

No. 819,829.

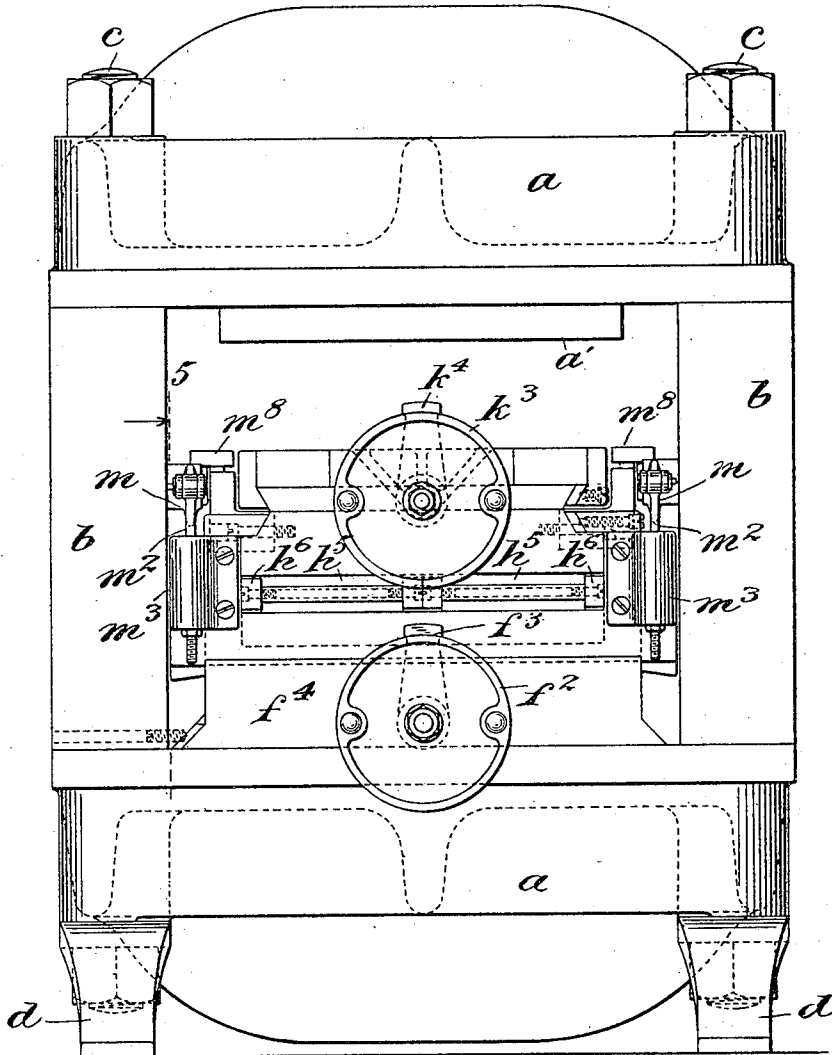
PATENTED MAY 8, 1906.

G. WHITE.
TRANSFER PRESS.

APPLICATION FILED SEPT. 19, 1903. RENEWED SEPT. 19, 1905.

5 SHEETS—SHEET 2.

Fig. 2



Witnesses:

Lucius Varney
Henrietta Lyon.

