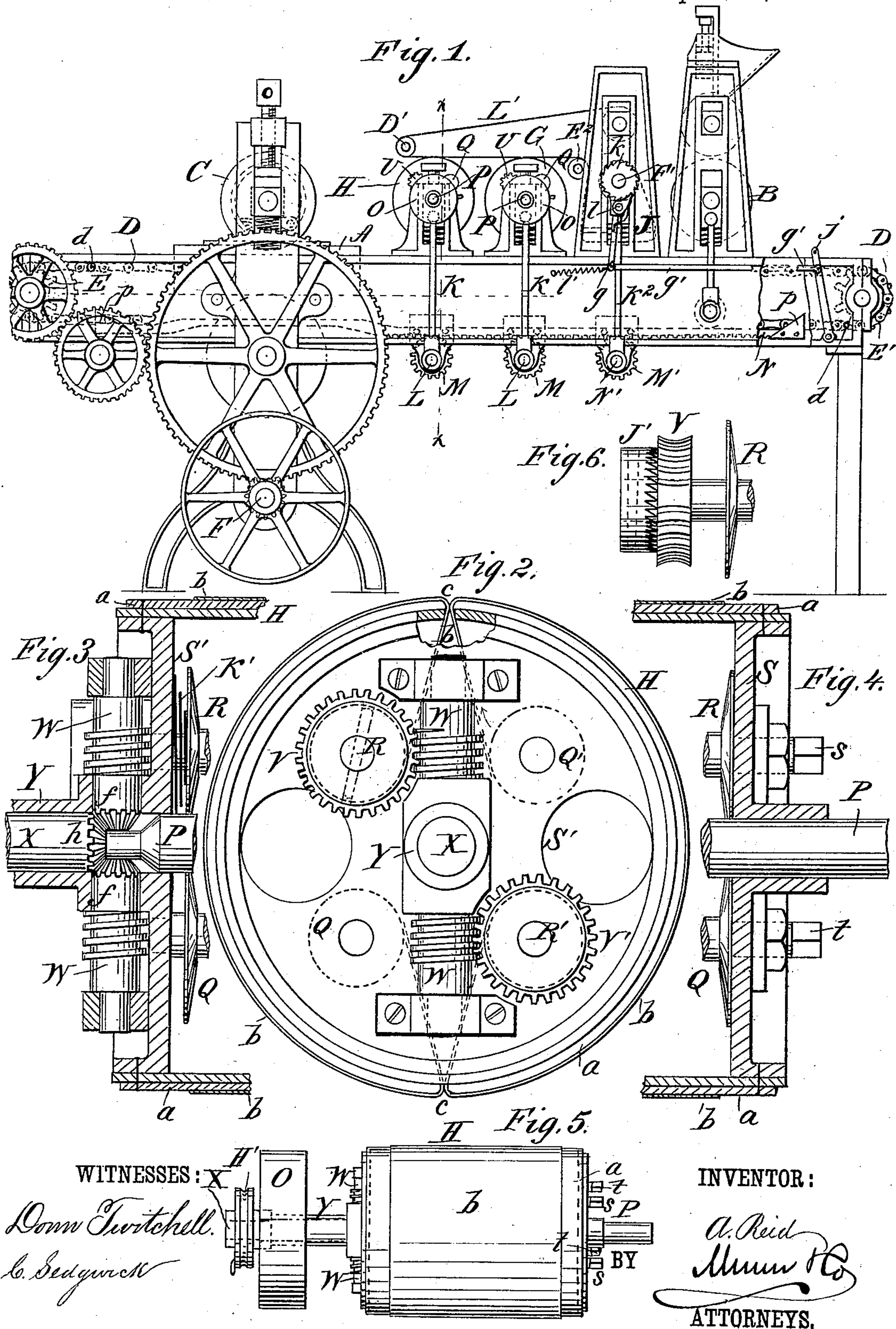


2 Sheets—Sheet 1.

WIPING AND POLISHING APPARATUS FOR PLATE PRINTING MACHINES.

Patented Apr. 22, 1884.



(No Model.)

