No. 721,765. PATENTED MAR. 3, 1903.

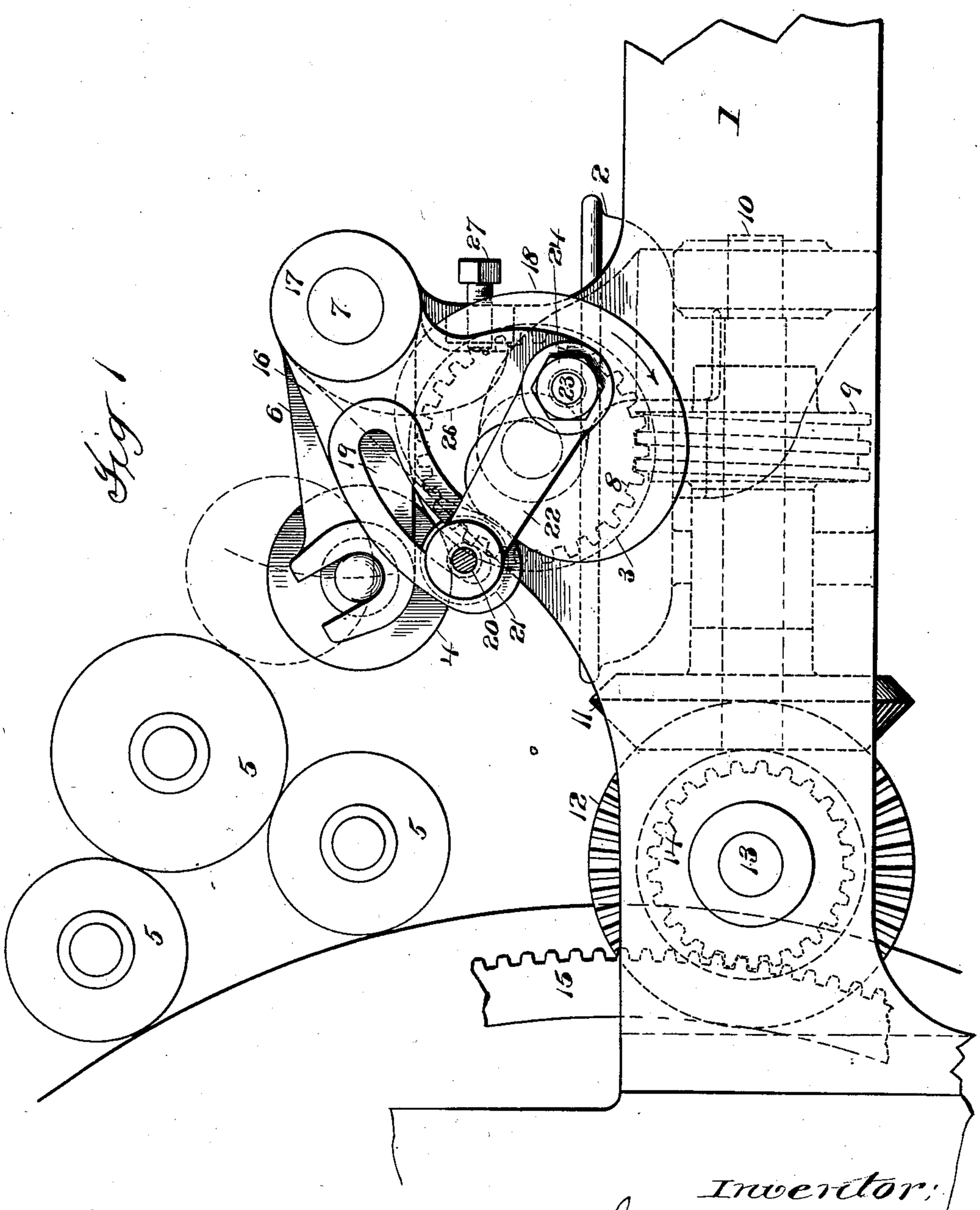
J. WHITE.