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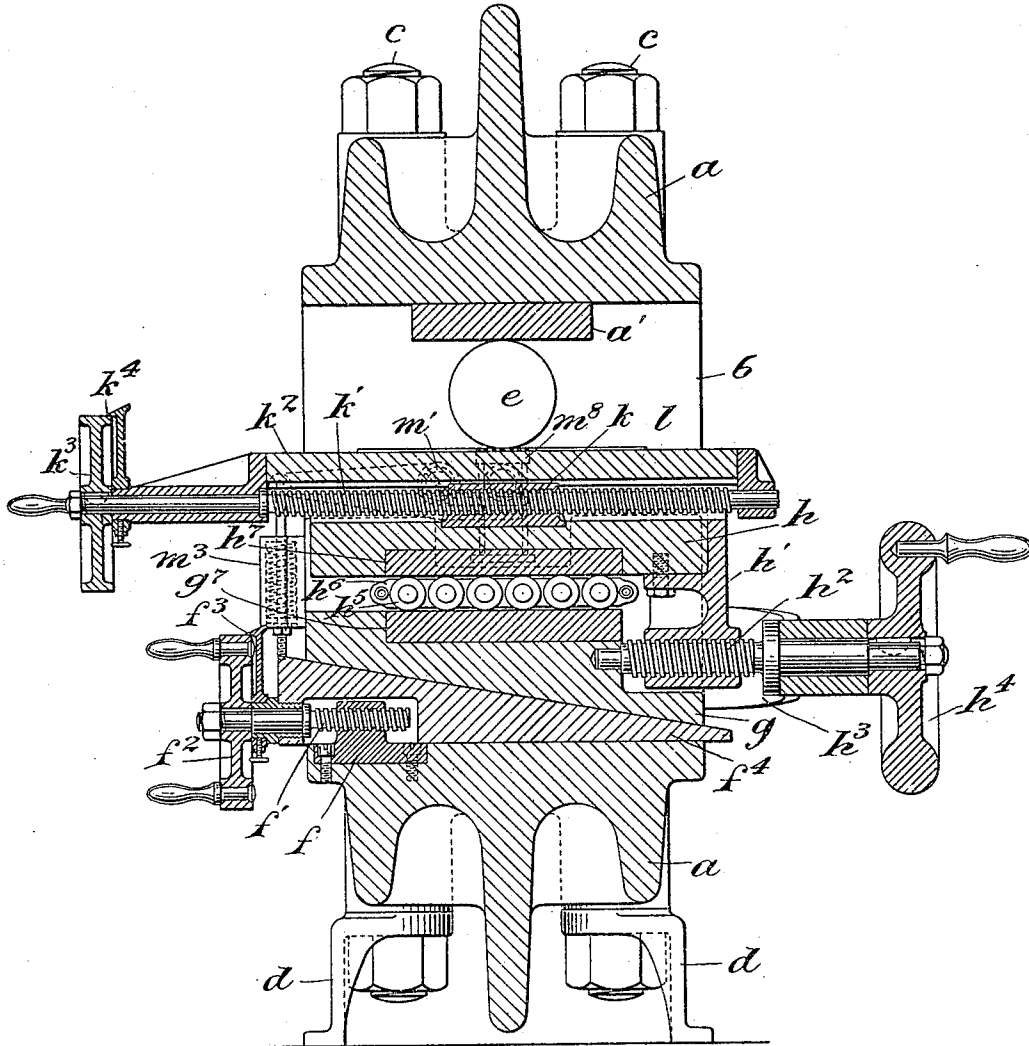
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5 SHEETS—SHEET 3.

Fig. 3



Witnesses:
Lucius Varney.
Henrietta Lyon.

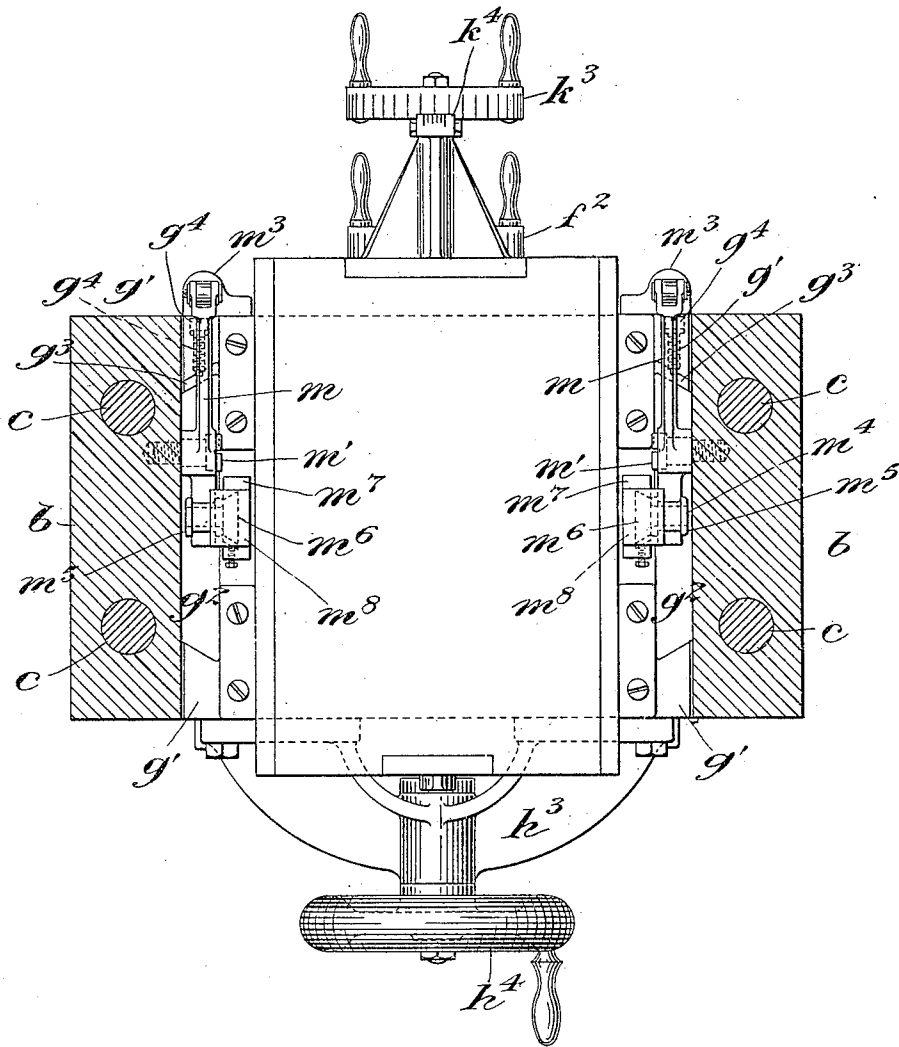
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APPLICATION FILED SEPT. 19, 1903. RENEWED SEPT. 19, 1905.

