

No. 743,419.

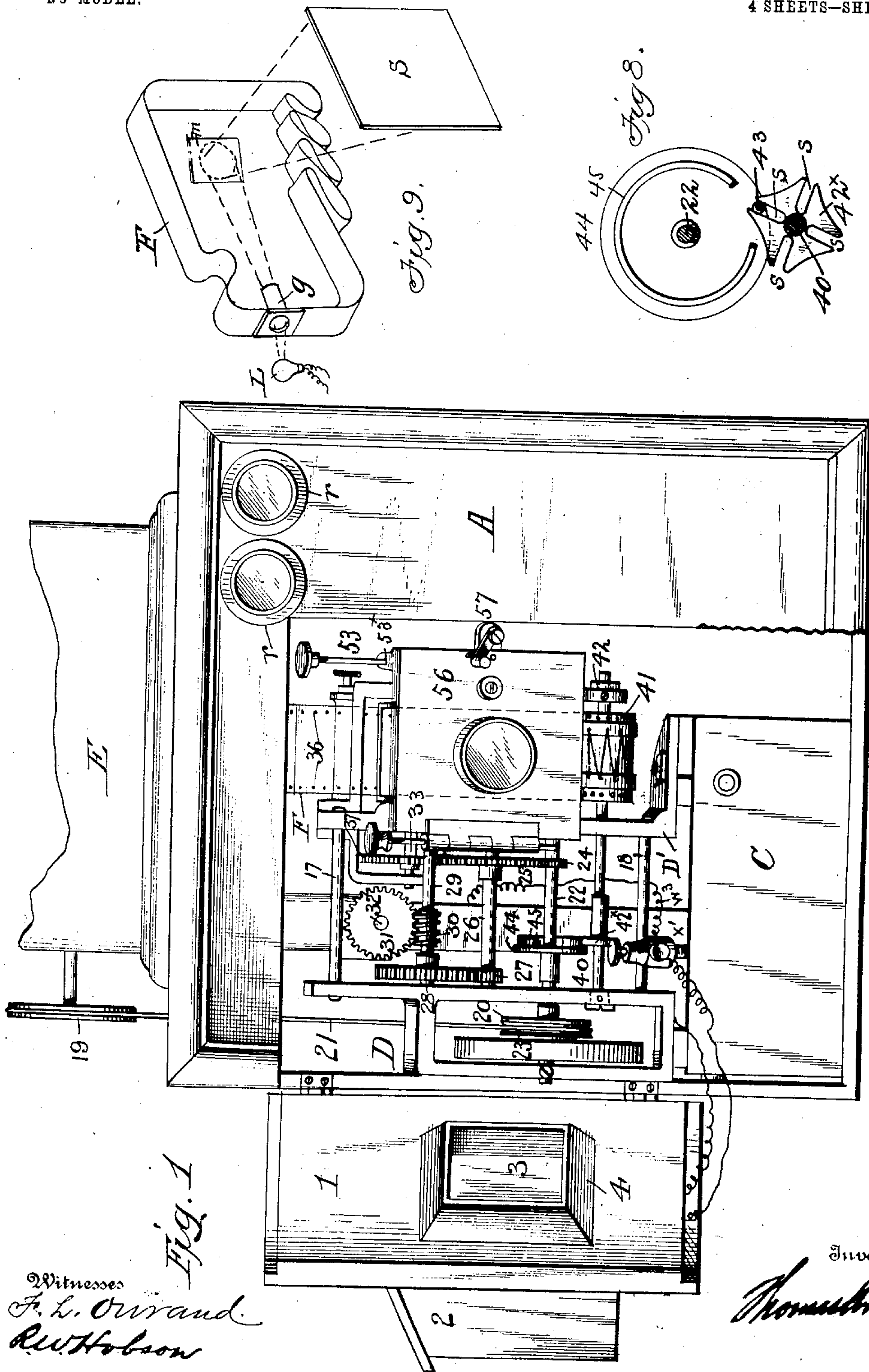
PATENTED NOV. 10, 1903.

T. ARMAT.
PICTURE EXHIBITING APPARATUS.

APPLICATION FILED MAR. 10, 1898.

NO MODEL.

4 SHEETS—SHEET 1



Witnesses
F. L. Orrand
R. W. Hobson

Inventor
Thomas Armat

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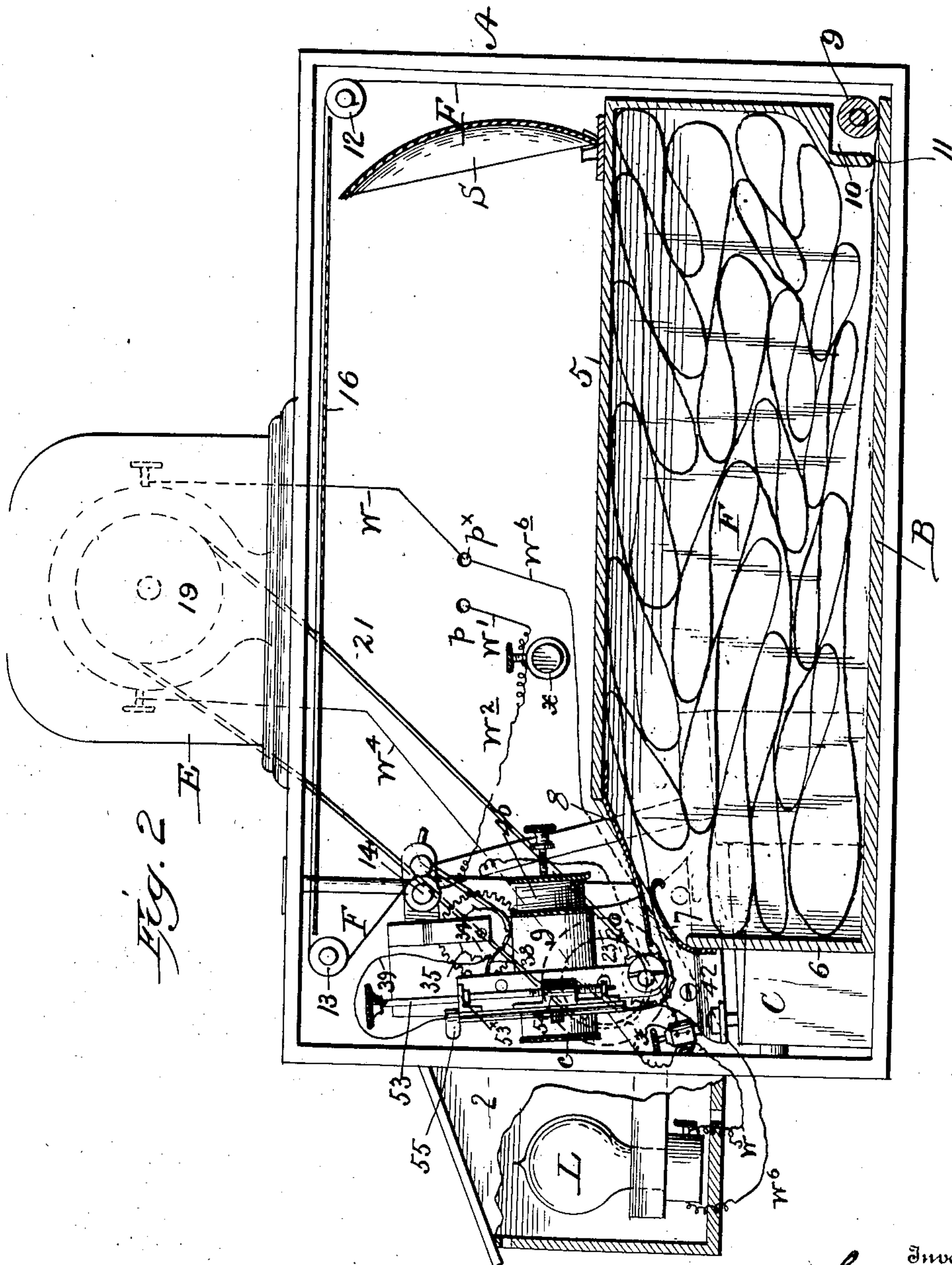


