W. M. EVENSEN.

CAM.

APPLICATION FILED JULY 26, 1917.

**1,331,746.**

Patented Feb. 24, 1920.

3 SHEETS—SHEET 1.

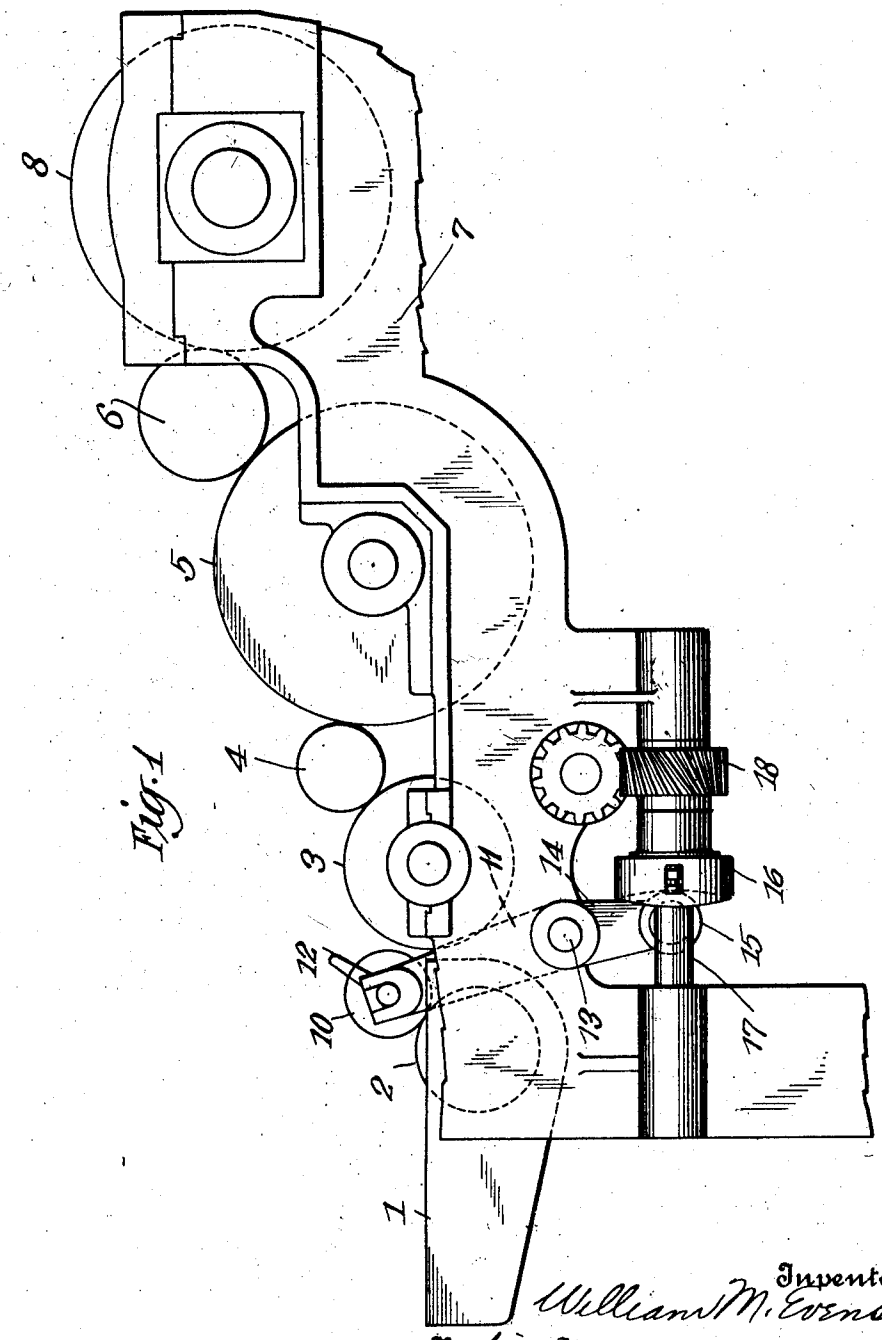



Fig. 1

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3 SHEETS—SHEET 2.

Fig. 4.

