

R. H. SYMS.

APPARATUS FOR INKING AND WIPING DIES IN PRINTING PRESSES.

No. 567,797.

Patented Sept. 15, 1896.

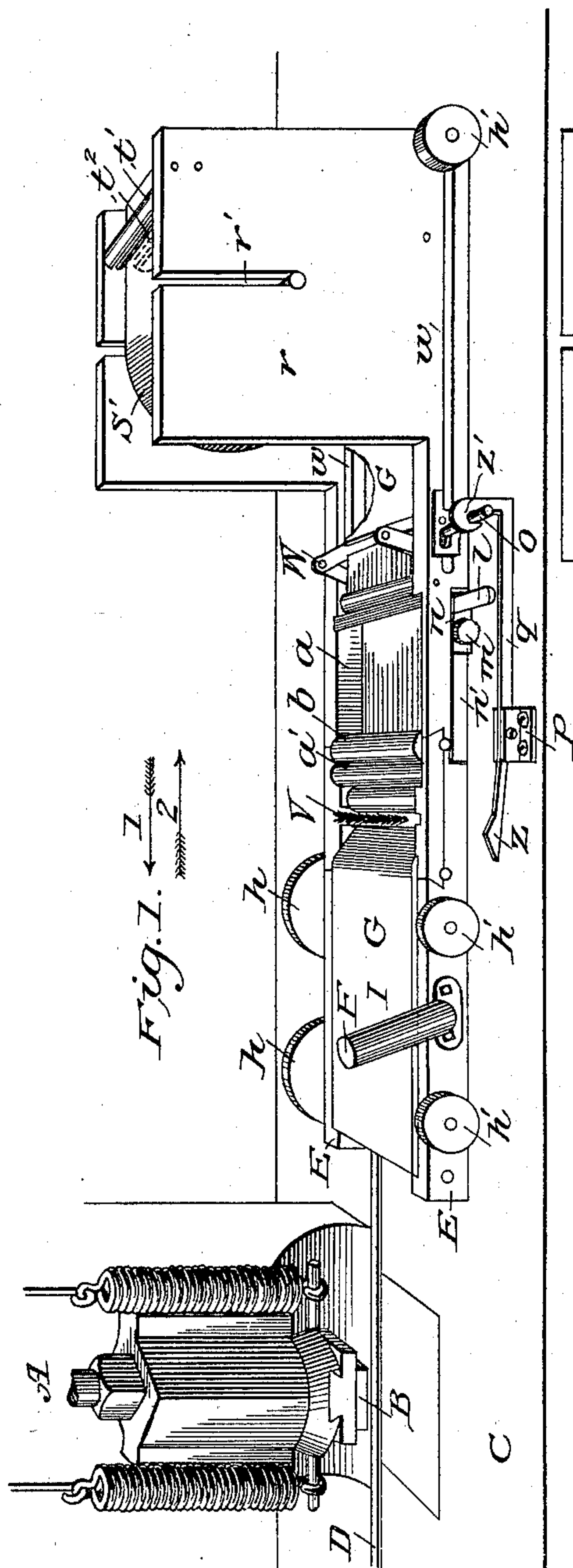


Fig. 1.

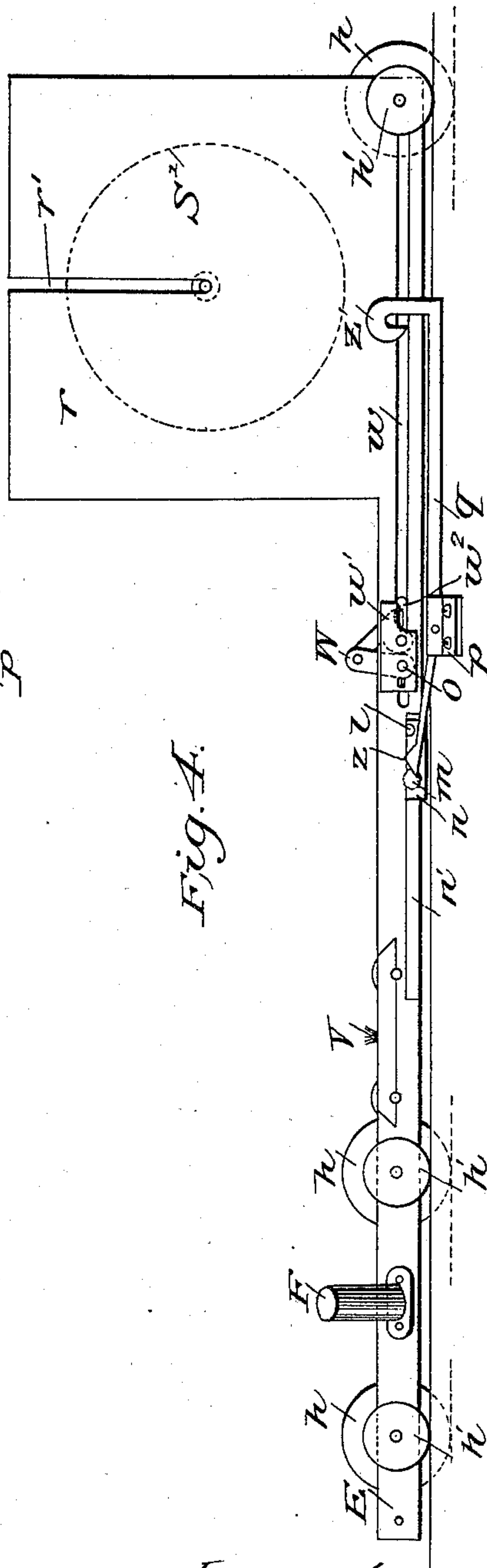


Fig. 4.