Fig. 2

Witnesses
H. L. Ormand
R. W. Hobson

Inventor
Thomas Armat

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4 SHEETS—SHEET 3.

Fig. 3

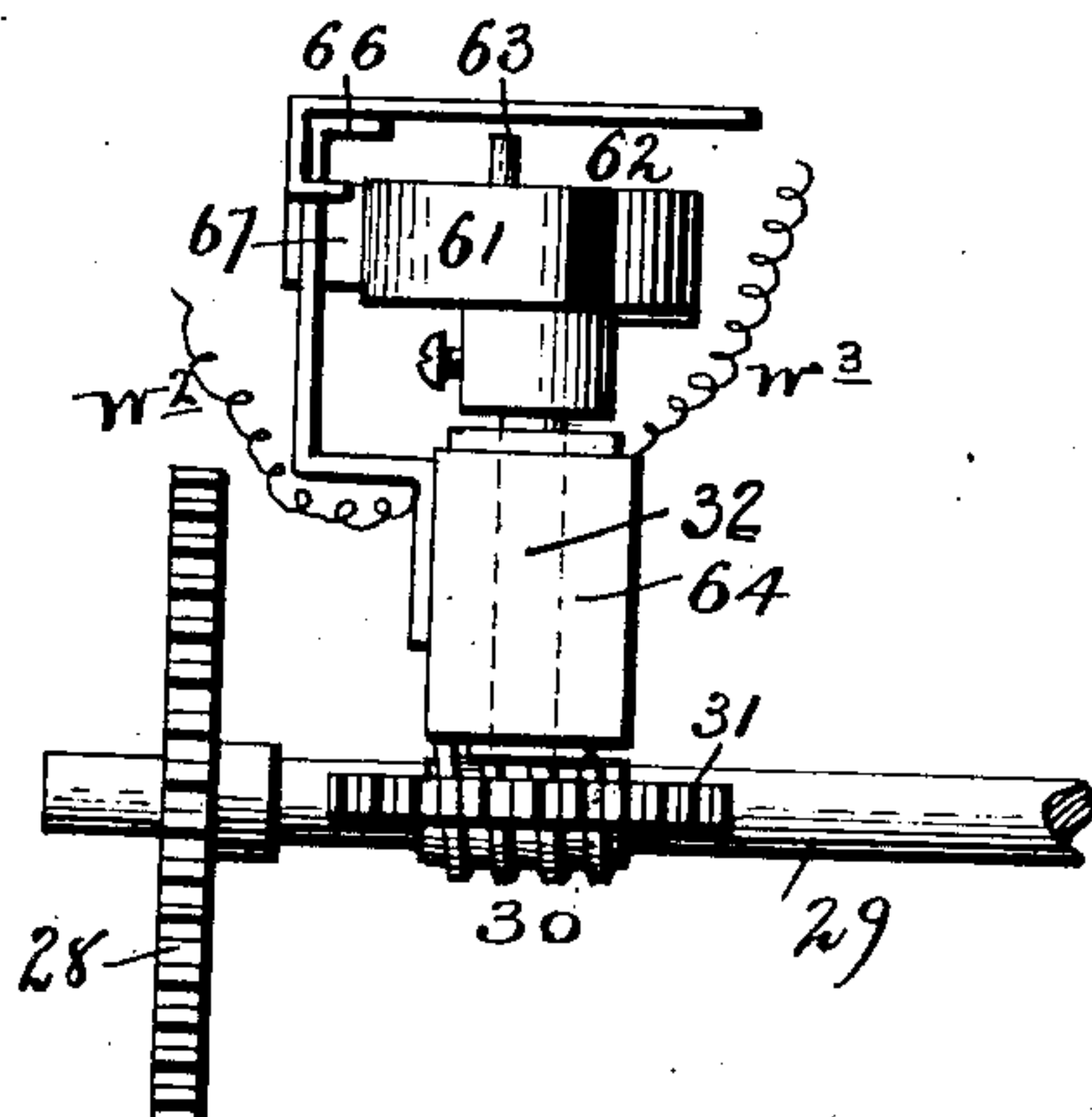


Fig. 4.

