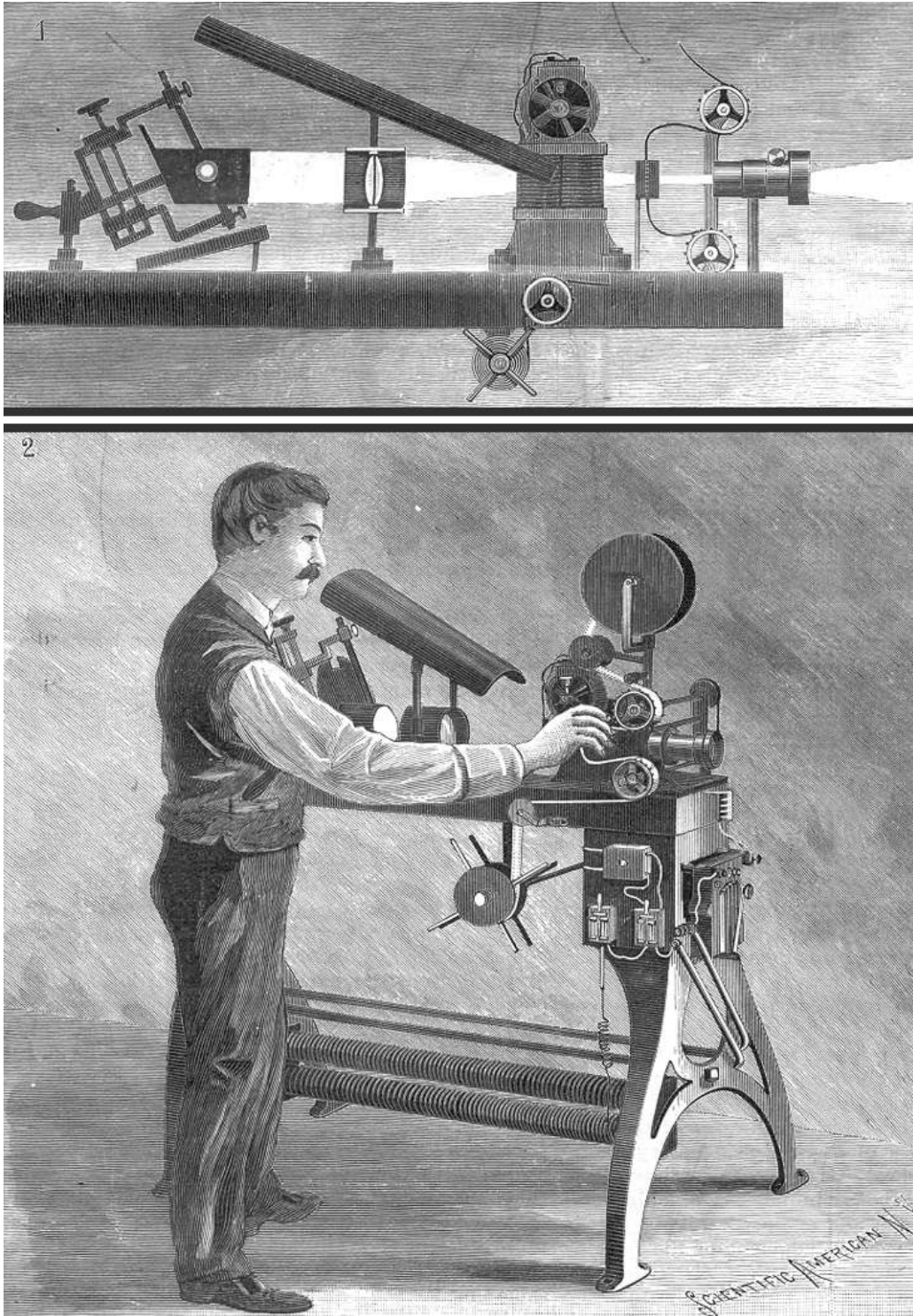
1, 2, and 3: Edison Vitascope. 4: The Jenkins Phantoscope. 5 and 6: Jenkins Kinetoscope Camera. 7: Acres Projection Device.

APPARATUS FOR PROJECTING KINETOSCOPIC PICTURES.

- 1, 2, and 3: Edison Vitascope
- 4: The Jenkins Phantoscope.
- 5 and 6: Jenkins Kinetoscope Camera.
- 7: Acres Projection device.

Source: Scientific American, October 31, 1896 Volume LXXV, No. 18

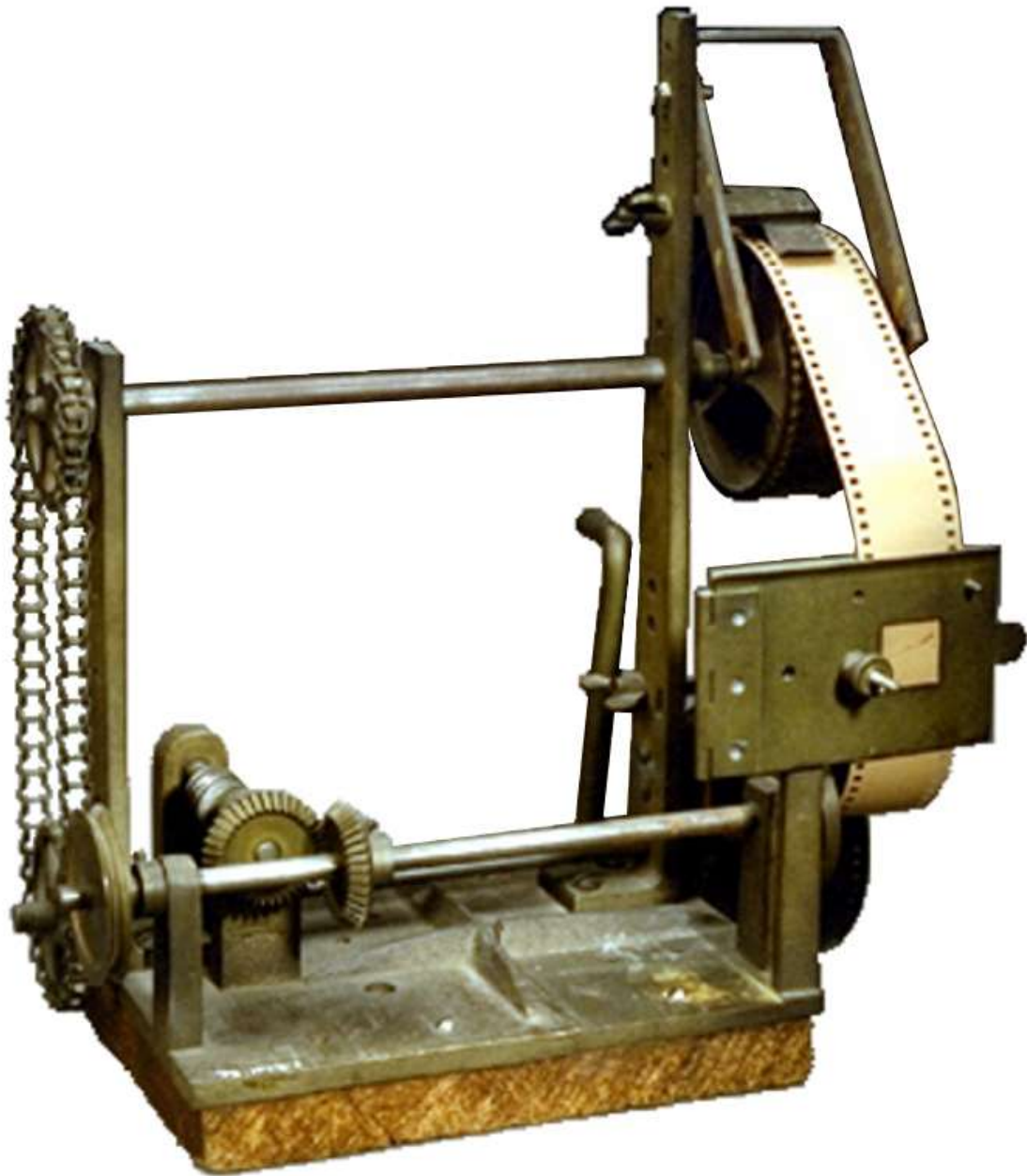
ARMATS VITASCOPE PROJECTOR



1, 2 .Edison Vitascope

Source: Scientific American, October 31, 1896 Volume LXXV, No. 18

ARMAT'S VITASCOPE PROJECTOR

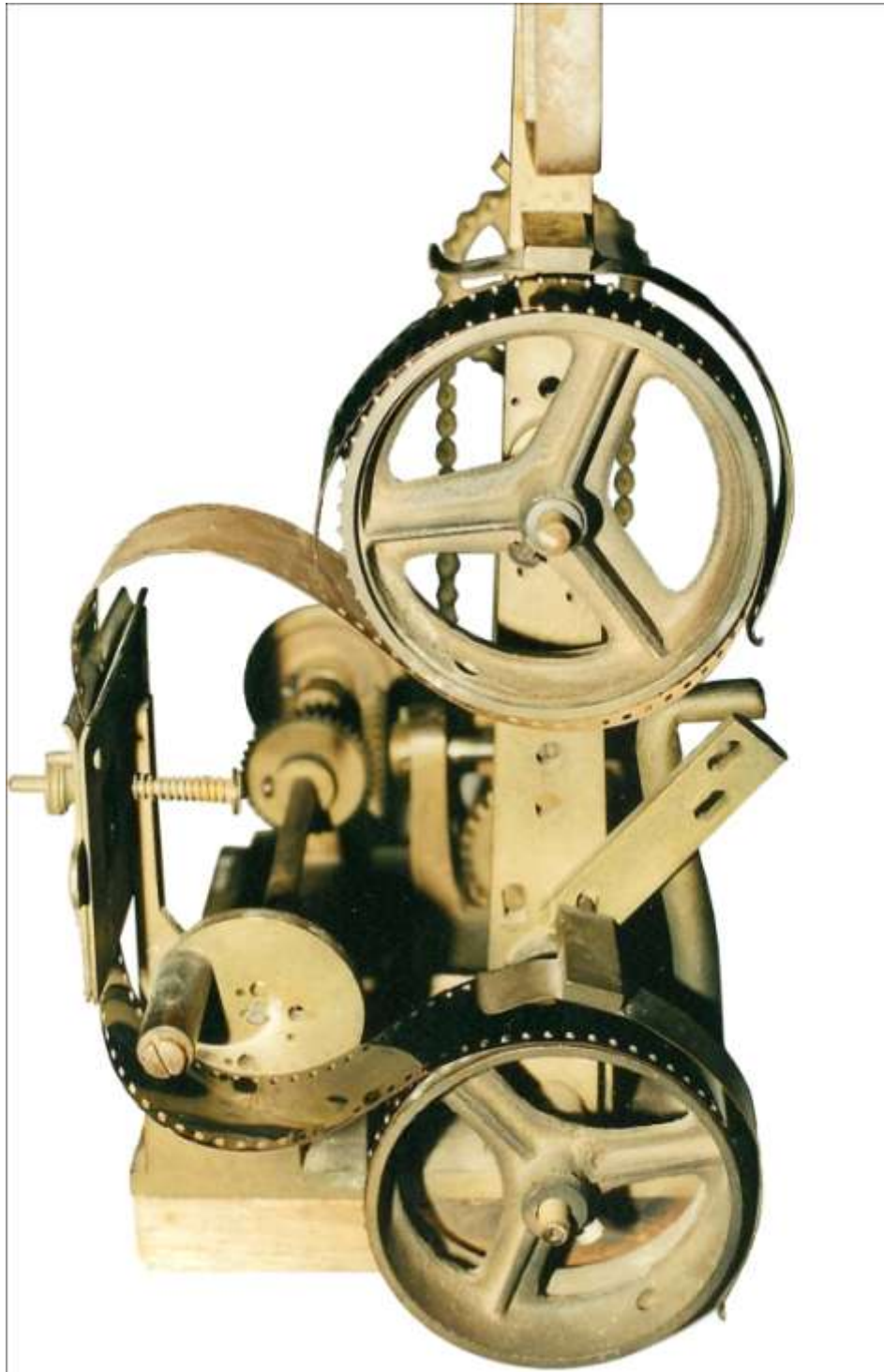


Vitascope projector

The Vitascope does not have a makers mark on it. There is a number 2 stamped into the base casting. According to the GEH computer database, it was given to the museum when it first opened in the late 1940s by Thomas Armat.

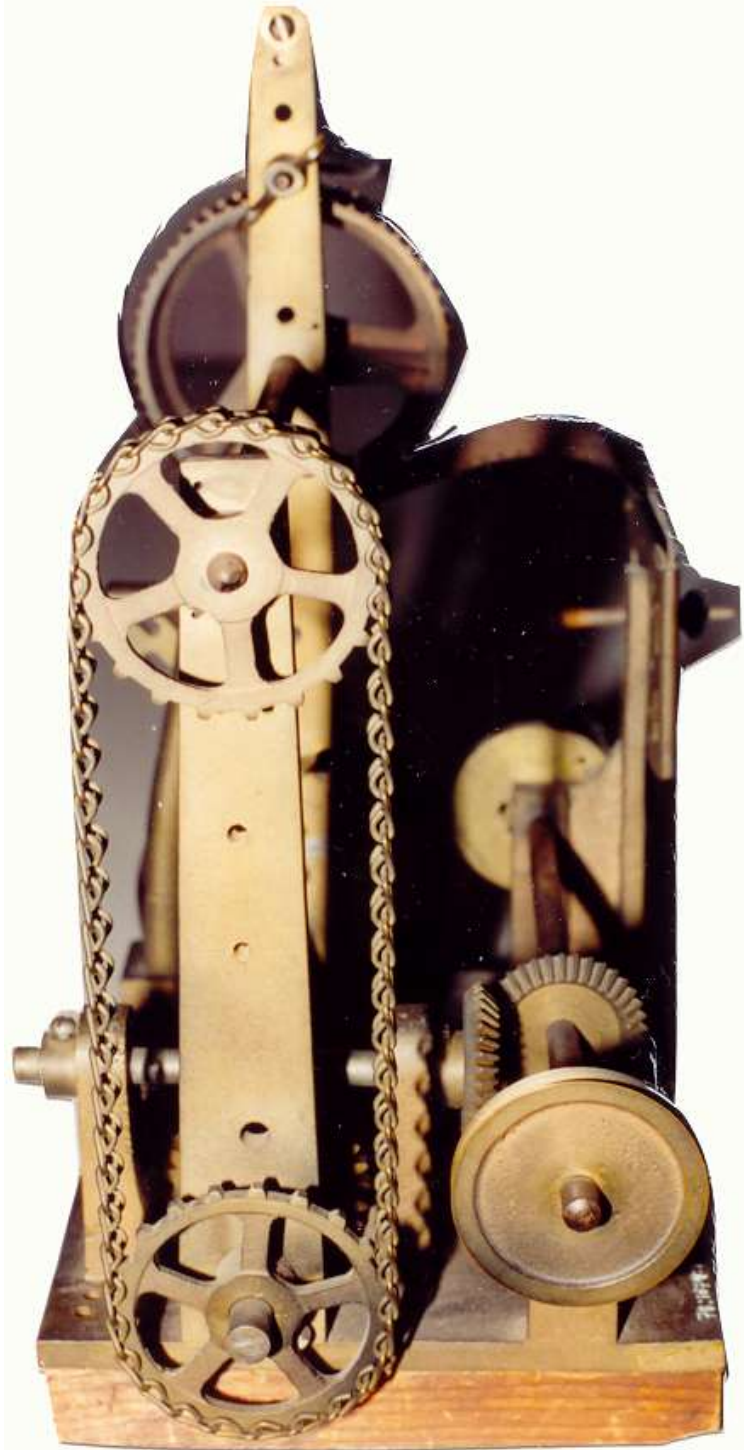
Collection George Eastman House, Technology Archive

ARMATS VITASCOPE PROJECTOR



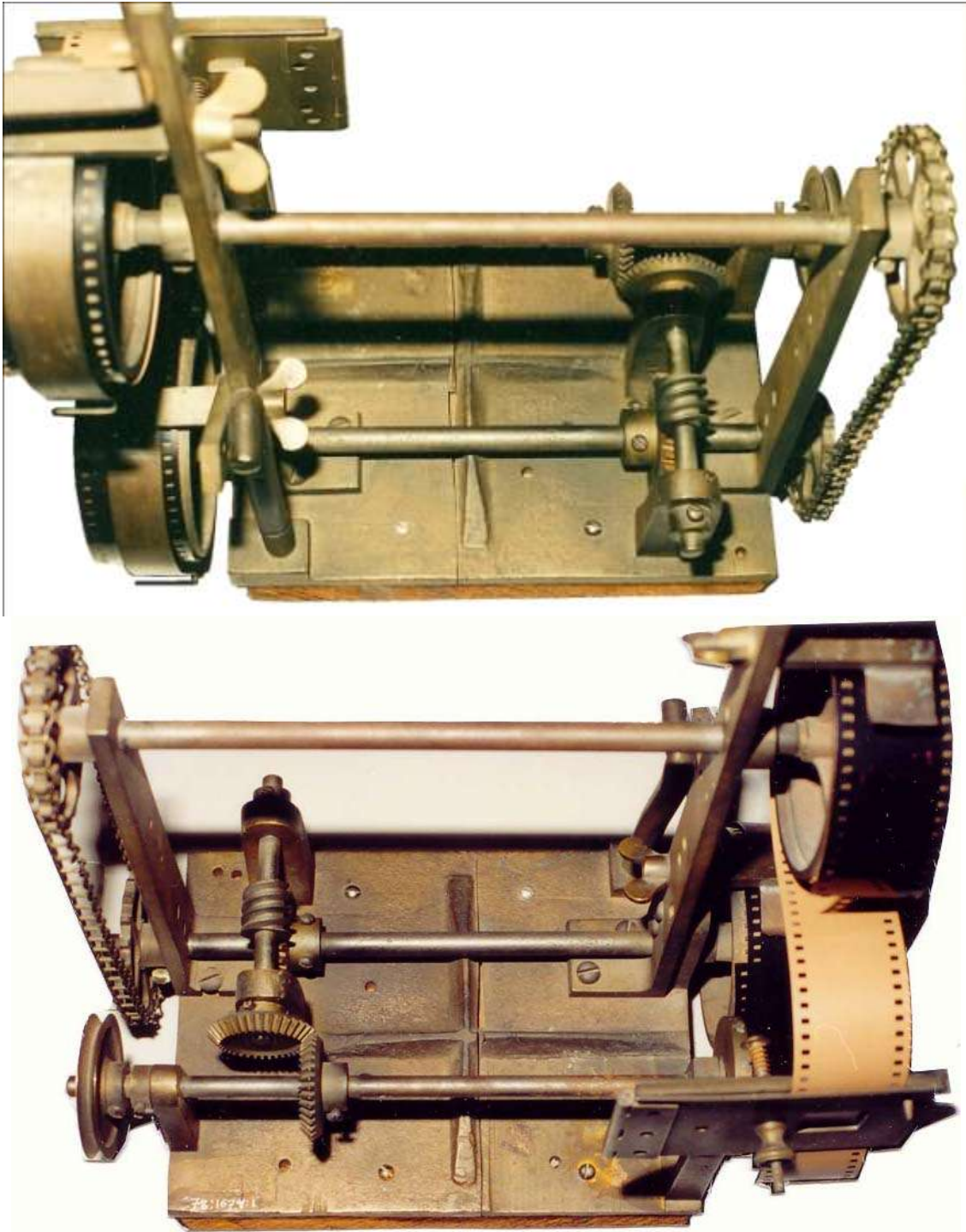
Vitascope projector with a Beater movement
Collection George Eastman House, Technology Archive
Photo Carey Williams, previously unpublished

ARMATS VITASCOPE PROJECTOR



Vitascope projector with a Beater movement
Collection George Eastman House, Technology Archive
Photo Carey Williams, previously unpublished

