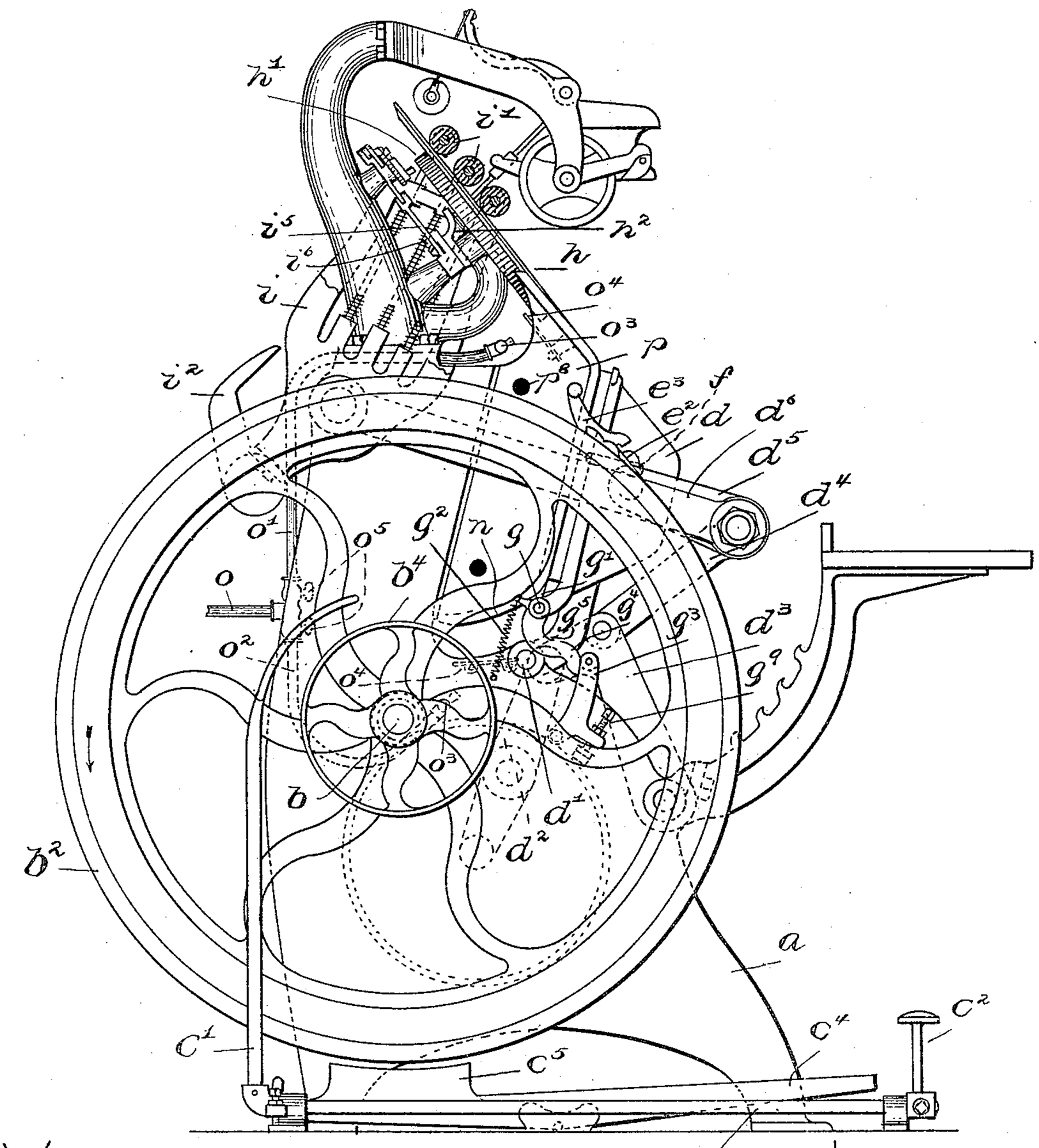
(No Model.) 4 Sheets—Sheet 1.

W. H. GOLDING.

PRINTING PRESS.

No. 529,489. Patented Nov. 20, 1894.

FIG. 1.



WITNESSES:
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M. W. Jackson

INVENTOR:
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Attys.

(No Model.)

