

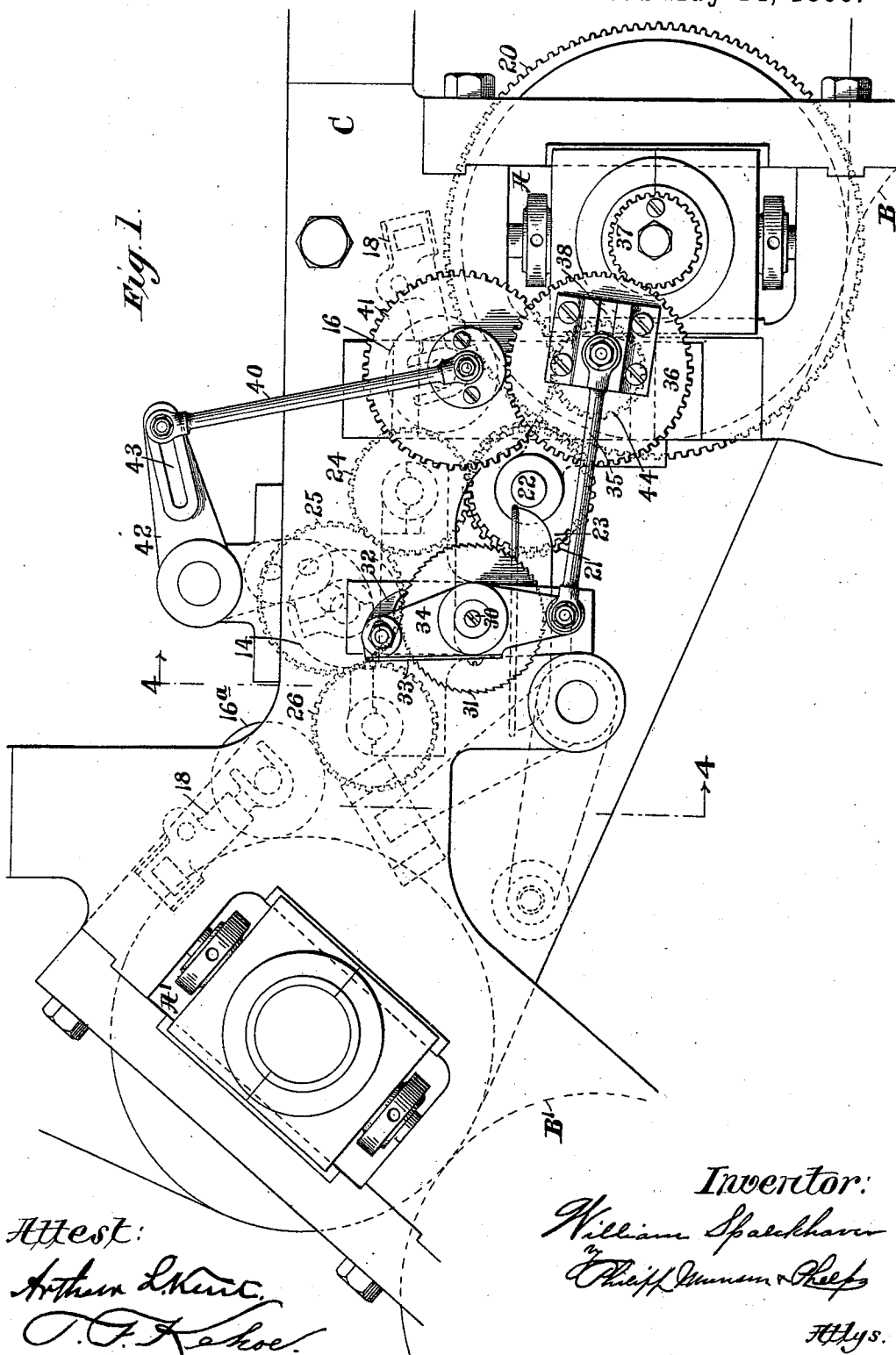
(No Model.)

4 Sheets—Sheet 1.

W. SPALCKHAVER.
OFFSET MECHANISM.

No. 539,198.

Patented May 14, 1895.



Attest:
Arthur L. Kent,
P. F. Kehoe.