ARMATS VITASCOPE PROJECTOR



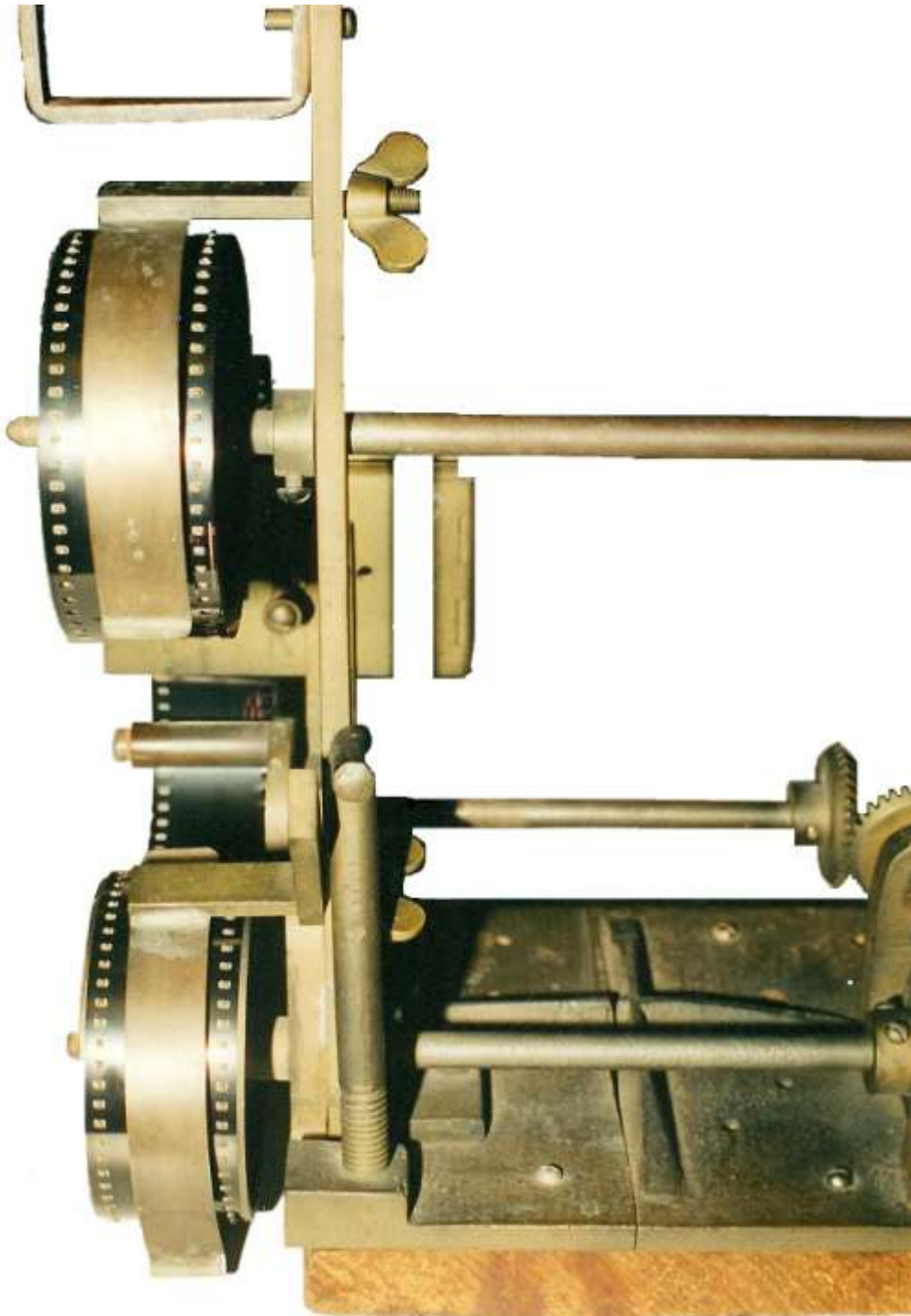
Vitascope projector with a Beater movement
Collection George Eastman House, Technology Archive
Photo Carey Williams, previously unpublished

ARMATS VITASCOPE PROJECTOR



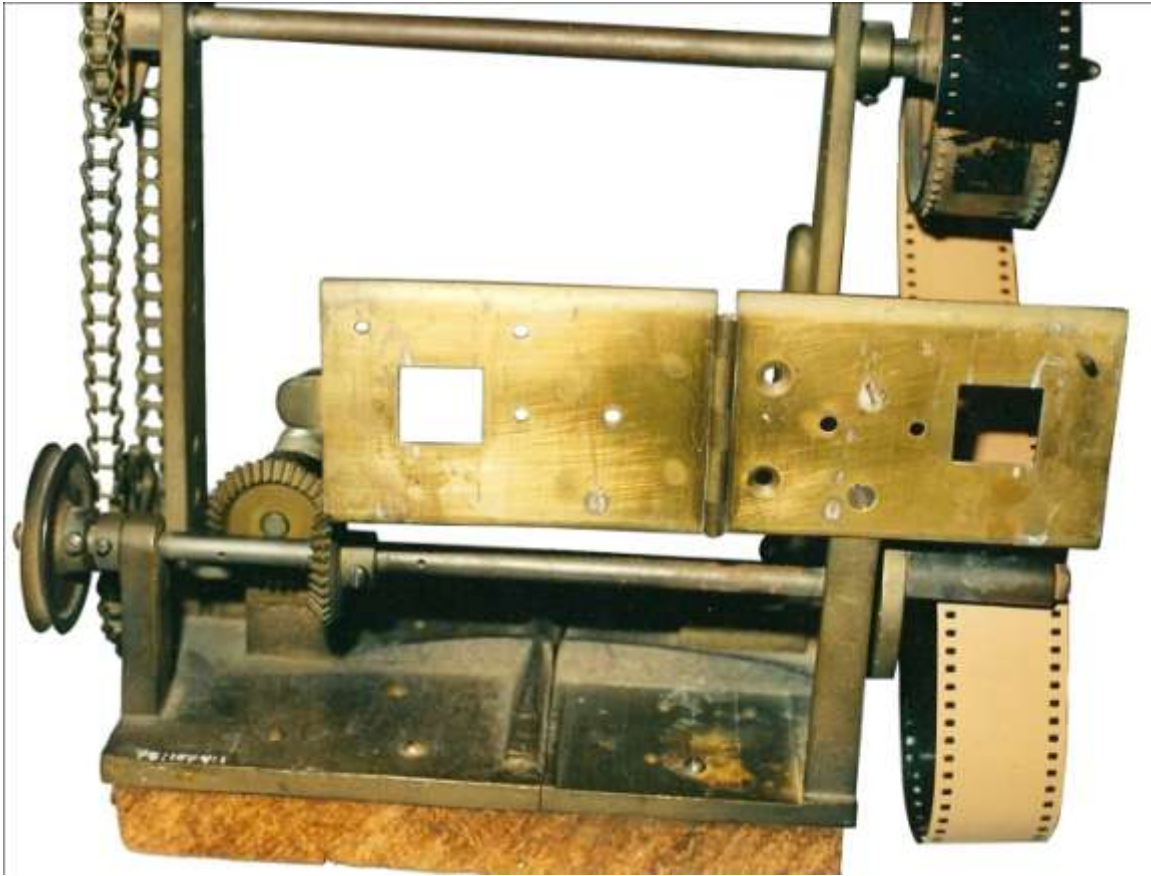
Vitascope projector with a Beater movement
Collection George Eastman House, Technology Archive
Photo Carey Williams, previously unpublished

ARMATS VITASCOPE PROJECTOR



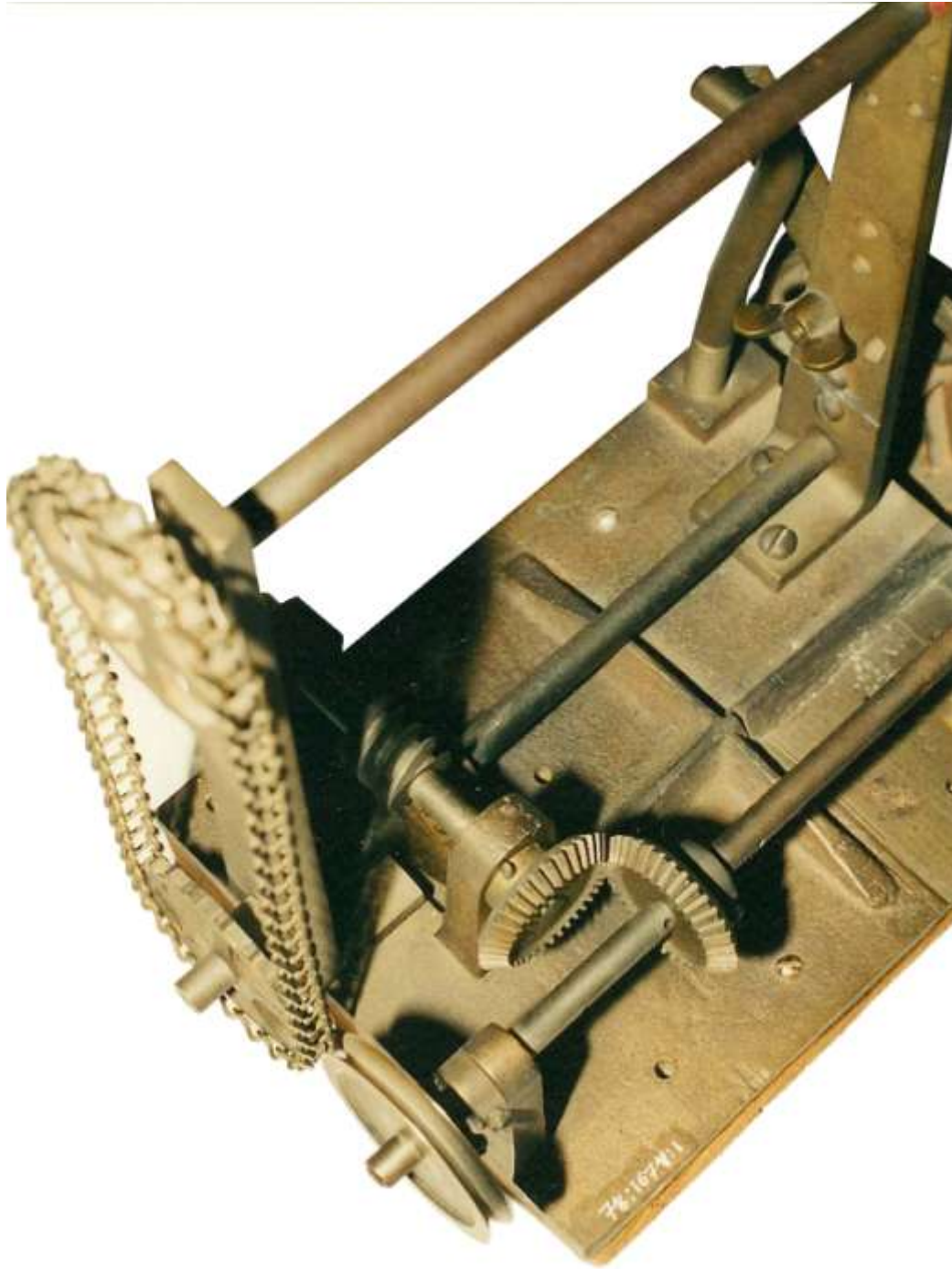
Vitascope projector with a Beater movement
Collection George Eastman House, Technology Archive
Photo Carey Williams, previously unpublished

ARMATS VITASCOPE PROJECTOR



Vitascope projector with a Beater movement
Collection George Eastman House, Technology Archive
Photo Carey Williams, previously unpublished

ARMATS VITASCOPE PROJECTOR



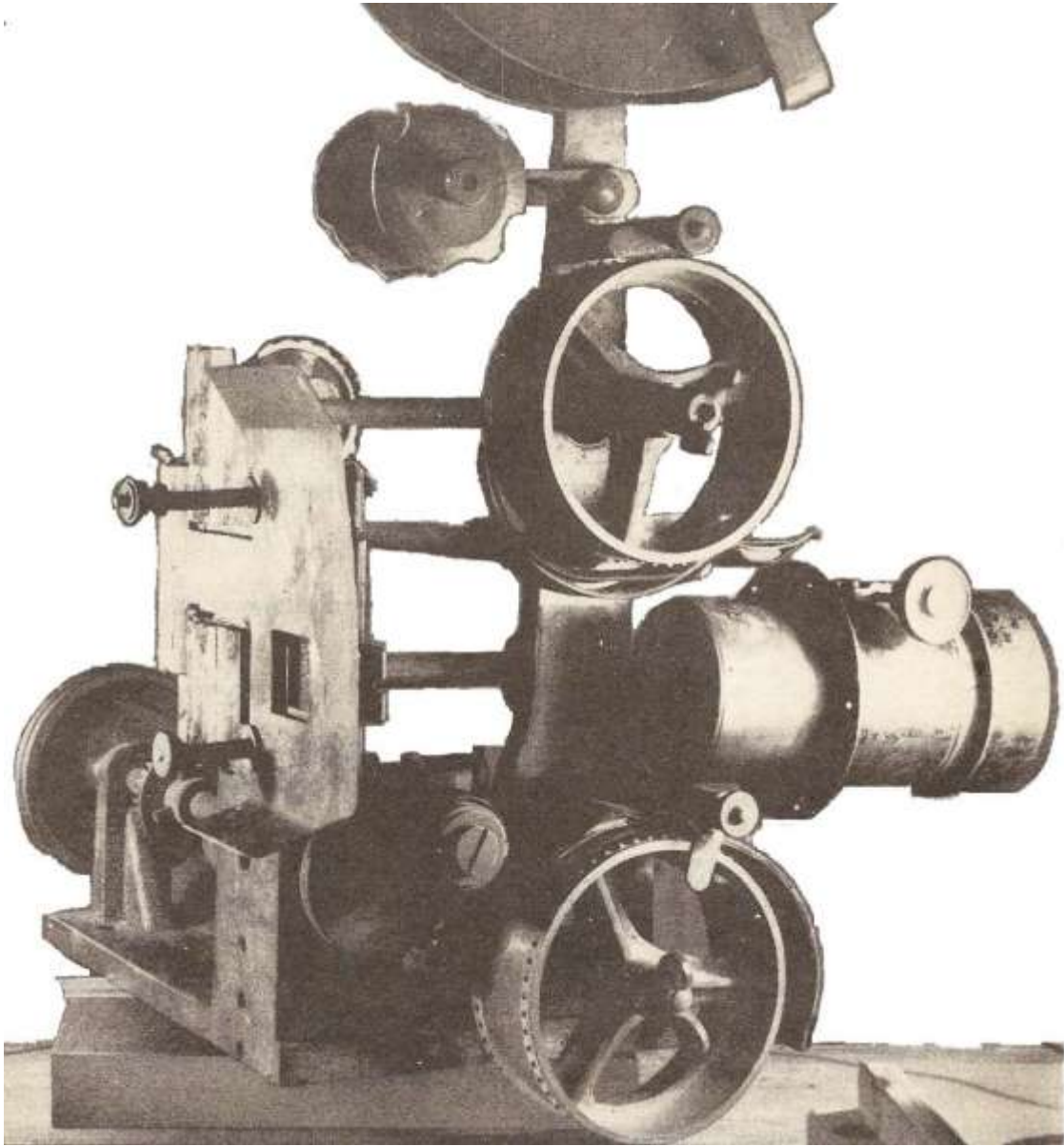
Vitascope projector with a Beater movement
Collection George Eastman House, Technology Archive
Photo Carey Williams, previously unpublished

ARMATS VITASCOPE PROJECTOR



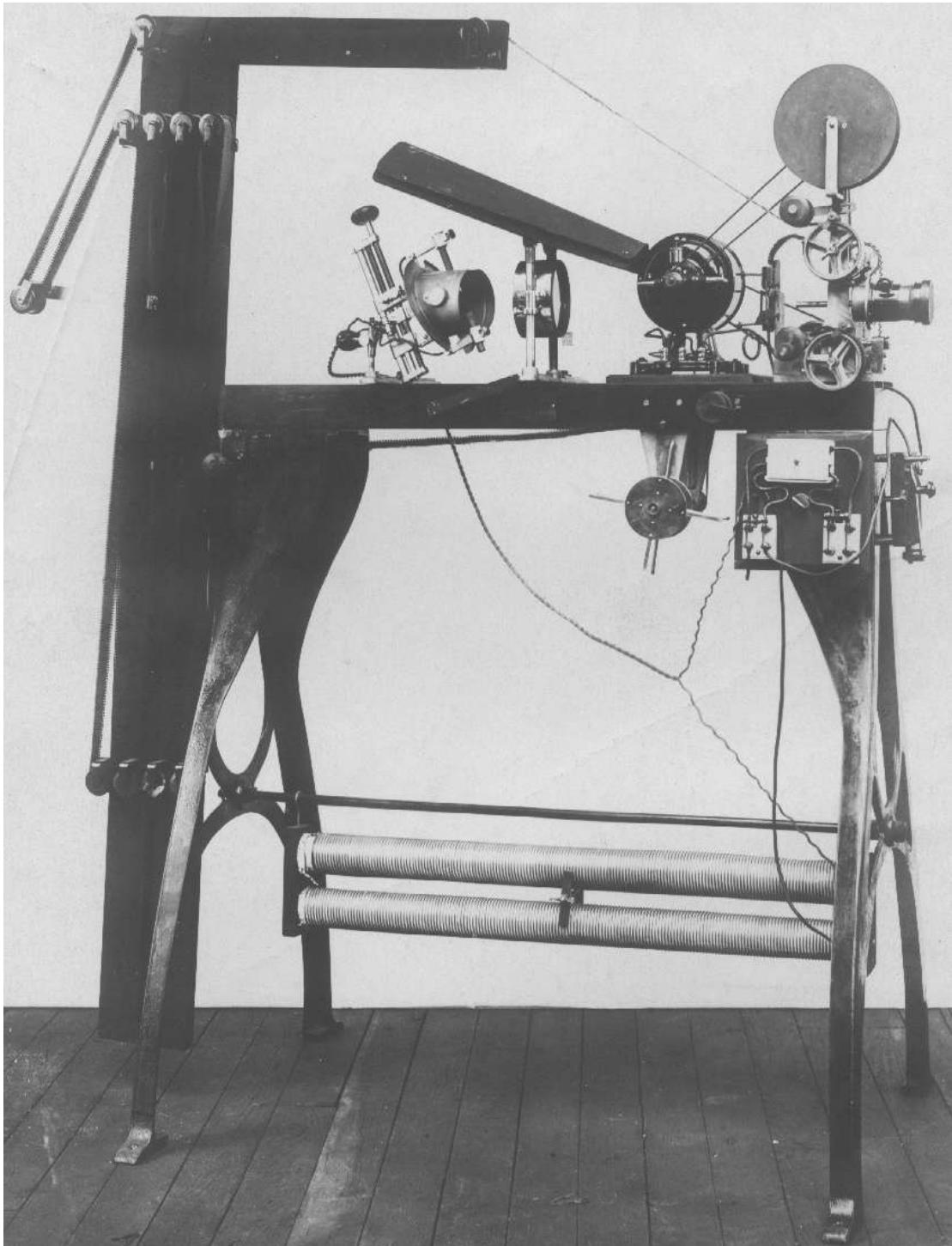
Vitascope projector with a Beater movement
Collection George Eastman House, Technology Archive
Photo Carey Williams, previously unpublished

ARMAT'S VITASCOPE PROJECTOR



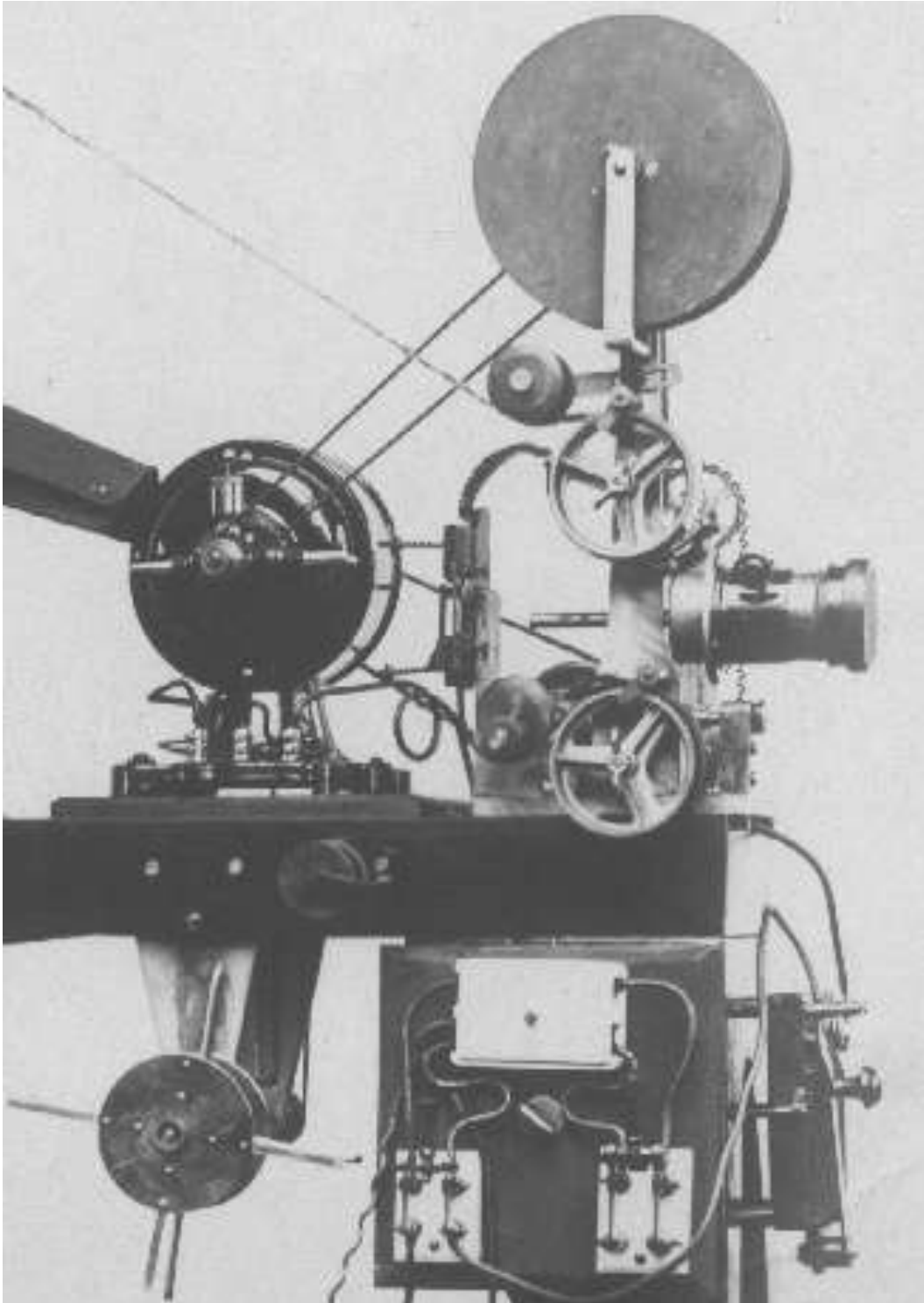
The Armat Vitascope which projected the first theatre movie April 23, 1896, Koster and Bial's Music Hall, Broadway and 34th Street in New York City
Source: James R. Cameron, Cameron's Encyclopedia – Sound Motion Pictures, Coral Gables, Florida 1948

