No. 750,405. PATENTED JAN. 26, 1904.

C. M. SHIGLEY.

MULTICOLOR PRINTING PRESS.

APPLICATION FILED SEPT. 24, 1903.

NO MODEL. 3 SHEETS—SHEET 1.

Fig. 1.

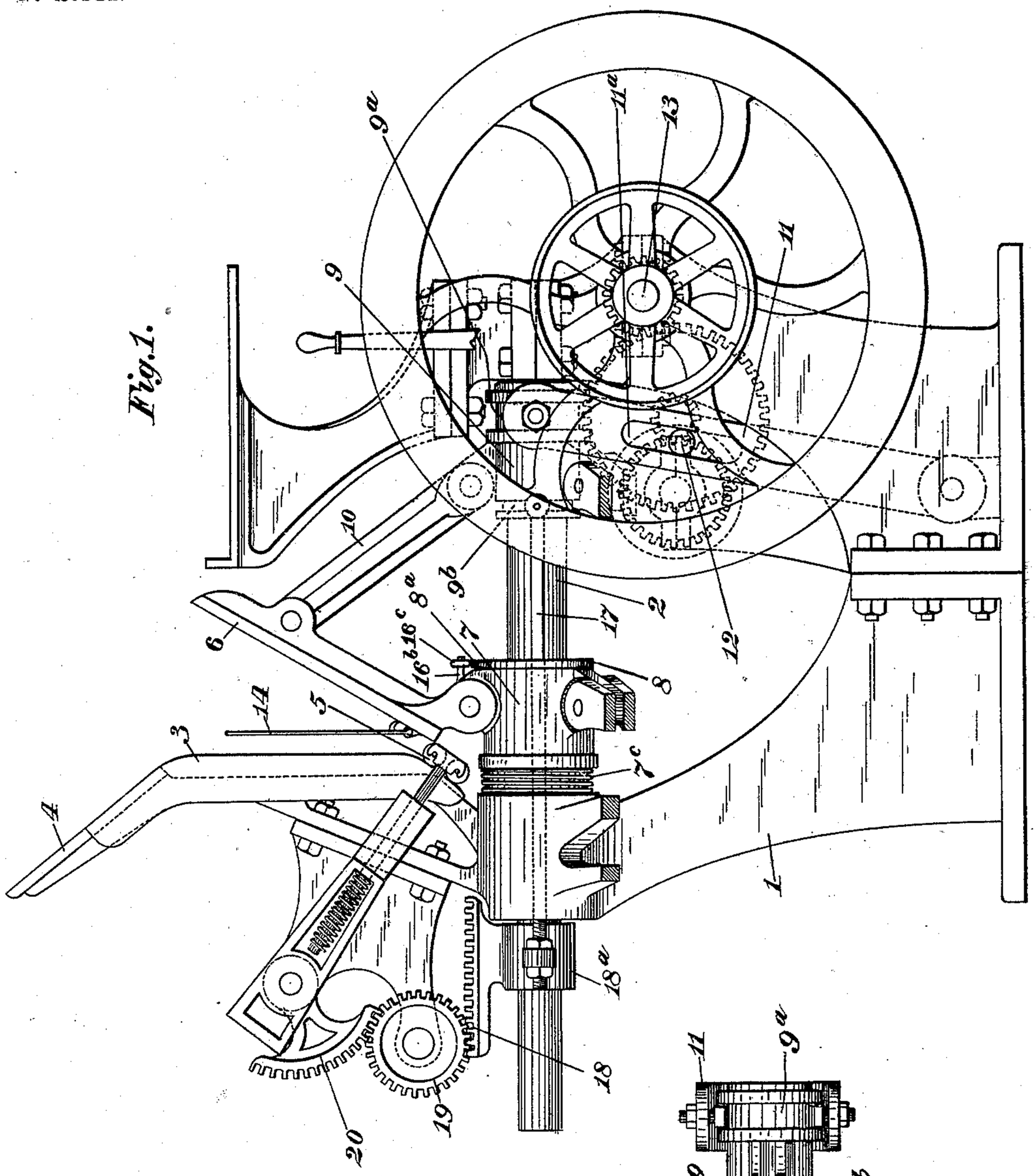
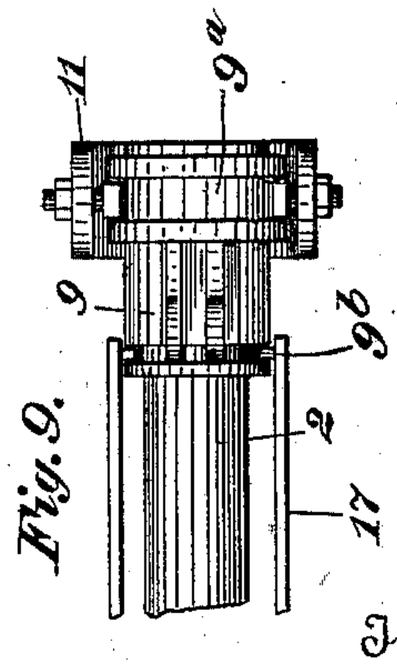


