

S. HOLLINGSWORTH.

INKING APPARATUS FOR PRINTING MACHINES.

APPLICATION FILED MAR. 9, 1908. RENEWED DEC. 13, 1909.

966,094.

Patented Aug. 2, 1910.

2 SHEETS—SHEET 1.

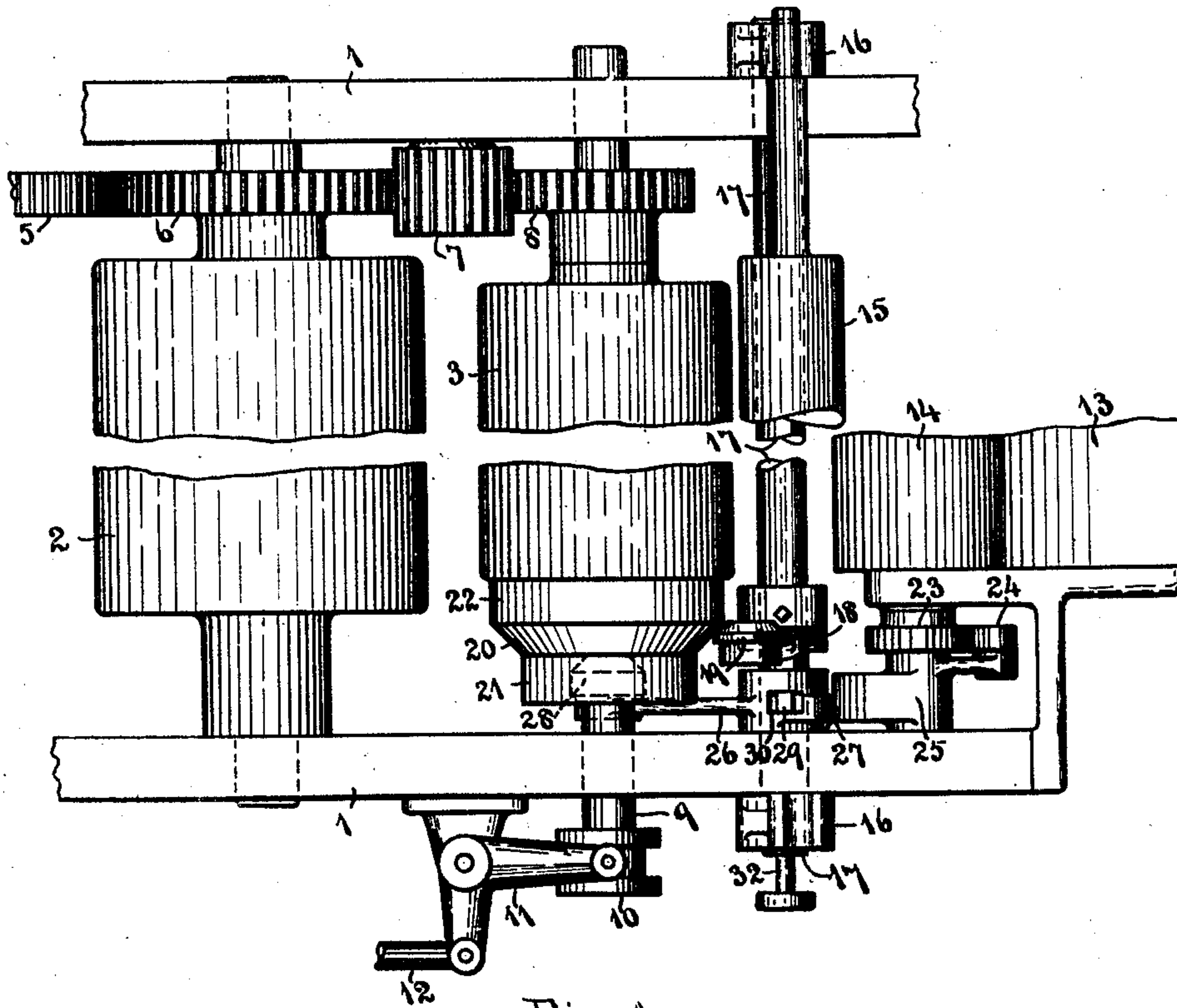


Fig. 1.

