

No. 626,872.

Patented June 13, 1899.

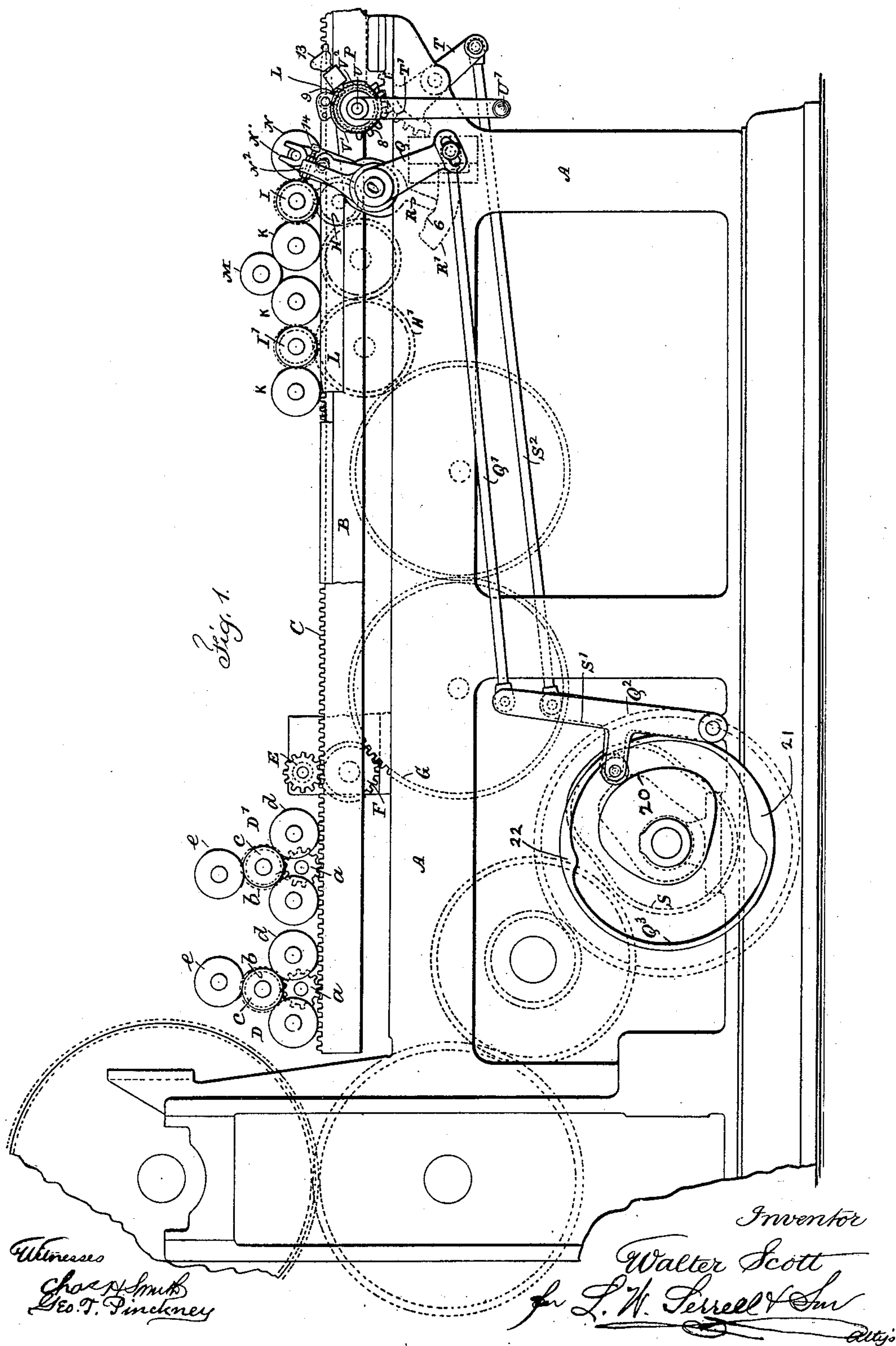
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INKING APPARATUS FOR PRINTING PRESSES.

