W. B. HAUSMAN.

PERFORATOR.

APPLICATION FILED AUG. 29, 1912.

**1,082,518.** Patented Dec. 30, 1913.

2 SHEETS—SHEET 1.

Fig. 1.

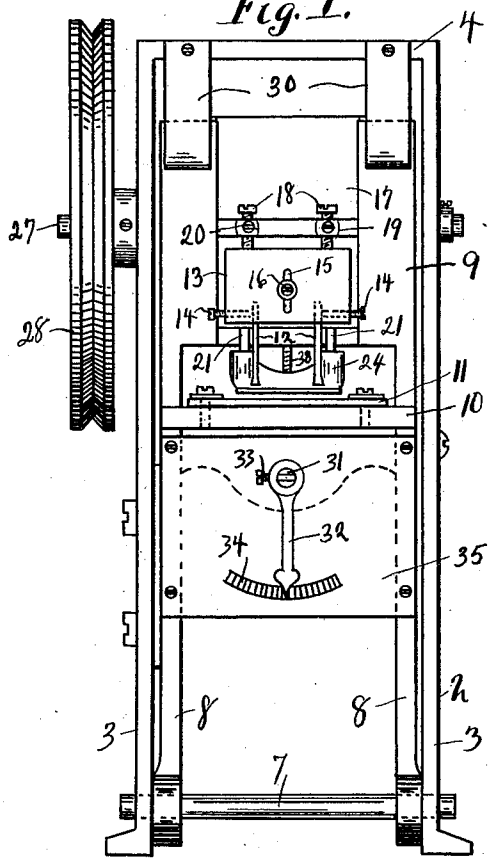
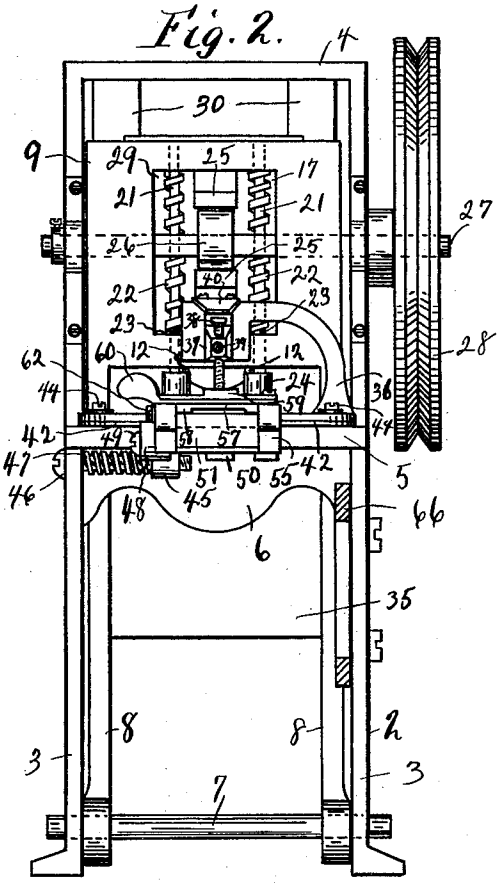


Fig. 2.