Fig. 9.



Witnesses
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NO MODEL. 3 SHEETS—SHEET 2.

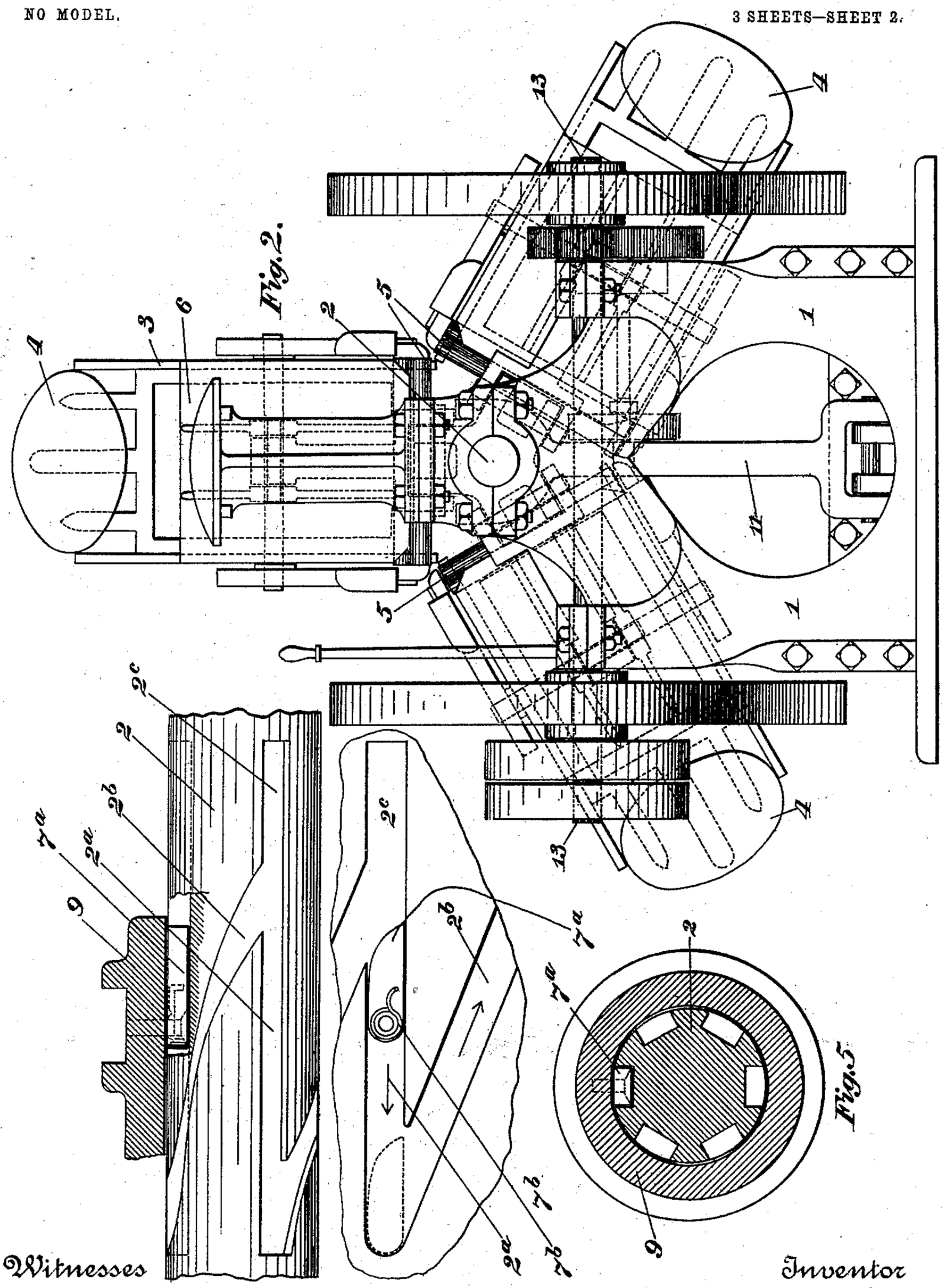

Fig. 2.

Fig. 3.

Fig. 4.

Fig. 5.

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NO MODEL. 3 SHEETS—SHEET 3.