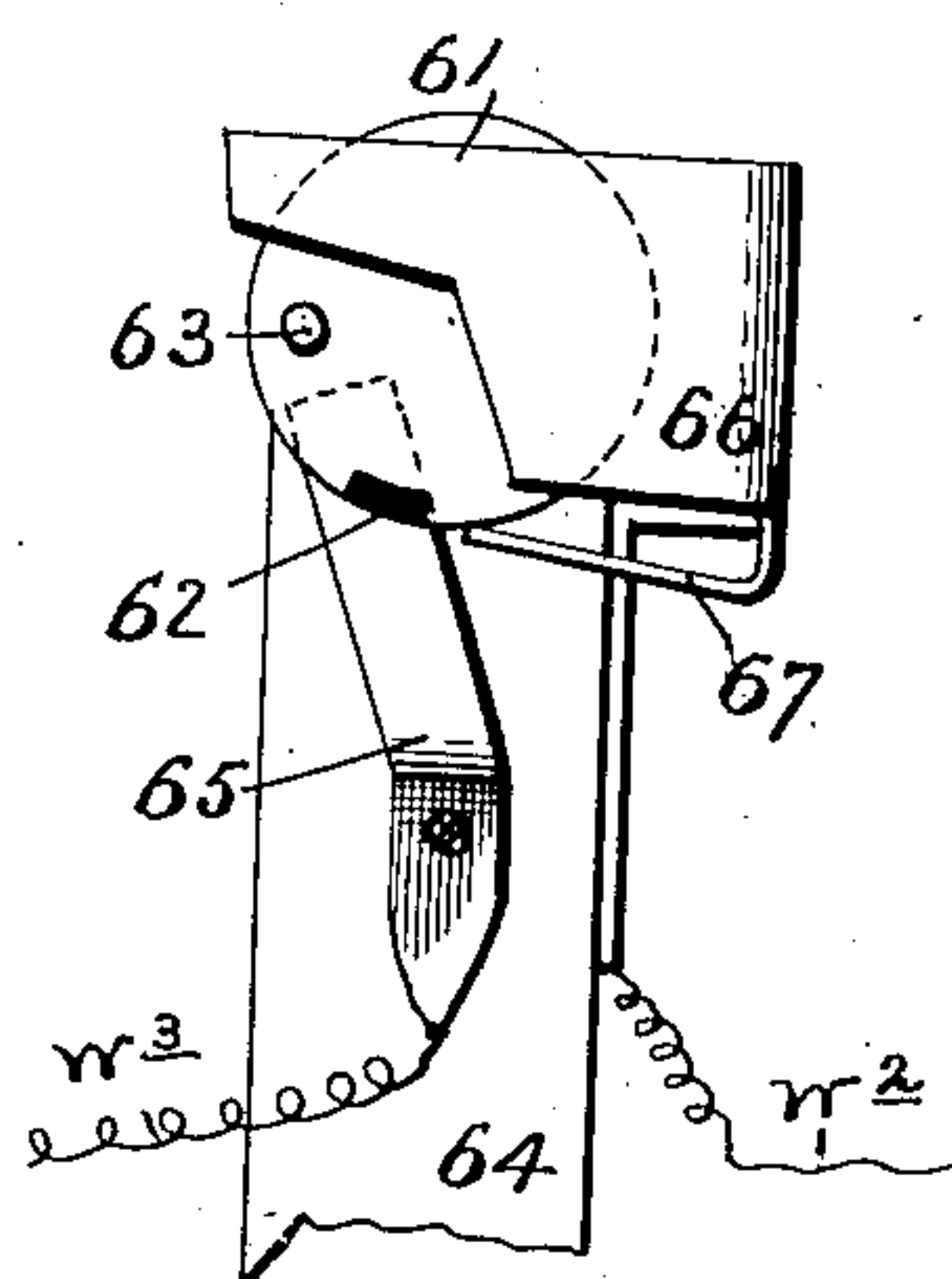


Fig. 5

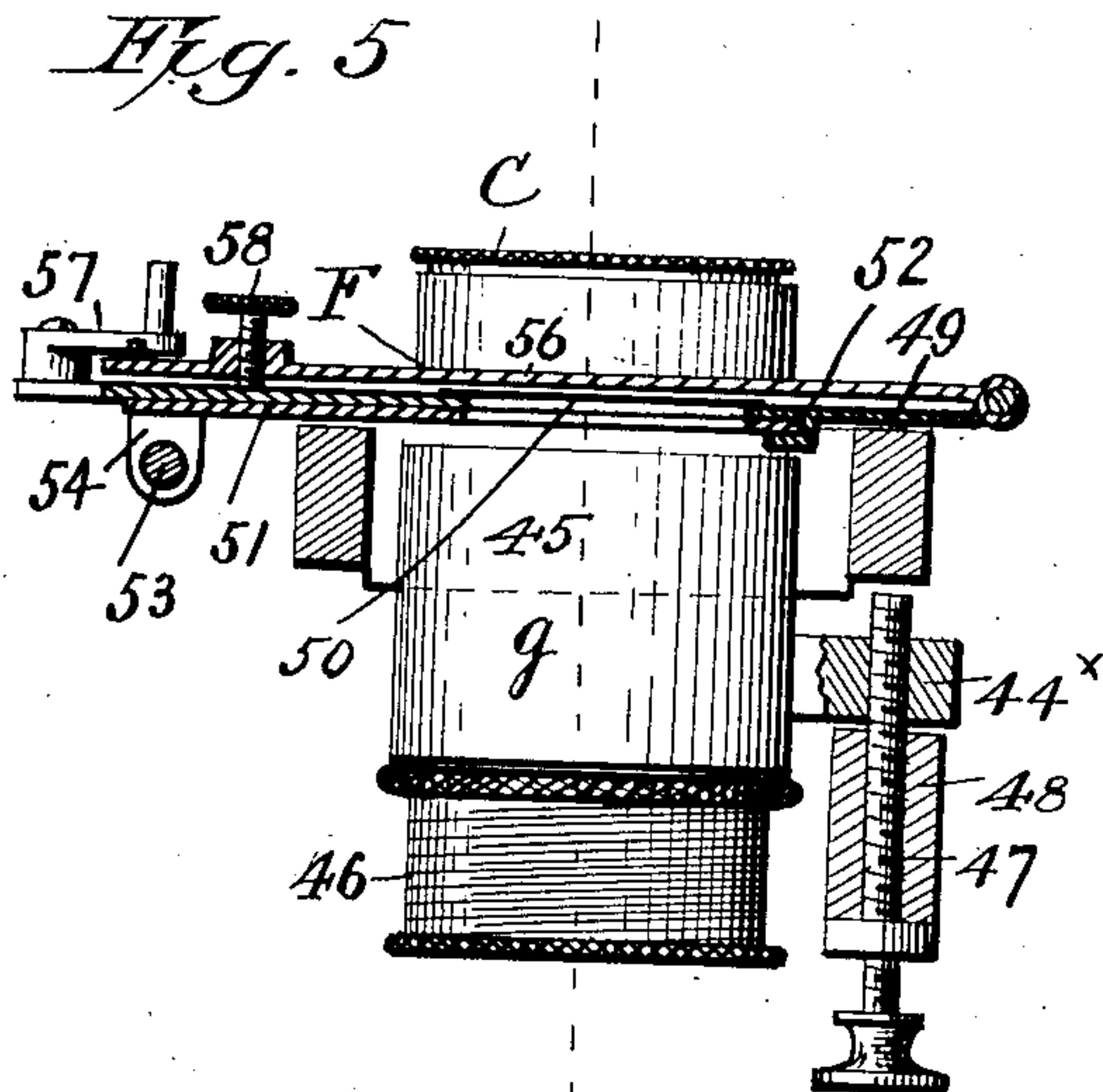


Fig. 6.

