

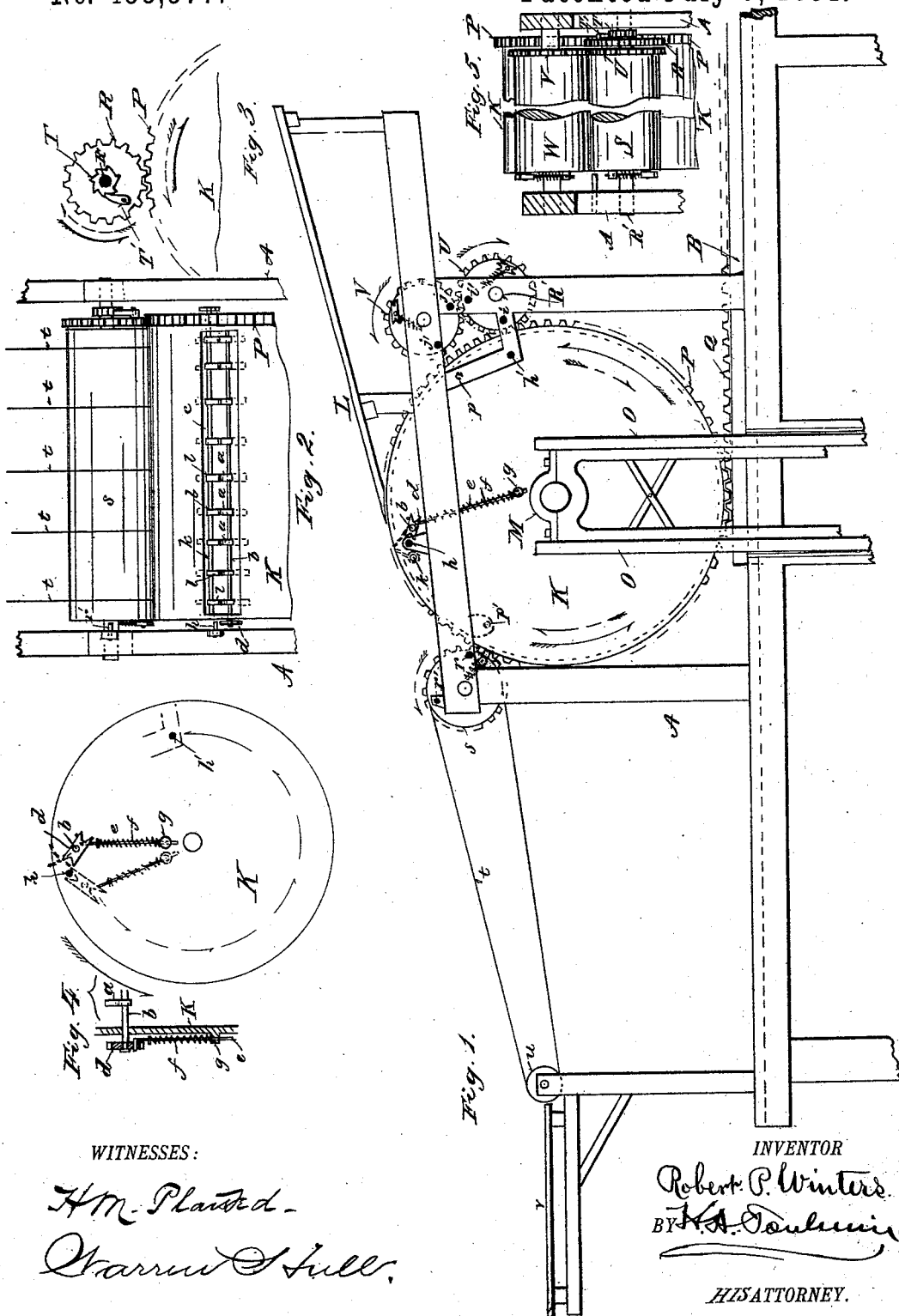
(No Model.)

2 Sheets—Sheet 1.

R. P. WINTERS.
PRINTING PRESS.

No. 455,377.

Patented July 7, 1891.



WITNESSES:

H. M. Planted.
Garrison & Hull.

INVENTOR

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HIS ATTORNEY.