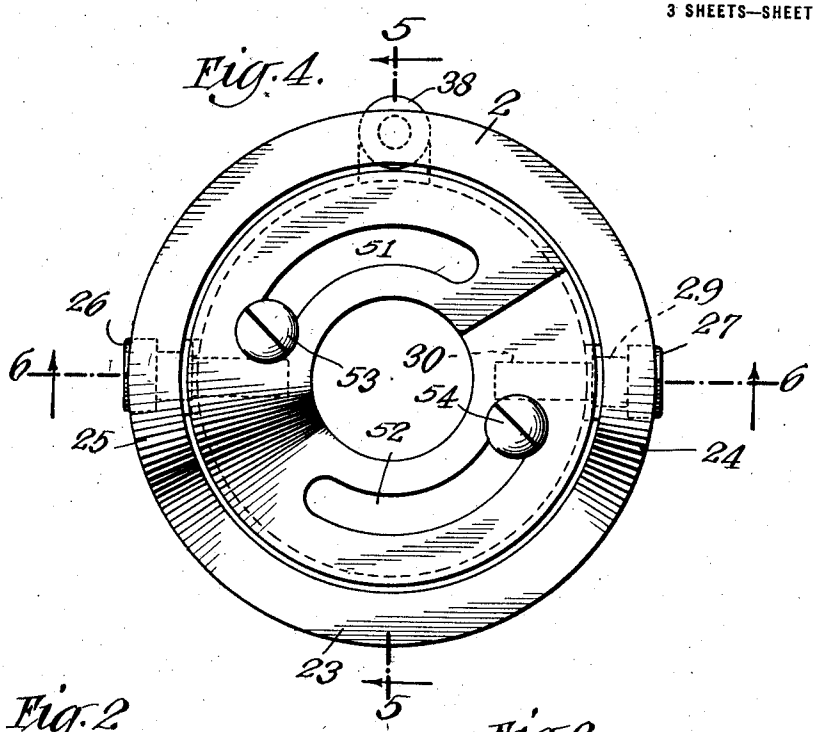



Fig. 2

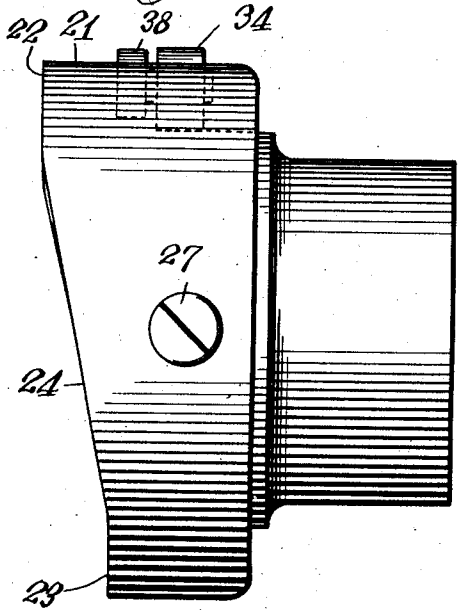
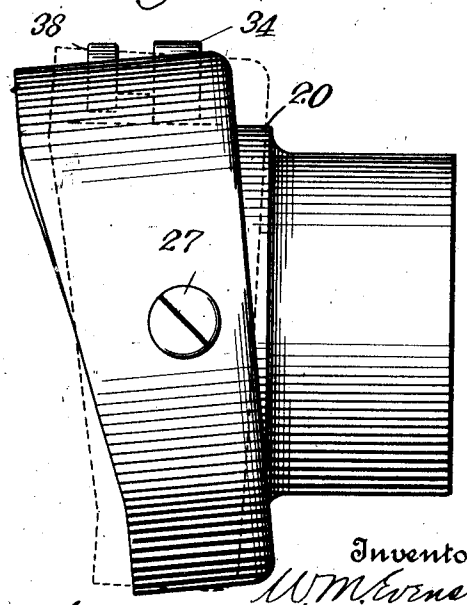



Fig. 3.




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3 SHEETS—SHEET 3.