(Application filed Oct. 25, 1898.)

(No Model.)

2 Sheets—Sheet 1.



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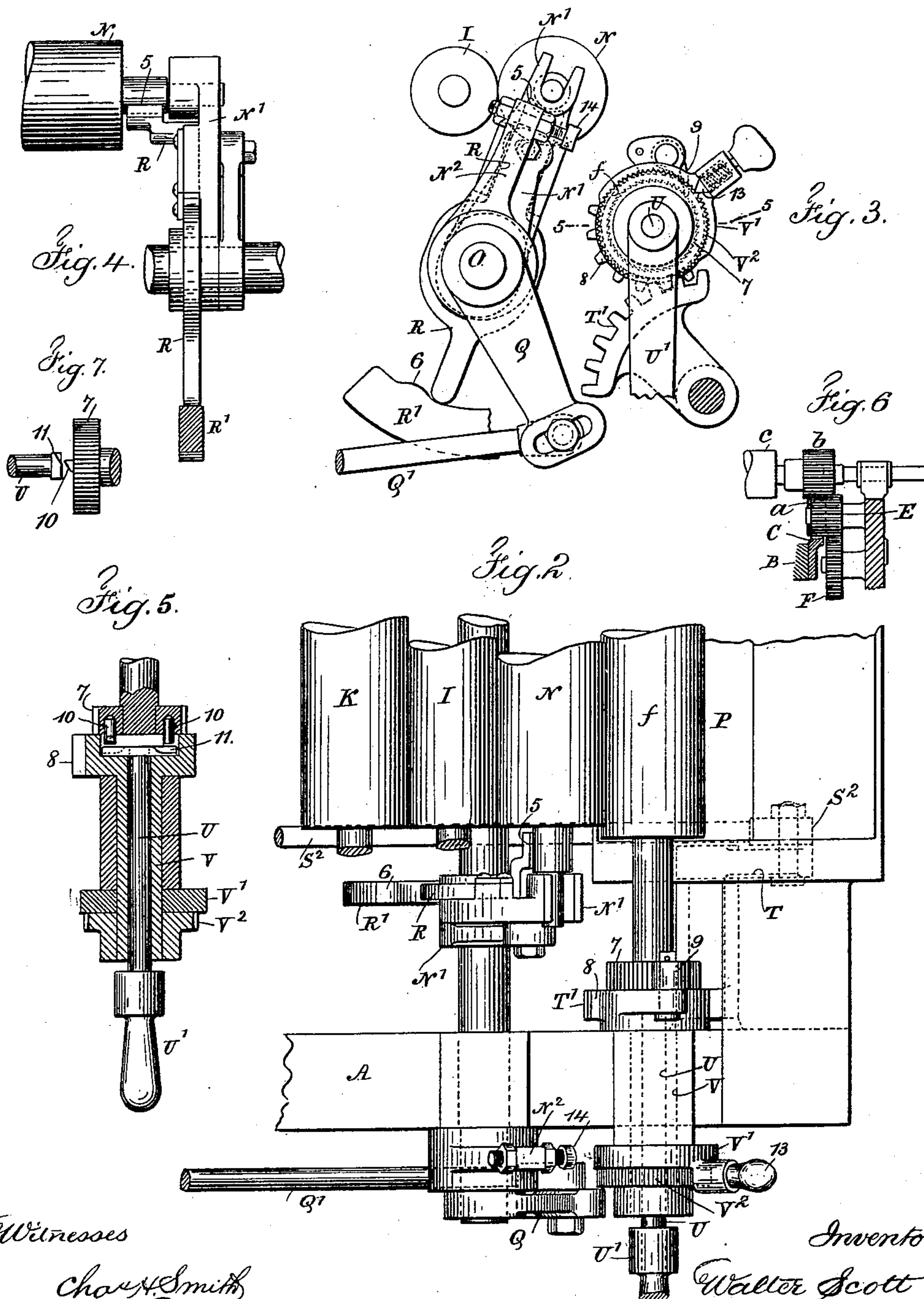
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INKING APPARATUS FOR PRINTING PRESSES.

