

(No Model.)

3 Sheets—Sheet 1.

H. JOHNSON.
PRINTING PRESS.

No. 548,711.

Patented Oct. 29, 1895.

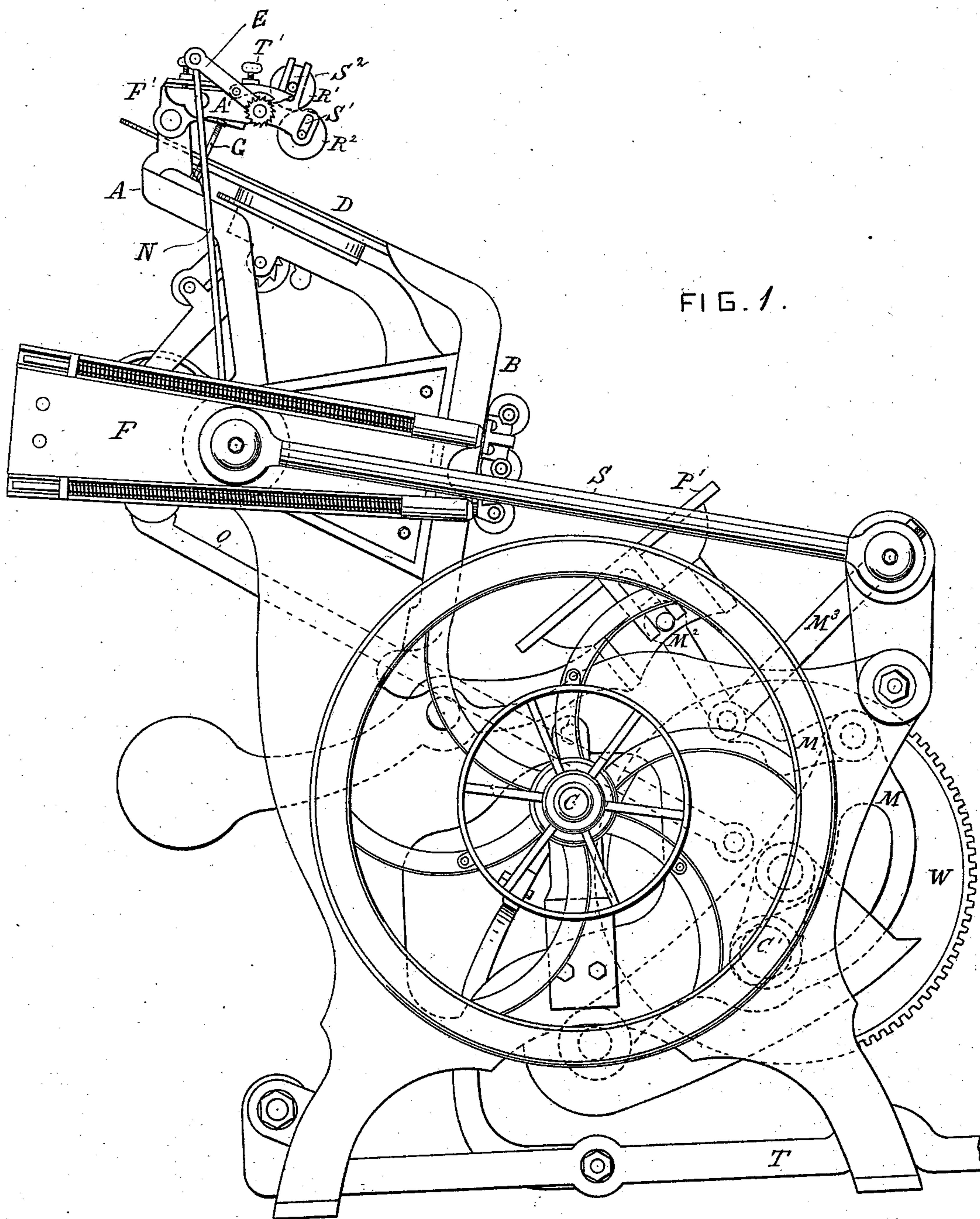


FIG. 1.

WITNESSES

Wm. A. Lowe
F. J. Mills

INVENTOR

Henry Johnson
By J. R. Stilton
att'y

(No Model.)

