

J. M. STAFFORD.
 FOCUSING LIGHT PRODUCER.
 APPLICATION FILED SEPT. 17, 1908.

930,242.

Patented Aug. 3, 1909.

Fig. 1.

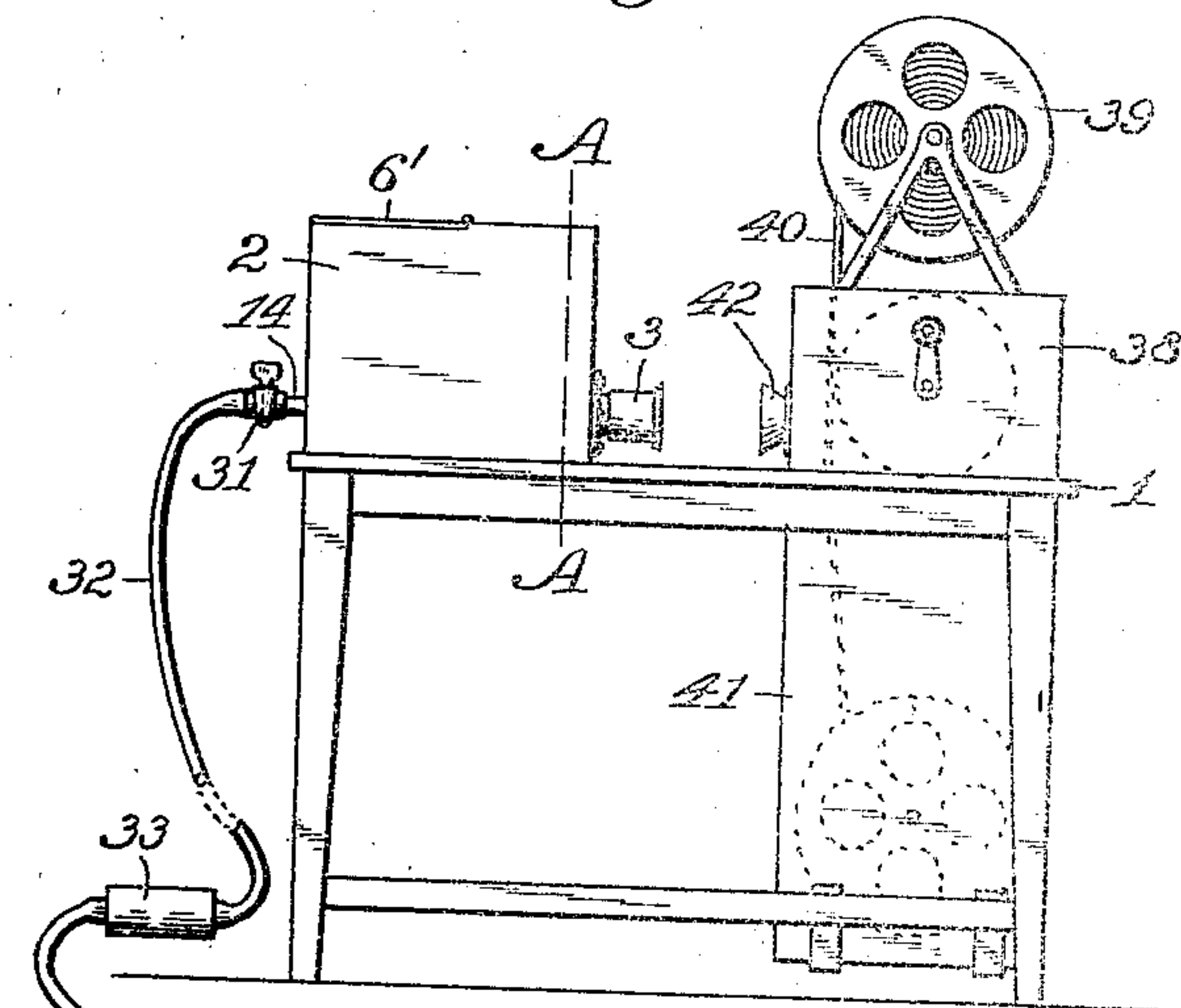


Fig. 2.