ARMATS VITASCOPE PROJECTOR



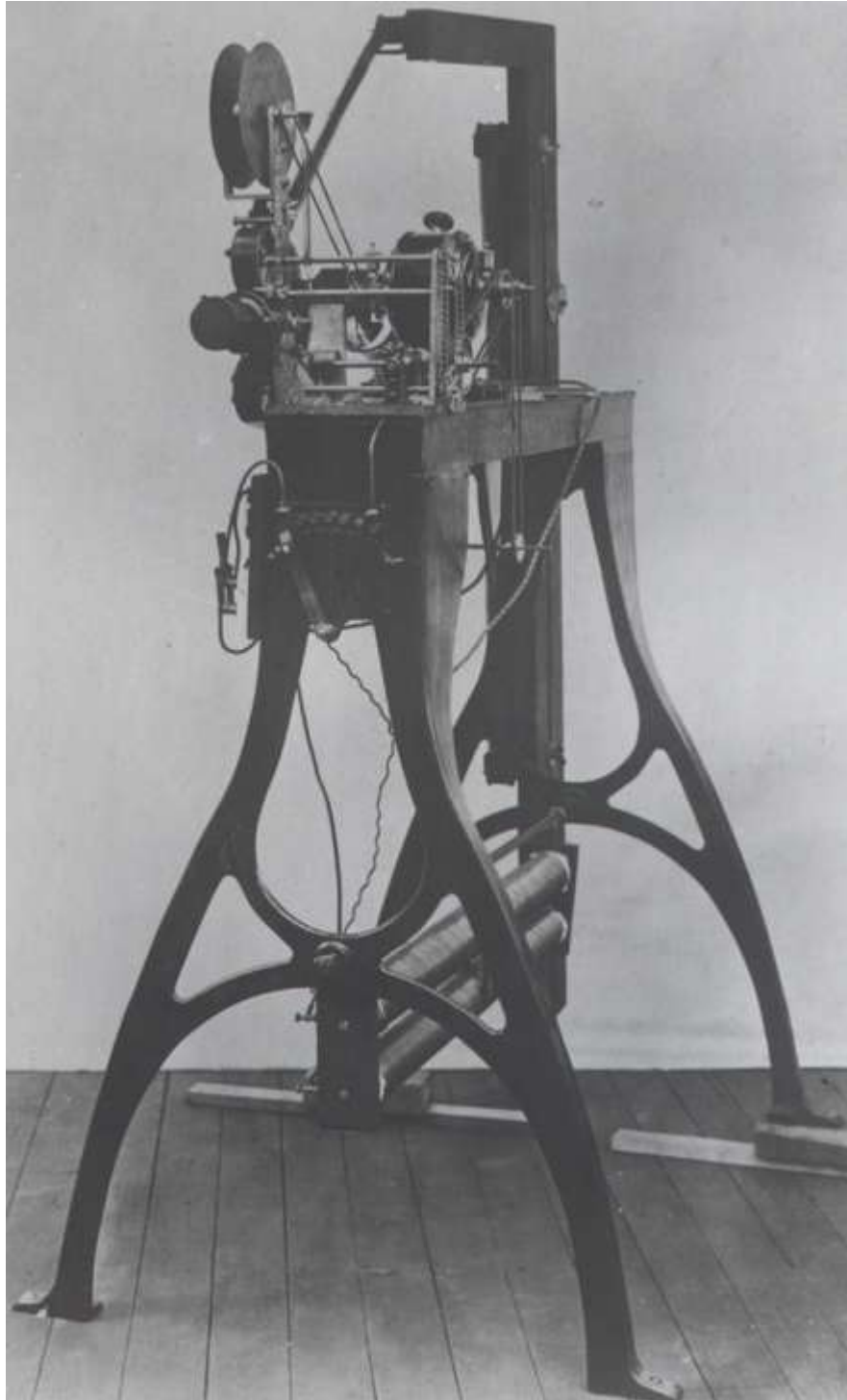
Vitascope projector with a Beater movement One of the first Vitascoes
U.S. Department of Interior, National Park Service
Thomas Edison National Historical Park

ARMATS VITASCOPE PROJECTOR



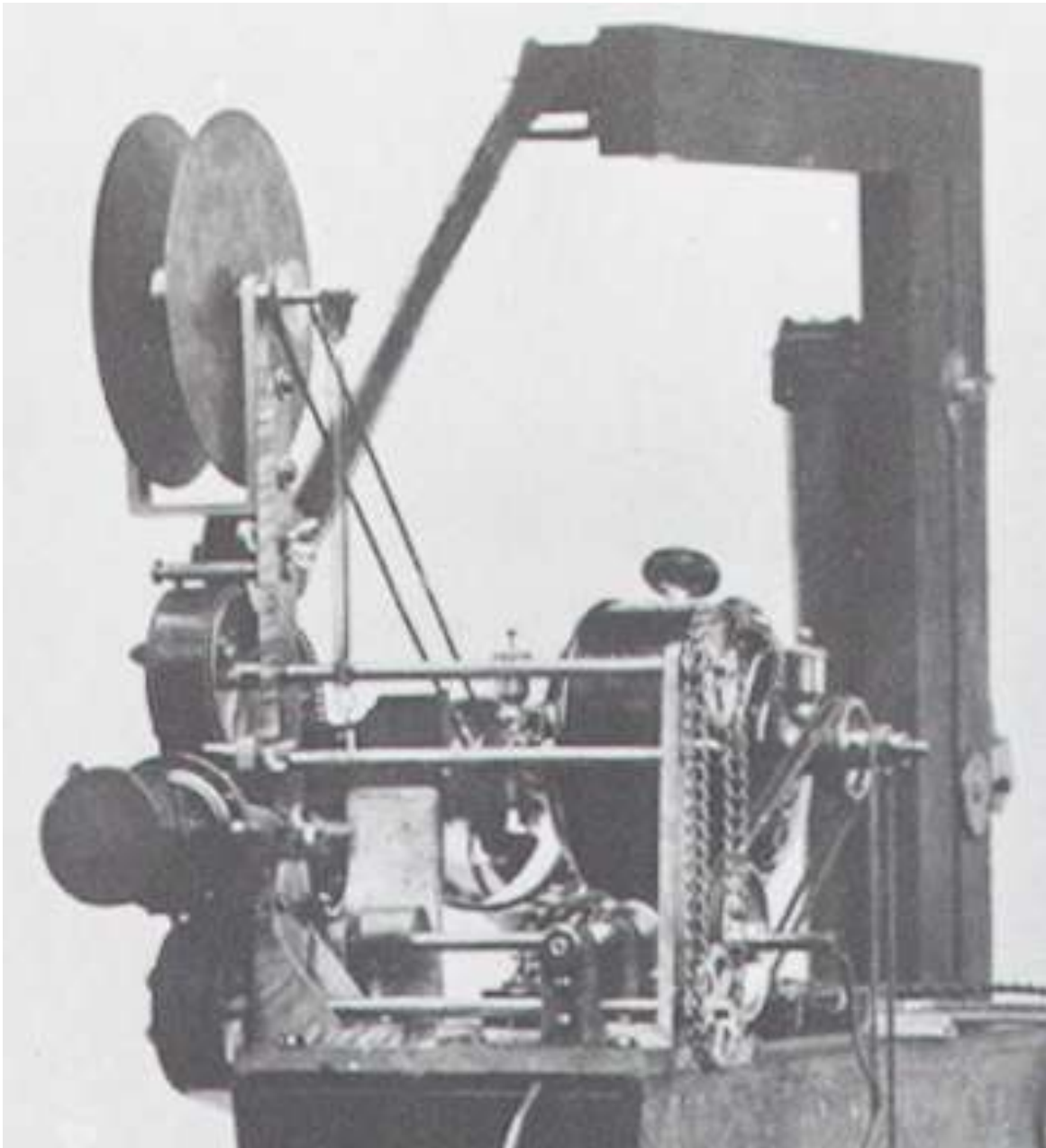
The above projector head enlarged
U.S. Department of Interior, National Park Service
Thomas Edison National Historical Park

ARMATS VITASCOPE PROJECTOR



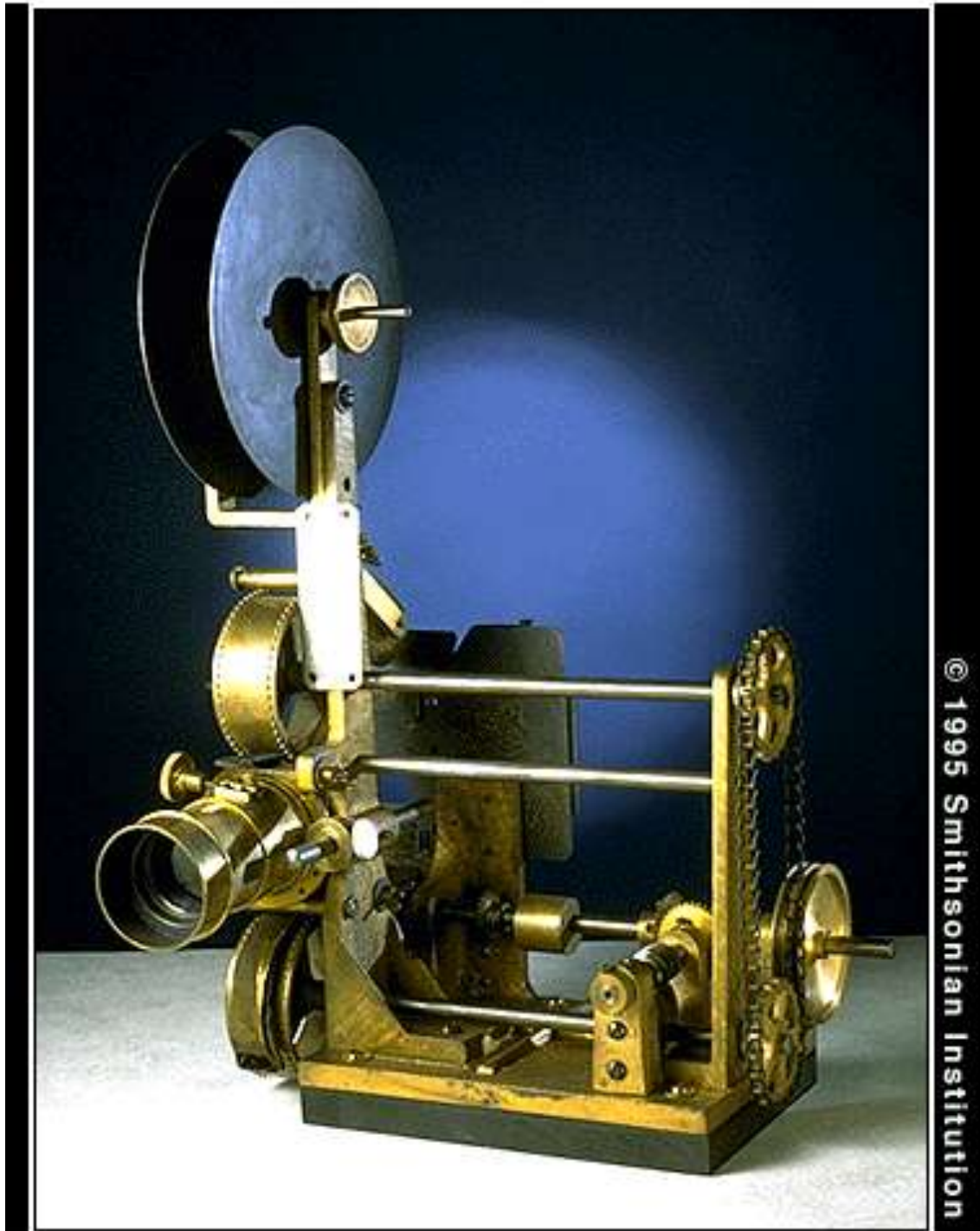
A Vitascope projector
Vitascope projector with a Beater movement
U.S. Department of Interior, National Park Service
Thomas Edison National Historical Park

ARMATS VITASCOPE PROJECTOR



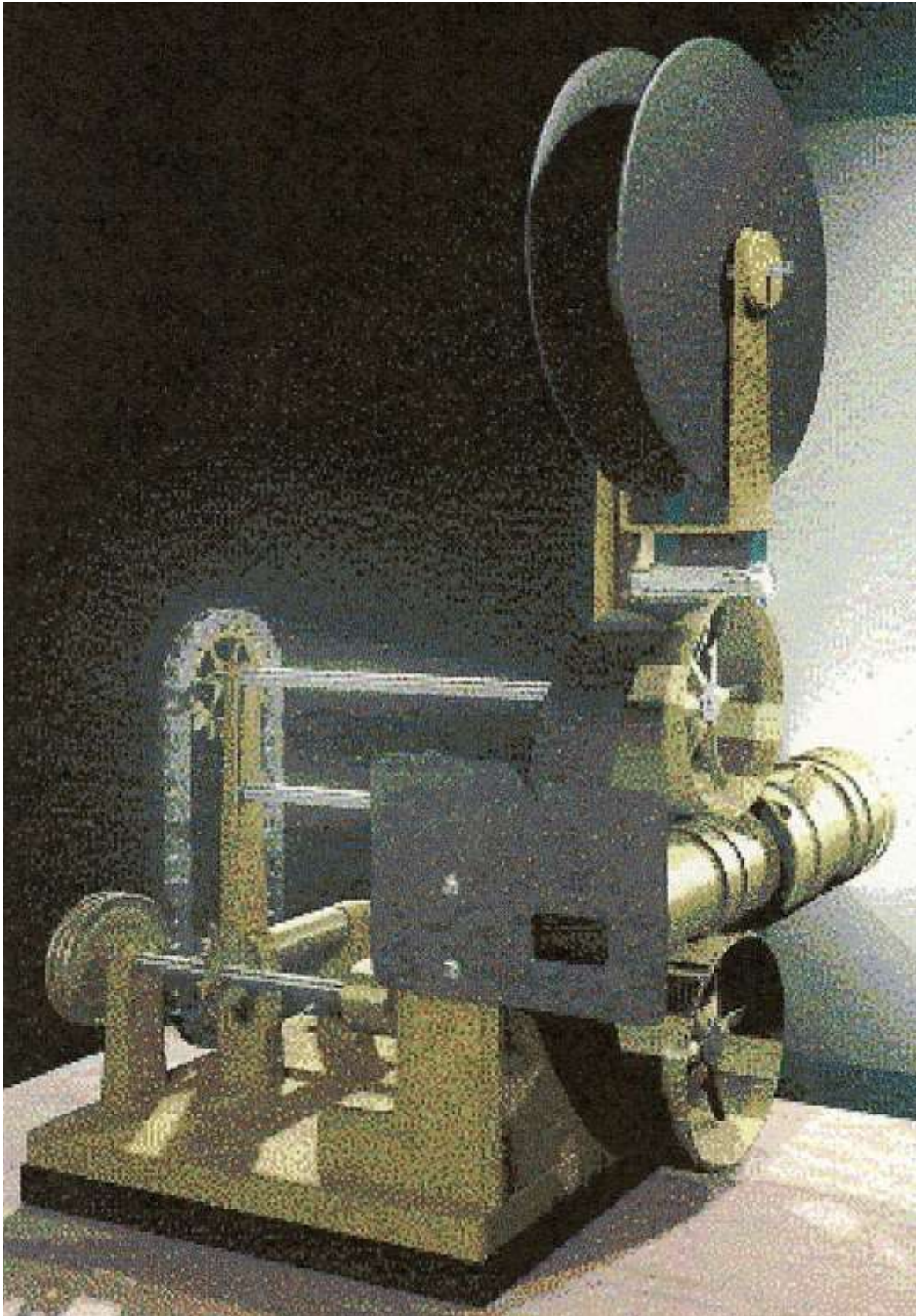
The above projector head enlarged
U.S. Department of Interior, National Park Service
Thomas Edison National Historical Park

ARMATS VITASCOPE PROJECTOR



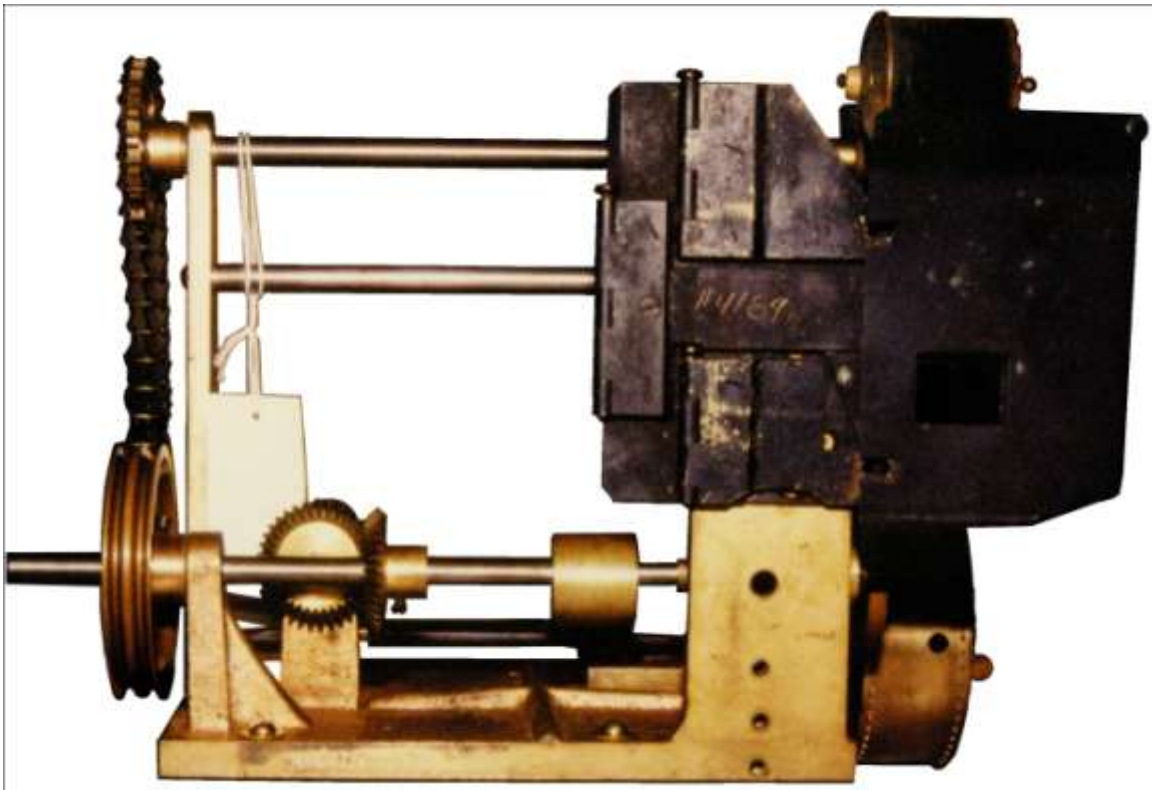
Vitascope projector with a Beater movement
Smithsonian, Washington, D.C. USA