Witnesses.  
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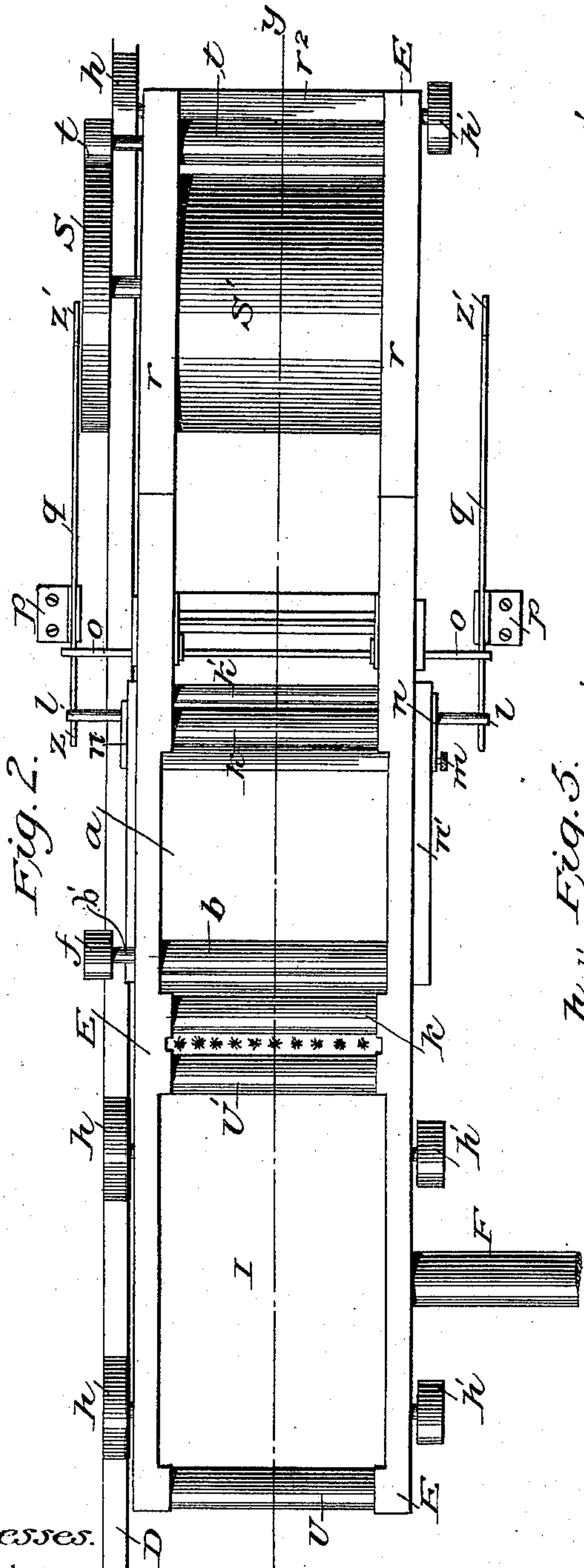


Fig. 2.

