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2,425,643

WATER FOUNTAIN

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2 Sheets-Sheet 1

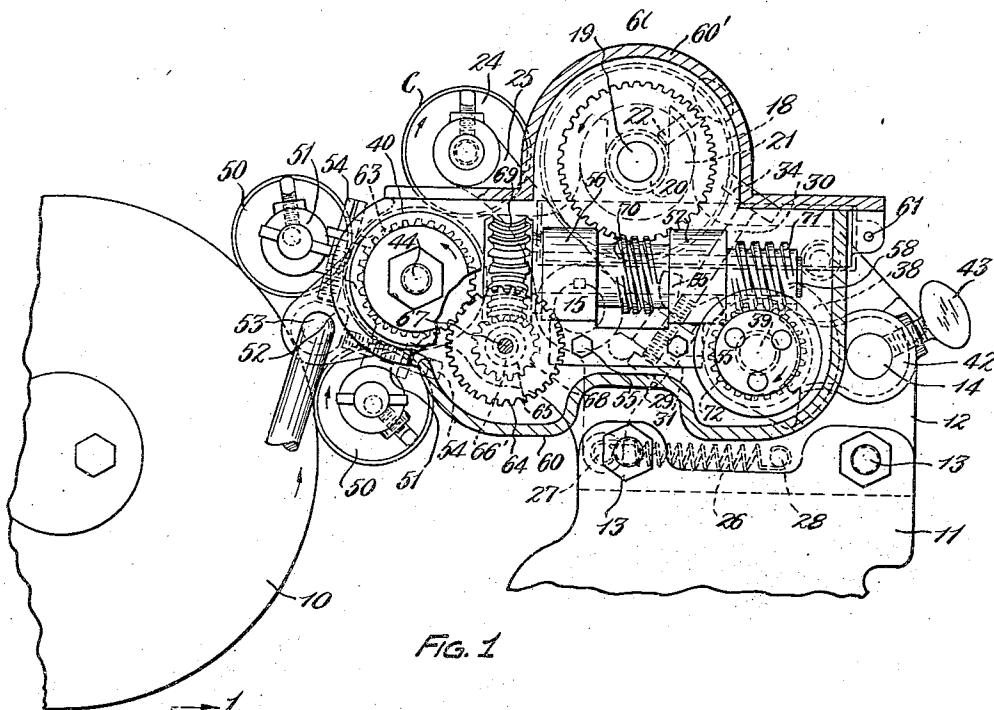


FIG. 1

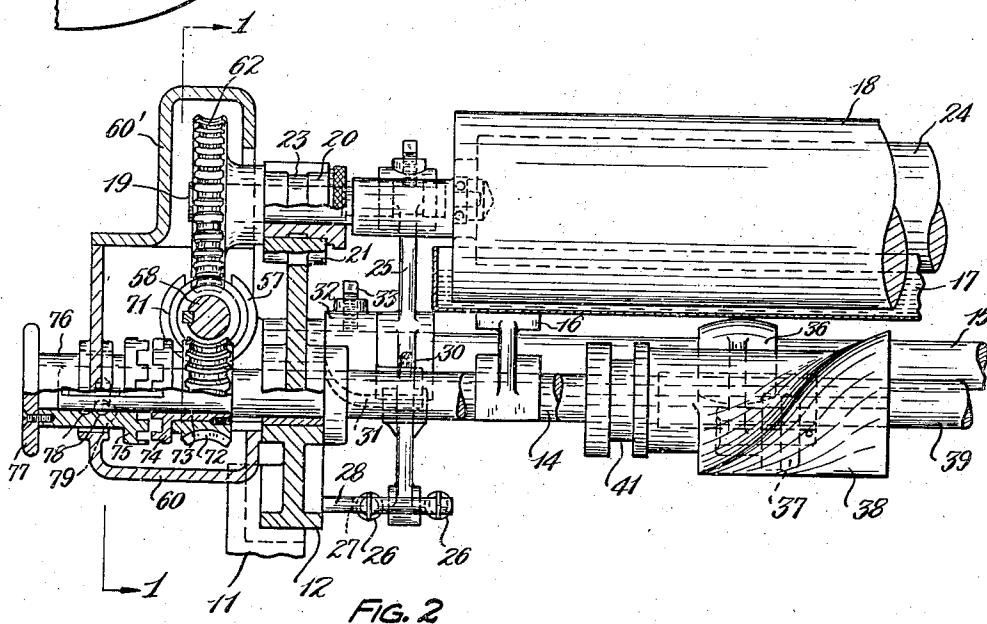


FIG. 2

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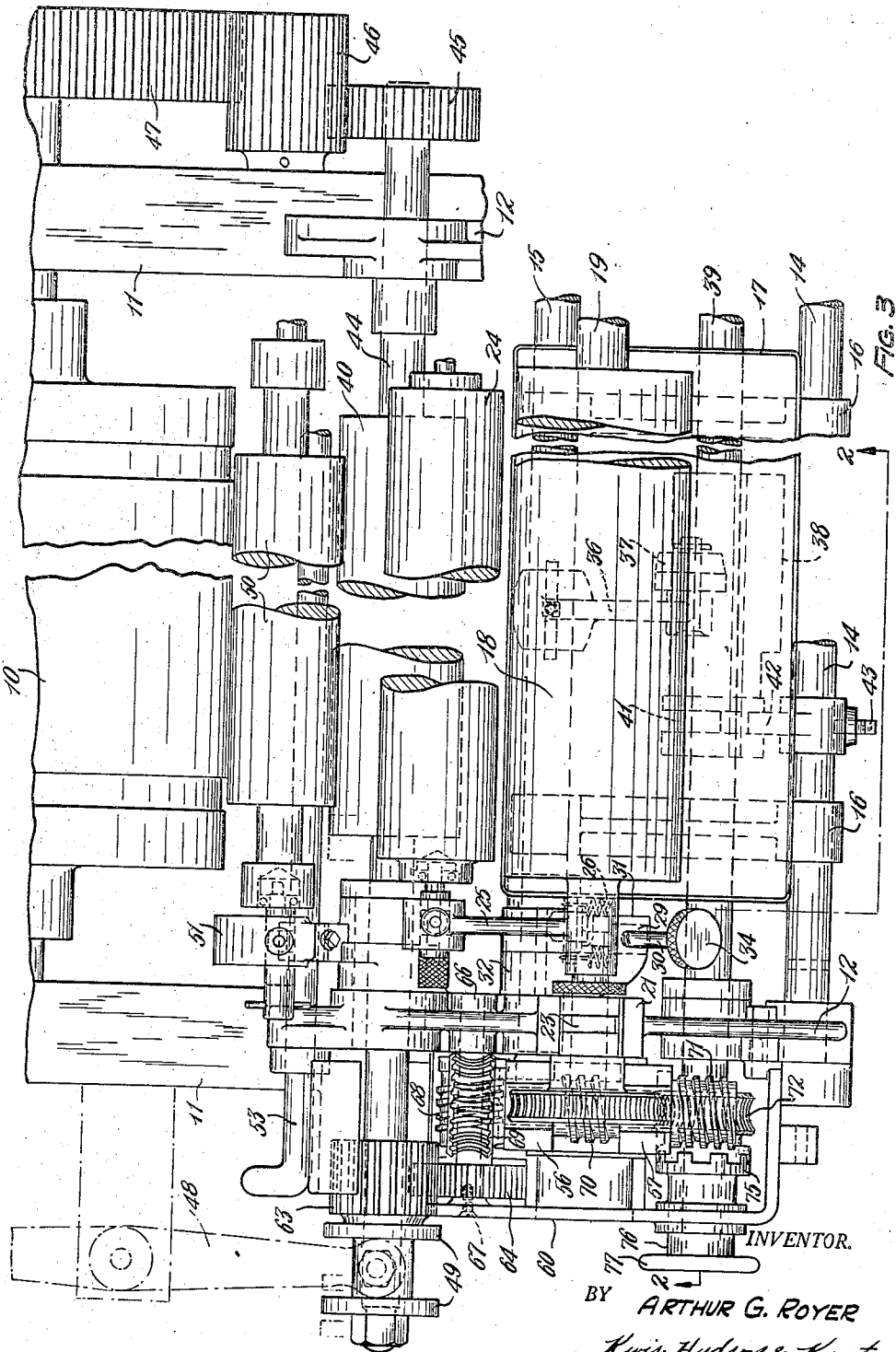
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WATER FOUNTAIN

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8 Claims. (Cl. 101—147)

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This invention relates to improvements in water fountains for printing presses, and has to do especially with the driving mechanism for rotating the fountain rollers and for shifting the ductor roller thereof.

One of the objects of the invention is the provision of simplified driving mechanism.

Another object is the provision of driving mechanism of such character as to practically eliminate vibration in the pan roller of the water fountain and the consequent agitation of water therein and slopping of water out of the pan, as well as the reduction or elimination of vibration of the camshaft and consequently of the ductor roller.

