

No. 684,343.

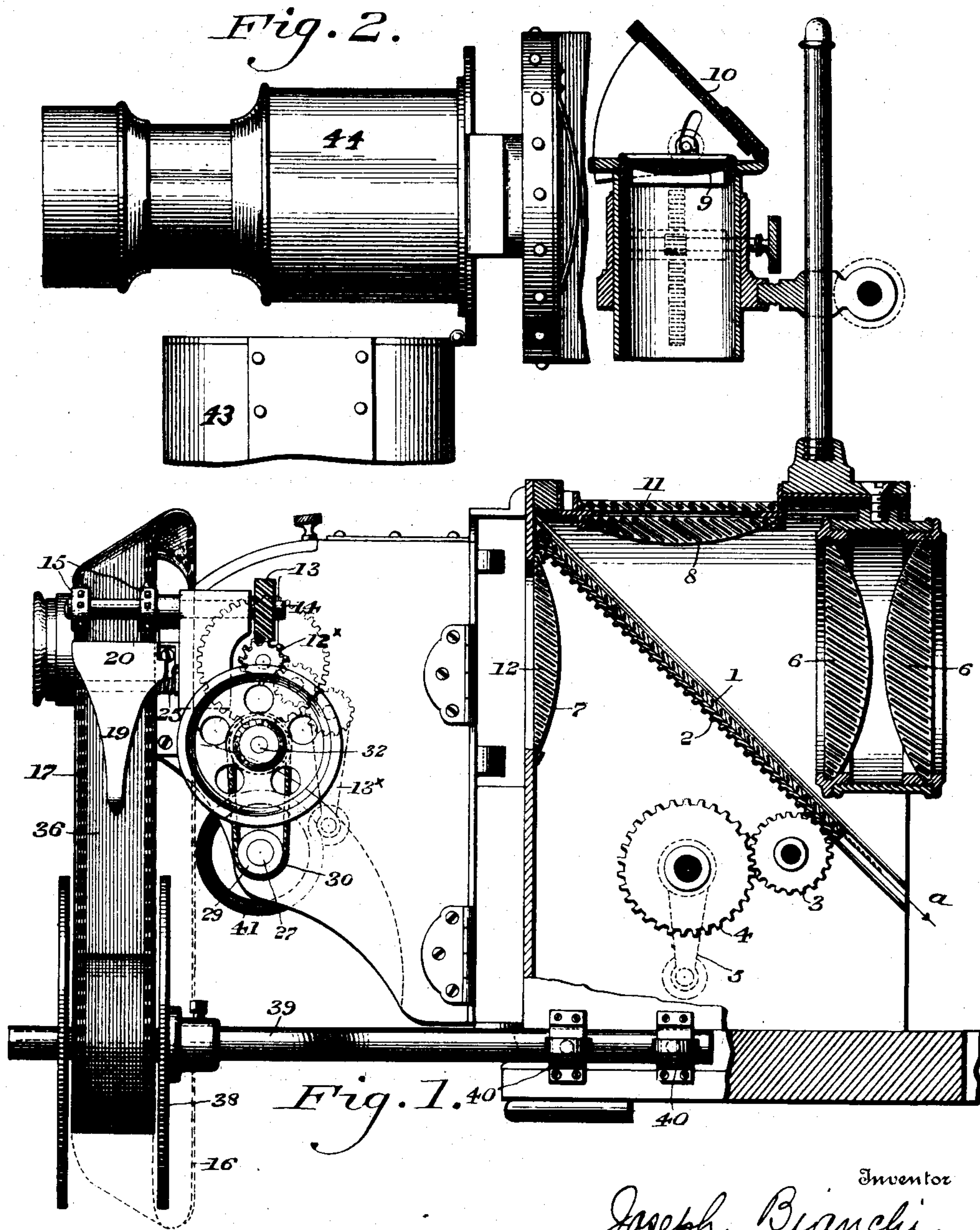
Patented Oct. 8, 1901.

J. BIANCHI.
PROJECTING APPARATUS.

(Application filed June 30, 1900.)

(No Model.)

2 Sheets—Sheet 1.



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Fig. 7.