CONTROLLING DEVICE FOR LIQUID SUPPLY ROLLS.

APPLICATION FILED JAN. 22, 1902.

NO MODEL. 3 SHEETS—SHEET 1.

Fig. 1



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NO MODEL. 3 SHEETS—SHEET 2.

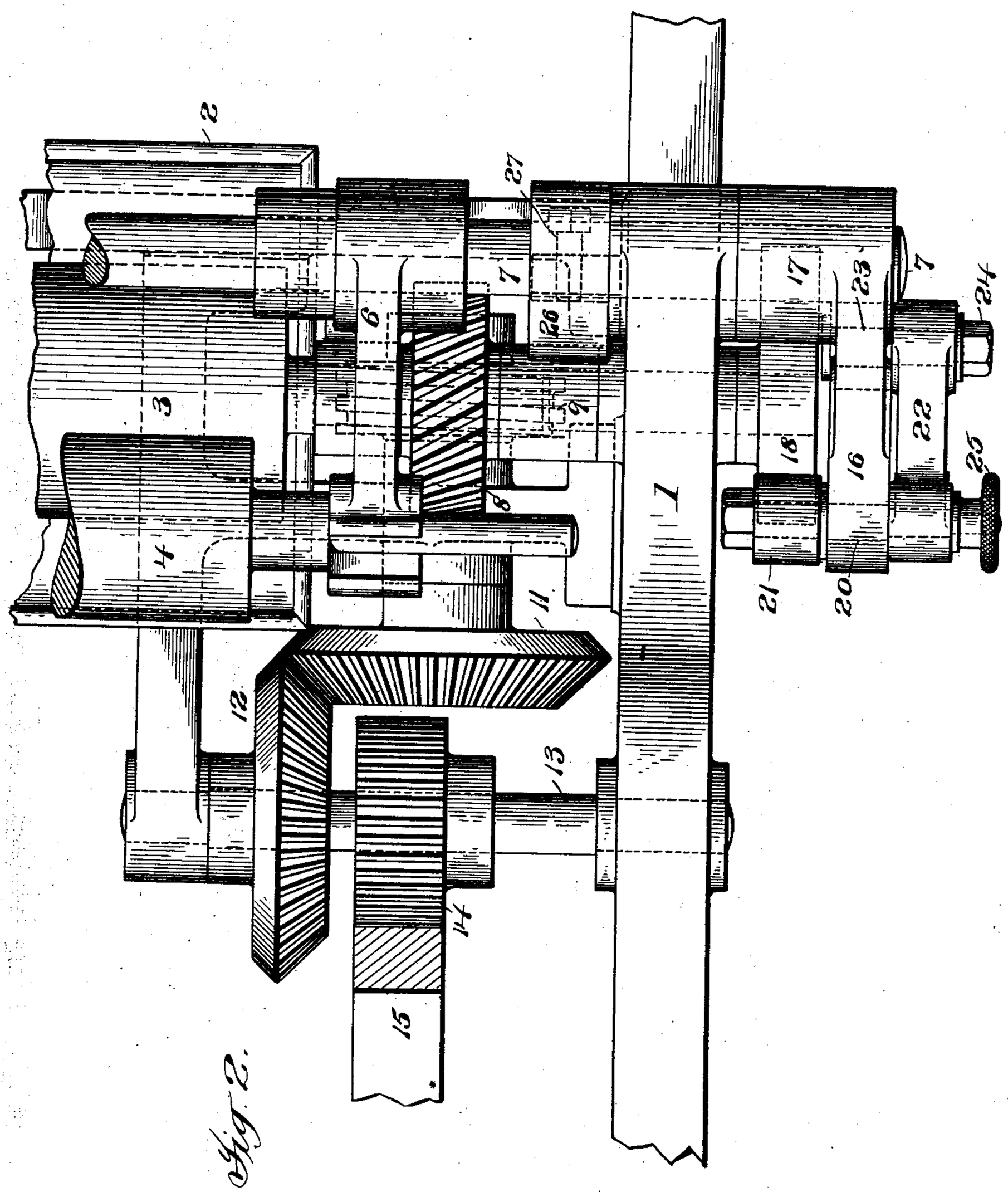

Fig. 2.