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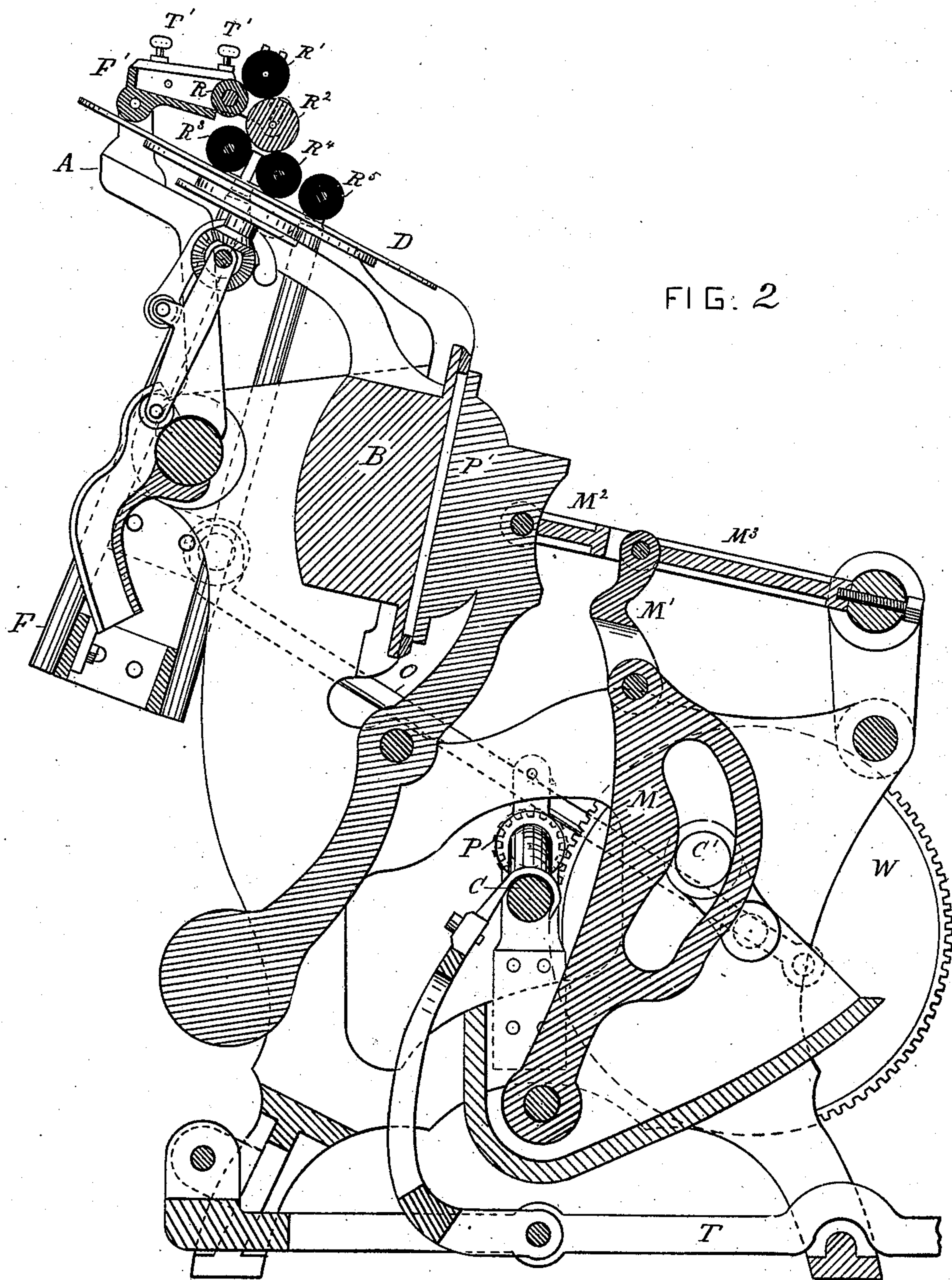