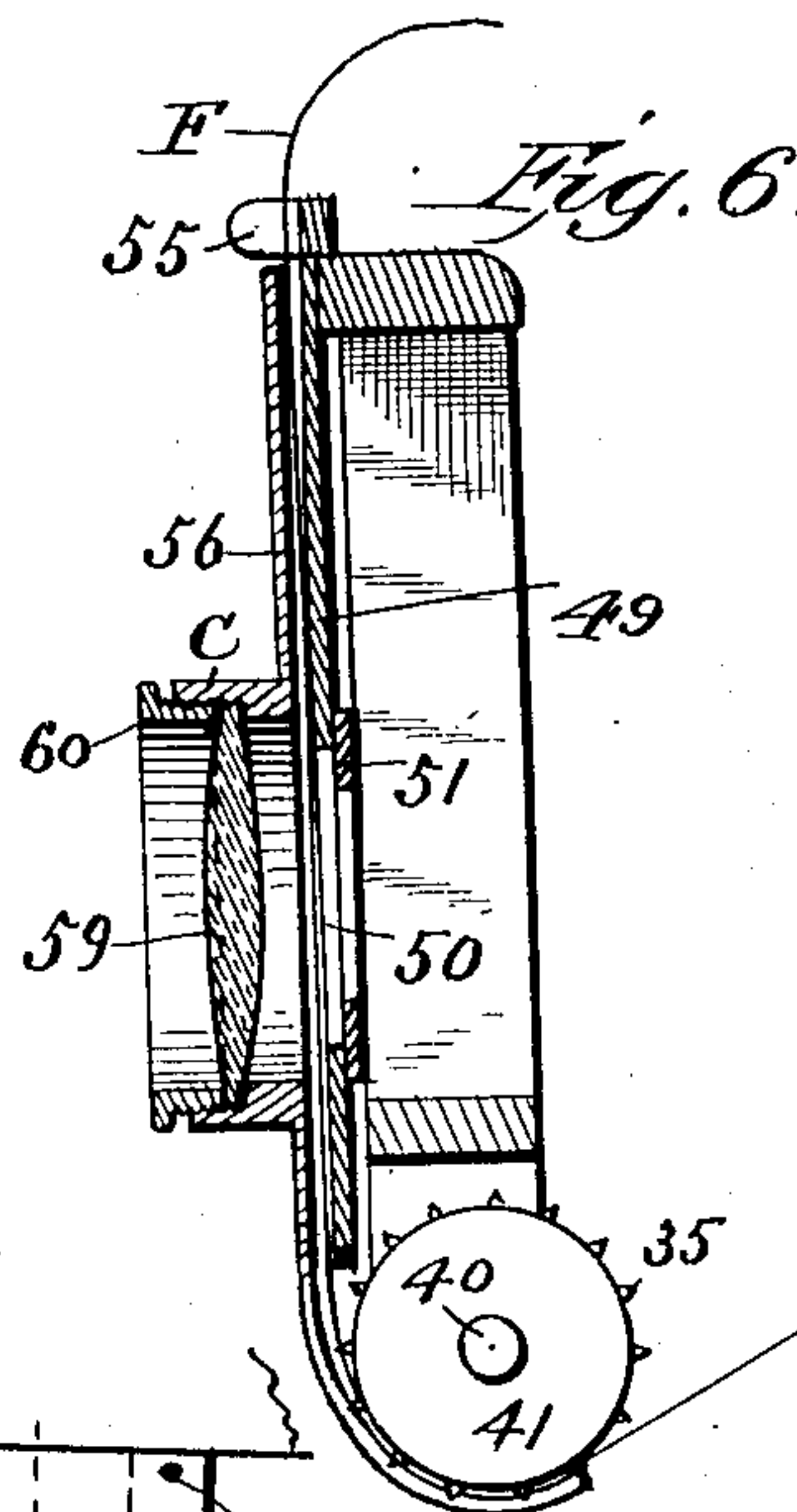
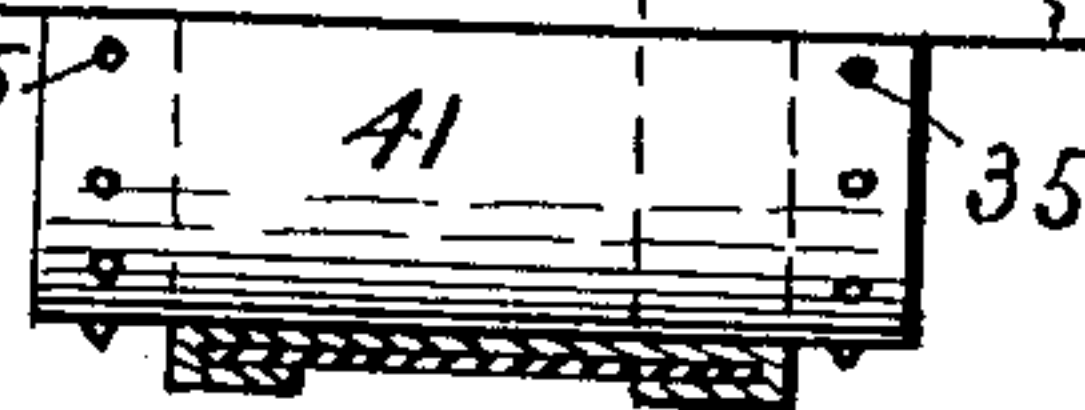


Fig. 7.