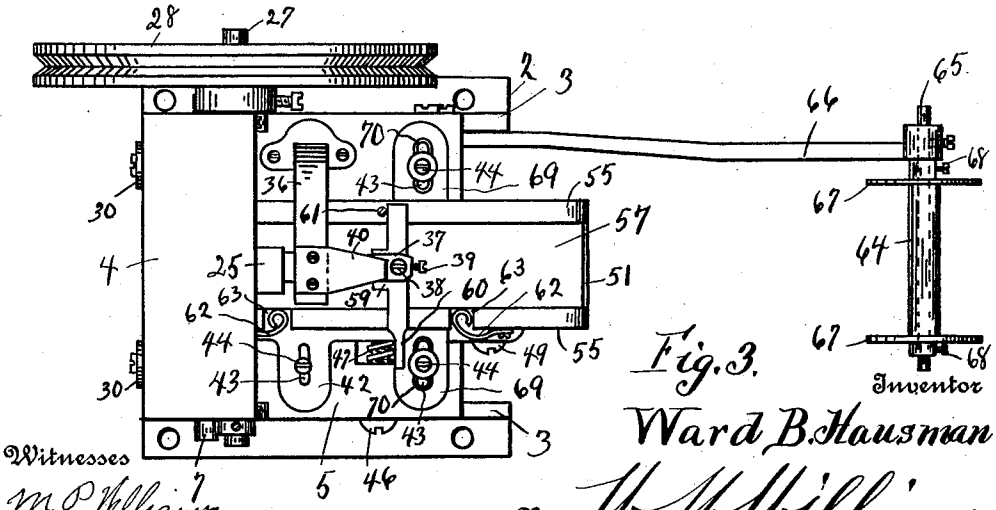


Fig. 3.

Witnesses

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2 SHEETS—SHEET 2.

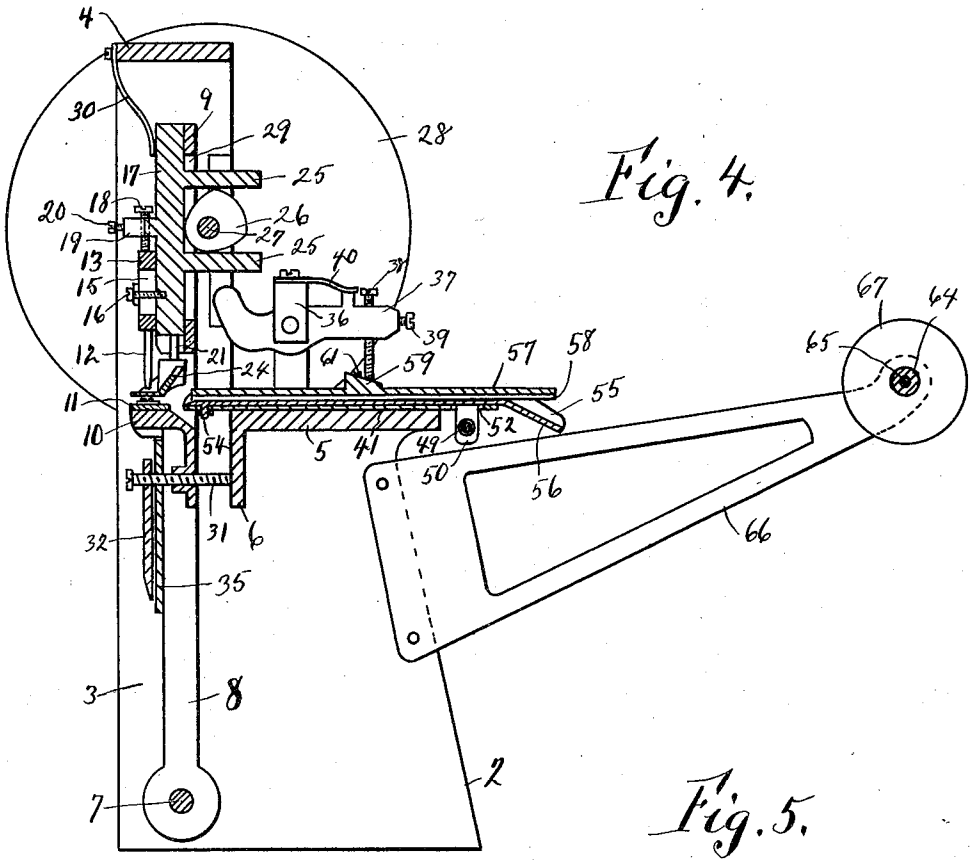


Fig. 4.