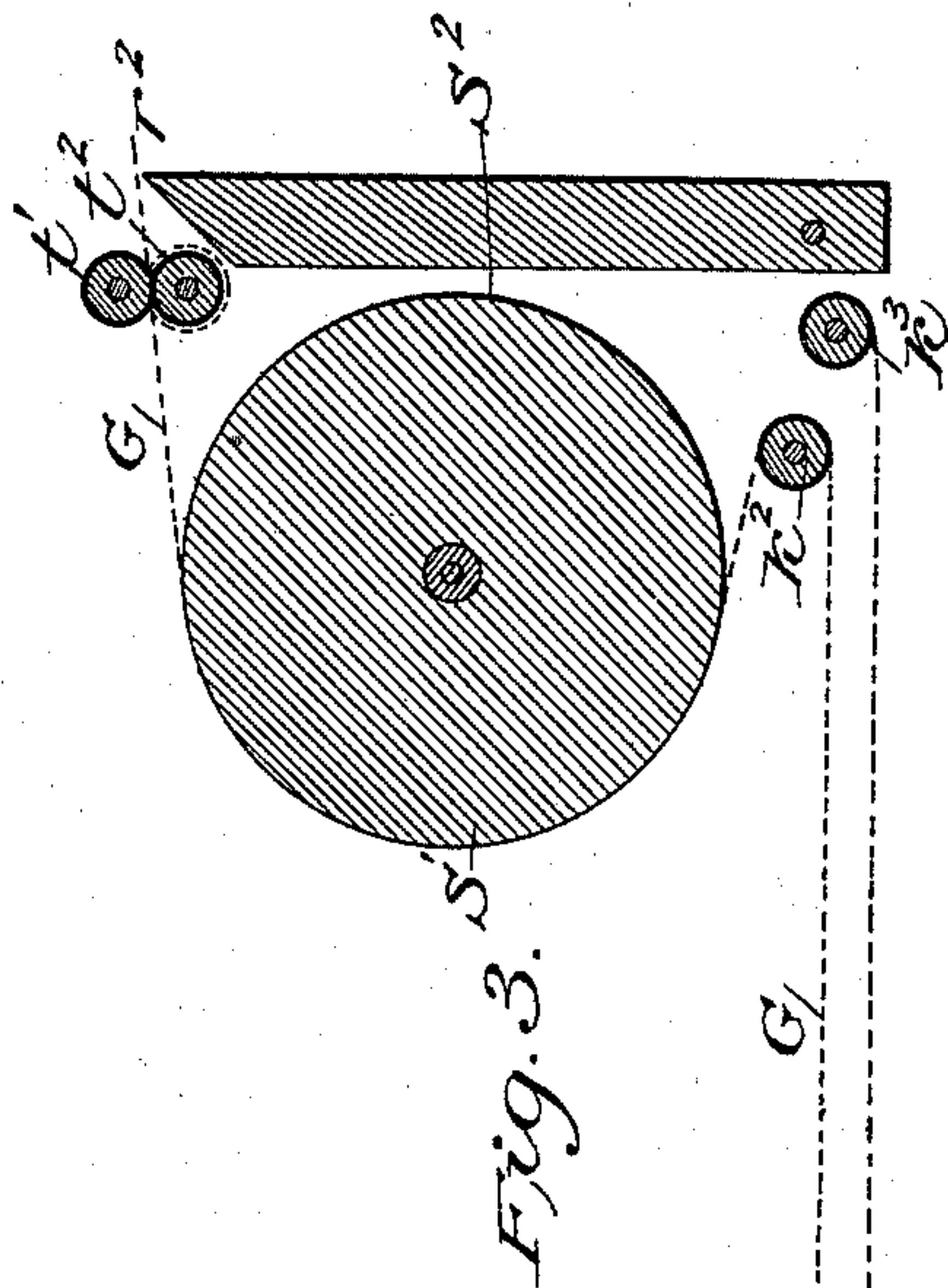


Fig. 3.

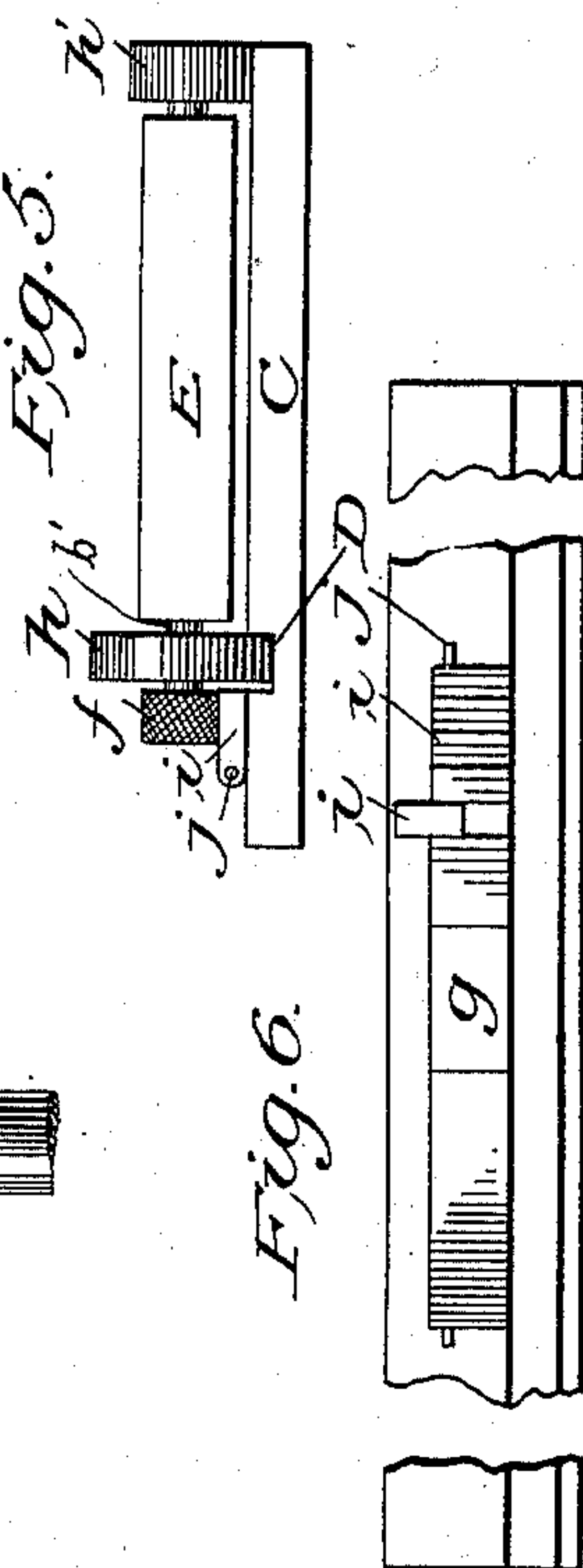
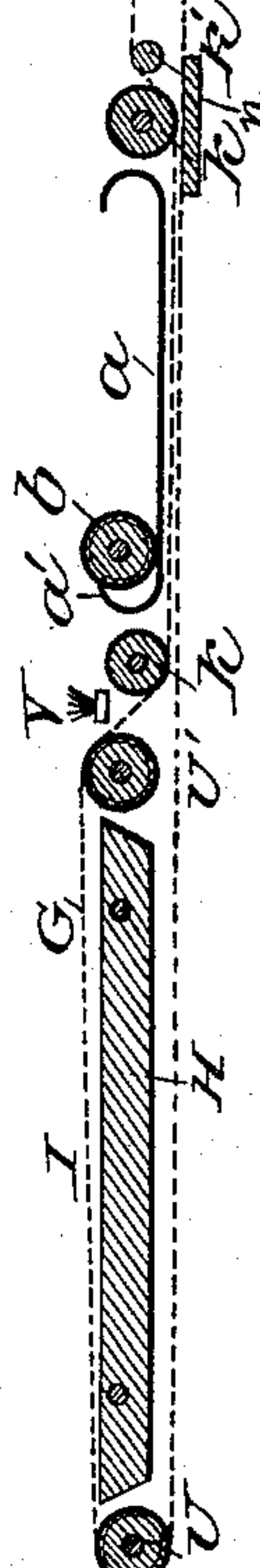


