

M. A. DROITCOUR.
 ROLL SEPARATING MEANS FOR PRINTING PRESSES.
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1,166,583.

Patented Jan. 4, 1916.

Fig. 1.

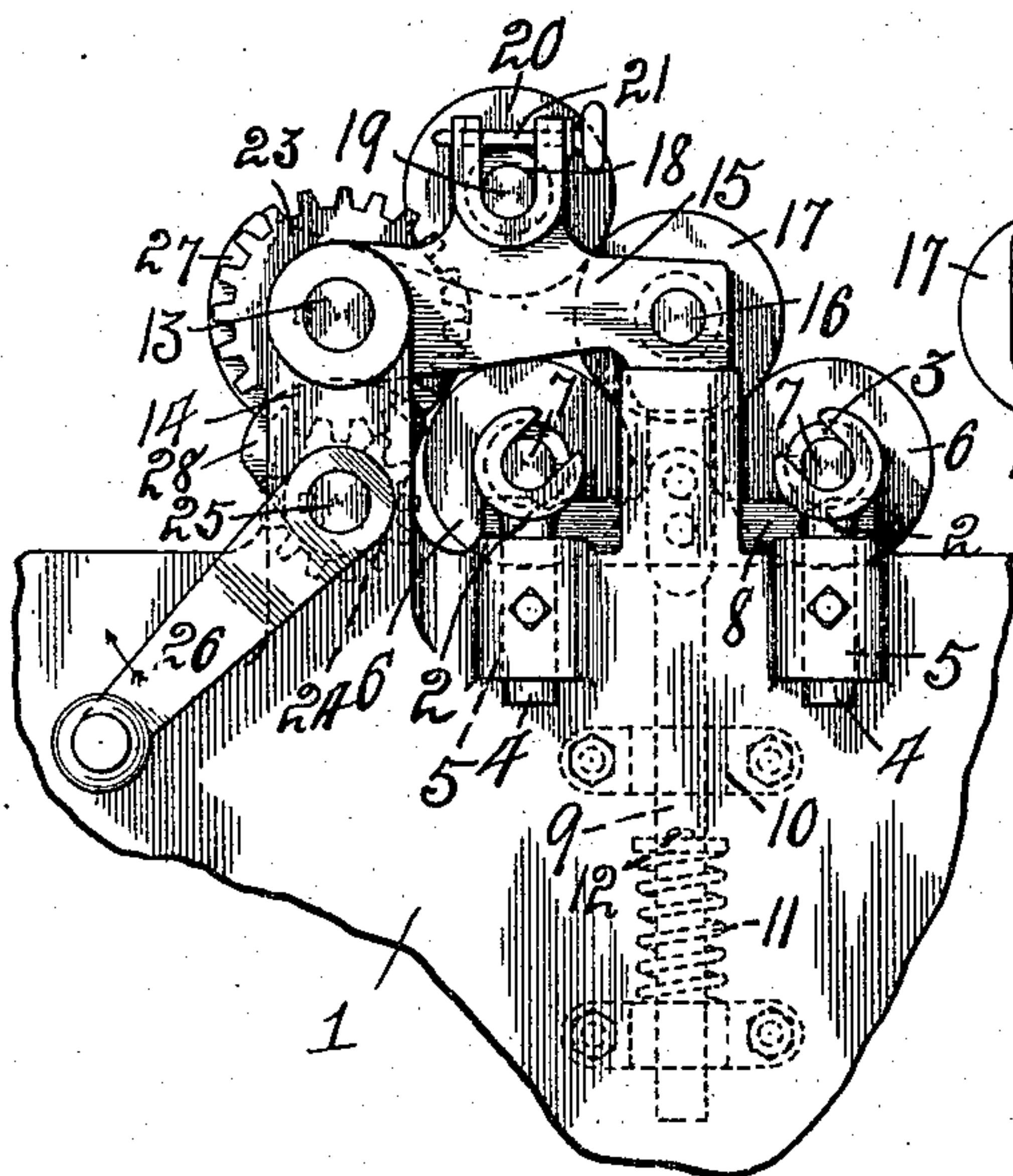


Fig. 2.