Witnesses
Frank L. Ouraud.
Rev. Hobson

Inventor
Thomas Armat

No. 743,419.

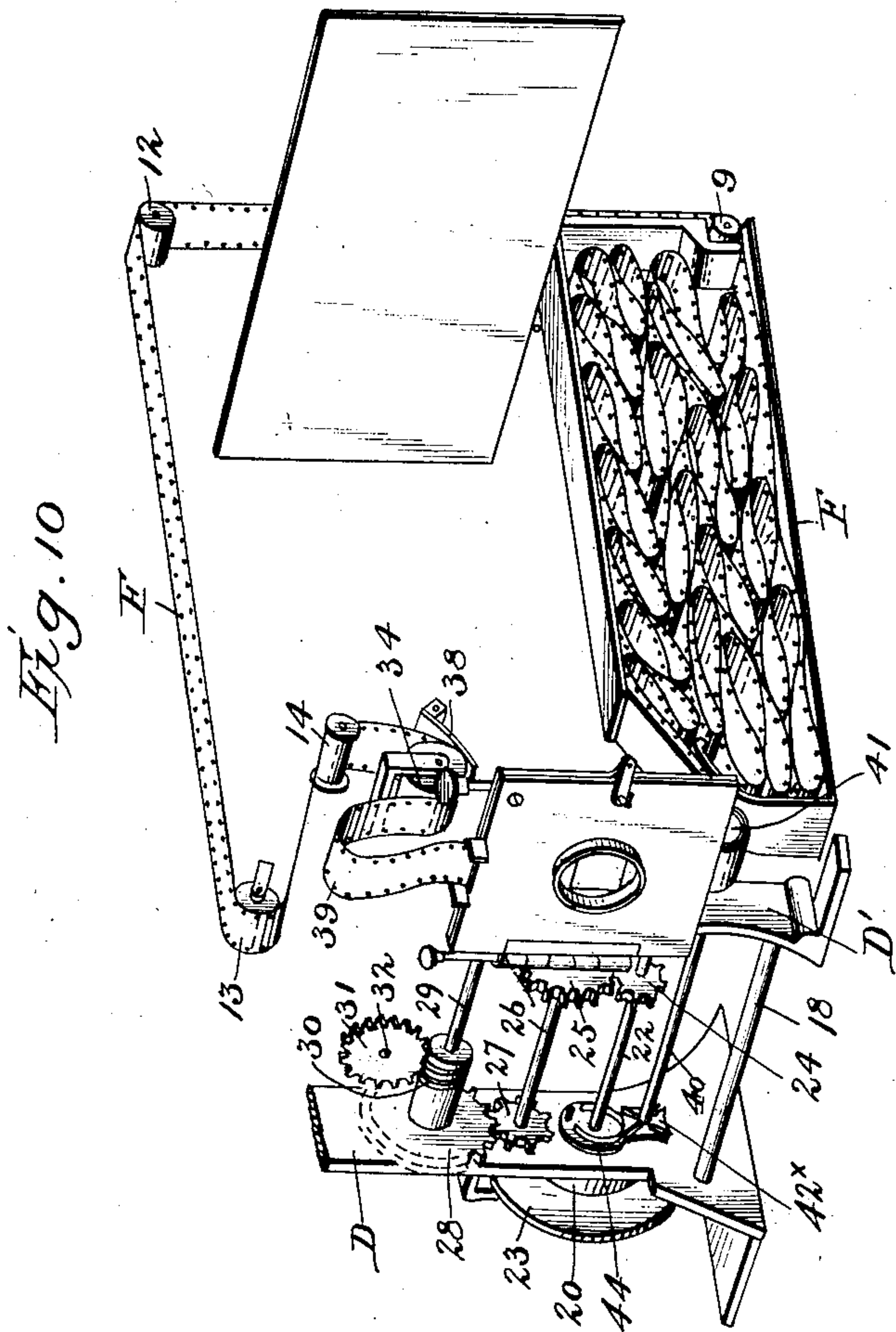
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NO MODEL.

4 SHEETS—SHEET 4.



Witnesses
F. L. Ourand
C. G. St. Hilaire

Inventor
Thomas Armat
By William C. Brown
Attorney

UNITED STATES PATENT OFFICE.

THOMAS ARMAT, OF WASHINGTON, DISTRICT OF COLUMBIA.

PICTURE-EXHIBITING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 743,419, dated November 10, 1903.

Application filed March 10, 1898. Serial No. 673,348. (No model.)

To all whom it may concern:

Be it known that I, THOMAS ARMAT, a citizen of the United States, residing at Washington, District of Columbia, have invented certain new and useful Improvements in Picture-Exhibiting Apparatuses; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to improvements in appliances or apparatus for exhibiting pictures in successive progression so as to give them the appearance of persons or objects in motion.

The objects are to provide a compact, efficient, and certainly-acting mechanism for the purposes intended which may be actuated by electrical circuits made by an interposed object, as a piece of metallic money, and broken at determined intervals or may be adapted to be actuated by applied mechanical means; to provide an improved mechanism for intermittently moving the film or band on which the pictures are imprinted so that the pictures shall be accurately and fully presented for visual observation; to provide a casing or receptacle for the used or discharged picture film or band, from which it is drawn and carried in subsequent operations of the apparatus, and to provide improved means for guiding, regulating, and supporting the picture film or band in the course of its progress behind the objective or projective lens; to so construct and arrange the mechanism and the picture film or band in the inclosure or casing that a screen for the pictures may be placed before the lens and entirely free and unobstructed by the remainder of the band, and generally to simplify and perfect the construction of parts or elements of the device or apparatus, as will be hereinafter fully described and mentioned, and particularly as pointed out in the claims.

The whole apparatus is particularly designed for public use, and for that object is made of such size and dimensions as will adapt it to be set up and used at convenient stations and places, so that any person desirous of viewing the pictures can do so by simply dropping the required piece of metal money in the coin-slot to close an electric-

motor circuit and then making visual observation through the observation-openings.