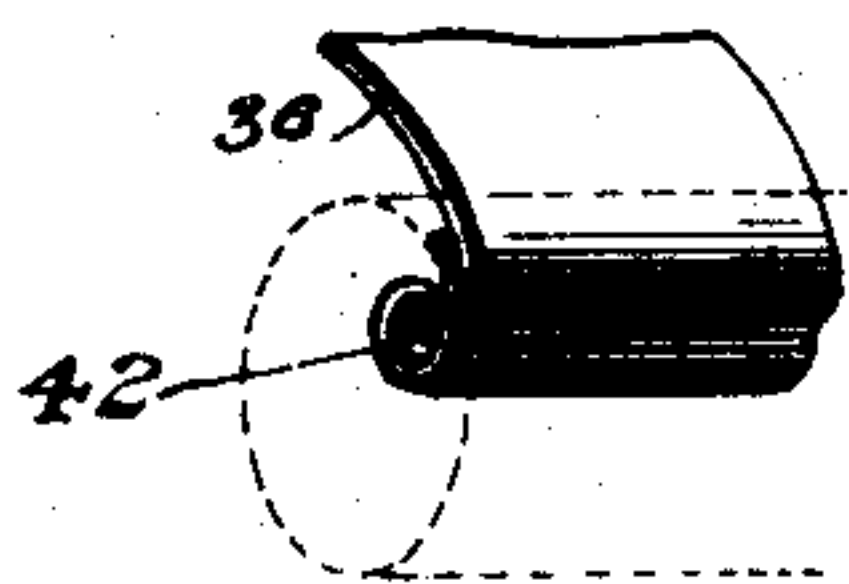


Fig. 6.

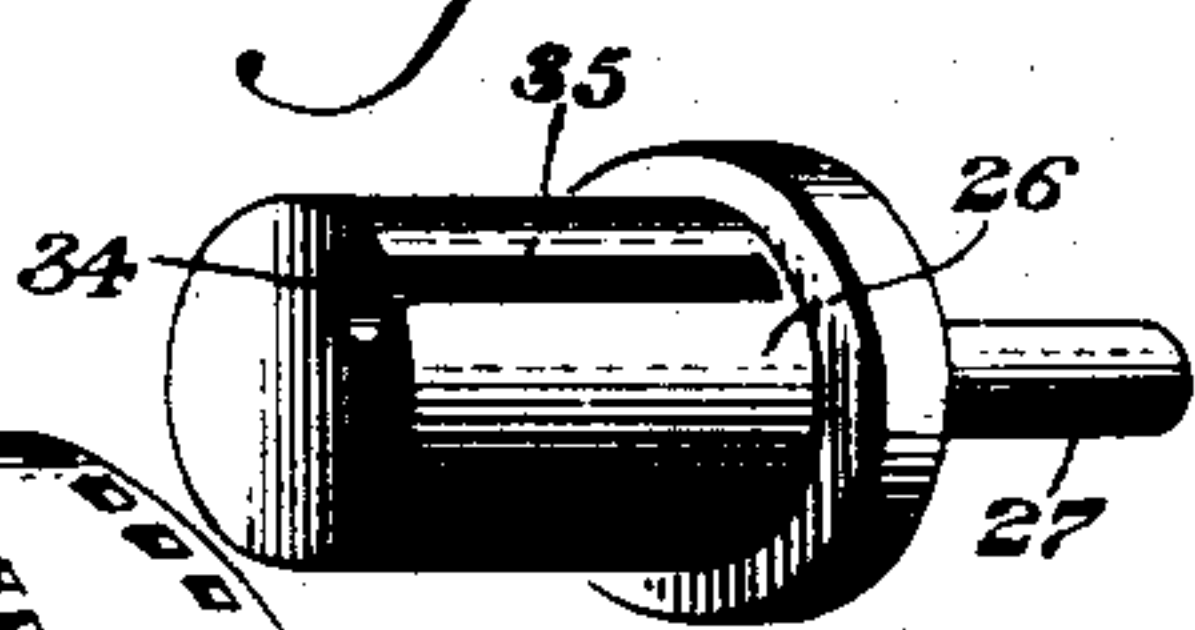


Fig. 3.

Fig. 5.