(Application filed Oct. 25, 1898.)

(No Model.)

2 Sheets—Sheet 2.



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. 626,872, dated June 13, 1899.

Application filed October 25, 1898. Serial No. 694,499. (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 inking apparatus upon printing-presses the ductor-roll has been applied so as to convey the ink from the roller in the ink-trough to the distributing-rollers over an ink-table upon the reciprocating bed, and this reciprocating bed has passed between the distributing-rollers and the ink-trough, said ink-trough being below the bed.

In my application Serial No. 639,255 I have represented a straight rack and gearing driving both sets, the type-inking rollers being driven directly from the rack and the distributing-rollers being driven by a train of straight gearing engaging teeth on the under side of the rack.

I have found that by introducing a pinion that is sufficiently long to engage the teeth on the upper part of the rack and also to engage a gear-wheel it is not necessary to have a second range of teeth on the under side of the rack.

In the present invention the ductor-roll is stopped by the action of a brake after it leaves the roll of the ink-distributing group and before it comes in contact with the ink-roll in the ink-trough, so that the ductor-roll is not rotating, and hence does not take off an undue quantity of ink from the ink-roll in the trough; but such ductor-roll simply turns by the contact with it of the ink-roll in the trough while such ink-roll is being moved the proper distance for supplying the proper quantity of ink for each movement of the parts.

It is important to be able to regulate with accuracy the quantity of ink supplied each complete movement of the parts. Otherwise the impression is either too dark or not dark enough. With this object in view I make use of an adjustable device that holds the ductor-roll from contact with the ink-roll in the trough for a greater or less portion of the movement of such ink-roll, so that when but a small quantity of ink is required the ductor-roll is only allowed to touch the ink-roll during a small portion of the movement of such ink-roll, and

where a larger or maximum quantity of ink is required the ductor-roll is allowed to come in contact with the inking-roll immediately upon its movement by the arm, so as to remain in contact with the ink-roll during the entire movement that is given thereto, so as to transfer to the ductor-roll the maximum quantity of ink for each movement of the parts.

In moving the ductor-roll rapidly from the ink-fountain roll to the set of ink-distributing rolls the inertia is liable to cause the ductor-roll to impinge upon the first roll in the group of ink-distributors, and if the ductor-roll is revolving when it contacts with a stationary roll, or the reverse, the elastic composition on the roll is liable to injury, so that the surface becomes rough and uneven. To prevent injury, the ductor-roll is brought into contact with a distributing-roll when the latter is stationary, or nearly so, and the ductor-roll is stationary, or nearly so, when contacting with the ink-fountain roll, so that the two can be turned together in transferring the ink.

In the drawings, Figure 1 is a diagrammatic side elevation showing a portion of the press to indicate the positions of the present improvements. Fig. 2 is a plan view at one end of the press and one side of the bed and frame. Fig. 3 is a separate elevation of the devices acting in connection with the ductor-roll. Fig. 4 shows one end of the ductor-roll and the brake applied to its shaft. Fig. 5 is a horizontal section at the line 5 5, Fig. 3. Fig. 6 is a section of the rack and elevation edgewise of the gears therewith connected, and Fig. 7 is a detached diagram of the bar and pins on the shaft of the ink-roller.

The framework A is of any desired character, and the bed B is reciprocated by suitable means, and upon one edge thereof is a rack C, and the groups D D' of inking-rolls are each provided with the gears a b, the former of which engages the rack C and the latter is upon the intermediate roll c, and this communicates motion to the composition rolls d, that apply ink to the types, and the upper roll e rests upon the roll c. These parts being of usual character do not require further description.