5 SHEETS—SHEET 4.

Fig. 4



Witnesses:
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 Henrietta Lyon

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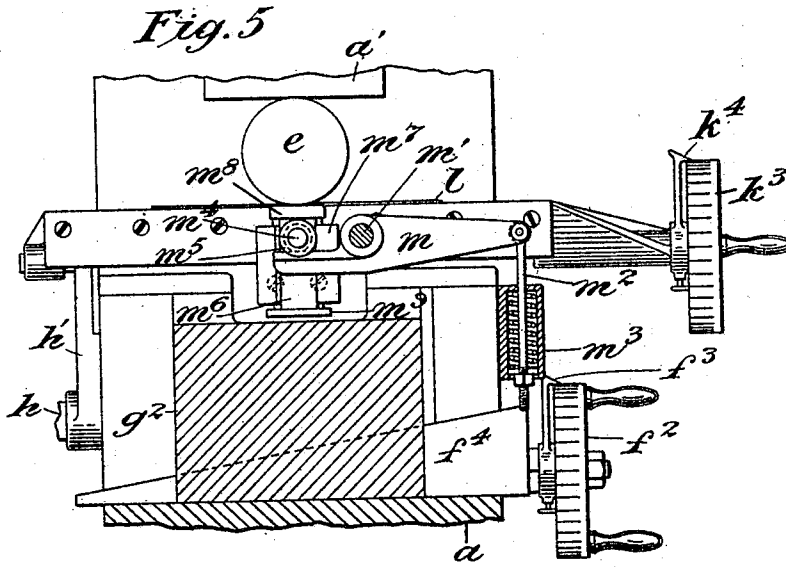
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TRANSFER PRESS.

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5 SHEETS—SHEET 5.



Witnesses:

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UNITED STATES PATENT OFFICE.

GEORGE WHITE, OF JERSEY CITY, NEW JERSEY.

TRANSFER-PRESS.

No. 819,829.

Specification of Letters Patent.

Patented May 8, 1906.

Application filed September 19, 1903. Renewed September 19, 1905. Serial No. 279,190.

To all whom it may concern:

Be it known that I, GEORGE WHITE, a citizen of the United States, residing in Jersey City, county of Hudson, State of New Jersey, have invented certain new and useful Improvements in Transfer-Presses, &c., of which the following is a specification, reference being had to the accompanying drawings, forming a part hereof.

This invention relates, primarily, to machines or apparatus for the transfer of lines or characters from a previously-prepared master-roll to a copperplate in intaglio that the latter may be used for printing. The machines or apparatuses heretofore commonly employed for the purpose have not only been exceedingly cumbersome, employing very long and heavy levers which take up much room, but in their use it was necessary to exert upon the plate the full pressure at the first operation, requiring much force to move the plate under the master-roll and making it impossible to secure gradations of pressure. Furthermore, in the use of such machines there was great liability to slip and loss of accuracy, the finer lines frequently failing of proper reproduction upon the plate and a bur being often raised about the heavier lines. Absolute rigidity was lost, and, in fact, the machines depended for their operation upon a certain amount of spring between the point of application of the power to the machine and the point of application of the pressure to the copperplate.