Inventor:
William Spalckhaver
Chaffin & Phelps
Atlys.

(No Model.)

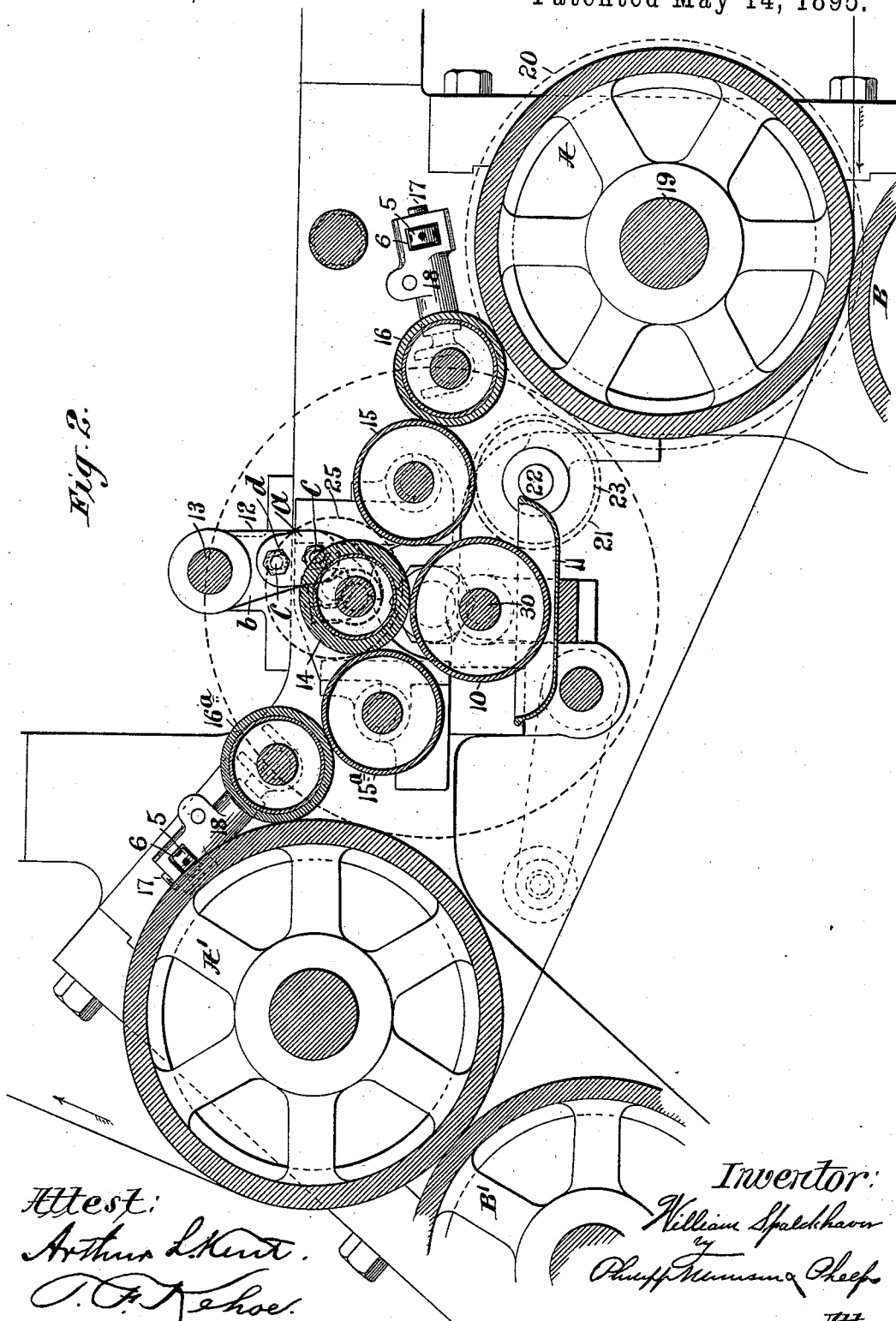
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Fig. 2.



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W. SPALCKHAVER.
OFFSET MECHANISM.