The pinion E engages the teeth of the rack C and is longer than the width of the rack, so that it also engages the gear-wheel F, which

is at the side of the bed and gives motion to the wheel G in the train of straight gearing that terminates with the wheels H H', that drive the rolls I I', which move the composition distributing-rolls K K, which rest upon the ink-table L upon the bed B, and it will be seen that this train of gearing gives motion to the composition distributing-rolls K K in the same direction and at a corresponding speed to the movement of the bed B and ink-table L, and when the bed reaches either end the movement of the rolls ceases and then they are started again in the opposite direction upon the return movement of the bed, and it is usual to provide a roll M above the rolls K K and resting in contact with them and receiving an end motion to aid in distributing the ink. These devices being well known are not represented to prevent confusion of the parts.

The ductor-roll N is mounted in arms N' on the rock-shaft O, so as to be carried bodily between the roll I and the roll f to transfer the ink from the ink-fountain P to the roll I.

I remark that the ink-fountain P and its roller f are of any desired character and they are usually located below the bed, so that the bed B in reciprocating passes over the ink-fountain to a greater or less distance, and to move the roller N from one position to the other the rock-shaft O receives motion at the proper time from the lever-arm Q and connecting-rod Q', leading to the lever Q², that is acted upon by the cam Q³, and these parts for moving the ductor-roll in the particulars thus far described are similar to those set forth in my application Serial No. 639,255.

The cam Q³ is shaped substantially as represented in Fig. 1 for the purpose of moving the ductor-roll N rapidly from contact with the ink-roll up to near the roll I, and then the said ductor-roll N is moved up gradually and comparatively slowly toward the roll I until such ductor comes into contact with the roll I, the object being to raise the ductor above and out of the way of the ink-table and to allow the roll I by its rotation to start the rotation of the ductor-roll without undue strain, thereby preventing injury to the roll, which is usually composition, and in such a manner as to spread the ink from the ductor-roll as evenly as possible upon the roll I, and this cam Q³ holds the roll N in contact with the roll I for about a quarter of the rotation of the cam, the movement given to the ductor-roll to carry it bodily into contact with the ink-fountain roll being given at the time the reciprocating bed and ink-table have been moved away from the distributing-rolls K K, and then the ductor-roller N is brought up above the bed before the end of the bed reaches such ductor-roll upon its return movement. The ductor-roll can be left in contact with one of the distributing-rolls any desired length of time, according to the shape of the cam.

When the ductor-roll N leaves the roll I, such ductor-roll is revolving at the same sur-

face speed as the roller I, and if the ductor-roll were allowed to continue its movement until it came into contact with the ink-roll in the ink-trough such ductor-roll would be injured or not take the proper volume of ink from the ink-roll in the trough, and the composition surface of the roll is also liable to injury. To prevent this and to allow the ductor-roll only to turn with the ink-roll in the trough when these rolls are in contact, I provide a brake for stopping the rotation of the ductor-roll after it leaves the roll I and before reaching the roll f in the ink-trough. With this object in view I apply a brake R, one end of which slides between guides upon the arms N' and has a brake-surface 5, projecting beneath and coming into contact with the shaft of the ductor-roll N, and there is a cam R' adjustably supported upon the frame of the machine and standing out therefrom sufficiently far for the brake-bar R to be in line with it, and there is upon this cam R' a projection 6, located at the proper point so that it acts upon the brake-bar R immediately after the arms N' commence to move by the action of the rock-shaft, so that the brake-surface 5 is pressed against the surface of the ductor-roll shaft to apply the force for stopping the same immediately after B separates from I, and the end of the brake-rod R, separating from the cam 6 before the ductor-roll comes into contact with the ink-fountain roll, allows the ductor-roll to be turned freely by contact with the ink-fountain roll.