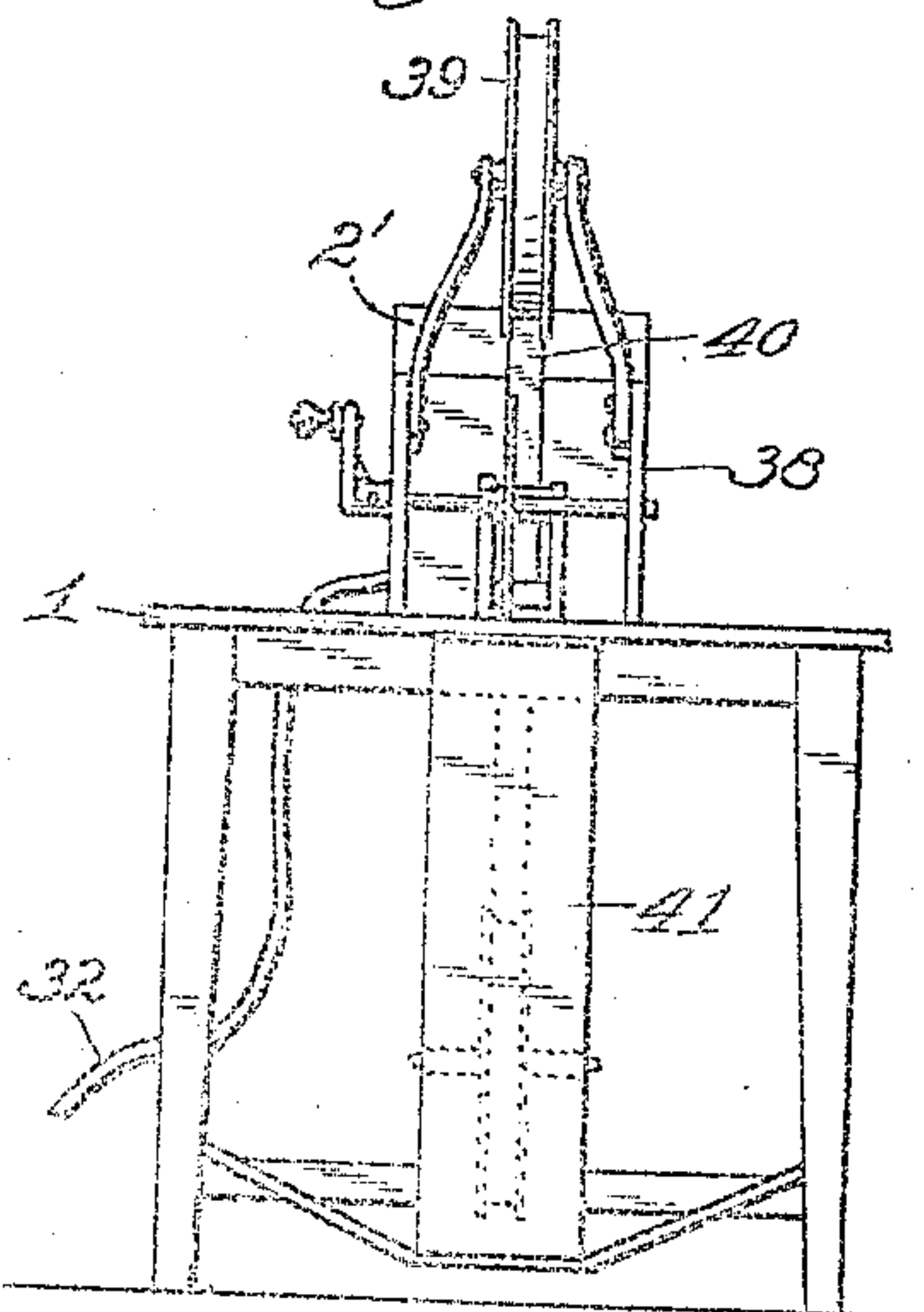


Fig. 3.

