

A. & L. CHRONIK.
FILM PERFORATING MACHINE.
APPLICATION FILED MAR. 16, 1910.

979,429.

Patented Dec. 27, 1910

2 SHEETS-SHEET 1.

Fig. 1

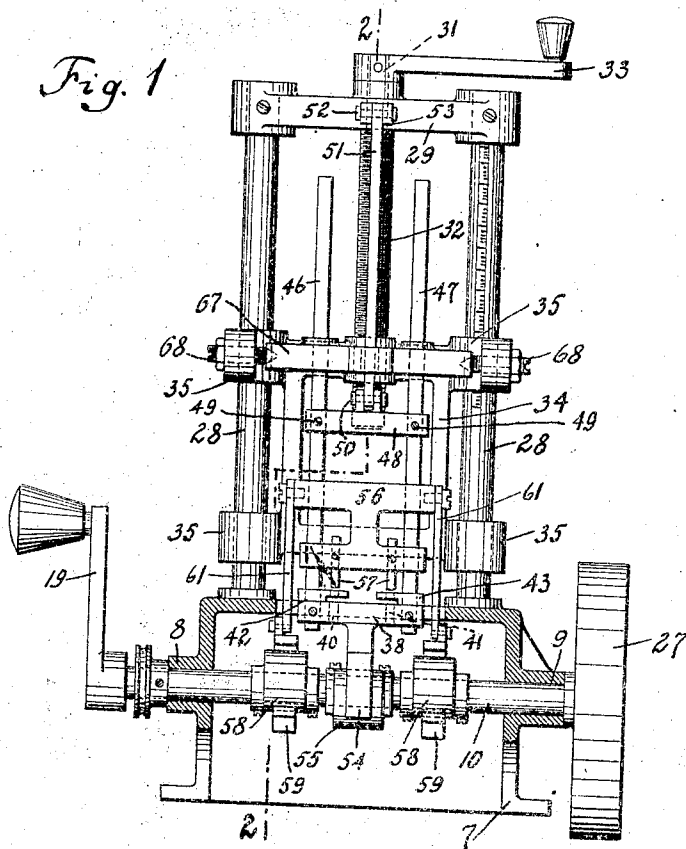


Fig. 6

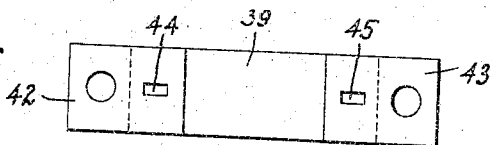
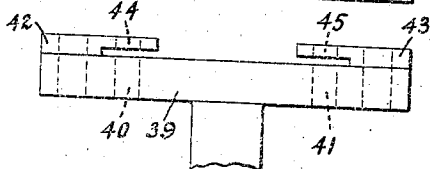


Fig. 5



WITNESSES:

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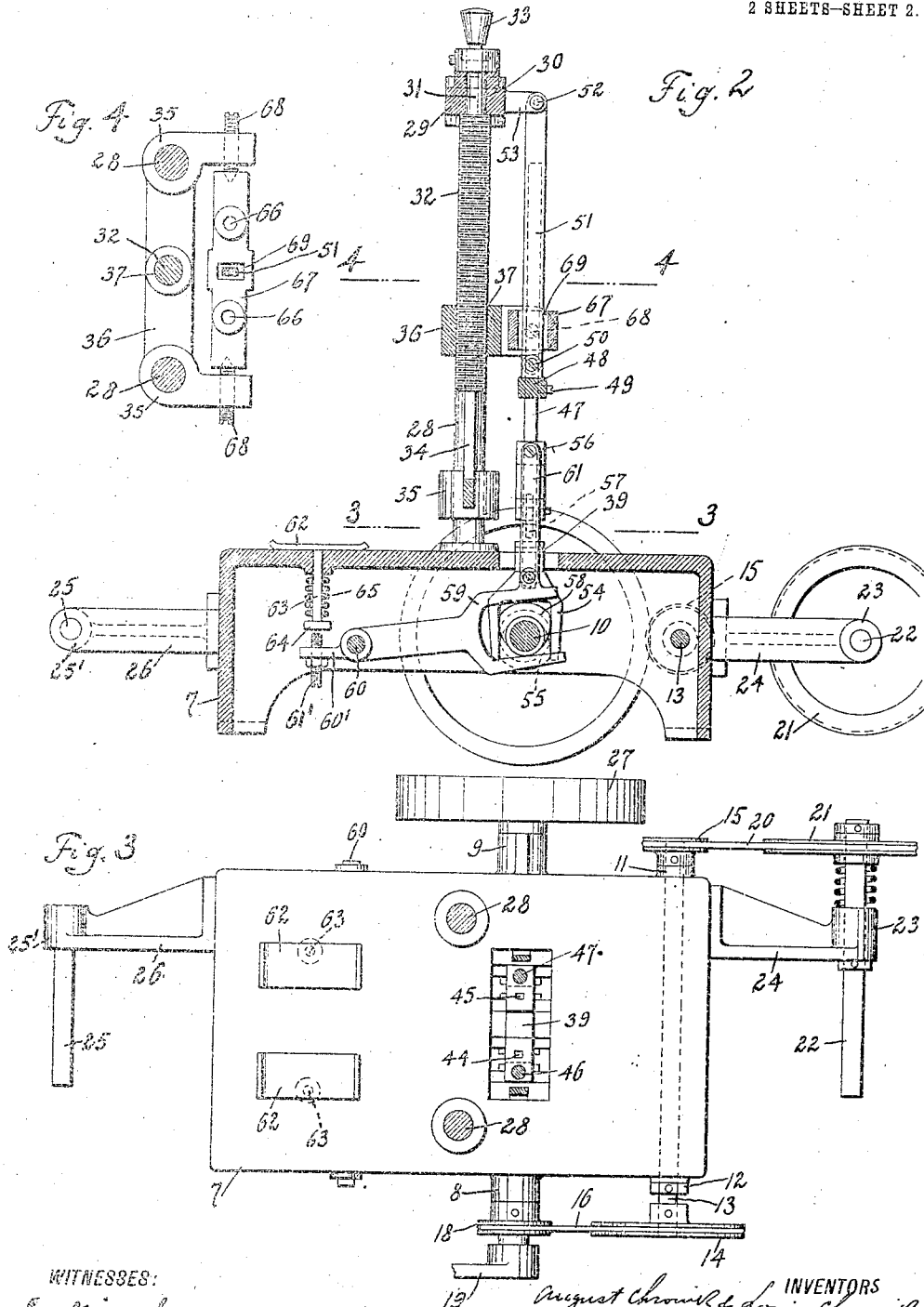
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2 SHEETS—SHEET 2.



WITNESSES:

J. H. [Signature]
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UNITED STATES PATENT OFFICE.

AUGUST CHRONIK AND LOUIS CHRONIK, OF NEW YORK, N. Y.

FILM-PERFORATING MACHINE.

979,429.

Specification of Letters Patent. Patented Dec. 27, 1910.

Application filed March 15, 1910. Serial No. 549,524.

To all whom it may concern:

Be it known that we, AUGUST CHRONIK and LOUIS CHRONIK, citizens of the United States, and residents of the city of New York, in the county of New York and State of New York, have invented certain new and useful Improvements in Film-Perforating Machines, of which the following is a specification.

The present invention relates to machines for perforating films of moving picture exhibitors, or other material.

One of the objects of the invention is to provide a device of this character which advances positively in a uniform manner the films or other material so that any dead motion of feeding mechanism is avoided.

Another object of the invention is to provide a simple and efficient operating means for varying the advancing movement of the feeding mechanism, at will.

A further object of the invention is to provide a combined punching and feeding mechanism, whereby the cooperating perforating members are adapted to advance the material after each perforation, to return to their normal positions again on being disengaged from the material.

A still further object of the invention is to provide a locking mechanism for holding the film firmly in its position during its period of rest.

With these and other objects in view, as will more fully appear as the nature of the invention is better understood, the same consists in the novel combination, arrangement and construction of parts, which will be hereinafter more fully described, pointed out in the appended claims and illustrated in the accompanying drawings, it being understood that various changes in the size, construction, arrangement of the parts and minor details of construction may be made without departing from the spirit or sacrificing any of the advantages of the invention.

One of the many possible embodiments of the invention is illustrated in the accompanying drawings, in which:—

Figure 1 is a front elevation, partly in section, of a film perforating machine constructed in accordance with the present invention; Fig. 2 is a section taken on line 2—2 of Fig. 1; Fig. 3 is a section taken on line 3—3 of Fig. 2; Fig. 4 is a section taken

on line 4, 4 of Fig. 2; Fig. 5 is a front elevation of the female die; and Fig. 6 is a plan view thereof.