It is the object of the present invention to produce a machine which shall be compact, shall be absolutely rigid so far as concerns the power required for its operation, and shall permit the master-roll and the plate to be brought progressively nearer to each other in the use of the machine, so that at the first operation upon the plate but slight pressure shall be exerted thereon, such pressure being increased with successive operations. Not only is less power thus required in the use of the machine, but the light lines and the heavy lines are reproduced upon the plate with their full relative values, little or no bur is formed upon the plate, and the work is performed with a degree of accuracy which leaves nothing to be desired.

Various other features of advantage in the construction and use of the machine will appear hereinafter as the description of the construction thereof proceeds.

Special reference has been made herein to

the adaptation of the machine for transferring from master-rolls to copperplates; but it will be readily understood that the machine is also capable of use for other specific purposes.

The invention will be more fully described and explained hereinafter with reference to the accompanying drawings, in which, for purposes of explanation, it is illustrated as embodied in a convenient and practical structure.

In said drawings, Figure 1 is a view in elevation of one end of the machine looking from the right hand of Fig. 3. Fig. 2 is a similar view of the opposite end of the machine looking from the left hand of Fig. 3. Fig. 3 is a vertical central section. Fig. 4 is a plan view with the top removed and the sides of the frames in horizontal section. Fig. 5 is a detail view, partly in section, on the plane indicated by the line 5 of Fig. 2 looking toward the right in said figure.

As the machine should be capable of exerting considerable pressures, the frame which supports the working parts of the machine is heavily constructed, comprising, as shown in the drawings, webbed top and bottom plates *a*, suitable side plates *b*, and heavy side plates *b*, which preferably pass through the ends of the top and bottom plates. For convenience in construction the top and bottom plates are precisely alike, so that they may be cast from the same pattern, and in order to properly support the machine feet *d* may be secured beneath the bottom plate *a*, as by the bolts *c*.

For convenience in manufacture, as well as to secure perfect accuracy in operation, a plate *a'* for contact with the master-roll *e* (represented in outline in Fig. 3) may be secured to the under side of the top plate *a*; as by bolts *a*², the under or working surface of said plate *a* being formed with great care that it may be absolutely true. Upon the upper surface of the bottom plate *a* is secured a fixed nut *f*, which is engaged by a traveling screw *f'*, provided with a suitable hand-wheel *f*² and vernier-scale *f*³. The screw *f'* engages so as to carry with it a wedge *f*⁴, which rests upon the bottom plate, being recessed on its under side to accommodate the nut and screw, as clearly shown in Fig. 3.

Upon the wedge *f*⁴ rests a block *g*, which has its under surface inclined for cooperation

with the wedge and is also cut out to accommodate various parts hereinafter referred to. The block g is intended for vertical movement only within the frame, and in order that it may be held from movement in a horizontal plane it is provided with gibs g' to engage vertical dovetailed guides g^2 , which may be formed on or secured to the side plates b of the frame. One gib of each pair is provided with a wear-plate g^3 and an adjusting-screw g^4 , as shown in part by dotted lines in Fig. 4, to take up wear.

Upon the block or frame g is supported for longitudinal movement in a horizontal plane a second block or plate h , said block or plate having secured thereto a bracket h' , which forms a traveling nut for a screw h^2 , the latter having a bearing at one end in the block g and at the outer end in a suitable bracket h^3 , which is carried by the block g . Outside of the bracket h^3 the shank of the screw h^2 is provided with a suitable hand-wheel h^4 , by the rotation of which in opposite directions the plate or block h is moved to and fro. To reduce friction, rolls h^5 , held in proper relative position by frames h^6 , are interposed between the vertically-movable block g and the longitudinally-movable block h . Suitable wear-plates g^7 and h^7 with carefully-trued working surfaces are preferably set into the blocks g and h , respectively.

The longitudinal reciprocation of the block h is that which is necessary to effect the transfer of the lines or characters from the master-roll e to the copperplate, and it is therefore desirable to provide further and additional means to effect adjustment of the copperplate and also to permit the withdrawal of the same from the machine for inspection or substitution. To this end the block h , not being itself adapted to directly support the copperplate, is provided on its upper surface with a fixed nut k , which is engaged by a traveling screw k' , mounted in suitable bearings in and moving with an adjustable supporting-plate k^2 , said screw being provided with a suitable hand-wheel k^3 and vernier-scale k^4 . The copperplate l which is to receive the impression lies upon the top of the adjustable plate k^2 and reciprocates in contact with the master-roll e as the block or plate h is reciprocated by the screw h^2 and may also be withdrawn from beneath the master-roll e with the adjustable plate k^2 by the rotation of the screw k' .