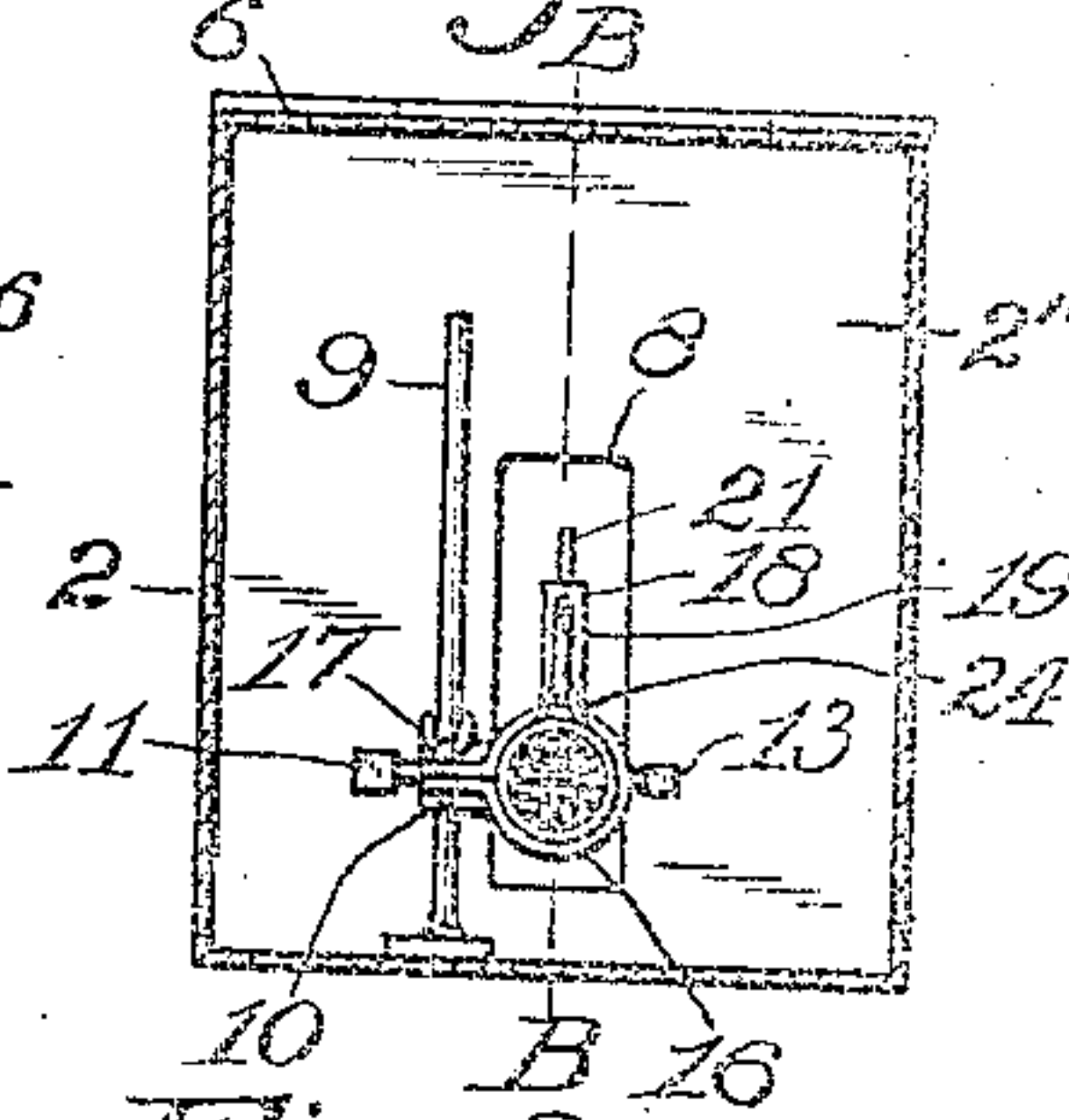


Fig. 4.

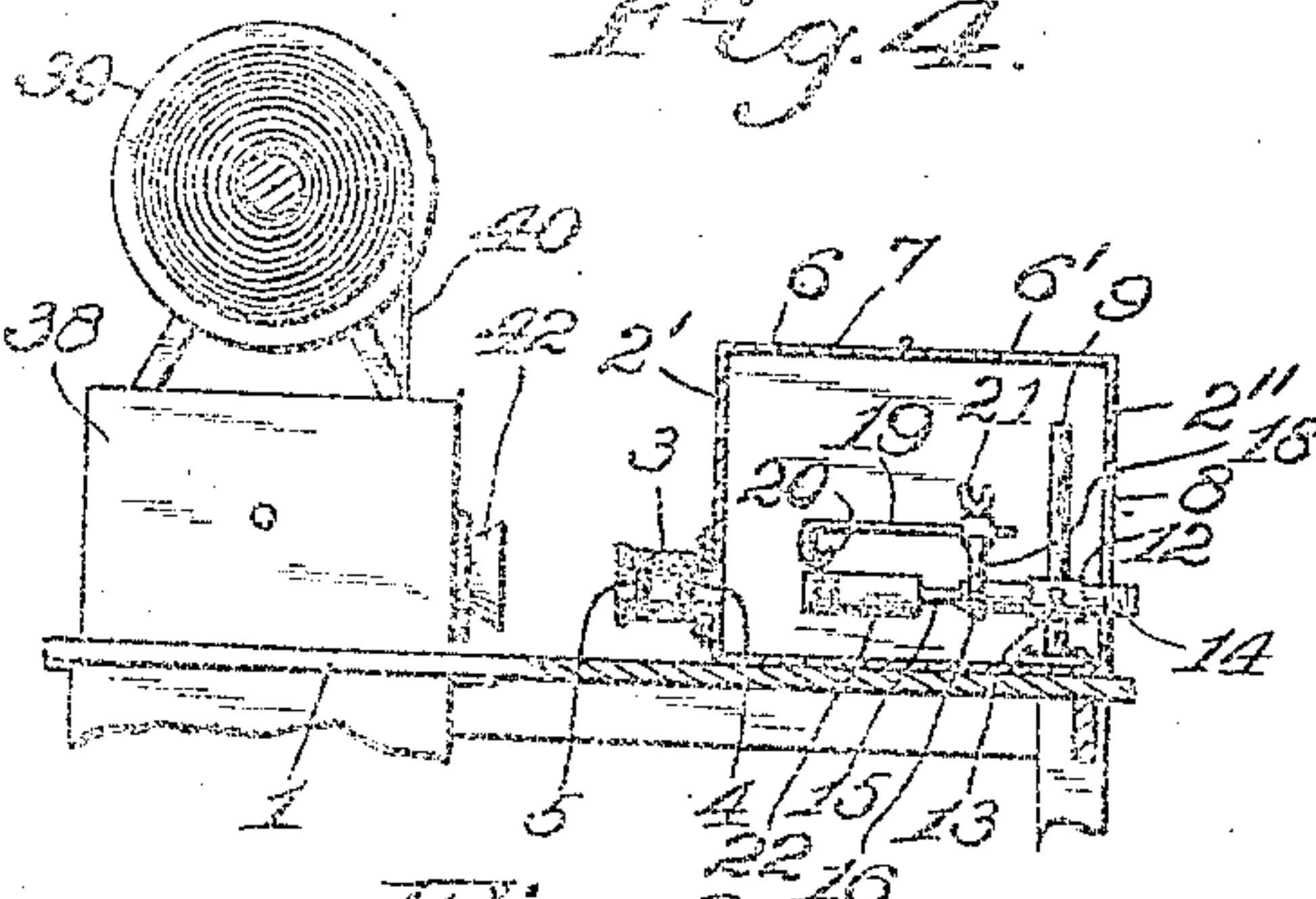


Fig. 5.

