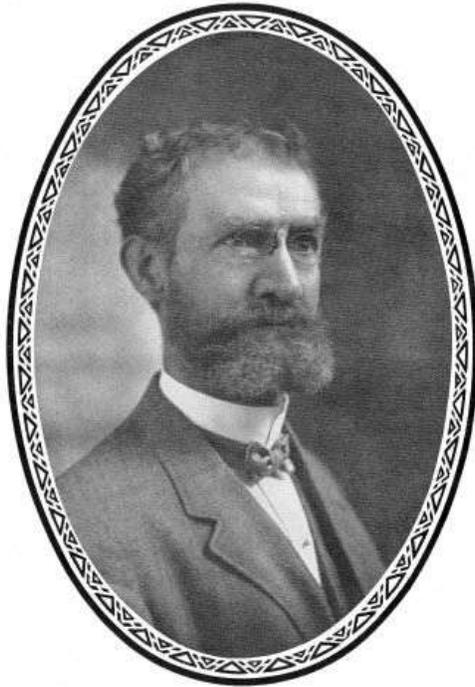


Power's
Cameragraph Projectors
a
Reclassification
New York, USA

February 7, 2013



Nicholas Power

UNIGRAPHICS INC

2010

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

**THE LIFE
OF
NICHOLAS POWER**

NICHOLAS POWERS
(October 22, 1854 - February 7, 1921)

Sources on the life of Nicholas Power in the Dunston Papers

These papers were saved from the trash heap by Carey Williams who has so kindly, as in so many other occasions, shared them with me. Everything below is typewritten by Dunston, as a copying machine was for all practical purposes un-available at the time.

Gatewood W. Dunston,(1908 - October 18, 1956,) notes on the life of Nicholas powers. This was a letter sent to the family of Nicholas Power for correction and objection. It is doubtful if he ever received an answer

Motiography, Vol XI, #3, February 7, 1914.

Motion Picture World or **Motion Picture Herald**, Volume 21, page 222.

Frank Richardson, What Happened in the beginning, September 1925 Transactions of the SMPE.

Motiograph, Volume 1 and Volume 2, Jan24th, 1914, page 61 &62. This is a typewritten by G. W. Dunston, I do not have a direct copy of the original.

When writing it is customary to place the sources (bibliography) at the end of the written article but in this case I have decided to place it before I proceed with a brief biography of Nicholas Power.

THE LIFE OF NICHOLAS POWER
Gatewood W. Dunston
(edited by Soterios Gardiakos)

Nicholas Power was born in the lower east side of New York City, designated as the eleventh ward of that city on October 22, 1854. It is claimed that he is of Scottish parents though some say he was born of German parents and that his real name was Macht; Power being an American translation for the German word macht(?). Mr.Power's early Schooling consists of attending parochial and several public schools in New York City.

In 1865, at the age of eleven, for unknown reasons, Mr. Power was forced to fend for himself. He became interested in the magic lantern and mechanics. Endless small jobs supplied Power with means of earning his food and lodging.

In 1867 Power persuaded an engineer to take him on as an apprentice mechanic at the age of thirteen,

In 1868 at the age of fourteen Power had saved enough money from his earnings to enable him to attend Cooper Union Institute. where he graduated in 1870. He soon obtained a position as engineer, and soon rose to the position of Directing and Construction Engineer of a large mining company (name unknown) whose home office was located in New York City. Mr. Power worked for this company for seven and a half years, traveling throughout the western United States and working in that concerns various mines.

On one of his letter trips to New York City, Power married Miss Rose Millian and soon thereafter became established at Cooper Union as an engineer of the section styled as the Inventor's Institute.

In 1881 Power invented an automatic magic lantern known as the *Automatic Stereopticon*. This mechanical magic lantern was composed of a clock movement which carried a circular disc that contained some twelve different pictures. The striking position of the clock was used to move disc's pictures behind a stationary...

In 1882 Power came out with a second automatic magic lanterns known as the *reflectoscope*, it was an elaboration of the first machine already described.

In 1893 Power invents still another advertising machine which held a cylinder of cards. By revolving this cylinder one card could be read on top and one on its reverse side at the bottom. This machine found its way into department stores employed to advertise the wares of the store.

In 1894 Power became engaged in the real estate business.

In 1897 Power becomes projectionist at a Brooklyn theatre. (Dunston asks: was this the novelty theatre which played both vaudeville and short film scenes of that day) Dunston than gives us the following anecdote: There is a story to the effect that Mr. Power took the intermittent apart to the projector used in this Brooklyn theatre and did not allow himself time to replace it by opening time. Then came hard word from the manager and Power quit In the year.

1898 Nicholas Power, Pop Rock (William T. Rock who with Albert Smith and Stuart Blackton founded Vitagraph) and Pop Lubin open a partnership on Nassau Street selling films. The partnership soon dissolved. Mr. Dunston does not know the veracity of this.

Probably in 1898 Power opens his projector repair shop and this is probably when he also started to make projector to order (not far away Walter L. Isaacs was doing the same, his great genius is shown in the Bioscope projector he built with and for Charles Urban). It was in this same year that Powers designed and built his very first projector of his own design known as the Peerless-scope (often incorrectly called the Peerless) projector.

Between 1898 and 1902 Mr. Power designed various models Peerless-scope projectors'.

In the year 1902 Mr. Power changes the name of his Peerless-scope projectors to the Power's Cameragraph.

Power manufactures three different models of the no. 5 Cameragraph from 1906 till 1913. During this period he also introduce the Cameragraph 6, 6A and 6B.

In 1925 powers business was consolidated with the International Projector Corporation.

On the February 7, 1921 Power died in Florida at the age of sixty seven years, leaving three daughters and his beloved wife.

This is an edited version, by me, of Sunston's letter to the Power family.

POWERS AND EDISON

Author unknown

In the last number of *Motiography* we (The G.....) made an unfortunate misstatement by saying that Nicholas Power worked at the same bench with Thomas Edison at Cooper Union. Mr. Power authorizes us to say that he never worked zt the same bench with Mr. Edison but he came in contact with him a great deal when Mr. Edison was engaged in experimental work at this place. Mr. Power is anxious that this correction be made for fear it will create a wrong impression in the minds of some people. It is our earnest belief that the head of the 6A establishment carries his conscience into every-thing.

Motiography Vol. XL, No. 3, February 7, 1914, page 37.

WHO'S WHO IN THE FILM GAME: FACTS AND FANCIES ABOUT A MAN YOU KNOW OR OUGHT TO KNOW

Author unknown

There is a difference in power plants wherever you find them, with distinction that there is only one Power plant in the shadow of the Brooklyn bridge on Manhattan Island. There are big brass plates at either side of the entrance to the door of a large building designed [designated] 90 Gold St., New York, and these plates set forth "Nicholas Power Company, Motion Picture Machines;" exhibitors by the thousand know about the Power's machines; what may follow will concern Mr. Nicholas Power, the man. You will find him in the furthest room from the door of the fourth floor office suite. There is lots of sun-shine in his room and there are fancy-cornered ecru curtains stretched across the two windows and a Cameragraph machine is under a drape cover in the center of the floor. On a small table in a corner, is a silver water pitcher and goblet, "one of the many gifts the people around here have given me", Mr. Power will tell you and prove to you that it contains ice-water. You'll find him friendly and ready to tell you fascinating things about projection and the philosophy of life, but he dreads to talk about himself. He has a wide and charming smile and with it goes a eye-twinkle that makes you guess whether his eyes are blue or gray. Though on the verge of sixty, he has escaped baldness and the gray hair

that parts in the center and curls at either side is plentiful. His 'Senator J. Ham Lewis whiskers' are also gray with a hint of very light brown at their roots. Mr. Power is not a tall man nor a fat man; he is slender not thin, and neat with a neatness that bespeaks him always to be found in a perfectly pressed suit and smooth "boiled shirt". He wears a ring and a watch-charm, each with a wonderful diamond in it and though he is apt not to remember your name should you ever call again, he will know who you are, because he takes pride in remembering persons, while maintaining a faculty for forgetting names. He acknowledges the latter is one of his faults.

Nicholas Power was born October 22nd, _____, and one would guess the year at 1864 rather than 1854, but the latter is the correct date. What is known as the east side, and the nest of foreigners, and more readily placed when you designate it as the eleventh ward of New York City, was where Mr. Power started out in life and where he attended one parochial and several public schools. When he reached the age eleven years he had to shift for himself. Machinery interest[ed] him, in fact anything did that had the use of a compass and a pencil as its foundation. The magic lantern afforded him endless days and nights of interest.

There were endless little jobs that earned him food and lodging from the time he was eleven until he persuaded an engineer to take him as an apprentice; he was but a few years more than eleven the, but his knowledge of things mechanical was so convincing that his years, or lack of them were forgotten.

His savings of several years enabled him to attend the machine class of Cooper Union, Where he and Thomas A. Edison worked at the same table (see above article in Motiography contradicting this statement). From engineer, he rose to the position of directing and construction engineer for a big mining co. in New York and during the seven and one-half years he held this position, he traveled throughout the western states and worked in the Companies various mines.

It was on one of his return trips to New York City that Mr. Power married Miss Rose Kilian, following which he became established at Cooper Union as engineer of the section styled, the Inventor's Institute.

Mr. Power holds the highest of engineer's credentials and has been known as an inventor even before those early days at Cooper Union. His first known experiment was a clock movement which caused to rotate sixteen different pictures in a circular disk, each picture taking its turn before a lens. This was called the automatic stereopticon . His first motion picture invention was the **reflectorscope** in 1897; it was during Peter Cooper's green-back party campaign and the device was used in Cooper's interest. Mr. Power*unable to read part of this line*..... about motion pictures in 1897; his knowledge dated back seven years before that. Those were the good old days when he and 'pop' Rock and Lubin had a little office on Nassau St., where they bought and sold films. Then the parting of the way came and Mr. Power's inventive genius made him parent to the majority of improvements on various projection machines. The Power's machine was put on the market and from time to time improvements were made upon it. The machine grew in popularity, Mr.

Power waxed rich in new ideas as to what additions would make it even better and he pointed to the present-day 6A as one of the results of his work of years.

Other results of which he speaks, as he speaks of anything concerning himself, sparsely, are the five floors of whirling machinery and busy men which go to make up the Power's plant.

As the three imperative elements to success, he counts:- "careful buying. manufacturing without waste and selling with a conscience". For to be successful and be happy at the same time, one must possess a conscience, he contends. His favorite motto, and he believes in it explicitly, is:- 'live and let live.' He believes in the Golden Rule. The man who applies these two standards to himself and measures up to them in the light of his conscience, has no need of sermons and church, says Mr. Power. 'The way to rise is not to rush or push the other fellow down, but to give him a hand when-ever possible and you'll get there as quickly as the fellow who rushes over every body in his haste to get there first.

I've worked days and nights until I was too nervous to either eat or sleep, this to keep pace with the other fellow, for I knew the minute I let go a bit, there was some body waiting to take what I was trying to keep. It's been a hard pull, but I can honestly say I have sacrificed no one for anything I have.

Mr. Power declared his hobby to be working with compass and pencil. We'd rather be left to himself and his desk than to auto or play golf or to indulge in any of the popular recreations. He owns an automobile, to be sure, and his older daughter (he has two) knows every thing possible about it and besides can take a typewriter or clock apart and put them together again, showing she takes after her father.

Mr. Power has a sure cure for the 'blues', which he admits having from time to time. "I lock myself in this room, take a pad and my working tools and in half an hour I'm feeling great! My thoughts have become so concentrated that the 'blues' just die a natural death."

Mr. Power and his family travel a great deal and Mr. Power confesses to being devoted to his wife now as when they were married. When traveling, he finds his greatest rest and best times for work and never returns from a trip that he hasn't made an inventive discovery.

Complete, exact copy of title:-Who's who in the film game. Facts and Fancies about a Man You Know or Ought to Know. Motiography Vol. 1, #2, Jan. 24, 1914, pages:- 61 and 62, includes photo portrait in this unsigned article.

Soterios note: I searched but could not find Motiography, I did however find a reference not to this article credited to (1910, August 1) THE NICKELODEON, IV 930, 64.

POWERS PROJECTORS

The dating of the Power's projectors presents a problem due to the lack of information, available to me. Below are listed the only information I could find, which I hope is of some use to my readers.

CONFLICTING INFORMATION ON THE POWERS PEERLESCOPE

“Shortly after the advent of the ‘Power’s Peerless,’ which must have come out some time in either 1897 or 1898, Mr. Power brought out his ‘Power’s No 1’ projector, which was followed by the No. 2, No. 3, No. 4 and No. 5 models, all of which appeared between 1897 or 1898 and 1907, in which latter year the No. 5 appeared.”

F.H Richardson, *What Happened in the Beginning*, September 1925 Transaction of the SMPE. From Raymond Fielding’s *A Technological History of Motion Pictures and Television*, page 32.

“Power’s Peerlescope Projector made by Nicholas Power in New York City in 1902. Equipped with a gas light and belt driven directly from the rim of the crankwheel. Film that passed through the projector dropped into a cloth bag”.

Gertrude Jobs, *MOTION PICTURE EMPIRE*, Archon Books, Hamden, Connecticut, 1966. p. 38.

**MODIFIED
KINETOSCOPES
(1898-1899)**

Known Specimens

Soterios Gardiakos, Aurora, Illinois

POWER'S MODIFIED KINETOSCOPES

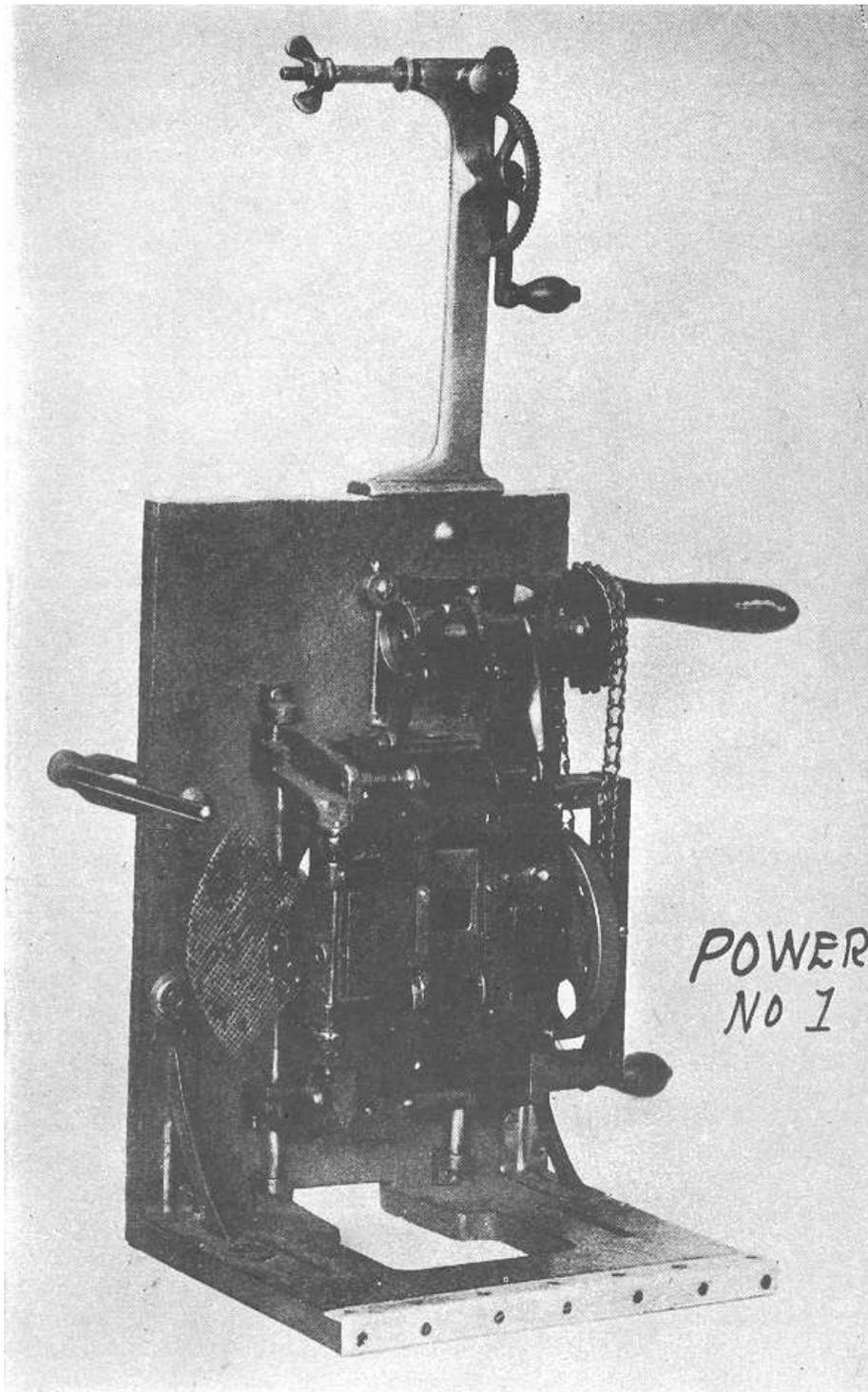


FIG. 11. The Power's No. 1.

A modified Kinetoscope with chain drive erroneously named Power 1
Raymond Fielding, *A TECHNOLOGICAL HISTORY OF MOTION PICTURES...* p. 33.

POWER'S MODIFIED KINETOSCOPES

The era of the spoolbank projector ended almost as fast as it had begun. Here we had probably a little over one thousand spoolbank projectors that could not exhibit the longer reels of films that flooded the market. Do you throw away your spoolbank that you have barely used and buy one of the new projectors at a considerable expense or is there a way to salvage your investment.