FIG. 2

WITNESSES

Wm. A. Lowe
J. J. Mills

INVENTOR

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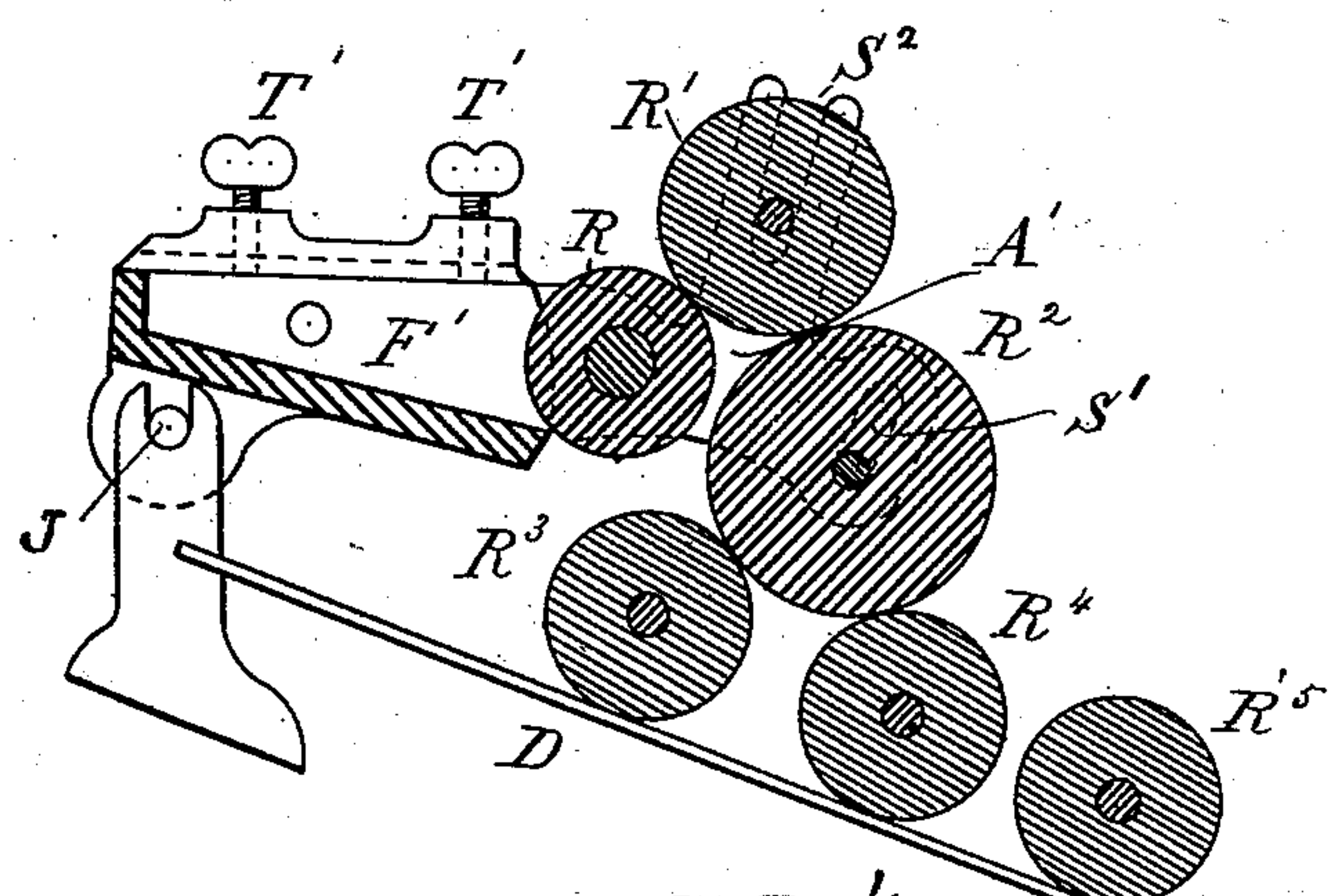
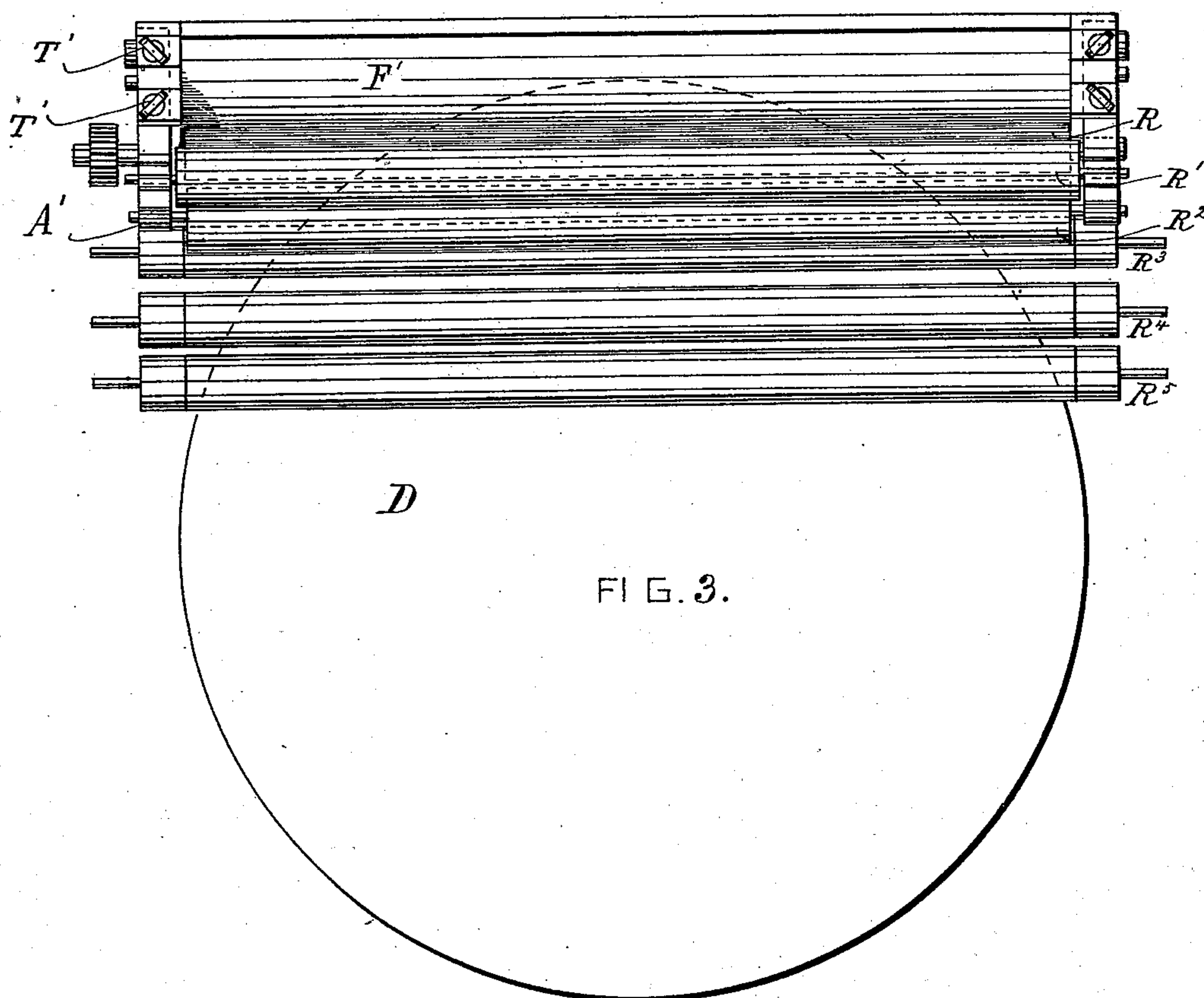
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3 Sheets—Sheet 3.