4 Sheets—Sheet 2.

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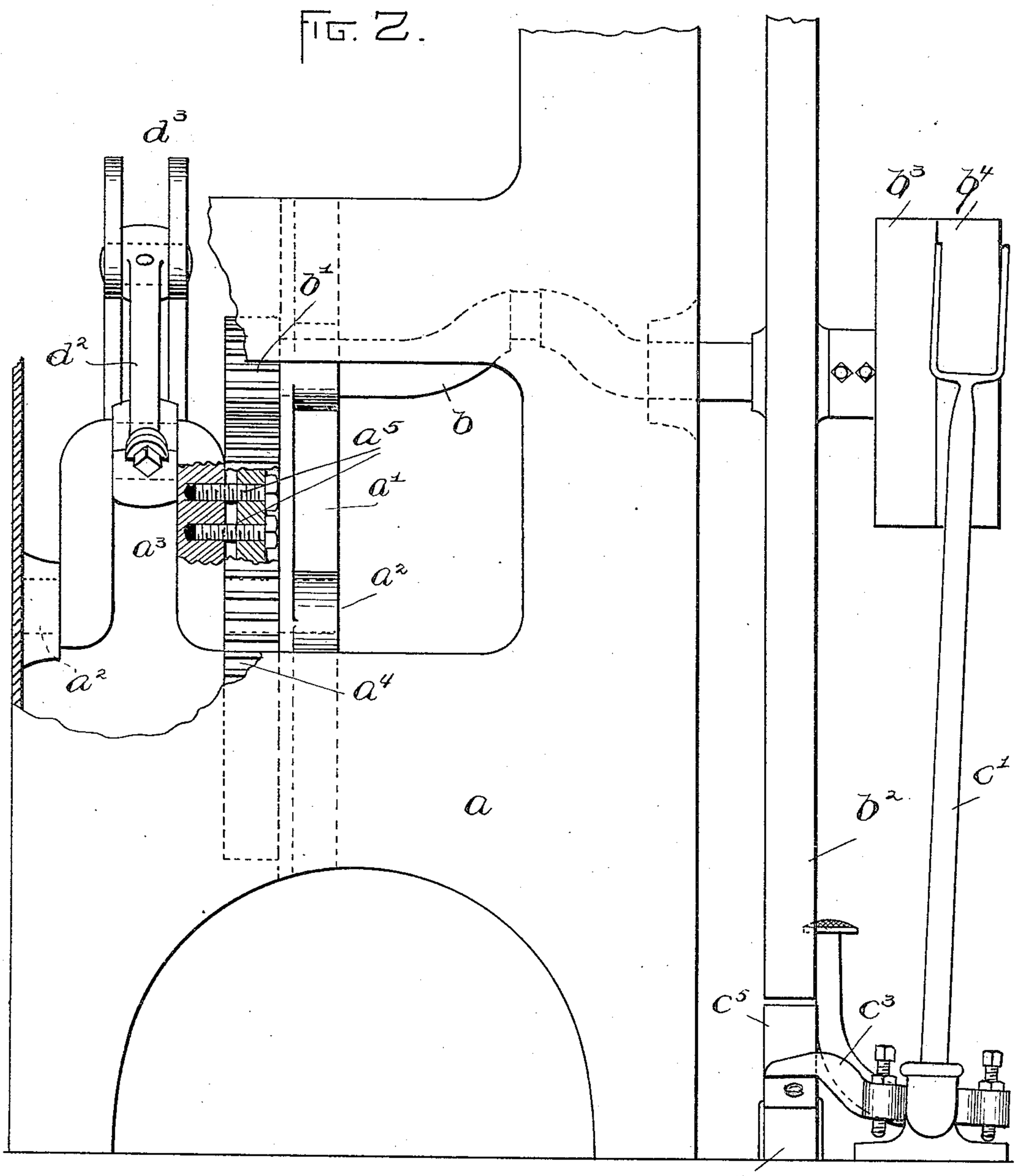
FIG. 2.



WITNESSES:

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(No Model.) 4 Sheets—Sheet 3.

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PRINTING PRESS.

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FIG. 3.