Nicholas Power found an ingenious answer to this problem without drilling or milling any part of the original Edison spoolbank projector, though obviously he did remove a few parts. Looking at now it seems a fairly simple thing to accomplish, but it in fact is the work of a supremely inventive mind, namely the mind of Nicholas Power.

Below I try to reconstruct the steps Power took to produce his possibly first "Cameragraph" if in fact he called it that.

1) He would first remove the spoolbank from its high wood case and place it either in a new wooden case or possibly he cut down the existing case.

2) He would remove:

- A. the framer
- B. one film guide cross bar
- C. outer film gate
- D. inner film gate.

3) He would then add the following:

- A. a new more efficient framer
- B. a Bracket for mounting film gate
- C. a new film gate
- D. a new outer film gate
- E. New film shield or film guide
- F. and finally add the new gear assembly
- G. A new more efficient crank (larger)

And now you had a fully functional and efficient movie projector at a fraction of the cost of a new projector.

Note that in Powers early modifications he started out with a chain drive and soon afterwards went to a full gear drive. Also in his early modifications the reel feed is on the right when looking from behind and it is only later that he placed the reel feed on the left.

THE QUESTION IS HOW TO CLASSIFY THIS PROJECTOR. IS THIS A CAMERAGRAPH OR AN EDISON KINETOSCOPE OR PERHAPS BOTH.

POWER'S MODIFIED KINETOSCOPES

Below are Mr. Tom Wilson's letter with his comments on my projector and my comments are in bold letters.

February 7, 2013

Hi Soterios

After looking closely at the photos I agree that the main frame is almost certainly a spoolbank frame that has been modified. **Positively as I have the Spoolbank No. 16 next to it for comparison (makes it much easier)** There are a few holes and features such as the notch for the spoolbank framing device on the upper hinge mount which would be unnecessary in the Power's design. If Power's had actually cast the frame I think he would have eliminated this notch. Also there are four mounting holes in the castings that would only be used in an Edison projector.

The machine in the fielding book looks to be just like yours except for the chain drive and the framing handles are of a different design and in different places. **I believe the chain drive was the earlier.**

I wonder if there really is such a thing as a No. 1 Cameragraph. **I believe there is. The two undated brochures hold the key, what is confusing is that Fielding's No. 2 Cameragraph does not square with either of the two brochures. Once we accept that the Spoolbank Kinetoscopes should not be called Cameragraphs. I believe that Fielding erroneously labeled the Spoolbank Kinetoscope as Cameragraph 1.** It is possible that Power's just bought some obsolete spoolbank projectors very cheaply and modernized them for resale. Perhaps he simply offered this service to people who wanted to have their machines updated rather than buy a new projector? If you think about it, all of the Power's sales literature that we have seen before the No. 5 Cameragraph does not make any mention of any model number; they simply refer to the machines as a Cameragraph. **Carey's No. 3 is labeled as Number 3, Can you send me a photo of the nameplate of you number 4.**

I think it is very safe to assume that the work on your projector was done by N. Power. The case is made of the same walnut material as the No. 3 machines I have seen. This material is also used for the base tables of the No. 4 and 5 Cameragraph. Also the framing device looks to be identical to the No. 3.

At first I thought that the Edison data plate on your machine must have been added by a collector at a later date, but now I think most likely it has been a part of the projector all along. I would imagine that if Power's had tried to sell this machine as a Cameragraph, he would have certainly been sued by Edison. **My feeling is that it was brought to him by the owner knowing that Powers was modifying these machines and as a memento had Power place the existing nameplate on to his modified projector.**

POWER'S MODIFIED KINETOSCOPES

It would be interesting if you could remove your tag and see if the wood is a lighter color behind the tag. If the tag has been there since the case was made the wood and finish will certainly look different from the rest of the case. **Removed the tag, there is no finish, it is raw wood a little lighter in color.**

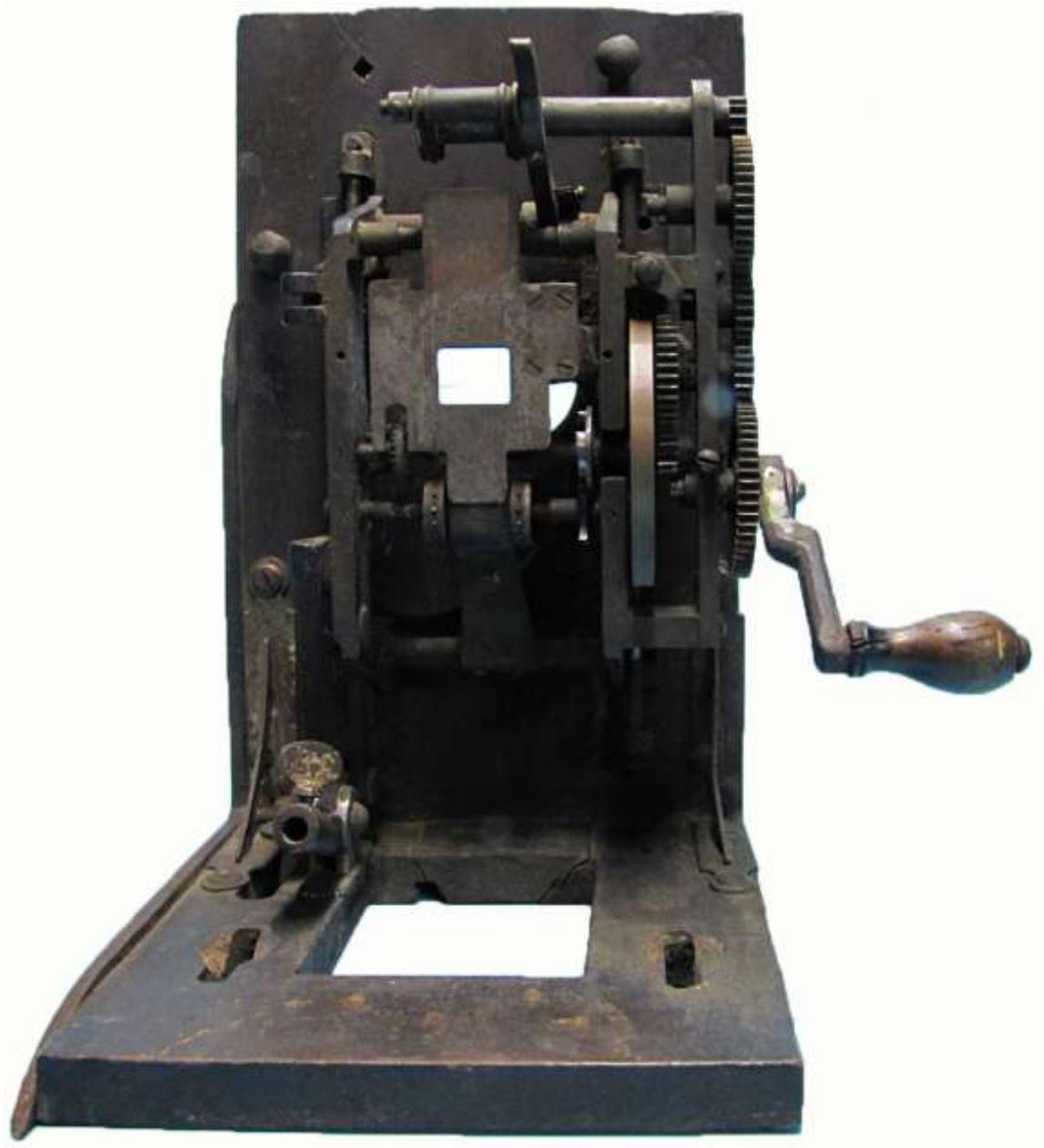
Attached are photos of the No. 3 in my collection. There is a No. 8 stamped into the frame in 2 places which I would guess to be a serial number. You might ask Carey if his has any numbers stamped on it. **Carey has a number 18 stamped on the main body.** Also would be curious to know if Cliff's machine has any numbers on it. **If you or Carey know Cliff maybe you could ask him, also if you would be willing to send me photos of his Cameragraph.**

POWER'S MODIFIED KINETOSCOPES



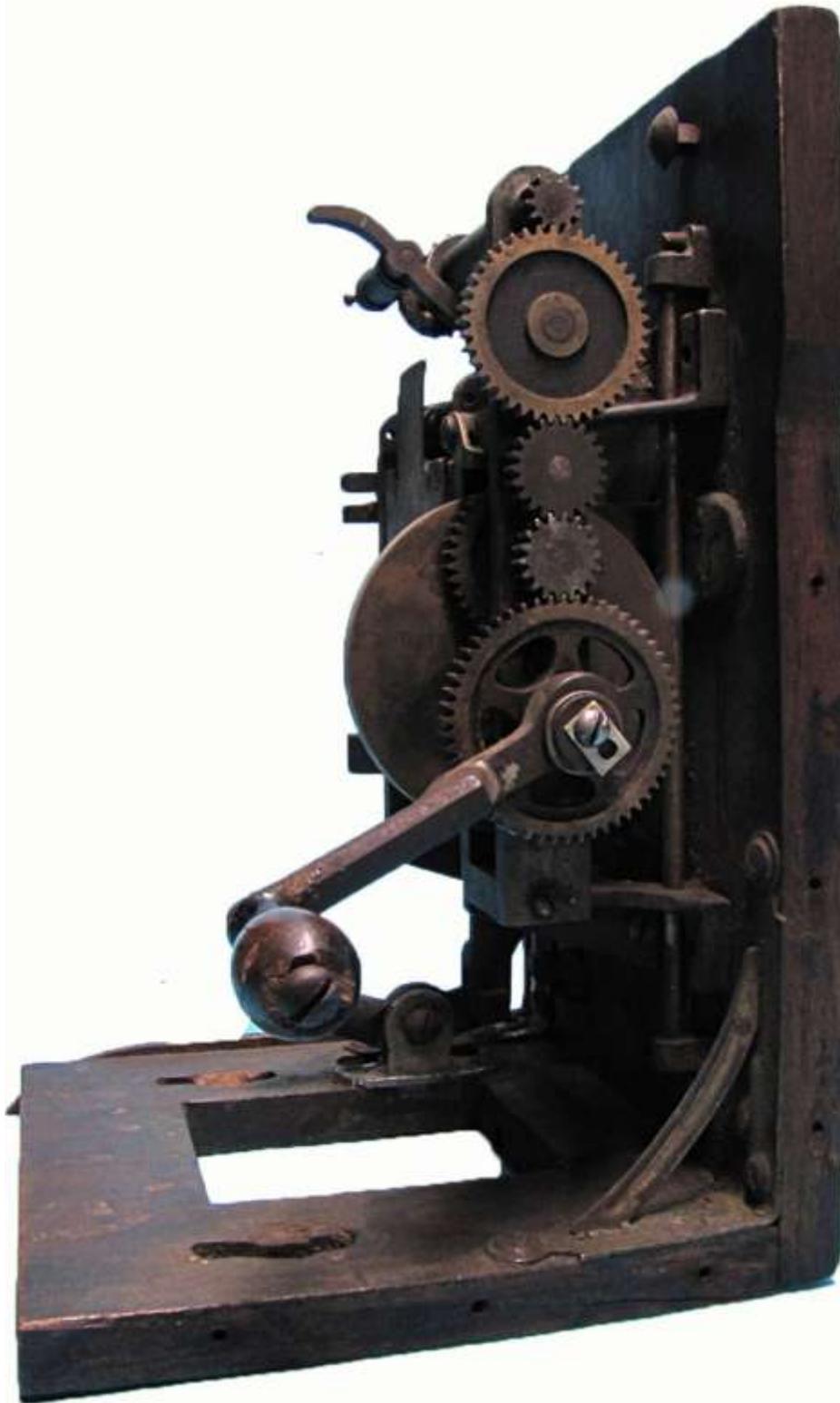
A spoolbank projector before modifications by Nicholas Power
This is serial number 16 in the Soterios Gardiakos collection

POWER'S MODIFIED KINETOSCOPES



Possibly a later version of Cameragraph No. 1, the chain drive has been replaced
with a gear drive
Soterios Gardiakos collection

POWER'S MODIFIED KINETOSCOPES



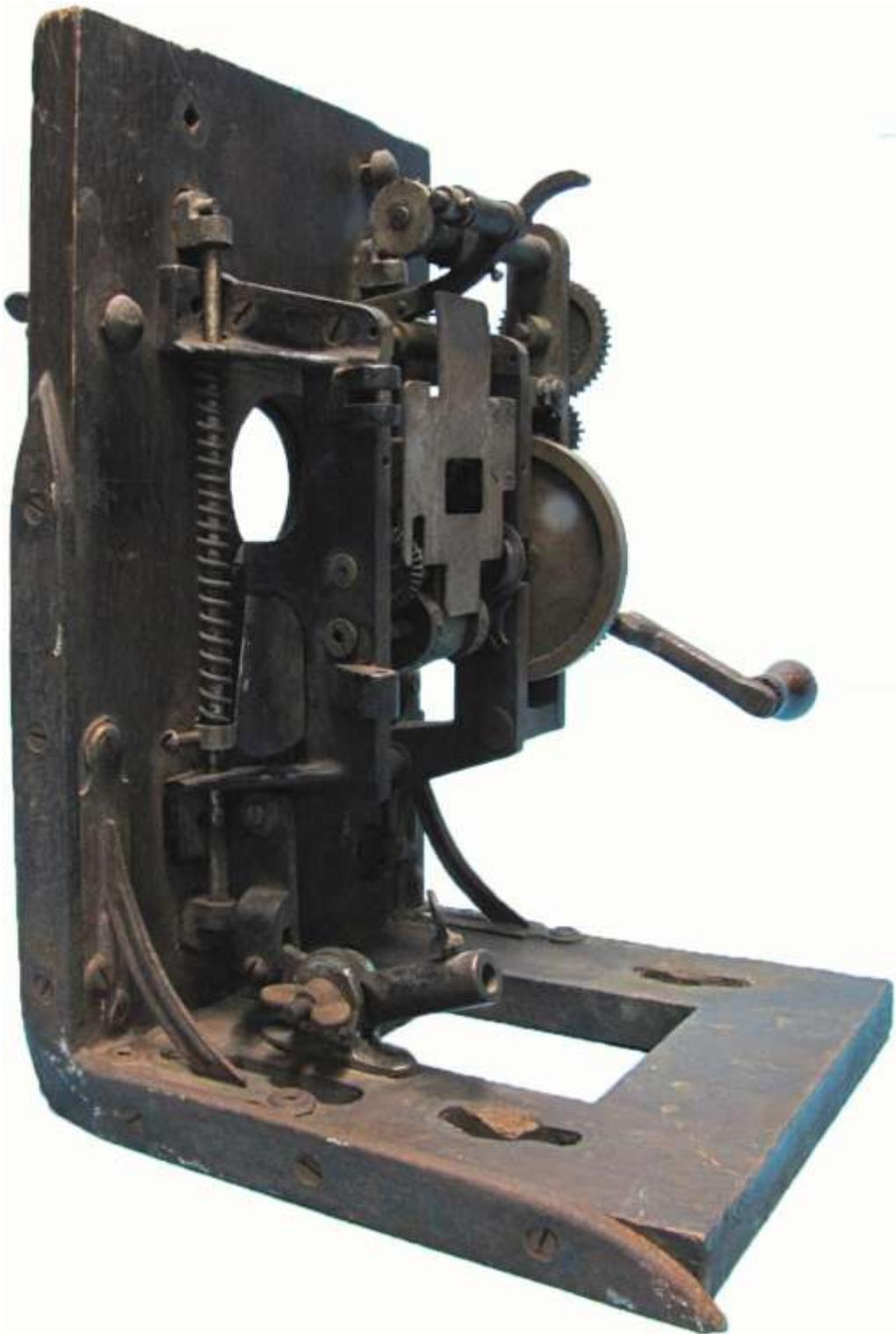
Possibly a later version of Cameragraph No. 1, the chain drive has been replaced with a gear drive Soterios Gardiakos collection

POWER'S MODIFIED KINETOSCOPES



New Gear mechanism installed by Nicholas Power

POWER'S MODIFIED KINETOSCOPES



Possibly a later version of Cameragraph No. 1, the chain drive has been replaced with a gear drive
Soterios Gardiakos collection

POWER'S MODIFIED KINETOSCOPES



Possibly a later version of Cameragraph No. 1, the chain drive has been replaced with a gear drive, The Edison name plate was probably on the original machine and for sentimental reason was attached to the now new modified projector
Soterios Gardiakos collection

POWER'S MODIFIED KINETOSCOPES



New Gear mechanism
Soterios Gardiakos collection

POWER'S MODIFIED KINETOSCOPES



New film shield or film guide
Soterios Gardiakos collection

POWER'S MODIFIED KINETOSCOPES



New framer mechanism added to the Spoolbank Kinetoscope No. 10
Soterios Gardiakos collection