Fig. 5.

Fig. 6.



Witnesses.

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(No Model.)

3 Sheets—Sheet 3.

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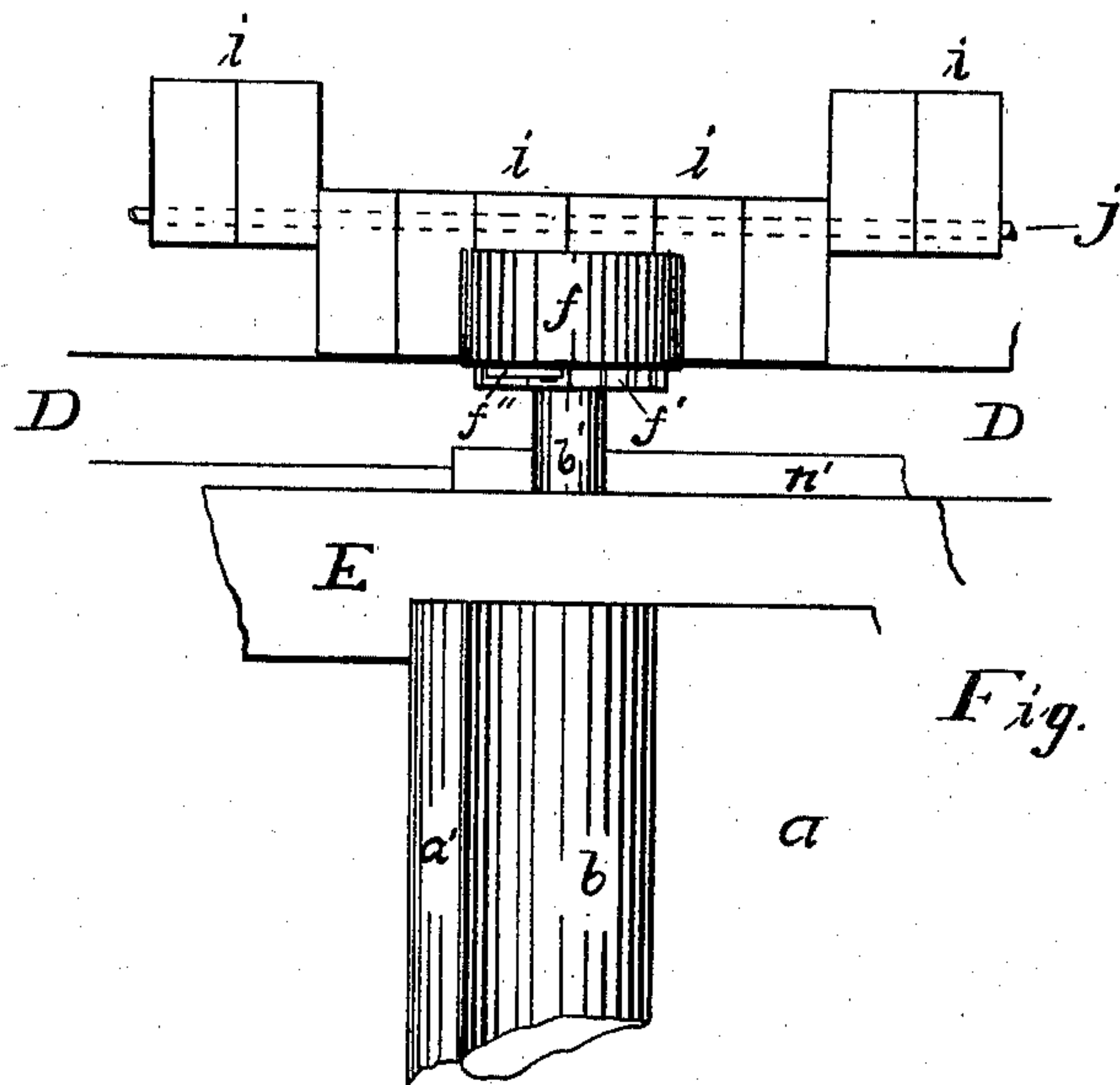


Fig. 7.