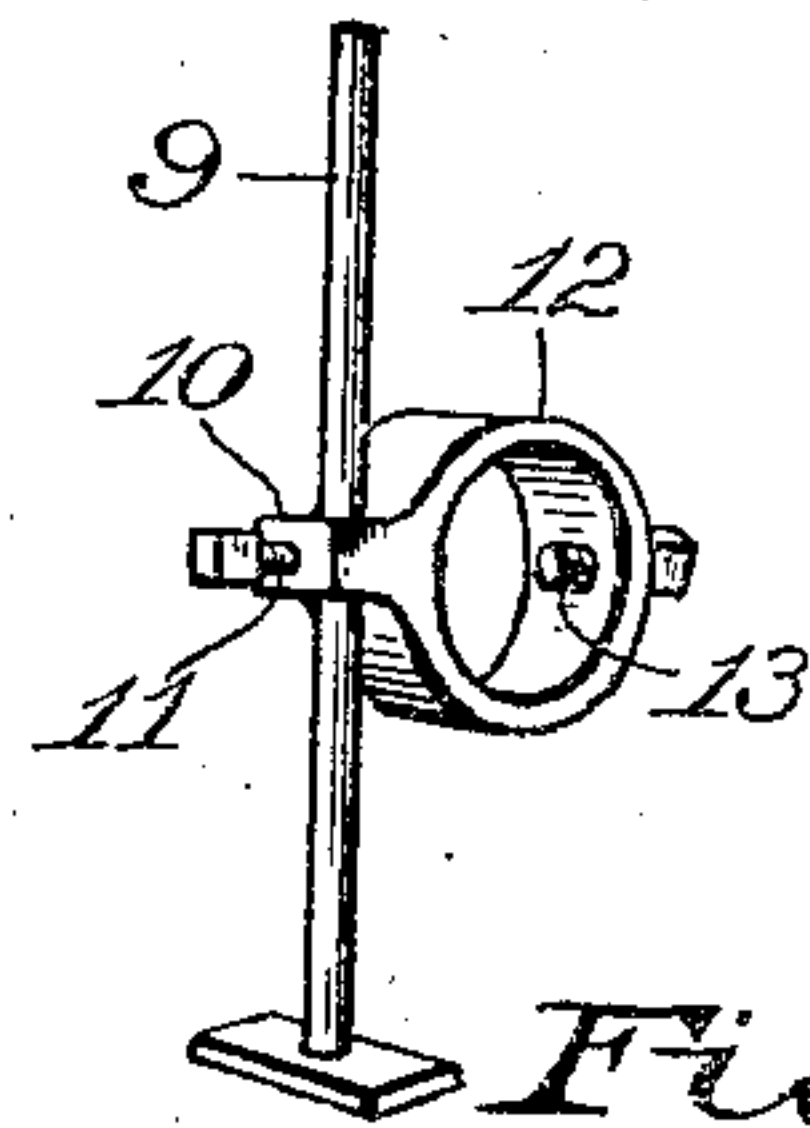


Fig. 6.

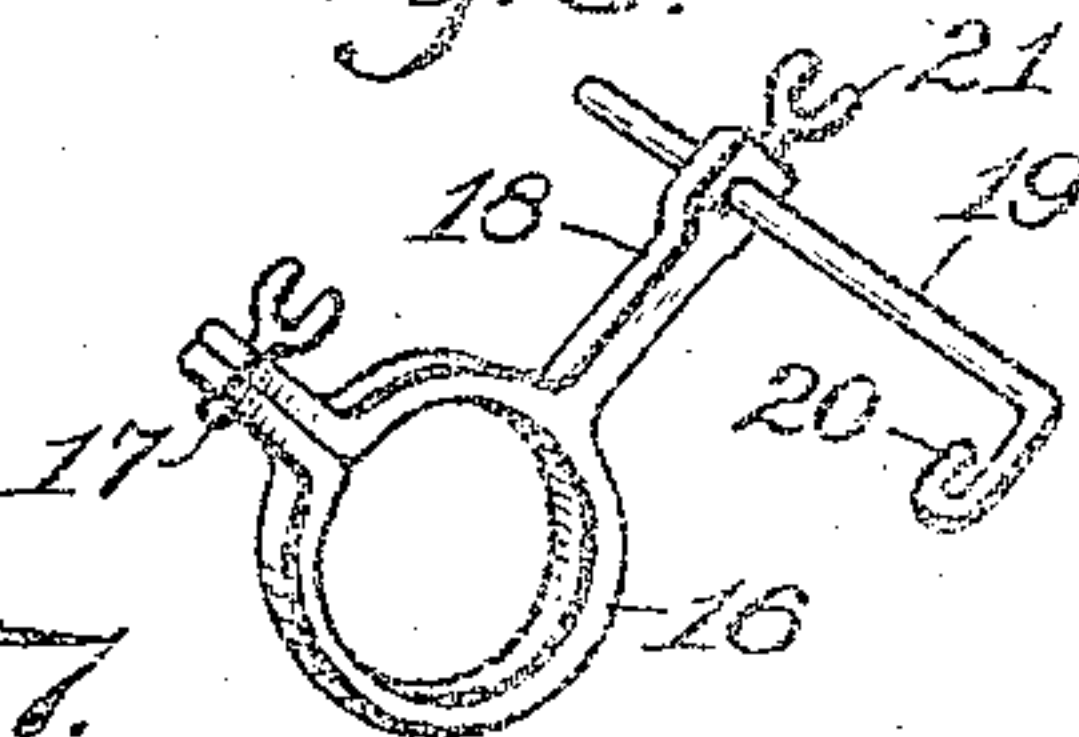


Fig. 7.