POWER'S MODIFIED KINETOSCOPES



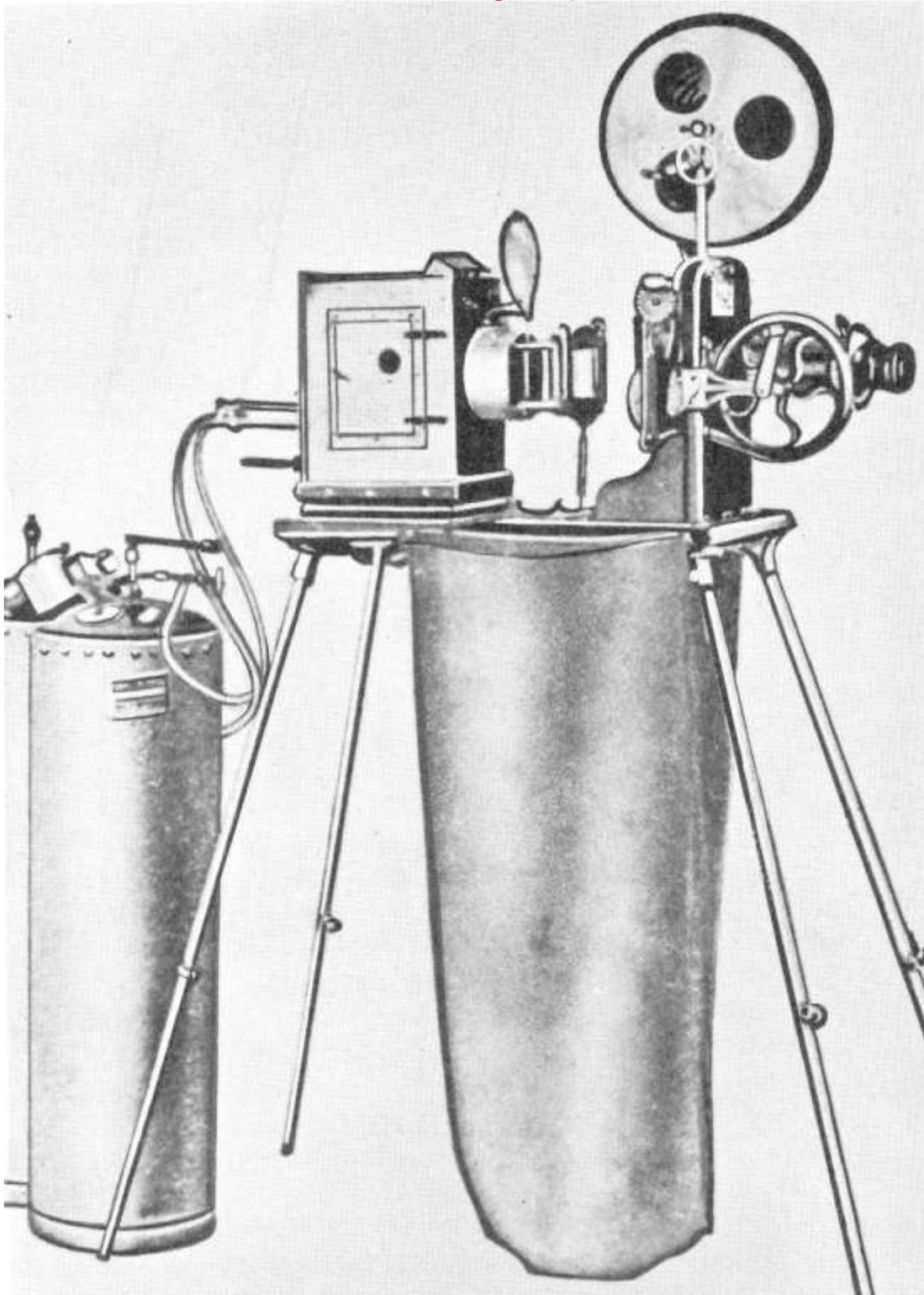
Above Bracket for mounting film gate , below new film gate, added to the
Spoolbank Kinetoscope No. 10
Soterios Gardiakos collection

**Power's
PEERLESCOPE
PROJECTOR
1899**

Known Specimens

No machines known to exist

Power's Peerlescope Projector



“Power's Peerless or Peerlescope Projector made by Nicholas Power in 1897 in New York City

CAMERAGRAPH 1

1899-1900

Known Specimens

No machines known to exist

Cameragraph No. 1

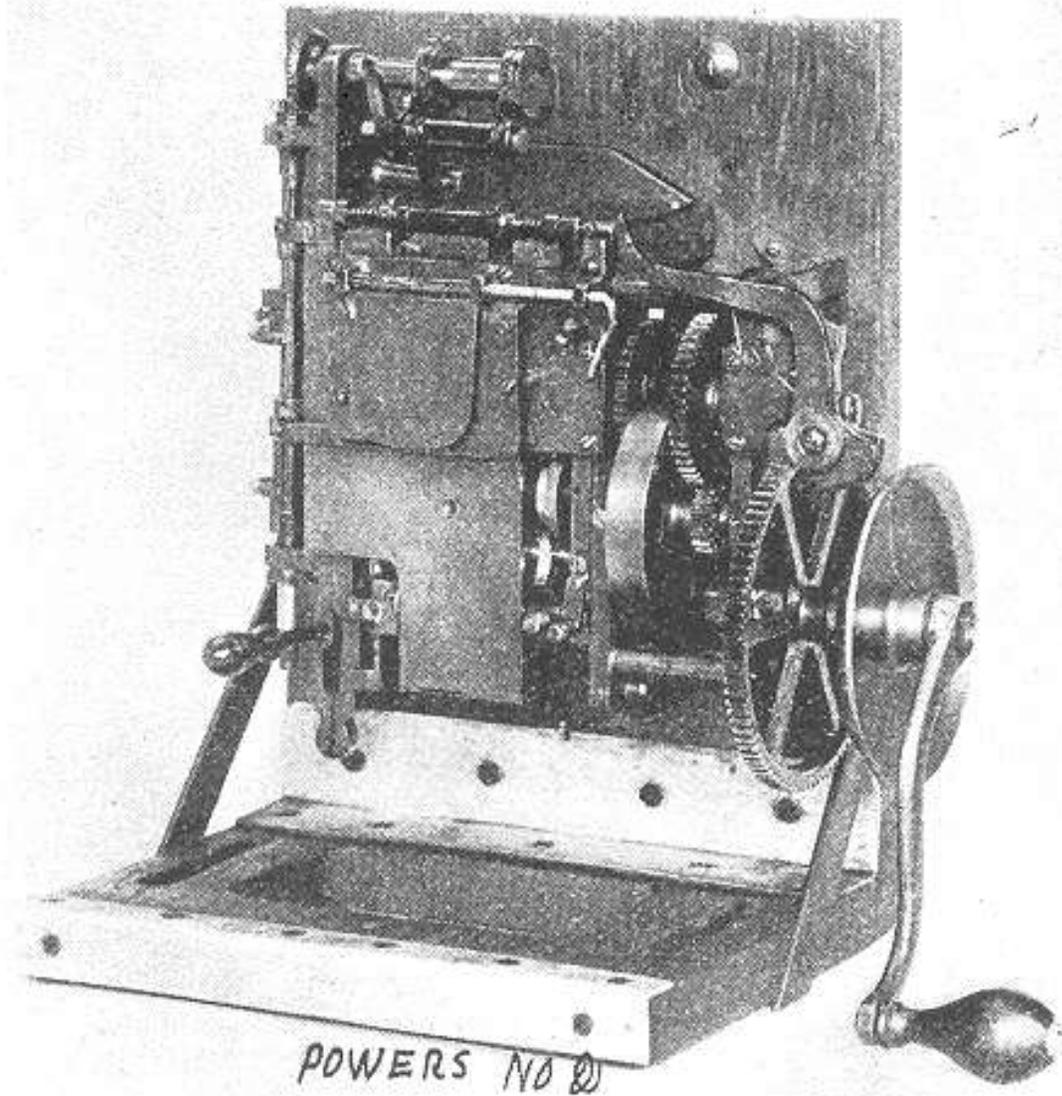


FIG. 12. The Power's No. 2.

I believe Richardson has mislabeled this machine
I am tentatively calling it Cameragraph No. 1
Raymond Fielding, *A TECHNOLOGICAL HISTORY OF MOTION PICTURES...* p. 33

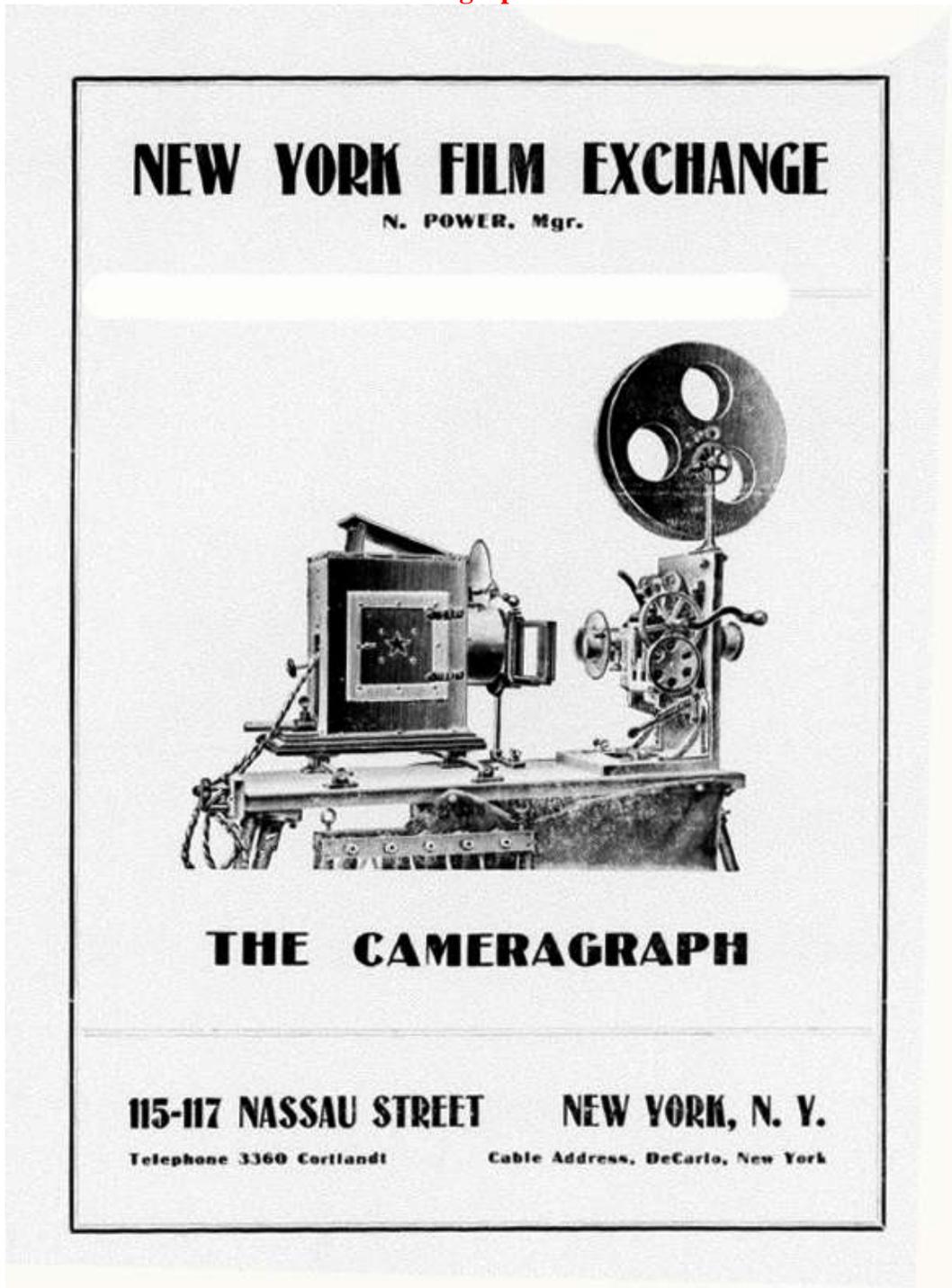
CAMERAGRAPH 2

1901

Known Specimens

No machines known to exist

Cameragraph No. 2



Attribution is assumed to be a Cameragraph No. 2?, Undated brochure

Both this machine and the one in the previous page are supposedly Cameragraph No. 2 but as is clearly shown they are indeed two different machines. Perhaps we will never know how to classify these two machines

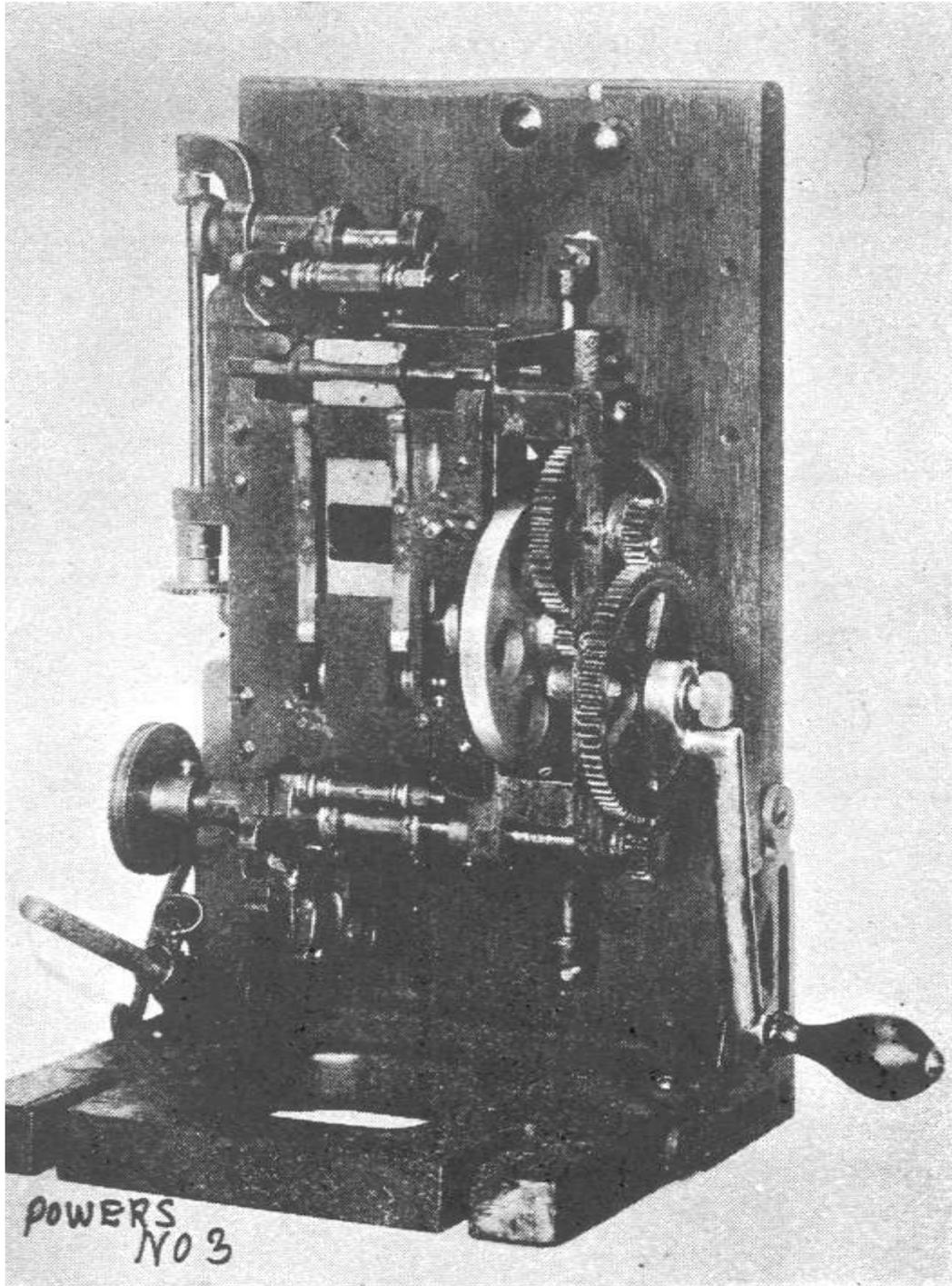
CAMERAGRAPH 3

1902

Known Specimens

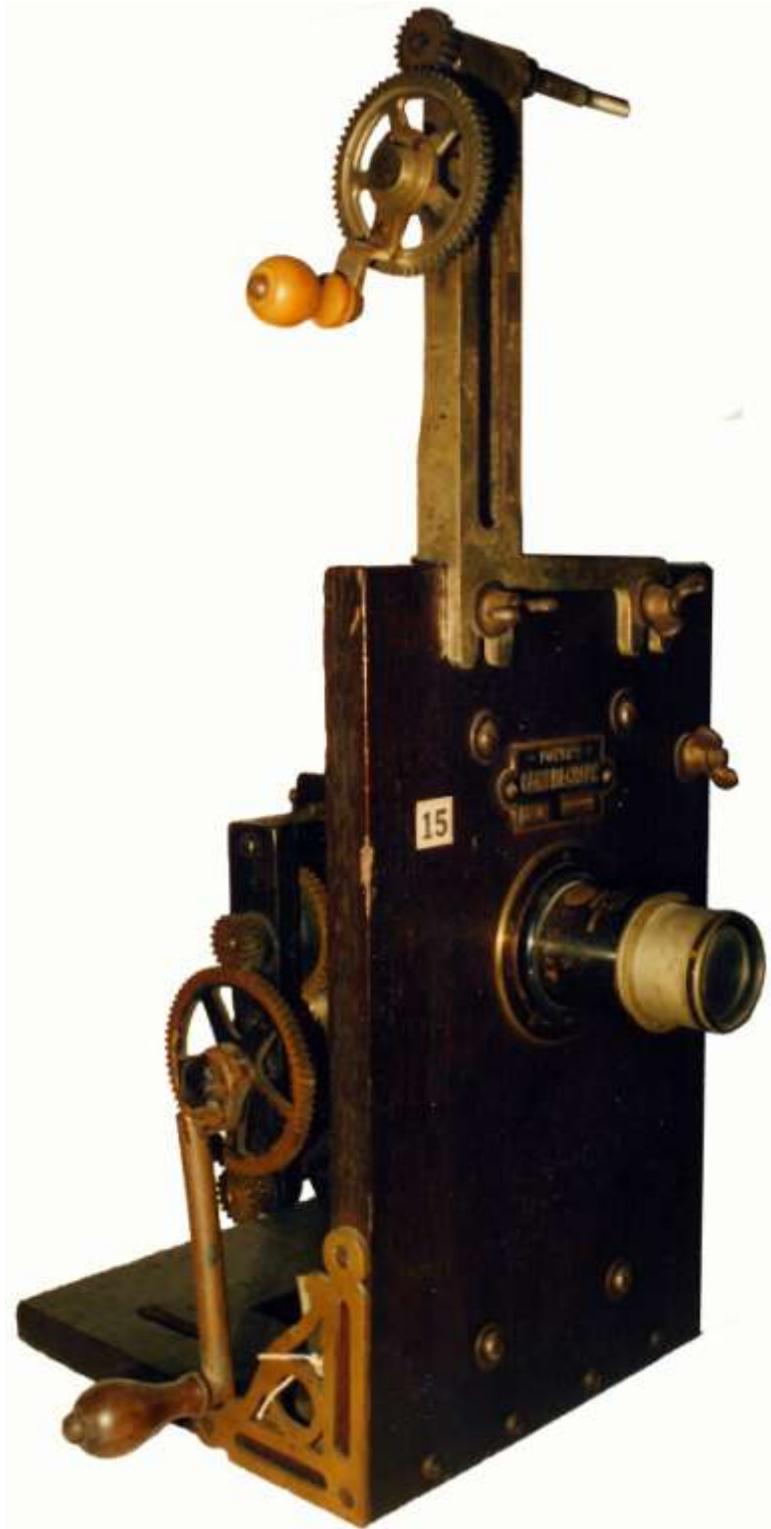
Tom Wilson. Clarksville Ohio
Carey Williams, Chicago, Illinois
Cliff Anderson, Texas