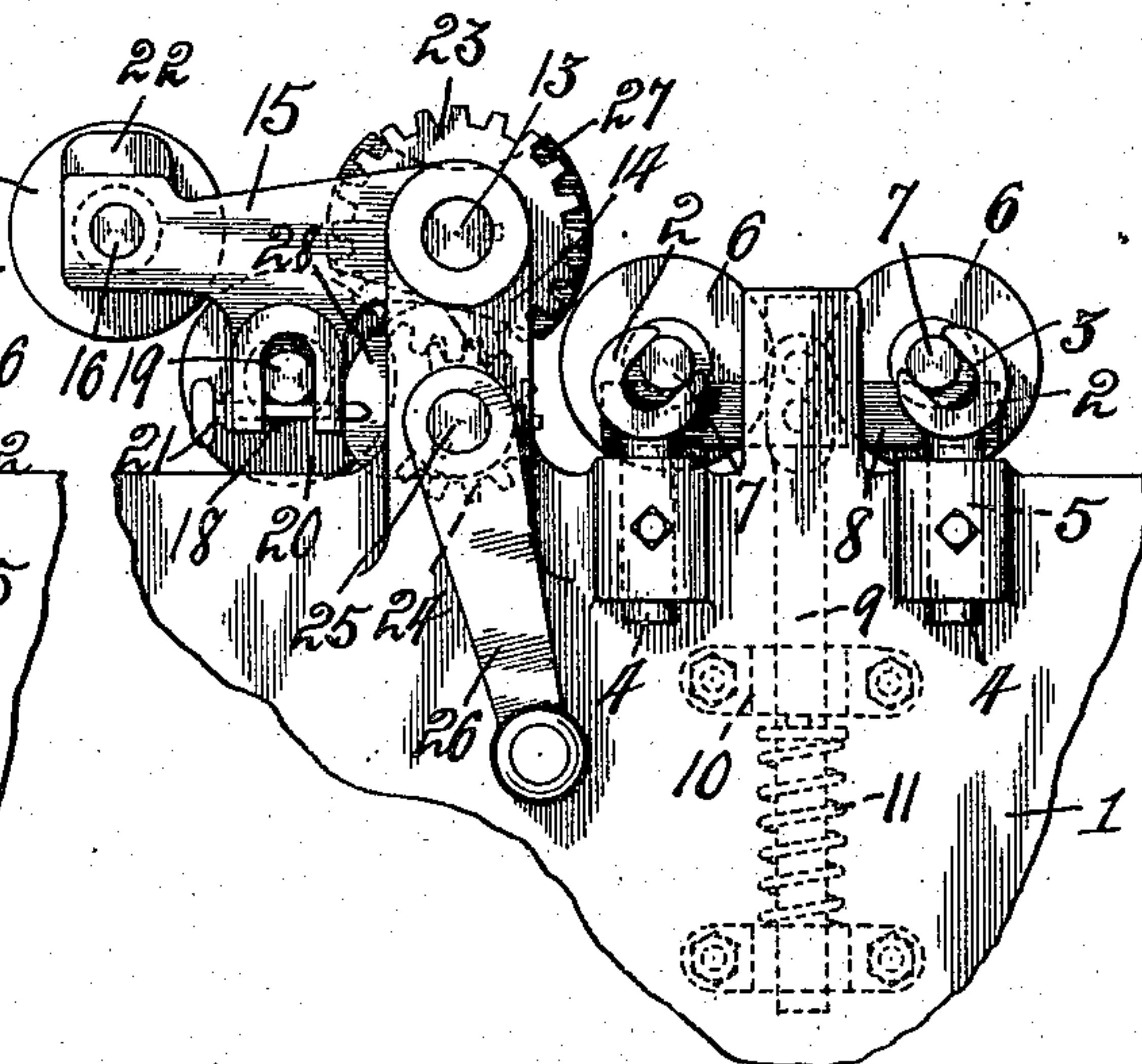


Fig. 3.