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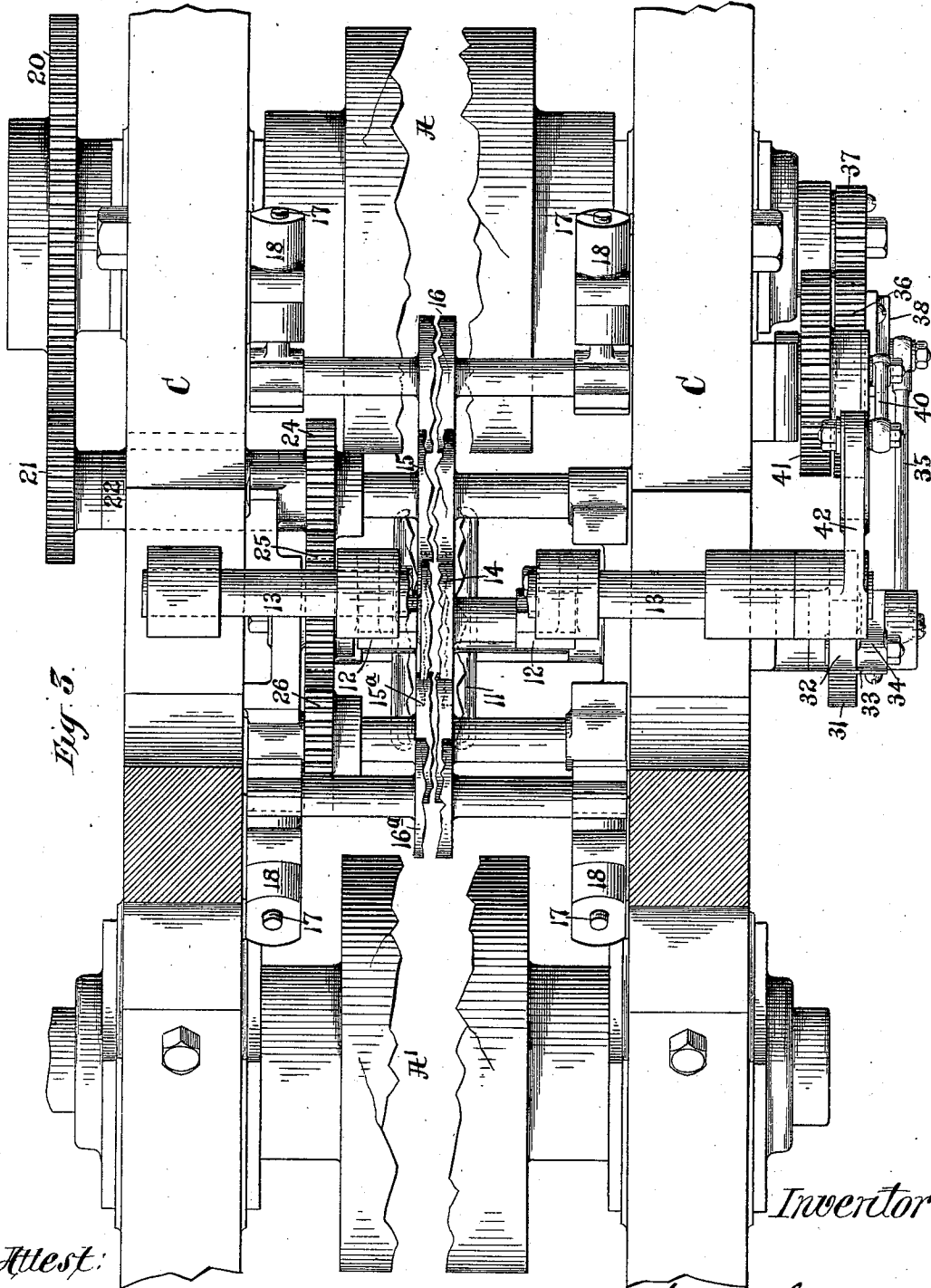


Fig. 3.

