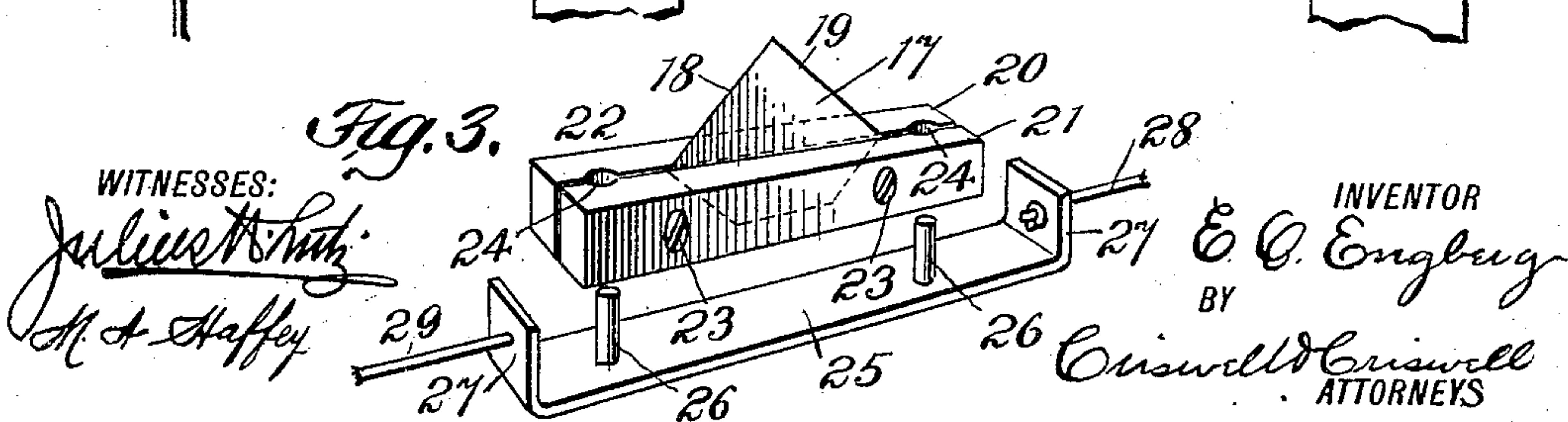
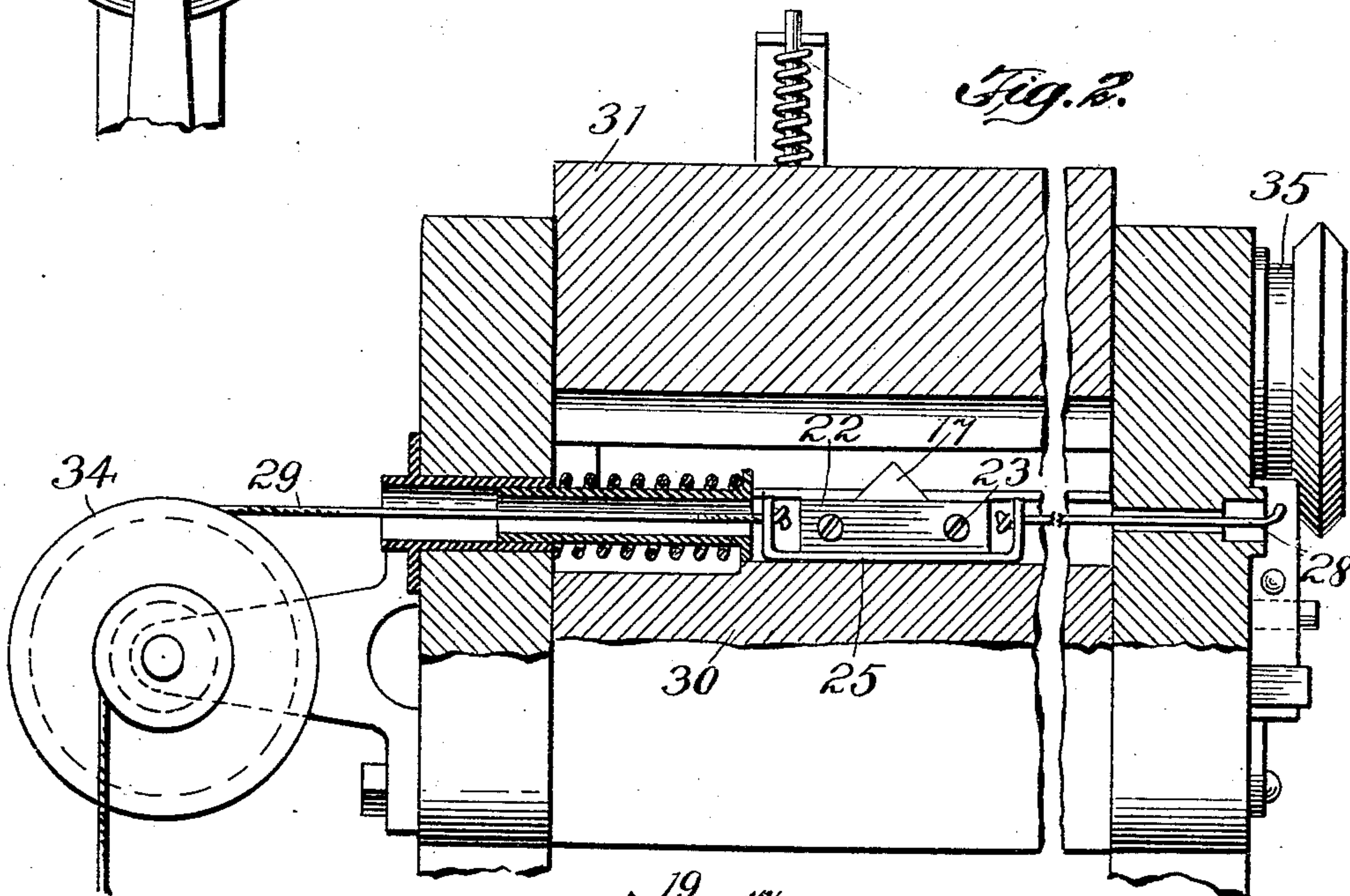