At the end of the ink-fountain roll is a ratchet-wheel 7, and the cam S, lever S', link S², arm T, and gear-sector T' give motion to the ink-fountain roll f progressively, the sector T' acting upon a gear 8, carrying a pawl 9, that acts upon the ratchet-wheel 7, so that the ink-fountain roll receives a definite movement for each complete movement of the parts of the press, and I remark that the usual knife or scraper is provided for regulating the quantity of ink allowed to remain upon the fountain-roll.

It will be noticed that the cam Q³ has a central portion 20, that brings the ductor-roll N into contact with the distributing-roll I, and the projection 21 or 22 causes the ductor N to separate from the roll I, and the groove in the cam Q³ is wide enough to allow the ductor-roller to descend by gravity and come into contact with the fountain-roll f, and during this movement the cam R' has acted on the brake and stopped the rotation of the ductor N.

It is difficult to supply to the ductor-roll exactly the amount of ink required in inking forms. If too much ink is provided, the form or printing-surface will become filled with ink and the impression imperfect, and if too little ink is supplied the impression will not be dark enough. I provide the means next described for regulating the quantity of ink transferred by the ductor-roll from the ink-fountain roll to the ink-distributors.

In starting up the press especially it is important to be able to give a rotation to the fountain-roll in order to bring all parts of its surface into intimate and uniform contact with the ink in the trough, and with this object in view I use a shaft U with a handle U', and this shaft U is in line with the axis of the fountain-roll, and there are upon the end of the shaft or upon the ratchet-wheel 7 pins 10, the back surfaces of which are beveled similar to latches, and there is a cross-piece 11 at the end of the shaft U and also beveled, which shaft and cross-piece can be pushed in between the pins 10 to give motion to the shaft and ductor-roll as the shaft U is revolved by the handle U'; but when the handle U' is not in use it will hang down and the bevels upon the backs of the pins 10 and upon the cross-piece will act to push the cross-piece and shaft U endwise, so as to separate the cross-piece 11 from the pins 10 and allow the ductor-roll to be turned progressively by the action of the gear-sector, ratchet, and pawl as the cam S gives motion to the gear-sector T'. This shaft U is within a sleeve V, that has upon its inner end the wheel 8 and the pawl 9, and this wheel 8 is hollow for containing the cross-piece 11, and around the sleeve V is the wheel V², which is fastened firmly to the sleeve and receives its motion therefrom. Around this sleeve V is a cam-ring V', the surface of which is composed of approximately half-circles of different diameters united by inclines, and upon the cam-ring is a spring detent or dog 13, which engages one of the notches in the wheel V². Hence by drawing back the spring-dog 13 the cam-ring V' can be turned around into any desired position upon the sleeve V, and this cam-ring by the action of the spring-dog moves along with the sleeve as it is oscillated by the action of the gear-sector T', and the cam-ring is in line with an adjustable stop 14 upon an arm N², that is upon the rock-shaft of the ductor-roll, and in adjusting the parts the cam-ring V' may be turned so that the portion that is of larger diameter is beneath the stop 14 as the ductor-roll is swung toward the ink-roll, and hence such cam-ring will hold the ductor-roll from contact with the ink-roll and prevent the transfer of any ink, and, on the other hand, the cam-ring may be moved around into such a position that the ductor-roll will not be supported by it, but will come down against the fount-roll and remain in contact therewith during its entire partial rotation, thereby causing a maximum transfer of ink from the ink-fountain roll to the ductor-roll, and by adjusting the cam-ring V' to any desired intermediate position the ductor-roll can be held from contact with the fountain-roll for a greater or less period of time as the sleeve and parts are turned in giving motion to the ink-fountain roll; and it will be understood that as the portion of the cam-ring which is of greatest diameter moves away from beneath the adjustable stop 14 the ductor-roll will descend and come into con-

tact with the fountain-roll and move along with it during the remainder of its partial rotation and receive from such fountain-roll the proper quantity of ink, and then the ductor-roll will be moved by the arms up above the bed and in contact with the distributing-roll I.