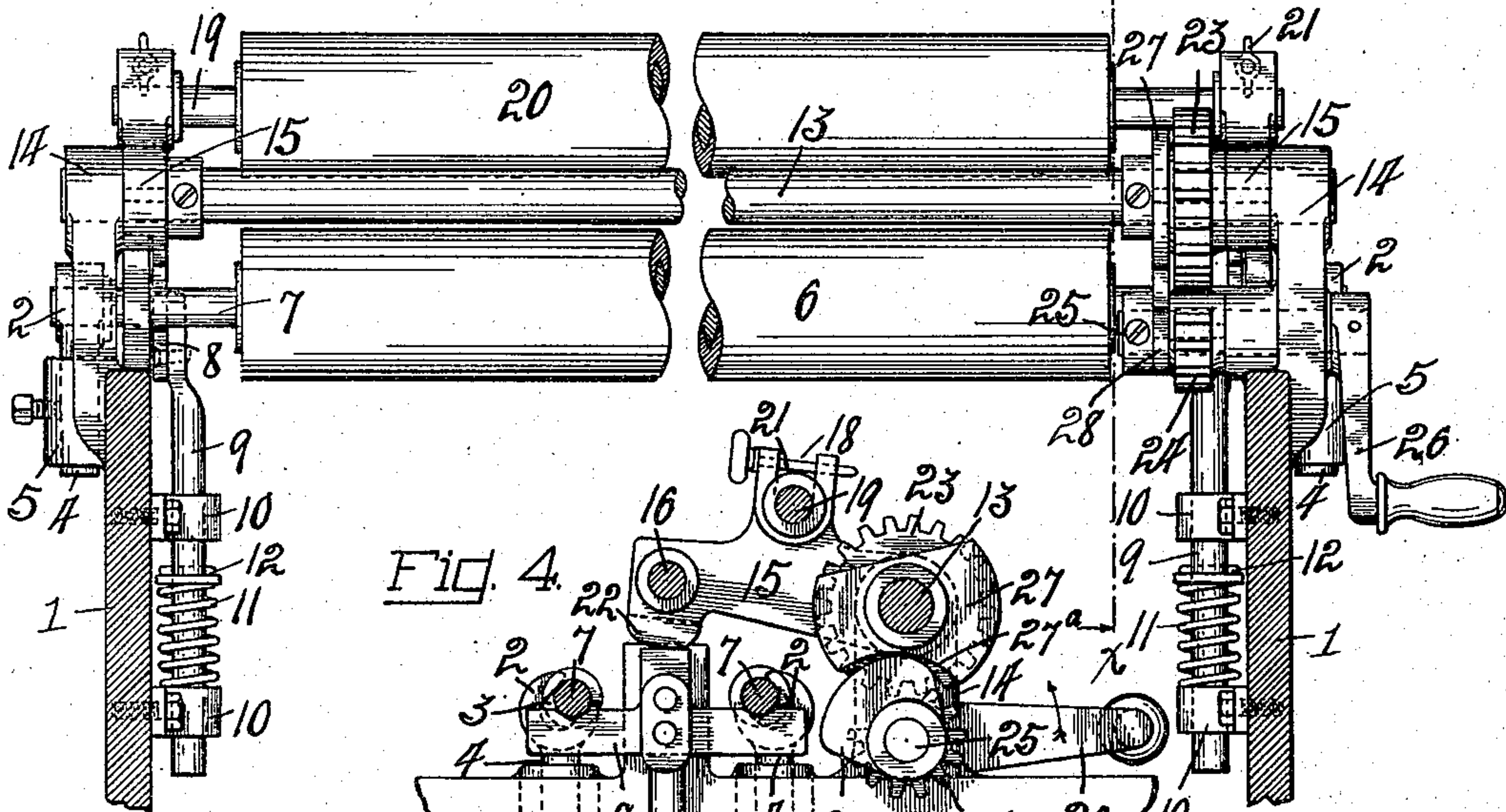
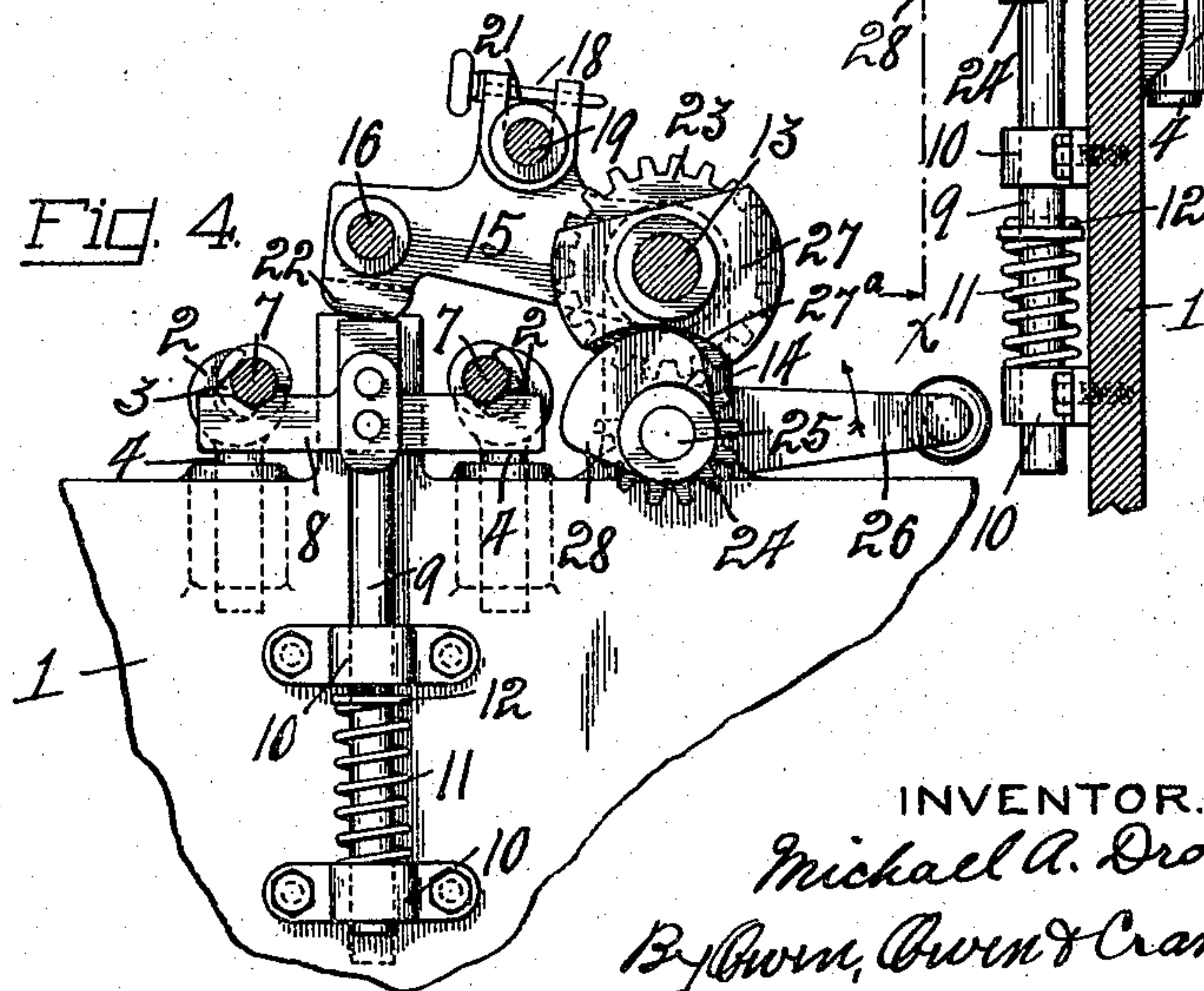