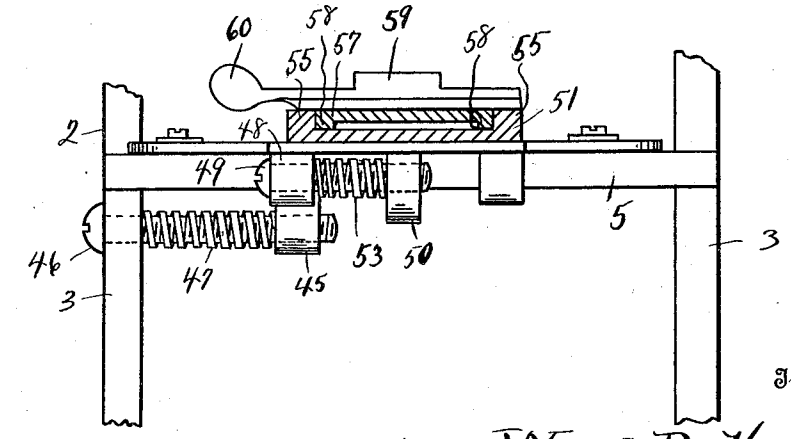


Fig. 5.

Witnesses

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# UNITED STATES PATENT OFFICE.

WARD B. HAUSMAN, OF PHILADELPHIA, PENNSYLVANIA.

## PERFORATOR.

1,082,518. Specification of Letters Patent. Patented Dec. 30, 1913.

Application filed August 29, 1912. Serial No. 717,735.

*To all whom it may concern:*

Be it known that I, WARD B. HAUSMAN, a citizen of the United States, residing at Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented new and useful Improvements in Perforators, of which the following is a specification.

My invention relates to new and useful improvements in perforators, and more especially that class which are used for forming the two parallel rows of perforations in a moving picture film adjacent the edges thereof, said perforations being utilized for drawing the film across the lens.

A further object of the invention is to provide an exceedingly simple and effective perforator, the operating parts of which are worked through the medium of a single cam.

A still further object of the invention is to provide a simple and effective means for adjusting the guide so that the perforations in the film will be in alinement and also the same distance from the edge of the film, thus overcoming the necessity of adjusting the dies which cannot be accomplished with accuracy.

Another object of the invention is to provide means for regulating the movement of the die carrying frame whereby the distance between the perforations may be varied and also to provide means for vertically adjusting the male dies.

With these ends in view, this invention consists in the details of construction and combination of elements hereinafter set forth and then specifically designated by the claims.

In order that those skilled in the art to which this invention appertains may understand how to make and use the same, I will describe its construction in detail, referring by numeral to the accompanying drawing forming a part of this application, in which—

Figure 1, is a front elevation of a perforator made in accordance with my improvement. Fig. 2, is a rear elevation thereof, the bracket being broken away. Fig. 3, is a plan view thereof. Fig. 4, is a longitudinal vertical sectional view, and Fig. 5, is an enlarged segmental view of a portion thereof, illustrating the adjustable guide.

In carrying out my invention as here embodied, 2 represents the frame comprising side walls 3, a top wall 4 and a table 5 intermediate the top and bottom and terminating some distance from the front of the frame from which point depends a stop 6.

In proximity to the bottom of the side walls 3 is mounted a shaft 7, on which are journaled the arms 8 of the oscillating frame 9, having a shelf 10 intermediate its ends on which is mounted the female die 11 which is provided with the necessary die openings to receive the male dies 12 which are detachably mounted in the adjustable die holder 13 having set screws 14 for holding the male dies in place.

The die holder 13 is provided with a vertical slot 15 through which passes a screw 16, the same being threaded into the slide 17, said screw 16 adjustably holding the die holder in different adjustments upon the slide 17 and said die holder is prevented from moving upward during the operation of the machine by screws 18 which are threaded through the projection 19 carried by the slide 17 and said screws 18 are locked by the screws 20 also threaded in the projection 19.

In the slide 17 are slidably mounted the pair of parallel vertical rods 21 which are normally forced downward or outward by a helical spring 22 coiled about each of said rods and resting against a portion of the slide 17 as the stationary member, the opposite end resting against the pin 23 carried by the rod 21 as the movable member.

On the lower or outer ends of the rods 21 is mounted the presser foot 24 adapted to co-act with the female die 11, said presser foot being provided with suitable openings for the passage of the male dies therethrough.

The slide 17 operates in a track formed in the oscillating frame 9, and said slide is provided with a pair of parallel rearwardly projecting arms 25 passing through an opening 29 in the oscillating frame, and between said arms operates the cam 26 carried by the shaft 27 journaled in suitable bearings in the side walls 3 of the frame adjacent the upper ends and on this shaft is mounted the pulley 28 for transmitting motion to the shaft 27 from a suitable source of power.