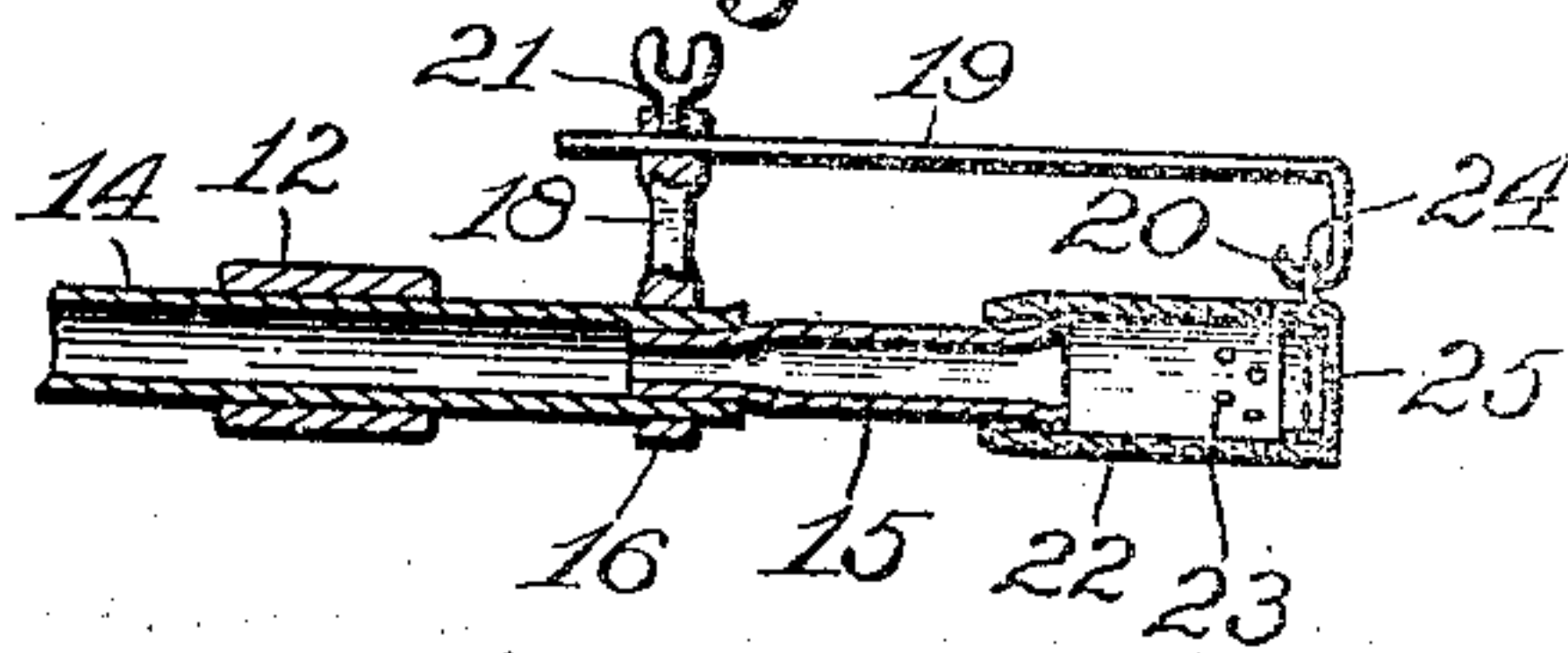


Fig. 8.