Cameragraph No. 3



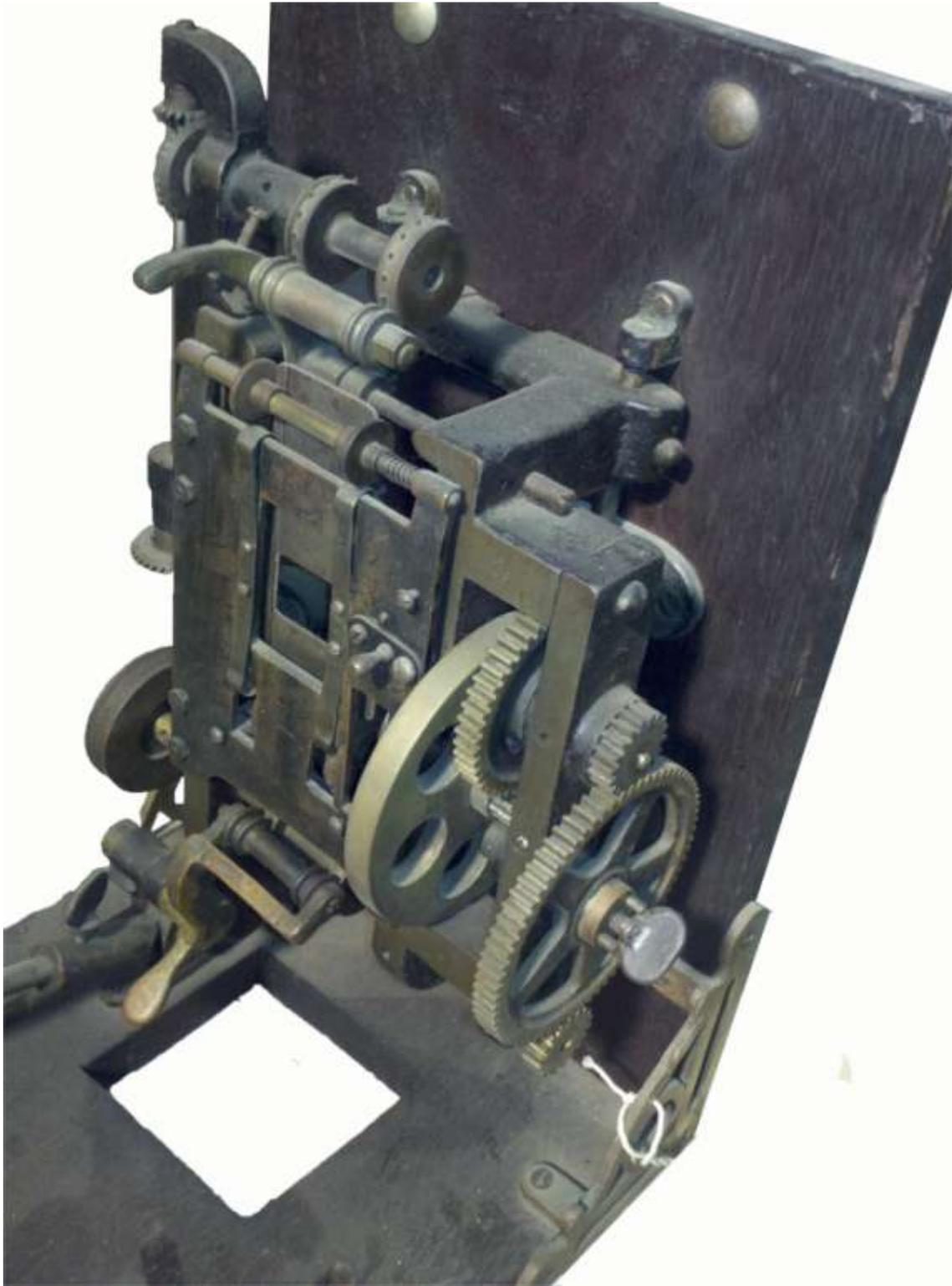
Raymond Fielding, *A TECHNOLOGICAL HISTORY OF MOTION PICTURES...* p. 33.
Cliff Anderson, Texas

Cameragraph No. 3



Cameragraph No. 3, serial number 18, Carey Williams collection

Cameragraph No. 3



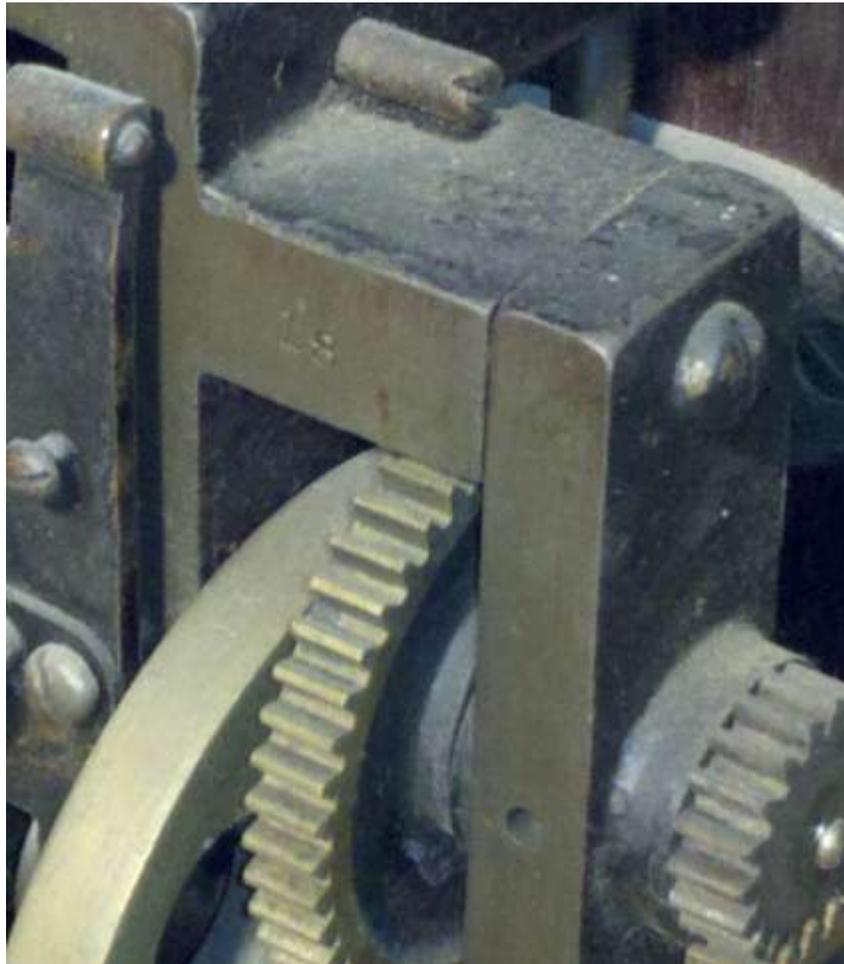
Cameragraph No. 3, serial number 18, Carey Williams collection

Cameragraph No. 3



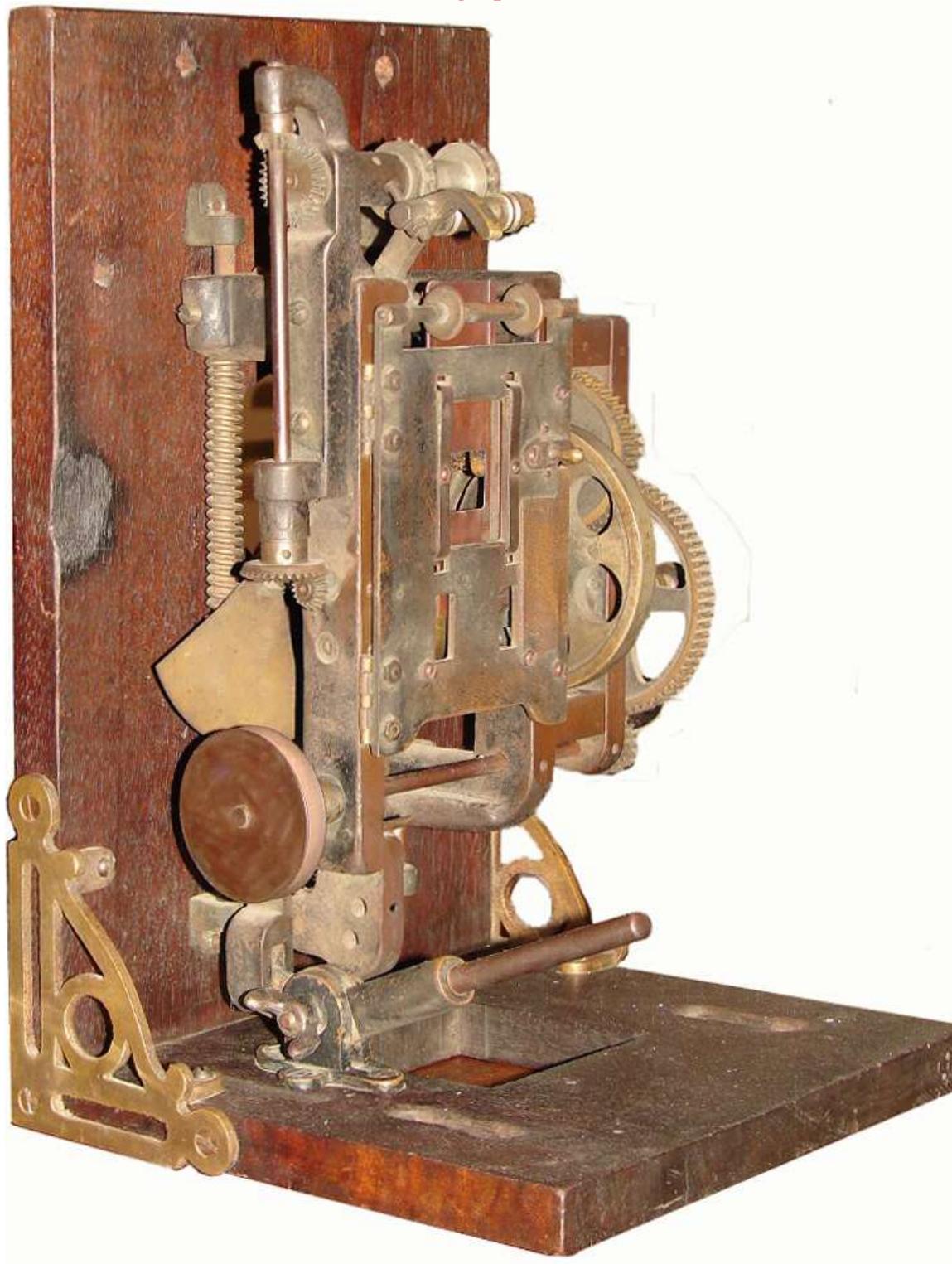
Cameragraph No. 3, serial number 18, Carey Williams collection

Cameragraph No. 3



Upper photo Cameragraph No 3,
Lower photo Serial number 18
Carey Williams collection

Cameragraph No. 3



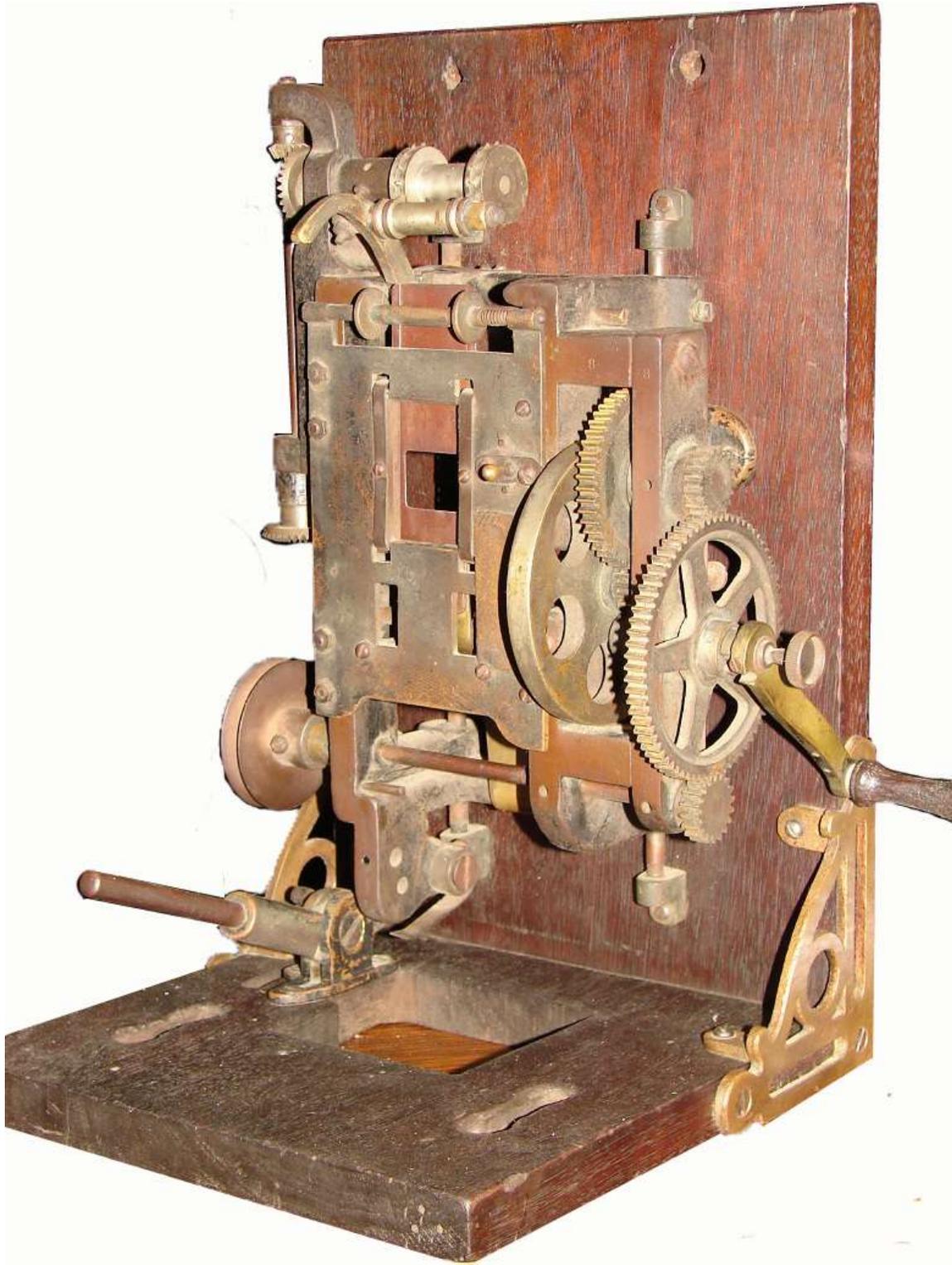
Cameragraph No. 3, Serial Number 8, Tom Wilson collection

Cameragraph No. 3



Cameragraph No. 3, Serial Number 8, Tom Wilson collection

Cameragraph No. 3



Cameragraph No. 3, Serial Number 8, Tom Wilson collection

Cameragraph No. 3

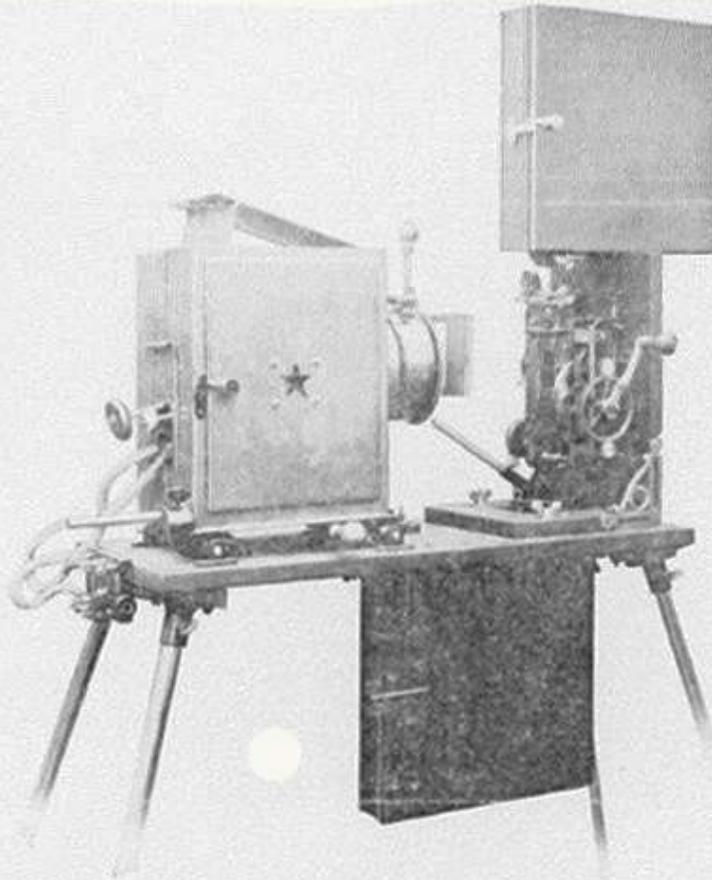


Cameragraph No. 3, Serial Number 8, Tom Wilson collection

Cameragraph No. 3

NEW YORK FILM EXCHANGE

N. POWER, Mgr.



POWER'S "TRIUMPH" FIREPROOF MAGAZINE

115-117 NASSAU STREET NEW YORK, N. Y.