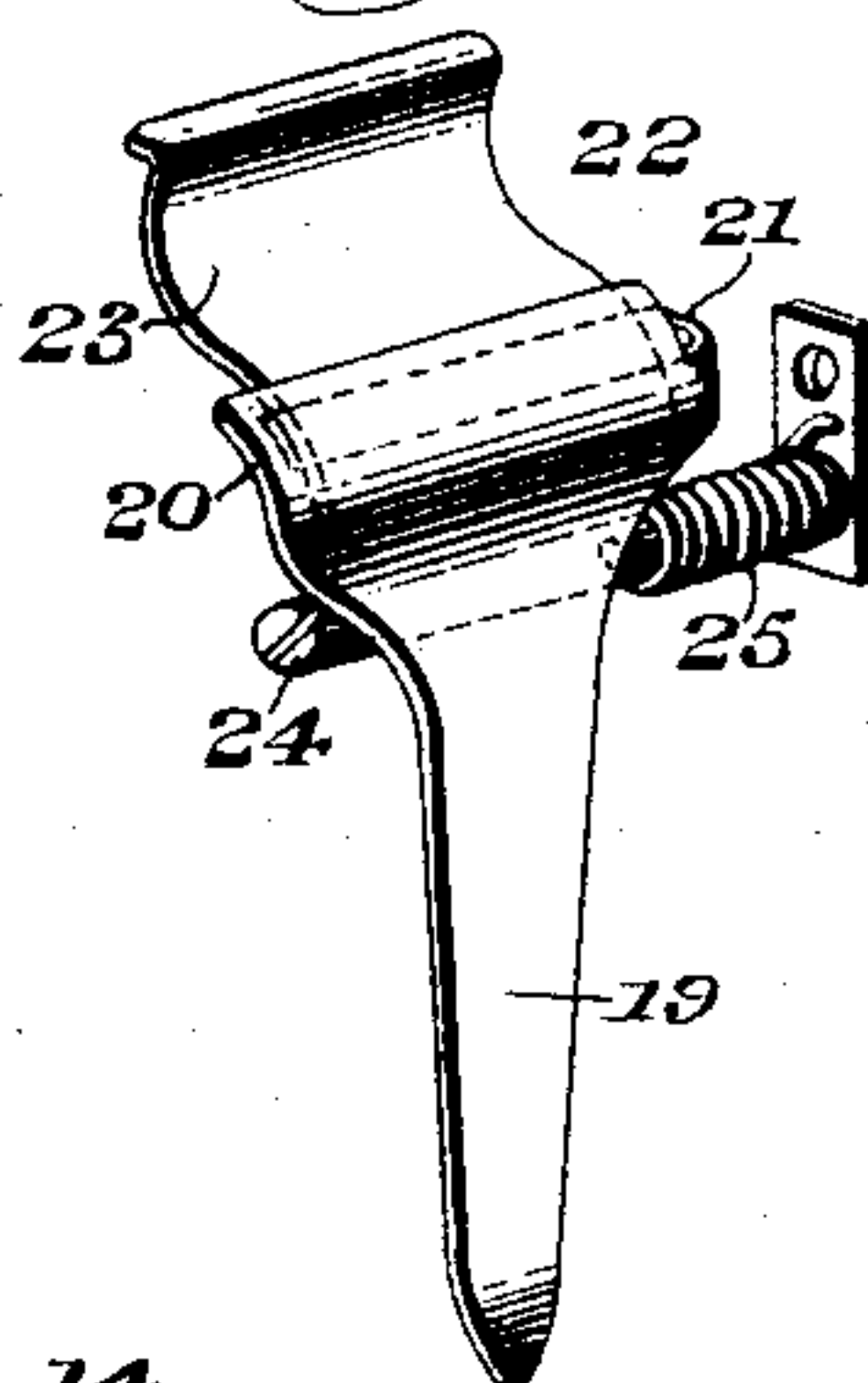