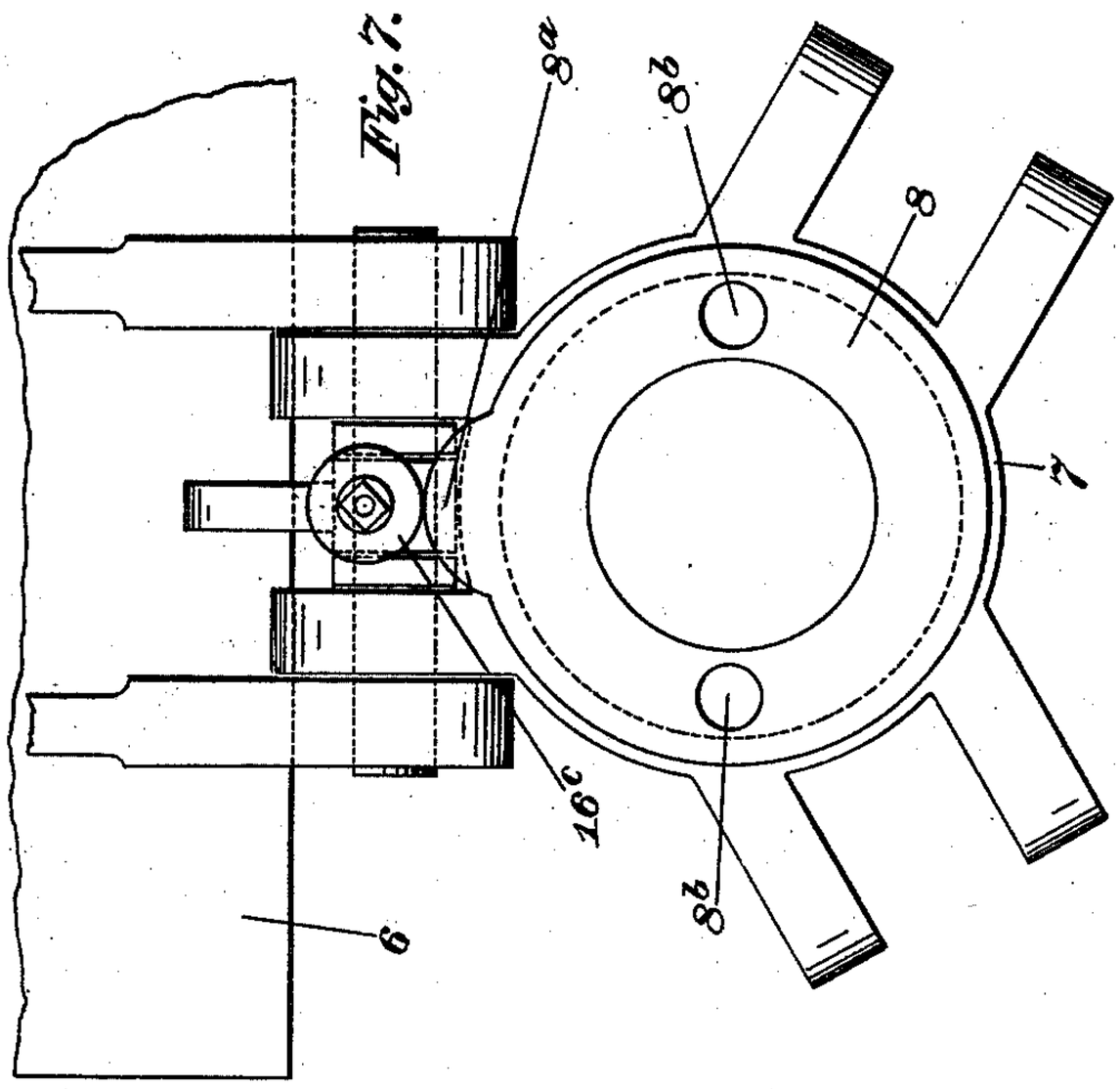

Fig. 7.