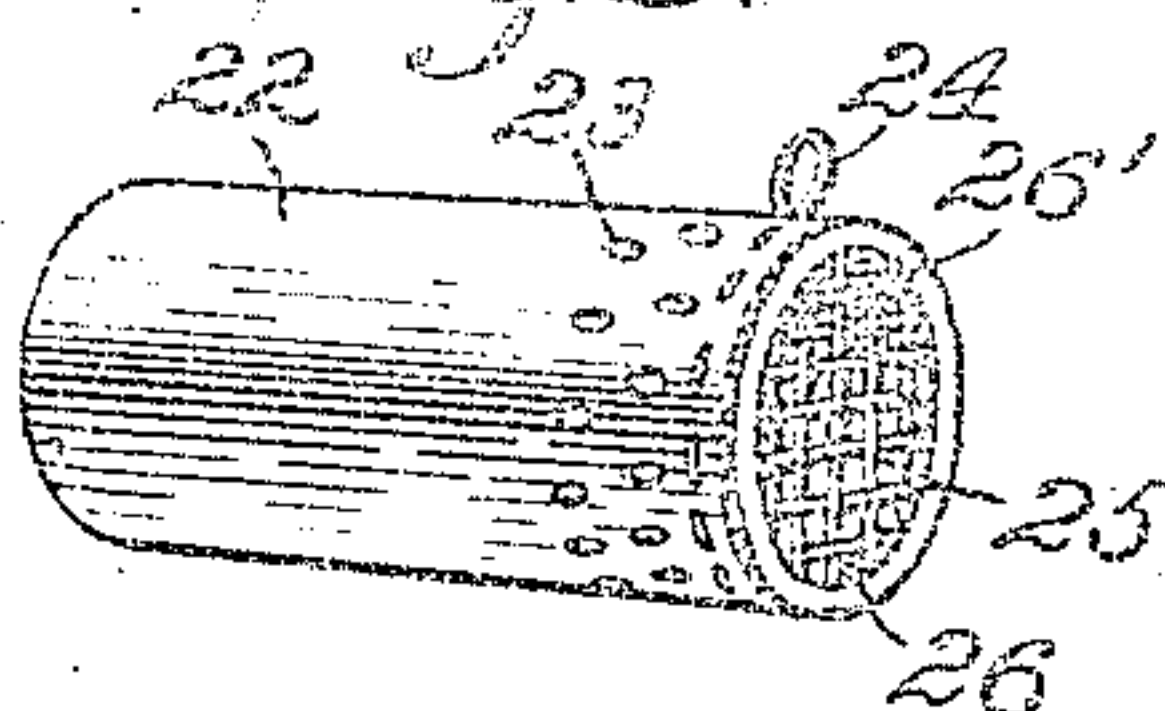


Fig. 9.

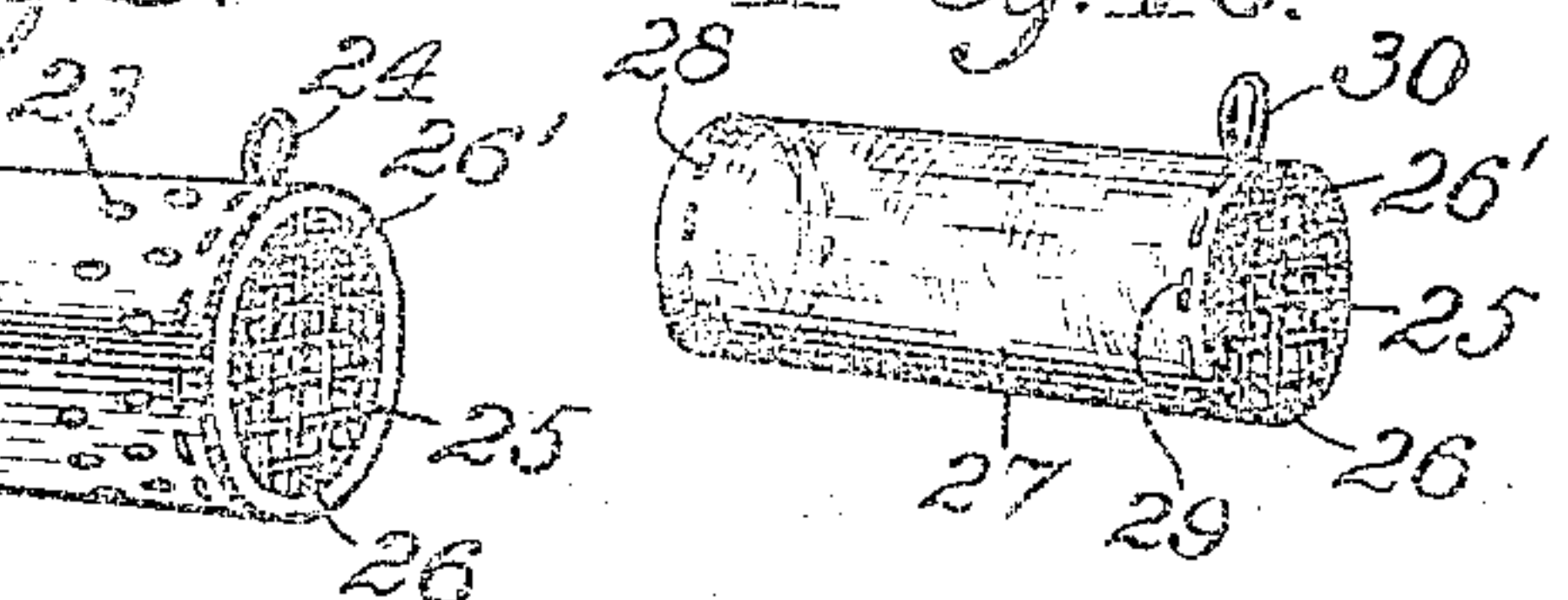
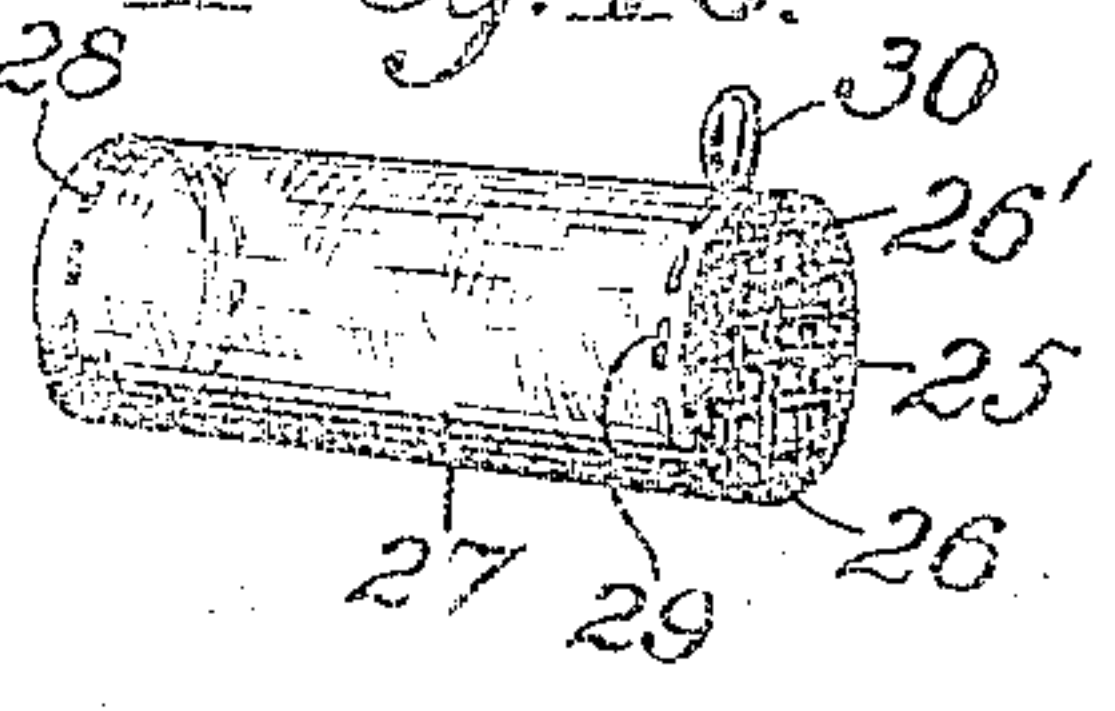