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NO MODEL. 3 SHEETS—SHEET 3.

Fig. 5.

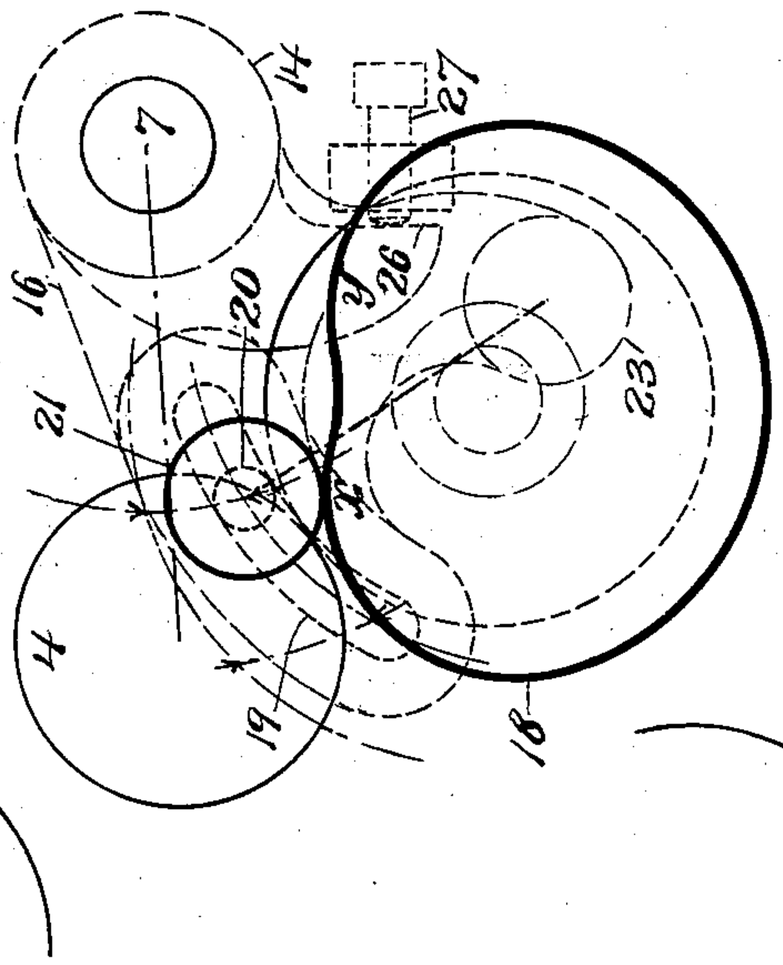


Fig. 6.