It is highly desirable that the master-roll e be supported independently of the copperplate l in order that the copperplate may be approached gradually to the roll as the impression therein is deepened at successive reciprocations of the plate. Accordingly there is conveniently provided at each side of the machine a lever m , which may be pivoted upon a stud m' in the corresponding side plate of the frame. At its outer end the

lever is connected by a link m^2 with a spring-box m^3 of ordinary construction, which may be secured to the vertically-movable block g . The other arm of the lever m is formed with a plane surface to bear against a stud m^4 , provided with a friction-sleeve m^5 , said stud projecting from a slide m^6 , arranged to have vertical movement in a guide m^7 , which is secured to the side of the horizontally-reciprocating block h . At its upper end the slide carries a supporting-block m^8 , which has its upper surface carefully trued to support the corresponding end of the master-roll e . It will be seen that the block m^8 , although pressed upward by the lever m , is free to reciprocate in a horizontal plane with the reciprocating block h upon the arm of the lever. The pressure of the springs, acting through the lever m , is sufficient to press the master-roll upward against the thrust-block a' and to support and hold said roll in working position independently of the movement of the copperplate l . As the supporting-block m^8 reciprocates with the reciprocating block h the master-roll is rolled to and fro through contact with said blocks, and so long as the hand-wheel k^3 is not disturbed the impression in the surface of the copperplate, if it be then in contact with the master-roll, will register with the lines or characters formed on said master-roll. At the same time, however, it is possible to raise the copperplate with reference to the master-roll, so that at the first operation of the machine a very light impression can be made, and at each successive operation the impression can be made slightly heavier, thus securing an impression in the copperplate which is an exact reproduction of the lines and characters formed on the master-roll, having corresponding values for light and heavy lines, avoiding the raising of a bur on the surface of the plate, and requiring the exertion of but little force at each operation. Furthermore, if it is desired at any time to inspect the progress of the work the copperplate can be lowered away from the master-roll through the operation of the hand-wheel f^2 , the reading of the vernier-scale having been carefully noted, and can then be withdrawn from beneath the master-roll by the operation of the hand-wheel k^3 , the reading of its vernier-scale also having been carefully noted, so that if it is desired to further deepen the impression the plate can be returned to exact position with respect to the master-roll. It will be noted that the levers m have stationary fulcrums upon the side plates b of the frame, while the spring-boxes m^3 are movable vertically with the vertically-adjustable block h ; but in the operation of the machine the effect of this relative movement is so slight that it can be disregarded and constitutes no sufficient objection to the convenient securing of the spring-boxes to such vertically-movable block. On the other

hand, when the wedge f^4 is withdrawn to the maximum extent the lower end of the guides m^7 make contact with a plate m^9 , secured across the lower end of the slide m^6 and draw the same down, thus releasing the master-roll e from the pressure of the blocks m^8 and permitting it to be withdrawn.

In the operation of the machine the master-roll is placed in position between the supporting-blocks m^8 and the thrust-block a' , being carefully centered by suitable gages, and the copperplate to receive the impression is likewise carefully placed upon the adjustable plate k^2 , friction being ordinarily sufficient to retain the plate l in proper position during the operation of the machine. The plate k^2 is then adjusted until the copperplate l stands in proper relation with the master-roll e and the hand-wheel f^2 is rotated to drive in the wedge f^4 and raise the copperplate into like contact with the master-roll. The hand-wheel h^4 is next rotated to and fro to cause the plate h and the plate k^2 to reciprocate beneath the master-roll, causing the latter to roll upon the surface of the copperplate and to transfer thereto the lines and characters formed upon its surface. As often as the progress of the work renders desirable the hand-wheel f^2 will be further rotated to raise the copperplate still further until the impression therein has been deepened to the desired extent. As already explained, the progress of the work can be inspected from time to time by lowering the copperplate by means of the hand-wheel f^2 and withdrawing it from beneath the master-roll by means of the hand-wheel k^3 .