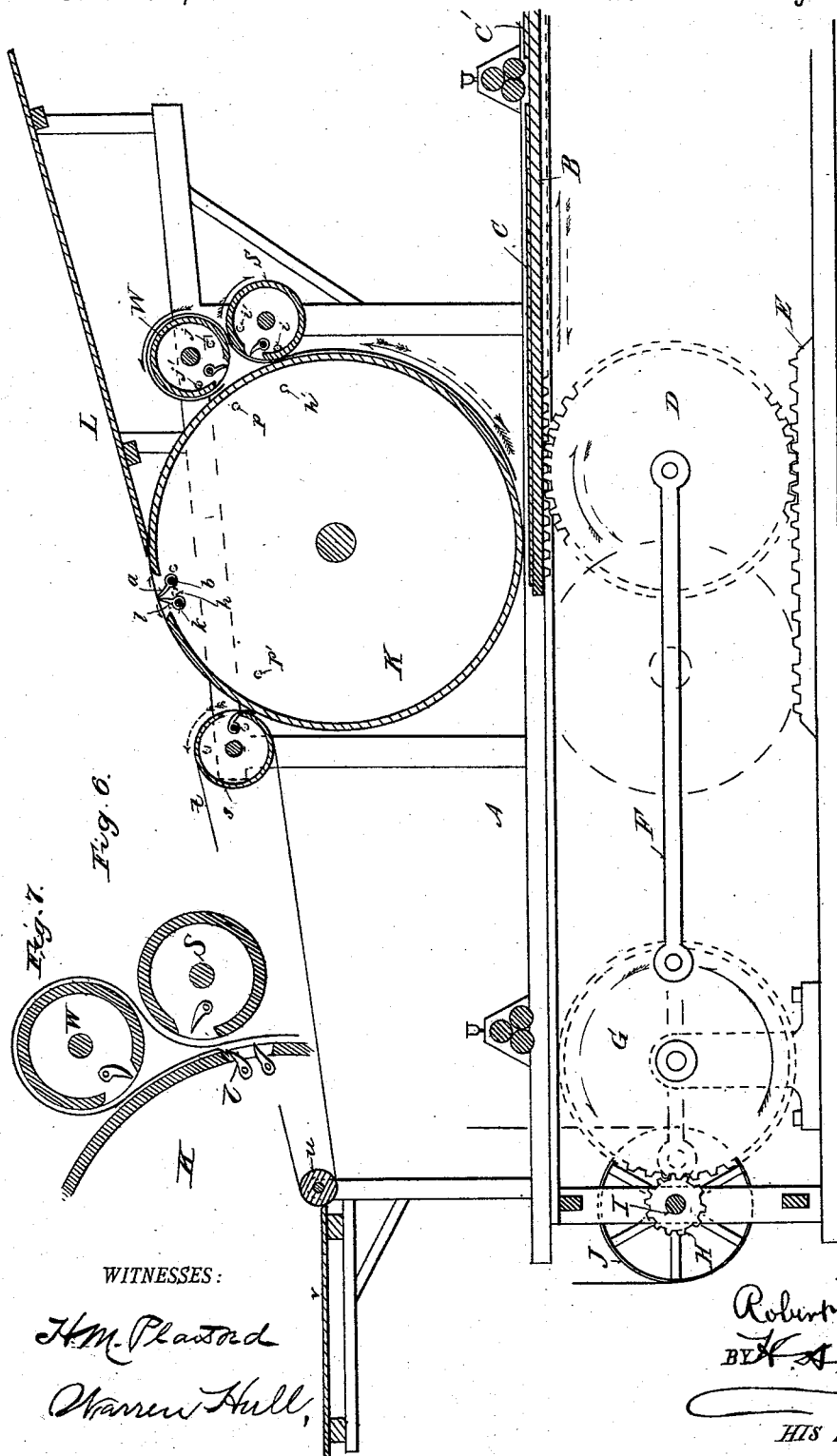
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2 Sheets—Sheet 2.

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UNITED STATES PATENT OFFICE.

ROBERT P. WINTERS, OF SPRINGFIELD, OHIO.

PRINTING-PRESS.

SPECIFICATION forming part of Letters Patent No. 455,377, dated July 7, 1891.

Application filed September 22, 1890. Serial No. 385,714. (No model.)

To all whom it may concern:

Be it known that I, ROBERT P. WINTERS, a citizen of the United States, residing at Springfield, in the county of Clark and State of Ohio, have invented certain new and useful Improvements in Printing-Presses, of which the following is a specification, reference being had therein to the accompanying drawings.

My invention relates to certain new and useful improvements in printing-presses, the peculiarities of which will be hereinafter more fully pointed out, and described in the claims.

In the ordinary style of printing-press the presser-drum, forming the bed for the paper which is printed by the forms traveling underneath as the drum revolves, is rotated in one direction and the form prints on the forward travel only of the bed, the backward stroke being lost for printing purposes.

The object of my device is to actuate the presser-drum, by means of the traveling bed or otherwise, so that it will oscillate and reverse its movement, while the paper thereon is also reversed, and the opposite side thereof printed during the said reversed movement of the drum, whereby the printing operation is performed during both movements of the table, so that both sides of the paper are printed upon.