ARMATS VITASCOPE PROJECTOR



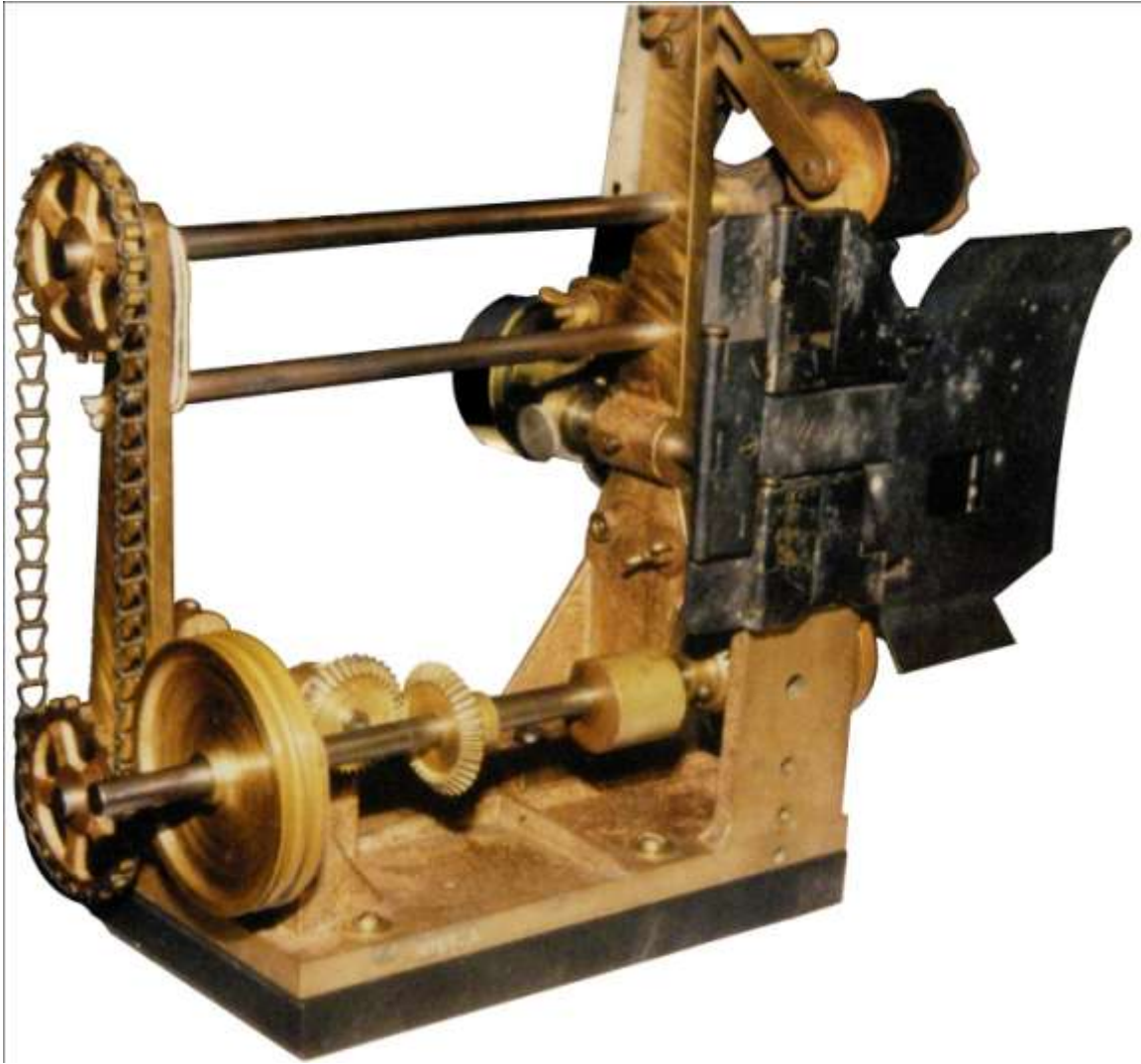
Vitascope projector with a Beater movement
Smithsonian, Washington, D.C. USA

ARMATS VITASCOPE PROJECTOR



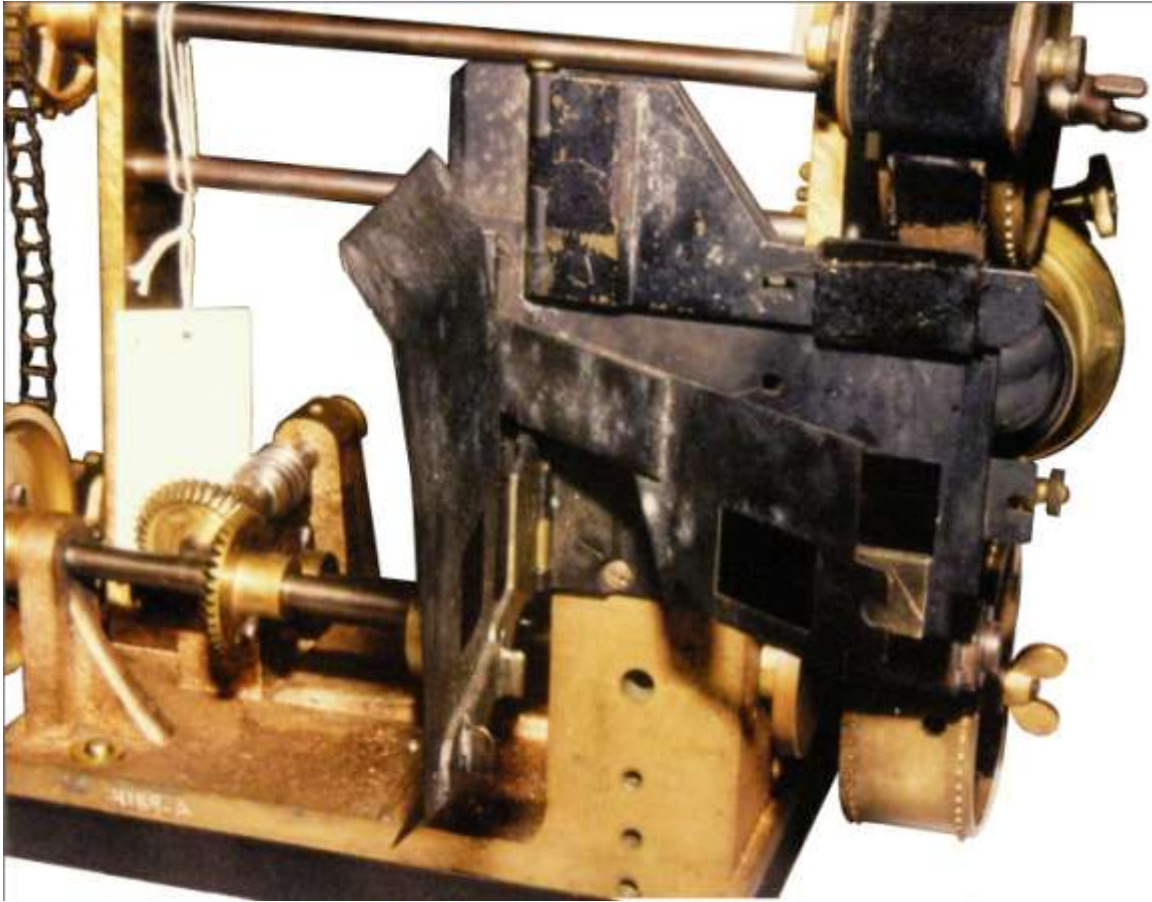
Vitascope projector with a Beater movement, serial number 39
Smithsonian, Washington, D.C., USA
Source: Photo by Paul Potash, previously unpublished

ARMATS VITASCOPE PROJECTOR



Vitascope projector with a Beater movement, serial number 39
Smithsonian, Washington, D.C., USA
Source: Photo by Paul Potash previously unpublished

ARMATS VITASCOPE PROJECTOR



Vitascope projector with a Beater movement
Vitascope serial number 39
Smithsonian, Washington, D.C., USA
Source: Photo by Paul Potash, previously unpublished

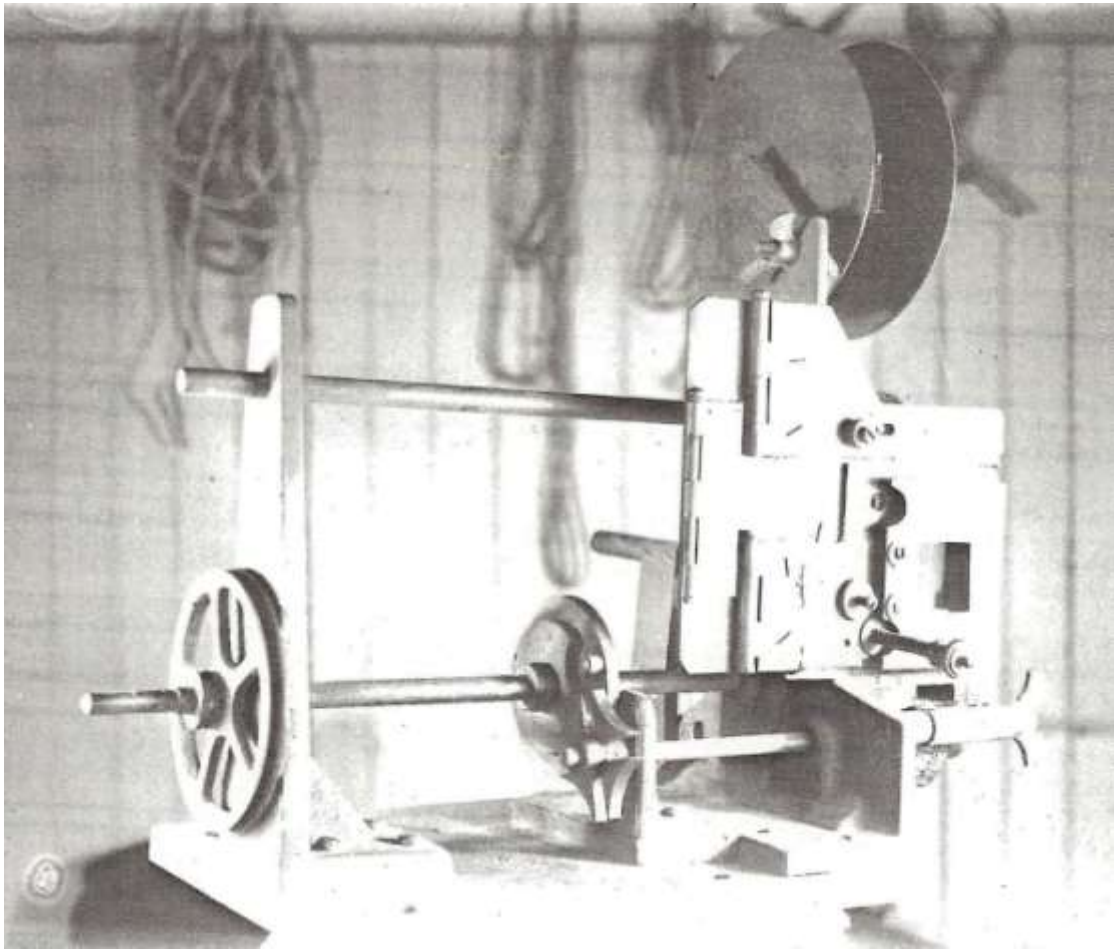
ARMAT'S VITASCOPE PROJECTOR



Armat's projector was advertised as "Edison's Greatest Marvel - the Vitascope" in this Vitascope poster

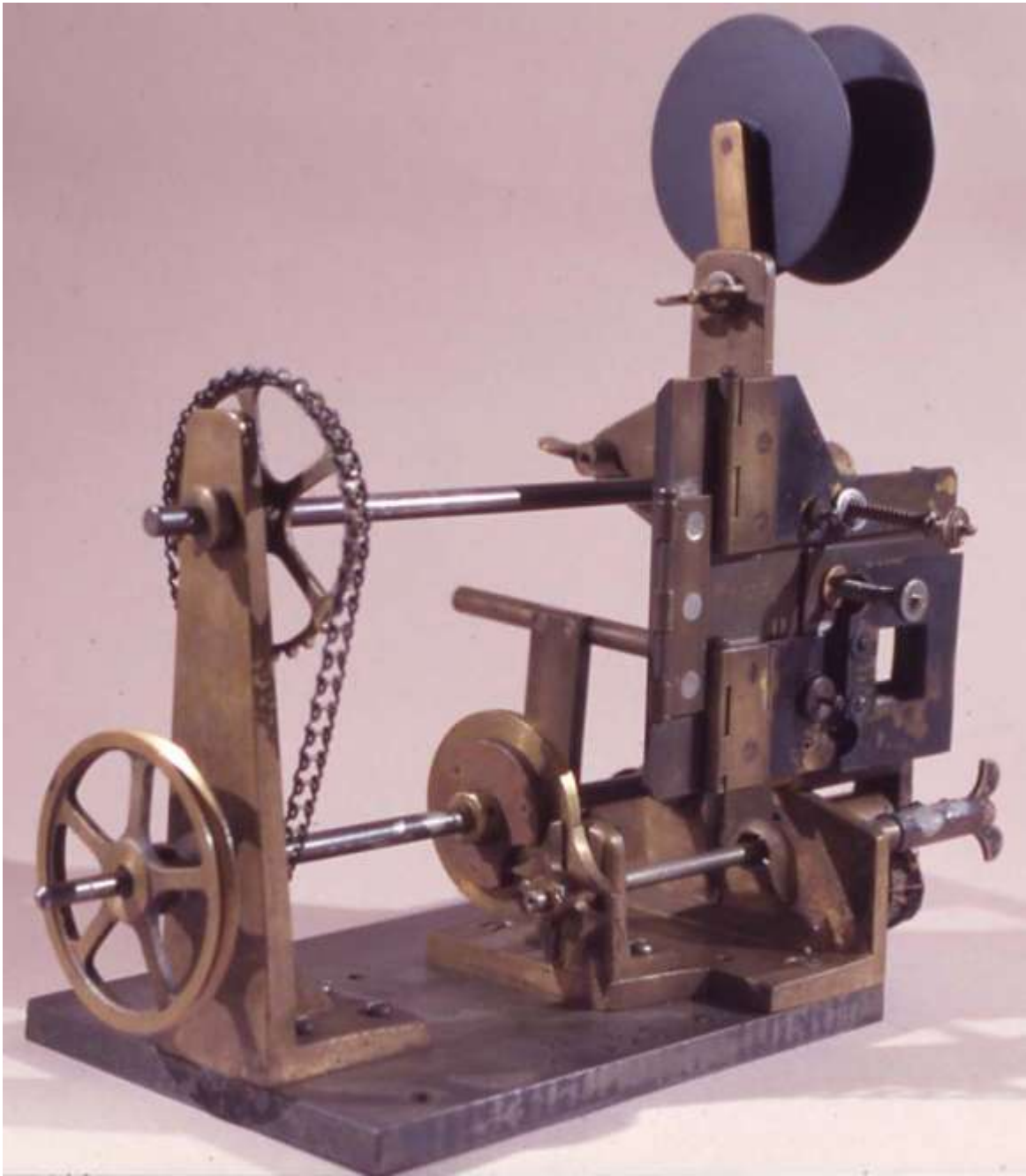
VIII
ARMATS MALTESE
CROSS VITASCOPE
PROJECTOR

ARMATS MALTESE CROSS VITASCOPE PROJECTOR



Possibly a prototype Maltese cross Vitascope or a Vitascope in the process of being assembled, previously unpublished
Thomas Armat Papers, Georgetown University Library

ARMATS MALTESE CROSS VITASCOPE PROJECTOR



Maltese cross Vitascope, Previously unpublished.
Smithsonian

ARMATS MALTESE CROSS VITASCOPE PROJECTOR

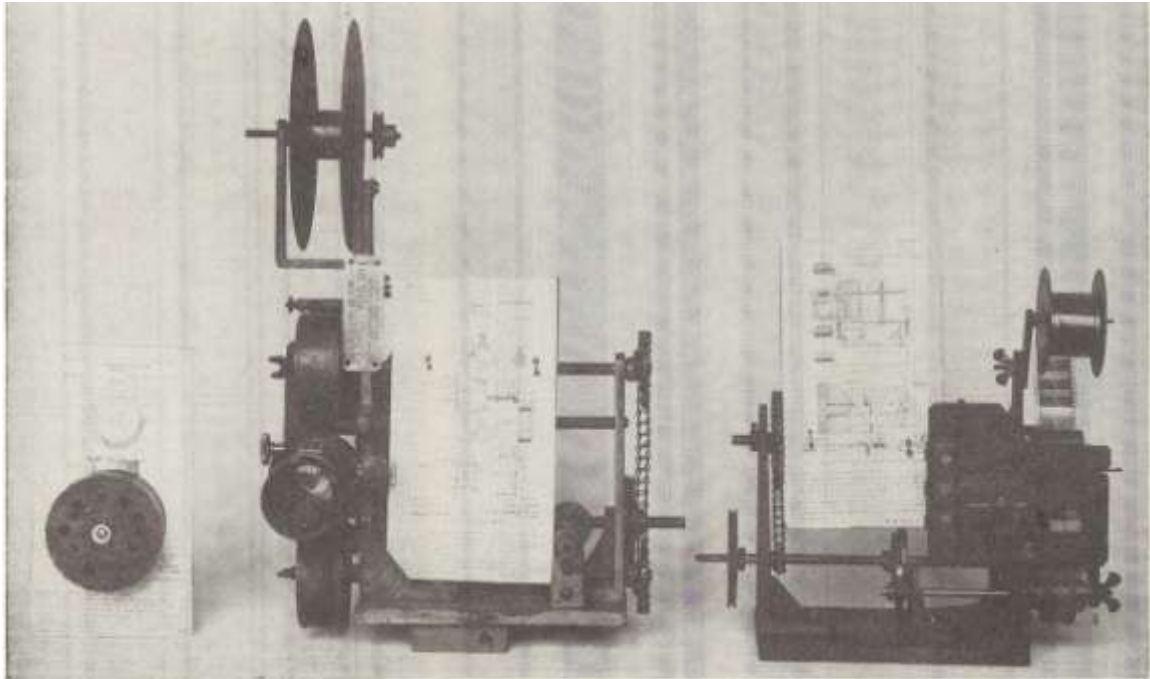
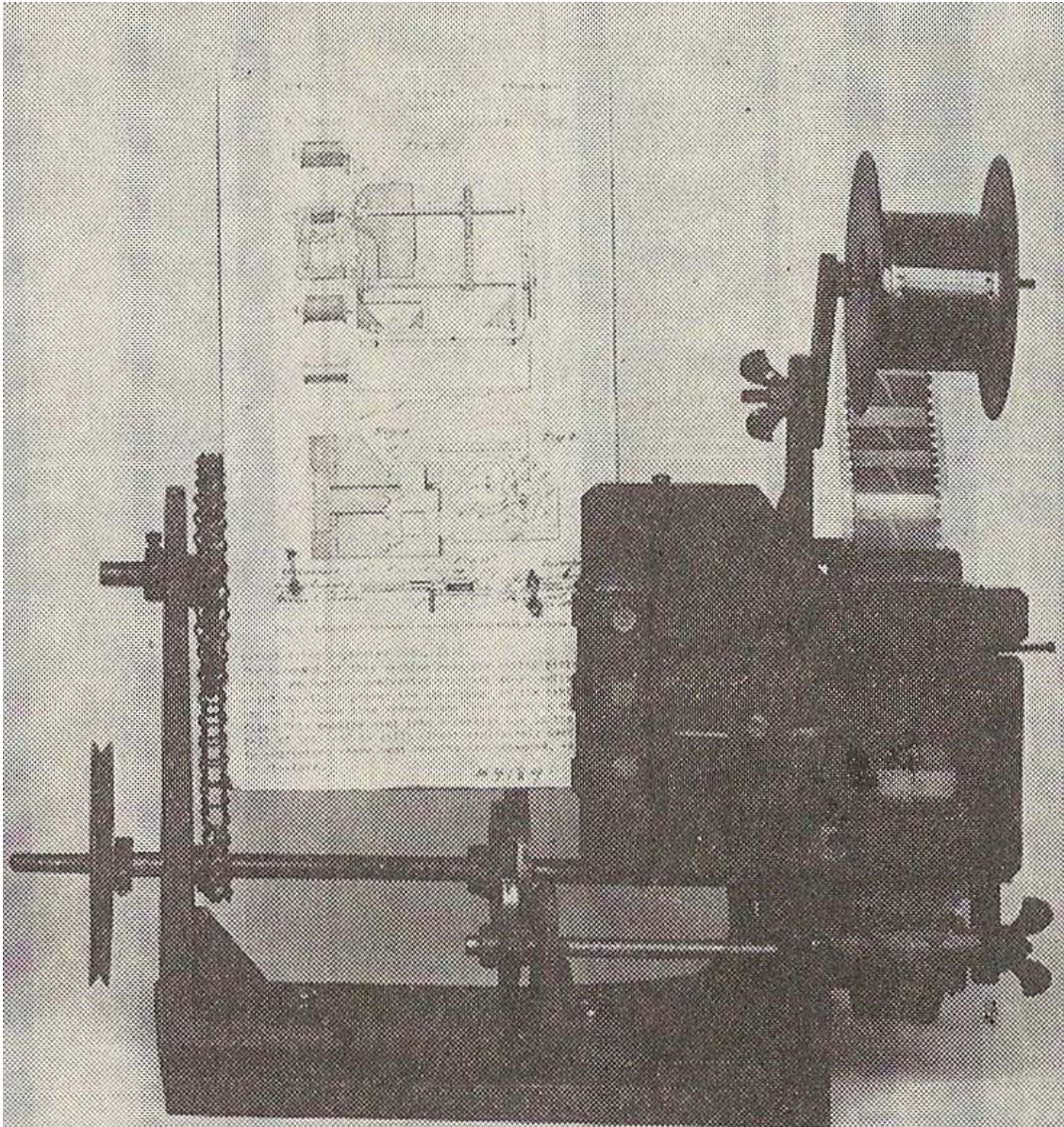


Fig. 19. Three historical exhibits in the motion picture collection, The Smithsonian Institution, Washington, D.C. Left: Gear used in Jenkins and Armat Phantoscope in 1895 to produce intermittent movement of the film. Although a mechanical failure, it was the first projecting machine to give the film a relatively long period of rest and illumination of the picture, thus pointing the way to successful projection (U.S. Pat. 586,953 filed 8-28-95). Center: Thomas Armat Vitascope—1896. First commercially successful moving picture projector. Used in Koster and Bial's Music Hall, New York beginning April 23, 1896 (U.S. Pat. 673,992 filed 2-19-96). Right: Thomas Armat Vitascope—1896. Improved model projector having a pin-and-star-wheel intermittent movement which produced a gradually accelerated stop and start motion resulting in greater steadiness of the projected picture (U.S. Pat. 578,175 filed 9-22-96). (Photograph courtesy of The Smithsonian Institution, Washington, D.C.)