Another object is the provision of driving mechanism of such character as to facilitate changes in the speeds of the pan roller and the ductor operating cam shaft with respect to the plate roller of the press, as well as changes in the speeds of the pan roller and the ductor cam shaft with respect to each other.

A further object is the provision of means for disconnecting the cam shaft to interrupt the movements of the ductor roller while permitting operation of the mechanism otherwise.

Other objects and features of novelty will appear as we proceed with the description of that embodiment of the invention which, for the purposes of the present application, we have illustrated in the accompanying drawings, in which

Fig. 1 is an end elevational view, partly in vertical section, as indicated by the line 1—1 of Fig. 2, of a water fountain embodying the invention shown in operative relation with the plate cylinder of a printing press;

Fig. 2 is a fragmental transverse elevational view, partly in vertical section, upon the line 2—2 of Fig. 3, parts being broken away to better illustrate the invention; and

Fig. 3 is a fragmental plan view of the same.

In the drawings, the plate cylinder of a printing press is indicated at 10. The sides of the press frame are shown at 11. The cylinder 10 is mounted in these two frame side members and is driven by any suitable means at the usual rapid rate of rotation. A pair of water fountain side supports 12 are attached to the frame members 11 by bolts 13 or the like, and in these side supports the rollers of the fountain are journaled. The side supports may be connected and braced by one or more transverse rods, one such rod being illustrated at 14.

15 is a rock shaft which oscillates through a small angle for a purpose which will presently

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appear. Shaft 15 and rod 14 support two brackets 16 upon which is carried the water pan 17. A pan roller 18 extends downwardly into pan 17, its shaft portions 19 being mounted in bushings 20 which are carried in bearings 21 that are open from above and provided with set-screws 22 which extend into annular grooves 23 in the bushings and thus hold the latter against movement axially.

The pan roller 18 is adapted to be contacted by a ductor roller 24 which is mounted in bearings in the upper extremities of a pair of lever arms 25 that are rotatably mounted upon rock shaft 15, the latter being oscillatably carried in bearings in the fountain supports 12. The lower extremities of these lever arms are biased anti-clockwise by tension springs 26, which are attached to the ends of a pin 27 driven into a hole in the arm 25, the opposite ends of the springs being suitably connected with a pin or the like 28 fixed in the adjacent support 12.

Each of the lever arms 25 carries a pad 29 which is adapted to be engaged by the end of a set-screw 30 which is threadably mounted in a short crank arm 31 carried by a hub 32 surrounding shaft 15 and locked thereto by a setscrew 33. For convenience in manipulation, the setscrew 30 is preferably formed with a knurled head 34 which extends upwardly to a position where it may be conveniently reached by the operator. The screw 30 may be locked in adjusted position by a thumb nut 35.

Shaft 15 is arranged to be oscillated by a crank arm 36 fixed to the shaft and carrying at its outer extremity a roller 37 which is arranged to run upon a cam 38 that is slidably keyed to a cam shaft 39. The rotation of the cam swings the crank arm 31 clockwise, causing the setscrew 30 to bear against pad 29 and swing lever arm 25 clockwise to thereby bring ductor roller 24 into contact with pan roller 18. When the follower 37 runs off the high spot of the cam, relieving the pressure of screw 30 on pad 29, springs 26 pull the lower ends of levers 25 toward the right as viewed in Fig. 1 and swing ductor roller 24 into contact with an intermediate roller 40.

Cam 38 is a barrel cam with a high spot which is long at one end of the cam and which decreases in length toward the other end. The cam, being slidably keyed to shaft 39, may be moved relatively to the follower 37 in order to vary the motion of shaft 15 and control the length of time that the ductor roller remains in contact with the pan roller and the intermediate roller respectively. At one end of the cam 38 there is provided an annular groove 41 which receives a

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yoke 42 that is slidable upon rod 14 and may be fastened to the latter at any desired point by means of a setscrew 43, thereby maintaining the cam in the desired position.

Intermediate roller 40 is carried by shaft 44 5 which projects through both supporting frame members 12. On one end this shaft carries a gear 45 that meshes with a wide idler gear 46 which in turn meshes with a gear 47 that turns with the plate cylinder 10. The roller 40 is a vibrating roller, that is, it has endwise reciprocation as well as rotation, the endwise movement being effected by a lever 48 the free end of which projects into the space between a pair of collars 49 attached to the end of shaft 44. The means 15 for swinging lever 48 back and forth is not herein illustrated since such means are well known in the art, and per se form no part of the present invention.