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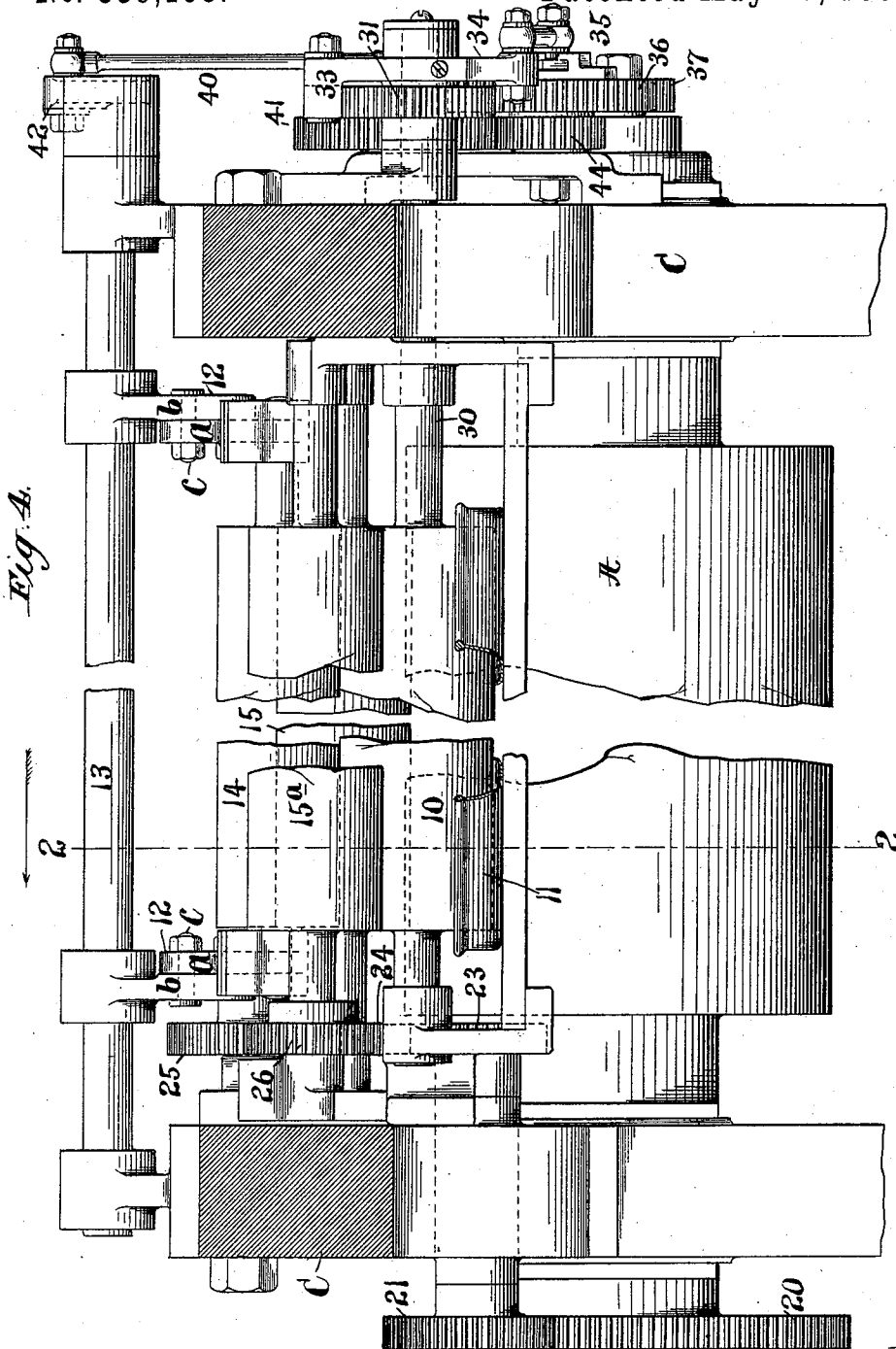
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W. SPALCKHAVER.
OFFSET MECHANISM.

No. 539,198.

Patented May 14, 1895.



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UNITED STATES PATENT OFFICE.

WILLIAM SPALCKHAVER, OF BROOKLYN, ASSIGNOR TO ROBERT HOE, THEODORE H. MEAD, AND CHARLES W. CARPENTER, OF NEW YORK, N. Y.

OFFSET MECHANISM.

SPECIFICATION forming part of Letters Patent No. 539,198, dated May 14, 1895.