In the drawings, the numeral 7 indicates the base of the machine which is provided at its sides with bearings 8 and 9, in which is journaled the main driving shaft 10 of the apparatus. In the bearings 11 and 12, similarly arranged on the sides of the base, is mounted a countershaft 13, carrying pulleys 14 and 15. The pulley 14 is driven through the intermediary of a flexible connection, such as a rope 16, by a pulley 18, arranged upon one of the ends of the main shaft 10, which latter may be rotated by hand by means of a crank 19, or may be actuated by any suitable source of power, such as for instance an electric motor. The pulley 15 is connected by means of another flexible connection 20 with a pulley 21, coupled by means of a friction-clutch with a spindle 22, which is journaled in a bearing 23, carried by a bracket 24, the latter being attached in any suitable manner to the base 7 of the motor. Upon the spindle 22 is mounted the receiving reel (not shown), while the delivery reel is mounted upon a spindle 25, journaled in a bearing 25', which is attached by means of a bracket 26 to the base of the device. A fly-wheel 27 is mounted upon the other end of the main shaft 10 for obvious reasons.

Vertical posts or standards 28, 28 are attached to the base and connected at their upper ends by means of a bridge 29, which is provided at its center with a hole 30, into which fits the reduced portion 31 of a screw threaded spindle 32. The upper end of the spindle 31 protrudes through the hole 30 and carries fixedly attached thereto an operating crank 33. As will be observed from the inspection of the drawings, the screw threaded spindle, while adapted to rotate in its bearing in the bridge 29, cannot be shifted in the direction of its longitudinal axis, whereby a nut meshing with the screw threaded spindle is adapted to be shifted in the direction of said longitudinal axis, if held against rotation. The part, which it is intended to shift in the direction of the longitudinal axis of the spindle 32, comprises a frame 34, provided upon its four corners with sleeves 35, 35 in sliding engagement with the posts 28. This frame is

provided in its cross-piece 36, with a screw threaded hole 37, the threads of which mesh with that of the spindle 32.

The female die of the device is designated by the numeral 38, and comprises a plate member 39 having holes 40 and 41 therein, which are arranged at a distance which corresponds to that of two rows of perforations intended to be punched into the two sides of the film. Upon the die plate 39 are arranged the strippers 42 and 43, which are provided with holes 44 and 45 registering with the holes 40 and 41. The female die is mounted upon two rods 46 and 47, which are secured to the support 48, preferably, by means of screws 49, 49. This support is pivoted at 50 to a supporting bar 51, the upper end of which is in a similar manner attached at 52 to lugs 53, 53, attached to or made integral with the bridge 29. To the lower face of the die plate 39 is attached a fork 54, between the prongs of which is arranged an eccentric 55, mounted upon the main shaft 10.

The male die of the device comprises a head 56, slidably mounted upon the rods 46 and 47, and carrying the punches 57, 57, in alignment with the holes 40 and 41 of the female die. The means for actuating the male die comprises two eccentrics 58, 58, arranged upon the main shaft 10, and set at 180° relative to the eccentric 55. These eccentrics 58, 58 engage the prongs of the forks 59, 59, oscillatably mounted upon a spindle 60, which is attached to the base 7 of the device. The forks are connected by means of bars 61, 61 with the die head 56, and more particularly in such a manner that both ends of said bars are pivoted to the forks and the die head, respectively.

The means for holding the film in position during the operation of the punches comprise presser feet 62, 62, mounted upon spindles 63, 63, which are slidably arranged upon the base, and provided at their lower ends with disks or heads 64. Springs 65, 65, bearing against the base and the heads 64, keep the presser feet in contact with the film, to hold the same firmly in its position. To release the film, the forks 59 are provided with fingers 60', upon which are mounted set screws 61', which cooperate with the heads 64, in the manner hereinafter described, in order to lift the presser feet.

From the inspection of the drawings it will be observed that the eccentric 55, in cooperation with the fork 54, oscillates the female die 38 together with all of those parts which are mounted upon the rods 46 and 47. These rods engage the holes 66, 66 in a block 67, which is oscillatably mounted upon the cross-piece 36 by means of pointed set screws 68, 68. This block is provided with a hole 69, which is engaged by the supporting bar 51, the width of said hole being

larger than the cross section of the bar, whereby the latter is adapted to oscillate relative to the block. The purpose of this arrangement will be hereinafter more fully explained.