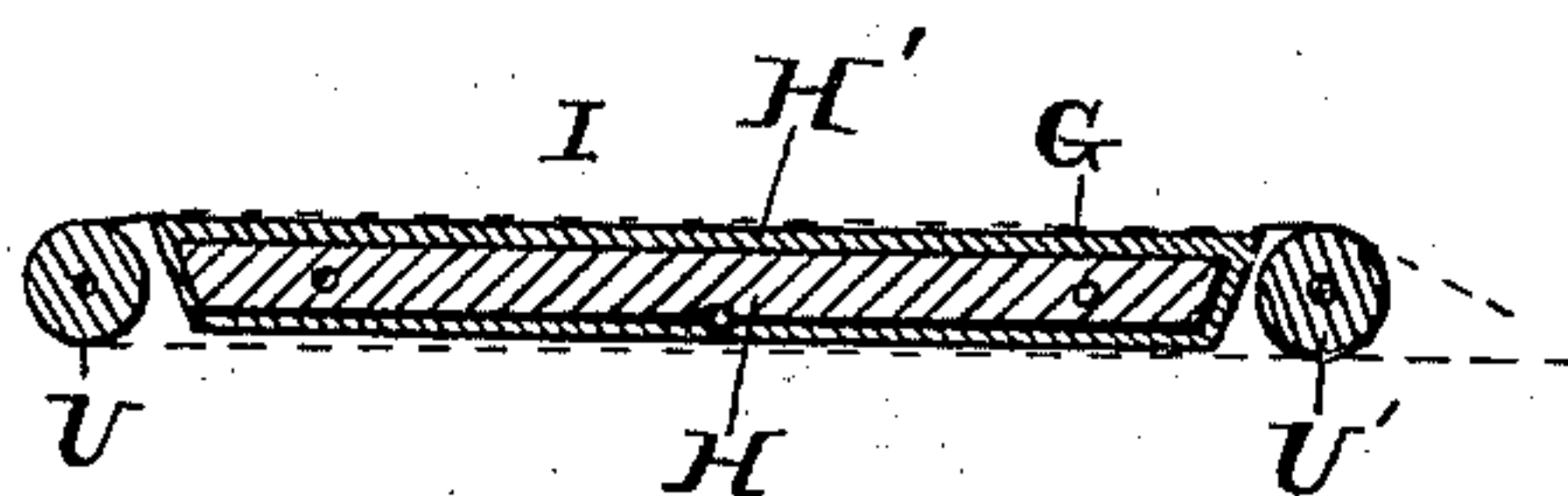


Fig. 9.