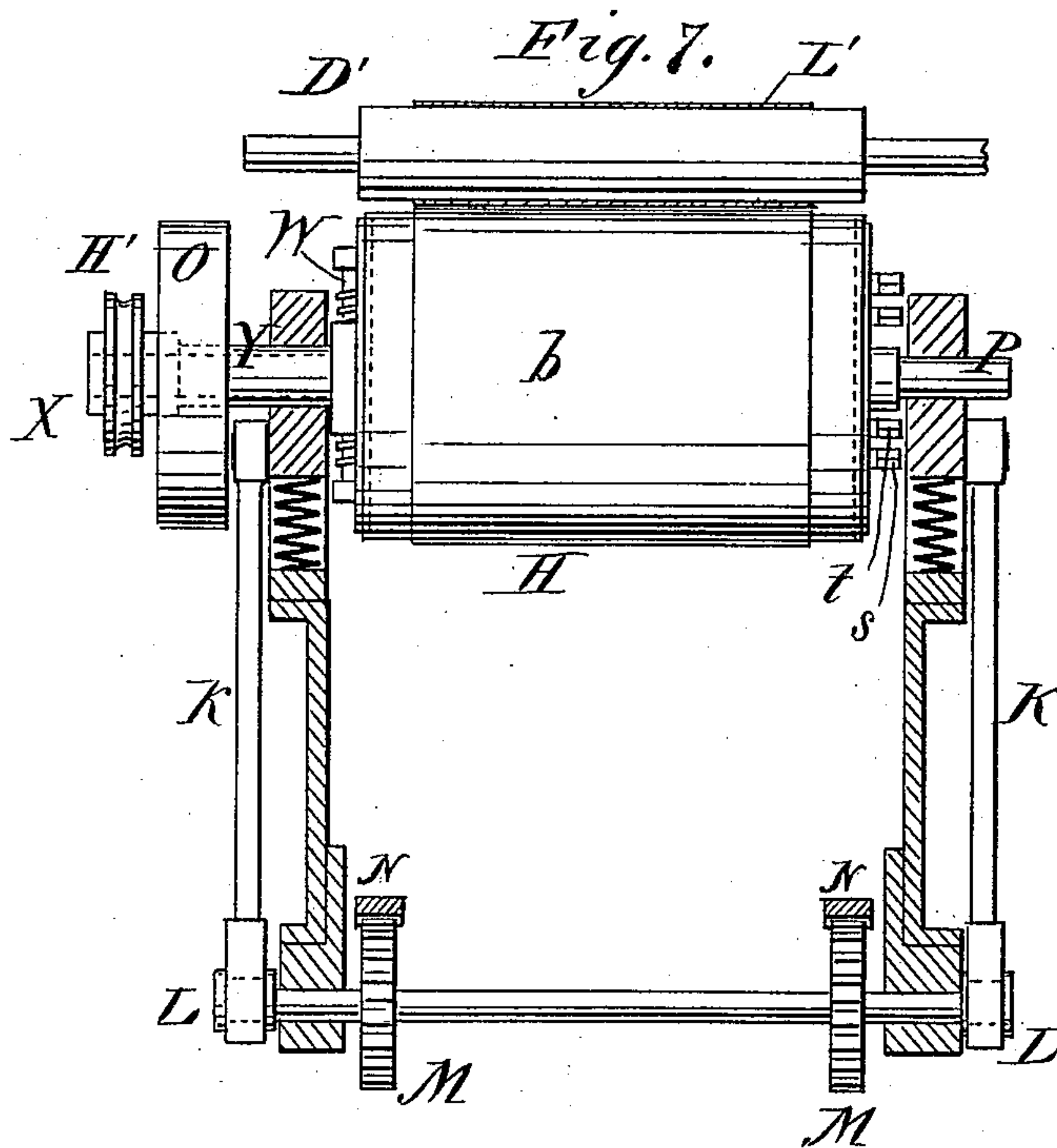
2 Sheets—Sheet 2.

A. REID.

WIPING AND POLISHING APPARATUS FOR PLATE PRINTING MACHINES.

No. 297,294.

Patented Apr. 22, 1884.



WITNESSES:

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UNITED STATES PATENT OFFICE.

ALEXANDER REID, OF BROOKLYN, NEW YORK.

WIPING AND POLISHING APPARATUS FOR PLATE-PRINTING MACHINES.

SPECIFICATION forming part of Letters Patent No. 297,294, dated April 22, 1884.

Application filed January 9, 1883. (No model.)

To all whom it may concern:

Be it known that I, ALEXANDER REID, of Brooklyn, in the county of Kings and State of New York, have invented a new and Improved Wiping and Polishing Apparatus for Plate-Printing Machines, of which the following is a full, clear, and exact description.

In plate-printing it is necessary, after the ink has been applied to the engraved plate, to wipe off the surplus ink and polish the plate before the impression is taken. To provide practical means for doing this work mechanically is the object of my invention; and to this end my invention consists in the peculiar construction and arrangement of parts as hereinafter fully described, and pointed out in the claims.

Reference is to be had to the accompanying drawings, forming part of this specification, in which similar letters of reference indicate corresponding parts in all the figures.