The invention is fully and clearly illustrated in the accompanying drawings, wherein—

Figure 1 is an end view or front view showing the operative mechanism and train of gearing, the door or closure to the casing being swung open and the lens-carrier in position. Fig. 2 is a side view in elevation, partly in section, the side of the casing being removed, the electrical circuits being shown in preferred arrangement, the picture film or band shown as in the looped or folded condition assumed in the film box or receptacle, and the loop-line of the film from and to the receptacle indicated. Fig. 3 is a detail plan view of the coin-controlled circuit closer and breaker. Fig. 4 is a detail side elevation of the coin-controlled circuit closer and breaker. Fig. 5 is a detail plan of the condensing objective-lenses and cross-section of the supporting, tensioning, and guiding devices for the picture-film. Fig. 6 is a vertical central section of Fig. 5 and end view of the lower film-carrying drum and edge view of the curved film guide and support. Fig. 7 is a detail plan view of the lower film-carrying drum and cross-section of the curved film guide and support. Fig. 8 is a detail of the mechanism for imparting intermittent rotation to the lower film-drum. Fig. 9 is a detail fragmentary diagrammatic view illustrating the interposition of a mirror or reflector to reflect the pictures onto the screen. Fig. 10 is a perspective view of the film-feeding devices and their operating mechanism, certain parts shown in connection therewith in other figures being omitted for the purpose of more clearly showing the construction and arrangement of said devices and mechanism.

A designates a suitable box or casing, rectangular, oblong, or square, as desired, and of such size and dimensions as may adapt it to the purposes intended of affording room for the mechanism to be mounted therein and for the proper disposition of the film-receptacle. The end or front of the casing is closed by a door 1, having a lamp-box 2 mounted on its outside, and in the door is a suitable opening 3, about which is a broad box-flange

4, extending inward and adapted to receive and surround the front end of the condensing-lens when the door is closed, so that the rays of the lamp are thrown directly on and
 5 through this lens to the objective-lens. The lamp L is suitably mounted and secured in the lamp-box and is so disposed therein that its rays shall be mainly directed through the opening in the door and be projected through
 10 the projecting-lens.

In the casing A is mounted and arranged a picture-film receptacle B of such capacity as may be desired or required to take in and hold the supply portion of the picture-film,
 15 substantially as indicated in the drawings in Fig. 2. The upper plate or top 5 of this film-receptacle is somewhat shorter than the length of the receptacle, and the front end piece 6 is lower than the height of the receptacle, as shown in the drawings, and the space
 20 or opening thus formed is closed by two guide-plates 7 and 8, the lower guide-plate 7 being directed upward and curved inward and the upper guide-plate 8 being projected forward and downward at an incline slightly curved
 25 and overlying the guide-plate 7, with a sufficient space or opening between the two plates to admit unimpeded the progressive movement of the picture film or band F as the film
 30 is discharged or delivered from the lower film roller or drum into the film-receptacle. At the rear lower corner of the film-receptacle is journaled a roller 9, having the lower point of its perimeter closely adjacent to the floor
 35 of the receptacle. This roller 9 may be located in a recess 10, formed in the end of the receptacle, and a slot 11 is formed under the end of the receptacle, between the lower edge thereof and the face of the floor or bot-
 40 tom of the receptacle, through which the film or band is drawn. In the casing in vertical alinement with the roller 9 is journaled a roller 12, and at the forward end of the casing is journaled another roller 13, and adja-
 45 cent thereto is journaled guide-roller 14, from which the film is directed to the upper film operating and carrying drum, as will be hereinafter fully specified. Under the upper line
 50 of the film or band between the rollers 12 and 13 is secured a shield 16 of any proper opaque material, extending over the superficial area of the film or band at this place in order that the film or band will be completely hid at this portion.

55 On the film-receptacle is mounted a screen S, (shown in Fig. 2 as in direct line with the rays emanating from the projecting-lens,) on which screen the pictures on the film are projected and to which visual observation is had
 60 through observation-openings *r r*, located at a proper place in the wall of the casing, as indicated in Fig. 1 of the drawings. The screen S is preferably made concave for the purpose of correcting the spherical-aberra-
 65 tions which may otherwise be produced by the lens. In Fig. 9 of the drawings is shown a mirror *m*, mounted in the path of the pro-

jected rays and so arranged as to reflect the rays and throw them onto the screen arranged in another part of the casing, or at any desired
 70 position outside thereof.

In the casing A is suitably secured a base C, on which are mounted and secured the up-
 right frames D D', secured together at their top and bottom by cross-bars 17 18. 75

E designates the electrical motor, of any approved type or construction, preferably located in a boxing on the casing A and carrying on its motor-shaft a pulley 19, having connection to the driving-pulley 20 by a band or
 80 belt 21, as indicated in Figs. 1 and 2 of the drawings. The pulley 20 is mounted on a shaft 22, which carries a fly-wheel 23 to maintain and equalize the movements of the mechanism. On the shaft 22 is fixed a small pinion
 85 24, meshing with a larger gear-wheel 25 on a shaft 26. On the shaft 26 is a small gear-wheel or pinion 27 in mesh with a larger gear-wheel 28 on a shaft 29, and on this shaft 29 is a worm
 90 30, engaging with a pinion 31 on a shaft 32, which carries on its other end the circuit-disk 61, which makes and breaks the circuits operating the mechanism, as will be hereinafter more fully specified. In the frame which sup-
 95 ports the film-feeding devices and operating mechanism at a proper location in its upper portion is a shaft 33, on which is mounted the upper feed roller or drum 34, which draws the picture-film from the receptacle over the rollers in the casing and delivers it subject to the
 100 action of the lower drum. The drum 34 is provided at each end with an annular series of pins 35, which are designed to engage in perforations 36, made in the edges of the picture film or band, so that the film will be
 105 drawn regularly and kept in alinement with the required direction of movement. Motion is imparted to this upper-drum 34 by means of a pinion 37 on its shaft, which pinion is in mesh with the gear-wheel 25. A guide and
 110 directing piece or plate 38, curved in contour and reaching under the drum 34 and arranged closely adjacent thereto, keeps the film engaged with the drum and directs it upward, as at 39, the flexible character of the film per-
 115 mitting the movement, and then the film is carried down in a substantially vertical direction through the film guiding and tensioning mechanism. On a shaft 40, Figs. 1, 6, and
 120 10, is mounted the lower film drum or roller 41, identical in construction with the drum 34, and is so placed that the film discharged therefrom is naturally directed through the opening between the guide-plates 7 and 8 at the entrance to the film-receptacle. The shaft
 125 40 is journaled in bearings 42, having the shaft-bearing eccentric to their axis, so that by turning the bearings in their seats the shaft 40 may be adjusted to bring the intermittent gearing or mechanism in proper ac-
 130 curate operative relation.