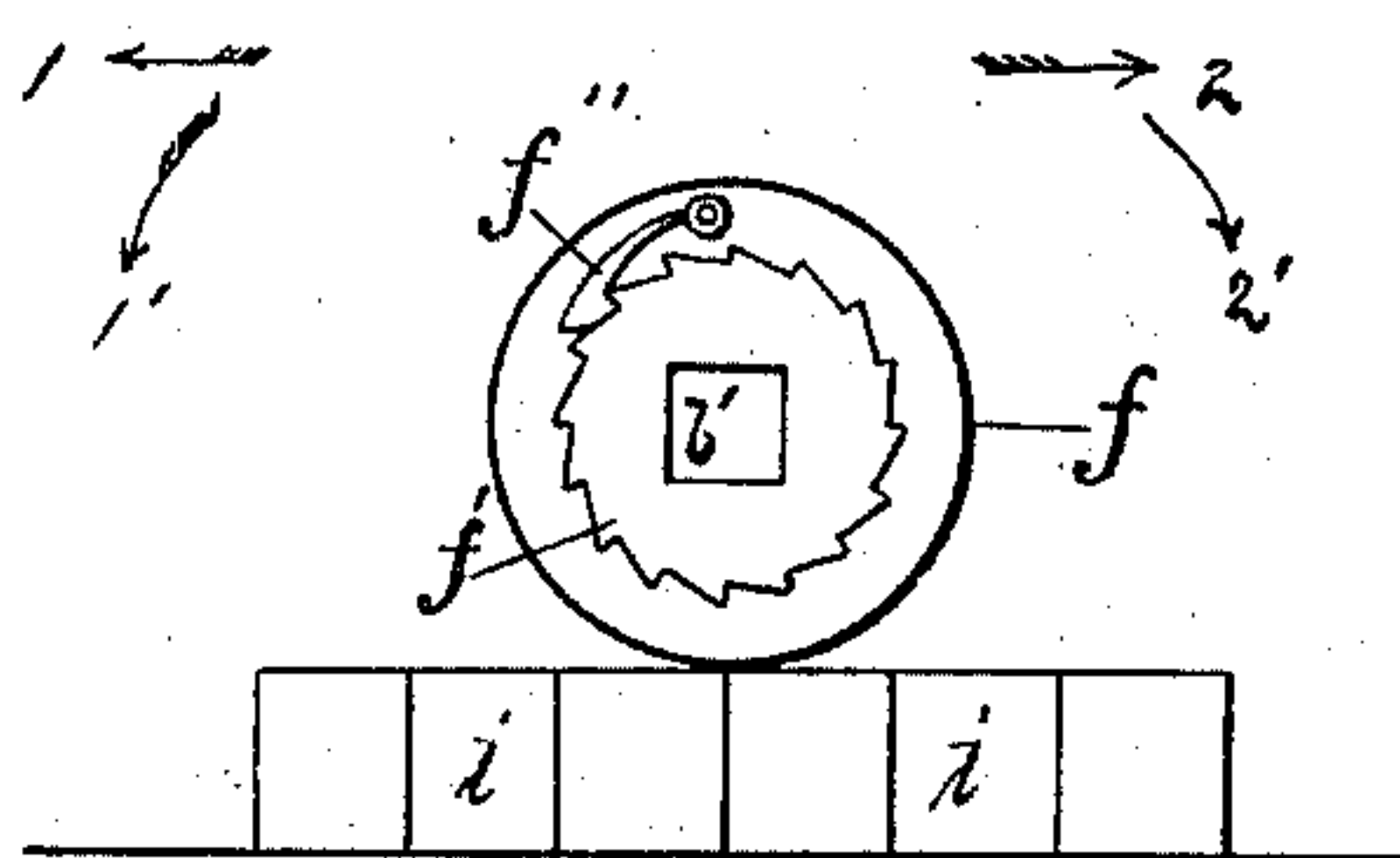


Fig. 8.

WITNESSES:

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# UNITED STATES PATENT OFFICE.

ROBERT HOWARD SYMS, OF NEW YORK, N. Y.

APPARATUS FOR INKING AND WIPING DIES IN PRINTING-PRESSES.

SPECIFICATION forming part of Letters Patent No. 567,797, dated September 15, 1896.

Application filed December 6, 1894. Serial No. 531,066. (No model.)

*To all whom it may concern:*

Be it known that I, ROBERT HOWARD SYMS, a citizen of the United States, and a resident of New York, in the county of New York and State of New York, have invented certain new and useful Apparatus for Inking and Wiping Dies in Printing-Presses, of which the following is a specification.

My invention relates to an improved method of inking and wiping the plates, dies, or type in printing or stamping presses and to the apparatus for applying this method; and although my invention relates more especially to the art of color-embossing and color-embossing presses operated by hand, yet I do not limit myself to that art or to any particular style of press, but include all kinds in which the ink is applied to the printing-face of the die or other printing portion. Heretofore in this class of presses the process of inking dies preparatory to making the printing impression has been cumbersome, slow, wasteful, and laborious. The die has been removed from the press, inked by hand with a brush or other means, the excess of ink removed by wiping the die by hand either with paper or some other substance or the bare hand, the die then replaced in the press, and the final impression made. The method is imperfect and objectionable because of, first, the additional labor required; second, the time expended in removing the die, applying the ink, wiping off the excess of the same, and replacing the die, all of which requires many separate motions; third, the imperfection in the results attained, as the manual inking and wiping are irregular, and the results are frequently dissimilar in successive operations. Sometimes the ink is applied too copiously and at others insufficiently, and the same irregularity exists in the wiping, the face of the die being at one time satisfactorily cleaned and at another, perhaps, most imperfectly so. Thus frequently results the loss or imperfection of the work performed.

The objects of my invention are, first, to accomplish the inking and wiping of the die without removing the same from the press; second, to perform this function with accuracy and regularity; third, to attain the greatest possible saving of time and material

in so doing; fourth, to provide certain devices and apparatus which may be readily applied to and with slight alteration of existing printing-presses. To this end my method consists in performing these operations mechanically in two separate motions—first, applying the ink to the die while in the press by passing the inking device across the die-face; second, in wiping off the excess by a return motion of the wiping substance. I employ this method and also attain these objects through the medium of an improved apparatus which I now describe and make the subject of separate and distinct claims, having illustrated it in the accompanying drawings, forming a part of this specification, and in which similar letters of reference refer to similar parts throughout the various views.

Figure 1 is a perspective view of an embossing-press and the attachment, showing the method of inking and wiping the die and one idea of means by which the method is rendered operative. Fig. 2 is a plan of the device, showing the component parts assembled. Fig. 3 is a longitudinal section of the same on the line X Y. Fig. 4 is a longitudinal elevation of the device. Fig. 5 is an end elevation of the track and end of car. Fig. 6 is a plan view of a portion of the sectional track, showing one of the sections removed. Figs. 7 and 8 are enlarged views of a detail of the ink-roller-operating mechanism and track. Fig. 9 is a detail of a portion of the carriage, showing more particularly the pad which supports the wiping material as it comes in contact with the die.

Referring to Fig. 1, A is the ordinary hand-press used for color-embossing, including the die B and the table C, in which the counter is sunk. In this table C is the grooved track D, and on this table C and in this track D runs and is guided the carriage or movable inker and wiper by means of which I apply my method, and all which auxiliary apparatus I hereinafter specifically describe and claim. In Figs. 1, 2, and 4 D is the grooved track in the surface of the table C of the press. E is the frame of the carriage, bearing the means for inking and wiping the die. The carriage is supported and moves in the track and on the table by means of the