*Fig. 8.*

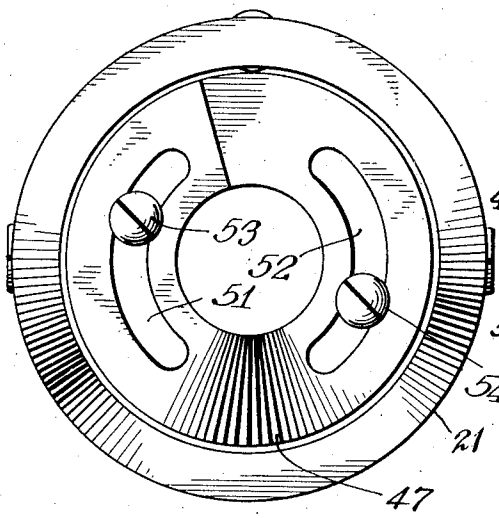



*Fig. 7.*

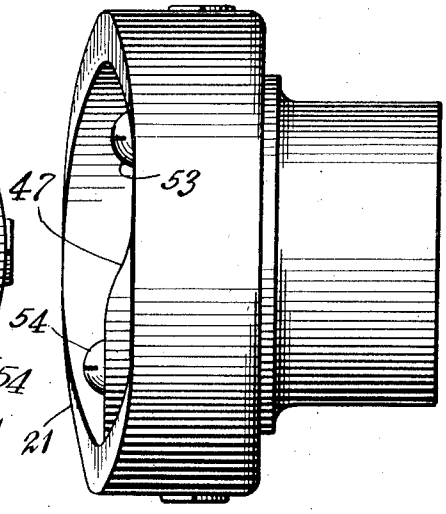



*Fig. 5*

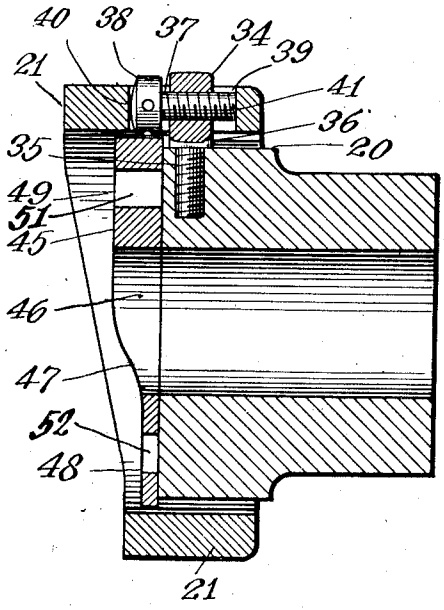
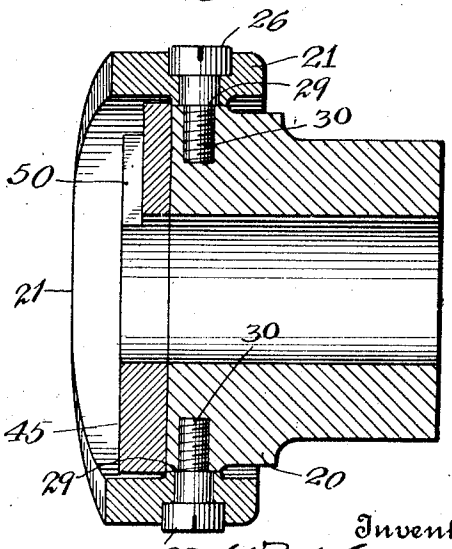



*Fig. 6.*




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By his Attorney

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# UNITED STATES PATENT OFFICE.

WILLIAM M. EVENSEN, OF CHICAGO, ILLINOIS, ASSIGNOR TO GOSS PRINTING PRESS COMPANY, A CORPORATION OF ILLINOIS.

## CAM.

1,331,746. Specification of Letters Patent. Patented Feb. 24, 1920.

Application filed July 26, 1917. Serial No. 182,830.

*To all whom it may concern:*

Be it known that I, WILLIAM M. EVENSEN, a citizen of the United States, residing at Chicago, county of Cook, and State of Illinois, have invented certain new and useful Improvements in Cams, of which the following is a specification.

The invention relates to printing presses, and more especially to inking mechanism for rotary and other presses.

Objects and advantages of the invention will be set forth in part hereinafter, and in part will be obvious herefrom, or may be ascertained through practice with the invention, the same being attained and realized through the means, instrumentalities and combinations pointed out in the appended claims.

The invention consists in the novel parts, constructions, arrangements, combinations and improvements herein shown and described.