It will be apparent that the parts of this inking apparatus are to be properly timed according to the objects to be accomplished. If the ductor-roll is moved away from contact with one of the ink-distributing rolls at the time the bed of the machine is most distant and the rolls have stopped, or nearly so, before commencing to move in the other direction, there is not always the desired length of time for the ductor-roll to be moved into contact with the ink-fountain roll and the two to turn together as the ink-fountain roll is moved in the ink-fountain and then for the ductor-roll to be moved up out of the way before the ink-table reaches that end of its motion.

To be sure of having the necessary time for the movements, it is generally preferable to employ the brake heretofore described, so as to separate the ductor-roll from the ink-fountain roll and stop it on its movement toward the ink-fountain roll while the bed is moving away from the ductor-roll toward the other end of the press, and hence there is time enough to transfer the ink from the ink-fountain roll to the ductor-roll and bring that up above the bed, and then the ink-table can move under the ductor-roll and the bed stop and then commence to move in the other direction just at the time the ductor-roll is brought into contact with the ink-distributing roll, and the fresh ink will not reach the roll that contacts with the ink-table until after the ink-table has passed away from it. Hence the ink will be worked by the distributing-rolls while out of contact with the ink-table until the ink-table returns beneath such distributing-rolls. Hence it is important to be able to move the ductor-roll above the ink-table and then to bring it into contact with the ink-distributing roll at the proper time, so that the fresh ink does not reach the ink-table until such ink has been thoroughly distributed upon the rolls.

I do not limit myself to any particular number of ink-distributing rolls or character of ink-distributing device or apparatus for distributing the ink, as these devices are well known, and my improvement is available regardless of any particular kind of distributing device.

In consequence of the arms N' that carry the ductor-roll being rigidly affixed to the rock-shaft O it is only necessary to have the stop 14 upon the arm N² at one end of the rock-shaft and to have the brake R at one end of the ductor-roll N, and it is not necessary to duplicate the parts before described at the two ends of the ductor-roll.

It is to be understood that the devices for vibrating some of the ink-distributing rolls endwise and also rolls in the groups of ink-

ing-rolls may be of any usual or desired character, and the manner of supporting and adjusting these rolls and giving end motion to the same forms no part of the present invention.

I claim as my invention—

1. The combination in a printing-press with the reciprocating bed and form-inking rolls and ink-distributing rolls, of a rack upon one side of the bed, gearing for giving motion from the rack to the form-inking rolls, a train of straight gearing adjacent to the side of the bed and giving motion to the distributing-rolls, and a pinion engaging the rack and also engaging the first wheel in the train for giving motion to such train, substantially as set forth.

2. The combination with the distributing-rolls and the ductor-roll and the arms for the same and mechanism for moving the ductor-roll from the distributing-roll to the ink-fountain roll, of a brake upon one of the arms carrying the ductor-roll and means for moving such brake at the proper time to arrest the rotation of the ductor-roll after it separates from the distributing-roll, substantially as set forth.

3. The combination with the distributing-rolls and the ductor-roll, of arms and a cross-shaft carrying the ductor-roll, a brake and a sliding bar upon one of the arms and a stationary cam engaging the brake-bar to apply the brake to the ductor-roll after it separates from the distributing-roll, substantially as set forth.

4. The combination with the ink-fountain and its roller, of a sector and pinion and an intermediate pawl and ratchet-wheel for giving motion to the ink-fountain roll and a shaft in line with the axis of the fountain-roll, a crank for turning the same and means for engaging the shaft and the fountain-roll and for automatically disconnecting the parts by the motion of the fountain-roll giving an end movement to the shaft, substantially as set forth.