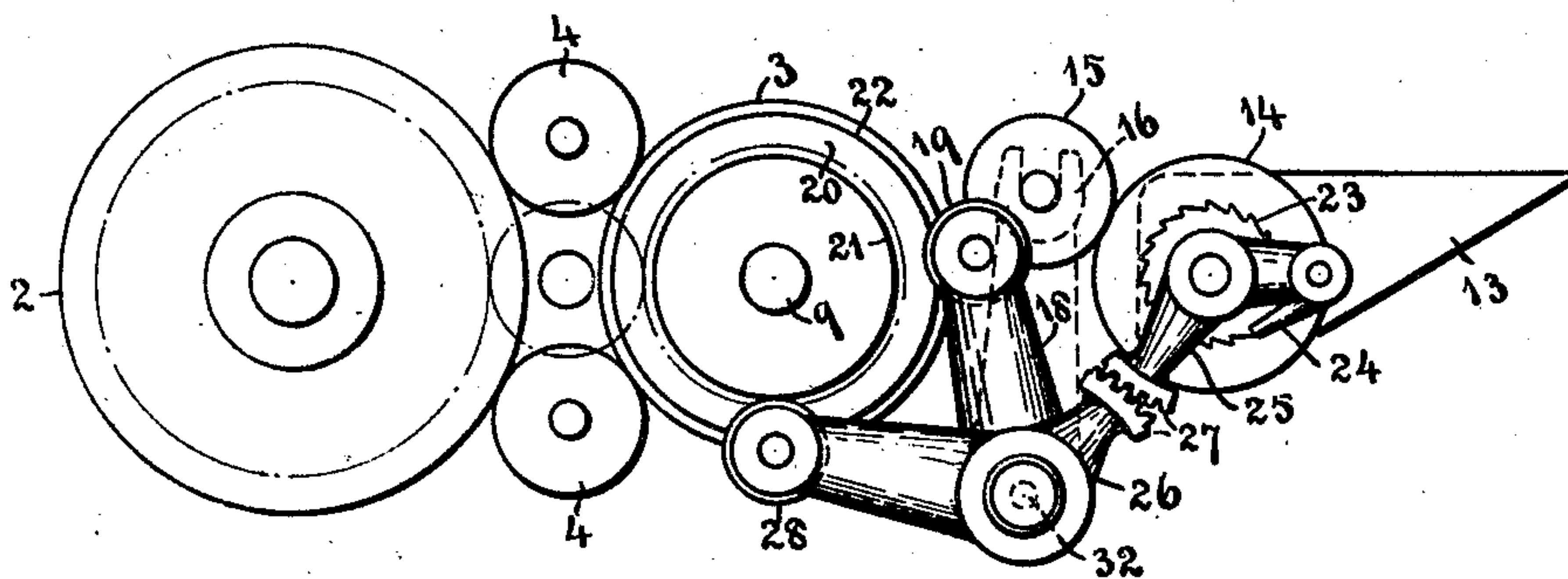


Fig. 2.