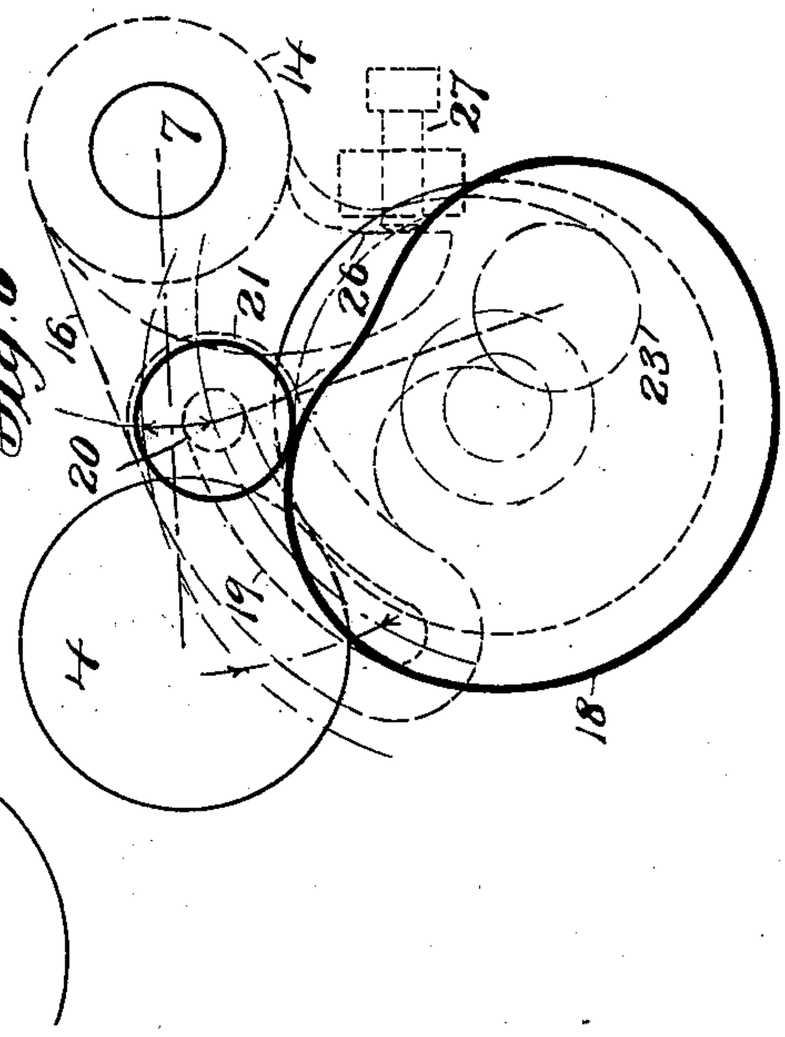


Fig. 3.