The accompanying drawings herein referred to, and constituting a part hereof, illustrate one embodiment of the invention, and together with the description serve to explain the principles thereof.

Of the drawings:

Figure 1 is a general elevation, with parts omitted, of an inking mechanism constructed in accordance with the principles of the invention;

Fig. 2 is a detail side elevation of the cam, on an enlarged scale;

Fig. 3 is a similar view but showing a different positioning of the high and low parts of the cam, to vary its throw;

Fig. 4 is an end elevation, looking at Fig. 2 from the left, and showing the dwell modifying member in inoperative position;

Fig. 5 is a central longitudinal section on the line 5—5 of Fig. 4;

Fig. 6 is a central longitudinal section (taken perpendicular to Fig. 5) on the line 6—6 of Fig. 4;

Fig. 7 shows the dwell modifying device in a different position from the preceeding figures, whereby the dwell is shortened; and

Fig. 8 is a side elevation looking at Fig. 7 from the left.

In rapid printing presses, and especially in rapid rotary presses, the providing of an ink supply which is adequate in quantity and which is uniformly distributed is a very difficult problem in connection with different classes of work, different kinds of paper, different press speeds and other variations in working materials and conditions.

Among the problems presented is that of securing a proper and always efficient action of the ductor roller, that is, the roller which vibrates or travels between the ink fountain roller and the ink drum. Among the problems presented in connection with the ductor roller is that of securing the proper degree of contact or pressure between the ductor roller and the fountain roller, and also between the ductor roller and the ink drum, despite changes in the size or condition of the ductor roller.

The ductor roller is usually made of composition, and varies in diameter with age and other conditions. To compensate for such variations, the present invention provides for lengthening and shortening the throw or travel of the ductor roller at each end of its path of travel, thereby regulating the degree of contact of the ductor roller with both the fountain roller and the ink drum and its pressure thereupon. More particularly, the present invention effects such regulation and modification of the travel of the ductor roller by a very simple, substantial, and practically "fool-proof" mechanism avoiding all complication of levers, lever arms and adjustments therefor.

It is also highly desirable in such a mechanism to provide for changes and modifications in, and regulations of, the duration of the dwell of the ductor roller at the ink fountain roller, and in the present invention, such means is provided in connection with the already-described means for modifying the length of the throw or path of travel of the ductor roller.

Referring to the accompanying drawings, illustrating by way of example, one embodiment of the invention, the ink fountain is indicated by reference numeral 1, and the ink fountain roller by reference numeral 2. The ink drum is shown at 3, and in the present embodiment two ink drums are employed, although so far as concerns the present invention, this feature of construction is

immaterial. One or more rollers 4 convey the ink from the drum 3 to the drum 5, the drum 5 being provided with a plurality of vibrating distributing rollers, not shown. The ink is conveyed from the drum 5 to form rollers 6 which form rollers ink the plates upon the form cylinder 8.

Reciprocating between the ink fountain roller 2 and the ink drum 3, is the ductor roller 10. The ductor roller 10 has its pintles mounted in the upper ends of a pair of arms 11, the ductor roller being removable and replaceable and being held in position by suitable means, such as the latches 12. The arms 11 are carried upon a shaft 13, transversely disposed and mounted in the machine frame. The shaft 13 has attached thereto an arm 14 provided with a cam roller 15. The cam roller 15 coöperates with a cam 16 mounted upon, and rotating with, a shaft 17 carried on the machine frame.

The shaft 17 may also be utilized to drive some of the cylinders and other parts of the inking mechanism, and for this purpose is shown provided with a gear 18 meshing with suitable driven gears, which are only partially shown, and need not be described in connection with the present invention.

In accordance with certain features of the invention, the means for modifying and regulating the length of the throw of travel of the ductor roller and the means for varying the duration of its dwell at the fountain roller are both incorporated in the structure of the cam 16. Thereby all complications of levers and lever-arm adjustments in connection between the cam and the ductor roller are obviated and dispensed with, leaving the mechanism exceedingly simple and compact, and at the same time providing an unusually nice and reliable adjustment for both functions or purposes.