Fig. 10.



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UNITED STATES PATENT OFFICE.

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FOCUSING-LIGHT PRODUCER.

No. 930,242.

Specification of Letters Patent.

Patented Aug. 3, 1909.

Application filed September 17, 1908. Serial No. 453,511.

To all whom it may concern:

Be it known that I, JAMES M. STAFFORD, a citizen of the United States, residing at Petersburg, in the county of Pike and State of Indiana, have invented certain new and useful Improvements in Focusing-Light Producers; and I do declare the following to be a full, clear, and exact description of the invention, reference being had to the accompanying drawings, and to the letters and figures of reference marked thereon, which form a part of this specification.

This invention relates to apparatus whereby artificial light may be produced to be focused onto moving picture films in moving picture machines that are employed for reproducing or projecting the pictures onto canvas for displaying them, the invention having reference more particularly to a lamp burner that is adapted to be used in horizontal positions so as to enable the operator of moving-picture machines to attain the best results by means of the strongest light at relatively small expense.

Objects of the invention are to provide an improved lamp and burner that will produce the maximum degree of light with a light condenser for various purposes, and whereby exceedingly strong light may be obtained with correct focusing by the use of gasolene or gas, particularly when electric lights are not obtainable or when calcium lights may be objectionable; a still further object being to provide light producing apparatus that may be provided at relatively small cost, and be safe, durable and economical in use.

With the above mentioned and other objects in view, the invention consists in a novel form of lamp including a mantle of novel construction, and in the parts, and combinations and arrangements of parts, as hereinafter particularly described and defined in the appended claims.

Referring to the drawings, Figure 1 is a side elevation of a moving-picture machine of common construction and having the improvements embodied therein; Fig. 2, an end elevation of the machine in which parts of the apparatus are omitted so as to expose other parts; Fig. 3, a transverse sectional view of the lamp case on the line A—A in Fig. 1; Fig. 4, a fragmentary sectional view at the plane of the line B—B in Fig. 3; Fig. 5, a perspective view of an adjustable lamp-stand; Fig. 6, a perspective view of an adjustable mantle supporter; Fig. 7, a longi-

tudinal central sectional view of the improved lamp; Fig. 8, a perspective view of the improved mantle; Fig. 9, a longitudinal central sectional view of a modified mantle; and Fig. 10 a perspective view of the modified form of mantle.

Similar reference characters in the different figures of the drawings indicate like elements or features of construction mentioned herein.

In the drawings the numeral 1 indicates a stand on which is mounted a lamp case or box 2, 2' and 2'' being opposite ends thereof, and on the end 2' is a tube 3 in which are two lenses 4 and 5 constituting a condenser to focus light into the moving-picture machine proper, the case having a top 6 having a lid portion 6' and an aperture 7 from which heat may escape. The lamp case or box may be of various forms of construction or such as are commonly used for the purpose, but in different forms of cases the condenser may be at different heights from the bottom of the case, and in order to adapt the case to receive the improved burner a vertical slot 8 is formed in the end 2'' to permit of vertical adjustment of the lamp, and such lamp as may have heretofore been used may be removed so that the improved lamp may be mounted in lieu thereof. Obviously the improved lamp may be provided with any suitable case.

The improved lamp comprises a stand having a vertical stem 9 that is fixedly mounted on the bottom of the case 2, a block 10 that is mounted adjustably on the stem and provided with a binding screw 11 for fixing it to the stem at any desired position, the block having a collar 12 formed thereon that is provided with a binding screw 13 for securing a feed-pipe 14 which extends through the collar and may be adjusted longitudinally toward or from the condenser. The pipe 14 extends out through the slot 8 that is in the end 2'' of the lamp case. The lamp-burner comprises a tube 15 that is inserted removably in the inner end of the pipe 14. A collar 16 extends around the inner end portion of the pipe 14 and is provided with a binding screw 17 so that the collar may be adjustably secured to the pipe, the collar having an arm 18 thereon in which is adjustably mounted a rod 19 having a hook 20 on one end thereof, the rod being secured to the arm in any desired position by a binding screw 21 with which the arm is provided.