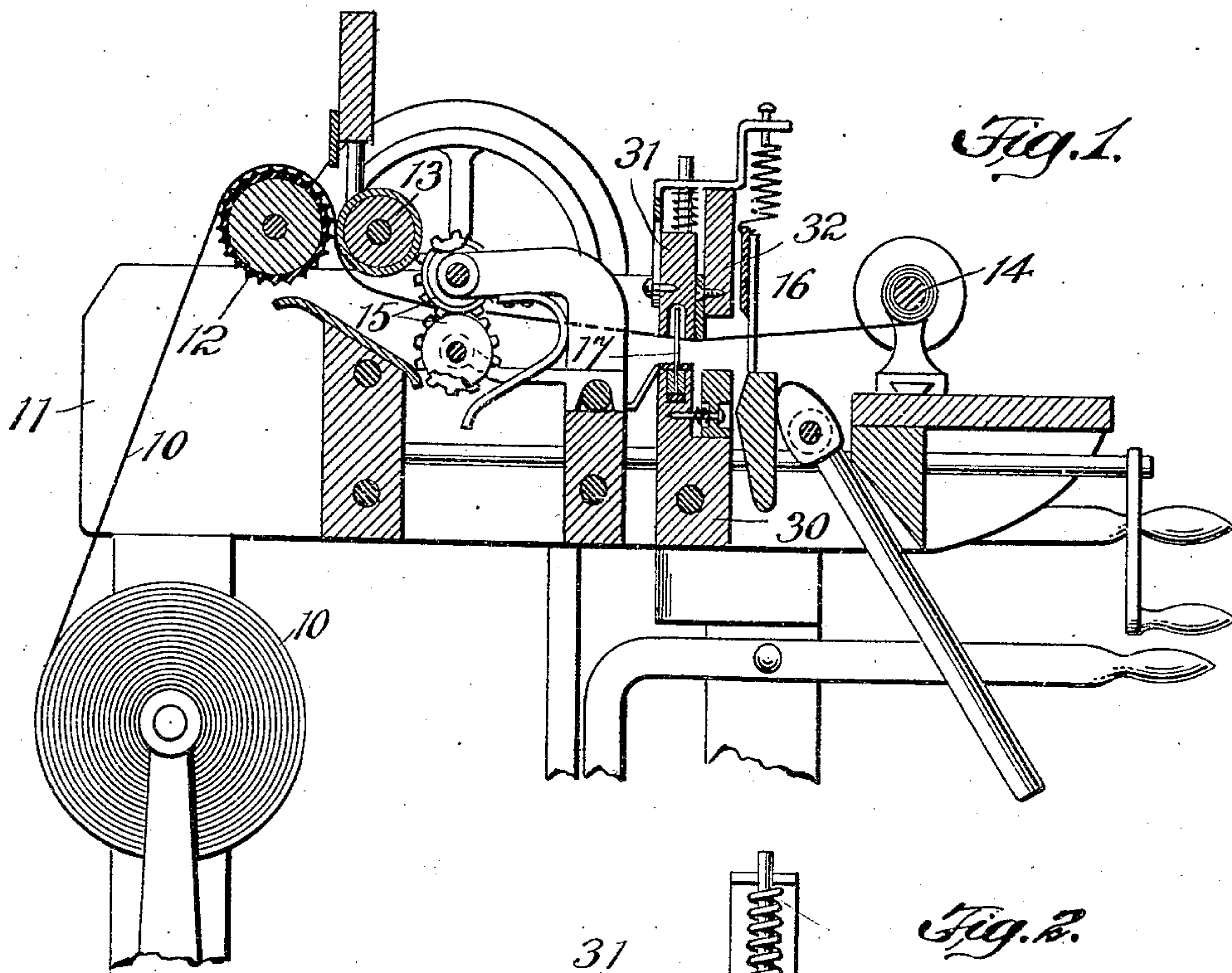