Referring more particularly to the embodied form of cam, the cam is provided with a hub 20 which is mounted upon, and fixed to rotate with, the shaft 17. Encircling the hub 20 is an annular operating member 21, that is, the member thereof which controls and determines the motion imparted thereby to the ductor roller. The operating member 21 is provided with a high part 22 and a low part 23, and with intervening sloping parts 24 and 25, the motion of the cam roller occurring during the passage of the cam roller 15 over the sloping parts, and the period of dwell of the cam roller at each end of its path of travel being determined by the length of the high part 22 and lower part 23.

The operating member 21 is movable upon its support to simultaneously vary the relative effective elevation or position of the low and high parts, thereby modifying and regulating the length of throw or travel of the ductor roller. As embodied, the operating member 21 is pivotally mounted on diametrally disposed supports. These supports are shown as bolts 26 and 27, each having a slotted head countersunk in the annular operating member 21, and having, respectively, shoulders 29 bearing upon the exterior surface of the hub 20, and having a threaded portion 30 screwed into the body of the hub.

Means are provided for swinging the operating member 21 about its pivotal bearing and for controlling its movement, that is, for holding it in any desired position. In the embodied form of such means (Figs. 2, 3 and 5), a bolt or member 34 has a threaded portion 35, screwed into the hub 20 and having a shouldered head 36 resting on and projecting from the hub. Said bolt head 36 has therein a screw-threaded opening disposed transversely to the bolt shank 35, and threaded thereinto is a screw or bolt 37 having an adjusting head 38. By turning the bolt 37 the operating member 21 is positioned and held to vary the throw of the cam as desired. The bolt 34 and adjusting bolt 37 are positioned in a recess or cut out portion 39 in the annular side wall of the operating member 21, the adjusting head 38 bearing against the top wall 40 of the aperture 39 and the lower end of the bolt 37, bearing against the bottom wall 41 thereof (Fig. 5).

Thus by turning the head 38, the screw 37 is moved to the right or left in Fig. 5, and the operating member 21 is thereby swung about its pivots 26 and 27, and thereby the high part of the cam is rendered higher and the lower part lower, or when the screw 37 is turned in the opposite direction, the high part of the cam is made lower and the low part higher. Thus the throw of the cam is minutely and nicely regulated, that is, lengthened or shortened, in the manner described. In Fig. 3 of the drawings, the longest throw of the cam is shown in full lines and the shortest throw of the cam is shown in dotted lines while in Fig. 2 of the drawings, the cam is shown in median position with a corresponding variation in the throw.

In the embodied form of dwell modifying and regulating means, an arcuate plate or member 45 rests against the end or face of the hub 20, having a central aperture 46 encircling the shaft 17. The plate 45 has its exterior periphery preferably dimensioned to nest within the annular operating member 21. The exterior face or flat side of the member 45 is formed at one point in its surface with a curved portion 47, which preferably has the same contour as the edge of the annulus 21 at the point where the latter begins to slope upwardly from the low part or low dwell 23. At either side of the part 47, the member or disk 45 is substantially flat or level, as shown at 48 and 49, the two level parts being joined by the step 50, corresponding

to the differences in their height or thickness and to the rise of the sloping part 47.

In the disk 45 are formed arcuate slots 51 and 52, through which project clamping screws or bolts 53 and 54, which screws or bolts are threaded into the end or face of the hub 20.

It will be understood that when the sloping part 47 of the disk 45 is in line with that part of the rim of the annulus 21 of like contour therewith, the action of the cam upon the ductor roller is unchanged, the dwell at the ductor roller being for the full period of the low part 23 of the cam. If the disk 45 be rotated in the counter-clockwise direction in Figs. 4 and 8, the rise 47 on the cam disk 45 will be moved outwardly into alinement with a portion of the low part 23 of the operating member 21, thereby in effect shortening the extension of the low part 23, and thereby causing the ductor roller to move away from the fountain roller after a shorter lapse of time than when the cam disk 45 is in the first described position. The clamping bolts 53 and 54 serve to hold the disk 45 in position, being loosened to permit movement of the disk, and being screwed down to hold it in place.

The invention in its broader aspects is not limited to the exact construction shown and described, nor to the particular form of cam illustrated and described, but changes may be made therefrom within the scope of the appended claims, without departing from the principles of the invention and without sacrificing its chief advantages.