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WITNESSES

Wm. A. Lowe
F. F. Miller

FIG. 4.

INVENTOR

Henry Johnson
By *J. A. Stillman atty.*

UNITED STATES PATENT OFFICE.

HENRY JOHNSON, OF NEW YORK, N. Y.

PRINTING-PRESS.

SPECIFICATION forming part of Letters Patent No. 548,711, dated October 29, 1895.

Application filed August 10, 1886. Serial No. 210,508. (No model.)

To all whom it may concern:

Be it known that I, HENRY JOHNSON, a citizen of the United States, residing at No. 33 East Twenty-second street, in the city, county, and State of New York, have invented a new and useful Improvement in Printing-Presses, of which the following is a specification.

My invention relates, primarily, to improvements in the job-printing press known under its trade-mark as the "Peerless Press," and, secondarily, in such other job-printing presses as they may be adapted to and for; and the object of my invention is to bring the ink distribution up to the full capacities of such presses in other respects. I attain this object by the mechanism illustrated in the accompanying drawings, in which—

Figure 1 shows the press and fountain in side elevation. Fig. 2 shows the same in vertical sectional view. Fig. 3 shows a plan or top view of the disk, ink-fountain, and rollers and the form-rollers; and Fig. 4 shows a vertical sectional view of the same.

Similar letters refer to similar parts throughout the several views.

Hitherto all job-presses known to me in which the ink is taken from a fountain and distributed upon a revolving disk or plate have been limited in their use and adaptations to work of a more common quality, in which very uniform distribution of ink was either not necessary or where the want of it was not noticeable. In all such job-presses it has hitherto been found impossible to produce an even or satisfactory distribution on a class of work where a solid body of ink was to be used or colors were to be applied, and also on cuts or half-tone work, or where fine tinting effects were necessary. By the aid of my invention I am able to bring the ink-distribution in such job-presses up to the full standard of the capacity of such presses in other respects, so that work which has heretofore been done upon large power-presses employing abundant cylinder distribution can be done upon such job-presses with perfection up to their capacity and the size of their forms, and these are the objects of my invention. To accomplish this purpose, I combine cylinder distribution with revolving-disk distribution with such effect that the ink, either in light or in heavy body, at will is distrib-

uted upon the disk without streaks and with perfect uniformity throughout, and also upon the form.

In the job-press shown in the drawings the power to take the impression is obtained through a treadle T, crank-shaft C, and pinion P, operating on the circumference of a driving-wheel W several diameters larger than the pinion and placed on a second crank-shaft C', the crank of which moves in a slotted member of a toggle M, the toggle of which it is a member being connected, through its other member M', with a second toggle in such a manner as to operate the same, this second toggle M² and M³ being so related to the platen as to cause the platen to move to and fro in taking the impression.