wheels  $h$   $h'$ , the wheels  $h'$  traversing the surface of the table, while the wheels  $h$  run in the guide-groove  $D$  of the track and are of course of larger diameter.  $F$  is a handle by means of which the whole carriage is given longitudinal motion on the track and under the die.  $H$  is a plate on which is a pad of soft material  $H'$  to support the paper  $G$  at the proper height and level under the die  $B$  in the operation hereinafter to be described. At either end of this plate are the rollers  $u$   $u'$ , serving as guides or pulleys for the paper.  $v$  is a brush, the use of which will be hereinafter shown.  $k$  is another guide-roller or pulley serving to lead the paper under the ink-tray  $a$ , in which tray revolves the ink-roller  $b$ , the lip  $a'$  of the tray serving to scrape off any excess of ink from said roller.  $k$   $k'$   $k^2$   $k^3$  are similar guide-rollers. The ink-roller  $b$  is revolved by the wheel  $f$  on its axis, which bears upon the sectional track  $g$   $i$ , a portion of which is shown in Fig. 6.  $S'$  is a reel holding the paper, whose axis rests in slots  $r'$  of the casing  $r$ .  $v$  is a brush adjusted so as to remove from the intaglio of the die any excess of ink therein.  $t^2$  is a roller revolved by means of a belt communicating motion from the pulley  $S$  to the pulley  $t$ , Fig. 2, the wheel  $S$  being of the same diameter and attached to the axis of the reel  $S'$ .  $t'$  is a friction or guide roller whose surface touches  $t^2$  sufficiently to evolve enough friction on the paper  $G$ , passing between  $t'$  and  $t^2$ , as to assist in the feed.  $W$  is a device for gripping and feeding the paper, operating by means of the tripping-lever  $z$   $q$   $z'$ .  $p'$  is the bearing in which the lever  $q$  is pivoted and which is attached to the bed of the press.  $n$  is a sliding clamp, adjustable by means of the set-screw  $m$  and bearing the stop or spur  $l$ , which clamp slides upon the shoulder  $n'$  on the car. The gripping device  $W$  consists of a sliding elbow-joint frame having its edges adapted to grip the paper. This device slides in the grooves  $w$  and is fitted with a spur or pin  $o$ . The end  $z$  of the tripping-lever  $q$  is wedge-shaped to enable it to engage with the spur  $l$  at the proper time, and the other end,  $z'$ , is bent to form a hook to engage the spur or pin  $o$  at the required time. The ink-pan  $a$  may be fitted with a cover (not shown in the drawings) to prevent any possible spattering of the ink from the roller  $b$ .

Referring to Figs. 5 and 6,  $f$  is the milled wheel, turning loosely on the axis  $b'$  of the ink-roller  $b$ , which bears upon the sectional track  $g$   $i$ . A ratchet-wheel  $f'$  and pawl  $f''$  (not here shown to avoid complicating the drawings) are shown specifically in Figs. 7 and 8. Their function is to transmit motion of the wheel  $f$  to the roller  $b$ . In Fig. 6 the track is shown composed of sections  $g$ , being fixed and of such length as to engage the wheel  $f$  for the length of time required to complete the operation of inking the smallest size die likely to be used.  $j$  is a rod of suitable length serving as a pivot for the movable sections  $i$ , which

may be thrown in or out of position to engage the wheel  $f$ , thus enabling the operator to adjust the rotation of the ink-roller for the size of die to be used. The track  $g$  is so located that when the sections are in place to operate the inking device they will come in contact with and operate the wheel  $f$  just as the roller rotated by the latter passes in contact with the die. The track will therefore be substantially opposite the die itself.

Referring to Figs. 7 and 8,  $i$   $i$  are the sections of track, and  $j$  the pivot already referred to in Figs. 5 and 6.  $D$  is the groove in which the wheels  $h$   $h'$  run;  $E$ , the frame of the car;  $b$ , the ink-roller;  $a$ , the ink-pan, and  $a'$  the scraper, which removes the excess of ink from the roller as it revolves under and inks the die. The wheel  $f$  turns loosely upon the axis  $b'$  of the ink-roller.  $f'$  is a ratchet-wheel fixed immovably upon the axis  $b'$  of the ink-roller and operated by the wheel  $f$  when revolving in the direction of the arrow 2 2' by means of the pawl  $f''$ .

Referring to Fig. 9,  $H'$  shows the pad, of suitable material, which surrounds the bed  $H$  and serves to keep the wiping material  $G$  at the proper height to wipe the die. I do not claim this pad as a new feature, as I am aware that pads have been heretofore used for the purpose of forming a yielding and proper back for wiping material in certain classes of plate-printing machines.

The operation of the device is as follows: Referring to Fig. 1, when the die  $B$  is in position ready for inking and wiping, the operator, by means of the handle  $F$ , draws the carriage with a single motion over the track  $C$  and under the die in the direction of the arrow 1 the ink-roller  $b$  can turn only in the direction of the arrow 2 2', Fig. 8, as will be explained, and so the excess of ink is continually removed from it by the under edge of the scraper  $a'$ , which may be an integral part of the ink-pan  $a$ . Referring for a moment to Fig. 8, when the motion is in the direction of the arrow 1 1' the wheel  $f$  carries with it in its revolution the pawl  $f''$ , which slips over the teeth of the ratchet-wheel  $f'$  without turning it and consequently without turning the roller  $b$ . When the carriage is moved in the direction of the arrow 2 2', the wheel  $f$ , by means of the pawl  $f''$ , transmits its revolution to the ratchet-wheel  $f'$  and by it to the roller  $b$ , thus taking up new ink for the die as long as the wheel  $f$  continues its motion in the same direction over the sectional track  $i$   $i$ . And now, again referring to Fig. 1, when the inking-roller has passed under and inked the surface of the die the motion is reversed, as shown by the arrow 2, when brush  $v$  wipes out the excess of ink from the intaglio of the die and the wiping-paper over the plate  $H$ , Fig. 3, supported by the pad  $H'$ , (see Fig. 9,) is drawn in contact with the surface of the die, wiping off the ink from all portions save in the intaglio. At each successive operation the paper is drawn along over the plate  $H$