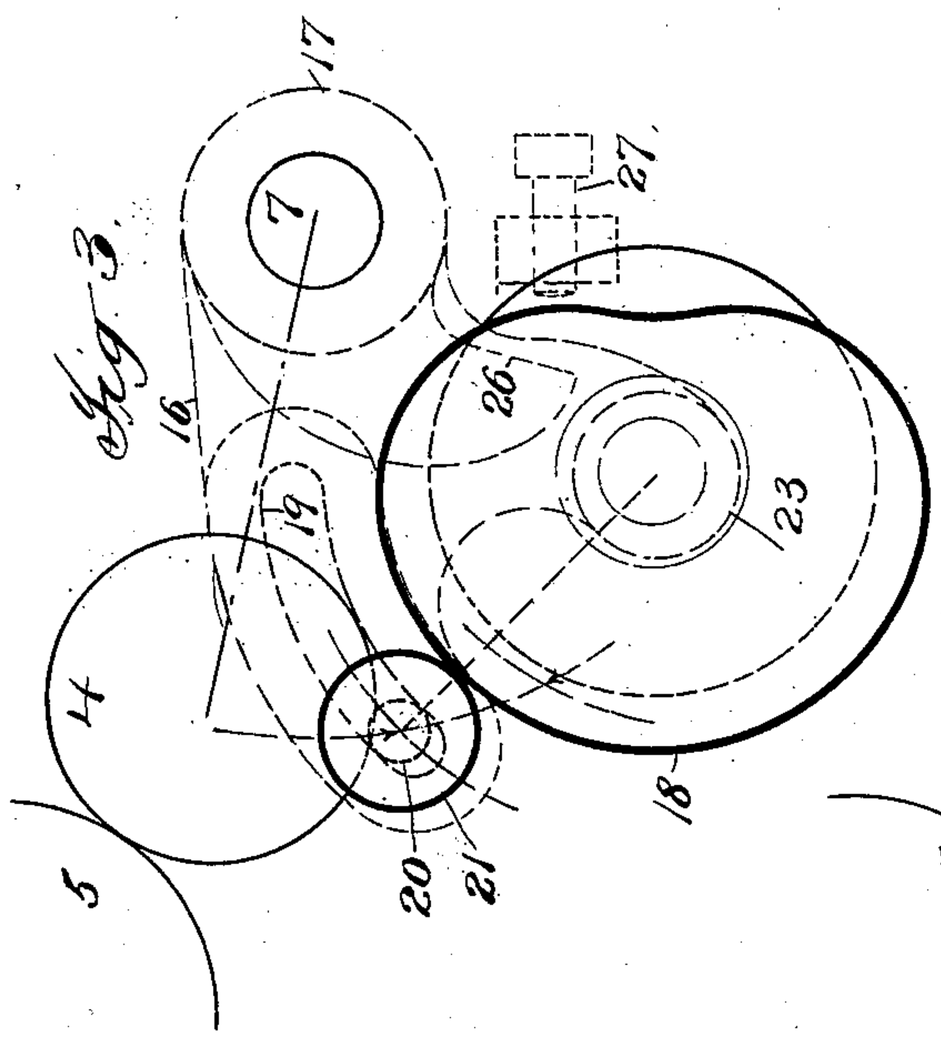
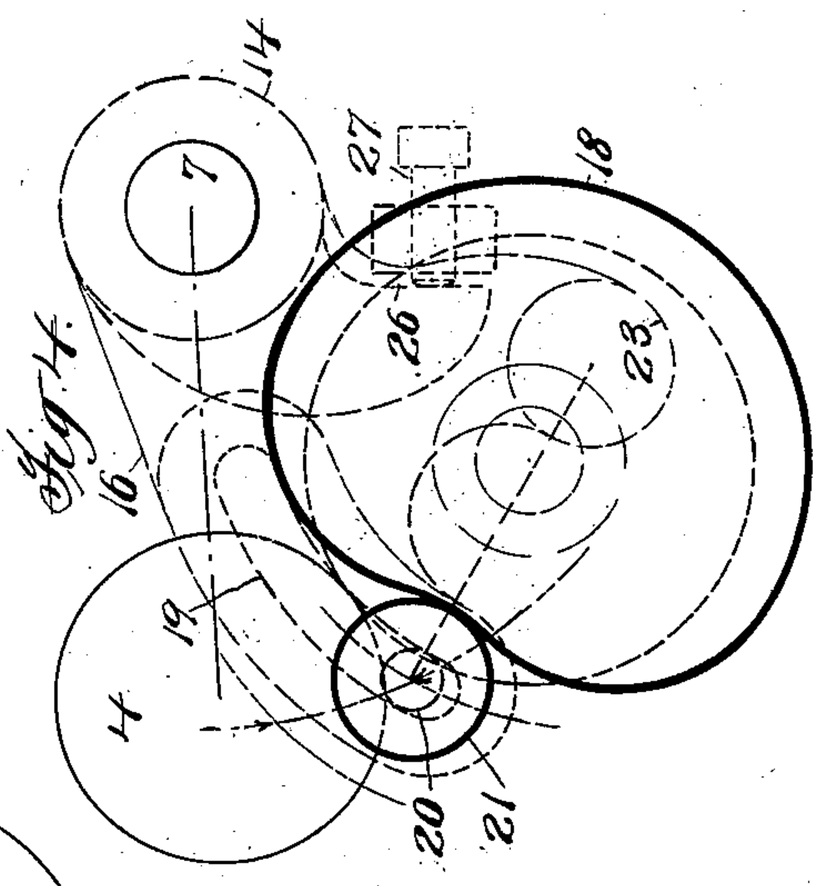


Fig. 4.



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UNITED STATES PATENT OFFICE.

JOSEPH WHITE, OF NEW YORK, N. Y., ASSIGNOR TO ROBERT HOE, OF NEW YORK, N. Y.

CONTROLLING DEVICE FOR LIQUID-SUPPLY ROLLS.

SPECIFICATION forming part of Letters Patent No. 721,765, dated March 3, 1903.

Application filed January 22, 1902. Serial No. 90,755. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH WHITE, a citizen of the United States, residing at New York, county of New York, and State of New York, have invented certain new and useful Improvements in Controlling Devices for Liquid-Supply Rolls, fully described and represented in the following specification and the accompanying drawings, forming a part of the same.