Telephone 3360 Cortlandt

Cable Address, Decarto, New York

Attribution is assumed to be a Cameragraph No. 3, Undated catalog,

CAMERAGRAPH 4

1905

Known Specimens

Cliff Anderson, San Antonio, Texas,

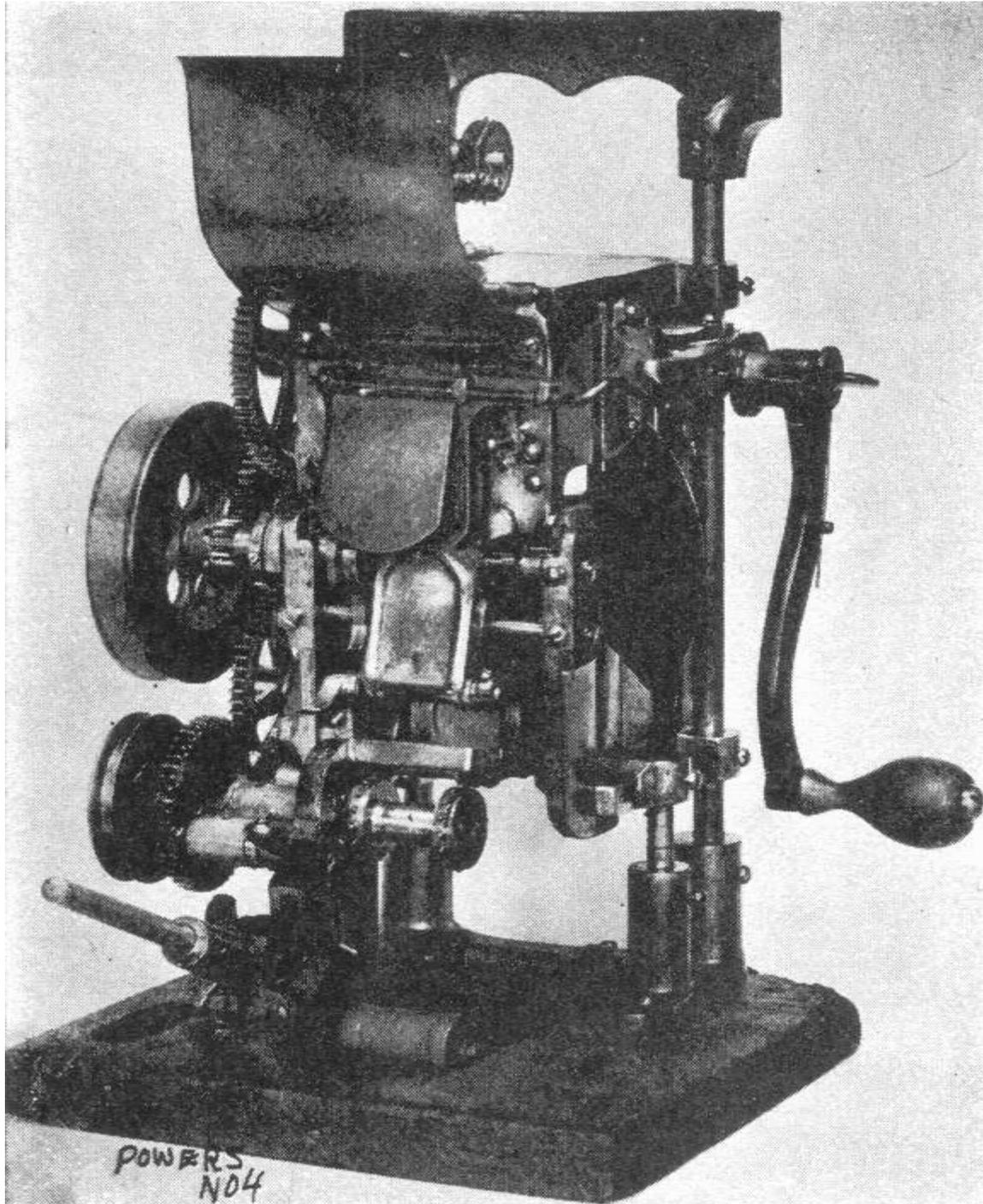
Carey Williams, Chicago, Illinois

Tom Wilson, Clarksville, Ohio

Konrad Schieke, Mount Prospect, Illinois

Hollywood Heritage museum, Hollywood, Ca.

Cameragraph No. 4

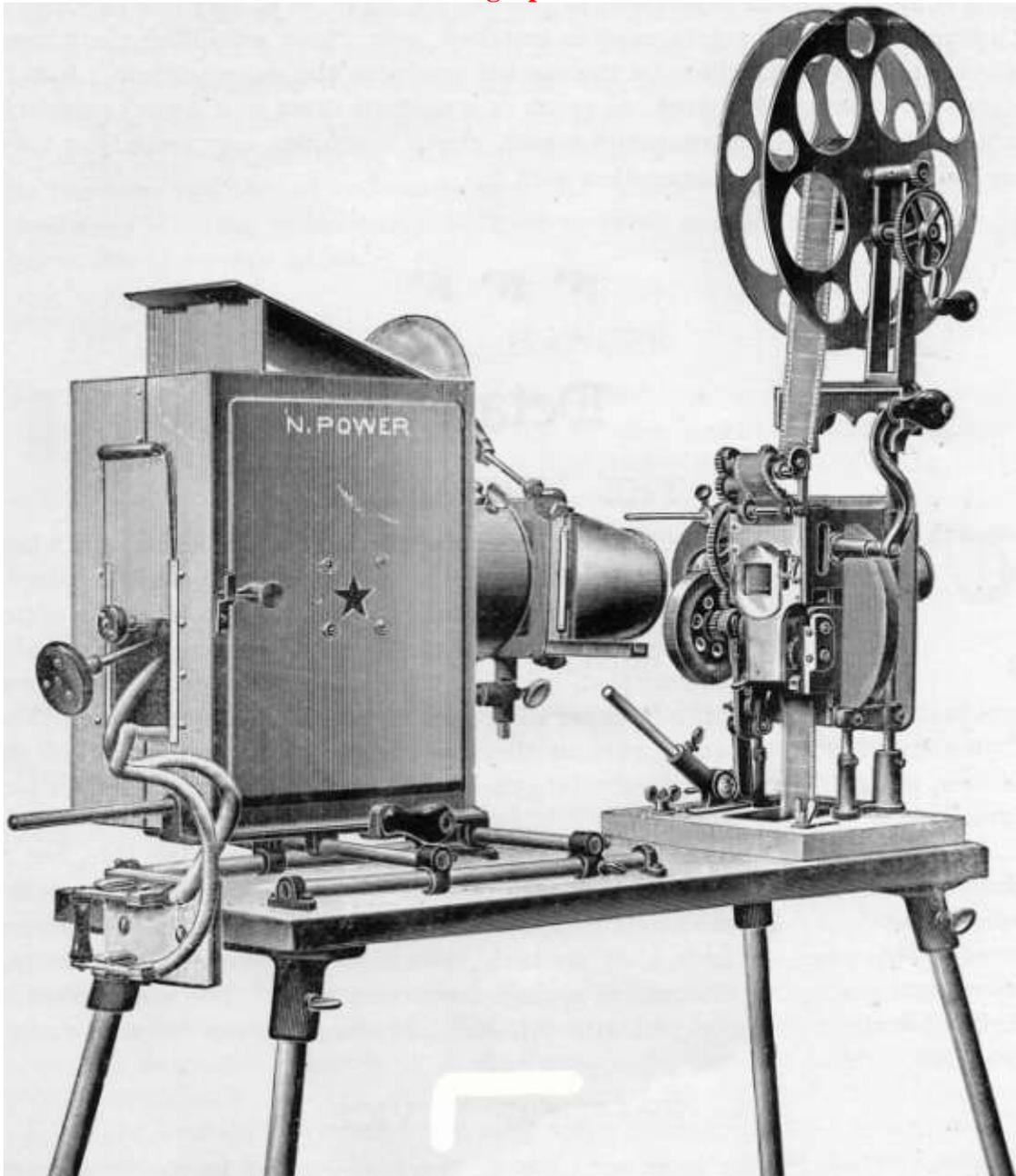


Cameragraph No. 4



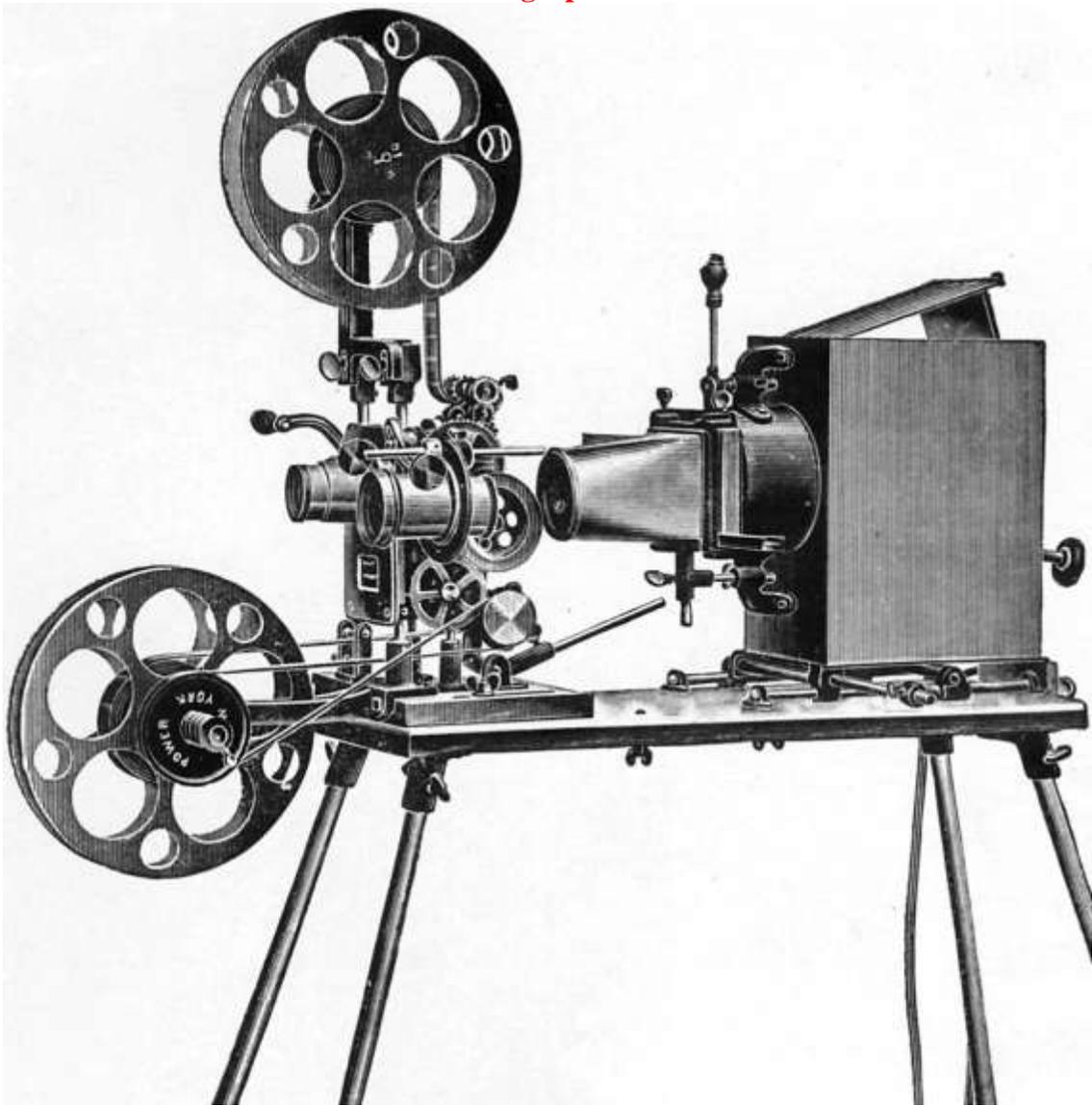
Cameragraph 4, Tom Wilson Collection
Cliff Anderson, Texas, Carey Williams, Konrad, and a guy in California

Cameragraph No. 4



Cameragraph No. 4, 1905 catalog
Courtesy Tom Wilson

Cameragraph No. 4



Cameragraph No. 4, 1905 catalog
Courtesy Tom Wilson

CAMERAGRAPH 5

1906

Cameragraph No. 5

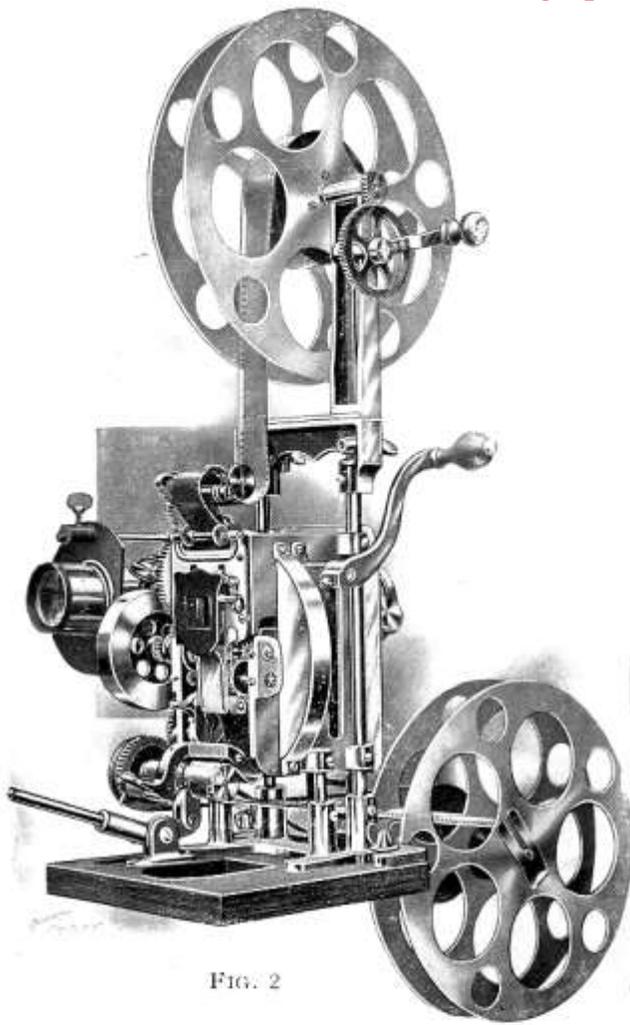


FIG. 2

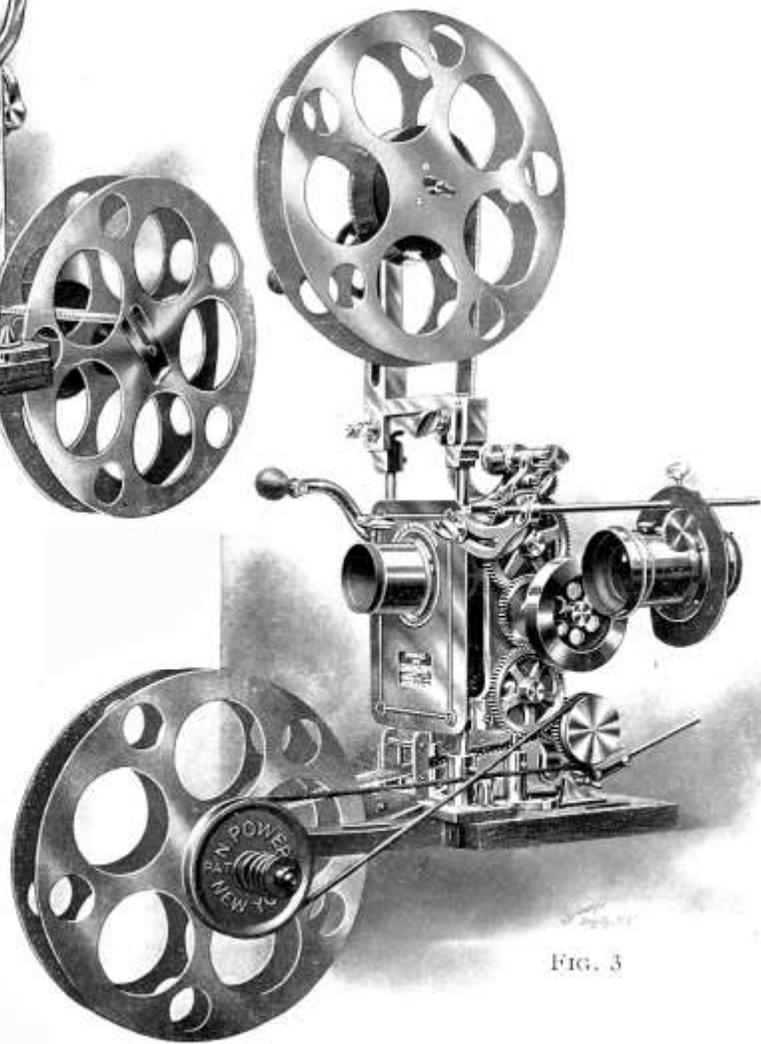


FIG. 3

POWER'S CAMERAGRAPH No. 5 CATALOG, New York 1908, Fig. 2 & 3, pg. 6 & 7.