Two damping rollers 50 normally contact the intermediate roller 40 and the plate cylinder 10. They are each carried in a pair of hangers indicated at 51 that are journalled upon the shaft 44 but are held by suitable means against reciprocation with that shaft. Resilient means of suitable character are employed for drawing these hangers toward each other and holding the dampening rollers in contact with the plate cylinder. This contact may be broken, however, when desired by means of cam blocks 52 carried by an oscillatable shaft 53. These blocks each have a pair of flat surfaces for engagement with adjusting screws 54 threadably mounted in the hangers 51. Manual movement of the shaft 53 through a given angle causes the screws 54 to ride onto the higher surfaces of the cam blocks, swings the hangers away from each other and separates the dampening rollers 50 from the plate cylinder. 20

Upon one of the fountain frame members 12 we mount, by means of bolts 55 or the like, a bracket having integral therewith two spaced bearings 56 and 57 that are open on their upper sides. These bearings receive bushings within which is rotatably mounted a transmission shaft 58, arranged horizontally in the preferred form of the invention as herein illustrated. The openings in the top of the bearings are wide enough to permit the transmission shaft to be moved upwardly through them provided the bushings are first moved axially outward beyond the bearings. 25

A gear housing 60 enclosing the transmission shaft and related parts now to be described is secured to one of the frame members 12 in any suitable manner. Preferably this housing includes a cover 60' hinged to the housing proper at 61, this cover being cut away to clear the hub of a worm wheel 62 fastened to a shaft portion 19 of the pan roller. The outer wall of the housing 60 is cut away to accommodate a wide gear 63 fixed upon shaft 44. This gear meshes with a gear 64 which is carried upon a sleeve 65 that rotates upon a pin 66, one end of which is supported in the frame member 12 and the other end of which is carried by the housing and held in position thereupon by means of a screw 67. Sleeve 65 also carries a worm 68 which meshes with a worm wheel 69 that is keyed to shaft 58, by means of which that shaft is driven. Between the two bearings 56 and 57 shaft 58 has keyed thereto a worm 70 which meshes with worm wheel 62 for rotating the pan roller 18. 30

On the opposite end of shaft 58 beyond bearings 57 another worm 71 is keyed to shaft 58. This latter worm meshes with and drives a worm wheel 72 which is secured to a sleeve 73 that is

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rotatably carried upon shaft 39 and has a dog clutch element 74 integral therewith. A cooperating clutch element 75 on the inner end of a second sleeve 76 is adapted to engage with element 74, the sleeve 76 being slidable upon the shaft 39 but being keyed thereto against relative movement. Sleeve 76 projects through an opening in the outer wall of housing 60, with clearance all around, and on its outer end it carries an operating wheel 77. Means, such as annular grooves 78 and a spring-pressed detent ball 79, may be provided for holding the sleeve against accidental movement while in either its operative or inoperative position. When the parts are in the position illustrated in Fig. 2, the sleeve 73 and its clutch element 74 are free to turn upon the shaft 39. When the clutch is engaged, however, as illustrated in Fig. 3, sleeve 73 is locked to the shaft and the latter rotates, turning cam 38 for swinging the ductor roller 24 back and forth into alternate engagement with pan roller 18 and intermediate roller 40. 35

When all of the parts are in operative relation, driving force is communicated from the printing press through gears 47, 46 and 45 to shaft 44, thence across the machine to gear 63, and then through gears 64, 68 and 69 to transmission shaft 58, through which driving force is communicated at a relatively low rate of speed to pan roller 18 and cam shaft 39. The moistening of the plate is accomplished in the usual manner by the mechanism heretofore described, as will be obvious to those skilled in the art. The pan roller may be readily removed by swinging the housing cover 60' back out of the way, loosening the setscrews 22 and lifting out the roller. Either the worm wheel 69 or the worm 71 may be removed from shaft 58, and if both of these gears are removed, the bushings may be slid outwardly away from the bearings 56 and 57, after which the shaft with the worm 70 thereon may be lifted out through the openings in the tops of the bearings. 40

It will be obvious that any one of the worm and worm wheel sets may be removed and others substituted to accomplish speed changes without affecting the other sets. By alteration of the number of teeth or their pitch or both, practically any combination of speeds within the desired range may be obtained. Thus the particular arrangement shown to be best by experience can be readily achieved. 45