Fig. 19. Three historical exhibits in the motion picture collection, The Smithsonian Institution, Washington, D.C. Left: Gear used in Jenkins and Armat Phantoscope in 1895 to produce intermittent movement of the film. Although a mechanical failure, it was the first projecting machine to give the film a relatively long period of rest and illumination of the picture, thus pointing the way to successful projection (U.S. Pat. 586,953 filed 8-28-95). **Center:** Thomas Armat Vitascope-1896. First commercially successful moving picture projector. Used in Koster and Bial's Music Hall, New York beginning April 23 1896 (U.S. Pat. 673,992 filed 2-19-96) **Right:** Thomas Armat Vitascope-1896. Improved model projector having a pin-and-star-wheel intermittent movement which produced a gradually accelerated stop and start motion resulting in greater steadiness of the projected picture (U.S. Pat. 578,175 filed 9-22-96). (Photograph courtesy of the Smithsonian Institution, Washington, D.C.)

ARMATS MALTESE CROSS VITASCOPE PROJECTOR



The Vitascope with a Maltese cross (pin-and-star-wheel) in the Smithsonian Journal of the SMPTE, Vol. 75, number 9, September 1966, p. 862

ARMATS MALTESE CROSS VITASCOPE PROJECTOR

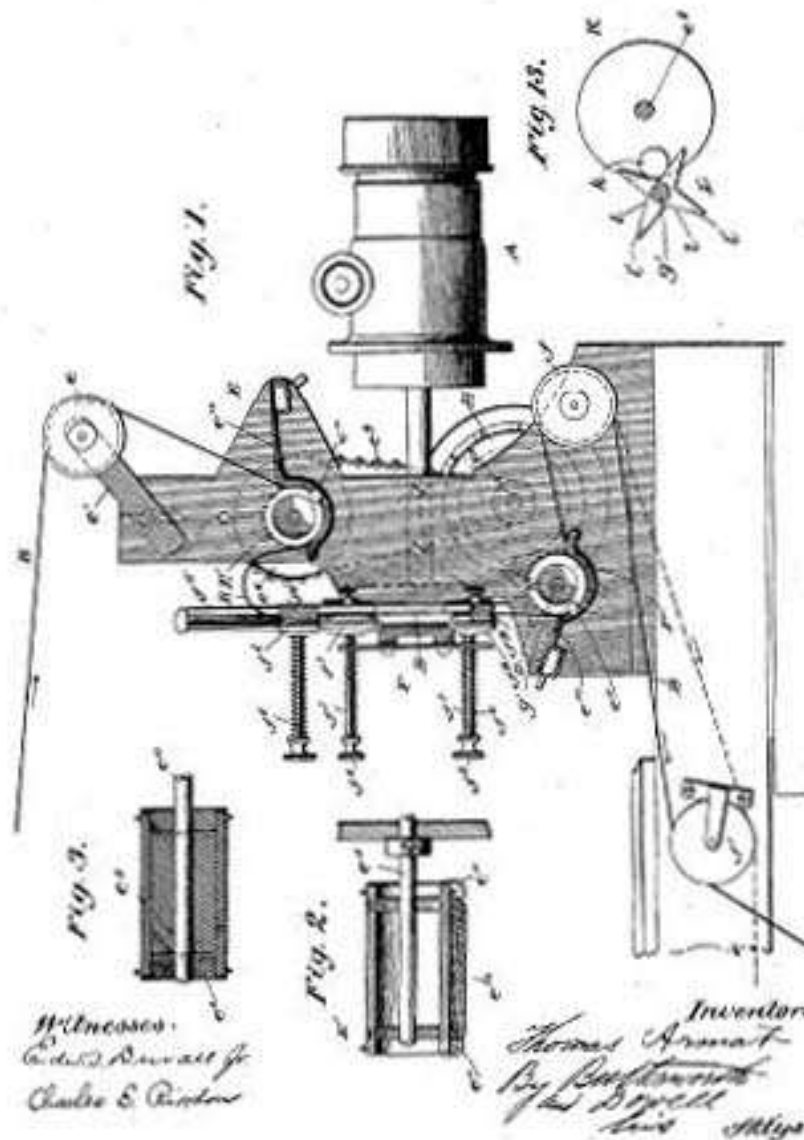
(No Model.)

4 Sheets—Sheet 1.

T. ARMAT.
VITASCOPE.

No. 578,185.

Patented Mar. 2, 1897.



The Maltese cross Vitascope
T. Armat patent 578,185, Patented March 2, 1897,

ARMATS MALTESE CROSS VITASCOPE PROJECTOR

(No Model.)

4 Sheets—Sheet 2

T. ARMAT.
VITASCOPE.

No 578,185

Patented Mar. 2, 1897

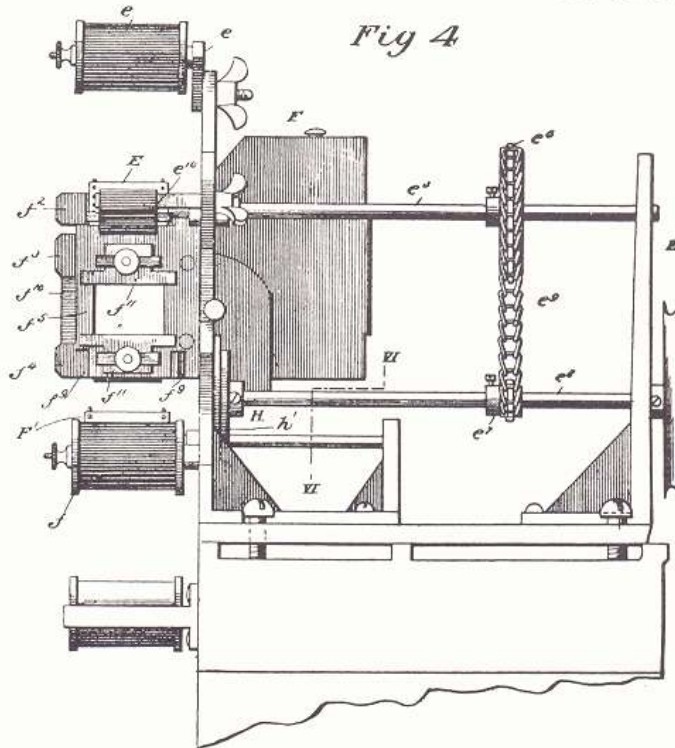


Fig 4

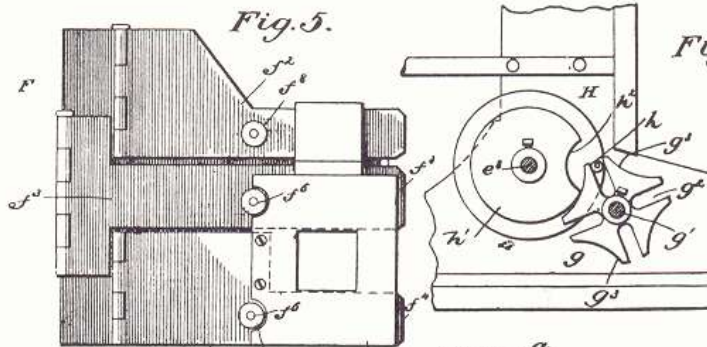


Fig. 5.

Fig. 6.

Witnesses
 Edward Duval for
 Charles E. Rindon

Fig. 5^a

Inventor,
 Thomas Armat
 By *Richard W. Howell*
 Attorney

FIG. 3. Intermittent movement employing the star-wheel, or Geneva cross.

The Maltese cross Vitascope
 T. Armat patent 578,185, Patented March 2, 1897,

ARMATS MALTESE CROSS VITASCOPE PROJECTOR

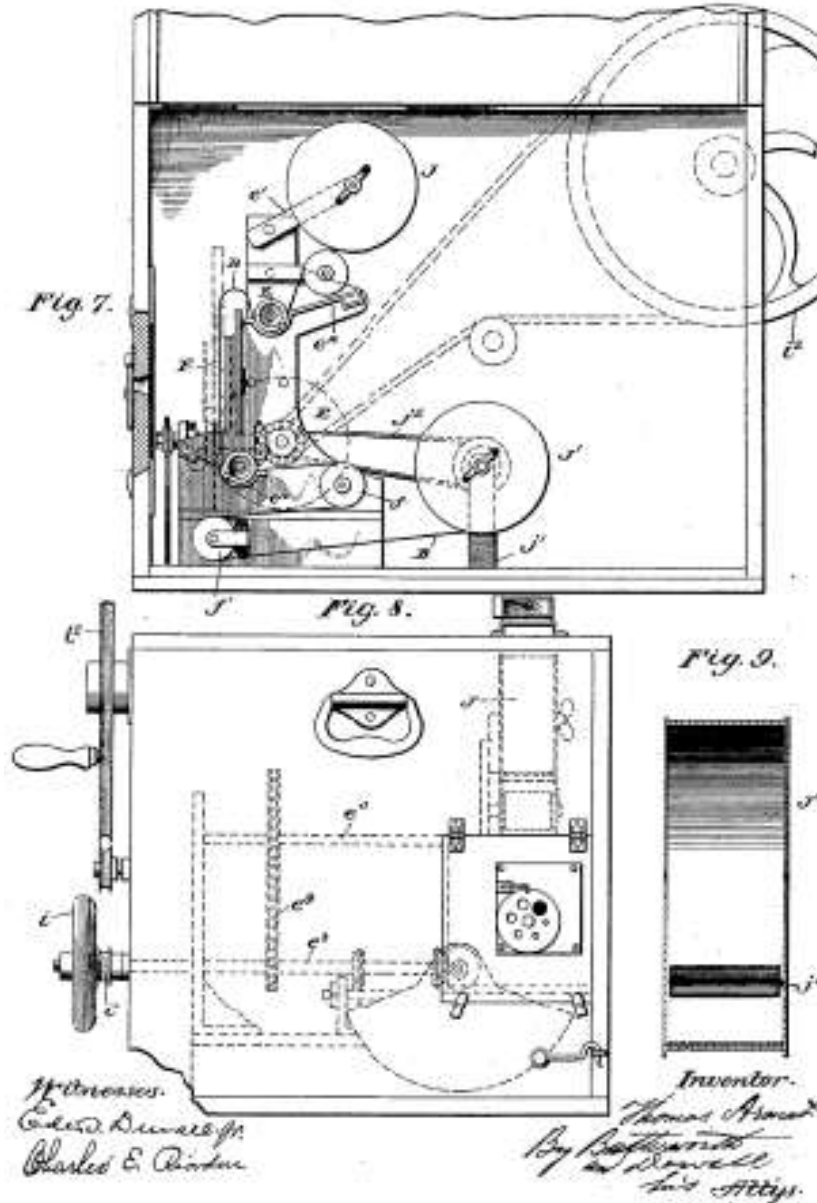
(No Model.)

T. ARMAT.
VITASCOPE.

4 Sheets—Sheet 3

No. 578,185.

Patented Mar. 2, 1897.



The Maltese cross Vitascope
T. Armat patent 578,185, Patented March 2, 1897,

ARMATS MALTESE CROSS VITASCOPE PROJECTOR

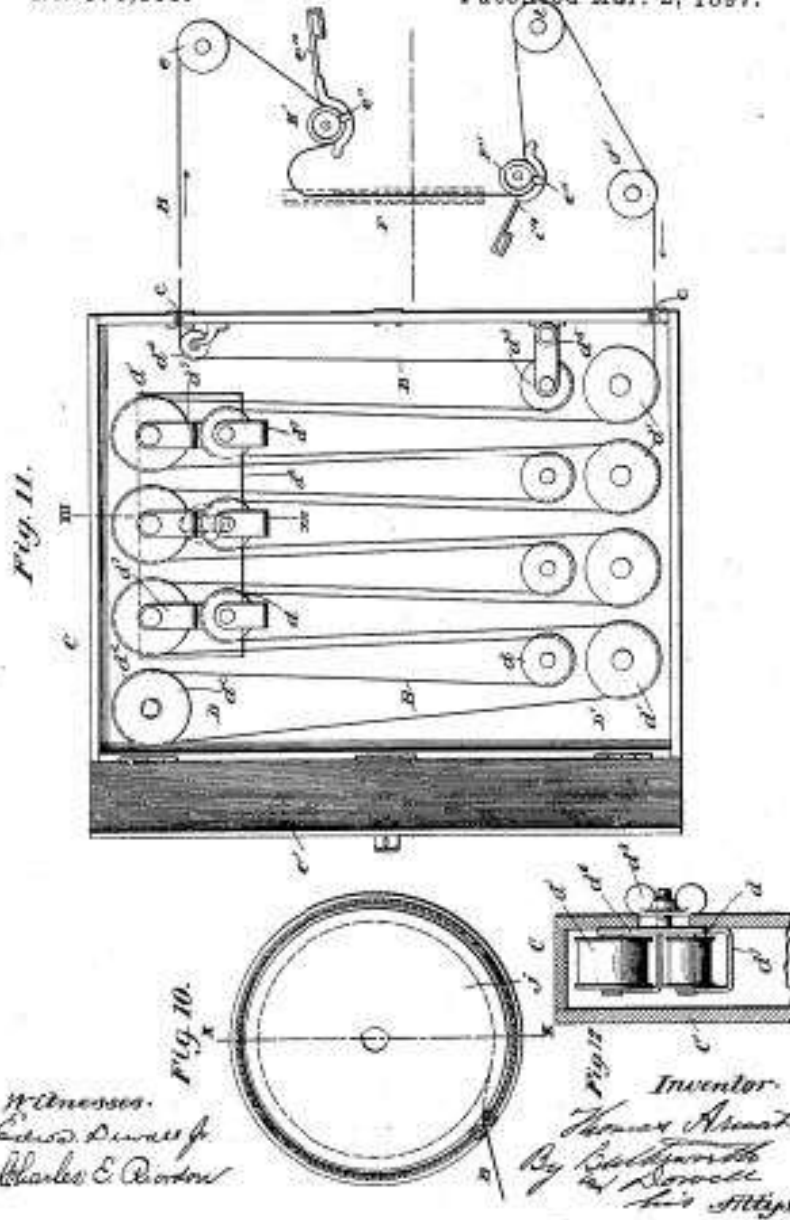
(No Model.)

4 Sheets—Sheet 4

T. ARMAT.
VITASCOPE.

No. 578,185.

Patented Mar. 2, 1897.



The Maltese cross Vitascope
T. Armat patent 578,185, Patented March 2, 1897,

IX
ARMATS LATER
PROJECTORS

ARMATS LATER PROJECTORS



Thomas Armat and his first "home movie" projector in his laboratory here
Star Staff Photo by Paul Schmick, Dated Oct 20, 1946

Armat Papers, Georgetown University Library, Previously unpublished.
For a full account of this 17.5 mm projector read Alexander J. Wedderburn another
Armat Intermittent Movement, August 1955 Journal of the SMPTE Volume 64

ARMATS LATER PROJECTORS

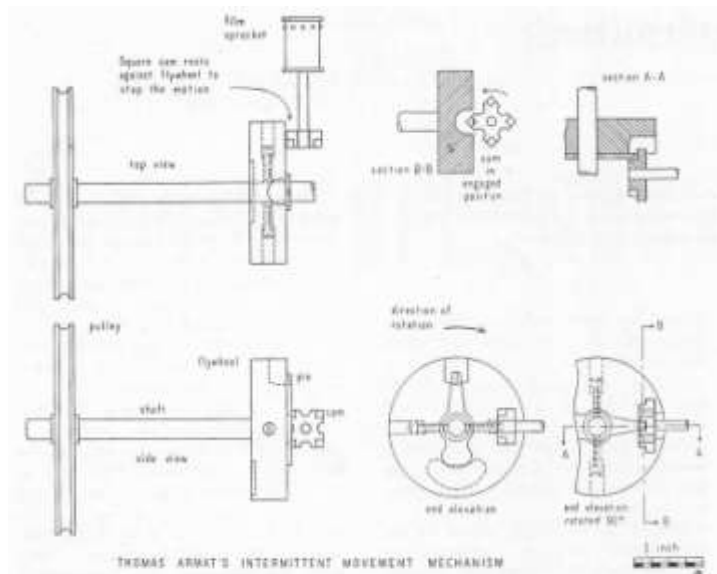


Fig. 2. The projector contains a type of mechanism not identified previously with Thomas Armat. A pin on the flywheel strikes a square cam rotating it one-quarter turn and advancing the film a frame at each revolution of the flywheel. Between times the cam is locked at rest against the face of the flywheel. (Photograph from the Smithsonian Institution.)

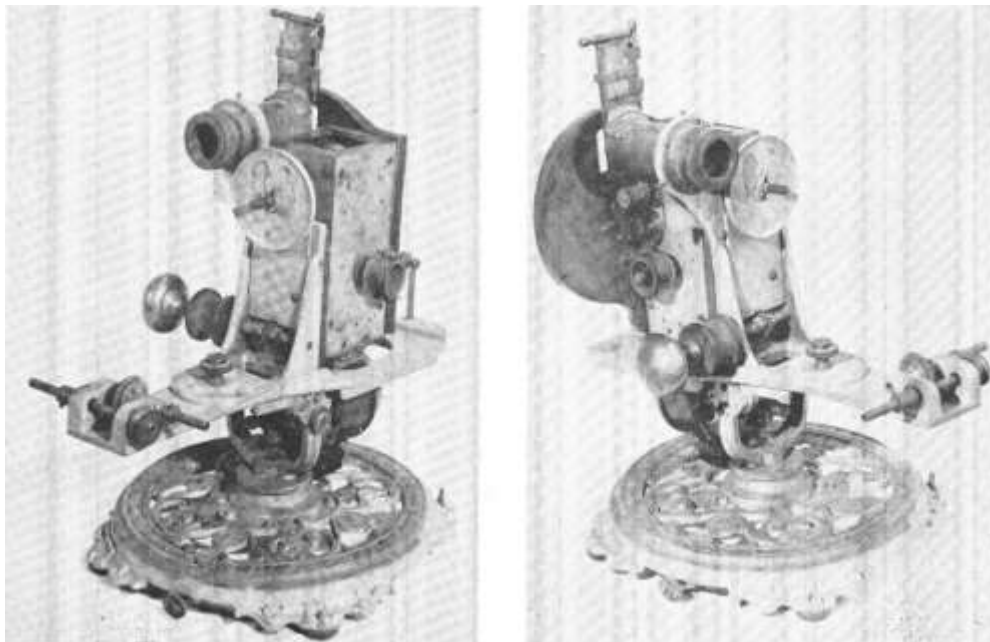
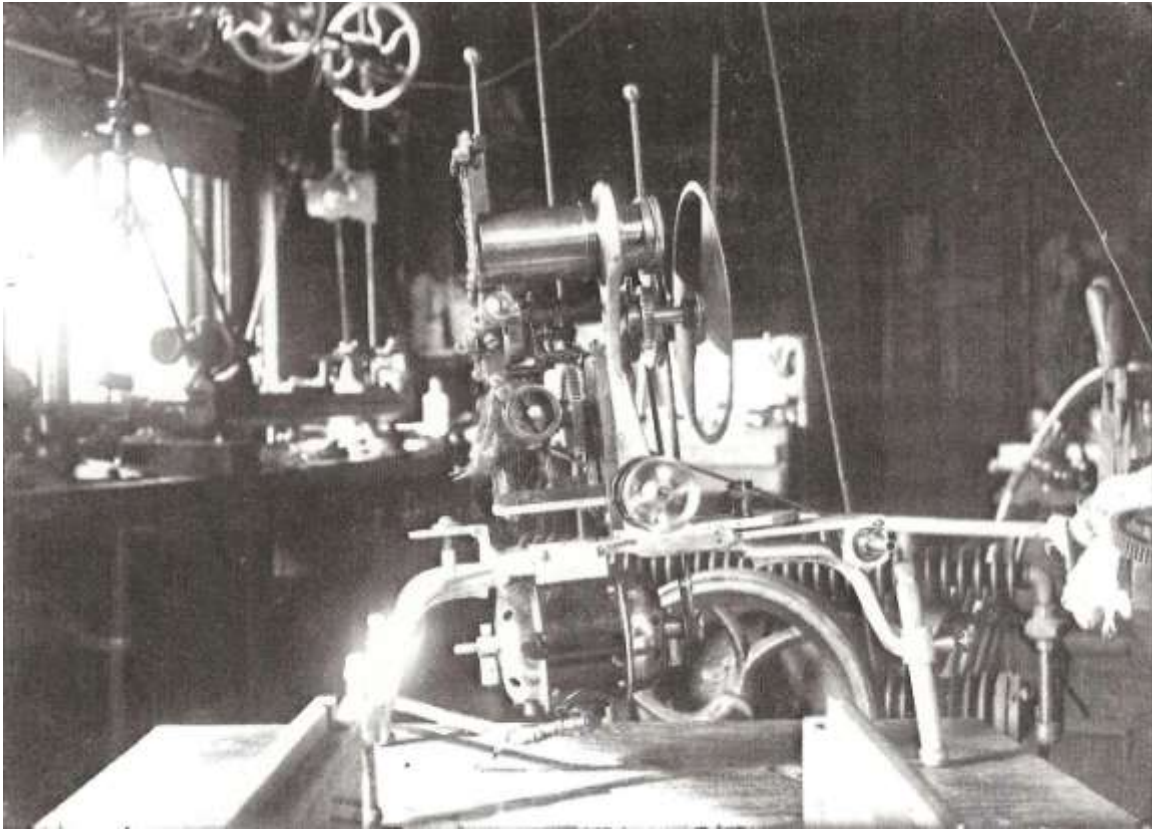


Fig. 3. Recently discovered 17.5mm motion-picture projector made by Thomas Armat about 1916-17. Rectangular metal housing contains the intermittent mechanism. The machine was intended for amateur use. (Photographs from the Smithsonian Institution.)