Fig. 4.



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ROLL-SEPARATING MEANS FOR PRINTING-PRESSES.

1,166,583.

Specification of Letters Patent.

Patented Jan. 4, 1916.

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To all whom it may concern:

Be it known that I, MICHAEL A. DROITCOUR, a citizen of the United States, and a resident of Delphos, in the county of Van Wert and State of Ohio, have invented a certain new and useful Roll-Separating Means for 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, reference being had to the accompanying drawings, and to the characters of reference marked thereon, which form a part of this specification.

My invention relates to printing machines, and particularly to the ink distributing means thereof.

The object of my invention is the provision in combination with a plurality of relatively shiftable rolls, of means which is easily and quickly operable to separate the several rolls from contact and to raise the form coacting rolls from operative position when not in use.

A further object of my invention is the provision of simple and efficient means which is automatically operable, upon movement of the roll controlling means, to lock the rolls in operative position.

The invention is fully described in the following specification and while in its broader aspect it is capable of embodiment in numerous forms a preferred embodiment thereof is illustrated in the accompanying drawings in which,—

Figures 1 and 2 are end elevations of a mechanism embodying the invention with the parts in operative and inoperative positions, respectively. Fig. 3 is a rear side elevation thereof with parts broken away and Fig. 4 is a section taken on the line $x-x$ in Fig. 3.