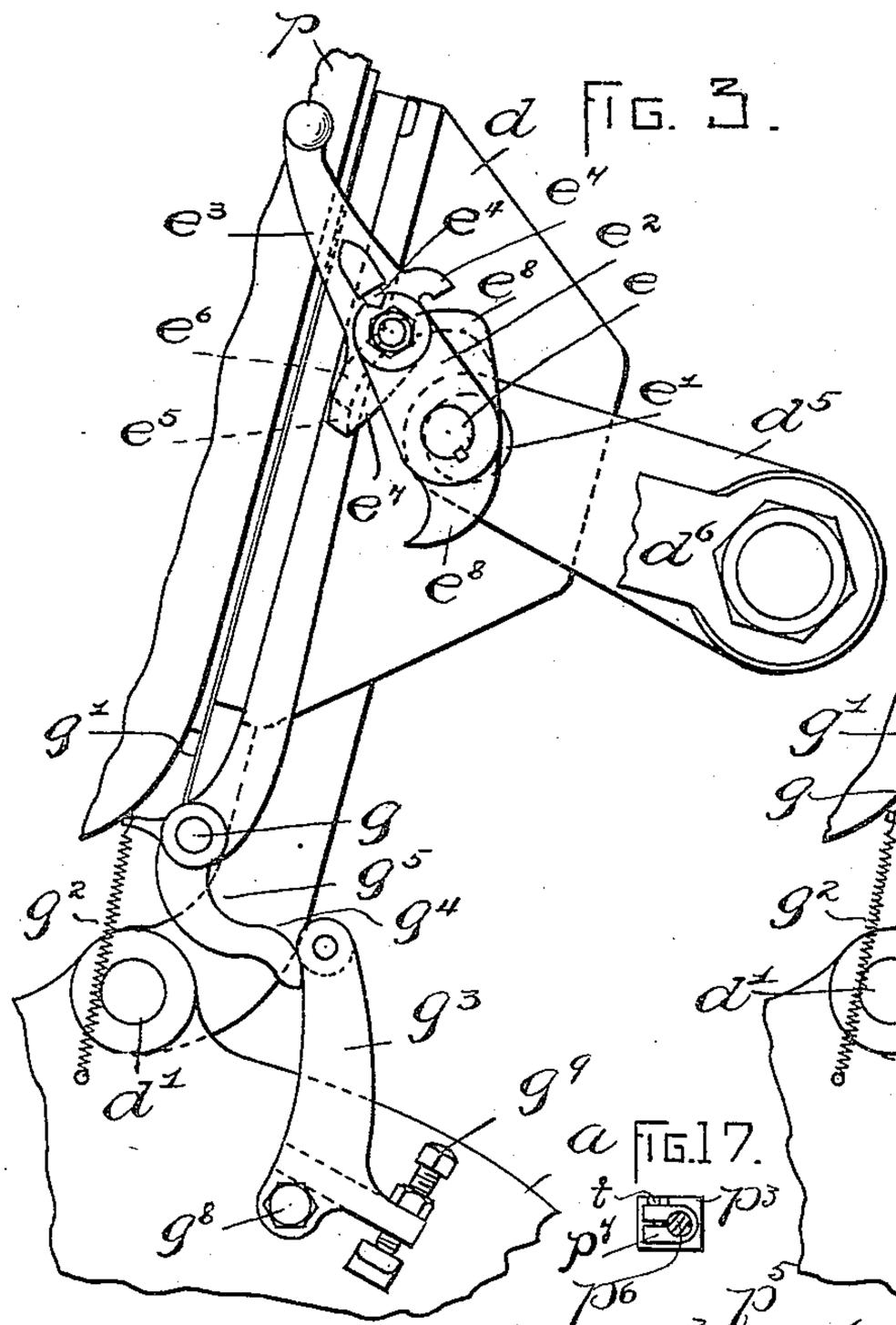


FIG. 4.

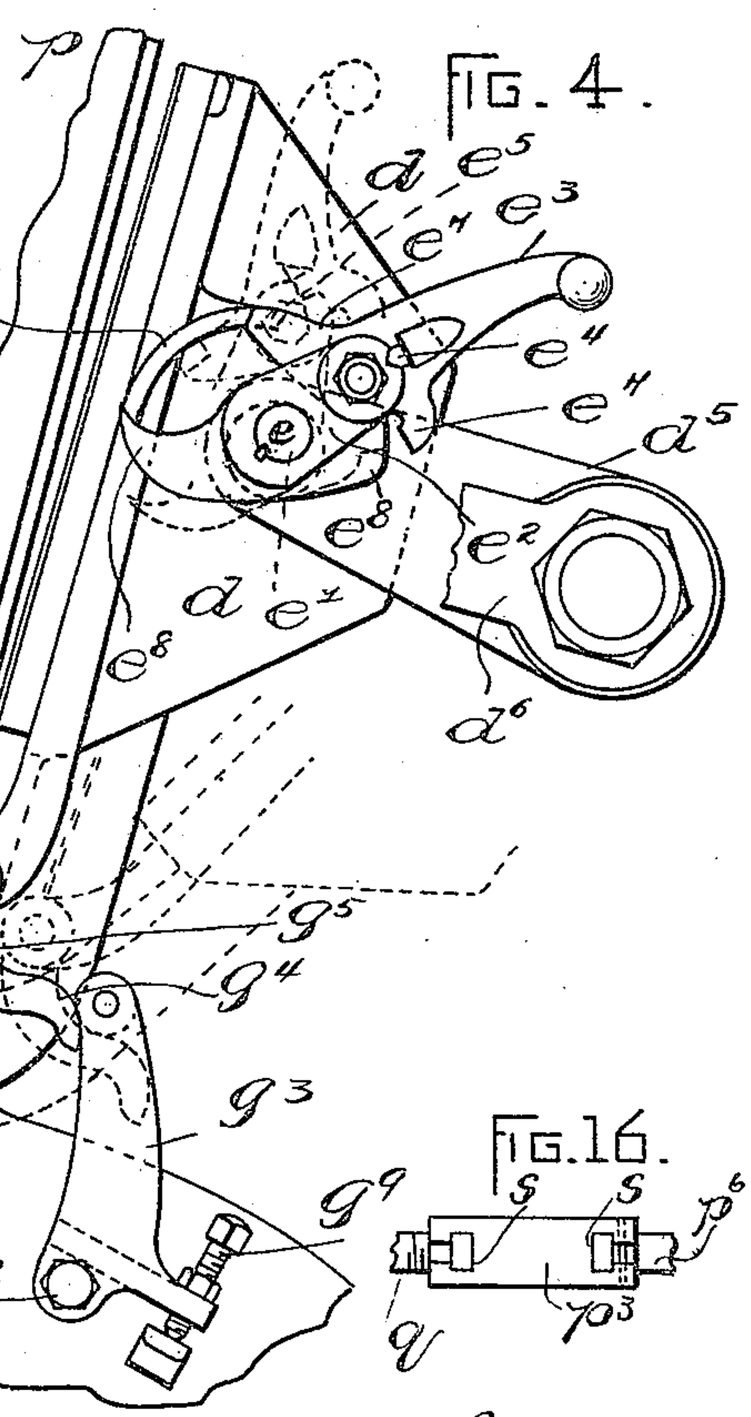


FIG. 16.

FIG. 17.