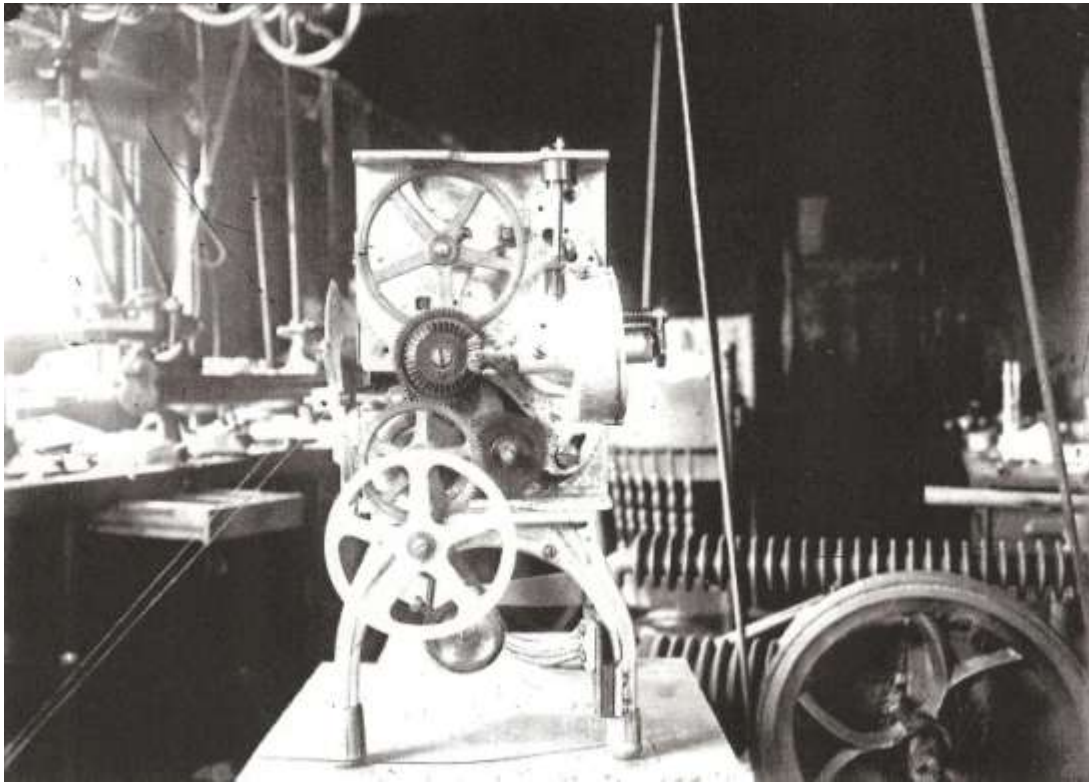
August 1955 Journal of the SMPTE Volume 64, pp 88- 89

ARMATS LATER PROJECTORS

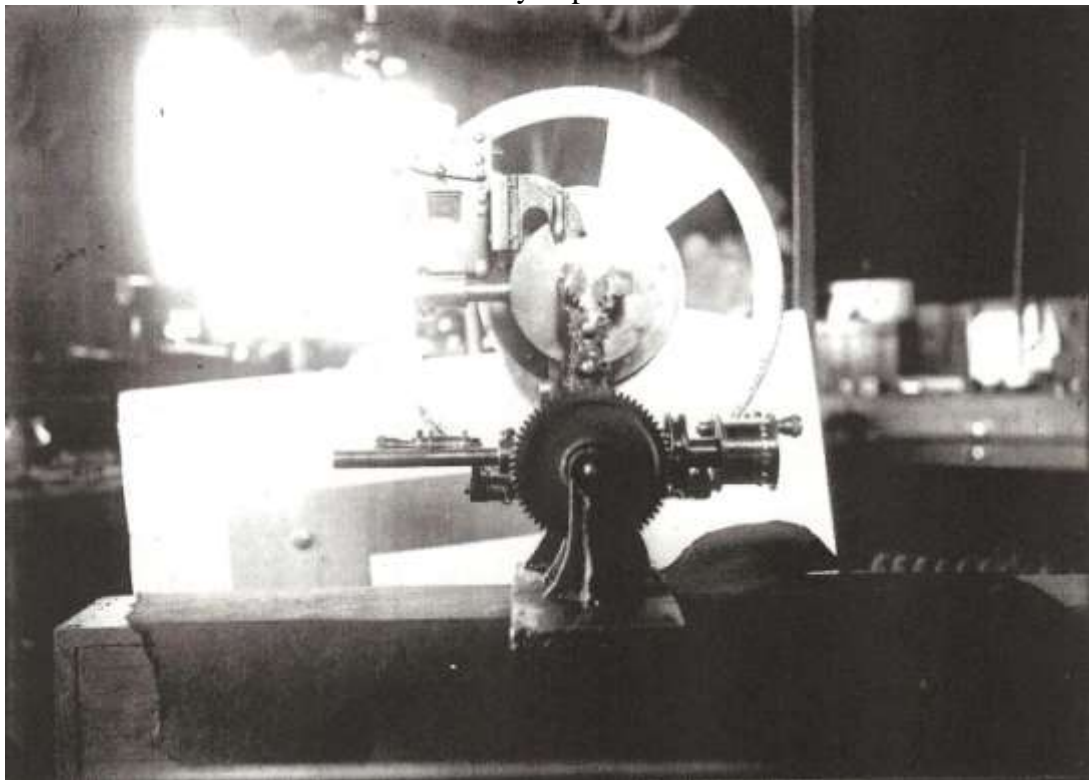


This is probably Armat's workshop where he made this projector and the following two as well, previously unpublished
Smithsonian

ARMATS LATER PROJECTORS



Previously unpublished



Previously unpublished

ARMATS LATER PROJECTORS

Six-Reel Movies for Every Home

*Inventor Claims New Method
Simplifies Film-Making
for the Amateur*



MANY novel features are incorporated in a new method of producing moving pictures for non-theatrical use developed by **Thomas Armat**, of Washington, D. C., who was a pioneer in the development of the moving-picture projecting machine.

The new process involves a camera, a projecting machine, a new kind of moving-picture film, and new ways of taking and showing pictures, which permit one-eighth of the usual quantity of film to be used.

In ordinary moving-pictures 16 images are photographed and projected in each second. Mr. Armat has succeeded in cutting the number of pictures made and shown each second to eight. This he has accomplished by making each "frame" a separate picture, do double duty, for instead of each frame containing only a single picture it contains two.

In the conventional movie camera the movement of the film is controlled automatically so that the film is halted momentarily while each exposure is made. By the Armat process the film is halted for double the usual time, and two pic-

tures are made one on top of the other. When the film made by this process is projected, each frame is held stationary in the projector for double the usual time—an eighth of a second, approximately, instead of a sixteenth—and the light in the projector lamp is interrupted. The result is that the same frame is seen twice, and here comes a remarkable feature of the process. Through an optical phenom-

non, in which the imagination possibly plays a part, the eye views the two images in the same frame separately, and in proper order, the result being that an impression of continuous action is conveyed, exactly as happens when ordinary film is projected at normal speed. This one feature would permit the amount of film necessary to show any action to be cut to half. The Armat film, though, is half the width of standard film, and each image is reduced one-half in length. Thus the amount of film necessary for a picture is reduced to one-eighth the quantity ordinarily used.

Prints can be made on the Armat film from standard negatives, the conventional feature picture of five or six reels requiring only a single one-thousand-foot reel of Armat film, which once placed in the projector will run for an hour without further attention of the operator.

The camera invented by Mr. Armat is a compact, simple, light machine that can be operated by any one without special training or practice.

The projecting machine, simple to operate, frequent changes of film being eliminated.

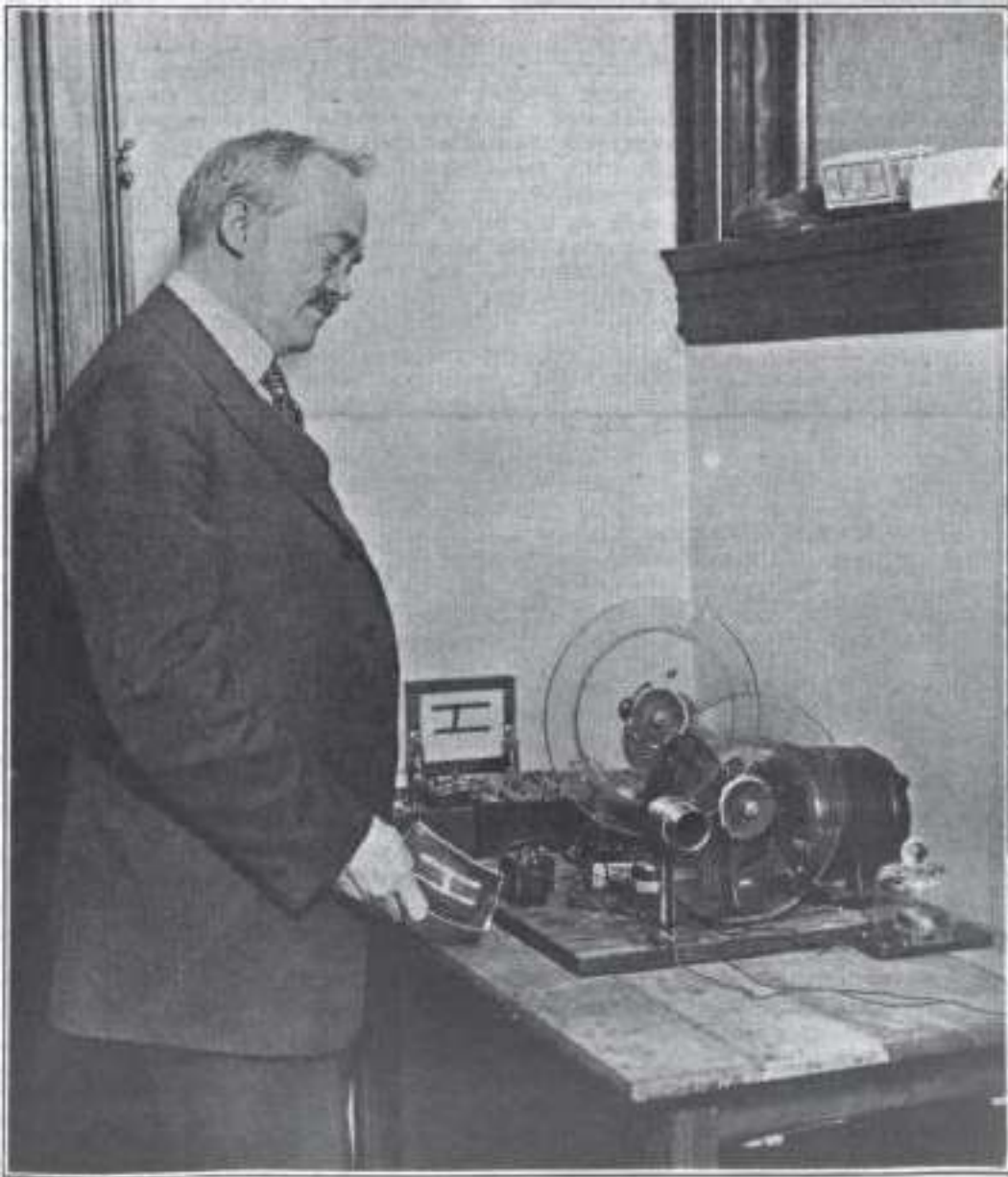
When the film made by this process is projected, each frame is held stationary in the projector for double the usual time—an eighth of a second, approximately, instead of a sixteenth—and the light in the projector lamp is interrupted. The result is that the same frame is seen twice, and here comes a remarkable feature of the process. Through an optical phenom-

Six-Reel Movies for Every Home

Popular Science Monthly, Vol. 106, No. 3, May 1925, p. 42

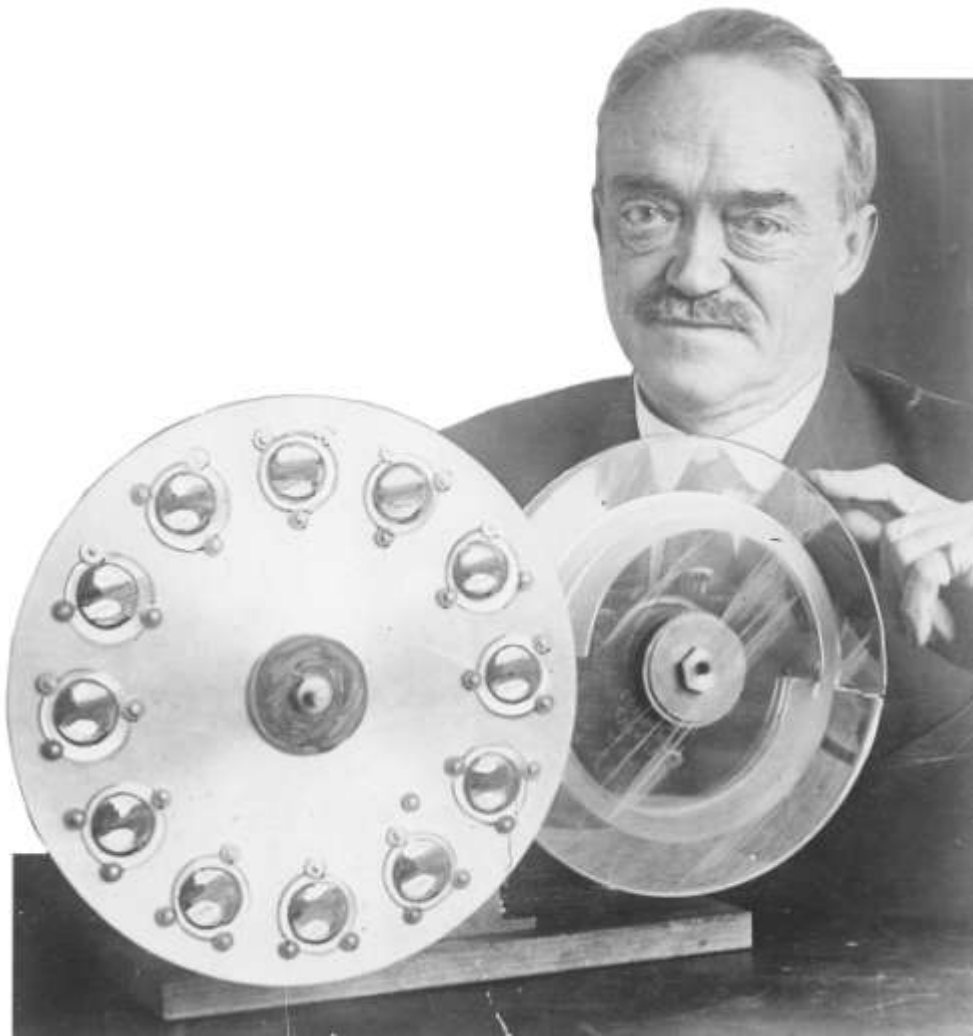
X
JENKINS TELEVISION

JENKINS TELEVISION



The American Cinematographer, Vol. 3 No. 4, July 1922, page 19

JENKINS TELEVISION



Reverse of above photo dated November 29, 1924, apparently signed by Jenkins

Jenkins with his Mechanical Television
Photos collection Soterios Gardiakos

JENKINS TELEVISION



Popular Science Monthly, Vol. 104, No. 6, June 1924, pp. 30, 128



Jenkins Mechanical Television (undated)

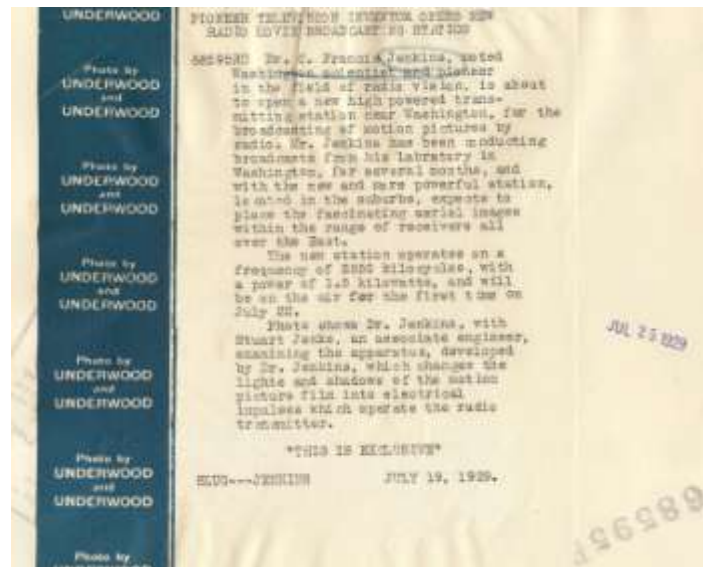
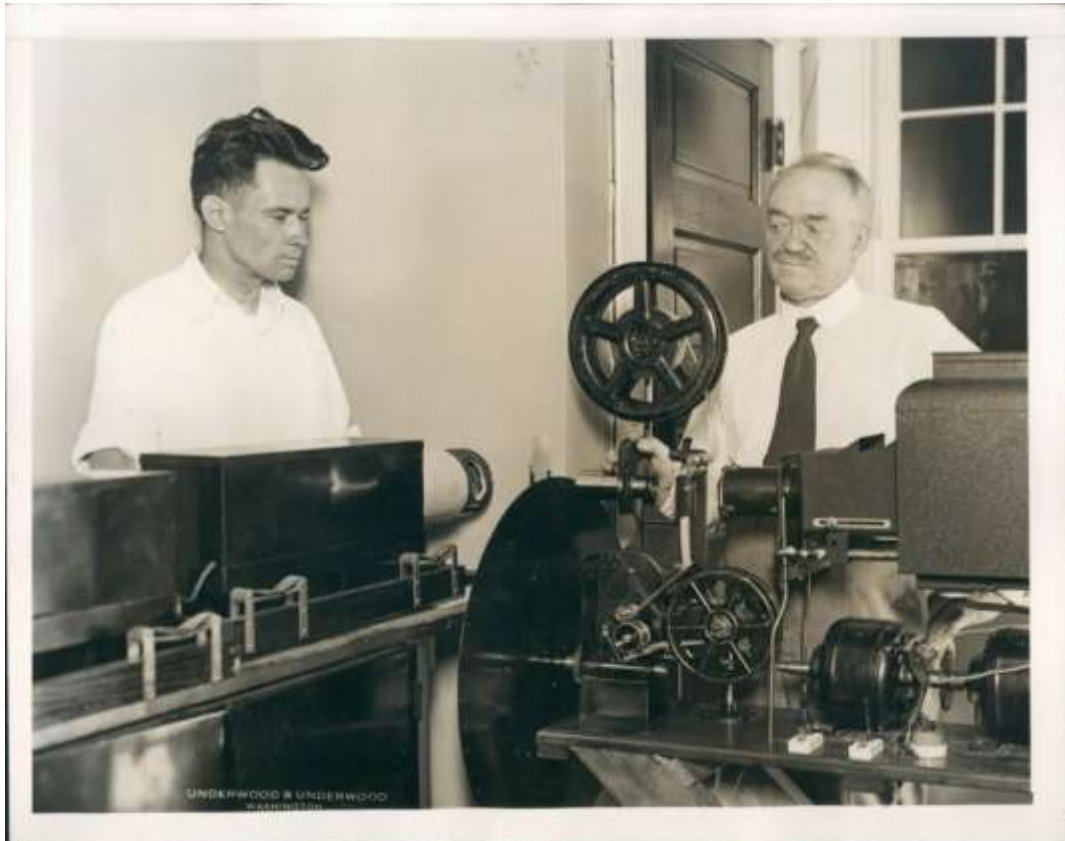
JENKINS TELEVISION



