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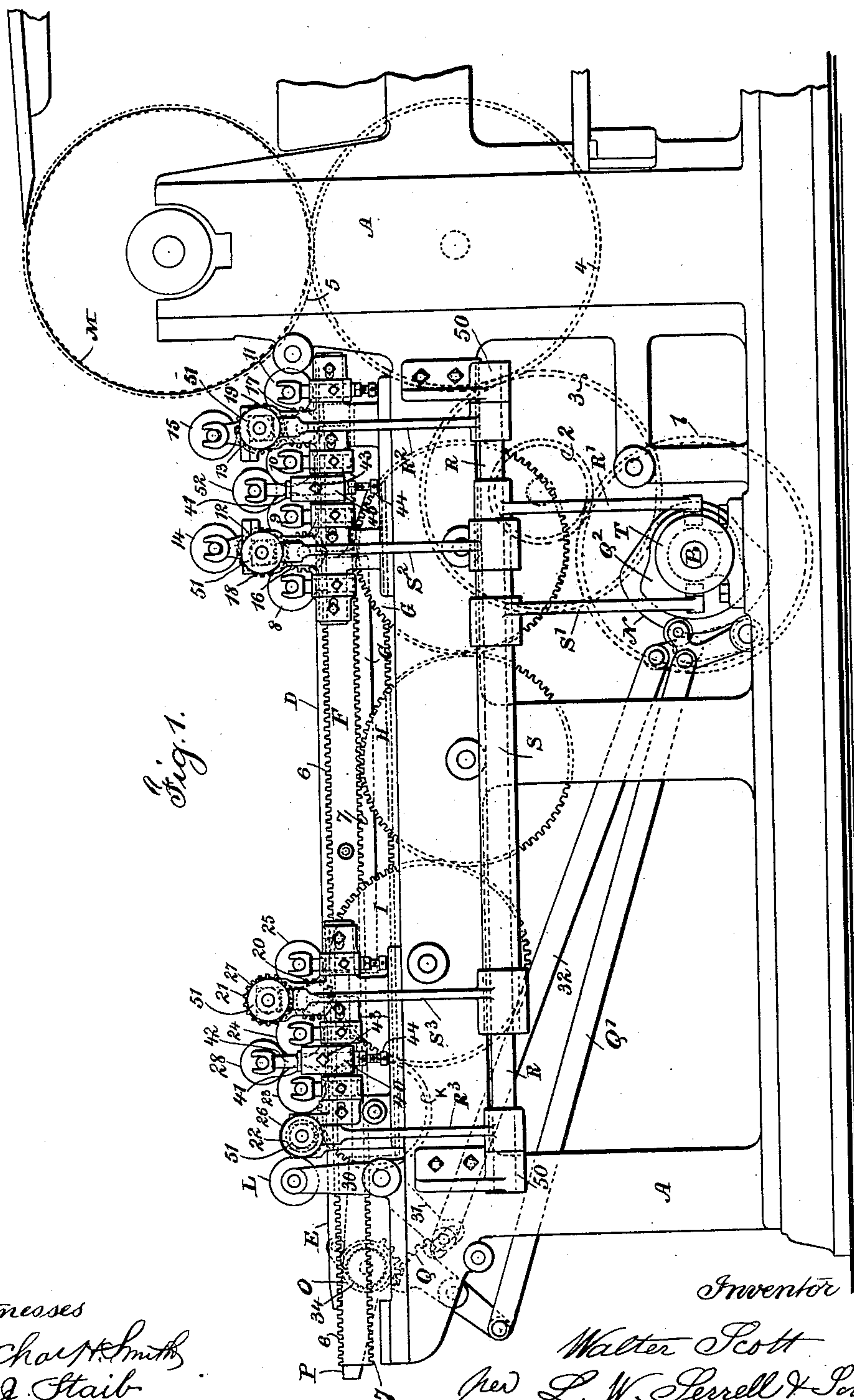
W. SCOTT.

INKING APPARATUS FOR PRINTING PRESSES.

(Application filed June 3, 1897.)

2 Sheets—Sheet 1.

(No Model.)



Witnesses

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# UNITED STATES PATENT OFFICE.

WALTER SCOTT, OF PLAINFIELD, NEW JERSEY.

## INKING APPARATUS FOR PRINTING-PRESSES.

SPECIFICATION forming part of Letters Patent No. 626,871, dated June 13, 1899.

Application filed June 3, 1897. Serial No. 639,255. (No model.)

*To all whom it may concern:*

Be it known that I, WALTER SCOTT, a citizen of the United States, residing at Plainfield, in the county of Union and State of New Jersey, have invented an Improvement in Inking Apparatus for Printing-Presses, of which the following is a specification.