E. O. ENGBERG.
KNIFE FOR WINDOW SHADE MACHINES.
APPLICATION FILED FEB. 19, 1908.

943,221.

Patented Dec. 14, 1909.



WITNESSES:

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EPHRAIM O. ENGBERG, OF SALT LAKE CITY, UTAH, ASSIGNOR TO JOHN BEECHER PATTON, OF KENT, OHIO.

KNIFE FOR WINDOW-SHADE MACHINES.

943,221.

Specification of Letters Patent.

Patented Dec. 14, 1909.

Application filed February 19, 1908. Serial No. 416,771.

To all whom it may concern:

Be it known that I, EPHRAIM O. ENGBERG, a citizen of the United States, and a resident of Salt Lake City, county of Salt Lake, and State of Utah, have invented certain new and useful Improvements in Knives for Window-Shade Machines, of which the following is a full, clear, and exact description.

This invention relates to a knife for cutting the fabric or shade material transversely thereof, and is more particularly adapted for machines such as is disclosed in my Patent Number 883,795, dated April 7, 1908.

The primary object of the invention is to provide a simple and efficient knife which may move bodily across the machine to cut the shade material, and which is so held to the operating means that the knife may be quickly removed and replaced in case it is desired to sharpen the knife, or in case it is necessary to replace one that has become injured or useless by another knife.

A further object of the invention is to provide a knife with a plurality of cutting edges so that it may be turned end-for-end in case one of the cutting edges becomes dull thereby preventing the necessity for taking the time to sharpen the edge of the knife.

With these and other objects in view, the invention will be hereinafter more particularly described with reference to the accompanying drawings, which form a part of this specification, and will then be pointed out in the claims at the end of the description.

In the drawings, Figure 1 is a vertical transverse section of one form of window shade machine with the knife applied thereto. Fig. 2 is an enlarged transverse section of the guiding means for the transverse cutting knife showing part of the operating mechanism for said knife; and Fig. 3 is a detail perspective view of the knife and its connecting parts.

The roll of fabric 10 is supported upon the machine frame 11, and said fabric is passed between the feed rolls 12 and 13, and from there to the shade roller 14 which is supported in any suitable way, and to which the end of the shade to be made may be fastened in the usual way. The fabric, as it is fed forward, may be trimmed lengthwise thereof by the cutting knives 15, and after being trimmed is creased transversely thereof by

means of the loop-forming mechanism 16 for the usual shade slat, and just prior to the forming of the loop the material is cut transversely by means of a movable knife 17. With the exception of the knife the mechanism is substantially the same as shown in my patent hereinbefore referred to.