Dated April 16, 1929

C. Francis Jenkins with his Mechanical Television Transmitter
Photos collection Soterios Gardiakos

JENKINS TELEVISION



Dated July 25, 1929

C. Francis Jenkins with Stuart Jenks (left) in his Laboratory with his Mechanical Television
 Photos collection Soterios Gardiakos

JENKINS TELEVISION



C Francis Jenkins inspecting the first television receiver made for home use, 1928
Collection eBay seller known as khiramaddie

JENKINS TELEVISION



Charles Francis Jenkins, 1867-1934, television pioneer, directing
A scene in studio, November 6, 1929
Collection eBay seller known as historicalfindings

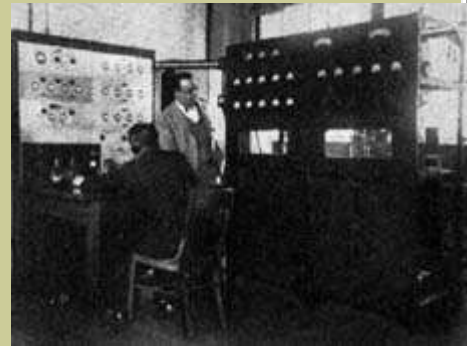
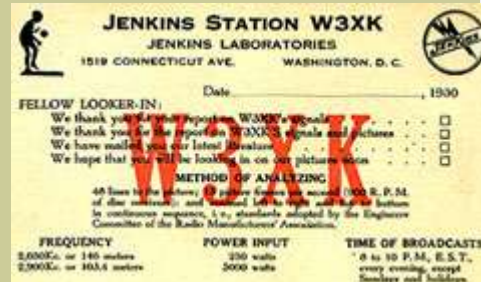
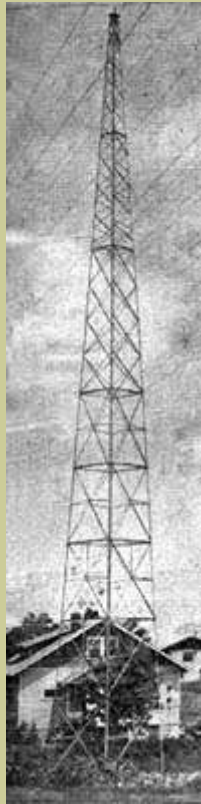
JENKINS TELEVISION



Jenkins Radio Vision 1930

JENKINS TELEVISION

A scrapbook of postcards, letters, and QSL cards collected by station owner, Charles Francis Jenkins



Charles Francis Jenkins (1867-1934) was the founding member and first president of the Society of Motion Picture and Television Engineers ([SMPTE](#)). He was a prolific inventor who achieved over 400 patents, including 75 devoted just to mechanical television. Among his other patents were the automobile self-starter, radio navigation, paper milk carton technology, reversible propellers, time-lapse photography, and the front-mounted automobile engine.

Albert Abramson wrote that Charles Francis Jenkins was "...the only man in history who was present at the birth of both the motion picture and television. As America's first pioneer of television, his vision is revealed in two historic articles: "Transmitting Pictures by Electricity" in the July 25, 1894 issue of *ELECTRICAL ENGINEER* and "Motion Pictures by Wireless" in the September 27, 1913 issue of *MOTION PICTURE NEWS*. Jenkins transmitted the earliest moving silhouette images in December 1923, which was the first witnessed demonstration (by two journalists, including Hugo Gernsback) of a working television system. On June 13, 1925, he publicly performed his first public wireless transmission of television images from Anacosta, Virginia to Washington, D.C. And on July 2, 1928, Jenkins Labs commenced broadcasting on W3XK scheduled television programs five nights a week continuously for several years. At first, the television station was limited to primitive silhouette images because of its 10kHz bandwidth, but soon it was allowed to move its carrier frequency to 4.95 MHz with a bandwidth of 100 kHz and a power of 5000 Watts. The following documents (QSL postcards and ordinary postcards) assembled by Jenkins in his personal scrapbook record the reception of some of these vintage television transmissions as well as his other amateur radio and experimental broadcasts involving this station.



Source: <http://online.sfsu.edu/~hl/cfj/cfj.W3XK.html>

XI
MISCELLANEOUS
JENKINSONIA

MISCELLANEOUS JENKINSONIA



C. Francis Jenkins, undated, courtesy the Smithsonian Institution

MISCELLANEOUS JENKINSONIA

TRANSMITTING PICTURES BY ELECTRICITY.

BY C. FRANCIS JENKINS.

One of the most interesting subjects before scientific societies at the present time is the problem of transmitting images to a distance by electricity. I offer for what it is worth a theoretical device which may be added to the

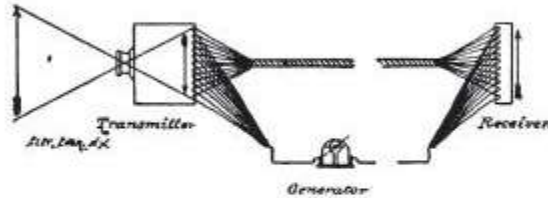


DIAGRAM OF JENKINS' PHANTOSCOPE.

methods already suggested for the accomplishment of this object. My scheme contemplates the use of selenium for a receiver, and the apparatus is substantially as follows :

A rectangular or circular non-conducting plate is set up behind a lens in such a manner as to receive the image or scene to be transmitted. This plate or board has upon its back a number of small short wires of selenium or sulphur, one end of each of which is thrust through the non-conducting board and immediately turned back, coming out again upon the same side and very near where it was thrust through. The face of the board is covered with these little loops, one end of each of which is joined to a common conductor, the other ends having separate conductors extending over the distance intervening between the transmitting and receiving stations. At the receiving end is a large flat electric lamp of ground glass with filaments in number and position corresponding with the loops at the transmitting station—a filament for each loop and in circuit with it. We now have a number of selenium loops, each upon a separate circuit, which are affected by the light passing through the lens at the transmitting station, and in circuit with these loops, filaments in a lamp common to all the circuits. As the conductivity of each circuit is affected by the light impinging upon the selenium loop at the transmitting station each circuit carries a different quantity of the electric current generated by a dynamo in the wire common to all the circuits. The result is that all of these little filaments glow, but each with a different intensity and the light diffused over the flat surface of the ground glass lamp at the receiving station appears brighter in some parts than in others, the bright parts corresponding in position to the bright parts of the image projected upon the board by the lens at the receiving station.

The scheme, if practicable when necessary modifications are made, is objectionable in that it contemplates a multiplicity of conductors, but as a basis for study the method has its merits. I should be glad to learn of the success of such an experiment by some one, as I cannot at present test it myself.

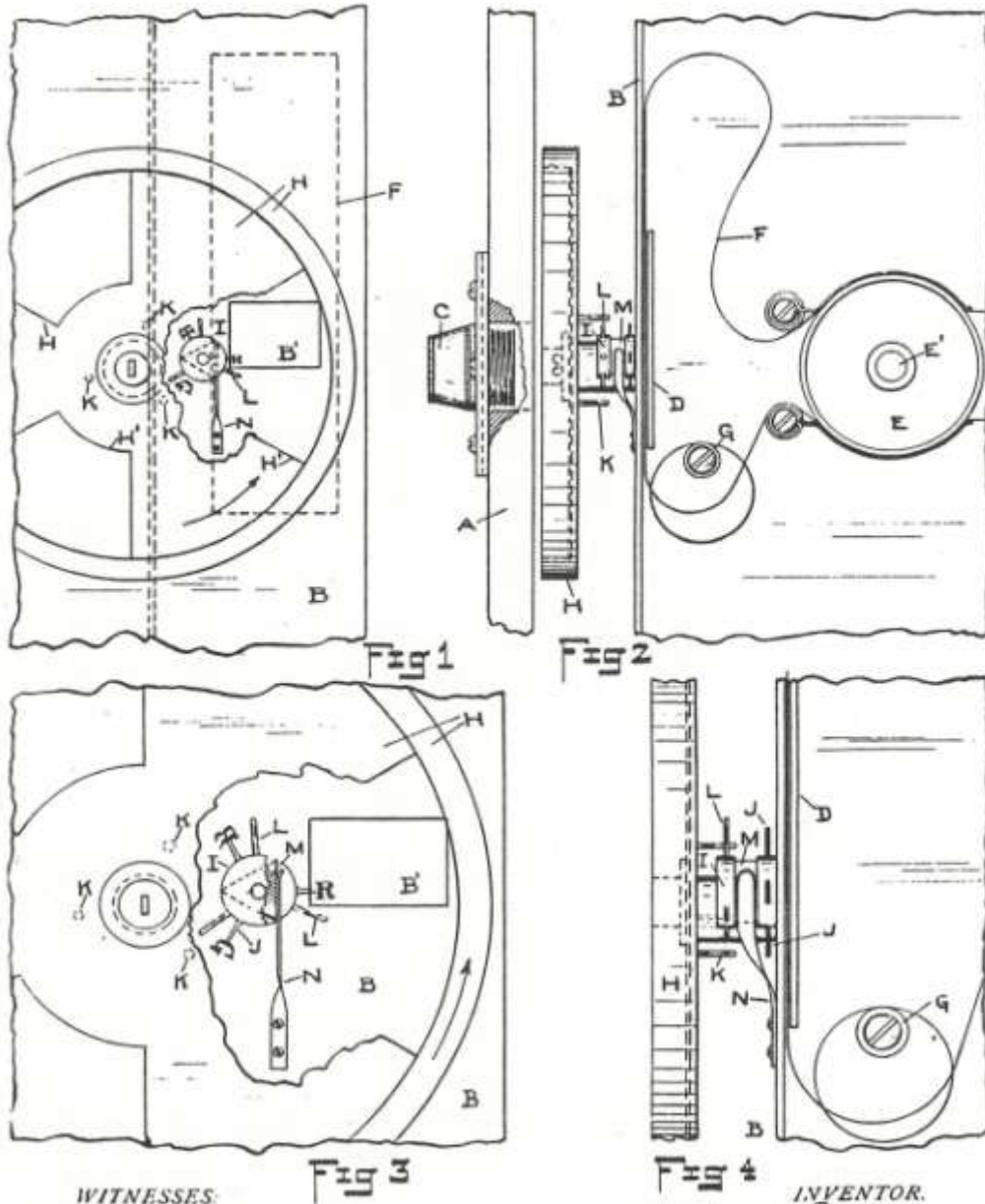
TRANSMITTING PICTURES BY ELECTRICITY
The Electrical Engineer, Vol. XVIII, No. 322, July 4, 1894, pp.62-63

MISCELLANEOUS JENKINSONIA

C. F. JENKINS.
MOTION PICTURE APPARATUS.
APPLICATION FILED MAY 10, 1911.

1,010,370.

Patented Nov. 28, 1911.



WITNESSES:
C. W. Jenkins
R. Craig Greene

INVENTOR.
C. Francis Jenkins
BY
Malcolm Greene,
ATTORNEY.

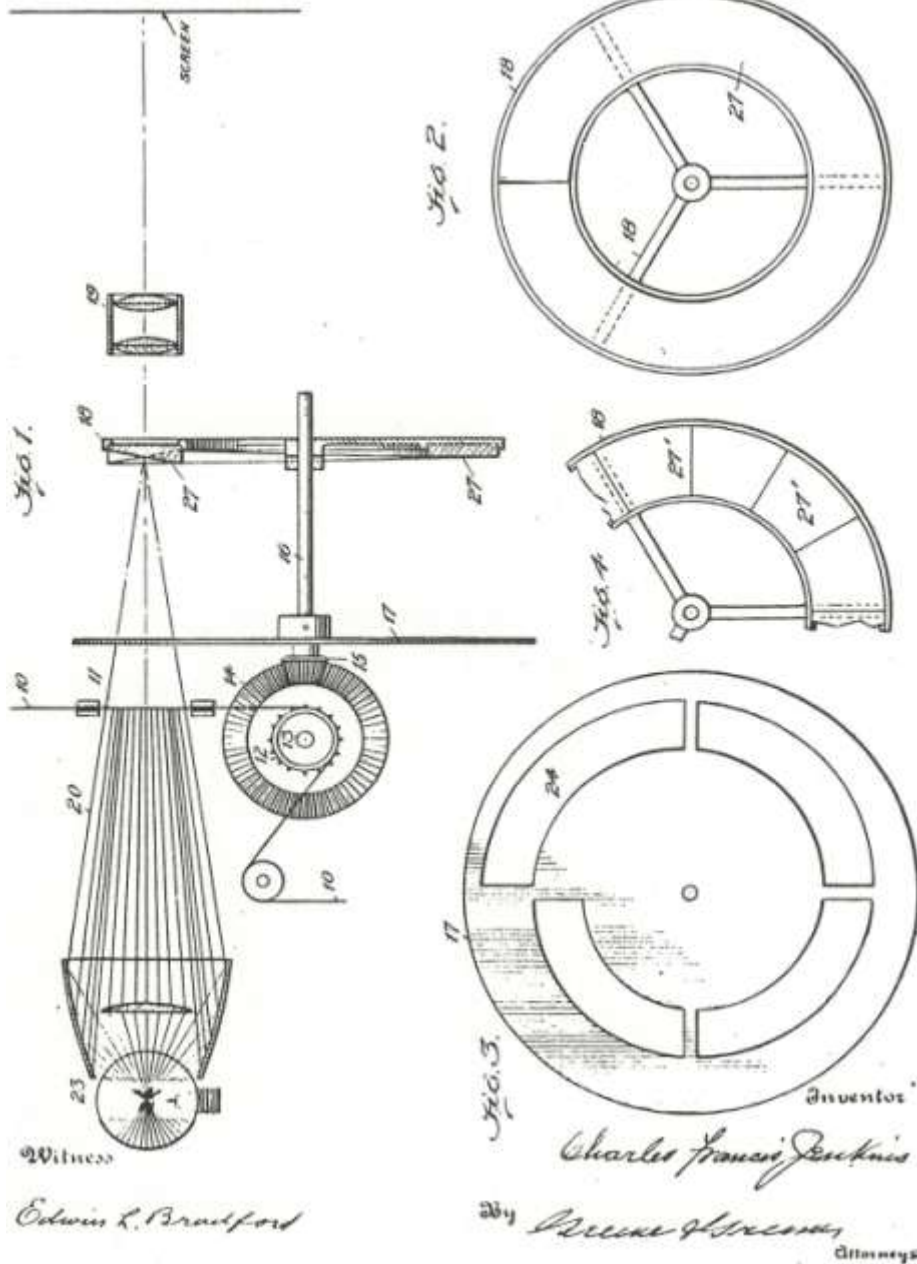
Camera for 3 color process Stereoscopic Films (Ray Bryan Files)
Patent 1,010,370, November 28, 1911

MISCELLANEOUS JENKINSONIA

C. F. JENKINS.
MOTION PICTURE MACHINE.
APPLICATION FILED OCT. 23, 1919.

1,385,325.

Patented July 19, 1921.



Continuous projector (ray Bryan Files)
Patent 1,385,325, July 19, 1921

MISCELLANEOUS JENKINSONIA



Source: Jenkins, *Animated Pictures*, 1898, front piece

This was the medal that was awarded to C. Francis Jenkins in 1897 by the Franklin Institute for his "invention of the Phantoscope, the first successful moving picture projecting apparatus"... This was challenged by Thomas Armat but his challenge was rejected by the Franklin Institute.

The Franklin Institute awarded Jenkins the "Scott Medal as well.

Much controversy surrounds the awarding of this highest honor of the Franklin Institute. For more information look at:

- 1) Franklin Institute, Contents of CSA #1946 Case File of C. Francis Jenkins Committee on Science and the Arts Cresson Medal 1897 (for the Phantoscope).
<http://www.fi.edu/learn/case-files/jenkins-1946/file.html>
- 2) Grosser, H. Mark, *The Armat - Jenkins Dispute and the Museums*, Film History, Volume 2, 1988, pp 1-12
- 3) Georgetown University, Special Collections, "*The Thomas Armat Papers*"
- 4) Gene G. Kelkres, *A forgotten first: The Armat-Jenkins partnership and the Atlanta projection*, Quarterly Review of Film and Video, Volume 9, Issue 1 Winter 1984 , pages 45 - 58

MISCELLANEOUS JENKINSONIA



The Franklin Institute awarded Jenkins the "Scott Medal" in 1914.

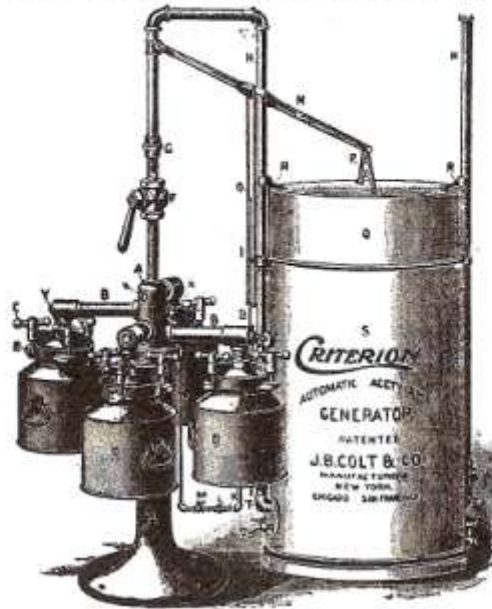
MISCELLANEOUS JENKINSONIA

Seein' Things at Night.—EUGENE FIELD.

The Criterion Acetylene Gas

Generator furnishes the new and wonderful

Illuminant,
Both
Superior in Quality
and
Cheaper in Cost
than any other
Artificial Light
known.
Positively Safe.



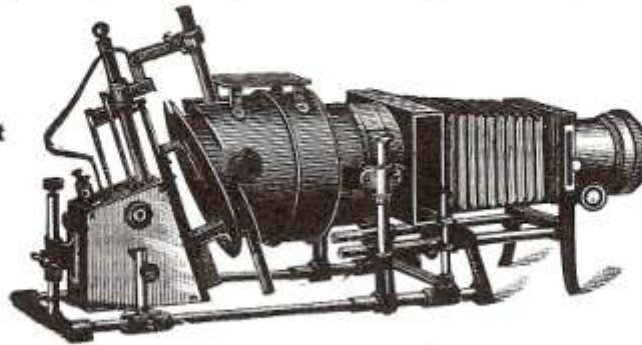
Suitable for nearly every purpose where an Artificial Light is required, from a Magic Lantern to an entire building or any number of buildings. Send for information.

Speak Quick

for a STEREOPTICON at HALF-PRICE.

We are selling our large and complete Stock of Magic Lanterns, Stereopticons, Slides,

and
Accessories at
greatly
Reduced
Rates.



NOW is the time to secure an Unprecedented Bargain.

Write for our "Bargain" Circular and mention "Animated Pictures."