Figure 1 is a side elevation of a plate-printing press having my invention applied thereto. Fig. 2 is a broken end elevation of one of the wiping or polishing rollers. Figs. 3 and 4 are sectional elevations of the ends of the said roller. Fig. 5 is a side elevation of one of the rollers removed from the press. Fig. 6 is a detailed side elevation of the axle, worm-wheel, and clutch of one of the spools used in the wiping or polishing rollers; and Fig. 7 is a transverse section on line *x x*, Fig. 1.

Although my invention may be applied to any approved form of plate-printing press, I prefer the form of press shown in Fig. 1, in which the bed *A* is reciprocated in the frame of the press from the inking-roller *B* to the impression-roller *C* by the chain *D*, that passes over the sprocket-wheels *E* and *E'*, the former of which receives suitable reverse motion through suitable gearing from the shaft *F*, which receives reverse motion from an overhead shaft through a shifting-belt passing over suitable pulleys on the said shaft *F*; and although I may use one, two, or more rollers for wiping or polishing the plate, I prefer to use the two rollers *G* and *H*, which I shall term, respectively, the "wiping" and the "polishing" rollers. These rollers are held in the frame of the press in front of the wiper *J*, and are vertically reciprocated by means of the connecting-rods *K K*, eccentric shafts

L L, pinions *M M*, secured thereon, and the intermittently-reciprocating rack *N*, so that they will clear the bed *A* in its backward movement, but will be brought down snugly upon it, or rather upon the engraved plate secured thereon, for wiping and polishing the same, during the forward movement of the bed; and these rollers are given a continuous rotary motion by means of belts leading from overhead shafts passing over the pulleys *O*, secured upon the shafts *P* (or sleeve *Y*, as shown in Figs. 5 and 7) of the rollers, so that while in contact with the engraved plate they will effectually wipe and polish it.

In order that the rollers may thoroughly wipe and polish the engraved plate without in any manner injuring it, I first cover them with the thick fabric *a*, which acts as a cushion, and then outside of this cushion I place the outside wiping material or cloth, *b*, and this wiping material is caused to change its position or travel with each revolution of the roller, so that a clean wiping-surface will be continually brought into action while the press is in operation.

To accomplish the movement or travel of the outside wiping material or cloth practically, I prefer to slot the shell of the rollers on opposite sides, as shown at *c c*, and use two cloths with each roller. On small rollers one continuous wiping-cloth might be used with good results; but on large or even medium-sized rollers the drawing strain would be too great for the strength of the material, and in case the rollers are made very large I may adapt them to receive three or even four or more outside wiping-cloths around the rollers, the paying off and winding spools being of course duplicated accordingly. When two wiping-cloths are used on the rollers, as shown in the drawings, the rollers will be provided with the two oppositely-arranged paying-off spools *Q Q'* and the two oppositely-arranged winding-spools *R R'*, all of which are journaled in the head-plates *SS'* of the rollers. The two pieces of wiping material *b*, when the rollers are being prepared for use, will first be wound upon the paying-off spools *Q Q'* in considerable lengths by passing it endwise through the slot *c* nearest to them, respectively, and turning the spools by a crank applied to the squared outer ends, *t t*, thereof. The outer

ends of the pieces of wiping material left out of the slots will then be passed around the outside of the roller and passed endwise through the opposite slot, *c*, and attached to the opposite receiving-spools, which will be provided with suitable points for that purpose, and these spools will then be turned by applying the crank to the squared ends *s s* enough for taking up the slack and for drawing the wiping-cloths snugly over the roller. Upon the ends of the receiving-spools outside of the head *S'* are placed the worm-wheels *V V'*, the teeth of which engage with the worm-shafts *W W*, which receive motion when the rollers are revolved from the beveled cog-wheel *h*, with which the beveled cogs *f f*, formed on the inner ends of the worm-shafts, engage, as shown clearly in Fig. 3. In this manner, when the rollers are revolved, the receiving-spools are given a slow but continuous rotary motion, which gradually draws the wiping-cloths from the paying-off spools *Q Q'*, and winds them upon the receiving-spools, thus constantly changing the outside wiping-surface of the roller. The cog-wheel *h* is by preference made on the inner end of the shaft *X*, which runs loosely in the hollow journal or sleeve *Y*, formed in the center of the head *S'*, and to which the main pulley *O* is by preference fixed, and to the outer end of this shaft *X* is secured the pulley *H'*, by which the shaft may be held stationary or turned in either direction for regulating the speed of travel of the wiping-cloths *b* while the roller is in motion, or for turning the spools *R* and *R'* independently of any motion of the main part of the roller. The worm-wheels *V V'* are clutched to the receiving-spools by clutches *J'*, (shown in Fig. 6,) and when these spools are to be turned by means of a crank the spools must first be pushed endwise in the heads *S S'* of the rollers against the pressure of the springs *K'* to disengage the clutches for releasing the spools. If the beveled cog-wheel *h* were made upon or attached to a stationary shaft, this clutch-and-spring arrangement would become a necessity; but when the shaft *X*, on which the said cog-wheel is formed, can be independently revolved, such clutch-and-spring arrangement might be omitted, if desired, since the receiving-spools can be revolved independently of the main part of the roller by means of the shaft *X*.