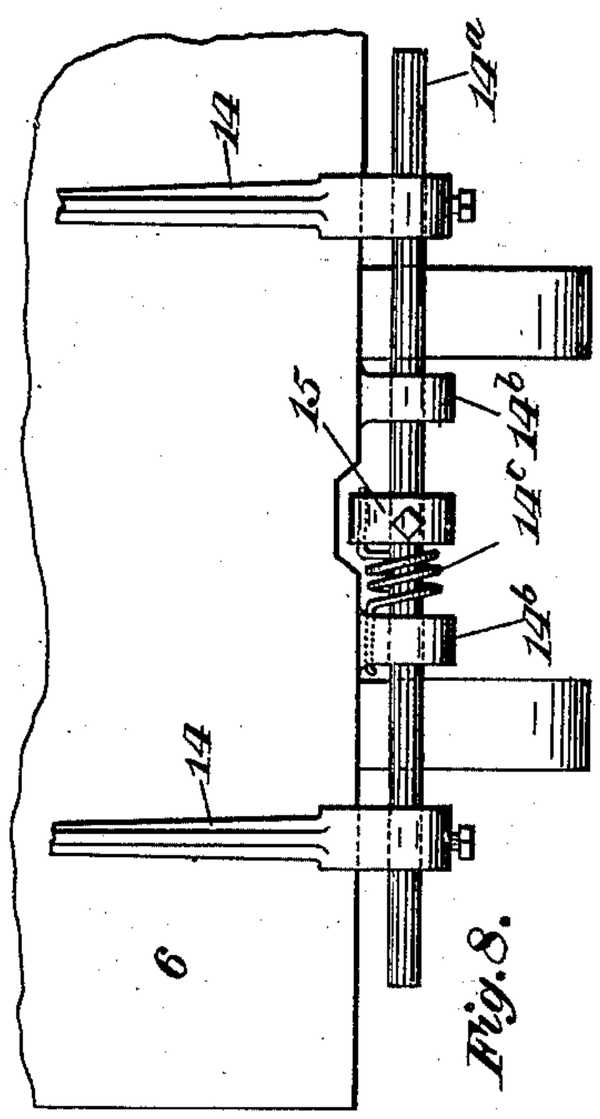

Fig. 8.