J. B. COLT & CO.,

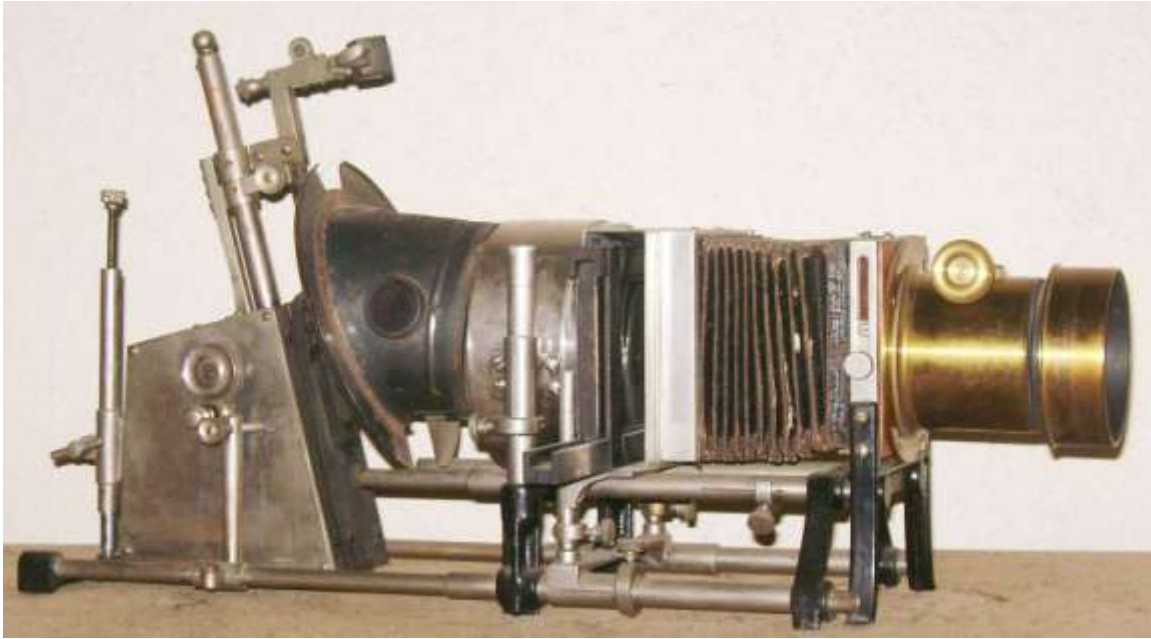
3 to 7 W. 29th St.,

NEW YORK.

The arc light source used in the Phantoscope and Vitascope projectors as well as many other early projectors was made by J. B. Colt and company which went on to make their own movie projector known as the Criterioscope.

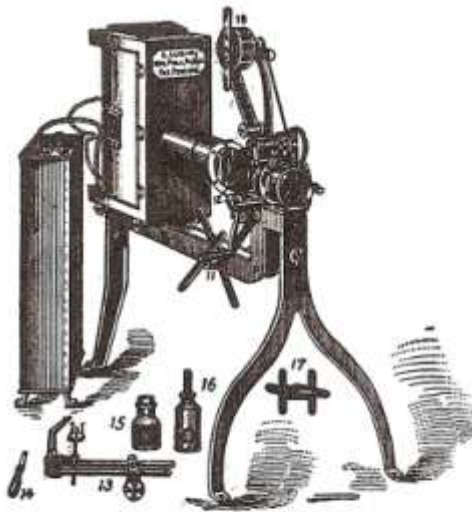
Source: Jenkins, *Animated Pictures*, 1898, in the advertising section

MISCELLANEOUS JENKINSONIA



A colt magic lantern apparatus of the type used as a light source in the Phantoscope and Vitascope projectors.

Collection Soterios Gardiakos



Lubin's Cineograph

Electric
Calcium
Acetylene Gas

Our new **Combined Cineograph and Magic Lantern** projects stationary pictures, announcements, etc., together with the finest moving pictures to be found anywhere. It is all right in quality and price. Investigate its merits for yourself.

Because we have the **largest film plant in the world**, and sell more films and lantern slides than any other manufacturer in existence, we can make very low prices.

Write for catalogue, pamphlets, price-lists, etc., etc., the largest and finest issued anywhere.

S. LUBIN,

21 S. 8th ST.,

PHILADELPHIA, PA.

Source: Jenkins, *Animated Pictures*, 1898, in the advertising section

Films or Picture Ribbons

FOR MOVING PICTURE MACHINES

Perforators, Standard Gauge,	\$100
Cameras, Hand, Spring, and Electric,	\$75 and \$150
Printers, Gas and Electric,	\$25
Developing Trays,	\$25 and \$100
Complete Plant,	\$150

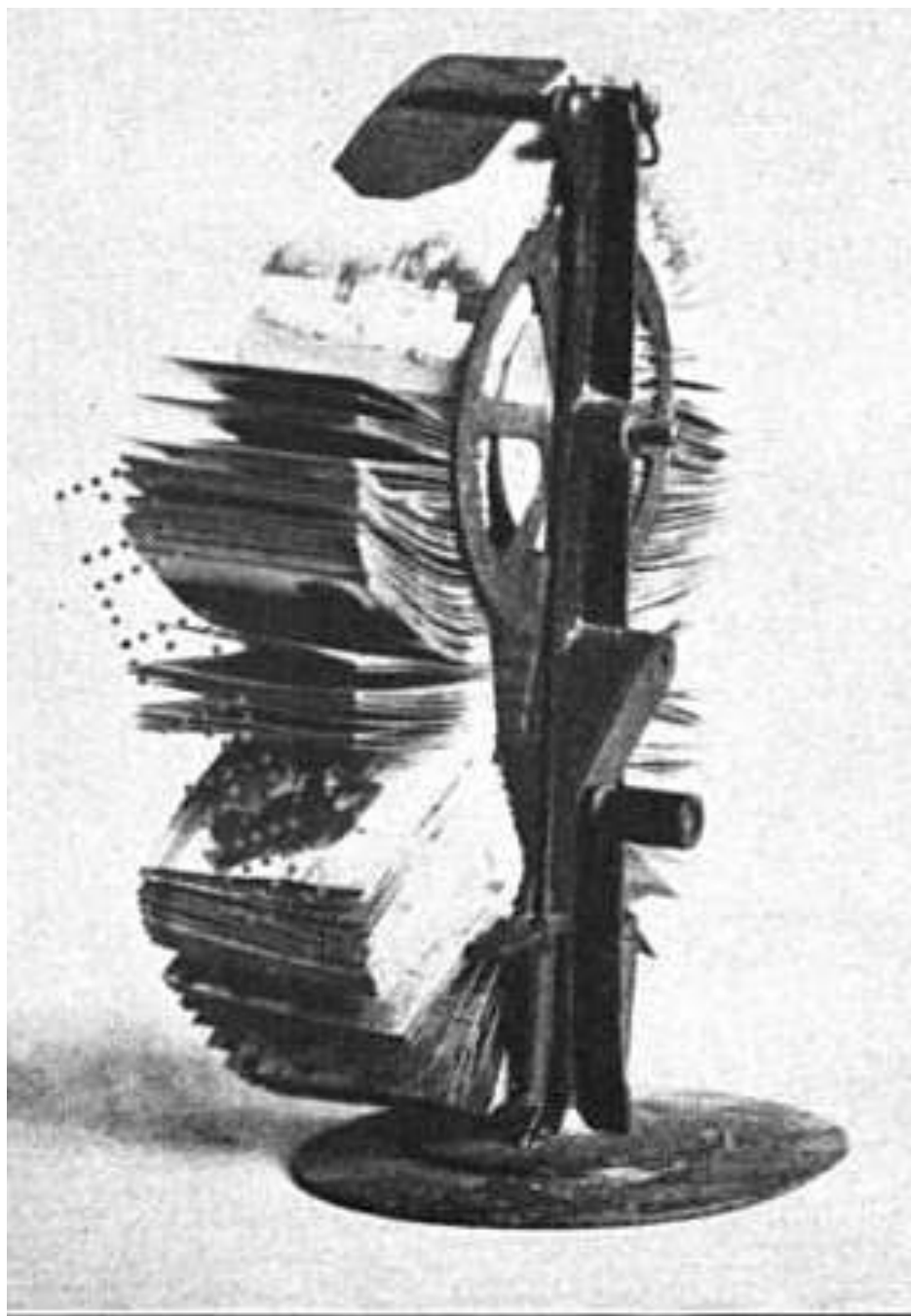
Picture Ribbons, the only book published giving an account of the apparatus and methods used in making and projecting animated photographs. Price, \$5.00.

LIBERAL DISCOUNT TO TRADE

C. FRANCIS JENKINS, 1325 F Street, N. W., Washington, D. C.

Jenkins advertisement
Photographic Mosaics, an Annual Record of Photographic Progress,
London, 1898, page 324

MISCELLANEOUS JENKINSONIA



PHANTOSCOPE MOVING PICTURE MACHINE (JENKINS).

Jenkins Flip Card Machine

Mina Fisher Hammer, *History of Kodak and its continuation*, New York 1940

MISCELLANEOUS JENKINSONIA

April, 1923

29

Inventor Promises Disk Record Movie Shows for the Home Film Projector Runs like a Talking Machine

WHAT Edison did with the talking machine; what Bell did with the telephone; what Ford did with the automobile, C. Francis Jenkins, inventor, of Washington, D. C., now proposes to do with the movies.

By means of an ingenious prism projector apparatus, growing out of his study of prismatic—a study by which, incidentally, Jenkins worked out the principle of radio transmission of photographs, to be described in the next issue of *POPULAR SCIENCE MONTHLY*—the Washington inventor has perfected a "movie record" machine that, he declares, will put movies in the home, along with the talking machine, the telephone, and radio, and at a cost within the average man's pocket-book.

For some time leaders in the motion picture industry have believed that the greatest future use of movies would be in the home. But to meet the requirements of this field, it was necessary to devise a projecting machine as easily managed as a talking machine, with "records" just as simple in form. This, Jenkins believes he has done. With his disk record apparatus he hopes to make available to stay-at-homes the greatest motion picture productions.

In construction, the new home movie machine is surprisingly simple. To operate the movie film, a mechanism like that of the modern cabinet phonograph is used. The miniature movie is projected on the inside of the hinged cabinet cover.

One of the first problems encountered was that of devising a small, compact disk that would hold the thousands of pictures necessary for one reel of movies. This, Jenkins accomplished in a truly ingenious way. First, the opening pictures of a reel were pasted in order around the rim of a paper disk about the size of a large disk

Note how the paper disks that have been run off are bent up over a guide frame to expose the succeeding pictures to the projection prisms.



How the inventor, C. Francis Jenkins, has converted a talking machine into a disk record movie projector. By an ingenious arrangement of prisms and oscillating mirror, pictures attached in sequence to paper disks, as shown at left, are projected as movies on the cabinet.



record. Naturally, one disk accommodated comparatively few pictures. So Jenkins arranged the succeeding pictures of the reel on other similar disks, which he placed in order beneath the first one.

By means of a radial slit, each disk in the series slightly overlapped the one beneath it, so that when the pile of disks was rotated, with a guide wheel running between the layers of paper, the effect was to produce a continuous spiral strip of paper and pictures. This arrangement, somewhat like a spiral spring, thus produced a continuous sequence of pictures. As the disks were run off, the thumblike frame of the guide wheel bent back the used disks so as to expose the succeeding pictures.

Then the problem was to provide a means of projection, including an intermittent mechanism to produce for the unaided eye the effect of one continuous moving picture on the screen. This, Jenkins was able to solve through his knowledge of prismatic. On each side of the image he desired to project, Jenkins placed a prism that caught the light and threw it on the picture. From the picture the light passed upward through a lens to two oscillating mirrors, which in turn projected it on the screen.

A user of the disk movie machine simply turns on the electric current that drives the small motor, places on the rotatable table his disk "record" that contains the "reel" of the film, switches on the projector light, then sits back to enjoy the show. The thumblike guide wheel arrangement follows down the spiral formed by the overlapping disks; the oscillating mirrors pick up the images thrown upward by the prism arrangement, and the moving pictures are projected in miniature.

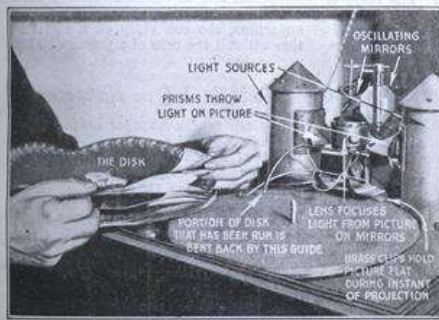
Why America Uses More Dope than China

WHAT are the facts about habit-forming drugs and the fascination they hold for their short-lived addicts?

Just now Americans are facing the astounding fact that in this country last year there was a consumption of 36 grains per capita of habit-forming drugs; that we used 40 times as much of these soul-wrecking chemicals as China, and that consumption is growing, rather than decreasing, at an alarming rate.

Where do these drugs come from? How are they prepared? Why will people steal and slay to get them? What are the physiological and moral effects of these drugs?

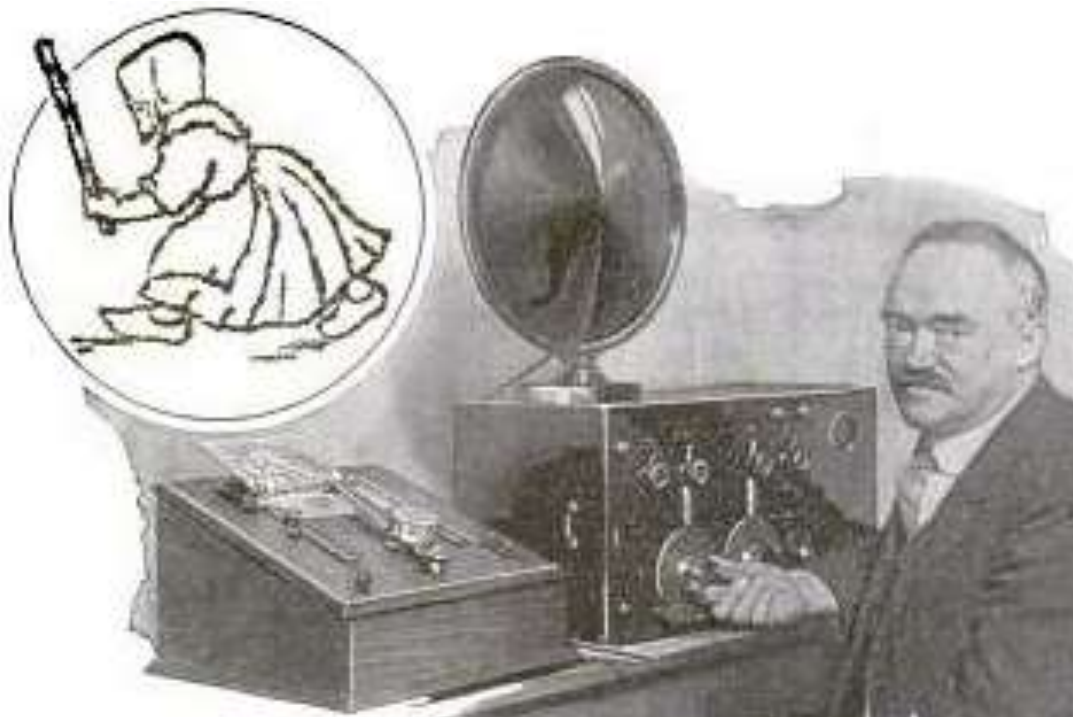
These are some of the questions that will be answered in the May issue of *POPULAR SCIENCE MONTHLY*. The drug problem is the most vital America has faced since prohibition.



Complete apparatus for producing disk movies. Note that the paper disks are held apart to show how each disk overlaps the one below it, giving the effect of a continuous circular strip.

Jenkins Disk Record Movie Shows for the Home
Popular Science, April 1923

MISCELLANEOUS JENKINSONIA



RADIO PEN DRAWS PICTURES FROM THE AIR
Attachment, Plugged In Place of Loud Speaker, Converts Radio Set into Receiver for
Broadcast Pictures
Popular Mechanics, Vol. 45, No. 5, May 1926, pp. 705-706

MISCELLANEOUS JENKINSONIA



WEATHER MAPS SENT BY RADIO - PROTECT NAVIGATION
Popular Mechanics, Vol. 47, No. 1, January 1927, p. 80

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Night Sitings, the Photographic Times, Vol. XXVIII, January, 1896, p. 5

Black Light Photographs, the Photographic times, Vol. XXVIII, March 1896 p. 152

Measuring the Velocity of the "Peace-Makers" Projectile, the Photographic Times, Vol. XXVIII, April 1896, p. 177

The Phantoscope: A Method and Apparatus for Recording and Reproducing Action (An extract of a paper read before the Franklin Institute, December 1895). The Photographic Times, Vol. XXVIII, May 1896, pp. 222 - 226.

A Shutterless Camera, the Photographic Times, Vol. XXVIII, August 1896, p. 375

The Development of Chronophotography, the Photographic Times, Vol. XXVIII, October 1896, pp. 449-454

A New Use for Stereoscopic Effects, the Photographic Times, Vol. XXVIII, December 1896, p. 571

The Picture Ribbons Used in Chronophotography, The Photographic Times, Vol. XXIX, June 1897, pp. 259 - 260.

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Patentable Priority in Chronophotographic Apparatus, The Photographic Times, Vol. XXX, 1898, page 152

Handbook for Motion Pictures and Stereopticon Operators, 1908, Washington, D.C., 132 pages

History of the Motion Picture, Transactions of the SMPE, October 1920.

The Beginnings of the Cinema - Birth of the Final Form of the Motion Pictures - the Work of C. Francis Jenkins, the American Cinematographer, Vol. 3 No. 1, May 1922, pp. 19-20

MISCELLANEOUS JENKINSONIA
Books and Papers Written by Jenkins up to 1908

The Beginnings of the Cinema - Birth of the Final Form of the Motion Pictures - the Work of C. Francis Jenkins, the American Cinematographer, Vol. 3 No. 1, May 1922, pp. 19-20

100,000 Pictures per Minute, American Cinematographer, Vo. 3, No. 1, May 1922, p.23

Radio Movies, 1925 issue of the SMPTE, pp18-21

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The Chronoteine Camera, Jenkins Labs 1928

The Boyhood of an Inventor, 1931, Washington D.C., 273 pp

XII CHRONOLOGIES

CHRONOLOGY OF THE PHANTOSCOPES/VITASCOPE

CHRONOLOGICAL ORDER OF THE PHANTOSCOPE/VITASCOPE

JENKINS PHANTOSCOPE PROJECTR

The original Jenkins Phantoscope lateral projector 1893-1894 (Franklin Institute)

JENKINS AND ARMAT PHANTOSCOPE PROJECTORS

Phantoscope machine built on the Kinetoscope principle of continuous film, by Jenkins and Armat in April or May 1895 (1) that was a total failure according to Armat

"A failure, too, was an attempt at a "gradually accelerated"-speed projector".

The Phantoscope "Mutilated Gear" machine, Jenkins and Armat patent 586.953, July 20, 1897

The "Atlanta Exhibition" machine, A Phantoscope with a beater movement, three machines were made by Jenkins and Armat and projected moving pictures in September 1895

POST SPLIT UP JENKINS PHANTOSCOPES

Later Jenkins Phantoscope projectors made by and for:

- 1) Columbia Phonograph Company (The Charles Hummel machine)
- 2) Lubin's first projector was basically a Phantoscope made with Jenkins help
- 3) Possibly Jenkins made machines on his own account such as the Phantoscope
Advertised in Chicago

POST SPLITUP ARMAT VITASCOPE

Vitascope beater movement projector, Armat patent 673,992 applied Feb 10 1896, granted May 14, 1901, GEH

Armat's Vitascope projector was sold as "Edison's Vitascope" and had a beater movement, 100 Vitascope projectors were contracted by Raff and Gammon to be made by Edison's United States Phonograph Co. (3)

Armat personally operated the Vitascope projector at Koster & Bials Music Hall on Broadway on April 23, 1896

Armat Vitascope using a Maltese cross, Patent 578,185 filed September 25, 1896 and patent issued March 2, 1897, was not part of the Raff and Gammon arrangement "Smithsonian" (4)

(1) Thomas Armat, *My Part in the Development of the Motion Picture Projector*, March 1935 Journal of the SMPE Volume 24. p 17

(2) H. Mark Grosser, *the Armat - Jenkins Dispute and the Museums*, Film History Volume 2, 1988, p. 11

(3) *The Federal Reporter*, Vol. 83, Jan -Feb 1898. pp 31-32

(4) H. Mark Grosser, *the Armat - Jenkins Dispute and the Museums*, Film History Volume 2, 1988, p. 11

CHRONOLOGY OF THE EXISTING PHANTOSCOPES/VITASCOPIES

Existing Machines Arranged Chronologically

Franklin Science Museum, Philadelphia, Pennsylvania

- 1) Complete Phantoscope machine donated by C. Francis Jenkins

George Eastman House, Rochester, New York

- 2) Vitascope projector head, probably the machine preceding the "Edison Vitascope"
Donated by Thomas Armat in the late 1940's, Serial number 2

Smithsonian Institution, Washington DC (2 projectors in the collection)

- 3) Vitascope Projector Serial number 39, with a "beater" movement "Edison Vitascope"
- 4) Vitascope Projector with a Maltese cross movement designed later in 1896
This projector may have been made by Armat outside the Edison Company.

Charles Hummel, Wayne, New Jersey

- 5) A Later Jenkins Phantoscope head probably made by, or for the Columbia
Phonograph Company

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