This invention relates to certain improvements in controlling devices for liquid-supply rolls.

In certain classes of machines it is customary to employ a liquid-supply roll and a ductor or delivery roll which takes the liquid from the supply-roll and delivers it. Thus, for instance, in the constructions used in planographic-printing machines and ordinarily known as "water-motions" there is employed a fountain-roll which takes up water from a fountain and a delivery or ductor roll which takes the water from the fountain-roll and delivers it to other rolls by which it is placed upon the form.

The present invention has for one of its objects to produce a simple, cheap, and effective construction by which the amount of liquid delivered by devices of the class referred to shall be controlled.

A further object of the invention is to produce an improved construction by which the amount of liquid delivered by devices of the character above referred to shall be controlled, which construction can be readily adjusted without stopping or otherwise interfering with the operation of the machine.

With these and other objects in view the invention consists in certain constructions and in certain parts, improvements, and combinations, as will be hereinafter fully described, and specifically pointed out in the claims hereunto appended.

In the accompanying drawings, in which like characters of reference indicate the same parts, Figure 1 is an elevation of the water-motion of a printing-machine having the improved device for controlling the amount of liquid supplied thereto. Fig. 2 is a plan view of the construction shown in Fig. 1. Figs. 3, 4, 5, and 6 are diagrams illustrating the operation of the device.

Referring to the drawings, which illustrate a concrete embodiment of the invention, 1 indicates a portion of the frame of a printing-machine. Suitably supported in this frame in any desired manner is a fountain 2, which, inasmuch as the invention is applied to the water-motion of a printing-machine, consists of a water-containing pan. The supply-roll, which is marked 3, is journaled in suitable bearings in the frame and rotates in contact with the liquid in the pan. The delivery or ductor roll 4 may be mounted in any suitable manner, so as to move between the fountain or supply roll 3 and the rolls 5, which distribute the water and apply it to the form. In the present construction the delivery or ductor roll 4 is mounted in arms 6, which are rigidly secured to a rock-shaft 7, journaled in suitable bearings in the frame.

The fountain or supply roll may be rotated in any suitable or desired manner. As shown, its shaft is provided with a worm-gear 8, which is driven by a worm 9, mounted on a shaft 10, said shaft being supported in suitable bearings in the machine. This shaft 10 is driven by means of a miter-gear 11, which meshes with a similar miter-gear 12, mounted on a short shaft 13, suitably supported in the frame. This shaft 13 carries a gear 14, which meshes with a gear 15, carried by the cylinder or driven in any other suitable manner from a moving part of the machine. This construction operates to drive the supply-roll at a constant speed, and it consequently operates to take up a substantially constant amount of water.

Since the fountain or supply roll rotates at a constant speed, it is obvious that the amount of water or other liquid which is delivered by it to the ductor or delivery roll will depend upon the time of contact between the two rolls. In other words, if the ductor or delivery roll is allowed to remain in contact with the supply-roll until it has made a complete revolution or for a longer period more liquid will be given up to the ductor or delivery roll than would be the case if it were allowed to remain in contact with it for a shorter period of time.

In order to regulate the amount of time during which the ductor or delivery roll remains in contact with the supply-roll, an actu-

ating mechanism is provided, which embodies a pivoted actuating-arm and a cam for operating the same, these devices being, however, so related that the amount of movement given by them to the ductor-roll is a constant one, this being necessitated by the fact that the ductor-roll must always travel through a given distance—that is, from the supply-roll to the distributing-roll.

The actuating-arm for the delivery-roll and the cam for operating it may be variously constructed and mounted. As shown, an actuating-arm 16 is secured to a hub 17, said hub being fast on the shaft 7, which carries the arms which support the ductor-roll. The operating-cam is marked 18, and this cam is mounted on the end of the shaft which carries the fountain or supply roll 3. The means by which the cam produces the movement of the actuating-arm may vary widely in construction, but are of such a character as to enable the cam to act on the arm at different distances from its center of movement—that is, from the axis of the shaft 7 on which the arm is mounted.