The improved burner comprises a mantle having the body portion thereof made of tubular form and preferably comprises a tube 22 composed of asbestos and having one end thereof connected to the end of the tube 15, the other end portion of the mantle 22 having apertures 23 therein and also having an asbestos loop 24 connected thereto that engages the hook 20 for supporting the free end of the mantle, said free end of the mantle body being partially closed by any suitable mantle fabric 25 of circular shape. The loop 24 is at the uppermost portion of the mantle body when in operative position and the fabric 25 has openings therein that vary in area, the lowermost openings 26 being larger than the uppermost openings 26', it being designed to retard the escape of gas through the upper portion of the fabric.

The modified mantle shown in Figs. 9 and 10 is also of tubular form, but is formed throughout of suitable mantle fabric such as is commonly used, or of other suitable material and comprising a tubular body portion 27 at one end of which an asbestos thread 28 is woven therein for holding the mantle on the tube 15, the other end of the mantle having an asbestos thread 29 woven therein and having a loop 30 formed thereof to engage the hook 20 for supporting the end of the mantle, said end having the mantle fabric end part 25 as hereinbefore described, so that the incandescent light which may be obtained will appear as a disk directly opposite the lens 4 and in a plane parallel to the plane of the lens.

A regulating valve 31 is connected to the feed pipe 14 and has a flexible tube 32 connected thereto, the tube being connected to a gas generator 33 which is connected by a tube or pipe 34 with a gasolene tank 35 provided with an air-pump 36 that is connected by a pipe 37 to the tank, and in order to eliminate danger from fire or explosions the tank may be placed outside of the exhibition halls.

The picture machine proper is indicated by the numeral 38 on which is mounted a reel 39 from which a film 40 may be unwound into a box 41, the apparatus having a light receiver 42 arranged opposite to the lens 5 of the condenser, and the apparatus being well known requires no further description herein. It is shown in order to clearly explain one of the uses and peculiar advantages of the invention.

It should be understood that while it is designed to supply gas generated from gasolene through the tube 32, any other suitable gas or fluid may be conveyed through a suitable conduit to the feed pipe 14 and the flow regulated by the valve 31.

In practical use the illuminating gas is fed through the pipe 14 and regulated in volume by the valve 31, the gas flowing through the

tube 15 and the mantle thereon and is ignited and consumed at the disk-shaped fabric 25 at which an incandescent light of great brilliancy is produced directly opposite to the lens 4, the two lenses 4 and 5 focusing the light into the receiver 42 and onto the film 40, the picture apparatus being provided with suitable means for projecting the pictures on a magnified scale onto a canvas, as will be understood, and it will be clear from the foregoing description that the burner may be readily adjusted toward or from the condenser, as may be required, or vertically so as to be fair or in alinement with the condenser. It will be understood that such apparatus must be operated in substantially horizontal positions and the tendency of the gas will be to escape from the uppermost portions of the mantle which, however, is retarded by the smaller openings 26' in the mantle fabric 25 so that the combustion is approximately uniform on the whole disk-shaped fabric; therefore, a light of uniform brilliancy is at all times maintained, and by reason of the fact that the light proceeds from one vertical plane toward the condenser the light converges at one point on the condenser, whereby the most satisfactory results are attained.

Having thus described the invention, what is claimed as new, is—

1. A mantle comprising a tubular body portion having apertures therein, and a foraminous end connected to the body portion and having portions thereof that have smaller openings than other portions thereof to retard the flow of fluid through portions only of the end.

2. A mantle comprising a tubular foraminous body portion having a loop on one side of one end part thereof, and a foraminous end connected to one end of the body portion and partially closing the end of the body portion in a greater degree near one side than at the opposite side of the body portion.

3. The combination of a horizontal tube, a mantle having a tubular body portion arranged horizontally and connected to the tube and a foraminous end connected to the body portion, said body portion having a loop at said end on the uppermost portion of the side thereof, and a rod suitably supported and having a hook engaging the loop.

4. The combination of a fixed upright stem, a collar supported on the stem and adjustable vertically thereon, a pipe secured horizontally in the collar and adjustable longitudinally therein, a tube connected to the pipe, a collar secured adjustably to the pipe and having an arm thereon, a mantle arranged horizontally in connection with the tube and having a loop on the uppermost side of the end portion thereof, and a rod mounted adjustably on the arm and having a hook connected to the loop.

5. The combination of a horizontal tube, a mantle having a tubular body portion arranged horizontally and connected to the tube and a foraminous end part connected to the body portion, said body portion having a non-combustible thread woven therein that extends about the tube, and having also a non-combustible thread woven therein adjacent to said end part provided with a loop that is situated on the uppermost portion of the body portion of the mantle, and a rod suitably supported and having a hook engaging the loop.

6. The combination of an inclosing case, a burner tube mounted in the case horizontally, a supply tube connected with the burner tube, a focusing lens mounted in the case opposite the open end of the burner

tube, a mantle having a tubular body portion arranged horizontally and connected to the burner tube, and a foraminous end part connected to the body portion, the end part being flat and opposite the lens and the uppermost portions thereof having smaller openings than the lowermost portions thereof to retard the flow of illuminating fluid through the said upper portions, whereby a flow of fluid is insured through said lowermost portions opposite to the lens.

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

JAMES MORTON STAFFORD.

Witnesses:

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LIZZIE H. MORRIS.