In printing-presses that have a reciprocating bed and an impression-cylinder the type is usually upon the bed, and adjacent to the same is an ink-table, and as the bed reciprocates the table is carried beneath the inking-rolls, and the ink is worked upon the same, and the rolls ink the type as the form passes beneath them. In this character of press, which is often known as a "two-revolution" or "stop-cylinder" press, a rack upon the bed has given motion to the inking-rolls, so that their surfaces are moving at the same speed as the inking-table and as the types or form, and it has been difficult to thoroughly work and distribute the ink before it reaches the types, and if a second set of ink-distributing rolls were employed the rack upon the bed would separate from the gears of such rolls unless it projected at one end of the bed, and thereby caused the press to occupy a large space. In cases where ink-distributing rolls have been used upon presses of this general character and driven by gearing the bevel-gears and shaft for the same are inconvenient in use, and in addition the gears are liable to wear away, so that the speed of movement of the ink-distributing rolls is not regular and uniform, or the rack has projected beyond the end of the bed, and hence is objectionable.

The object of the present invention is to employ a second group of ink-distributing rolls that act in connection with the ink-trough and with the ink-table when such ink-table is at or near its extreme movement in one direction, and this ink-table carries the ink to the group of rollers that inks the form, thereby insuring a very thorough distribution of the ink, and the ink-distributing rolls are driven from a rack by straight parallel gearing, that is out of the way and receives its motion from a rack upon the bed, so that the rolls are driven first in one direction and then in the other direction at the same speed as the movement of the bed, whether such

rolls are in contact with the ink-distributing table or not, and I also provide distributing-rolls that receive an end motion in addition to their revolving movement for more thoroughly distributing the ink upon the composition inking-rolls.

In the drawings, Figure 1 is a diagrammatic elevation showing part of a printing-press with the present improvement added. Fig. 2 is a plan view of part of one of the frames and the adjacent gearing and bed, and Fig. 3 is a partial cross-section showing one frame and the levers for giving end motion to the distributor. Fig. 4 is a sectional plan at the line  $x x$  of Fig. 5, and Fig. 5 is a vertical section through the eccentric bushing. Figs. 4 and 5 are on an enlarged scale.

The main frame is of any size or shape. One side frame is represented at A, and the cam-shaft B is rotated by suitable power, and the gear-wheels 1 2 3 4 5 connect the cam-shaft with the shaft of the impression-cylinder M. The type-bed C is reciprocated by any suitable device, and the form D is upon the bed, and the ink-table E is between the form and one end of the bed. These devices being well-known in two-revolution or stop-cylinder presses do not require further description.

The rack F is fastened to one edge of the reciprocating bed, and the top teeth 6 engage the gears or pinions 16 and 17, and these in turn drive the gears 18 and 19 upon the metal rolls 12 and 13, and there are composition rolls 8, 9, 10, and 11, which ink the form, and there are also composition rolls 14 and 15, which act as distributors. This group of inking-rolls, except in the particulars hereinafter set forth, corresponds to the group of rolls ordinarily made use of in presses of this character. A metal roll 52 is between and above the rolls 9 and 10.

It is important that the inking-rolls receive a motion corresponding to the movement of the reciprocating bed, so that the surface-speeds coincide. Hence the rack before mentioned, acting directly upon the gears of the rolls, drives those rolls first one way and then the other as the bed reciprocates; but inasmuch as the second set of ink-distributing rolls is placed near the end of the machine the rack F cannot be availed of for giving a



motion directly to the rolls of such second set of ink-distributers, because the rack would separate from such gears as the form passes under the impression-cylinder unless that rack projected beyond the end of the bed and thus occupied unnecessary space.

To give motion to the second set of ink-distributing rolls, I make the rack F double—that is to say, a second set of teeth 7 is provided upon the under side of the rack, and these teeth engage the gear-wheel G, and the gears H, I, and K transmit motion from the rack and gear G to the pinions or gears 20 and 22, the gear 22 being upon the metal roll 26 and the gear 20 engaging the gear 21 on the metal roll 27, and these metal rolls 26 and 27 are in contact with the composition rolls 23, 24, and 25, so as to drive them in the proper direction and at the same surface speed as the ink-table on the type-bed, and there is also a metal roll 28 intervening between the composition rolls 23 and 24, and the ductor L, which is preferably of composition, is upon arms 30 on a cross-shaft that is rocked by an arm 31 and adjustable link 32 to a cam N upon the shaft B, such ductor swinging from the roll O in the ink-trough to the roll 26. The roll O is of ordinary character in the ink-trough P, and it is turned progressively by the gear-teeth and sector Q, with a link Q' extending to an arm and roll receiving motion from the cam Q<sup>2</sup> on the cam-shaft B, there being a pawl intervening between the gear that is moved by the sector Q and the ratchet-wheel 34 upon the shaft of the ink-roll. By the aforesaid train of gearing the second set of inking-rolls receives its motion from the teeth of the double rack, and the gear G always remains in engagement with the teeth of the rack.