In the construction shown the arm is provided with a slot 19, which extends generally in a radial direction, but is preferably slightly curved, as shown, for reasons which will be hereinafter stated. Adjustably located in this slot is a stud 20, which is or may be provided with the usual cam-roll 21, said stud being so located as to be operated upon by the cam 18. The stud itself is preferably so supported as to be quickly and readily adjusted in the slot, the construction, furthermore, being preferably such as to enable this adjustment to be accomplished without stopping or interfering with the operation of the machine.

In the construction shown, the stud is carried on an arm 22, which is pivoted on a stud 23, carried on the arm 16, the arm 22 being held in position by a nut 24 or in any other suitable manner. The stud 23 is located at the center of the curve on which the curved slot 19 is struck. Any suitable means may be provided to hold the stud in its adjusted position in the slot. As shown, a knurled nut 25 is provided for this purpose, the end of the stud 20 being threaded to receive this nut.

The bearings in the arm 6 which support the journals of the roll 4 will usually be open bearings in order to facilitate the removal of the roll. For this reason and for the further reason that it is frequently desirable to adjust the pressure with which the roll 4 will bear against the supply-roll 3 a stop is provided to limit the downward movement of the arm 6. This stop may be variously arranged. As shown, the shaft 7 is provided with a toe or arm 26, (clearly shown in dotted lines in Fig. 1,) the end of said toe or arm abutting against a set-screw 27, which is tapped through a lug on the frame. By adjusting this set-screw it will be apparent that the movement of the shaft 7, and consequently the downward movement of the arms, may be controlled.

As illustrated in Figs. 1, 3, and 4, the stud 20 is adjusted in the extreme outer end of the curved slot 19. In this position it is apparent that as the cam rotates the roll 4 will only come in contact with the supply-roll 3 at the time when the stud or its cam-roll 21 is in contact with the lowest part of the cam, this position of the parts being shown in Figs. 1 and 4. With the stud in this position, therefore, it follows that the two rolls are in contact only for a short period of time—that is, the period during which it takes the low part of the cam to pass the stud or its cam-roll. As the stud, however, is moved along the slot toward the center of the shaft 7 the stud, following the configuration of the cam, will allow the delivery-roll to come into contact with the supply-roll at a point to one side of the low part of the cam and the rolls will remain in contact until the roll touches a corresponding point on the other side of the low part of the cam. Referring to Fig. 5, for instance, when the cam is in position so that the point marked *x* is beneath the roller 21, the delivery or ductor roll 4 will be in contact with the supply-roll 3, and it will remain in contact until by the continued rotation of the cam the point *y* is brought beneath the roll 21. At this time the roll begins to be lifted toward the rolls 5. The ductor-roll, therefore, instead of being in contact with the supply-roll only while the cam-roll 21 is passing the low part of the cam is in contact with it while that part of the cam which is included between the points *x* and *y* is passing the roll 21. Furthermore, the nearer the stud is moved toward the center of the shaft 7 the sooner will the two rolls come into contact and the longer they will remain in contact. When the stud is moved away from the extreme outer end of the slot, the cam-roll will pass out of contact with the cam before it touches its low part, because the delivery-roll is resting on the supply-roll. In other words, as soon as the delivery-roll touches the supply-roll the stud leaves the cam, this departure taking place at one side of the low part, and it remains out of contact with the cam until this roll is to be moved away from the supply-roll. The reason for this operation of the stud actuating arm and cam is due to the fact that the nearer the stud approaches the center of movement of the arm—*i. e.*, the center of the shaft 7—the less actual distance the stud is required to travel in order to produce the fixed movement of arc which the delivery-roller must have. By shifting the stud, therefore, in the curved radial slot it is apparent that the time of contact between the two rolls is varied, and consequently the amount of liquid which is delivered by one roll to the other is varied. It is furthermore apparent that the adjustment of the stud is made easy by the fact that it is controlled in its move-

ment by the pivoted arm 22, which carries it, and it is further apparent that the stud can be adjusted at any time during the revolution of the cam and can be very readily adjusted without disturbing the position of the roll 4, provided this is done when the stud is traveling upon the concentric portion of the cam.