The bed B in the press shown is stationary and the platen P' moves under the control of the secondary toggle, as stated, one member of which is secured opposite the center of the platen, so as to exert the greatest force and control over the platen in taking the impression. The press is provided with an ink-disk D, operated in any usual manner, and with an ink-roller frame F, which is operated by a connecting-rod O, secured at one end upon a pin secured in the side of the wheel W, which operates the secondary crank, and at the other end to an arm which operates the frame of the form-rollers. The strain of the impression is thrown upon two side tension-bars S S, preferably made of steel, when the secondary toggle is straightened. The press being so made, great power is obtained in excess of what can be obtained where the impression is made through a simple crank motion. Consequently a form can be printed properly of a much larger size than in other presses where the original power is less.

In a press made with the double toggle, as described, sufficient power can be obtained to do embossing efficiently.

I employ an ink-fountain F', which is secured to the press through arms or brackets A, to which the fountain is hinged at joints J in such a manner that the ink-fountain extends over the revolving disk D, made to revolve in any usual manner. This fountain rests upon an adjustable stop at some point forward of the hinge, whereby the fountain and the several rollers or cylinders supported

on or by the fountain, as well as the fountain itself, are all adjusted or adjustable in relation to the revolving disk D and the several form-rollers. I prefer to use a screw-stop G, which is secured in a part of the frame supporting the fountain, so as to be screwed up or down, and thereby automatically raise or lower the fountain resting thereupon. Of course it is evident that the same object could be accomplished by locating a screw for adjustment having a bearing upon the fountain or upon some extension of the same back of the hinge; but I prefer the arrangement shown in Fig. 1 of the drawings, where the adjustment is effected in the manner and by the mechanism above described. This ink-fountain is provided with a well-roller or duct-roller R, which first takes the ink from the fountain. This duct-roller R is preferably suspended and journaled in the arms A' A', by means of which the distance of the duct-roller from the knife-edge may be controlled through or by means of the thumb-screws T' T' and the increasing or diminishing of the space between the duct-roller and the knife-edge may be effected thereby, so that the mass or body of ink taken up by the duct-roller to be eventually transferred and distributed upon the disk may be increased or diminished in a manner well known; but the duct-roller may be stationary or journaled in stationary bearings, and the knife-edge may be varied and made to leave more or less space between the knife-edge and the duct-roller in any ordinary manner for the same purpose.

The transfer and distributing roller R' is a composition roller, the function of which is to receive the ink from the duct-roller R and transfer it to and distribute or spread it upon the distributing roller or cylinder R². The distributing-cylinder R² is preferably made of metal and much larger than either the duct-roller or the roller R'. The rollers R³, R⁴, and R⁵ are the ordinary form-rollers, secured in the roller-frame F in any ordinary manner. These three form-rollers (one or more of them) receive the ink (already well distributed) from the distributing roller or cylinder R², and, aiding still further distribution, transfer the same in the first instance to the revolving disk D. Where the location of the cylinder R² and the throw of the frame are such as to bring the form-roller R³ only in contact with the roller R², the effect of the movement of the parts for this purpose is as follows: In the upward movement of the form-rollers the roller R³ comes in contact with the roller R², which, being journaled in the slots S' S' of the arms A' A', rises so as to allow the roller R³ to pass thereunder. The continued upward movement of the roller R³ in contact with the roller R² causes the roller R² to revolve upon and with the roller R³, the roller R² at the same time parting with ink already partly distributed by distributing the same again or, further, upon and by the aid

of the roller R³. Coincident with this redistribution between the rollers R² and R³, the roller R', being also journaled in the slots S², is lifted from contact with the duct-roller R and caused to roll upon the roller R², thereby causing both a transfer of ink from the roller R and a distribution of the same upon the roller R². In the return movement of the form-roller R³, the rollers R³ and R² being again brought in contact and rolling one upon the other, the rollers R³, R², and R' are rolled in the opposite direction, thereby causing a still further distribution and spreading of the ink upon the roller R³, the rollers R² and R' being again raised in their slots in the operation. As this last movement is completed, the roller R' again drops, but not at first in contact with the roller R, being permitted to drop by the dropping of the roller R², with which it is in contact. However, the roller R³, preferably remaining in contact with the roller R², the contact of the roller R' with the duct-roller R is prevented until the form-roller passes beyond the roller R² toward the form. The ink thus distributed upon the roller R³ by the further downward movement of the form-roller frame is distributed upon the revolving disk D in such a manner as to leave the surface of the disk covered with a layer of ink of uniform thickness and appearance and without streaks. During these operations, in which the roller R³ automatically revolves and operates the transfer-roller R' and the distributing roller or cylinder R², the form-rollers R⁴ and R⁵ traverse the disk upward and downward, aiding in the first place to still further distribute the ink upon the disk D and at the same time upon their own surfaces, these two last-mentioned rollers, together with roller R³, by the further continued movement of the roller-frame applying the ink in uniform thickness and without streaks upon the form preparatory to the printing, which takes place in the interval during the period within which the form-rollers are traversing the disk in the operations heretofore described. After the roller R³ parts contact with the roller R² in the downward movement of the roller-frame, and before it again makes contact therewith in its next upward movement, the rod N, attached to the roller-frame F, operates the ratchet-arm E, thereby causing the duct-roller R to revolve a stage, taking upon its surface an additional supply of ink, and also at the same time transferring an additional supply of ink from the forward part of the roller R to and upon the roller R', which is revolved to an equal extent through its contact with the roller R, made for that purpose, and the roller R² is also revolved by the roller R', the roller R' at the same time transferring and spreading its ink to and upon the roller R². The roller R', being a composition roller and having "tack," hugs or adheres to the roller R² sufficiently to insure its revolution, and thereby effect both the transfer and the spread of ink upon the