In the accompanying drawings, forming a part of this specification, and on which like reference-letters indicate corresponding parts, Figure 1 represents a side elevation of a press having my improvements applied thereto; Fig. 2, a plan view of a portion of the same; Fig. 3, a wheel and pinion meshed and having a ratchet connection with the pinion-shaft; Fig. 4, a side view of the presser-drum with its clip-actuating mechanism; Fig. 5, a rear view of a portion of the machine; Fig. 6, a longitudinal section of the machine, and Fig. 7 a view showing a sheet passing the return mechanism on a reverse movement of the presser-drum.

The letter A designates the frame of a printing-press, of the usual or any approved type, in which is mounted the traveling bed B, having the forms C C' secured thereon and reciprocated in its guides by a traveling gear-wheel D, working in a rack on the lower side of the said bed, and also in a rack E, secured to the said frame. This wheel is connected

by a rod F with a gear-wheel G, suitably mounted in said frame and meshing with a pinion H, mounted on the shaft I, which is rotated through the driving-pulley J, and thus converts the rotary motion of the wheel G into a reciprocating motion of the bed B by said link and traveling gear. Any other means may be employed for reciprocating the table.

The presser-drum K, on which the paper is delivered from the inclined table L and held thereto, as will be hereinafter described, is mounted in boxes M and adapted to be raised and lowered in the guides O, secured to the said frame, by mechanism not shown, since it forms no part of my invention. A gear P is secured to one end of said drum K and meshes with a rack Q on the reciprocating table, whereby the drum is moved in one direction or the other, according to the forward or reversed movement of the said table. This gear P meshes with a gear R, having a ratchet connection with the shaft R', on which is mounted the guiding-drum S, as shown in Figs. 3 and 5, so that the forward movement of the drum K will actuate the said drum S through the ratchet connection and allow it to remain stationary on the reverse movement and only rotate the loosely-mounted gear R. This ratchet connection conveniently consists of a ratchet-wheel T, fixed to the shaft R' and having a pawl T' carried by the gear R, so as to operate the shaft in one direction only and allow the gear to ratchet by without moving said shaft when the drum K is reversed in its motion. A gear U is carried by one end of the guiding-drum S and meshes with a similar gear V on one end of a return-drum W, whereby motion is given to the latter drum only when the guiding-drum S is actuated, and the drum W also remains stationary on the reversed movement of the drum K. The reason for this intermittent action is to receive the paper from the drum K upon the guiding-drum S and deliver it over the drum W again upon the drum K as it reverses its movement. A backward action of the drums S and W when the drum K reverses would cause the paper on said drums also to be carried backward, and said drums are therefore adapted to remain stationary on the reversed movement of the drum K while

the paper is drawn therefrom by the clipping mechanism now to be described.

Any suitable form of gripping or clipping mechanism for the paper printed on may be used, but a convenient form will be described herein. The clips *a* are mounted at suitable intervals on a bar *b*, rotatably mounted in the sides of the said drum *K* or otherwise, and adapted to be turned in and out of an opening *c* in said drum, so as to operate upon the paper fed to said drum from the table *L*.

A convenient mechanism for rotating the bar *b* is by means of a tumbler *d*, mounted on the end of said bar *b* and having notched ends adapted to engage with the tripping-pins located in the frame of the machine at suitable intervals in the circumference of the drum *K*. As the tumbler passes each pin it is moved from one side to the other, and held in its position by the spring *e*, mounted on the rod *f*, secured to the said tumbler, and slidably connected with the lug *g* on the drum, which the spring also bears against.

In Fig. 4, the tumbler is shown about to engage with the pin *h*, which is carried by the frame, and as the drum revolves past it in the direction of the arrow the tumbler is thrown into the dotted position as indicated in said figure, and the clips are brought to bear upon the edge of the paper, which is fed to them from the table *L*. They will hold the paper till the clips are reversed by the tumbler striking the pin *h'*, as indicated by the dotted path in Fig. 4. The drum *S* is provided with similar clipping mechanism actuated by the pin *i*, and as the paper is released from the clips on the drum *K* those on the drum *S* engage with it and draw it over the latter drum till it is released by the tumblers on said drum striking the pin *i'*. A clipping mechanism on the drum *W* is now actuated by the tumbler thereon striking the pin *j* and engages with the paper, drawing it over the drum till released by the tumbler striking the pin *j'*, leaving the forward end of the paper in convenient proximity to the presser-drum *K*, but in a reversed direction, the outer surface of which was printed on by the form *C* being now next to the presser-drum *K*. The position of the paper and the respective clips at the end of the forward movement is shown in Fig. 6, and the tripping-pins carried by the frame of the machine are conveniently dotted in their located position. The bar *k* is mounted in the drum *K* conveniently to the said bar *b*. The clips *l* on the bar *k* are adapted to clip in the opposite direction from the clips *a*, as indicated by the dotted lines in Fig. 2. The tumbler *k'* is conveniently located on the opposite side of the drum from the tumbler *d*, so as not to interfere with the pins which operate the latter tumbler. The reverse movement of the drum *K* causes the clips *l* to engage with the end *m* of the paper as its tumbler is operated by striking the pin *p*, as the clips arrive at the edge of the paper on the reverse movement of the drum. The paper will