While the construction in which the invention has been shown and described is an efficient one for the purpose, it is apparent that many changes and variations may be made in its specific details. While, furthermore, the invention is particularly adapted for use with the water-motions of printing-machines, it may be used in many other relations. The invention is not, therefore, to be restricted to the specific details of construction nor to the specific use described.

What is claimed is—

1. The combination with a liquid-supply roll, of a delivery-roll, a pivoted actuating-arm controlling the movement of the delivery-roll toward and away from the supply-roll, and operating means arranged to act upon the arm at different distances from its center of movement, thus varying the time of contact of the rolls without varying the amount of movement of the delivery-roll, substantially as described.

2. The combination with a liquid-supply roll, of a delivery-roll, a pivoted actuating-arm controlling the movement of the delivery-roll toward and away from the supply-roll, a cam for operating the actuating-arm, and means whereby the cam is caused to act upon the arm at different distances from its center of movement, thus varying the time of contact of the rolls without varying the amount of movement of the delivery-roll, substantially as described.

3. The combination with a liquid-supply roll, of a delivery-roll, a pivoted actuating-arm controlling the movement of the delivery-roll toward and away from the supply-roll, a rotating cam for operating the actuating-arm, and means whereby the cam is caused to act upon the arm at different distances from its center of movement, thus varying the time of contact of the rolls without varying the amount of movement of the delivery-roll, substantially as described.

4. The combination with a liquid-supply roll, of a delivery-roll, a pivoted actuating-arm controlling the amount of movement of the delivery-roll toward and away from the supply-roll, a stud on the arm adjustable toward and from its center of movement, and a cam for operating on the stud, substantially as described.

5. The combination with a liquid-supply roll, of a delivery-roll, a pivoted actuating-arm controlling the amount of movement of the delivery-roll toward and away from the supply-roll, a stud on the arm adjustable toward and from its center of movement, and a rotating cam for operating on the stud, substantially as described.

6. The combination with a liquid-supply roll, of a delivery-roll, a pivoted actuating-arm controlling the movement of the delivery-roll toward and away from the supply-roll, said arm having a slot which is generally radial in direction, a stud adjustable in said slot, and a rotating cam, substantially as described.

7. The combination with a liquid-supply roll, of a delivery-roll, a pivoted actuating-arm controlling the movement of the delivery-roll toward and away from the supply-roll, said arm having a curved slot which is generally radial in direction, a stud movable in said slot, a pivoted arm in which the stud is mounted, and a rotating cam for operating on the stud, substantially as described.

8. The combination with a liquid-supply roll, of a shaft on which the roll is mounted, means for driving the shaft, a second shaft, pivoted arms on said second shaft, a delivery-roll mounted in said arms, an actuating-arm connected to said second shaft, a stud on said actuating-arm adjustable toward and away from the shaft on which it is carried, and a rotating cam for operating the stud, substantially as described.

9. The combination with a liquid-supply roll, of a shaft on which the roll is mounted, means for driving the shaft, a second shaft, pivoted arms on said second shaft, a delivery-roll mounted in said arms, an actuating-arm connected to said second shaft, said arm having a slot extending in a generally radial direction, a stud adjustable in said slot toward and away from the center of the shaft on which said arm is carried, and a rotating cam for operating the stud, substantially as described.

10. The combination with a liquid-supply roll, of a shaft on which the roll is mounted, means for driving the shaft, a second shaft, pivoted arms on said second shaft, a delivery-roll mounted in said arms, an actuating-arm connected to said second shaft said arm having a curved slot extending in a generally radial direction, a stud movable in said slot, a pivoted arm on which the stud is carried, and a rotating cam for operating the stud, substantially as described.

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

JOSEPH WHITE.

Witnesses:
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W. F. MORGAN.