Referring to the drawings, 1 designates a printing press frame the opposite sides of which are provided in transverse registering relation with sets of blocks 2, which, in the present instance, are provided with diagonally disposed bearing recesses 3 and are located at the upper ends of stems 4, which are adjustably mounted in vertical sockets 5 provided in the respective frame sides. The bearing-blocks 2 of each set, in the present instance, are two in number, and the sets cooperate to carry a pair of form-rolls 6, the ends of the shafts 7 of

which are removably mounted in the bearing recesses 3. While I have shown and described a particular manner of mounting the form rolls, it will be understood that any suitable means for such purpose may be provided so long as such means is adapted to permit limited vertical movement of the rolls.

The ends of the roll shafts 7 rest upon and are normally supported in inoperative position by respective cross-arms 8, which are carried at the inner sides of the respective bearings-blocks 2 by vertically reciprocable bars 9, which are mounted in guides 10 at the inner sides of the respective frame sides 1. A coiled expansion spring 11 encircles each bar 9 and has its lower end thrust against one of the guides 10 and its upper end thrust against a pin shoulder 12 on the rod, thus urging an upward movement of the rod. The upward movement of the rod under the influence of the spring 11 is limited in the present instance by the pin 12 striking the upper guide 10. The upper end of each rod 9 is extended a short distance above the cross-bar 8 for the purpose hereinafter described.

Disposed at one side of and slightly above the set of rolls 6, 6 is a rock-shaft 13, which is journaled at its ends in bearing standards or arms 14 rising from the respective frame sides of the machine. Fixedly projecting from the opposite end portions of the shaft 13, adjacent to the inner sides of the standards 14, are rocker-arms 15, which cooperate with the shaft 13 to form a rocker-frame and have bearings at their outer ends for the respective ends of a shaft 16 carrying an inking or rider roll 17. The arms 15 are also provided intermediate their ends and in lugs rising from the top edges thereof, when in the operative position shown in Fig. 1, with vertical bearing notches 18 for receiving the respective ends of a shaft 19 carrying an inking roll 20. The shaft ends are retained within the respective bearings by pins 21 or in any other suitable manner.

It will be noted that the shaft 19, when the rocker arms 15 are in the operative position shown in Fig. 1, is disposed above the horizontal plane of the shaft 16, and that the rolls 17 and 20 have peripheral contact. It will also be noted that the position of the inking or rider roll 17 is such as to adapt it to rest upon both rolls 6, 6 when the

rocker frame is in its operative position. Upon a swinging of the rocker frame to the inoperative position shown in Fig. 2 the roll 17 is removed from contact with the form rolls 6, 6, and the roll 20 lowers by gravity from contact with the roll 17, the lowering movement of the roll 20 relative to the roll 17 being permitted by reason of a limited vertical play of the shaft 19 in the bearing notches 18. The free ends of the arms 15 of the rocker frame are provided with laterally projecting lugs 22, which are positioned to rest upon the upper extended ends of the respective bars 9 when the rocker frame is in operative position.

Fixed to one end of the rocker-shaft 13 at the inner side of the adjacent rocker-arm 15 is a spur-gear 23, the teeth of which mesh with the teeth of a drive pinion 24 on a crank shaft 25, which is journaled in the adjacent bearing standard 14 below the rock shaft 13. An operating crank-handle 26 is carried by the shaft 25 at its outer end. It is evident that rocking movements of the frame 13—15 to throw the rolls 17 and 20 into and out of operative position can be controlled by movements of the crank 26, due to the connecting of the crank-shaft with the rocker-frame shaft through the medium of the gears 23 and 24.

In order to lock the rocker frame against movement from operative position except by a movement of the operating crank 26, the shafts 13 and 25 are provided in registering relation with coacting locking parts or cams 27 and 28, respectively, which inter-engage when the rocker frame is in operative position and serve to securely lock the same in such position. In the present instance the cam 27 (see Fig. 4) is provided with a peripheral recess 27^a, while the cam 28 is of the protuberant character and adapted to have interlocking engagement with the rolls 27^a when the shafts 13 and 25 are in predetermined positions of their turning movement. In order that the shafts 13 and 25 may have limited relative movements during portions of the relative engaging and releasing movements of the cams 27 and 28, the pinion 24 is mutilated or provided with a gap, which is disposed to permit a disengagement of the driving action of the pinion with the gear 23 when the cam 28 is having both the last portion of its engaging movement and the initial portion of its releasing movement relative to the cam 27. It will be noted by reference to Fig. 4 that the cam 28 has moved sufficiently to release its locking engagement with the cam 27 by the time the first tooth of the pinion 24 has moved into driving engagement with the teeth of the gear 23 to effect a positive swinging of the rocker-frame from operative position.