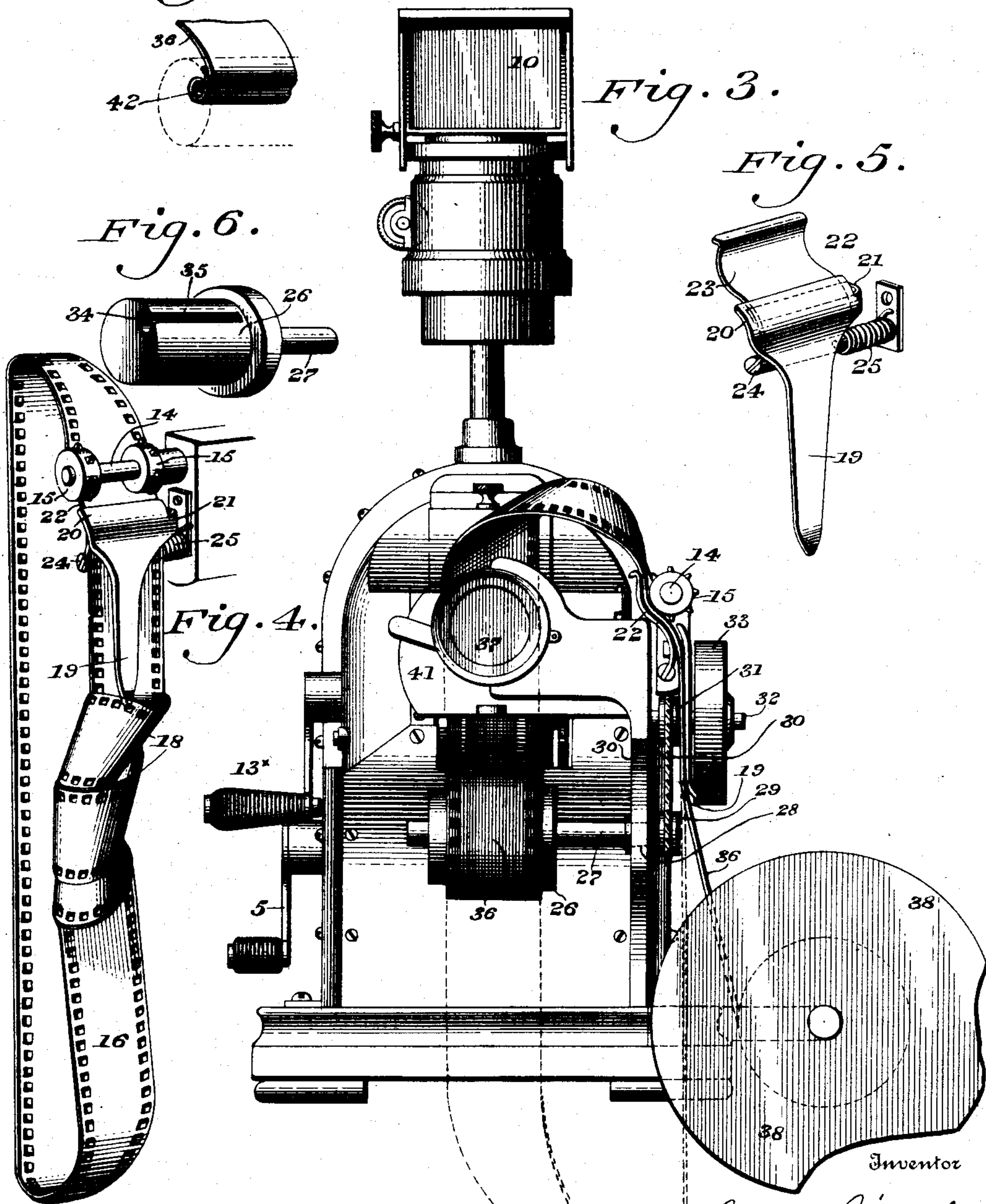