Application filed November 17, 1894. Serial No. 529,101. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM SPALCKHAVER, a citizen of the United States, residing at Brooklyn, county of Kings, and State of New York, have invented certain new and useful Improvements in Offset Mechanism, fully described and represented in the following specification and the accompanying drawings, forming a part of the same.

10 This invention relates especially to devices for preventing offset or transfer of ink from a freshly printed side of a sheet or web of paper or other material when the same is being passed between impression and form cylinders for receiving an impression or impressions on the other side, by applying a film or coating of oil or other ink-repelling liquid or semi-liquid to the surfaces of said impression cylinders; and the main object of the invention is, to provide a construction whereby oil is supplied to two such impression cylinders from a single fountain roll. To the end named, I provide for each such impression cylinder a suitable distributing roll, which 25 distributing rolls receive oil from a single fountain roll through the medium of a reciprocating ductor roll, intermediate depositing rolls being preferably provided to receive the oil from the ductor roll and deposit it on the 30 distributing rolls.

The invention, therefore, lies in the arrangement of the oiling device, as above described, and in various details of construction, arrangement and combination of parts, all as hereinafter fully described and specifically set forth in the claims.

As a full understanding of the invention can best be given by a full description of a construction embodying the same in a preferred form, all further preliminary description will be omitted, and such a full description will now be given, reference being had to the accompanying drawings, which show the invention in a preferred form as applied to two 40 perfecting impression cylinders of a multi-color web perfecting press, and in which—

Figure 1 is a side view of so much of such a press provided with my improved offset device in a preferred form as is necessary to 50 illustrate the invention. Fig. 2 is a central vertical section of the parts shown in Fig. 1,

taken on line 2 of Fig. 4. Fig. 3 is a plan view. Fig. 4 is a section on line 4 of Fig. 1.

Referring to the drawings, A and A' are two perfecting impression cylinders of a web perfecting printing press adapted for making two perfecting impressions on the web, as in multi-color printing, and B and B' are the form cylinders against which the web is pressed by the impression cylinders A, A', said impression and form cylinders being suitably 60 mounted in the frame C. Mounted between the impression cylinders A and A', is a fountain roll 10 mounted to revolve partly submerged in a reservoir or fountain 11 for the oil or other liquid. Carried by arms 12 depending from a rock shaft 13, is a ductor roll 14, which, as it swings or reciprocates back and forth by the rocking of the shaft 13, comes in contact with and receives a portion of oil 70 from the fountain roll 10. Mounted so as to be engaged by the ductor roll 14 at each extremity of its reciprocations, are rolls 15 and 15^a which receive oil from the ductor roll 14 and deposit it on distributing or offset rolls 75 16 and 16^a, by which it is distributed on the impression cylinders A and A'. By this construction, as the ductor roll 14 reciprocates, it will take up a portion of oil from the fountain roll 10 at each reciprocation, and will 80 carry it to one of the depositing rolls 15, 15^a, by which it will be deposited on one of the distributing rolls 16, 16^a, by which it will be applied to the corresponding impression cylinder.

It will be understood that, instead of having the ductor roll mounted as in the preferred construction shown, it may be mounted in any other suitable manner so as to reciprocate between the rolls 15 and 15^a past the fountain roll 10. 90

The distributing rolls 16 and 16^a are preferably adjustably mounted in the manner shown, that is, by being carried by arms 17 adjustable in pivoted sleeves 18, as by nuts 5 on said arms housed in pockets 6 in said sleeves. The rolls 16 and 16^a may thus be readily adjusted to bear lightly and evenly on the impression cylinders and on the depositing rolls 15 and 15^a. The fountain roll 10 and the depositing rolls 15 and 15^a preferably have hard smooth surfaces, as of metal or wood, and the distributing rolls 16 and 16^a 100

are preferably covered with felt or plush, or similar material. The ductor roll 14 preferably has a surface of "composition" such as is used on inking rollers in printing presses, that is, a compound of glue and molasses, or a similar composition, adapted to take up the oil from the fountain roll, and of a yielding nature so that the movement of the ductor roll may be so adjusted that said roll will come in contact with the depositing rolls before it reaches the end of its movement, thereby providing for a longer contact between the ductor roll and the depositing rolls than if the ductor roll had an unyielding surface so that there could be no further movement of the ductor roll after it came in contact with said depositing rolls.