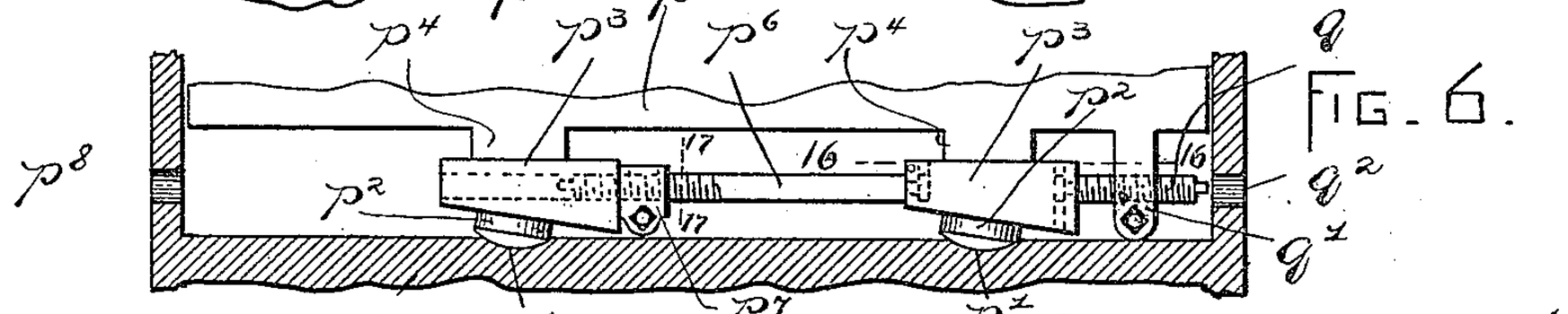


FIG. 6.

FIG. 7

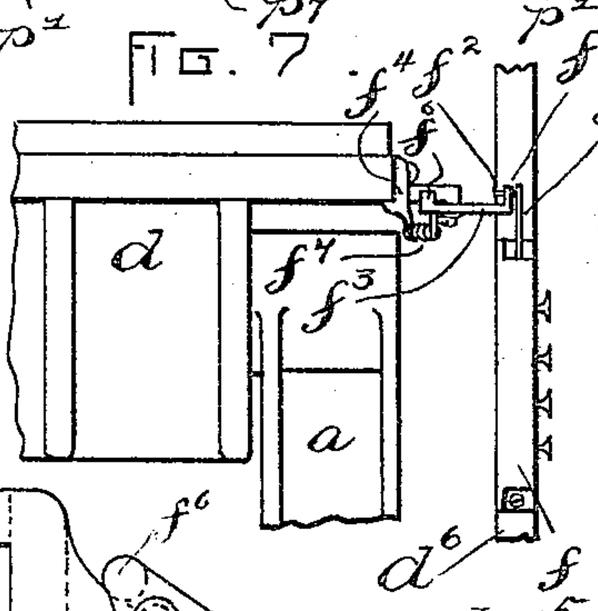


FIG. 8.

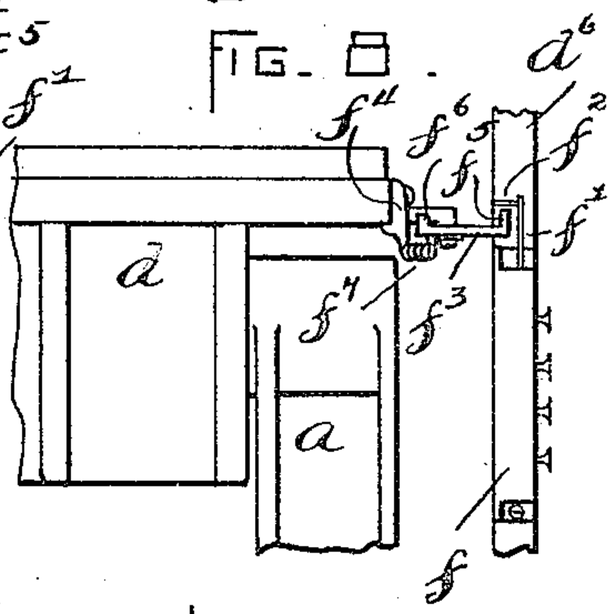


FIG. 5.

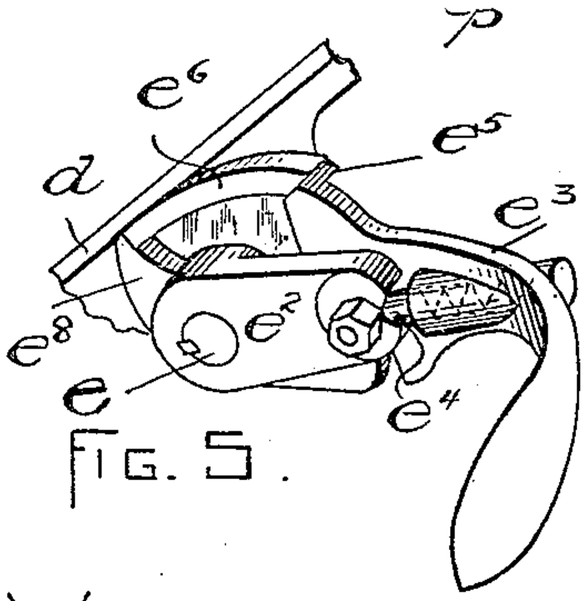
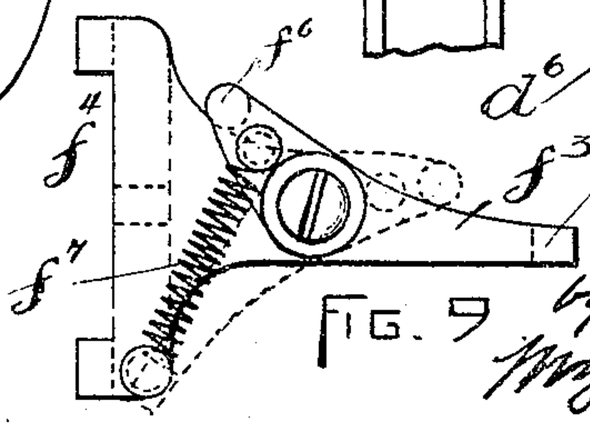