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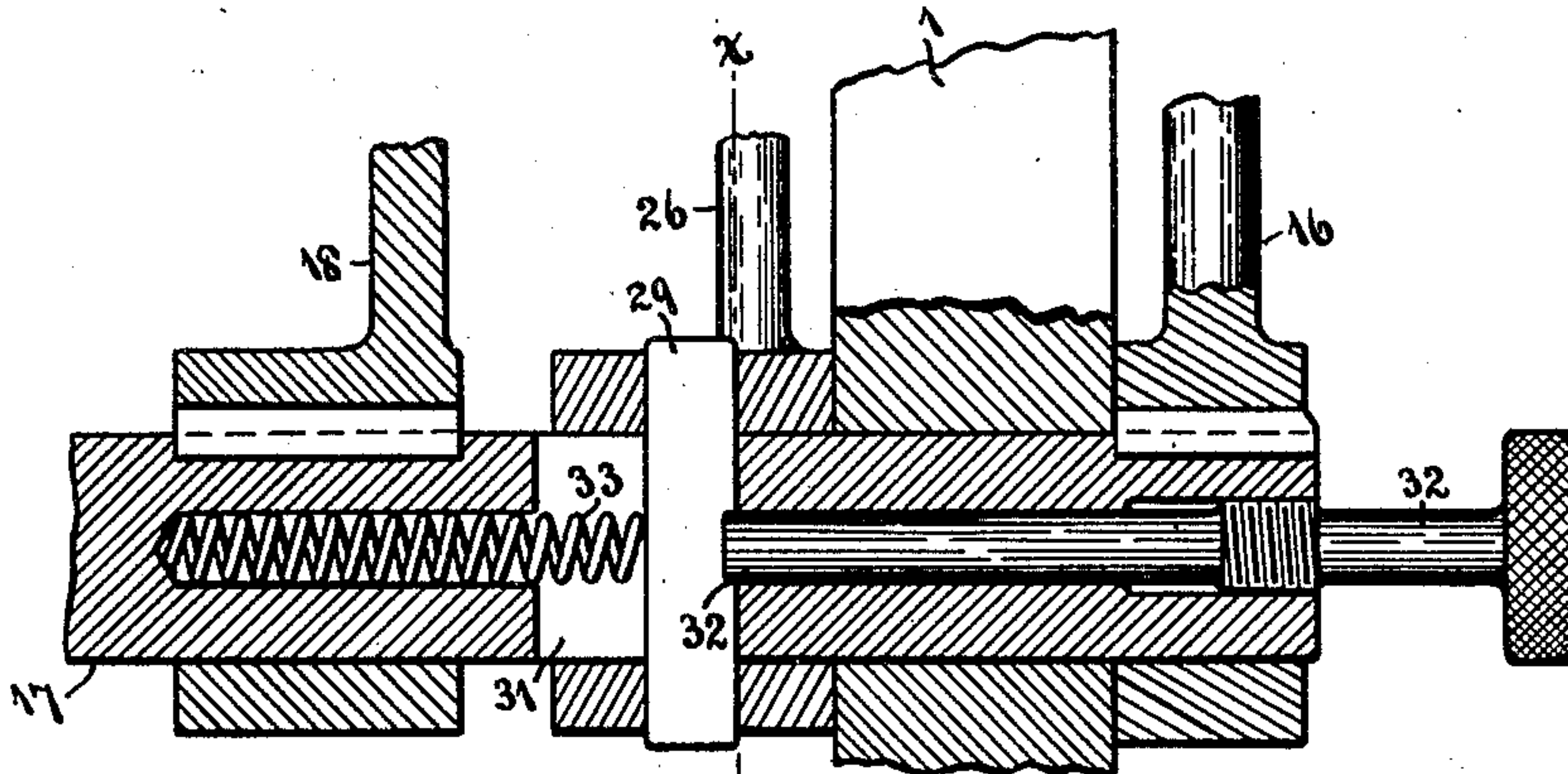


Fig. 3.