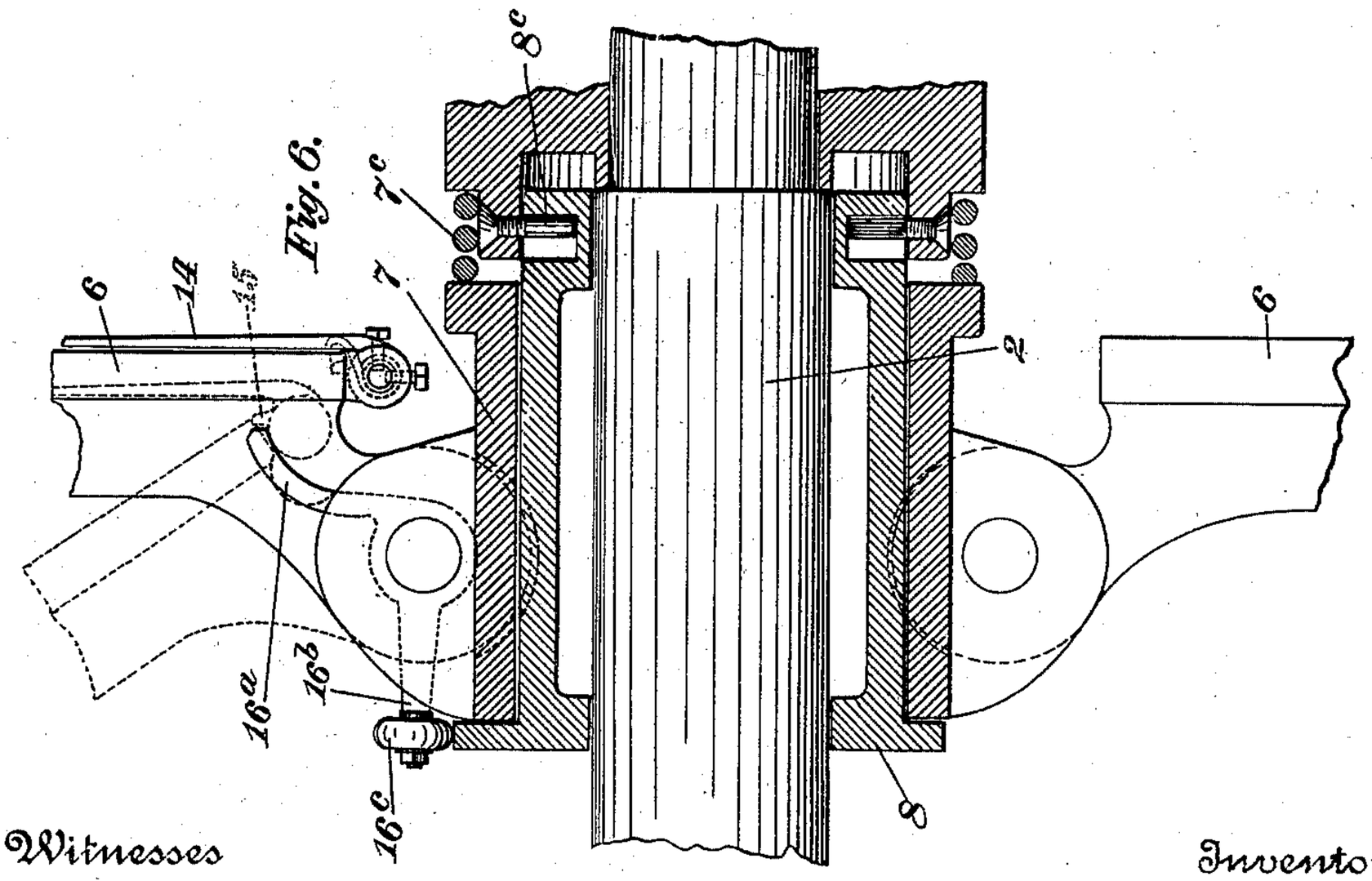

Fig. 6.

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No. 750,405. Patented January 26, 1904.

UNITED STATES PATENT OFFICE.