FIG. 9



WITNESSES:

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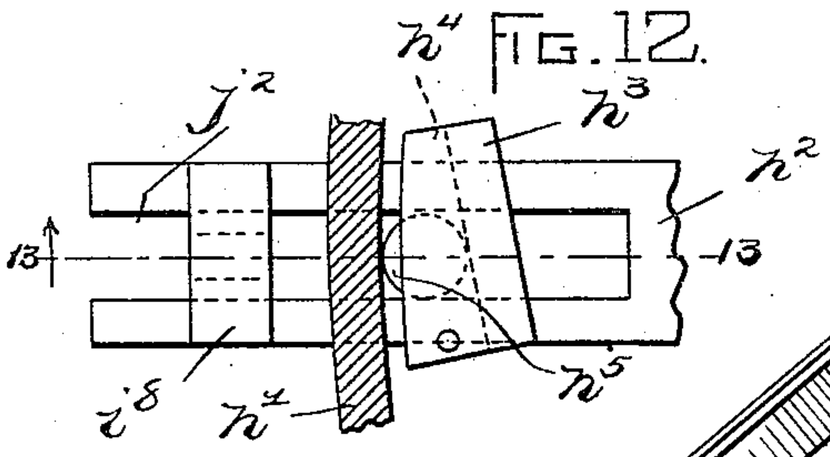

FIG. 12.

FIG. 10.

FIG. 13.

FIG. 11.

FIG. 14.

FIG. 15.

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UNITED STATES PATENT OFFICE.

WILLIAM H. GOLDING, OF NEWTON, MASSACHUSETTS.

PRINTING-PRESS.

SPECIFICATION forming part of Letters Patent No. 529,489, dated November 20, 1894.

Application filed January 3, 1894. Serial No. 495,551. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM H. GOLDING, of Newton, in the county of Middlesex and State of Massachusetts, have invented certain new and useful Improvements in Printing-Presses, of which the following is a specification.

This invention relates to certain improvements in printing presses of the class employing an oscillatory platen in conjunction with a type-supporting bed and an intermittently-moving distributing-disk, and consists in the novel constructions and arrangements of parts hereinafter described and claimed.

Reference is to be had to the annexed drawings and to the letters marked thereon, forming a part of this specification, the same letters designating the same parts or features, as the case may be, wherever they occur.

Of the drawings: Figure 1 shows a side elevation of the press. Fig. 2 shows a rear elevation of a portion of the press, with part of the frame represented as broken away. Figs. 3 and 4 show the throw-off device and gripper-mechanism in side elevation. Fig. 5 shows a detail perspective view of the throw-off device. Fig. 6 shows a sectional detail, illustrative of bed-supporting and adjusting means. Figs. 7 and 8 show the counting-devices in plan, in both operative and inoperative adjustment. Fig. 9 shows a detail of part of the counting means. Fig. 10 shows in side elevation the means for actuating the distributing-disk. Fig. 11 shows an inverted plan of the same parts, taken on line 11—11 of Fig. 10. Fig. 12 shows an enlarged detail sectional view on line 12—12 of Fig. 10. Fig. 13 shows a section on line 13—13 of Fig. 12. Fig. 14 shows a part sectional view and part side elevation of the devices illustrated in Fig. 10, as they appear in a different adjustment. Fig. 15 shows an inverted plan of the parts in this latter adjustment. Fig. 16 shows a detail sectional view on line 16—16 of Fig. 6. Fig. 17 shows a detail sectional view on line 17—17 of Fig. 6.

The stationary supporting frame a of the machine is formed with a centrally-located and vertically-extending web a', and a crank-shaft a^2 is supported in a bearing on one side of the frame and bearing on said web, the crank a^3 of said shaft being connected with the platen-operating motion. A large gear a^4 is mounted on the shaft a^2 beside the crank a^3, and is rigidly connected with the latter by bolts a^5, entered through the web of the gear and tapped into the crank. By thus connecting the gear and crank near the periphery of the gear, torsional strain between the gear and crank-shaft is obviated; and, by connecting the gear directly with the crank in this manner, the gear is brought as nearly as possible to a direct connection with the platen-motion, and a true action of said motion insured. The driving-shaft b is supported in a bearing on the web a' and a bearing on the side of the frame opposite that where the crank is located, and said driving-shaft carries a spur-gear b' in mesh with the large gear a^4, and a fly-wheel b^2 outside the frame, and also a fast and a loose pulley b^3 b^4. A rock-shaft c is supported in stationary bearings, and a shipper c' is affixed to it at one end, and projects therefrom for engagement with the belt which embraces the pulleys. A treadle c^2 is also affixed to the said rock-shaft, and projects laterally and upwardly therefrom, so that by depressing the said treadle the belt is thrown over onto the fast-pulley and the machine thereby set in operation. The rock-shaft has another lateral arm c^3 affixed to it, and a lever c^4 is arranged to coact with said arm c^3 to shift the belt onto the loose pulley and stop the machine. The lever c^4 has a shoe c^5 for contact with the periphery of the fly-wheel b^2, so that said lever serves the double purpose of shipping the belt and putting a brake on the fly-wheel. This brake-lever is designed to be operated as a treadle by the attendant's foot. By this arrangement, the attendant may control the operation of the machine conveniently with one foot.