roller R². It may shrink or diminish in size without material injury to its functions in the operations heretofore described; but the roller R², being made of metal, and therefore unchangeable, and being provided with a uniform surface, will always perform the functions of transferring the ink to and distributing it upon the form-roller with uniformity of action.

By giving an additional throw to the form-roller frame or additional extension to the ink-fountain and its attachments over and upon the disk the form-roller R⁴ can also be brought into contact with the roller R² in such a manner as to repeat the operations and effects of the roller R³ upon the series of rollers R' and R², as previously described, and the same statement is true as to the roller R⁵; but I have not found it necessary to bring either the roller R⁴ or the roller R⁵ in contact with the roller R² for the reason that within a wide range of distribution required I have found that the contact of the roller R³ in the manner described with the roller R² was sufficient to produce the most perfect distribution over the entire form even where the form was of the largest size known to job-presses and where the body of color required to be printed upon the paper was substantially solid throughout, and by proper adjustment of the parts shown and described I have found it possible to effect perfect and uniform distribution in this manner where the tints were most delicate and where the shades of color were most difficult to deal with in their contrasts with the color of the paper or other material upon which the printing was done.

Prior to my invention it was customary to bring the upper roller of the form-rollers in contact with the duct-roller secured, operated, and adjusted in the ink-fountain substantially as the roller R is operated and adjusted in the fountain F', or in some other manner. In these arrangements the upper form-roller acted as a transfer-roller, taking the ink directly from the duct-roller, and also as a distributing-roller, distributing or spreading the same upon the disk, aided in that operation by the second and third form-rollers; but in this method of distribution it was found to be impossible to distribute the ink uniformly upon the revolving disk so as to print solid bodies of color and delicate tints. In another form or method of distribution (shown in my application, Serial No. 182,058, filed November 6, 1885) the distribution is improved or increased by placing an intermediate roller in an extension of the arms of the ink-fountain, journaled in slots, by the aid of which an intermediate distribution is obtained upon one or more of the form-rollers prior to the distribution from those form-rollers, one or more, upon the revolving disk. In that case, as in the other just described, it is one of the functions of the most forward of the form-rollers to take ink from the duct-roller and act as a transfer-

roller in transferring the ink to the disk, the intermediate distribution taking place between the roller journaled in slots in the arm extensions referred to and the transfer form-roller. I found that the intermediate distribution referred to, obtained in manner described, greatly improved the distribution upon the revolving disk, and consequently the distribution upon the form, and this to such an extent as greatly to increase the capacity of the job-press, and to increase it sufficiently to enable the job-press to satisfactorily perform work or do printing that formerly could only be done upon presses in which cylinder distribution was employed; but in my present invention neither the upper nor any other one of the form-rollers is allowed to come in contact with the duct-roller or take ink directly therefrom, the transfer action of the form-rollers and contact being limited to the transfer from and contact with the distributing cylinder or roller R², to and upon which the ink is first distributed by and through the composition roller R', as previously described, since the roller R² itself is so arranged as not to come in contact with the roller R, but instead with the roller R'. In this manner I have obtained in the job-press a combination of disk and cylinder distribution which increases the capacity of the job-press greatly and equalizes its ink-distributing qualities with its other qualities, especially that of taking an impression.