The upper end of the oscillating frame 9 is normally forced rearwardly by suitable resilient means here shown as a pair of flat springs 30 secured to the edge of the top wall 4 of the frame 2, and in order that the rearward movement of the oscillating frame may be regulated, I thread a screw 31

through a portion of said oscillating frame, the end of said screw 31 co-acting with the stop 6 and the adjustments of this screw are indicated by a pointer 32 adjustably mounted upon the screw 31 and held in its different adjustments by a set screw 33, said pointer registering with suitable indication marks 34 upon the plate 35 carried by the oscillating frame 9.

Mounted upon the table 5 of the frame 2 is a bridge 36 having one point of attachment to the table permitting the removal of the tensioning device sidewise of the machine as will be hereinafter described. To the bridge is pivoted the swinging lever 37 one end of which coöperates with one of the arms 25, the opposite end having threaded therethrough a screw 38 which is held in its adjustments by a set screw 39. The outer end of the lever 37 is normally held downward by a spring 40, one end of which is secured to the bridge while the free end cooperates with the lever as plainly shown in Fig. 4.

On the table 5 is adjustably mounted a base plate 41 having side wings 42 provided with slots 43 through which pass screws 44, the latter being threaded into the table for holding said base plate in its different adjusted positions. A depending lug 45 is formed integral with the base plate and passes through a suitable opening in the table 5 and into said lug is threaded a screw 46 which passes through one of the side walls 3, said screw being utilized for moving the base plate sidewise of the perforator and about said screw is coiled a helical spring 47 one end of which rests against the depending lug 45 as the movable member and the opposite end against the side wall as the stationary member thus normally forcing the base plate toward one side of the device. Adjacent the outer end of said base plate is formed integral therewith, another lug 48 through which passes a screw 49, the latter being threaded into a lug 50 depending from and formed integral with the guide plate 51, said lug 50 passing through a suitable opening 52 in the base plate. The screw 49 moves the outer end of the guide plate sidewise of the base plate and about said screw is coiled a helical spring 53, one end of which rests against the lug 50 as the movable member, and the opposite end against the lug 48 as the stationary member thereby normally forcing the outer end of the guide plate toward one side of the base plate. The inner end of the guide plate 51 is pivoted as at 54 to the base plate so that said inner end is always centered and only the outer end is movable. The guide plate carries intermediate its ends a pair of oppositely disposed side wings 69 in each of which is formed a slot 70 for the passage of the screws 44 whereby the outer end of said guide plate is held in its different adjusted positions, the same screws holding both the base plate and the guide plate in place. The guide plate 51 is provided with longitudinal side flanges 55 between which runs the film to be perforated and to prevent said film from binding at the outer end of the guide plate, said guide plate is preferably bent downward at some suitable angle as indicated at 56.

Between the flanges 55 of the guide plate is situated a tension plate 57 having longitudinal flanges 58 which bear upon the edges of the film and prevent any movement of said film at certain period as will be hereinafter described, and on this tension plate is mounted a transverse rest 59 having formed therewith a finger hold 60 whereby said tension plate may be readily removed. When the tension plate is in position, the lower end of the screw 38 bears upon the rest 59 thus normally holding the tension plate in contact with the guide plate or the film running therebetween.

In order to prevent forward movement of the tension plate 57 when the film is being drawn forward, I place a stop screw 61 in one of the flanges of the guide plate with which contacts one end of the rest 59 and overcomes the possibility of said tension plate sliding about, and I screw to one edge of the guide plate a pair of springs 62, the free ends of which pass through slots or openings 63 in one of the flanges, and bear against one edge of the tension plate as plainly shown in Fig. 3.

If found desirable, the film which is to be perforated may be placed upon the revoluble hub 64 carried by the shaft 65 which is mounted in the outer end of the bracket 66, said bracket being carried by one of the side walls 3. The film is held upon the hub by the stationary removable flanges 67, said flanges being held in place upon the shaft 65 by suitable screws 68.