The platen d is pivoted to the frame a at d', and is oscillated by means comprising a link d^2 connecting the crank a^3 with radius-bars d^3 pivoted to the frame a, a toggle composed of members d^4 and d^5 connecting said radius-bars with the platen, and radius-bars d^6 connecting the toggle with the frame a and extending across the ends of the platen.

My invention contemplates an improved throw-off device, by which the platen may be quickly changed from operative to inoperative adjustment and vice versa, with relation to the bed; or, in other words, pressure of the

platen against the type applied and removed, the construction being as follows:

The member d^5 of the toggle is connected with the platen by a shaft e, which, where it engages the toggle-member, is eccentric, as indicated at e', whereby, upon turning the shaft, the relation of the platen to the toggle-member d^5 is changed. An arm e^2 is affixed to the shaft e, and a handle e^3 is jointed to said arm, and is normally held in alignment therewith by the engagement of a double-tapered and spring-pressed latch e^4 on the handle with a V-shaped notch in the arm. The handle has a lateral extension, which is formed on the inner side with a substantially diamond-shaped lug e^5, adapted for engagement with a curved flange or rib e^6 formed on the end of the platen. When the platen is in operative adjustment, so that pressure is had against the type (see Fig. 3), the large side of the eccentric e' is rearward, and the lug e^5 abuts the front end of the flange e^6. When it is desired to throw off the pressure, a rearward pull is exerted on the handle e^3, which first causes the latter to turn on its pivot, and throws the lug e^5 up past the end of the flange e^6, the latch e^4 permitting this movement of the handle by riding up on one side of the notch. Then the continued pull on the handle carries the arm e^2 back on its pivot, the lug e^5 riding on the upper side of the flange e^6, and the platen is shifted to its inoperative position, shown in Fig. 4, the lug e^5 dropping behind the rear end of the flange e^6 by reason of the action of the tapered spring-pressed latch against the side of the V-shaped notch. To restore the parts to their first adjustment, the handle is pushed from the operator, and first turns on its own pivot carrying its lug e^5 downward past the end of the flange e^6, and then the arm e^2 is moved forward on its pivot, the lug e^5 riding on the under side of the flange, and when it reaches the rear end of the same springing behind this end by reason of the co-action of the latch and V-notch. This construction provides very convenient and easily-operated means for throwing the pressure off and on and locking the platen in each adjustment, the operator having simply to move the handle back and forth without having to operate any other devices.

The movement of the handle on its own pivot is limited by its lateral extensions e^7 abutting portions of the arm e^2, and the movements of the latter are limited by its projections e^8 abutting the ends of the flange e^6.

I employ novel counting-devices (see Figs. 7 and 8), comprising a registering-mechanism f, of suitable construction, attached to the upper side of one of the radius-bars d^6, and having a projecting actuating-arm f' extending in the direction of length of the bar d^6 and having a laterally-projecting finger f^2. An arm f^3, pivoted to a bearing f^4 affixed on one end of the platen, has a lateral finger f^5, extending transversely of the finger f^2 and adapted to stand in the path of the same. (See Fig. 7.) In the operation of the press, the bar d^6 has a movement crosswise of the end of the platen; and when the latter is in operative position, or in other words when the pressure is on, each time the bar rises, the finger f^2 on the arm f' of the registering-mechanism encounters the finger f^5 of the arm f^3 on the platen, and is caused thereby to actuate the registering-mechanism. When, however, the platen is moved back to its inoperative position, or when the pressure is off, the finger f^5 of the arm f^3 is carried back out of the path of the finger f^2 of the arm f' (see Fig. 8), and hence the registering-mechanism will not be operated. By this arrangement, the counting-devices operate only while printing is in progress, and reciprocations of the platen when the pressure is off do not affect the counting-devices.

When the arm of the registering-mechanism acts against the arm f^3, the latter is rigidly held by abutment of a stud f^6 carried by it against the bearing f^4. The arm may be moved out of operative position altogether, when it is not desired to use the counting-devices, by turning said arm over on its pivot, as indicated in broken lines in Fig. 9. A spring f^7 holds the arm in its two positions, said spring passing the center when the arm is moved from one position to another.

A number of advantages result from mounting the register on the draw-bar rather than on a bracket fastened to the side of the press as has heretofore been done, viz: greater simplicity by not requiring an extra part for support; reduction in cost for the same reason; and greater convenience and less liability to derangement by reason of the fact that it is carried down with the draw-bar and out of the way when the attendant is feeding or making ready, and it does not project laterally so as to be in danger of receiving a blow.

A rock-shaft g, supported in bearings on the platen above the pivot of the latter, has affixed to it gripping-fingers g', extending over the face of the platen to act upon the work thereon. A spring g^2 tends to turn the rock-shaft in a direction to move the grippers away from the platen, and pressure of said grippers against the platen is effected by the engagement of a curved arm affixed to the rock-shaft with a stop-arm g^3 on the frame a. When the platen is pressing against the type, the upwardly-curved front end g^4 of the arm is behind an anti-friction roll on the end of the arm g^3, and by its engagement therewith causes the grippers to press against the work. Upon the retraction of the platen, the engagement of the said roll with the curved end of the arm g^3 causes the pressure of the grippers to be maintained momentarily. Then the receding portion or incline g^5 of the curved arm receives the said roll, and the spring g^2 holds the grippers back, so that, as the platen moves forward away from the bed, its face is

separated from the grippers. Upon the return of the platen, the grippers are pressed against its face by the front curve g^4 of the arm encountering the anti-friction roll. The pressure may be regulated by adjusting the arm g^3, which is mounted on a bolt g^8, and carries a set-screw g^9 bearing against a lug on the frame.