I am aware that the combined cylinder and disk distribution shown in my invention can be adapted to other job-presses in which revolving-disk distribution is employed besides that described herein, and in which there is less power or capacity only for a smaller amount of pressure upon the form, owing to different organization of the press from that described herein, and therefore I do not desire to limit my invention to presses in which the impression is given by the use of the toggle-joint, as shown; neither do I desire to limit it to a press in which the impression is given by power applied through a double toggle, as shown herein, since, having brought the distribution up to the capacity of the double-toggle power, the same distribution will manifestly answer for the press wherein the power for the impression is obtained by means of a single-toggle, and in all these presses the same power that operates the roller-frame may be made to operate automatically the cylinder distribution shown in this invention.

The hinging of the ink-fountain as shown and described prevents any injury to the press during the movements of the form-rollers to and fro, since the ink-fountain itself will be lifted in case the journals of the rollers R' and R² bind in their slots or any other contacts are made with any other portion of the fountain, and at the same time the fountain may be adjusted readily, so as to give more or less contact between the form-rollers and the roller R² in the movements of the former

back and forth, this adjustment also necessarily effecting correspondingly the movement of the roller R' as well as the distribution of the ink. I do not, however, desire to
 5 limit my invention to the instances in which a hinged fountain is used, since the roller R³, being journaled in slots S S and no contact between the form roller or rollers and the duct-roller being required, a stationary fountain
 10 might be used in the place of the hinged fountain shown without avoiding my invention. I am also aware that the arms A', in which the rollers R, R', and R² are supported, may be firmly secured to the fountain or
 15 otherwise made an immovable part of the same, provided other and well-known means are used for controlling the knife-edge in its relation to the duct-roller and thereby the amount of ink at any time to be taken from
 20 the fountain by the duct-roller.

I am aware that additional rollers may be added to the system of rollers which take the ink from the duct-roller beyond roller R², and in this way the distribution may, if necessary,
 25 in the case of heavy inks, be carried still further; but the three rollers shown will be found sufficient for all ordinary purposes. I am also aware that the slotted cam part of the toggle member M may be secured to one
 30 member of the toggle M² M³, with the crank-shaft C' arranged to move and operate therein for the purpose of giving the necessary vibratory motion and power to the platen P', and when this is done the system of ink distribution herein shown will be found amply
 35 sufficient for all purposes within the capacity of a printing-press so organized.

What I claim as my invention is—

1. In inking devices for printing presses
 40 provided with a revolving ink-disk and swinging form-rollers, a receiving, transferring and distributing roller operated from, by or with a duct-roller upon a third roller, for receiving, transferring and distributing ink from the
 45 duct-roller.

2. In inking devices for printing presses, provided with a revolving ink-disk and swinging form-rollers, a receiving, transferring and distributing roller operated from, by or with a
 50 duct-roller, for receiving, transferring and distributing ink from the duct-roller, in combination with a second receiving, transferring and distributing roller operated from, by or with the duct-roller for receiving, transferring and distributing ink from the duct-roller, and two or more swinging form-rollers for receiving, transferring and distributing ink from such second roller upon a revolving ink-disk and therefrom upon the form.

3. In inking devices for printing presses, a receiving, transferring and distributing roller operated from, by or with a duct-roller for receiving, transferring and distributing ink from the duct-roller, and having intermittent
 65 contact therewith for those purposes, in combination with a second receiving, transferring and distributing roller also operated

from, by or with the duct-roller through or by the first receiving roller, for receiving, transferring and distributing ink from the
 70 first receiving-roller.

4. In inking devices for printing presses, the duct-roller R in combination with the receiving, transferring and distributing rollers R' and R² operated from, by or with the duct-roller, for receiving, transferring and distributing ink from the duct-roller.
 75

5. In inking devices for printing presses, the duct-roller R in combination with the receiving, transferring and distributing rollers R' and R² operated by, from or with the duct-roller for receiving, transferring and distributing ink from the duct-roller, and with the form-roller R³ for receiving, transferring and distributing ink from the roller R² upon the
 80 revolving-disk D and thereupon distributing the same.
 85

6. In inking devices for printing presses, the duct-roller R, the receiving, transferring and distributing rollers R' and R², the form-rollers R³, R⁴ and R⁵, and the revolving-disk D, in combination.
 90

7. In inking devices for printing presses, the duct-roller R, the receiving, transferring and distributing rollers R' and R² and the form-rollers R³, R⁴ and R⁵, in combination with a stationary bed, a movable platen and a revolving-disk.
 95

8. In inking devices for printing presses, the duct-roller R, the receiving, transferring and distributing rollers R' and R² and the form-rollers R³, R⁴ and R⁵ located in a roller-carriage which has a vibratory motion given by an arm or connecting rod operated by a crank-shaft, in combination with a stationary
 100 bed, a revolving ink-disk and a movable platen moved to and fro by a toggle, all so adjusted that the form-rollers may traverse the stationary bed without interfering with the movable platen when making the impression,
 105 substantially as shown and described.
 110