It is preferable to overcome the tension

of the form-roll lifting spring 11 by the engaging action of the cams 27 and 28 when the gears are disengaged, the cams coacting in a manner to effect a completion of the downward swinging of the rocker-frame to its operative position whereby to positively lower the form-roll supports to place the form rolls in operative position. In Fig. 4 it will be noted that the form rolls have been lifted to inoperative position while the free ends of the rocker frame are still resting on the roll lifting frames 8—9, and that the cam 28 has moved from locking engagement with the cam 27 preparatory to a turning engagement of the pinion 24 with the gear 23. It will, of course, be understood that the lifting pressure of the springs 11 on the roll lifting frames 8—9 may be overcome by the weight of the free end of the rocker frame when resting thereon. It is preferable, however, even if such is the case, to provide means such, for instance, as the coaction of the cams 27 and 28, to positively force the rocker frame to operative position after lowering into contact with the roll supporting frame 8—9. The cams 27 and 28 also serve to limit the outward swinging of a rocker frame 13—15 due to their locking coaction of the cams, as indicated in Fig. 2, when the frame is in inoperative position.

The operation of my invention is as follows: It being desired to separate the contact of the several inking rolls by throwing the rocker-frame 13—15 from the operative position shown in Fig. 1 to the inoperative position shown in Fig. 2, the operator turns the crank-handle 26 in clockwise direction, as indicated by the arrows in Figs. 1 and 4. During a movement of the crank from the position shown in Fig. 1 to the position shown in Fig. 4, the pinion 24 and gear 23 will be out of mesh and the cam 28 will be moving to release its locking engagement with the cam 27, and, if the form-roll lifting-springs 11 are of sufficient strength to overcome the weight of the rocker-frame on the roll lifting frame 8—9, said rocker and roll lifting frames will be raised to the position shown in Fig. 4, thus raising the form rolls from operative position. During the continued turning of the crank 26 the gears 23 and 24 will be in mesh and effect a throwing of the rocker-frame 13—15 to the inverted or inoperative position shown in Fig. 2, in which position the inking-roll 20 is permitted to drop from contact with the roll 17. When the rocker frame has been swung to such inverted position, portions of the cam plates 27 and 28 will have moved into contact to stop a further swinging movement of the frame. It will be understood that to return the rocker-frame to operative position the operator turns the crank 26 in counter-clockwise direction until the

movement in such direction is stopped by the locking engagement of the cams 27 and 28, which locking takes place when the roll 17 has been placed in contact with the rolls 6—6 and said latter rolls lowered to operative form coacting position.

I wish it understood that my invention is not limited to any specific construction, arrangement, form or combination of the parts, as numerous modifications hereof can be made without departing from the spirit of the claims.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is,—

1. In combination, a set of form-rolls, means normally supporting said rolls in inoperative position, a separate roll, a frame carrying said separate roll and movable to place it in coaction with said form-rolls and to coact with said means to lower the form-rolls to operative position.

2. In combination, a set of form-rolls, a raising frame for said form-rolls, means urging a movement of said frame to place the form-rolls in inoperative position, and means operable to effect a lowering of said frame against the action of said urging means.

3. In combination, a set of form-roll shafts, a T-frame having its cross-arms in supporting coaction with said shafts, a spring urging an upward movement of said frame, and means operable to effect a lowering of said frame against the action of said spring.

4. In combination, a form roll, a rider-roll therefor, means normally urging a movement of the form roll to inoperative position, and means carrying said rider-roll and operable to swing it into or out of operative relation to the form-roll and to coact with said first means to hold it in position for the form roll to have contact with a form.

5. In combination, a form roll, a rider roll for the form roll, means carrying said rider roll and operable to swing it into and out of operative relation to said form roll, and spring urged means automatically operable to move said form roll into and out of operative position when said first means has predetermined movements.