The knife 17 may be of any suitable form. As shown it is substantially rectangular, and is provided with two cutting edges 18 and 19, though if desired the said knife may be square so as to provide for cutting edges. This knife is held between the members 20 and 21 of a knife-bar 22, and said members of the knife-bar are held together by means of screws 23 or in any other suitable way, and are adapted to clamp and rigidly hold the knife between said members. The knife-bar 22 is provided at or near its end with apertures 24, which may be formed by recesses in the two opposed members 20 and 21, and said knife-bar is adapted to be removably held to a carrier, plate or device 25. The carrier 25 is provided with two posts or projections 26, which are adapted to fit into the apertures 24 of the knife-bar in such a way that the said knife-bar may be quickly removed from the carrier 25 in order that the knife may be sharpened or replaced by another knife. The carrier 25 is in the form of a plate, and has upwardly projecting ends 27 to which flexible connections 28 and 29 are secured, and said carrier 25 is adapted to move, and is held to slide in a groove in a transverse bar 30 of the loop-forming mechanism. As in the patent referred to the knife is adapted to move under the fabric and under a clamping member 31 of the loop-forming cross-head 32, though its position with respect to other parts of the machine may be changed as desired.

Any suitable means may be employed for forcing the knife transversely of the machine. As shown the flexible connection 29 is secured to a drum 34, and the flexible connection 28 is connected to a drum 35, one of said drums being made to force the knife across the machine into cutting position, and the drum 34 serving to carry the knife across the machine to cut the material transversely as set forth in said patent. By this means the knife-bar 22 is suitably guided to move transversely of the machine, and the knife may be quickly removed to sharpen the same or to replace the knife by another.

From the foregoing it will be seen that simple and efficient means is provided whereby a transversely movable knife for window shade machines is provided; that said knife is so held to a knife-bar that it may be readily removed; that the knife-bar may also be removed from a carrier, and that by having the knife-bar removable in the manner shown it is not necessary to disconnect the flexible connections or other operating means from the carrier.

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

1. The combination with means for supporting shade material, of loop-forming mechanism for the shade-slat, a carrier movable transversely of the machine, and a knife-bar removably held to the carrier.

2. The combination with means for supporting shade material, of loop-forming mechanism for the shade-slat, a carrier plate movable transversely of the machine, means for moving the carrier plate, a knife-bar removably held to the carrier plate, and a knife removably held to the knife-bar.

3. The combination with means for supporting shade material, of loop-forming mechanism for the shade slat, a carrier having posts thereon and means for moving the carrier, a knife-bar comprising two members removably held to the posts, and a knife clamped between the members of the knife-bar.

4. The combination with means for supporting shade material, of loop-forming mechanism for the shade slat, of a carrier movable transversely of the machine and having posts thereon and means for moving the carrier adjacent to said mechanism, a knife-bar comprising two members removably held to the posts, and a knife clamped between the members of the knife-bar.

5. The combination with means for supporting shade material, of loop-forming

mechanism for the shade slat, a carrier having posts thereon and means for moving the carrier, a knife-bar comprising two members removably held to the posts, and a knife having a plurality of cutting edges clamped between the knife-bar.

6. The combination with means for supporting shade material, of loop-forming mechanism for the shade slat, a plate having upwardly-extending ends and posts arranged between said ends, a knife-bar comprising two members having apertures therein adapted to fit over the posts of the plate so as to be removably held thereto, screws rigidly holding the members together, and a knife having a plurality of cutting edges clamped between said members.

7. The combination with means for supporting shade material, of loop-forming mechanism for the shade slate, a carrier having posts arranged thereon, a knife-bar comprising two members having apertures therein adapted to fit over the posts of the carrier and adapted to be removably held thereto, means rigidly holding the members together, and a knife having a plurality of cutting edges clamped between said members.

8. The combination with means for supporting shade material, of loop-forming mechanism for the shade slat, a carrier having upwardly-extending ends and posts arranged between said ends, of a knife-bar comprising two members having apertures therein adapted to fit over the posts of the carrier and adapted to be removably held thereto, means rigidly holding the members together, and a knife clamped between said members.

This specification signed and witnessed this 12th day of February A. D. 1908.

EPHRAIM O. ENGBERG.

Witnesses:

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