As shown, the rolls 15 and 15^a receive a rotary motion from a gear 20 on the shaft 19 of the impression cylinder A, which gear 20 meshes with a gear 21 on one end of a shaft 22 which carries a gear 23 which engages a gear 24 on the shaft of the roll 15, from which motion is transmitted to the roll 15^a by means of a transmitting gear 25 in engagement with the gear 24 and with a gear 26 on the shaft of the roll 15^a.

The fountain roll 10 is rotated, preferably step by step, to supply fresh oil to the ductor roll; and for producing this step by step rotation in the construction shown, the shaft 30 of the fountain roll is provided with a ratchet wheel 31 which is engaged by a pawl 32, spring pressed, as by a flat spring 33, and carried by a pivoted lever 34. The lever 34 is rocked by means of a rod 35 pivoted at one end to the lever and at the other end pivoted eccentrically to a disk 36, which is rotated by a gear 37 on the shaft 19 of the impression cylinder A, which engages gear teeth in the periphery of said disk 36. The pin connecting the rod 35 to the disk 36 is preferably adjustable in a slot 38 in said disk to provide for varying the throw of the lever 33, and consequently the amount of rotation of the fountain roll at each step, and, thereby, the amount of oil delivered to the ductor roll.

The shaft 13 is preferably rocked to cause the roll 14 to reciprocate by means of a rod 40 pivoted at one end eccentrically to a rotary disk 41, and at the other end to an arm 42 on the shaft 13, the pivotal pin preferably passing through a slot 43 in the arm 42 to provide for an adjustment by which the length of the reciprocations of the roll 14 may be adjusted. As shown, the disk 41 is driven by a gear 44 carried by the disk 36, which engages gear teeth in the periphery of said disk 41.

The gears 37, 36, 44 and 41 are preferably timed so that the fountain roll is moved ahead twice to each complete reciprocation of the ductor roll, or once for each single reciprocation of the ductor roll, so as to bring a portion of its periphery having a fresh supply of oil in position for each passage of the ductor roll across its surface; and I prefer to have the ductor roll make one complete reciprocation

for every four revolutions of the impression cylinders.

The ductor roll is preferably adjustable toward and away from the fountain roll, and this adjustability may be provided for by having the arms 12 adjustable in length, as by being formed of two parts *a* and *b* secured together by bolts *c* passing through slots *d* in one of the parts, as *b*.

The circumference of the depositing rolls 15 and 15^a, and of the distributing rolls 16 and 16^a is preferably not quite the same, as, the depositing rolls may be of a greater circumference than the distributing rolls, as shown; and this is for the purpose of providing a more even application of the oil to the distributing rolls, as will be readily understood.

In operation, the two impression cylinders A and A' both revolve in the same direction, and the depositing rolls 15 and 15^a are both driven in the same direction and preferably at the same surface speed as the impression cylinders, and the distributing rolls 16 and 16^a in contact with the impression cylinders and with the rolls 15 and 15^a will be revolved thereby, receiving oil from the rolls 15 and 15^a and distributing it on the surface of the impression cylinders. The ductor roll 14 will be moved into engagement alternately with the rolls 15 and 15^a, receiving during each movement from one of said rolls to the other a fresh supply of oil from the fountain roll 10, and said fountain roll being advanced a step for each such movement of the ductor roll to bring fresh oil into position to be taken up by the ductor roll. The impression cylinders will thus have their surfaces continuously oiled by their respective distributing or offset rolls, the oil being supplied from a single fountain and fountain roll. By adjusting the length of the movements of the fountain roll, as hereinbefore explained, or by adjusting the ductor roll toward or away from the fountain roll, the amount of oil taken by the ductor roll at each reciprocation past the fountain roll, and consequently the amount of oil applied to the surface of the impression cylinders, may be readily regulated so as to cause sufficient oil to be applied to the impression cylinders to prevent offset from the freshly printed web without being sufficient to be noticeable on the paper.