To impart to the drum 41 the required intermittent rotation to bring the pictures into the illuminated field and to be there held for

the required interval exceeding the time required to effect the displacement of one picture and the substitution of another therefor, a wheel or disk 42^x is secured to the shaft 40 at the desired point and formed with radial slots *s*, opening at the periphery of the disk, as shown more clearly in Fig. 8, to intermittently engage with a pin or lug 43, projected laterally from a disk wheel 44 on the driving-shaft 22, said disk wheel being provided with an open-face ring or flange 45, against which the coincident recesses in the edge face of the slotted disk 42^x rest when that element is inactive.

g designates the projecting-lens, provided with an adjustable lens-section 46, wherein a lens or lenses (not shown) are mounted as usual, and which lens-section may be adjusted to the desired focus by moving it in a well-known manner. To the shell or barrel of the projecting-lens is secured a laterally-extending piece 44^x, by which the barrel is supported in position, being so held by means of a clamping-screw 47 let through a standard or other suitable support, as 48, secured in the casing and projecting into and engaging in a threaded aperture in the piece 44^x, as shown in Fig. 5 of the drawings. To the front of that part of the frame through which the barrel of the projecting-lens extends is secured a metal plate 49, provided with a central opening 50, through which the rays of light find access to the instrument. The opening 50 being fixed in position, it may occur that the pictures will not aline accurately for reproduction on the screen through the instrument in such fixed relation and fragments or parts of adjacent pictures in the series be thus observed. To remedy this, a slide 51 is provided having a central opening and held to this plate at one side by a keeper-flange 52 and adjusted by an adjusting-screw 53, let through a lug 53^x on the fixed plate 49 and taking in a threaded lug or sleeve 54 on the slide 51, so that the slide 51 may be moved up or down, and thus brought so that the opening will accurately aline with the vertical dimensions of the pictures to be exhibited. At the sides of the plate 49 at the top are formed or secured guide-flanges 55 to direct the passage of the film into the guiding device and to prevent lateral displacement. To the plate 49 is hinged a presser or tension plate 56, adapted to lie over the fixed plate 49 and is held in closed position by means of a suitable latch 57. The position of this hinged guide-plate 56 in its relation to the moving picture-film is regulated by means of an adjusting-screw 58, let through it adjacent to its front free edge and bearing with its end against the face of the fixed plate 49, as shown in Fig. 5 of the drawings. Integral with the hinged guide-plate 56 is a lens-carrier *c*, in which a lens 59 is detachably secured by means of a threaded ring 60 taking in interior threads in the lens-carrier *c*. The picture-film *F* is carried between the fixed

plate 49 and the hinged plate 56 and held at the desired position by the adjustment of the screw 58, and the space or opening between the plates thus regulated, so that the pictures pass through the opening or space between the adjacent ends of the lens-carrier *C* and the barrel or shell of the projecting-lens *g*. It will be seen from the foregoing description that the projecting instrument is made in two parts or sections, one of which is stationary and the other carried by a hinged plate, and that the picture-film is moved through the space provided for it between the segregated adjacent ends of the projecting instrument.

On the shaft 32 of the pinion 31 is mounted a metal disk 61, in which is fitted a suitable piece of non-conducting material 62, upon which the arm 67 normally rests and constituting the means for making and breaking the electric circuit, and in the disk 61 is a metal pin 63, against which the coin lodges when deposited through the coin-slot in the casing leading thereto. The supporting post or standard 64, Figs. 1, 3, and 4, is of some suitable non-conducting material, as of seasoned and dry wood, and has secured to it a contact-piece 65, connected to the circuit-wire, the free end of the contact-piece lying against the disk, as indicated, and about the disk is a coin-supporting frame 66, lying adjacent to the outer face thereof and provided with a tongue or arm 67, above mentioned, the free end of which bears on the perimeter of the disk 61 and at the other end having connection to the circuit-wire, as indicated in Figs. 3 and 4 of the drawings. It will be readily perceived that this arrangement of the parts provides a mechanism in which the circuit stands normally open or broken, but that when a metallic coin is deposited and reaches the coin-frame it lodges in contact with the lug on the disk 61 and the plate of the coin frame or receptacle 66 and bridges or closes the circuit, making the electrical energy active and starting the motor, which through its connection to the operating mechanism imparts the requisite motion thereto. It will also be perceived that when the circuit is completed and the mechanism started up the disk will be rotated by connection of the pinion 31 on the shaft with the worm engaging it, which rotation will be continued until the non-conductor portion 62 is brought into contact with the end of the tongue 67, when the circuit will be broken and the mechanism will immediately stop. During the rotation of the disk 61 the lug 63 will be carried away from the coin, which as soon as released will fall down into any suitable receptacle provided to receive it. The release of the coin, however, will not break the circuit, since that is continued through the disk and contact 65 and the arm 67 and continues until the tongue or arm 67 contacts with the non-conductor in the disk, when the circuit is broken, as heretofore stated.

The mechanism may be operated by any

properly-arranged electric circuits arranged to stand normally open at the coin-receiving point and to be made by the interposition of a metallic coin lodging there and bridging the point of separation. I have illustrated in the drawings the following-described arrangement of circuits, premising that the source of electric energy has connection to the lugs or posts p p^x , and, assuming that the direction of flow is from p to p^x , the circuit is carried as follows: by wire w^1 from p to binding-post x , by wire w^2 from x to supporting-frame 64 and arm 67 of coin device, through disk 61 to contact-piece 65, by wire w^3 from contact-piece 65 to binding-post x' , by wire w^4 from x' to one side of motor, through motor, and by wire w to p^x . The lamp-circuit follows the same course up to post x' , then goes from x' to one side of lamp L, by wire w^5 , through lamp L, and by wire w^6 to p^x .

The use and observation of the apparatus may be stated as follows: The apparatus is set up in a selected position and the circuits connected to a source of electricity. As heretofore specified, the motor-circuit stands normally open at the coin frame or receptacle. Any person desirous of viewing the pictures drops the designated coin in the coin-slot, which in its descent lodges at the coin frame and disk and closes the circuit, which immediately effects the rotation of the motor mechanism and illumines the lamp, and the motor in turn operates the mechanism to move the picture-film progressively and intermittently through the projecting-lens, and then by looking through the observation-openings, which may be provided with lenses, the pictures are observed on the screen.