It will be readily understood that the machine is capable of use for other purposes than the specific purpose herein described, and, furthermore, that various details of construction and arrangement may be altered as the necessities of or particular case may render desirable without departing from the spirit of the invention.

I claim as my invention—

1. A press, comprising a frame, a wedge block, a vertically-movable block, a horizontally-reciprocating block mounted on said vertically-movable block and carrying rollers, interposed between said blocks, substantially as described.

2. A press, comprising a frame, a wedge block, a vertically-movable block, a horizontally-reciprocating block mounted on said vertically-movable block, and a screw supported by said wedge block and engaging a nut carried by said reciprocating block, substantially as described.

3. A press, comprising a frame, a vertically-movable block, means to move said block, a horizontally-reciprocating block supported by said vertically-movable block, and means to reciprocate said block, substantially as described.

4. A press, comprising a frame, a vertically-movable block, means to move said block, a horizontally-reciprocating block supported by said vertically-movable block and a screw supported by said vertically-movable block and engaging a nut carried by said reciprocating block, substantially as described.

5. A press, comprising a frame, a wedge block, a nut carried by said frame, a screw engaging said wedge block and nut, a vertically-movable block and a horizontally-reciprocating block mounted on said vertically-movable block, substantially as described.

6. A press, comprising a frame, a vertically-movable block, means to move said block, a horizontally-reciprocating block supported by said vertically-movable block, means to reciprocate said block, a supporting-block mounted on said reciprocating block, and means to move said supporting-block on said reciprocating block, substantially as described.

7. A transfer-press, comprising a frame, a plate-supporting block, means to raise and lower said plate-supporting block, independent means to support the master-roll, substantially as described.

8. A transfer-press, comprising a frame, a plate-supporting block, means to raise and lower said plate-supporting block, and levers pivoted independently of the plate-supporting block to support the master-roll, substantially as described.

9. A transfer-press, comprising a frame, a plate-supporting block, means to raise and lower said plate-supporting block, master-roll-supporting blocks, guides for said master-roll-supporting blocks, and means independent of the plate-supporting block to support said master-roll-supporting blocks, substantially as described.

10. A transfer-press, comprising a frame, a plate-supporting block, means to raise and lower said plate-supporting block, master-roll-supporting blocks, guides for said master-roll-supporting blocks, and levers pivoted upon the frame to support said master-roll-supporting blocks, substantially as described.

11. A transfer-press, comprising a frame, a plate-supporting block, means to raise and lower said plate-supporting block, means to reciprocate said plate-supporting block, and independent means to support the master-roll, substantially as described.

12. A transfer-press, comprising a frame, a plate-supporting block, means to raise and lower said plate-supporting block, means to reciprocate said plate-supporting block, and levers pivoted independently of the plate-supporting block to support the master-roll, substantially as described.

13. A transfer-press, comprising a frame, a plate-supporting block, means to raise and

lower said plate-supporting block, means to reciprocate said plate-supporting block, master-roll-supporting blocks, guides therefor carried with the plate-supporting block, and
5 levers to support said master-roll-supporting blocks, substantially as described.

14. A transfer-press, comprising a frame, a plate-supporting block, means to raise and lower said plate-supporting block, means to
10 reciprocate said plate-supporting block, master-roll-supporting blocks, carried with said plate-supporting block, levers pivoted upon the frame to support said master-roll-sup-
15 levers, substantially as described.

15. A transfer-press, comprising a frame, a wedge block, a vertically-movable block, a plate-supporting block mounted on said verti-
20 cally-movable block, and independent means to support the master-roll, substantially as described.

16. A transfer-press, comprising a frame, a vertically-movable block, a horizontally-reciprocating block adapted to support a plate

and mounted on said vertically-movable 25 block, and independent means to support a master-roll substantially as described.

17. A transfer-press, comprising a frame, a vertically-movable block, means to move said block, a horizontally-reciprocating block 30 supported by said vertically-movable block, means to reciprocate said block, a plate-supporting block carried by said reciprocating block, and independent means to support a master-roll, substantially as described. 35

18. A transfer-press, comprising a frame, a wedge block, a vertically-movable block, a horizontally-reciprocating block mounted on said vertically-movable block, and inde-
40 pendent means to support a master-roll, substantially as described.

This specification signed and witnessed this 10th day of September, A. D. 1903.

GEORGE WHITE.

In presence of—

J. HERBERT POTTS,
LUCIUS VARNEY.