L' is the web of the wiper *J*, which web passes over the rollers *D' E'* in such manner as to come in contact with the outside wiping-cloths of the wiping and polishing rollers *G H*, and thus serves to clean to a considerable extent the wiping-surfaces of these rollers. From the roller *E'* the web *L'* passes under the wiper *J*, thence up over the roller *F'*, to which it is attached, and by which, when the press is in operation, it is drawn slowly along, the said roller *F'* being revolved for this purpose by means of the ratchet *k*, pawl *l*, lever *g*, connecting-rod *g'*, and lever *j*, against the upper end of which the bed *A* comes just be-

fore it reaches the limit of its backward movement. A lock-pawl on the opposite end of the roller *F'* serves to hold the roller from backward movement during the return movement of the lever *j*, connecting-rod *g'*, &c., which is accomplished by means of the coiled spring *l'*. The roller *F'* and the wiper *J* are given vertical movement, so that the wiper will clear the engraved plate during the backward movement of the bed *A*, but will be brought down snugly upon the plate as it passes under it in the forward movement of the bed in the same manner that the wiping and polishing rollers are reciprocated—that is, by means of the pinion *M'*, eccentric shaft *N'*, and connecting-rod *K'*, the said pinion meshing with the reciprocating rack *N*, as will be understood from Fig. 1. The said rack *N* is reciprocated, for revolving the pinions *M* and *M'* for vertically reciprocating the wiper, wiping and polishing rollers, by means of suitable pins or studs, *d d*, attached to the chain *D*, which at the proper time come alternately against the toes *p p*, formed at the ends of the rack, as shown in Fig. 1.

From the above it will be understood that the backward movement of the bed *A* will be entirely unobstructed after leaving the impression-roller *C* until it reaches the inking-roller *B*, which applies the ink to the engraved plate secured upon the platen. On the forward movement of the platen the inked plate comes first in contact with the web *L'* under the wiper *J*, which removes most of the surplus ink from the plate. It then comes under the wiper *G*, which removes from the plate any remaining surplus ink, and then it passes under the polishing-roller *H*, which thoroughly polishes and cleans the plate, ready to receive the sheet for giving the impression in passing under the impression-roller *C*. In this manner it will be seen that the operation of inking, wiping, and polishing the plate is continuous, that no time is lost in wiping and polishing the plate, that the work is all done by machinery, and owing to the constant change of the wiping-surfaces of the wiping and polishing rollers they will perform their work perfectly and reliably. When all the wiping material *b b* shall have been drawn off from the spools *Q Q'* and wound upon the receiving-spools *R R'*, and become soaked by use, the same will be removed from the spools *R R'* and the rollers supplied with another quantity of clean material, in the manner above described.

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

1. In a plate-printing press, the combination, with reciprocating bed *A*, of the roller *H*, having slots *c*, the webs *b*, the paying-off spools *Q Q'*, the receiving-spools *R R'*, and means, substantially as herein shown and described, for rotating the spools *R R'* and vertically reciprocating the roller, as set forth.

2. The combination, with the roller *G* or *H*,

having receiving and paying-off spools, of the worm-shafts W and worm-wheels V V', the shafts being formed or provided with the gears f, meshing with the gear h, substantially as 5 and for the purposes set forth.

3. The combination, with the worm-wheels V V' and worm-shafts W, formed with the beveled gears at their inner ends, of the shaft X, formed with the beveled gear h, and running in the hollow journal Y, substantially as 10 described.

4. The combination, with the wiping and polishing rollers and the web L', passing over the rollers D' and E² and under the wiper J, 15 and attached to the roller F', of the ratchet-and-lever mechanism for revolving the roller F', substantially as and for the purposes set forth.

5. The reciprocating rack N, in combina-

tion with the pinions M M, eccentric shafts L 20 L, and connecting-rods K K, attached to the rollers, whereby the rollers are reciprocated vertically, as and for the purposes set forth.

6. The combination, with the reciprocating rack N, of the pinion M', eccentric shaft N', 25 and connecting-rod K², attached to the wiper J, whereby the wiper is reciprocated vertically, as and for the purposes set forth.

7. The chain D, attached at its ends to the bed A, and provided with the studs or pins d 30 d, in combination with the rack N, formed or provided with the toes p p, as and for the purposes set forth.

ALEXANDER REID.

Witnesses:

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JOSEPH A. ROTHWELL.