One object of my invention is to provide improved means for imparting a progressive step-by-step movement to the distributing-disk, and for converting the same into a step-by-step vibratory motion of the disk, to secure a blending of different colors, when desired. The means employed to accomplish the above objects are as follows:

The distributing-disk h is rotatively supported on the frame, and formed with an annular flange h' on the under side; and an arm h^2, pivoted to a support on the frame, extends under said flange, and is formed with a wedge-shaped lug h^3, projecting over the inner side of the flange, and having a channel h^4, containing a ball h^5 which bears against the flange. It will be seen that, under one direction of movement of the arm, this ball will be caused to bind against the flange, and the disk will be carried around with the arm; whereas, under the reverse direction of movement, the ball will roll freely on the flange, and no movement of the disk will ensue. This is due to taper of the ball-channel with respect to the flange. The arm h^2 is intermittently vibrated through the following connections with the rocker i which carries the distributing-rolls i': A striker i^2, affixed to said rocker, encounters a toothed segment i^3, pivoted to the frame and limited in its movements by a pin on the frame, engaging a slot in the segment, and said segment meshes with teeth i^4 on the under side of an arm i^5, pivoted on the same support as the arm h^2, and rigidly but detachably connected with the latter by a screw i^6, passing through the arm i^5 and through a lateral extension of the arm h^2. The parts are restored to their initial position by gravity after having been actuated by the striker.

This ball-and-wedge device for effecting the progressive step-by-step movement of the disk has the advantage of noiseless action, and moreover of causing irregularity in the length of the step, which insures a more even distribution of ink over the surface of the disk.

When different colors are to be blended on the disk, it is desirable to impart to the latter a step-by-step vibratory motion, and this is effected by the following arrangement: The arm h^2 is clamped to the flange h', by means of a set screw i^7, entered through a lug i^8 and engaging a notch i^9 in the flange, and the said arm h^2 is disconnected from the arm i^5 by withdrawing the screw i^6, and step-by-step vibration of the arm h^2 and consequently of the disk is effected through the following means: A ratchet-wheel j is rotatively supported on the frame a, and carries a crank-pin j', and the arm h^2 is formed with a slot j^2 at its outer end, adapted to be engaged by the said crank-pin. When blending of colors is to be done, the arm h^2 is swung around over the ratchet, and the crank-pin is engaged with the slot in said arm. (See Figs. 14 and 15.) An arm k, pivoted concentrically with the ratchet-wheel, carries a pivotal pawl k' for engagement therewith, and said arm is connected by a rod k^2 with the arm i^5. When the blending is not in progress, the pawl k' is thrown back on its pivot, as shown in Fig. 11, so as to be inoperative, and the vibration of the arm i^5 does not affect the ratchet-wheel. With the parts adjusted for blending, however, the pawl is thrown into engagement with the ratchet-wheel (see Fig. 15), and the vibrations of the arm i^5 then cause the ratchet-wheel to be turned step-by-step, and the arm h^2 consequently to be moved step-by-step first in one direction and then in the opposite direction, by reason of the engagement of the crank-pin on said ratchet-wheel with the said arm, and thus the desired step-by-step vibration of the disk is obtained. The crank-pin engages a radial slide-way j^4 on the ratchet, and is controlled by a screw j^5, so that by turning the latter the throw of the pin can be regulated. In order to engage the pin with the slot in the arm, it is moved back to the end of the slide-way, and then moved into the slot when the latter is brought in line with it by swinging the arm around on its pivot.

In order to prevent the ink from congealing on the disk or on the auxiliary distributing-surface n below the bed, these parts are subjected to heat through the following agencies: A gas-pipe o enters the rear of the machine, and has two branches o' o^2, one leading to a point below the disk, and the other to a point below the auxiliary distributing-surface, and each having burners o^3. Baffle-plates o^4 are fastened above said burners, and cause a proper distribution of the heat, and valves o^5 in the branches o' o^2 regulate the flow of gas to the burners.

Another improvement contemplated by my invention relates to adjustment of the type-supporting bed, and is illustrated in Fig. 6. The letter p designates the stationary support for the bed, the rear wall of said support being formed with sockets p', which are engaged by rounded ends of universally-adjustable blocks p^2. Wedges p^3 are interposed between the said blocks and feet p^4 on the bed p^5, the straight sides of the wedges engaging the bed and the inclined sides engaging the blocks. The wedges are adjustably connected together by means of a screw p^6, loosely engaging one of the wedges at one end, and screwed into a threaded clamp p^7 on the other, the latter being drilled out to admit an implement for turning the screw and adjusting the wedges with relation to each other. Such an implement may be inserted through an opening p^8 in one end of the support. The two wedges are adjusted together by means of a screw q, loosely engaging one of them and passing

through a threaded clamp q' on the bed, said screw being in line with an opening q^2 in the support, so as to be accessible for adjustment. A set of these adjusting-devices are located at the upper and at the lowet end of the bed. By adjusting the wedges of each pair with respect to each other, lateral adjustment of the bed is established. By adjusting the wedges together in pairs, vertical adjustment of the bed is established. By means of these adjusting-devices, the bed can be made absolutely true with respect to the platen. The screws are engaged with the right hand wedge p^3, by means of T-shaped slots s in said wedge, see Fig. 16, which are occupied by suitably formed heads on the screws. The nuts p^7 and q' are split and clamped around their respective screws by means of bolts, as shown at t in Fig. 17.