CLARENCE M. SHIGLEY, OF COLUMBUS, OHIO.

MULTICOLOR-PRINTING PRESS.

SPECIFICATION forming part of Letters Patent No. 750,405, dated January 26, 1904.

Application filed September 24, 1903. Serial No. 174,479. (No model.)

To all whom it may concern:

Be it known that I, CLARENCE M. SHIGLEY, a citizen of the United States, residing at Columbus, in the county of Franklin and State of Ohio, have invented certain new and useful Improvements in Multicolor-Printing Presses; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

The object of this invention is to provide a printing-press of simplified and improved construction capable of printing in several colors without removing the article to be printed from the platen. Such presses, broadly, are not new and are denominated in the art as "multicolor" presses.

The invention, generally stated, is embodied in a printing-press comprising a number of stationary type beds or holders having their faces arranged in a plane and radially with respect to an axis or shaft, and inking-rollers and means for reciprocating them across the faces of the type-beds in combination with correspondingly-radiating platens adapted to be revolved about said axis and moved longitudinally thereon up to the type-beds to make the impression, so that if the type-forms in the beds be inked with different colors and an article, as a sheet of paper, to be printed is put into a platen it is carried from one type-form successively to the others and printed in different colors without removing the article to be printed. The invention consists in features of construction, as will be hereinafter fully described and then pointed out in the claims.

In the accompanying drawings, in which I have illustrated an embodiment of the invention, Figure 1 is a side elevation showing one only of the type-beds and platens. Fig. 2 is an elevational view of the front of the press, illustrating a triradial arrangement of type-beds and platens. Fig. 3 illustrates a fraction of the stationary shaft and means for effecting the revolution of the platens. Fig. 4 is a diagrammatic view of the shaft scheme and platen-shifting dog. Fig. 5 is a sectional view of the said shaft, the platen-supporting collar, and the shifting-dog. Fig. 6 is a sectional view of the platen-supporting collar and the means for operating the paper-holding fenders. Fig. 7 is an end elevation of the same. Fig. 8 is a detail showing the means for holding the said fenders against the paper to be printed. Fig. 9 is a top view of the platen-moving collar.

Like characters of reference in the several views designate corresponding parts.

1 designates the supporting frame or standard, which is composed of a front and a rear wing. The front wing supports the power or operating mechanism, while the rear wing supports the inking and printing mechanism. Where I use the expression "front" or "forward" I refer to that part of the machine where the pressman stands. Supported between the wings of the standard is a stationary shaft 2, that constitutes the axis from which the type-beds and the platens radiate. 3 designates the type beds or holders in which the type-forms are to be secured, as usual. These beds, as before indicated, are supported at the upper end of the rear wing of the standard 1 in radii from the axis of the shaft 2 and with their faces lying in the same plane, preferably a plane intersecting the shaft 2 at right angles. Each type-bed is equipped with appropriate inking mechanism, including an ink-disk 4 and inking-rollers 5, the latter adapted to move across the face of the type-form as usual; but I have devised means, to be hereinafter described, for moving the inking-roller frame adapted to the peculiar construction of press herein shown.

6 designates the platens. These are hingedly connected at their lower or inner edges to a hub 7, which latter is adapted to turn about the shaft 2 and move with a slight longitudinal movement, together with a rimmed or flanged sleeve-bearing 8, non-rotatively but slightly slidingly secured by pins 8^c to the upper end of the standard 1. The rim of the bearing 8 limits the longitudinal movement of the hub to a point where the inking-rollers can pass between the platen and the type-form, and interposed between the standard and the hub 7 is a spring 7^c for normally holding the platens away from the beds.