Cameragraph No. 5

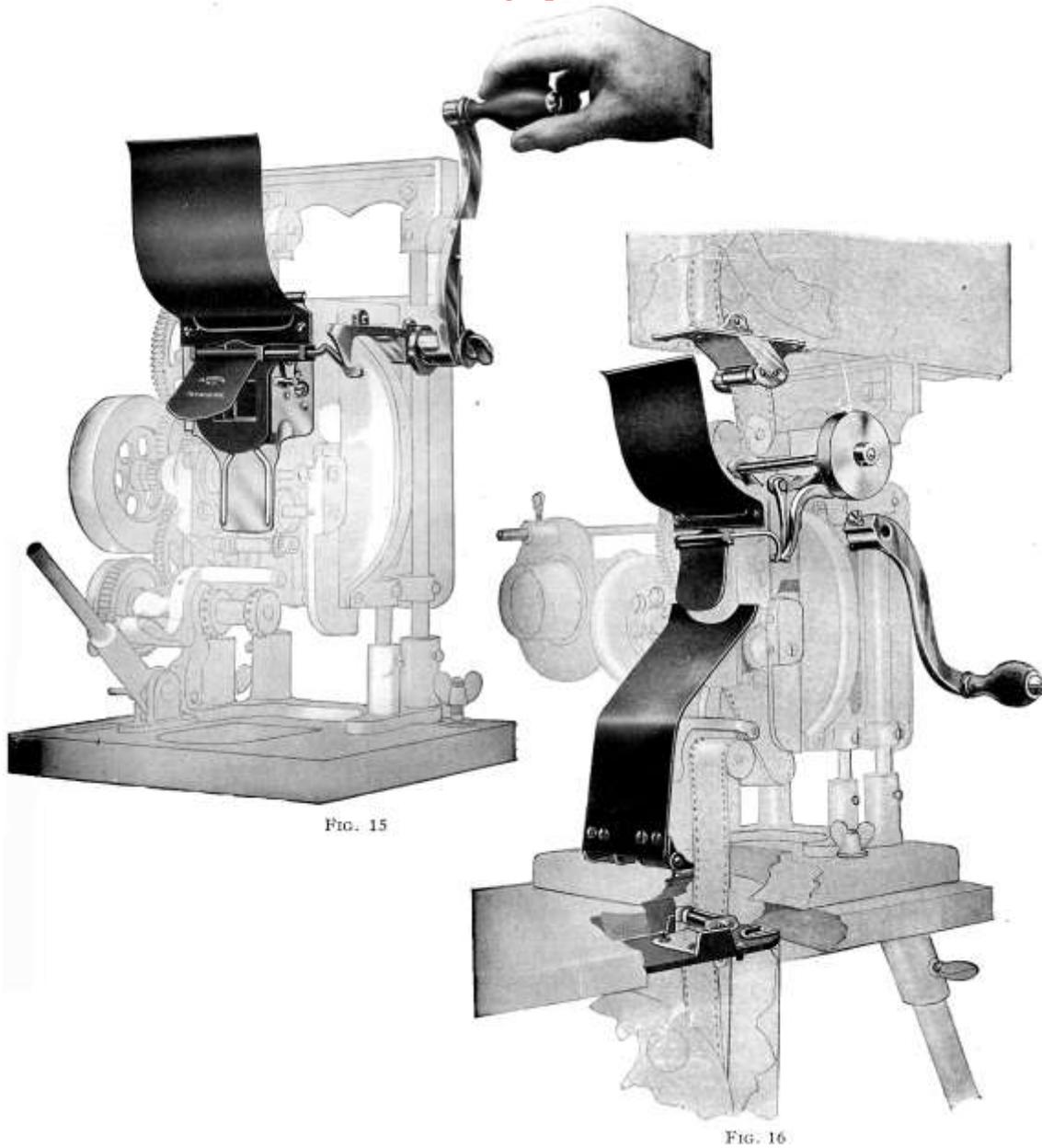
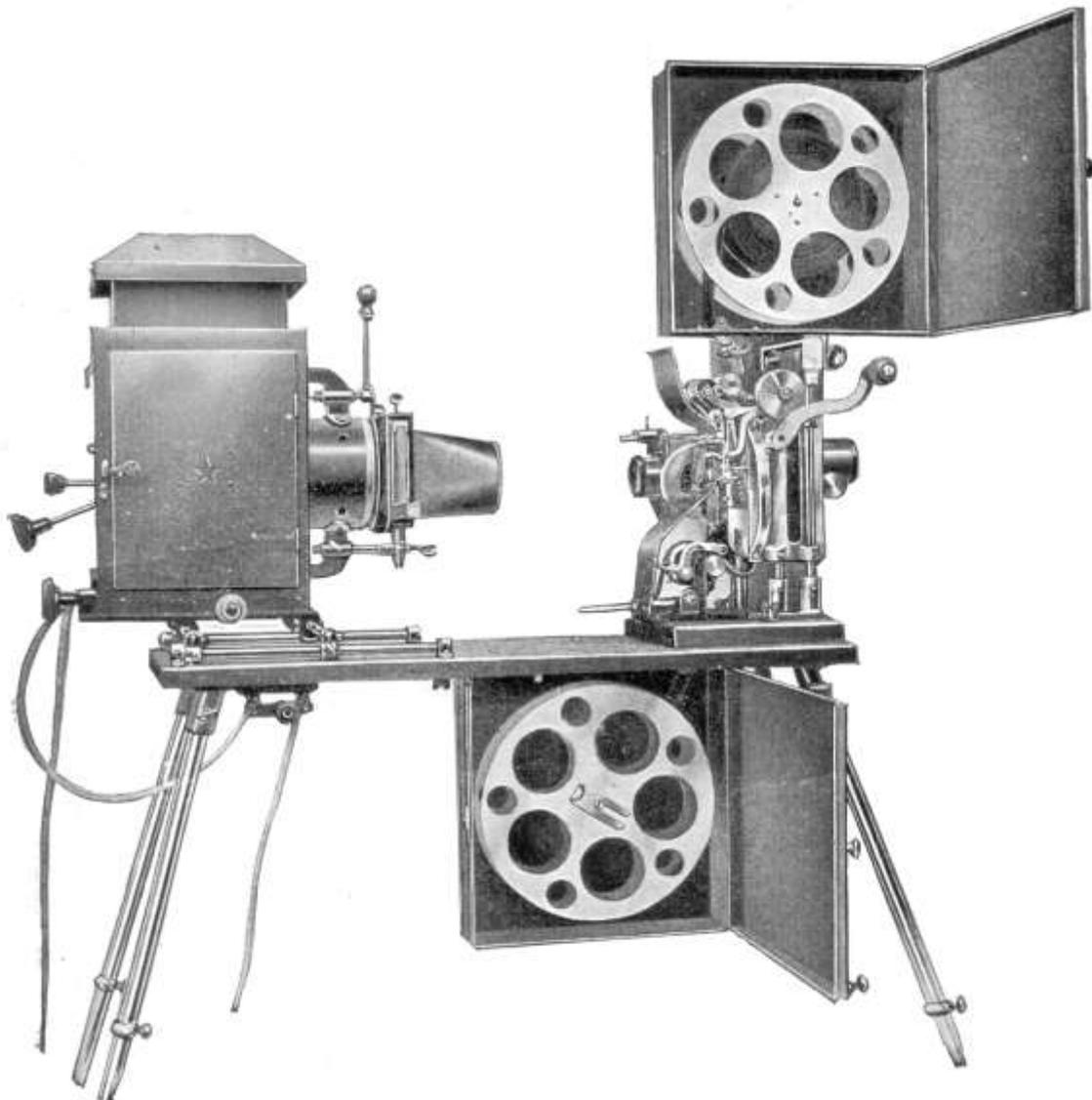


Fig. 15: Style "A" Automatic Fire Shutter, With Upper Film Shields.

Fig. 16: Style "B" Automatic Fire Shutter, With Upper and Lower Film Shields.

POWER'S CAMERAGRAPH No. 5 CATALOG,
New York 1908, Fig. 15 & 16, pg. 20 & 22.

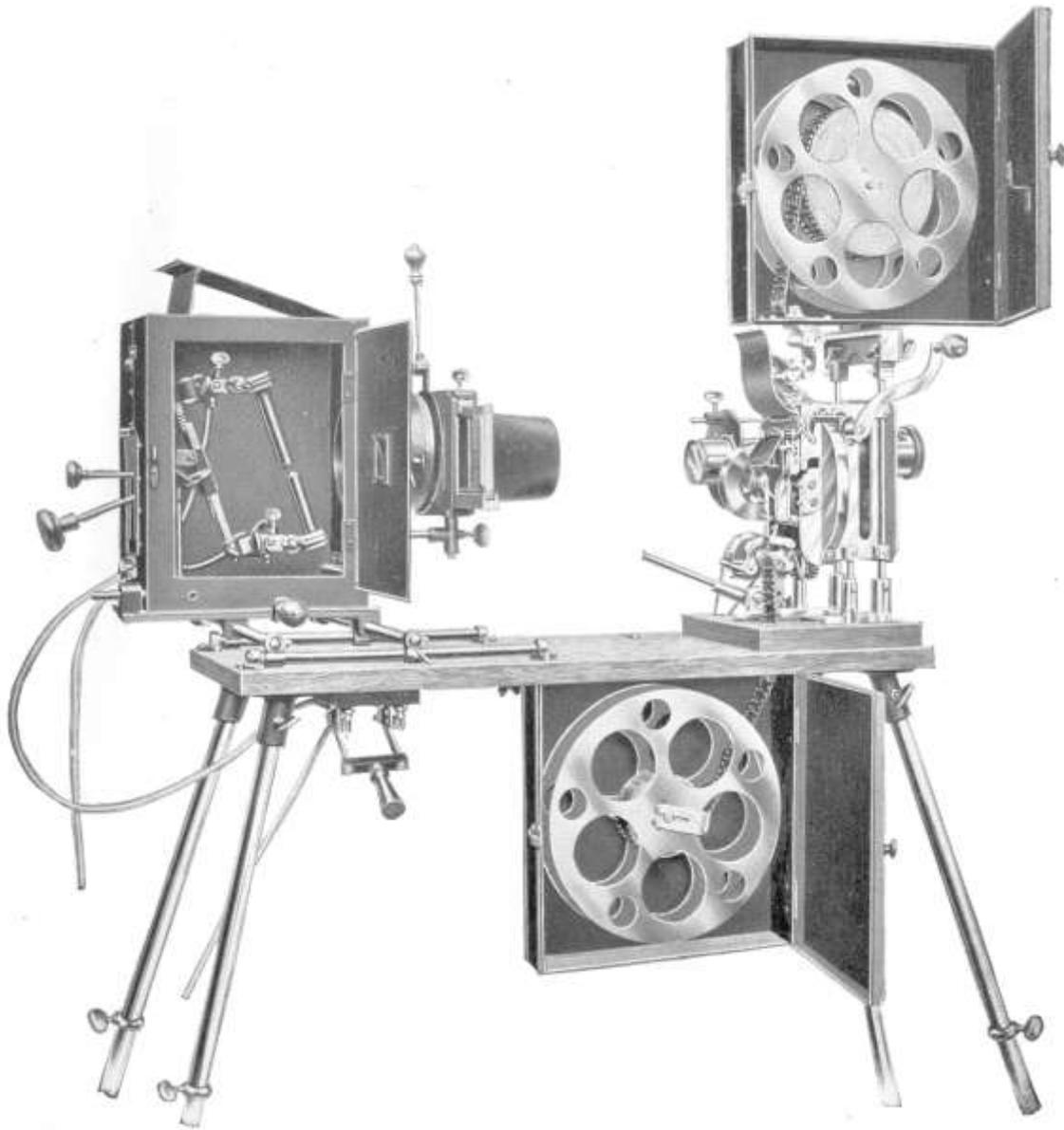
Cameragraph No. 5



Power's Cameragraph "New York Approved" Equipment.
With Style "B" Automatic Fire Shutter and Lower Film Shields.

POWER'S CAMERAGRAPH No. 5 CATALOG,
New York 1908, Fig. 17, page 24.

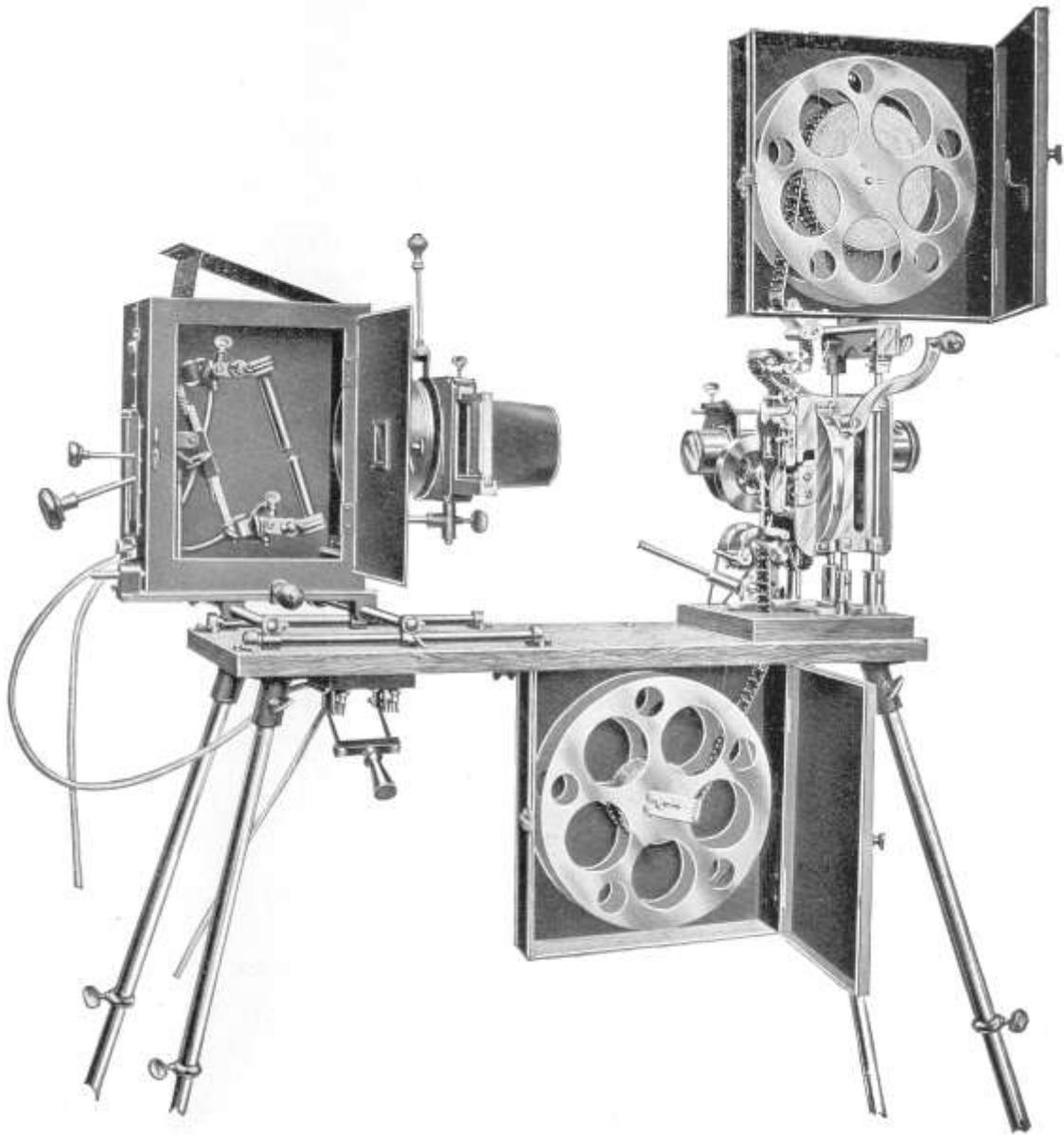
Cameragraph No. 5



Power's Cameragraph "Standard Underwriters" Equipment.
With Style "A" Automatic Fire Shutter and Upper Film Shields.

POWER'S CAMERAGRAPH No. 5 CATALOG,
New York 1908, Fig. 18 page 26.

Cameragraph No. 5



Power's Cameragraph Regular Equipment.
With Automatic Fire Shutter or Film Shields.

POWER'S CAMERAGRAPH No. 5 CATALOG,
New York 1908, Fig. 19, pg. 28.

CAMERAGRAPH 6

Cameragraph No. 6

**The Proof of the pudding is the Eating.
The Test of a Machine's Popularity is the Sales.**



DIARY OF EVENTS

NEW YEAR.