The operation of the device is as follows: The end of the film is placed between the presser feet 62, strippers 44 and 45, and attached to the receiving reel, which is mounted upon the spindle 22. As the crank 19 is now rotated, the following operations will take place, considering the position shown in the drawings as the position of rest: The eccentrics 58, 58 will force the forks 59, 59 downward, whereby the film is perforated by the punches 57, 57. As the punches are being forced downward, the fingers 60' of the forks 59 are moved upward, whereby the presser feet 62 release the film at or after the end of the punching operation. Upon further rotation of the main shaft 10, the eccentrics 58, 58 hold the punches 57 in engagement with the female die and thus with the film, and the eccentric 55 forces the lower end of the fork 54 toward the spindle 22, whereby the die and film are moved a predetermined distance toward the receiving reel. At the outermost point of the forward movement the presser feet 62 are forced by their springs in engagement with the film, the punches 57 disengaged from the same, and both the female and male dies brought back into their normal positions to perform again the cycle of operation now described. It will be observed that the outward movement of the dies and thus the distance between the perforations upon a side of the film is determined by the position of the block 67 relative to the female die 38, or in other words by the distance at which the female die 38 is pivoted to the frame of the device. This distance can be obviously varied by turning the crank 33 in one or the other direction and raising or lowering thus the block 67 relative to the base 7. The higher the block is raised, the greater is the distance between the perforations and conversely the lower it is brought, the less is the distance between the same, or in other words if the block is raised, the number of perforations upon one foot of the film is decreased, while, when lowered, the number is increased. Obviously one of the posts 28 may be graduated, whereby the desired position of the block relative to the base plate can be easily found.

While herein the device has been described for films for moving picture exhibitors, it will be observed that the machine can be made use of for perforating other articles also.

What we claim is:

1. In a perforating machine, the combination with the base of vertical standards attached thereto, a bridge connecting the up-

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per ends of said standards, a frame pivoted to said bridge, a female member of a punch fixedly attached to said frame, a male member of a punch reciprocatably mounted upon
 5 said frame, means for alternating said male member relatively to said female member, and means for oscillating said frame around its pivot when said male and female members of said punch are in engagement with
 10 each other so as to bring the material to be perforated in position for the next perforation.

2. In a perforating machine, the combination with the base, of vertical standards attached thereto, a bridge connecting the upper
 15 ends of said standards, a frame pivoted to said bridge, a female member of a punch fixedly attached to said frame, a male member of a punch reciprocatably mounted upon
 20 said frame, means for alternating said male member relatively to said female member, means for oscillating said frame around its pivot when said male and female members of said punch are in engagement with each
 25 other so as to bring the material to be perforated in position for the next perforation, and means shiftably arranged upon said standards in engagement with said frame for varying the amplitude of oscillation
 30 thereof.

3. In a perforating machine, the combination with the base, of vertical standards attached thereto, a bridge connecting the upper
 35 ends of said standards, a frame pivoted to said bridge, a female member of a punch fixedly attached to said frame, a male member of a punch reciprocatably mounted upon said frame, presser feet adapted to engage the material to be perforated, means for

alternating said male member relatively to
 40 said female member and for disengaging said presser feet from the material to be perforated, and means for oscillating said frame around its pivot when said male and female members of said punch are in en-
 45 gagement with each other so as to bring the material to be perforated in position for the next perforation.

4. In a perforating machine, the combination with the base, of vertical standards attached thereto, a bridge connecting the up-
 50 per ends of said standards, a frame pivoted to said bridge, a female member of a punch fixedly attached to said frame, a male member of a punch reciprocatably mounted upon
 55 said frame, presser feet adapted to engage the material to be perforated, means for alternating said male member relatively to said female member and for disengaging said presser feet from the material to be
 60 perforated, means for oscillating said frame around its pivot when said male and female members of said punch are in engagement with each other so as to bring the material to be perforated in position for the next
 65 perforation, and means shiftably arranged upon said standards in engagement with said frame for varying the amplitude of oscillation thereof.

Signed at New York, in the county of
 New York and State of New York this 11th
 day of March, A. D. 1910.

AUGUST CHRONIK.
 LOUIS CHRONIK.

Witnesses:

SIGMUND HERZOG,
 S. BERNBAUM.