It will be understood that many changes may be made in the construction shown without departing from the invention, and that I am not to be limited to the exact construction and arrangement of parts as shown, as for example, although in the construction shown the distributing rolls are arranged to be always in contact with the impression cylinders, yet it may in some cases be found desirable to have the distributing rolls in contact with the impression cylinders during only a certain part of the revolution of the cylinders, and such a construction is to be considered as within the claims. It will also be understood that the device may be applied

to any form of printing press having two impression cylinders to which it is desired to apply an ink repelling liquid whether such press be designed for printing on a continuous web or on separate sheets, whether of paper or of other material, and whether for color printing or not; and the device may be used for other purposes for which it may be found useful.

Where the word "oil" is used in the claims, it is to be understood to mean any ink-repelling liquid or semi-liquid which it is desired to distribute on the cylinders.

What is claimed is—

1. The combination with two perfecting impression cylinders of a printing press, of a distributing roll in surface contact with each of the said cylinders, a fountain, a fountain roll, and a reciprocating ductor roll by which oil is supplied alternately to each of the distributing rolls from the fountain roll, substantially as described.

2. The combination with two perfecting impression cylinders of a printing press, of a distributing roll in surface contact with each of said cylinders, a depositing roll in surface contact with each of said distributing rolls, a fountain, a fountain roll, and a ductor roll mounted to reciprocate past said fountain roll to engage said depositing rolls alternately, substantially as described.

3. The combination with two perfecting impression cylinders of a printing press, of a distributing roll in surface contact with each of said cylinders, a fountain, a fountain roll, and a composition ductor roll mounted to reciprocate past said fountain roll to supply oil to each of said distributing rolls from said fountain roll, substantially as described.

4. The combination with two perfecting impression cylinders of a printing press, of a distributing roll in surface contact with each of said cylinders, a depositing roll in surface contact with each of said distributing rolls, a fountain, a fountain roll, and a composition ductor roll mounted to reciprocate past said fountain roll to engage said depositing rolls alternately, substantially as described.

5. The combination with two perfecting impression cylinders of a printing press, of a distributing roll having a covering of felt or similar material in surface contact with each of said cylinders, a depositing roll in surface contact with each of said distributing rolls, a fountain, a fountain roll, and a composition ductor roll mounted to reciprocate past said fountain roll to engage said depositing rolls alternately, substantially as described.

6. The combination with two perfecting impression cylinders of a printing press, of a distributing roll in surface contact with each of

said cylinders, a depositing roll in surface contact with each of said distributing rolls, a fountain, a fountain roll, a ductor roll mounted to reciprocate past said fountain roll to engage said depositing rolls alternately, means for reciprocating the ductor roll, and means for giving the fountain roll a step by step rotation such that it shall move two steps for each complete reciprocation of the ductor roll, substantially as described.

7. The combination with two perfecting impression cylinders of a printing press, of a distributing roll in surface contact with each of said cylinders, a depositing roll in surface contact with each of said distributing rolls, a fountain, a fountain roll, a ductor roll mounted to reciprocate past said fountain roll to engage said depositing rolls alternately, means for reciprocating said ductor roll, means for giving the fountain roll a step by step rotation, means for adjusting the length of the reciprocations of the ductor roll, and means for adjusting the length of the movements of the fountain roll, substantially as described.

8. The combination with two perfecting impression cylinders of a printing press, of a distributing roll in surface contact with each of said cylinders, a depositing roll in surface contact with each of said distributing rolls, a fountain, a fountain roll, a ductor roll hung in arms carried by a rock shaft so that by rocking said shaft the ductor roll may be made to reciprocate past said fountain roll to engage said depositing rolls alternately, and means for rocking said shaft, substantially as described.

9. The combination with two perfecting impression cylinders of a printing press, of a fountain roll 10, a fountain 11, a ductor roll 14 hung in arms 12 carried by a rock shaft 13, said arms, said shaft, means for rocking said shaft, and rolls positioned to receive oil from the ductor roll alternately at each extremity of its reciprocations, and to deliver oil to the two perfecting impression cylinders substantially as described.

10. The combination of a fountain roll 10, a fountain 11, a composition ductor roll 14 hung in adjustable arms 12 carried by a rock shaft 13, said arms, said shaft, means for rocking said shaft, depositing rolls 15 and 15^a, and distributing rolls 16 and 16^a, substantially as described.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

WILLIAM SPALCKHAVER.

Witnesses:

FRED. C. SCHENCK,
ARTHUR L. KENT.