therefore be drawn down from off the drums *S* and *W*, and by the time its edge reaches the reciprocating table the form *C'* will be in position to make its impression thereon. In order that the form *C* may not print on the bed of the drum during the first part of its reversed movement, the drum is lifted a slight distance therefrom by elevating the boxes *M*, in which the said drum is mounted, as already mentioned. The forward edge of the paper is held by the clips *l* till it is released by the pin *p'* engaging with the tumbler *k'*, while at the same time a clipping mechanism on the drum *S* is actuated by the pin *r* to engage with the forward end of the paper and draw it over the said delivery-drum *S* till the clips are reversed by means of the pin *r'*, and the paper is carried by the cords *t*, which are mounted on the said drum *S*, and the roller *u*, whereby a carrier is formed to deliver the paper on the table *v*. The delivery-drum *S* is rotated on the reverse movement of the drum *K*, being provided with a ratchet connection similar to that shown in Fig. 3, which causes it to remain stationary on the forward movement of the drum *K*, the gear *s'* being loosely mounted on the shaft of the drum *S*.

Any suitable clipping mechanism may be employed in the place of that already described, which serves as one means of carrying out my object in printing on both sides of the paper, and utilizing the entire surface of the presser-drum. Thus it will be seen that the paper is delivered upon the presser-drum, is printed on one side by the form *C* as the table makes its forward movement, is carried over the return-drum *W* and returned upon the presser-drum upon its reverse movement, and printed by the form *C'*, whereby both impressions are made at one double stroke of the table, giving practically twice the capacity to the press, since no loss of time occurs during the backward stroke of the table.

I do not wish to limit myself to the form of transferring means between the presser-drum and the return-drum, which form, as above exemplified, is the drum *S*.

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

1. In a printing-press, the combination, with an oscillating presser-drum and operating means therefor, a reciprocating table adapted to carry type-forms, and means to reciprocate said table, of a return-drum mounted in immediate proximity to said presser-drum, means to guide the paper from the presser-drum to the return-drum, clipping mechanism carried by said return-drum and adapted to positively clip and release the paper at the predetermined intervals, means to rotate said return-drum, clipping mechanism carried by said presser-drum, and means to actuate both clipping mechanisms, respectively, at predetermined intervals, whereby the paper is guided to the return-drum, is carried around said return-drum and returned to the presser-

drum reversed as to the sides thereof, and is printed on both sides during a forward and return movement of the oscillating drum.

2. In a printing-press, the combination,
5 with an oscillating presser-drum, a reciprocating table adapted to carry type-forms and geared to said drum, and means to operate said table, of a guiding-drum and a return-drum geared together and located in immediate proximity to said presser-drum, means
10 to cause an intermittent rotary movement of said return and guiding drums during a forward and back movement of the said table, clipping mechanism to transfer the paper operated on from one drum to the other, respectively, and means to actuate each set of
15 clipping mechanism at suitable intervals, whereby the paper is printed on one side, reversed, and printed on the other side during a forward and back movement of said reciprocating table.
20

3. In a printing-press, the combination, with an oscillating presser-drum, a reciprocating table geared thereto and carrying type-

forms, and means to actuate said table, of a
25 reversing mechanism consisting of two intergeared drums, a ratchet connection between one of said drums and the presser-drum to rotate said intergeared drums in a uniform direction only, a delivery-drum opposite said
30 intergeared drum, a ratchet connection between the presser-drum and the delivery-drum to operate the latter in one direction only, a clipping mechanism for each drum to secure the onward movement of the paper, and actuating means to operate each set of clipping
35 mechanism at successive intervals, whereby the paper is received on said presser-drum and returned to the same from the reversing mechanism and delivered from said presser-drum, both sides being printed on a forward
40 and back movement of the reciprocating table.

In testimony whereof I affix my signature in presence of two witnesses.

ROBERT P. WINTERS.

Witnesses:

OLIVER H. MILLER,
H. M. PLAISTED.