It will be understood that in the operation of the apparatus the film is discharged into the receptacle intermittently in loose folds, while the withdrawal of the film from the receptacle is accomplished in a continuous manner, as otherwise the operation would not be as effective.

What I claim is—

1. In an apparatus for exhibiting pictures, the combination with a casing, of a movable picture film or band, a box or receptacle in the casing having unobstructed interior, and means for discharging the film into said receptacle intermittently in loose folds, and for continuously withdrawing the same therefrom for further use.

2. In an apparatus for exhibiting pictures, the combination with a suitable inclosing casing, of a movable picture film or band, a box or receptacle in the casing having unobstructed interior, mechanism mounted in the casing for discharging the film into said receptacle intermittently in loose folds, and means for withdrawing the film from the receptacle continuously and carrying the same to said mechanism.

3. In an apparatus for exhibiting pictures, the combination with a suitable inclosing cas-

ing, of a picture film or band, and mechanism in the casing to intermittently move said film or band, a receptacle in the casing to receive the intermittently-discharged portions of the film, and provided with guides to direct the film therein, whereby the bulk of the latter is disposed in folds as it is discharged, to be again paid out for use, means for continuously directing the film from the receptacle to said mechanism, and a screen in the casing on which the pictures are projected.

4. The combination in an apparatus of the character described, of a receptacle or compartment in the casing, a picture film or band arranged in loose folds in said compartment, means for continuously withdrawing successive portions of said film from the compartment to and across a light-opening, and means for intermittently returning the film to the compartment in loose form, and a shield to obscure a portion of the film, substantially as described.

5. The combination in an apparatus of the character described, of a suitable inclosing casing, and a mechanism therein to move a picture film or band, a receptacle or compartment of the casing, a picture film or band arranged therein in loose folds, and operated by said mechanism to be withdrawn continuously from the compartment to and across a light-opening, and thence back to said compartment intermittently in loose form, a screen in the casing, and a shield to obscure a portion of the film, substantially as described.

6. The combination in an apparatus of the character described, of a mechanism located at one part of the casing adapted to move a picture-film, a reflector at another part of the casing, a picture-film traversing the space between said mechanism and reflector, and a shield to obscure the intermediate portions of the film, substantially as described.

7. In an apparatus for exhibiting pictures, the combination with a suitable inclosing casing and a mechanism mounted in the casing to intermittently move a picture film or band, of a receptacle to receive the discharged film, a screen within the casing, a picture-film mounted on rollers to carry it from the receptacle to the said mechanism through the casing, and an opaque shield arranged below the line of the film as specified.

8. In an apparatus for exhibiting pictures, the combination of a lens-barrel, a stationary plate arranged across the end of the barrel and having a central opening therein, a tension-plate hinged to the stationary plate and having a central opening therein and provided with a lens-carrier, and an adjusting-screw to regulate the space or opening between the two plates.

9. In an apparatus for exhibiting pictures, the combination of a lens-barrel, a stationary plate arranged across the end of the barrel and having a central opening therein, a ten-

sion-plate hinged to the stationary plate and having a lens-carrier, an adjusting-screw to regulate the opening between the plates, and an adjustable slide having a picture-opening, on the stationary plate.

10. In an apparatus for exhibiting pictures, the combination with a movable picture film or band, and a drum to carry the film, of a lens-barrel, a stationary plate arranged across the end of the lens-barrel and before the film and provided with a central opening, a tension-plate hinged to the stationary plate and having a central opening, a lens-carrier integral with the hinged plate, and a curved plate extending from the lower end of the hinged plate and reaching partly around the said drum.

11. In an apparatus for exhibiting pictures, the combination with a movable picture-film and a drum to carry the film, of a lens-barrel, a stationary plate arranged across the end of the lens-barrel before the film and provided with a central opening, a tension-plate hinged to the stationary plate and having a central opening, a lens-carrier integral with the hinged plate, a curved plate extending from the lower end of the hinged plate and reaching under the said drum, and a flexible covering on the curved plate.

12. In an apparatus for exhibiting pictures, a projecting-glass, comprising a lens-barrel, and a lens-carrier hinged to close in front of the open end of the lens-barrel, substantially as and for the purpose specified.

13. In an electrically-controlled apparatus for exhibiting pictures, the combination with an operating mechanism, of a worm-gear operated by said mechanism, a pinion in mesh with said worm, a disk on the shaft of said pinion, a non-conducting section in the disk, and an electric circuit made and broken by the rotation of the disk.

14. The combination in an apparatus of the character described, of a picture-carrying strip, a receptacle therefor having unobstructed interior, a projecting device, means for feeding the strip past such device and into the receptacle intermittently in loose folds, and again withdrawing said strip continuously from the receptacle for further use, a light at

one end of the apparatus, and a screen at the other, substantially as described.

15. The combination with the casing, of a screen at one end thereof, a receptacle having unobstructed interior and containing a picture-carrying film arranged in loose folds lying one upon another, and mechanism at the other end of said casing whereby the film is continuously withdrawn from one end of the receptacle and intermittently discharged into the other end thereof, substantially as described.

16. In an apparatus for exhibiting animated pictures, the combination with a suitable casing having a screen mounted thereon at or near one end or extremity, and film-feeding devices at or near another extremity, a picture film or strip, a light, means for directing said film between said light and screen, and mechanism operating to discharge the film from said feeding devices intermittently in loose folds one upon another, and again continuously supplying said film thereto, substantially as described.

17. The combination in an apparatus of the character described, of a storage-compartment for a picture-film, the same having unobstructed interior, a film arranged in said compartment in loose folds lying one upon another, and means for withdrawing the film from said compartment continuously and to and across a light-opening, and thence back into the compartment intermittently in similar form, said compartment being of substantially equal width with the film, substantially as described.

18. In a kinetoscope, a box having an unobstructed interior whereby the film may be stored in loose folds, and having openings for the entrance and the exit of the film, means for driving the film into the box intermittently, and means for withdrawing it from the box continuously, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

THOMAS ARMAT.

Witnesses:

R. W. HOBSON,

JOHN E. MITCHELL.