The operation of the device is as follows: The screw 31 is adjusted to permit a certain rearward movement of the oscillating frame 9, thus regulating the distance between the adjacent perforations. Next the screws 44 are backed out slightly and the screw 46 turned in either direction for centering the guide plate with relation to the dies in order that each of the perforations will be equidistant from each edge of the film. After this last named adjustment has been made, the screw 49 is turned in either direction to swing the outer end of the guide plate 51 sidewise for adjusting the position of the perforations in one row with relation to the perforations directly opposite in the other row, or in other words, the swinging of the outer end of the guide plate, sidewise, will throw the perforations in one row either forward or backward of the perfora-

tions in the other row which are in direct alinement.

The film is next placed in the guide plate and the tension plate placed thereon at which time the perforator is ready for operation. Power being transmitted through the pulley 28 to the cam shaft 27, the cam will be operated to move the slide 17 downward bringing the presser foot 24 into contact with the film, holding the latter between said presser foot and the female die 11, and since the rods 21, which carry the presser foot are slidably mounted in the slide 17, said slide will continue its downward movement after the presser foot has engaged the film, said further downward movement of the slide causing the male dies 12 to enter the female die 11 for perforating the film. The downward movement of the slide 17 will cause the lower arm 25 to engage the end of the swinging lever 37 depressing that end with which it contacts and raising the opposite end of said lever against the action of the spring 40, thus relieving the pressure from the tension plate 57 and likewise the tension from the film to permit the latter to be drawn through the guide plate at the proper moment.

After the slide 17 has completed its downward movement, the high portion of the cam, while continuing to hold the slide downward will engage the rear face of said slide and force the oscillating frame 9, forward against the action of the springs 30 which will cause the film to be drawn forward through the guide plate. After the oscillating frame has made its extreme forward movement, the high portion of the cam, while still holding the oscillating frame toward the front end of the device, will engage the upper arm 25, thus lifting the slide 17, causing the lower arm 25 to be disengaged from the lever 37 and permit the spring 40 to impart the proper tension upon the tension plate. At this point in the operation of the perforator, both the tension plate and presser foot are holding the film, although the male dies have been withdrawn. The continued movement of the slide 17 will raise the presser foot and as soon as the high portion of the cam has become disengaged from the slide the action of the springs 30 will cause the oscillating frame to move rearwardly, thus completing one operation or one revolution of the cam and the continued revolutions of said cam will intermittently operate the different parts to perforate the film and intermittently move said film forward.

Of course I do not wish to be limited to the exact details of construction here shown as these may be varied within the limits of the appended claims without departing from the spirit of my invention.

Having thus fully described my invention, what I claim as new and useful, is—

1. In a perforator, a frame, an oscillating frame between the side walls of the first named frame, a slide carried by the oscillating frame, an adjustable die holder attached to the slide, male dies carried by said die holder, a presser foot, means for slidably mounting said presser foot in the slide, female dies carried by the oscillating frame with which co-acts the presser foot and the male dies, a cam shaft journaled in the first named frame, a cam mounted on said shaft and co-acting with a portion of the slide for operating the same, a base plate adjustably mounted upon first named frame, a guide plate, one end of which is pivoted to the base plate, means for adjusting the free end of said guide plate, a tension plate mounted upon the guide plate, a bridge carried by the first named frame, a swinging lever pivoted to said bridge, a screw passing through one end of said lever, and bearing upon the tension plate and means for normally forcing that end of the lever which carried the screw downward, the opposite end of said lever adapted to co-act with a portion of the slide for relieving the tension upon the tension plate.

2. In a perforator, a frame, an oscillating frame pivoted thereto, a slide carried by the oscillating frame, a pair of arms projecting from said slide, a spring actuated presser foot fitted to reciprocate in said slide, dies carried by said slide, a tension device having a lever as one of its elements adapted to co-act with one of the arms of the slide, and a cam mounted between the arms for intermittingly operating the oscillating frame, the presser foot, the dies and the tension device.

In testimony whereof, I have hereunto affixed my signature in the presence of two subscribing witnesses.

WARD B. HAUSMAN.

Witnesses:
W. HAMILTON ROSE,
JAMES W. GUNBY.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."