and its pad by means of the device W, &c., so as to present fresh portions of paper for each successive wiping of the die, the paper being unwound from reel S' (see Fig. 3) at the point S<sup>2</sup>, passing under the guide-roller k<sup>3</sup>, thence along under the carriage over the guide-roller u, supported from sagging by the clamp n, which passes under and across the carriage, thence over the plate H and its pad, over the guide-roller u', thence under the guide-rollers k k at either end of the ink-pan, thence over the guide-roller k' through the jaws of the gripping device W, and thence around the guide-roller k<sup>2</sup> and over the reel S' between the rollers t' and t<sup>2</sup>, where it may be cut off on the edge r<sup>2</sup>, Fig. 3, or otherwise disposed of.

It will be seen that there are three methods of feeding or moving the paper—first, by the gripping motion about to be described more minutely; second, by the revolution of the reel S', which tends to communicate its motion to the paper as it passes over its surface at S', Fig. 3; third, the revolution of the roller t<sup>2</sup> by means of the pulley t, taking its motion from the wheel S by means of a band. These different feeds keep the paper tight and prevent or minimize the danger of tearing by distributing its strain.

The operation of the device W is as follows: When the carriage is at rest normally at one side of the press, as indicated in Fig. 1, the pin o, Figs. 1 and 4, will be engaged by the hook z' of the lever q, &c., and as the carriage is moved in the direction of the arrow 1, the jaws w' and w<sup>2</sup>, being constructed as an elbow-joint, bite the paper and thus prevent it from moving actually, but relatively draw it over the guide-rollers above mentioned and over the plate H and its pad, effecting the required presentation of a clean portion at I, Figs. 1 and 2. The gripping device of course remains itself actually at rest, being held by the hook z', but relatively it slides along the grooves w until it is released by the tripping of the lever q, which is effected when the spur l impinges on the wedge-shaped end z, depressing it and thus raising the hook z' at the other end of the lever q. From this point the device W moves with the car during its remaining motion in the direction of the arrow 1, and returns with the car in the direction of the arrow 2 until the spur o reengages with the hook z', which by its resistance first opens the jaws w', thus freeing the paper, then carries W to its first position at the end of the grooves w, which point is reached at the end of the motion of the car.

I wish to be understood as not limiting myself to a carriage moving on wheels, or a carriage moving in a grooved track. Although I prefer such a construction, my improvement would be embodied in constructing the carriage to slide in a groove or on a raised track, or between raised tracks, or any equivalent means of guiding and preserving the alignment of the same in its reciprocations in re-

lation to the printing-surface. Nor do I wish to limit myself to the exact form or construction of the different parts shown, especially of the means for feeding the wiping material. A friction-roller operated by means similar to those operating the inking device might be employed; but

What I claim, and desire to secure by Letters Patent, is—

1. In a printing-press the combination of a reciprocating carriage, means on said carriage for inking the printing-surface, means on said carriage for wiping the printing-surface, and means on said carriage for feeding the wiping material, said means being adapted to be operated by the reciprocation of the carriage.

2. In a printing-press the combination of a printing-surface constantly in alinement for making an impression, a reciprocating carriage bearing an inking device, a wiping-band, and a feeding device for presenting new portions of said band to the printing-surface; the whole adapted to be operated by the reciprocation of said carriage.

3. In a printing-press the combination of a die, stationary as regards the motion of the inking and wiping devices, with a reciprocating carriage bearing an inking-roller and fountain, a band of wiping material, an elastic pad supporting the wiping material, means for feeding said wiping material and a receptacle for holding said wiping material, the whole adapted to be operated by the reciprocation of the carriage.

4. In a printing-press the combination of a printing-surface, movable only in a direction perpendicular to its impression-piece, a carriage reciprocating transversely thereto, and bearing an inking-roller, fountain and scraper; a wiping-band, means for feeding fresh wiping material, and a receptacle for said wiping material; the whole being operated by the reciprocations of the carriage.

5. In a printing-press the combination of a relatively stationary die, a reciprocating carriage moving transversely thereto; means on said carriage for inking the die, means on said carriage for holding and feeding the wiping material, means for adjusting the operation of the inking device, according to the size of the printing-surface, and means for adjusting the amount of feed of the wiping material; substantially as described.

6. In a printing-press the combination of a die, with a carriage bearing an inking-roller with its fountain and scraper, a brush for removing the excessive ink from the intaglio of the die, a band of wiping material with its receptacle; a device for gripping said wiping material, a stop and tripping-lever for catching and releasing said gripping device, and a sectional track for adjusting the operation of the inking-roller; substantially as described.

7. The combination in a printing-press of a reciprocating carriage; means on said carriage for inking the die; means on said carriage for



removing a portion of the ink from the in-  
taglio of the die; means on said carriage for  
cleaning the plane surface of the die; means  
operated by the movement of said carriage  
5 for automatically presenting fresh cleaning  
material to the face of the die, substantially  
as described.

Signed at New York, in the county of New  
York and State of New York, this 21st day of  
November, A. D. 1894.

ROBERT HOWARD SYMS.

Witnesses:

JOHN W. LOVELAND,  
WILLIAM M. STIEFERT.