6. In combination, a movable roll carrying frame, means having tooth connection with said frame and operable to move the frame into and out of operative position and to lock it in operative position, the toothed connection of said means and frame being broken when the frame is in operative position.

7. In combination, a movable roll carrying frame, means having toothed connection with said frame and operable through the medium of said connection to move the

frame into and out of operative position and having parts separate from said connection for locking the frame in operative position.

8. In combination, a movable roll carrying frame, means having toothed connection with said frame and operable to move the frame into and out of operative position, said toothed connection being broken when the frame is in operative position, and means controlled by said first means for locking the frame in operative position.

9. In combination, a movable roll carrying frame, means operable to move said frame into and out of operative position, and means controlled by said first means and operable to lock the frame in operative position and to limit the movement of the same from operative position.

10. In combination, a movable roll carrying frame, and means having rotatable control part in toothed connection with said frame and operable to move the frame into and out of operative position and to lock it in operative position, said toothed connection being broken during the locking action of said means.

11. In combination, an invertible roll carrying frame, means having a rotatable control part in geared connection with said frame and operable to invert the frame from operative position and vice versa, and means operable by said first means to lock the frame in operative position.

12. In combination, a movable roll carrying frame, means operable to move said frame into and out of said operative position, and means controlled by movements of said first means and operable to impart a partial predetermined movement to said frame and to lock it in operative position.

13. In combination, a movable roll carrying frame, means having toothed connection with said frame and operable to move it into and out of operative position, said toothed connection being broken when the frame is in operative position, and means controlled by said first means and operable to impart predetermined movements to said frame when said toothed connection is broken and to lock the frame in operative position.

14. In combination, a roll-carrying rocker-frame, means operable to swing said rocker-frame into and out of operative position, and cam means operated by said first means to lock the frame in operative position.

15. In combination, a roll-carrying rocker-frame, means having toothed connection with said frame and operable to swing the same into and out of operative position, and means having cam parts operable by said first means to lock the frame in operative position.

16. In combination, a roll-carrying rocker-

frame, controlling means for said frame having geared connection therewith and operable to swing the frame into and out of operative position, said geared connection being broken when the frame is substantially in operative position, and means operable by said control means to lock said frame against movement when in operative position and to cooperate with said first means in moving the frame to operative position.

17. In combination, a set of form-rolls, means normally supporting said form rolls in inoperative position, a roll-carrying rocker-frame, and means operable to place said frame into and out of operative relation to said form-rolls, to lower said first means to operative position and to lock the frame against movement from operative position.

18. In combination, a set of form rolls, means yieldingly supporting said form-rolls in inoperative position, a roll-carrying rocker-frame, and control means having geared connection with said rocker-frame and operable to move the frame into and out of operative relation to said form-rolls and to cause said frame to coact with and effect a lowering of said first means, said control means having parts which interengage to lock the frame against movement when in operative position.

19. In combination, a set of form-rolls, spring actuated means normally supporting said rolls in inoperative position, a roll-carrying rocker-frame, control means having geared connection with said frame and operable to swing the frame into and out of operative relation to said form rolls and to place it in coaction with said first means, one of the gears of said means having a gap

positioned to break the driving connection between the gears when the frame is in operative relation to said form-rolls, and means operable by said control means to impart predetermined movement to said frame when the gears of said control means are disconnected, whereby to move said roll raising means to operative position and then to lock the frame against movement.

20. In combination, a set of form-rolls, frames for lifting said rolls from operative position, springs for imparting lifting movements to said frames, a rocker frame, a plurality of rolls carried thereby and movable into and out of operative relation to said form rolls by rocking movements of said rocker frame, one of said rocker-frame rolls being movable by gravity from contact with the other upon an inverting of the rocker-frame from operative position, a crank-shaft, a set of gears connecting said crank-shaft and rocker-frame and operable to swing said frame into and out of operative position and to break their connection when the frame is in operative position, said rocker-frame when in operative position having contact with said roll lifting frames and being movable to effect lowering movements of said lifting frames, and cam means operable upon a turning of said crank-shaft to impart a predetermined movement to said rocker-frame when substantially in operative position and to lock it against movement from such position.

In testimony whereof I have hereunto signed my name to this specification in the presence of two subscribing witnesses.

MICHAEL A. DROITCOUR.

Witnesses:

M. F. WEGER,

N. R. WILLIAMS.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."