Reciprocating and rotating (as hereinafter described) on the shaft 2 is a collar 9, and hingedly connecting said collar and each of the platens is a link or bar 10, so that when the collar is pushed toward the rear of the machine the platens are brought into a position where their faces or tympans are approximately parallel to the faces of the type-forms. The collar 9 can be reciprocated by any appropriate means; but those shown comprise a lever 11, fulcrumed at its lower end in the base of the supporting-frame and having its upper end bifurcate and provided with inward projections engaging an annular groove 9^a on the collar 9, said lever 11 having a slot 11^a engaged by a pin 12 on a disk operated through a suitable and well-understood train of gearing from the power-shaft 13. To effect the revolution of the platens, the stationary shaft 2 is made in its surface with a zigzag circumambient groove of the form in plan view somewhat of several slanting capital letter "N's," (see Fig. 3,)—that is to say, this groove has a part 2^a that is parallel to the axis of the shaft and spiral parts 2^b, connecting the parts 2^a; but the straight part 2^a is prolonged toward the front of the machine, as indicated at 2^c, beyond the junction of the part 2^b with the part 2^a. There will in practice be as many of these straight parts 2^a as platens or type-beds, and they will preferably be equidistantly located around the shaft 2. In conjunction with this groove for effecting the revolution of the platens I provide the collar 9 with a dog 7^a, pivoted to the inner side of the collar and actuated by a spring 7^b to throw the front or free end of the dog toward the spiral part 2^b of the groove at the time the printing impression is being made. The operation of this feature of the invention is this: When the collar 9 is pushed rearward, the spring-dog 7^a guides said collar and the platens in a right line toward the type-beds, and when the collar 9 is drawn toward the front of the machine it is given a partial rotation about the shaft 2, carrying with it the hub 7 and the platens, because the guiding-dog 7^a enters and moves through the spiral connecting part 2^b of the groove and the shaft is stationary or rigid. The purpose of the prolonged portion 2^c of the straight part 2^a is to straighten out and hold in straightened position the dog 7^a preparatory to its entrance into the straight portion 2^a in the rearward stroke of the collar 9.

In order that the platen or tympan shall make a uniform or perfect impression, it is important that the tympan shall move squarely in its final movement up to the type-form. For this reason, as well as the other one mentioned, the spring 7^c is provided to hold the lower edge of the platen away from the type-bed and afford resistance at the bases of the platens. The collar 9 is made of sufficient length to strike the bearing 8, and therefore push the bases of the platens toward the type-beds, overcoming the resistance of the spring 7^c, while the outer ends of the platens are being pushed by the connecting-rods 10. Any slight inequalities in the printed impression not rectified by moving the platens squarely toward the type-beds are of course to be overcome by treatment of the tympan as in ordinary practice.

Each platen will be provided with fenders. These are indicated at 14 and as being mounted on a shaft 14^a, journaled in fixed ears 14^b at the inner edge of the platen. The shaft 14^a is held by a spring 14^c, engaging an ear 14^b and a finger 15, secured to the shaft. These fenders 14 subserve their usual function of pulling the paper away from the type-form and the additional function of holding the paper to the platen while it is revolved about the shaft; but I provide means whereby the fenders are held away from the platen for an interval to permit the removal of the paper printed and the insertion of a piece to be printed. This means comprises a lever fulcrumed on the pintle to which the platen is hinged to the collar 7 and having a rearwardly-extending finger 16^a and a forwardly-extending arm 16^b, containing an antifriction-roller 16^c, that travels on the end rim of the stationary collar-bearing 8, and a cam projection 8^a on said rim. The cam projection 8^a moves the end of the finger 16^a into position to abut against or stand in the way of the finger 15 when the platen is retracted by the arm 10, as indicated in Figs. 1 and 6, thus holding the fender while the platen moves toward the pressman or away from the type-bed.