Having thus explained the nature of the invention and described a way of constructing and using the same, although without attempting to set forth all of the forms in which it may be made or all of the modes of its use, it is declared that what is claimed is—

1. A printing press comprising in its construction, the oscillatory platen having a curved flange, means for actuating said platen, a rotatively adjustable shaft connecting the platen with said means that part of said shaft which engages the latter being eccentric with respect to that part which engages the platen, an arm affixed to said shaft, a handle pivotally connected with the said arm and having a projection arranged to traverse the upper and under sides of the curved flange on the platen under reverse movements of the arm and to establish operative and inoperative adjustments of the platen, by abutting the ends of said flange.

2. In a printing-press, the combination of an oscillating platen having a curved flange on one side, a pivoted arm controlling adjustment of said platen, a handle pivoted to said arm and having a lug arranged to traverse both the upper and under sides of the curved flange and to abut the ends of the same, and means for yieldingly holding said handle in an intermediate position in alignment with the arm.

3. A printing press comprising in its construction, the oscillatory platen having a curved flange, means for actuating said platen, a rotatively adjustable shaft connecting the platen with said means that part of said shaft which engages the latter being eccentric with respect to that part which engages the platen, an arm affixed to said shaft, a handle pivotally connected with the said arm and having a projection adapted to abut the ends of the curved flange on the platen and to traverse the upper and under sides of said flange under reverse movement of the arm, and a spring-pressed latch which resists movement of the handle on its pivot.

4. In a printing press, the combination of an oscillating platen; a draw-bar for actuating the same and arranged to move transversely of one end thereof; a throw-off device which establishes an inoperative adjustment of the platen; a register on the said draw-bar having a projecting actuating arm extending longitudinally of the draw-bar and provided with a lateral finger; and an arm standing out from the end of the platen and having a lateral finger extending transversely to the lateral finger of the register-arm and adapted to co-act with the same in operating the register and to be moved out of operative relation therewith by the action of the throw-off device.

5. A printing press comprising in its construction an oscillatory platen, an actuating mechanism connected therewith and including a bar moving cross-wise of one end of the platen, a register on said bar, and a spring-pressed pivotal arm on the platen and capable of assuming an adjustment for co-action with the register, and an inoperative adjustment.

6. In a printing press, bed or platen adjusting means comprising universally adjustable blocks engaging sockets in the bed-support, wedges interposed between the said blocks and the bed, one of said wedges being formed with T-shaped slots, and screws having heads engaging said slots, one of said screws threaded into the other wedge and the other screw engaging a nut on the bed.

7. In a printing press, bed or platen adjusting means comprising universally adjustable blocks engaging sockets in the bed-support, wedges interposed between the said blocks and the bed, one of said wedges having a split clamping nut, a screw connecting the wedges and engaging said nut, and a screw connecting the wedges with the bed and engaging a split nut on the latter.

8. In a printing press, bed or platen adjusting means comprising universally movable blocks engaging sockets in the bed-support, wedges interposed between the said blocks and the bed, adjustable connections between said wedges, and adjustable connections between the wedges and the bed.

9. In a printing-press, means for imparting to the distributing plate or disk either a step-by-step progressive movement or a step-by-step vibratory movement, said means comprising a member pivotally supported concentric with the disk and adapted for driving engagement therewith, a vibrating member, a fastening for connecting said two members so that they move together as one, and devices for connecting the said members so that the vibrating member imparts a step-by-step movement to the disk-engaging member.

10. A printing press comprising in its construction a rotatively supported distributing disk, a slotted arm pivoted concentrically with said disk and adapted to be locked thereto, a ratchet-wheel having a crank-pin

adapted for engagement with the slot in said arm, and means for turning said ratchet step-by-step.

11. A printing press comprising in its construction a distributing disk, a pivotal arm having means co-acting with the said disk to progressively turn the same step-by-step under vibration of said arm, and also having means whereby it may be locked to the disk, a ratchet-wheel having a crank-pin for engagement with said arm, an arm pivoted concentric with said ratchet-wheel and carrying a pawl for engagement with the latter, and actuating devices adapted for operative connection with either the first-named arm, or the last-named arm.

12. A printing press comprising in its construction a rotatively supported distributing disk, a pivotal arm having means co-acting with said disk to intermittently turn the same and means for locking it to the disk, a second arm pivoted concentrically with the first-named arm, fastenings for rigidly connecting the two arms, means applied to the second arm for vibrating the same, a ratchet-wheel having a crank-pin for engagement with the first named arm, an arm pivoted concentric with said ratchet-wheel and carrying a pawl for engagement therewith, and a link connecting said last-named arm with the second-named arm.

13. In a printing press, bed or platen adjusting means comprising universally adjustable blocks engaging sockets in the bed-support and wedges interposed between said blocks and the bed.

14. In a printing press, bed or platen adjusting means comprising adjustable wedges inserted between the bed and its support and having T-shaped slots, and adjusting screws having similarly shaped heads engaging said slots.

15. In a printing press, bed or platen adjusting means comprising adjustable wedges having split clamping nuts, and adjusting screws engaging said nuts.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, this 18th day of December, A. D. 1893.

WILLIAM H. GOLDING.

Witnesses:

ARTHUR W. CROSSLEY,

M. W. JACKSON.