It is often necessary to adjust the bearings carrying the shafts of the metal rolls that intervene between the composition rolls in order that such metal rolls may bear equally upon the adjacent composition rolls, and the bearing for the shaft of the metal roll has to be adjusted from time to time according to the wear or shrinkage of the composition rolls. With this object in view the fixed socket 40 upon the frame of the machine has within it an eccentric bushing 41, that receives into its vertical hole the stud 42, having at its upper end the jaw or fork receiving the shaft or journal of the intermediate roll, and a screw 43 is employed for clamping the eccentric bushing within the fixed socket. It will be apparent that the eccentric bushing can be turned around within the fixed socket, and thereby shift the stud 42 toward or from either of the composition rolls in order to cause the metal roll to bear equally upon the two composition rolls, and the screw 44 passes vertically into the bottom of the stud 42 and supports the said stud 42, and it can be adjusted for raising or lowering the metal roll so that it bears with the desired pressure upon the composition rolls. I have shown the fixed

sockets and eccentric bushings as applied to the metal rolls 28 and 52; but this bushing can be applied to any of the inking-rolls.

The metal rolls 12, 13, 26, and 27 advantageously receive end motion while they are also being rotated at the surface speed of the bed and inking-table, and with this object in view I provide a rock-shaft R, supported in suitable bearings 50 upon the frame, and around this rock-shaft is a sleeve S, and the cam T upon the cam-shaft B is made with a grooved cylindrical surface acting at opposite sides upon the pins or rolls projecting toward each other from the levers R' and S', and this cam having a single groove in it moves one lever in one direction and the other lever in the other direction, and hence turns the rock-shaft R and sleeve first one way and then the other way; but the sleeve is moving in the opposite direction to the rock-shaft, so as to equalize the strain and motion, and from the rock-shaft R the levers R<sup>2</sup> and R<sup>3</sup> project upward, and from the sleeve S the levers S<sup>2</sup> and S<sup>3</sup> also project upward, and the upper ends of the respective levers act upon grooved hubs 51 upon the shafts of the distributing-rolls 12, 13, 26, and 27, so as to give end motion to such rolls for spreading the ink and rendering the same uniform.

In consequence of the rolls 12 and 13 resting upon the composition type-inking rolls and being beneath the composition distributing-rolls 14 and 15 the end movement given to such rolls 12 and 13 and in opposite directions is very efficient in equalizing the ink on all the rolls and preventing a greater accumulation of ink peripherally at one place than at another.

It will be apparent that the roll 26 as it receives motion from the reciprocating bed rotates the ductor L and also the adjacent composition roll 23, so as to spread the ink upon the ductor and upon the adjacent composition roll and from there to the other rolls in the group and also upon the ink-table, and this roll 26, also receiving an endwise movement, spreads the ink and unifies the same, so that inequalities in the ink as transferred from the fount by the ductor are rapidly obliterated, and in consequence of the ductor supplying fresh ink when the ink-table is out of contact with the group of rolls and these rolls are constantly in motion the ink becomes spread upon such rolls before the ink-table underrunning the same receives the fresh supply of ink therefrom, thus greatly promoting the uniformity of distribution of the ink on the table and also upon the inking-rolls that are supplied from the table and inking device.

It will be apparent that the location of the rack that gives motion through the gearing to the second set of ink-distributing rolls is immaterial, and although the rack is represented as with the teeth standing downward and with the gearing closely adjacent to and



within the framework of the machine the rack and gearing may be located elsewhere so long as the length of the reciprocating bed is not increased materially by this rack and so long as the teeth of the rack remain in engagement with the gear-teeth that transmit motion to the rolls of the second set of ink-distributors.

I claim as my invention—

1. The combination in a printing-press having a reciprocating bed, an inking-table and a set of form-inking rolls and driving-gears, of a rack attached upon one edge of the bed and having two sets of teeth, one set of teeth giving motion to the gears that drive the form-inking rolls and a train of gearing receiving motion from the other set of teeth on the rack, a group of ink-distributing rolls and driving-gears engaging the train of gearing for turning such rolls first one way and then the other at the surface speed of the reciprocating bed, and an ink-trough and a ductor for supplying ink, substantially as set forth.