The means for operating the inking-rollers consists of a pair of rods 17, the forward ends of which engage a groove 9^b in the sliding collar 9, and the rear ends of which are coupled with a collar 18^a on a rear extension of the shaft 2 and bearing at its upper side a rack-bar 18. The rack-bar 18 engages a gear 19, and the latter in turn engages a sector-gear 20, forming a part of or secured to the inking-roller frame. The rods 17 pass through openings 8^b in the stationary collar-bearing 8 (see Fig. 7) and within the path of rotation of the hub 7, and therefore do not interfere with such rotation. Obviously the rearward pushing of the bars 17 effects a corresponding movement of the rack-bar 18 and an outward movement of the inking-rollers, and a forward movement of the bars 17 effects a reverse movement of such inking-rollers.

With three type-beds and inking mechanisms three separated distinct colors can be printed, and by compounding the impressions added shades and shadings of color can be obtained. One revolving platen can be employed in connection with several radiating beds; but the work of printing is greatly expedited and the press better balanced by employing as many platens as type-beds.

What I claim, and desire to secure by Letters Patent, is—

1. In a multicolor-printing press, the combination of a plurality of stationary type beds or holders having their faces radially arranged in a plane and about an axis, inking-rollers, and means for reciprocating them across the faces of the type-beds, and a radiating platen or platens adapted to be revolved with respect to said axis and moved thereon up to said type-beds.

2. In a multicolor-printing press, the combination of a plurality of stationary type beds or holders having their faces radially arranged in a plane about a stationary shaft, the said shaft, a platen or platens, a hub to which said platen is hinged having a limited longitudinal play on its bearing, a spring for holding said hub away from the beds, and means for moving the platen or platens with the hub toward the type-beds.

3. In a multicolor-printing press, the combination of a plurality of stationary type beds or holders having their faces radially arranged in a plane about a stationary shaft, the said shaft, inking-rollers, and means for reciprocating them across the faces of the type-beds, a platen or platens, a hub to which said platens are attached and means for rotating said hub to bring the platen successively into printing position opposite each of the type-beds.

4. In a multicolor-printing press, the combination of a plurality of radially-arranged type beds or holders, inking-rollers, and means for reciprocating them across the faces of the type-beds, and a radiating platen, and mechanism for locating said platen successively in printing position with respect to each of said type-beds.

5. In a multicolor-printing press, the combination of a plurality of stationary type beds or holders having their faces arranged in a plane about a stationary shaft, the said shaft, a hub bearing a platen or platens rotatable about said shaft, connected grooves 2^a, 2^b and 2^c in said shaft, collar 7 and guiding-dog 7^a thereon engaging said grooves, means connecting said collar and platen, and means for reciprocating said collar on said shaft, substantially as described.

6. In a multicolor-printing press, the combination of a plurality of stationary type holders or beds having their faces arranged in a plane about a stationary shaft, the said shaft, a hub bearing a platen or platens rotatable about said shaft, connected grooves 2^a, 2^b, and 2^c in said shaft, collar 7 and guiding-dog 7^a thereon engaging said grooves, means connecting said collar and platen or platens, inking mechanism, rods 17 connected with said collar 7 and inking mechanism, and means for reciprocating said collar on said shaft, substantially as described.

7. In a multicolor-printing press, the combination of a plurality of stationary type beds or holders having their faces arranged in a plane about a stationary shaft, the said shaft, a hub bearing a platen or platens rotatable about said shaft, fenders for said platens, means for normally holding said fenders against said platens, means for intermittently rotating said hub to bring the platens successively into printing position opposite the type-beds, and means for automatically separating the fenders from said platens, substantially as described.

8. In a multicolor-printing press, the combination of a plurality of stationary type beds or holders arranged in a plane about a shaft, the said shaft, a hub supporting a platen revoluble to be brought successively into printing position with respect to said type-beds, a bearing for said hub stationary on said shaft, a reciprocating collar on said shaft, means connecting the collar and platen, and inking mechanism, and a rod 17 connecting said collar and inking mechanism passing through the bearing of the hub and inside the path of its rotation.

In testimony whereof I affix my signature in presence of two witnesses.

CLARENCE M. SHIGLEY.

Witnesses:
BENJ. FINCKEL,
SAMUEL W. LATHAM.