Fig. 4.



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UNITED STATES PATENT OFFICE.

JOSEPH BIANCHI, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR OF ONE-HALF TO THEODORE J. HARBACH, OF SAME PLACE.

PROJECTING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 684,343, dated October 8, 1901.

Application filed June 30, 1900. Serial No. 22,176. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH BIANCHI, a citizen of the United States, residing in the city and county of Philadelphia, State of Pennsylvania, have invented new and useful Improvements in Projecting Apparatus, which improvements are fully set forth in the following specification and accompanying drawings.

My invention relates to improvements in lanterns for moving pictures; and it consists more especially in the novel application of a movable or adjustable light-deflecting body or bodies, such as mirrors, &c., which are located in front of the condensers in order to intercept the light at an angle to be taken up by an objective lens and in turn by a mirror or prism or other reflecting-body at an angle in order to project the picture or character desired on a screen or wall, whereby I have produced a simple mechanical device which can be used for projecting a picture or title of a picture from a lantern, which can be used after the mirror is moved out of the path of said condensers to project another picture.

It further consists of the novel construction and location of the mechanism whereby the film for moving the pictures is located and fed from one side of the lantern, making use of the usual wheels, and held in place by a tension-spring having at its lower portion and projecting downwardly a finger adapted to engage or straighten out the twisted portion of the film, whereby the latter is properly fed under all conditions.

It also consists of the novel construction and location of a roller which is adapted to have an end of the film wound thereupon.

It further consists of the novel details of construction, all as will be hereinafter fully set forth, and particularly pointed out in the claims.

Figure 1 represents a longitudinal sectional view of a projecting optical apparatus or lantern for moving pictures embodying my invention, certain portions of the same being shown in elevation. Fig. 2 represents a plan view of the apparatus seen in Fig. 1, showing the portion thereof which is adapted to be used for showing moving pictures swung to one side and a projecting-lens placed in

position. Fig. 3 represents a front elevation of the lantern seen in Fig. 1. Fig. 4 represents a perspective view of a portion of the novel mechanism which is located at one side of the apparatus, showing the sprocket-wheel and tension spring or finger whereby the film is straightened out prior to passing through the tension device. Fig. 5 represents, on an enlarged scale, a perspective view of the tension device seen in Fig. 4. Fig. 6 represents a perspective view of the roller employed, which will be hereinafter referred to.

Similar numerals of reference indicate corresponding parts in the figures.

1 designates a movable light-deflecting body or bodies, the same being inclosed in a suitable casing and actuated by means of the rack 2, located on the under side of said mirror, said rack being in mesh with the pinion 3, which latter engages the gear 4, the same being actuated by any suitable means, as the crank 5. The adjustable deflecting-body 1 is located at an angle in front of the condensers 6, and is also angularly located with respect to the lenses or condensers 7 and 8 and the objective lens 9, the latter being located below the adjustable mirror 10, which projects the picture or character upon the screen, as desired, said objective lens and mirror 10 being vertically adjustable.

11 and 12 designate slide-holders arranged at an angle to each other. It will thus be seen from the foregoing that by the utilization of the movable deflecting-body 1, angularly located, substantially as described, the operator can readily throw the title of a moving picture on a screen by placing said title-slide in the holder 11, when the horizontal path of the rays of light is obstructed by the deflecting-body 1, being in the position seen in Fig. 1, the rays of light being deflected from the mirror or deflecting-body 1 through the objective lens 9 to the desired point on the screen.

It will be apparent that when the movable deflecting-body 1 is moved from the position seen in Fig. 1 in the direction of the arrow *a* until it is below the condensers 6 the rays of light will pass in a horizontal line through the condensers 6 and lens 7 to the desired

point, thus obviating the necessity of shifting the entire lantern bodily in a sidewise or lateral direction or using another lantern when it is desired to throw the title of the moving picture upon the screen, as has been heretofore practiced.

It will be apparent that one or more inclined mirrors or deflecting-bodies may be employed, if desired, and that I may employ other means for actuating the same without departing from the spirit of my invention.

I have found by placing the film and feeding the same from the side of the apparatus, with or without mechanism, that a continuous film in the form of a band or apron can be used without any rackwork or spools of any kind, as heretofore used, so that I am enabled to economize space and time in placing the film in position for projection. In carrying out this embodiment of my invention I employ any suitable mechanism whereby the worm-wheel 12^x is actuated, as by a train of gearing or by a crank or other suitable means, which I have not deemed it necessary to illustrate in detail. I locate the worm-gear 12^x at the side of the apparatus, so as to mesh with the worm-wheel 13, which is mounted on the shaft 14, suitably supported, which latter carries the two sets of sprocket-wheels 15, which are adapted to engage the perforations 17, located in the edges of the film 16, in order to propel the same.