9. In inking devices for printing presses, the duct-roller R, the receiving, transferring and distributing rollers R' and R² and the vibrating form-rollers R³, R⁴ and R⁵ located in a roller-carriage which has a vibratory motion given by an arm or connecting rod operated by a crank-shaft, in combination with a stationary bed, a revolving ink-disk and a movable platen moved to and fro by a double or
 115 compound toggle, all so adjusted that the form-rollers may traverse the stationary bed without interfering with the movable platen when making the impression, substantially as shown and described.
 120
 125

10. In inking devices for printing presses, the duct-roller R, the receiving, transferring and distributing rollers R' and R² and the form-rollers R³, R⁴ and R⁵ located in a roller-carriage which has a vibratory motion given
 130 by an arm or connecting rod operated by a crank-shaft, in combination with a stationary bed, a revolving ink-disk and a movable platen moved to and fro by a double or com-

pound toggle, the crank-shaft C' the crank-shaft C, the pinion P and the treadle T, all so adjusted that the form-rollers may traverse the stationary bed without interfering with the movable platen when making the impression, substantially as shown and described.

11. In inking devices for printing presses, the secondary receiving, transferring and distributing roller or cylinder R² journaled in the slotted or elongated bearings S', S', in combination with the roller R' journaled in the slotted or elongated bearings S², S² each of these bearings being located in or on the ink fountain or some portion of its attachments.

12. In inking devices for printing presses, a duct-roller R and receiving, transferring and distributing rollers R' and R² journaled in or on and supported by a hinged fountain, or some extension of the same.

13. In inking devices for printing presses, the duct-roller R, the receiving, transferring and distributing rollers R' and R² journaled in or on and supported by a hinged fountain, in combination with a form-roller R³ journaled in or on and moved by a vibrating carriage-frame.

14. In inking devices for printing presses, the duct-roller R, the receiving, transferring and distributing rollers R' and R² journaled in or on and supported by a hinged fountain, in combination with a form-roller R³ journaled in or on and moved by a vibrating carriage-frame, and the revolving-disk D.

15. In inking devices for printing presses, the duct-roller R, the receiving, transferring and distributing rollers R' and R² journaled in or on and supported by a hinged fountain, in combination with the form-rollers R³, R⁴ and R⁵ journaled in or on and moved by a vibrating carriage-frame, and the revolving disk D.

16. In inking devices for printing presses, the duct-roller R, the receiving, transferring and distributing rollers R' and R² journaled in or on and supported by a hinged fountain, for the purpose of taking the ink from the fountain and giving the same cylinder distribution, in combination with the revolving disk D and the form-rollers for the purpose of perfecting plate or disk distribution.

17. In inking devices for printing-presses, a hinged fountain provided with a duct-roller R, in combination with a receiving, transferring and distributing roller R' supported on or by the ink-fountain and journaled in slot-

ted or elongated bearings S² S², for the purpose of permitting intermittent contact of the roller R' with the roller R, at will.

18. In inking devices for printing-presses, a hinged fountain provided with a duct-roller R, in combination with the receiving, transferring and distributing rollers R' and R² supported on or by the ink-fountain and journaled in slotted or elongated bearing S² S² and S' S', for the purpose of permitting intermittent contact between the roller R' and the roller R and of maintaining constant contact between the rollers R' and R².

19. In inking devices for printing presses, a hinged fountain provided with a roller R, in combination with rollers R' and R² journaled in slots S², S², and S', S', respectively, and the form-roller R³, in the manner and for the purposes described.

20. In inking devices for printing presses, a hinged fountain provided with a duct-roller R, in combination with the rollers R' and R² journaled in the slots S², S², and S', S', the form-roller R³ and the disk D, in the manner and for the purposes described.

21. In inking devices for printing-presses, a fountain provided with two rollers, first, a duct-roller, and, second, a roller for receiving and transferring the ink from the duct-roller to a third roller, or cylinder, and also for commencing distribution between the first and second rollers, the first and second rollers being arranged to have intermittent contact with each other for those purposes, and, in combination therewith, with a third roller, or ink-cylinder for receiving and transferring the ink from the second roller with which such third roller, or cylinder, maintains constant contact for the purpose of receiving and transferring the ink and also for the further purpose of continuing its distribution.

22. In inking devices for printing-presses, the roller R' and cylinder R², in combination with the form-roller R³, in such relations that the form-roller automatically lifts the roller R' from contact with the duct-roller, and at the same time and by the same action continued causes the roller R' and cylinder R² to continue ink distribution upon and between each other and also upon and between the roller R³ and the cylinder R² automatically.

HENRY JOHNSON.

Witnesses:

WM. H. BUTTERWORTH,
F. F. MILLS.