What I claim as my invention and desire to secure by Letters Patent is:—

1. The combination with a rotatable, longitudinally immovable shaft, of a cam having a hub mounted upon the shaft, and an annular operating member having a high and low part on its rim, a pivotal mounting for said member upon its hub, a threaded member engaging the operating member and the hub to move the operating member about its bearing to change the relative position of the low and high parts of the cam and a modifying member carried on the side face of the hub within the annular operating member and rotatable on the hub to vary the relative proportions of the low and high parts of the operating member.

2. The combination with a rotatable, longitudinally immovable shaft, of a cam having a hub mounted upon the shaft, an annular operating member having a high and low part on its rim, a pivotal mounting for said member upon its hub, a threaded member engaging the operating member and the hub to move the operating member about its bearing to change the relative position of the low and high parts of the cam, and a modifying member carried on the side face of the hub within the annular operating member and rotatable on the hub to vary the extent of the low part of the cam.

3. The combination with a rotatable, longitudinally immovable shaft, of a cam having a hub mounted upon the shaft, an annular operating member having a high and low part on its rim, a pivotal mounting for said member upon its hub, a threaded member engaging the operating member and the hub to move the operating member about its bearing to change the relative position of the low and high parts of the cam, a modifying member carried on the side face of the hub within the annular operating member and rotatable on the hub, and a screw and slot connection between said modifying member and the hub to vary the relative proportions of the low and high parts of the operating member.

4. A cam having a hub mounted on a shaft, an annular operating member loosely encircling the hub and having a mounting upon the hub, and a threaded device engaging the annular operating member and the hub to move the annular operating member about its mounting to vary the position of the low and high parts to vary the throw of the cam and a member movable to vary a dwell portion of the cam.

5. A cam having a hub mounted on a shaft, an annular operating member loosely encircling the hub and having a mounting upon the hub, and a threaded device engaging the annular operating member and the hub to move the annular operating member about its mounting to vary the position of the low and high parts to vary the throw of the cam and a member movable to vary the extent of the low portion of the cam.

6. A cam having a hub mounted on a shaft and an annular operating member pivotally mounted on the hub and connections between the operating member and hub for positioning the operating member and positively holding it in position to vary the throw of the cam, the cam roller path being along the side edge of the annular operating member.

7. A cam having a hub mounted on a shaft and an annular operating member pivotally mounted on the hub, and a screw, for positioning the operating member and for positively holding it in position to vary the throw of the cam, the cam roller path being along the side edge of the annular operating member.

8. A cam having a hub mounted on a shaft and an annular operating member pivotally mounted on the hub, and a screw threaded in the hub and engaging at both ends with the operating member for positioning the operating member and for positively holding it in position to vary the throw of the cam.

9. A cam having a hub mounted on a shaft

and an annular operating member having a high and a low part and being diametrally pivoted on the hub and means for positioning the operating member relatively to the hub to vary the throw and for positively holding it in position.

10. A cam having a hub mounted on a shaft and an annular operating member having a high and a low part along the side edge thereof constituting the cam roller track, and being pivoted on the hub, and means for positioning the operating member relatively to the hub to vary the throw and for positively holding it in position.

11. A cam having a hub mounted on a shaft and an annular operating member pivotally mounted on the hub and connections between the operating member and hub for positioning the operating member and positively holding it in position to vary the throw of the cam, and a dwell modifying device coöperating with the operating member.

12. A cam having a hub mounted on a shaft and an annular operating member pivotally mounted on the hub and connections between the operating member and hub for positioning the operating member, and a dwell modifying device coöperating with the operating member.

13. A cam having a hub mounted on a shaft and an annular operating member pivotally mounted on the hub and having the cam track on its side edge, and inclinable both ways from the perpendicular to the hub.

14. A cam having a hub mounted on a shaft and an annular operating member pivotally mounted on the hub, and inclinable both ways from the perpendicular to the hub, and means for so inclining the operating member and for positively holding it in position.

15. A cam having a hub mounted on a shaft and an annular operating member having a high and a low part along the side edge thereof constituting the cam roller track, and being pivoted on the hub and being inclinable both ways from the perpendicular to the shaft.

In testimony whereof I have signed my name to this specification.

WILLIAM M. EVENSEN.