As is familiar to those skilled in the art, a single strip of film may be employed or the film may be endless or in the form of an apron, as seen in Fig. 4. When the film of the apron form is employed, it is liable to become twisted or coiled, and in order that it will be fed in a straight or unknicked condition I employ the tension-finger 19, the construction of the same being best understood from Figs. 4 and 5, said finger being attached to or integral with the body portion 20, which latter is secured by a neck 21 to the presser 22, which is provided with a concaved portion 23, the edges of said presser being adapted to occupy the space between the teeth of the sprocket-wheels 15. The presser 22 is supported on the shaft 24, which carries the spring 25, the tension of the latter being such that the concavity 23 of said presser is always in contact with the middle portion of the film 16, whereby the latter is caused to be always engaged by the teeth of the wheels 15 and to be propelled to the desired point while the finger 19 straightens out the twisted portion 18, said film passing between the members 20 and 23, as will be apparent.

The preferred construction when a continuous film or apron is employed will be understood from Fig. 4, and in case a single non-continuous film is employed I utilize the device seen in Fig. 6, wherein is shown a roller 26, having a shaft 27, which is suitably journaled in the portion 28 of the casing, on which shaft is mounted a pulley 29, whereby power thereto is communicated by the cord or other

connection 30, which engages the pulley 31 on the shaft 32, which carries the wheel 33, it being understood that said shaft 32 is actuated in unison with the train of gearing seen at the left of Fig. 1, which same I have not deemed necessary to describe in detail, as it forms *per se* no part of my invention, and other power-transmitting mechanism can be employed, if desired.

The roller 26 is provided with a groove 34, which extends longitudinally thereof and is wider at its base than at its top portion 35, wherefrom it will be seen that when the end of a film, as 36, has been passed between the tension-finger 19 and presser 22 and the sprocket-wheels 15, forming a twisted loop, and down back of the presser-plate 41 the free end of the film can be doubled or folded upon itself, as illustrated at 42 in the drawings, and inserted in the slot or groove 34, wherefrom the film 36 will be wound upon the roller 26, as will be understood from Figs. 1 and 3. The film is preferably unwound from a spool 38, which is mounted upon the rod 39, which is secured to a side of the casing 43 by the brackets 40.

In Fig. 2 the casing 43, which covers the mechanical features shown in Fig. 1 directly beneath the same, is swung aside from the optical center, and with it the said mechanical features, in order to place the projecting-lens 44 in its stead, which converts the apparatus into a stereopticon without the moving-picture mechanism.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a projecting apparatus or lantern for moving pictures, the combination of condensers located in substantial alinement with each other, a condenser located at an angle to said first-mentioned condensers, a reflecting-body located intermediately of and at an angle to said condensers, and means for moving said body into and out of the path of the rays of light passing through said alining condensers.

2. In a projecting apparatus or lantern for moving pictures, a shaft and a roller mounted on said shaft, said roller having a slot therein and said slot being narrower at its top than at its base and adapted to receive the end of a film and adapted to engage with said film when the same is twisted.

3. In a projecting apparatus or lantern for moving pictures, a tension device consisting of a finger, a body portion to which said finger is attached, a presser attached to said body portion, the film passing between said body portion and presser, and a spring for yieldingly holding said presser and finger in the desired position relative to said film.

4. In a projecting apparatus or lantern for moving pictures, a tension device having a finger projecting in the longitudinal direction of the advancing film in proximity to the loop of the film where presented to the optical

center, a film, and a feeding device for said film, said tension device and feeding mechanism being located at the side of the machine, and means for causing the film to move
5 in substantially parallel paths in planes at an angle to each other.

5. In a projecting apparatus or lantern for moving pictures, a film-feeding device therefor located at the side of the apparatus, and
10 means for moving the film in substantially parallel paths in planes at an angle to each other.

6. In a projecting apparatus or lantern for moving pictures, the combination with a casing, of a film, a support for the film-supply
15 located at a side of the lower portion of the apparatus, a finger extending in the longitudinal direction of the advancing film, a presser attached to said finger, said film passing be-
20 tween said finger and presser, sprocket-wheels adapted to coact with said presser, and a

spring for yieldingly holding said presser and finger in the desired position relative to a film.

7. In a projecting apparatus or lantern for moving pictures, feeding devices located at
25 an angle to the plane of the film in the optical center, means for forming a twisted loop in the film, and means for moving the film in substantially parallel paths in planes at an
30 angle to each other.

8. In a device of the character named, a condenser, a projecting-lens, means for holding and guiding the film in the optical center, a film-feeding device located to feed the film
35 from one side of the machine, and means for moving the film in substantially parallel paths in planes at an angle to each other.

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