2. The combination in a printing-press having a reciprocating bed, an inking-table and a set of form-inking rolls and driving-gears, of a rack attached upon one edge of the bed and having two sets of teeth, one set of teeth giving motion to the gears that drive the form-inking rolls and a train of gearing receiving motion from the other set of teeth on the rack, a group of ink-distributing rolls and driving-gears engaging the train of gearing for turning the rolls first one way and then the other at the surface speed of the reciprocating bed and inking-table, an ink-trough below the bed and a ductor-roller and means for moving the same laterally from the ink-trough to the set of distributing-rolls for supplying ink to such distributing-rolls, substantially as set forth.

3. The combination with the set of type-inking rolls and the set of ink-distributing rolls and the reciprocating type-bed and inking-table, of a rock-shaft, a sleeve upon the rock-shaft, a cylinder and a cam-groove around its periphery, arms with pins at opposite sides of the cam-groove and connected with the sleeve and rock-shaft respectively, and arms extending from such sleeve and rock-shaft respectively, and connections from their upper ends for moving the ink-distributing rolls endwise and in opposite directions, substantially as set forth.

4. The combination with the composition ink-rolls, of a distributing-roll, a vertical bearing for the shaft of such roll, a socket and an eccentric bushing within the socket receiving through it the vertical stud of the bearing and means for holding the eccentric bushing after it has been turned to adjust the distributing-roll to bear equally against the adjacent composition rolls, substantially as set forth.

5. The combination with the composition ink-rolls, of a distributing-roll, a vertical bear-

ing for the shaft of such roll, a socket and an eccentric bushing within the socket receiving through it the vertical stud of the bearing and means for holding the eccentric bushing after it has been turned to adjust the distributing-roll to bear equally against the adjacent composition rolls, and a screw for adjusting the stud vertically, substantially as set forth.

6. The combination in a printing-press having a reciprocating bed for the form and an ink-table upon the bed, of a group of ink-distributing rolls beneath which the table passes, an ink-trough below the bed at one end of the press, a ductor-roll and arms for supporting the same and means for moving the ductor-roll into contact with the roll in the ink-trough and then into contact with one of the distributing-rolls and gearing for driving the distributing-rolls first in one direction and then in the other in unison with the movements of the bed, the ductor-roll being revolved by surface contact with the distributing-roll so as to spread the ink on the distributing-rolls during the reciprocations of the bed, the ink-trough being out of the way below the bed, substantially as specified.

7. The combination in a printing-press having a reciprocating bed and an ink-distributing table thereon and a set of form-inking rolls and a set of ink-distributing rolls of a rack upon the reciprocating bed at one edge thereof and having two sets of teeth, and gearing engaging one set of teeth and giving motion to the form-inking rolls, a train of straight gears engaging the other set of teeth on the rack and giving motion to the distributing-rolls first in one direction and then in the other at the same speed as the bed after the table has passed from contact with said ink-distributing rolls, substantially as set forth.

8. The combination in a printing-press having a reciprocating bed for the form and an ink-table upon the bed, a group of form-inking rolls and a group of ink-distributing rolls, of one cylinder having a peripheral cam-groove, a lever at each side of the cam with a pin entering the groove, a rock-shaft and a sleeve around the rock-shaft to which the respective arms are connected, arms extending up from the rock-shaft and from the sleeve respectively, and connections from the arms to the ink-distributing rolls in the respective groups whereby the one cam is caused to give end motion to the distributing-rolls in the respective groups and in opposite directions, substantially as set forth.

9. The combination in a printing-press having a reciprocating bed and the ink-distributing table thereon, and a set of form-inking rolls, and a set of ink-distributing rolls, of a rack with two sets of teeth upon such bed and gearing between one set of rack-teeth and the form-inking rolls and straight gearing between the other set of rack-teeth and the distributing-rolls for driving such rolls



first in one direction and then in the other at the same surface speed as the bed, substantially as set forth.

10. The combination in a printing-press  
5 having a reciprocating bed and an ink-distributing table thereon and a set of form-inking rolls and a set of ink-distributing rolls, of a rack with two sets of teeth upon the reciprocating bed, one set of teeth standing upward  
10 and gearing between the same and the form-rolls and the other set of teeth standing down-

ward and straight gearing below the same and connecting gears to the distributing-rolls for driving such rolls first one way and then the other at the same surface speed as the bed, 15 substantially as set forth.

Signed by me this 28th day of May, 1897.

WALTER SCOTT.

Witnesses:

GEO. T. PINCKNEY,

S. T. HAVILAND.