Jan. 1st—

S.S. Minivosky arrived in London Docks with 60 Power Cameragraphs No. 6, for Walturdaw.

Jan. 3rd—

60 Delivered to 40 Gerrard Street.

Jan 4th, 5th, 6th—

Exodus of Cameragraphs No. 6, from 40 Gerrard Street.
33 Machines Sent Out.

Jan. 8th, 9th, 10th—

Telegrams and Letters of satisfaction from the Buyers.

Jan. 11th and onwards—

Cameragraphs No. 6 Still Selling.
More on way from America.

We shall be pleased to see YOU.

WALTURDAW CO., LTD.,

LONDON:
40, Gerrard Street, W.

Phone—4291 Gerrard, 1260 Hble.
Wire—"Albertson, London."

CARDIFF:
9, St. John's Square.

Phone—2080 Cardiff
Wire—"Walturdaw, Cardiff."

BIRMINGHAM:
192, Corporation Street.

Phone—6123 Central
Wire—"Albertson, Birmingham."

Cameragraph No. 6
Power's Cameragraph No. 6
Complete Equipment

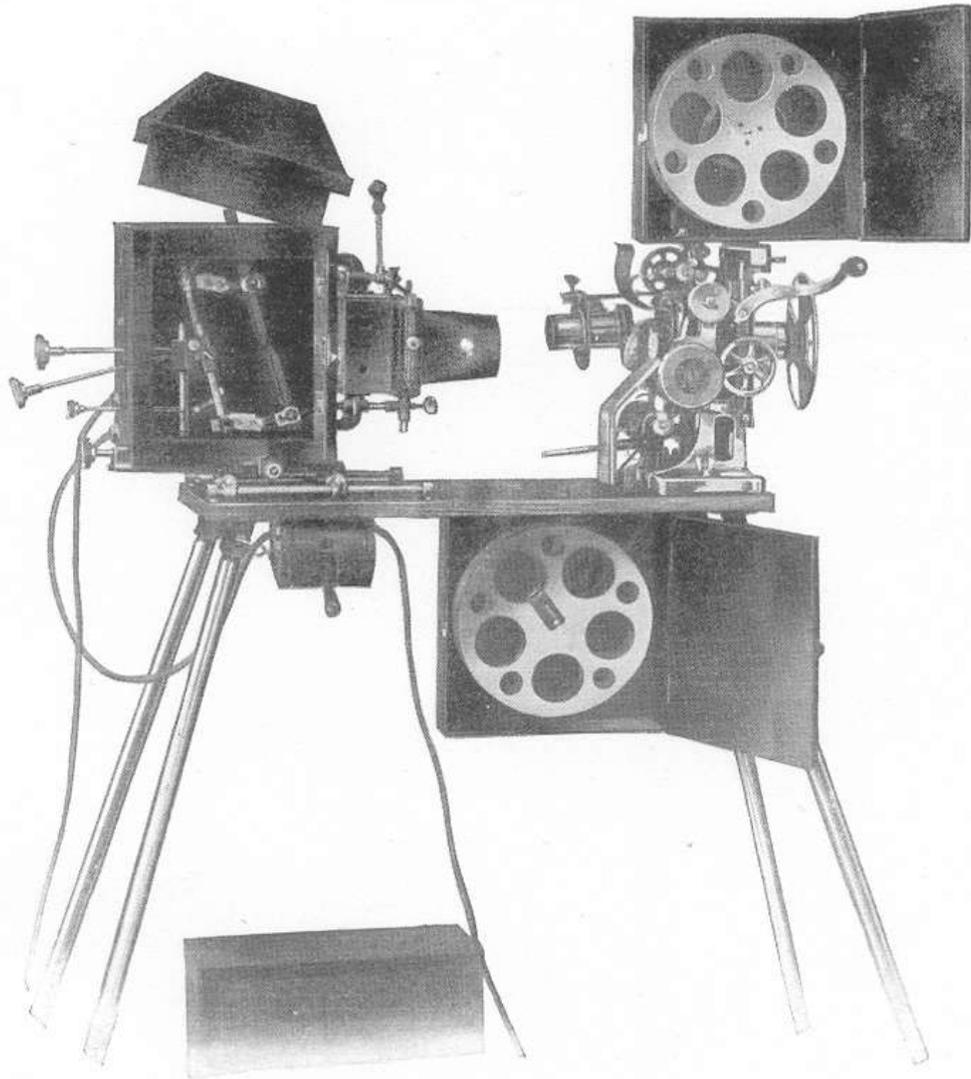


Fig. 8

Power's Cameragraph No. 6
Complete equipment

Cameragraph No. 6

No. 6 Cameragraph Mechanism

Front View Showing Three Wing Shutter and Stereopticon Attachment.

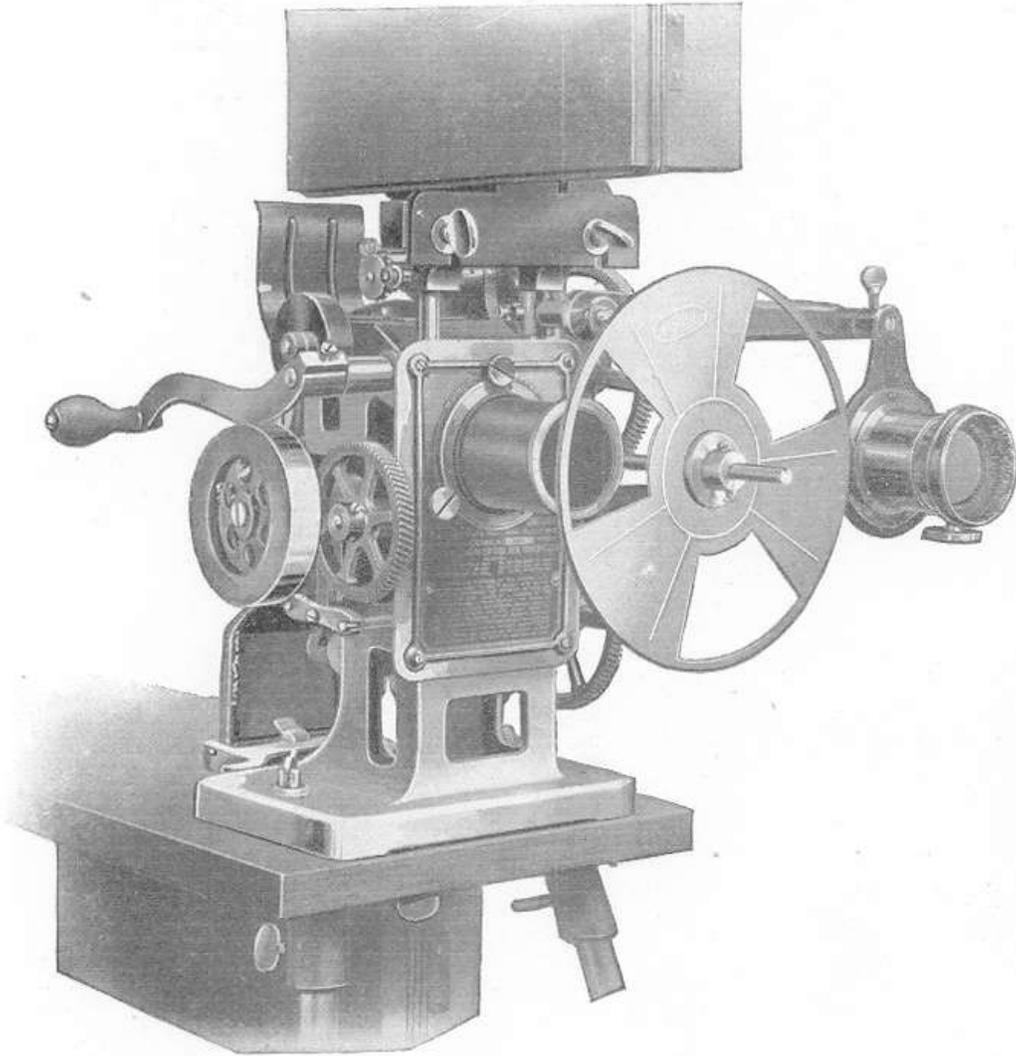


Fig. 1

No. 6 Cameragraph Mechanism

Front view showing three wing shutter and stereopticon attachment

CAMERAGRAPH 6A

Cameragraph No. 6A

Power's Cameragraph No. 6A

Complete Equipment with Motor and Mechanical Speed Control.

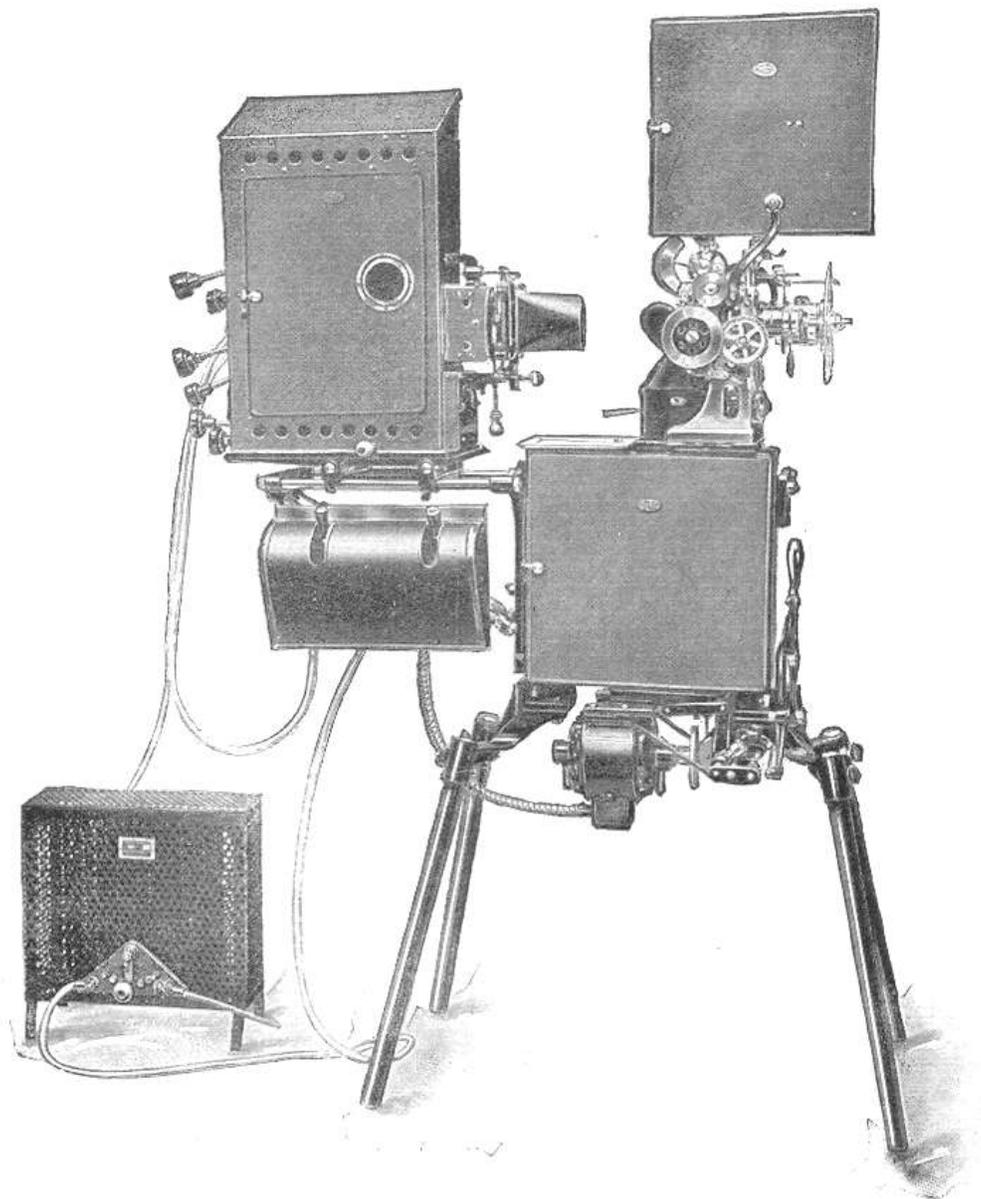


Fig. 2

Power's Cameragraph No. 6A

Complete equipment with motor and mechanical speed control

Inventions New and Interesting

Simple Patent Law : Patent Office News : Notes on Trademarks

A Remarkable Intermittent Mechanism for Motion Picture Projectors

By W. B. Weston

IN the production of motion pictures advantage is taken of the characteristic of the eye known as the persistence of vision. There is no actual motion of the rays of light forming the picture on the screen at all. Indeed, it may be said that to obtain perfect motion in the picture the film must be held perfectly still.

The motion picture film consists of a series of successively taken photographs of such small size that on a reel of standard length there are approximately 10,000 pictures, each differing from its predecessor by so small a difference that it is difficult to measure and quite impossible to observe by mere comparison.

By the operation of the motion picture machine the film strip is fed intermittently across the path of light of the arc lamp in such manner that each picture is brought to rest in the focal plane of the projecting lens, while the light from the lamp is cut off from the screen by the shutter of the machine and is maintained at rest for a definite period in which the shutter, usually a continuously rotating blade, uncovers the lens, makes its revolution, and again intercepts the light during the interval in which the film is advanced to bring the next picture into place.

The smoothness and exactness of operation of the intermittent gearing which drives the film feed directly determines the quality of the projection, as the "definition" of the picture depends chiefly on the exactness with which each picture is registered with the position of the preceding picture. An inequality of less than 1/10,000 of an inch in the engaging parts of the intermittent gearing can be distinguished in the appearance of the picture on the screen.

Not only must the intermittent be absolutely exact, but the experience of the first inventors in this field demonstrated the desirability of having the period of illumination as long as possible and the period of movement of the film as brief as can be obtained within the limits imposed by the fragile nature of the film and the speed of operation.

Prior to the invention by Mr. Nicholas Power of the recently patented intermittent gear forming the subject of this article, the greatest relative period of rest was three times the duration of the period of motion obtained with the well-known 4-slot Geneva gear (Fig. 1).

The next Geneva gear in ratio of rest to movement is the 5-slot Geneva gear. This gear, shown in Fig. 2, gives a period of rest four times as long as the period of motion, the total movement of the film taking place in one-fifth of the time of complete revolution of the driving member. Hence, as pictures are exhibited sixteen to the second, the entire period of movement for each picture must be completed in 1/80 of a second.

Experience demonstrated that neither the film nor the machine would stand up with this movement, and as there is no Geneva between the 4-slot and 5-slot, it was believed that with the 4-slot movement the final development had been reached and for a number of years prior to the production of the Power movement, it was the intermittent movement of all commercial machines.

Mr. Power's first idea in developing the new intermittent was not so much to improve the Geneva gear as a type, but to produce a gear which would have a ratio between the two Geneva gears, and thereby obtain a greater period of rest of the film than the 4-slot Geneva without the destructive action of the 5-slot gear. The final result, however, of his study and experiment far exceeded his expectations; for in his latest model he has produced a gearing which has a longer period of rest than the 5-slot Geneva, and which nevertheless actually produces less wear on the film and less vibration of the machine than the 4-slot Geneva.

This form of gearing is shown in Figs. 3 and 4, and comprises a rotating driving member having a locking ring or flange extending throughout the greater portion of its circumference with a diamond-shaped driving cam in the gap intermediate the ends of the locking ring. The driven member, known to the trade as the "pin cross," comprises a 4-arms cross, each arm being provided with a pin to be engaged by the driving cam and locking ring. Each part is formed from a single block of drop forged tool steel to insure durability and reduce wear to a minimum.

The operation of the gear is shown graphically in

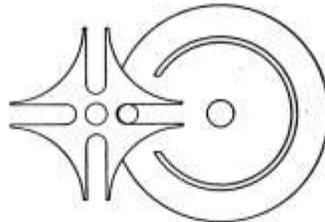


Fig. 1.—The standard four-slot Geneva movement of motion picture projectors.

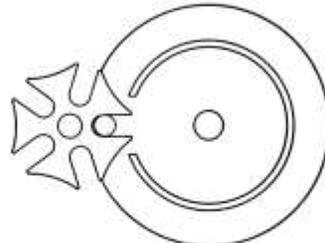


Fig. 2.—The five-slot Geneva gear, which gives a motion picture film a period of rest four times as long as the period of motion.

Figs. 3 and 4.—The new Nicholas Power intermittent movement for motion picture projectors.

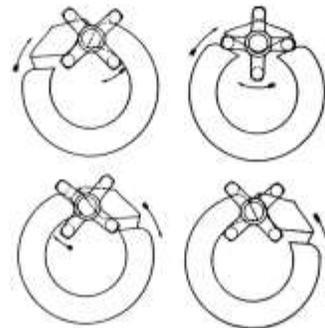


Fig. 5.—Successive positions of the parts in a complete movement of the Power intermittent motion.

Fig. 5, which shows different successive positions of the parts in a complete movement. In locking position all four pins of the cross engage the locking ring, two on each side as shown at position 1 of Fig. 5. As the diamond-shaped cam starts to pass between the pins of the cross the outer pin is engaged by the slightly curved outer face of the diamond, which produces the initial rotation of the pin-cross and causes the pins on each side of the pin to be engaged by the diamond into the slots between the driving cam and the locking ring as shown at position 2. The cam action of the inclined slots on the pins continues the movement of the pin cross through the various stages illustrated, giving the driven member of the intermittent to which is attached the film feeding sprocket an exact quarter revolution, at which point the locking ring is again engaged by all four pins, thus holding the pin cross absolutely stationary during the period of rest of the film.