Whenever it becomes desirable to interrupt the transfer of water from the fountain roller 18 to the ductor roller 24, this can be accomplished readily with our mechanism by separating the clutch elements 74 and 75, that is by exerting a pull on the hand wheel 77. In that case if the bodily movement of the ductor roller happens to stop when the two rollers are in contact, the cam shaft 39 may be turned by means of hand wheel 77 keyed to shaft 39, to swing the ductor roller out of contact with the pan roller. 50

Having thus described our invention, we claim:

1. In a water fountain for a printing press having a rotating form cylinder, an intermediate roller adapted to turn with surface speed substantially equal to the surface speed of the form cylinder, a pan roller, a ductor roller, a camshaft for moving the ductor roller into engagement with the intermediate roller and pan roller alternately, a transmission shaft with its axis disposed at right angles to the axis of said rollers, and separate worm and worm wheel connections for driving the transmission shaft from the intermediate roller and for driving the pan roller and the cam 55

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shaft independently from said transmission shaft.

2. In a water fountain for a printing press having a rotating form cylinder, a rotating intermediate roller adapted to turn with surface speed substantially equal to the surface speed of the form cylinder, a pan roller, a ductor roller, a camshaft for moving the ductor roller into engagement with the intermediate roller and pan roller alternately, a transmission shaft, a worm and worm wheel connection between the intermediate roller and the transmission shaft adapted to drive the latter at reduced speed, and separate worm and worm wheel connections between the transmission shaft and said pan roller and said cam shaft adapted to drive said pan roller and said camshaft independently at reduced speeds as compared with transmission shaft.

3. In a water fountain, a pan roller and a ductor roller, a transmission shaft at one end of the fountain disposed transversely to said rollers, means for driving said shaft, a camshaft for moving said ductor roller into and out of engagement with said pan roller, a two-gear driving connection between said transmission shaft and said pan roller, and a separate two-gear driving connection from said transmission shaft to said camshaft.

4. In a water fountain, a pan roller and a ductor roller, a transmission shaft at one end of the fountain disposed transversely to said rollers, means for driving said shaft, a camshaft for moving said ductor roller into and out of engagement with said pan roller, two worms on said transmission shaft, a worm wheel on said pan roller meshing with one of said worms, and a worm wheel on said camshaft meshing with the other of said worms.

5. In a water fountain, a pan roller and a ductor roller, a transmission shaft at one end of the fountain disposed transversely to said rollers, a pair of spaced bearings for said transmission shaft, means outwardly of the first bearing for driving said shaft, a camshaft for moving the ductor roller into and out of engagement with said pan roller, said transmission shaft having one worm between said bearings and another outwardly of the second bearing, a worm wheel on said pan roller meshing with one of said worms to one side of said transmission shaft, and a worm wheel on the camshaft meshing with the other of said worms on the side of the transmission shaft remote from said first named worm wheel.

6. In a water fountain, a pan roller and a ductor roller, a horizontal transmission shaft at one end of the fountain disposed transversely of said rollers, a pair of spaced bearings for said transmission shaft open on their upper sides, means out-

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wardly of the first bearing for driving said shaft, a camshaft for moving the ductor roller into and out of engagement with said pan roller, said transmission shaft having one worm between said bearings and another outwardly of the second bearing, a worm wheel on one end of said pan roller meshing with one of said worms above the shaft, and a worm wheel on said camshaft meshing with the other of said worms below said transmission shaft, whereby said transmission shaft may be removed upwardly following the removal of the first named worm wheel.

7. In a water fountain, a pan roller and a ductor roller, a transmission shaft at one end of the fountain disposed transversely to said rollers, a camshaft for moving the ductor roller into and out of engagement with said pan roller, a pair of spaced bearings for said transmission shaft, said transmission shaft having a worm wheel at one end outwardly of the adjacent bearing, a worm between the bearings and another worm outwardly of the other bearing, a worm wheel on the pan roller meshing with the intermediate worm, a worm wheel on said camshaft meshing with the end worm on the side of the transmission shaft opposite said pan roller worm wheel, and means for driving said transmission shaft comprising a worm meshing with the worm wheel on the transmission shaft on the side of that shaft opposite said pan roller worm wheel.

8. In a water fountain, a pan roller and a ductor roller, a transmission shaft at one end of the fountain disposed transversely to said rollers, a worm wheel on said transmission shaft, a worm meshing with and driving said worm wheel, a camshaft for moving said ductor roller into and out of engagement with said pan roller, a two-gear driving connection between said transmission shaft and said pan roller, and a separate two-gear driving connection from said transmission shaft to said camshaft.

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