5. The combination with the ink-fountain and its roller, of a sector and pinion and an intermediate pawl and ratchet-wheel for giving motion to the ink-fountain roll and a shaft in line with the axis of the fountain-roll, a crank for turning the same and a cross-bar upon the end of the shaft and pins beveled on one side for engaging the cross-bar in giving motion by hand to the ink-fountain roll and by which the parts separate automatically by the bevels of the pins giving end motion to the shaft, substantially as set forth.

6. The combination with the ductor-roll and its arms and rock-shaft and the ink-fountain and its roll, of a cam-ring moving with the ink-fountain roll and a projection upon one of the rock-shaft arms coming into contact with the cam-ring and by which the ductor-roll is kept from contact with the ink-fountain roll during a portion of the movement

of the ink-fountain roll, substantially as set forth.

7. The combination with the ductor-roll and its rock-shaft and arms and the ink-fountain and its roll, of an oscillating device for giving a progressive motion to the ink-fountain roll, a cam-ring adjustably connected with the oscillating device and serving to arrest the ductor-roll and keep it from contact with the ink-fountain roll during a portion of the progressive movement of the ink-fountain roll, substantially as set forth.

8. The combination with the ductor-roll, its arms and shaft and the ink-fountain roll and a ratchet-wheel upon its shaft, of a pawl for giving motion to the ratchet-wheel, a separate shaft and clutch mechanism for connecting the same to the fountain-roll, a sleeve around the shaft and carrying the pawl, a cam-ring around the sleeve adjustable in its position and a spring-dog for holding the cam-ring when adjusted and regulating the contact of the ductor-roll with the ink-fountain roll, substantially as set forth.

9. The combination in a press with a reciprocating bed, ink-table, distributing-rollers and inking-roller, and means for communicating the same surface speed to the rollers as the table, of an ink-ductor roller, ink-trough and roller and means for moving the ductor-roller into contact with one of the distributing-rollers at about the time the movement of the bed is reversed and the rollers are quiescent, substantially as set forth.

10. The combination in a printing-press with the reciprocating bed, inking-rolls, a table upon the bed and ink-distributing rolls, an ink-trough and its roll, of a ductor-roll and means for moving the same from the ink-trough roll to one of the ink-distributing rolls at the end of the movement of the bed, when the rollers are quiescent, or nearly so, substantially as set forth.

11. The combination with the distributing-rolls and the ductor-roll and arms for the same, and mechanism for moving the ductor-roll from the distributing-roll to the ink-fountain roll, of a brake on one of the arms carrying the ductor-roll and a cam for moving the brake and causing it to act upon the shaft of the ductor-roll for arresting its rotation, substantially as set forth.

12. The combination with the reciprocating bed and ink-table and an ink-fountain and its roll below the bed and means for moving the same progressively, and the set of ink-distributing rolls, of a ductor-roll and means for moving the same into contact with the ink-fountain roll and then carrying such ductor-roll rapidly toward the set of ink-distributing rolls and then lessening its movement before contact with one of such ink-distributing rolls, substantially as set forth.

13. The combination in a printing-press with the reciprocating bed, inking-rolls, a table upon the bed, and an ink-distributing roll,

of an ink-trough and its roll, a ductor-roll
and means for moving the same laterally from
the ink-trough roll to near the ink-distrib-
ing apparatus and then moving such ductor-
5 roll into contact with the ink-distributing ap-
paratus when the latter is quiescent or nearly
so and the bed changes its direction of mo-
tion substantially as set forth.

14. The combination in a printing-press
10 with a reciprocating bed, and ink-distributing
apparatus receiving its motion from the bed,
of an ink-fountain and roll and a ductor-roll

and means for moving the same laterally from
contact with the ink-fountain roll and into
contact with the distributing apparatus at the 15
time the movement of the bed is being re-
versed, so that the inking-surfaces are sta-
tionary or nearly so, substantially as set forth.

Signed by me this 20th day of October, 1898.

WALTER SCOTT.

Witnesses:

GEO. T. PINCKNEY,
S. T. HAVILAND.