The movement of the pin cross takes place during an angular movement of approximately 70 degrees of the cam, thus giving a period of rest even greater than the 5-slot Geneva, and yet it has been proven by a very interesting demonstration given at the recent Motion Picture Exhibition at Grand Central Palace that the new movement produces much less wear on the film than the 4-slot Geneva of other machines with the 90 degree period of movement.

The reason for this superiority is that the new movement has been designed to give to the driven member an absolutely uniform acceleration in speed starting from its position of rest and an absolutely uniform retardation back to locking position, so that the driving power required is the same throughout the entire period of acceleration. In other words, the new gear utilizes the entire period of operation to the maximum degree, whereas the Geneva gear, which has a slow rate of acceleration at the start of the movement and also at its period of greatest velocity, must make up for these periods of understrain, when the rate of acceleration is small, by an intermediate period of severe overstrain in order to accomplish its full movement in the allowed period of time. In designing the new gear Mr. Power has adapted to the rotative movement of the intermittent gear, the laws of movement of a freely falling body whose velocity increases uniformly in successive periods of time under the force of the weight of the body which, of course, remains constant during its entire downward movement.

In the projection of motion pictures the new Power intermittent accomplishes three notable results. Its longer period of rest allows a longer period of illumination of the screen with brighter pictures and greater definition as well as less consumption of lighting current. Its uniform action produces less vibration of the machine, increasing the steadiness of the picture to a marked degree. Finally, the important fact of its easy action on the comparatively fragile film extends its life and usefulness.

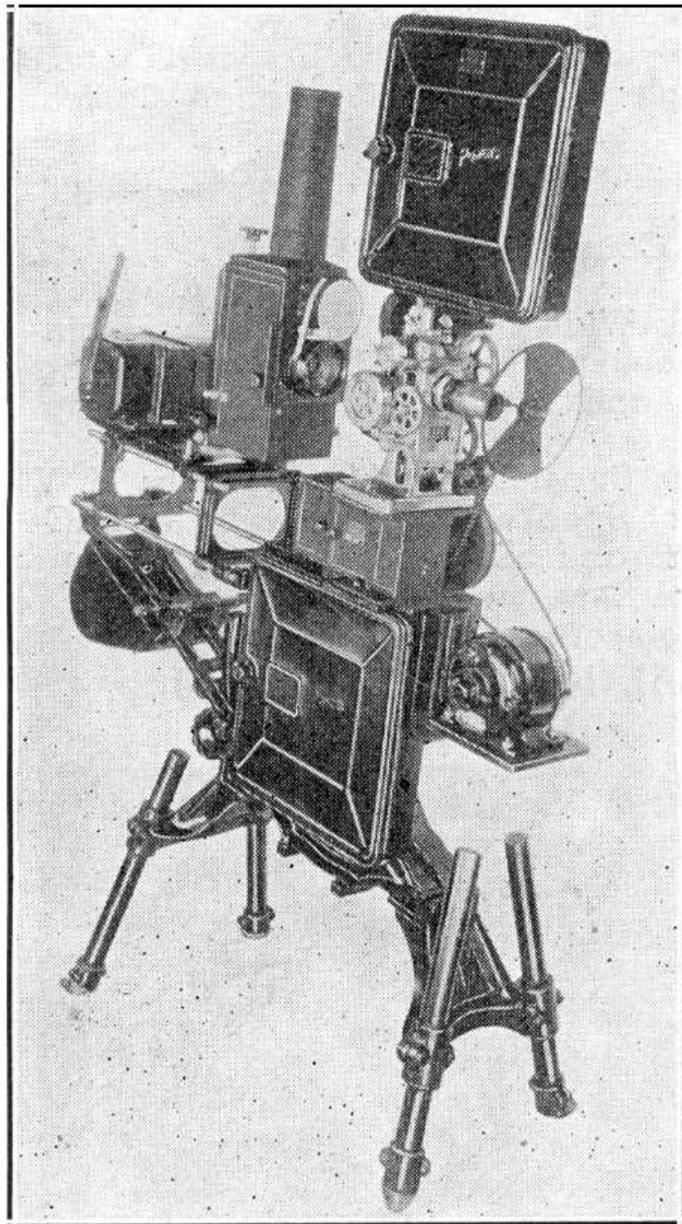
Readers of this article who wish a more detailed analysis of this remarkable mechanical movement and a curve comparison of the time relations in the standard and the new Power intermittent gears, are referred to the current issue of the SCIENTIFIC AMERICAN SUPPLEMENT, No. 2089.

A Long Delayed Application

THE Court of Appeals of the District of Columbia has had under consideration an ex-parte Patent Appeal in which probably a record case of time in the Patent Office is involved. The patent application, the subject of this appeal, was filed in the Patent Office in 1886. As one of the counsel suggested at the argument, the application was in the Patent Office a period equal to or in excess of the succeeding terms of two patents, the patent term being seventeen years, while the application has been in the Patent Office more than thirty-four years. Incidentally, there was raised the bearing upon the application of an expired patent, the application for which was filed subsequent to that of the application in question. It does not appear that there could be an interference, and the extent to which the patent could be held a constructive notice to the applicant is subject for argument. The present Commissioner's endeavor has been to avoid the delays in applications, and during the argument of the appeal in question counsel asserted that there had been consumed 50 per cent more time by the Patent Office in action on the merits than by the applicant in replying to the official objections, a rather unusual circumstance in delayed applications of this character.

CAMERAGRAPH 6B

Cameras 6B



*Powers 6B Projector with Heavy
Stand and G.E. Mazda Lamphouse*
World famous since 1905. for

Cameragraph 6B

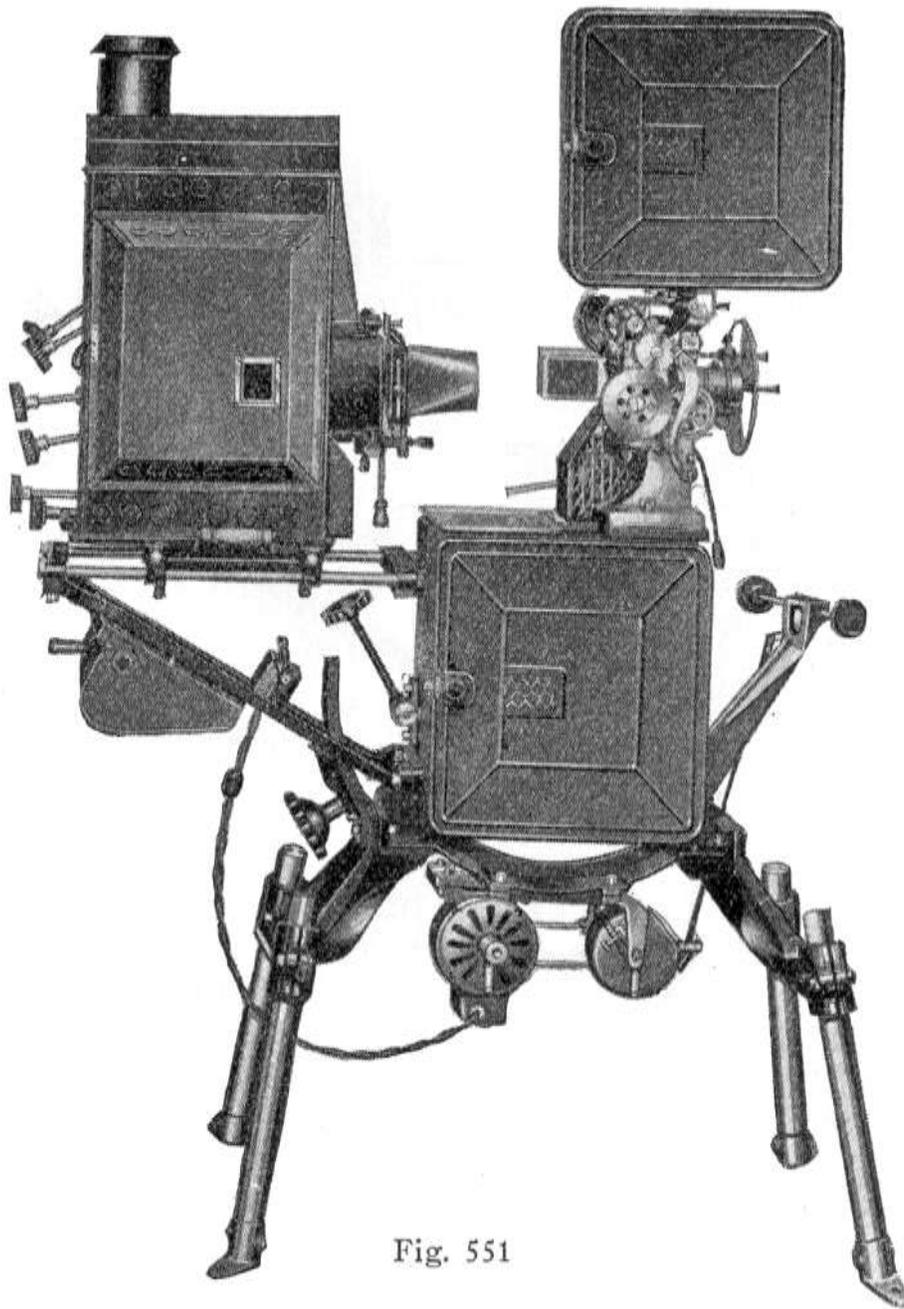


Fig. 551

James R. Cameron, *MOTION PICTURE PROJECTION*,
Manhattan Beach, NY 1928. Fig. 551, p. 932.

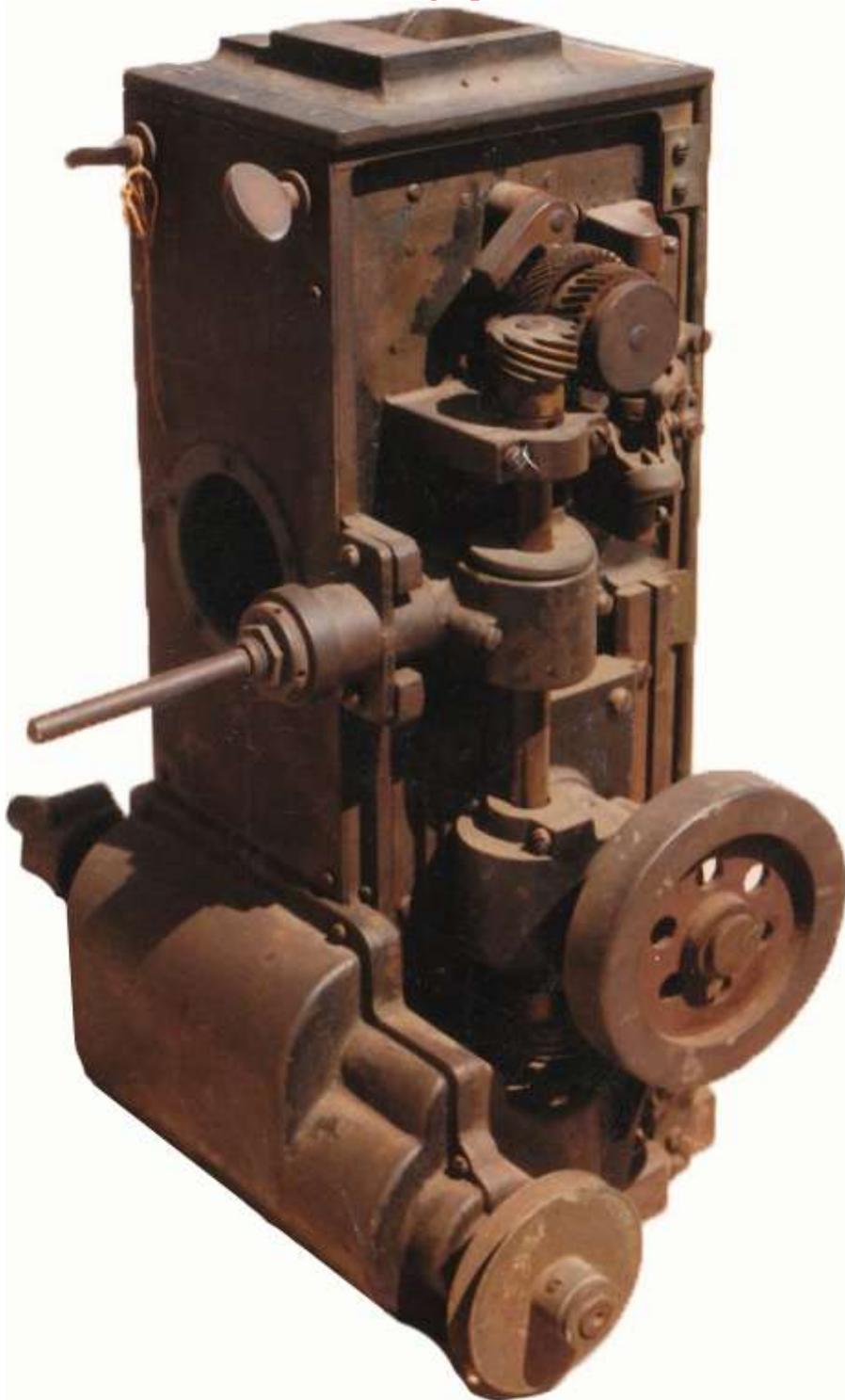
CAMERAGRAPH 7

Cameragraph 7



Cameragraph 7

Cameragraph 7



Cameragraph 7

BOOKS AND MONOGRAPHS WRITTEN BY SOTERIOS GARDIAKOS

February 7, 2013

15 Books Relating to Movie Machinery

Cinematic Machinery Collection of Soterios Gardiakos, 2002, ISBN 0-9777537-3-5, August 25, 2011, 227 pages

A Warwick (Baucus & Maguire Ltd.) spoolbank Projector ca 1897 In the Collection of Soterios Gardiakos, Photographs by Katerina Nike Gardiakos. 2001, ISBN 0-9777537-0-0, June 1, 2008 49 pages

Pre 1900 American Made Movie Projectors. 2002. ISBN 0-9777537-4-3, June 30, 2010, 143 pages

A Compilation of Greek made Movie Projectors and other Cinematic Equipment. From information provided to Soterios Gardiakos by Nikos Theodosiou. 2002.

ISBN 0-9777537-2-7, June 20, 2009, 60 pages

Kinematic Peephole Machines Using a Continuous Strip of Film or Paper, 2002

ISBN 0-9777537-5-1, June 22, 2010, 73 pages

LeRoy Projectors, An enigmatic pioneer in the quest to project motion pictures on the big screen. ISBN 0-9777537-7-8, July 17, 2008, 48 pages

Optigraph 35 mm projectors, August 23, 2008 , 89 pages

The Peerless Kinetograph made by Geo. A. Knaak Co., of Oshkosh Wis. U.S.A. and the Veriscope Projector, *An Inquiry into an enigma*, September 30, 2011, 33 pages.

A Prototype 35 mm Movie Projector in the Collection of Soterios Gardiakos Made by Carl J. Lang (Lang Manufacturing works) of Olean, New York, March 15, 2010, 56 pages

Peep Show Phantoscope ca 1904-1905 made by C. Francis Jenkins in the Collection of Soterios Gardiakos, November 22, 2010, 34 pages

Spoolbank Projectors, 2001. ISBN 0-9777537-1-9, June 31, 2010, 82 pages

Selig Polyscope Movie Projectors made by William N. Selig – a compilation, September 25 2011, 62 pages.

Cineograph movie projectors and some cameras Made by Siegmund Lubin 1896-1916 A checklist, October 25, 2011 62 pages

From the JENKINS PHANTOSCOPE to the ARMAT VITASCOPE Chronologically arranged, June 25, 2011, 132 pages

Eberhard Schneider's Cinematic Machinery, 2010, 60 pages.

Power's Cameragraph Projectors, 2013, 73 pages

Works in progress relating to movie machinery

A Possible Classification of Thomas Edison's Kinetoscopes, 2002, (Incomplete, work in progress)

35mm Movie Projectors, A work in progress with over 1,300 pages so far. (Dec. 2006)

Relating to Numismatics

The Coinage of Modern Greece, Crete, the Ionian Islands and Cyprus, Chicago, 1969, ISBN 0-916710-02-5, 96 pp, + 16 plates, hardbound

The Coins of Cyprus 1489-1571, Chicago, 1975, ISBN 0-916710-19-X, 32 pp, fully Illustrated, paper cover

A Catalogue of the Coins of Dalmatia et Albania 1410-1797. Chicago, 1970
ISBN 0-916710-67-x, 32 pp, illustrated, maps, tables, paper cover

The Coinages of Alexander the Great, S. Gardiakos Editor. ISBN 0-916710-82-3, 1,007 pp, +157 plates, hardbound in three volumes

Books on Soterios Gardiakos and his collections

The Sculptures of Soterios Gardiakos, (From the Bronze age to the Modern Age) By Chryssafenika Gardiakos, Photographs by Brad Baskin and Katerina Nike Gardiakos. September 1, 2011, ISBN 0-9777537-6-X. featuring 140 sculptures, 167 pages

Selections from the collection of Soterios and Irlanda Gardiakos, September 20, 2011, 272 pages

Soterios and Irlanda Gardiakos collection of hospital prints formerly known as the William Bebb collection of hospital prints, 2012, 49 pages

The Soterios and Irlanda Gardiakos collection of prints and drawings, 2012. 110 pages

MY LIFE an illustrated photo album of me, my family and my friends, from the early twentieth century to the present. September 30, 2011,

Part A, 1944 to 1984, 272 pages

Part B, 1985 to the present, 268 pages

Site on Movie Machinery: <http://bioscope.biz/>

Site on Sculpture: <http://gardiakos.com/>

Email: [sgardiakos \(omit\) @aol.com](mailto:sgardiakos(omit)@aol.com)

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