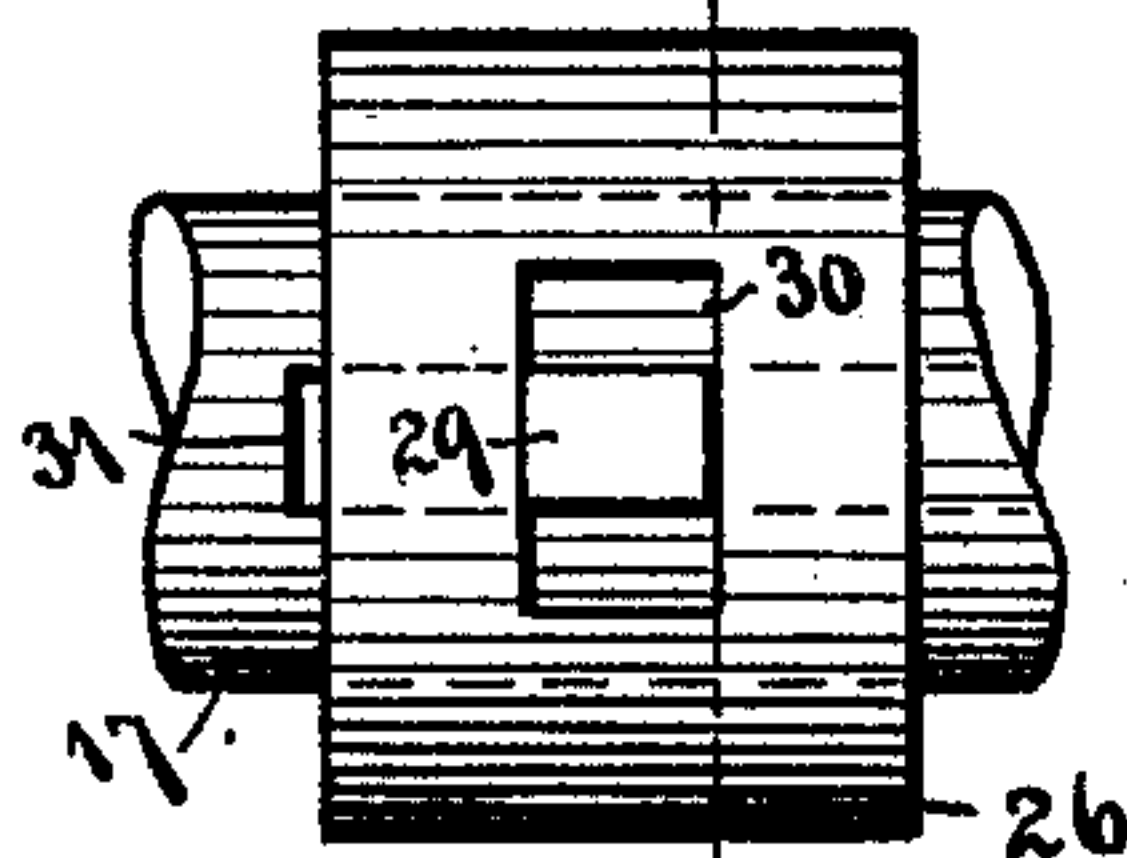


Fig. 4.

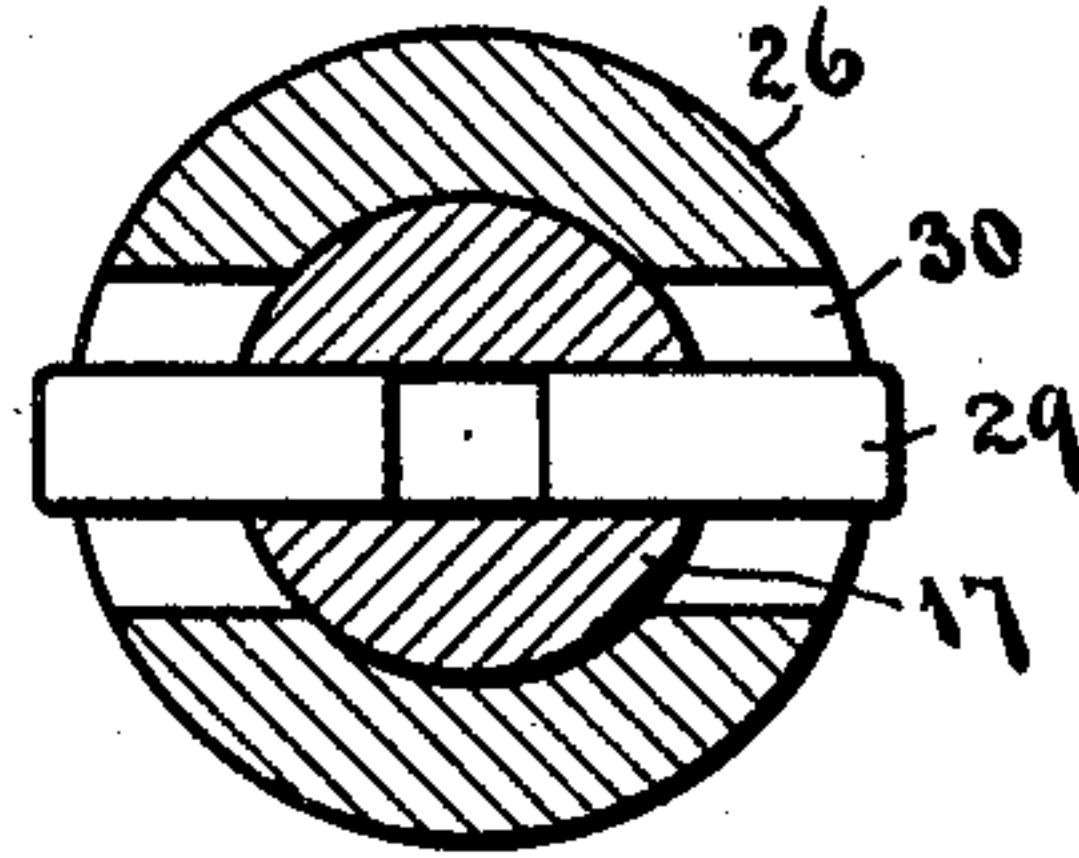


Fig. 5.

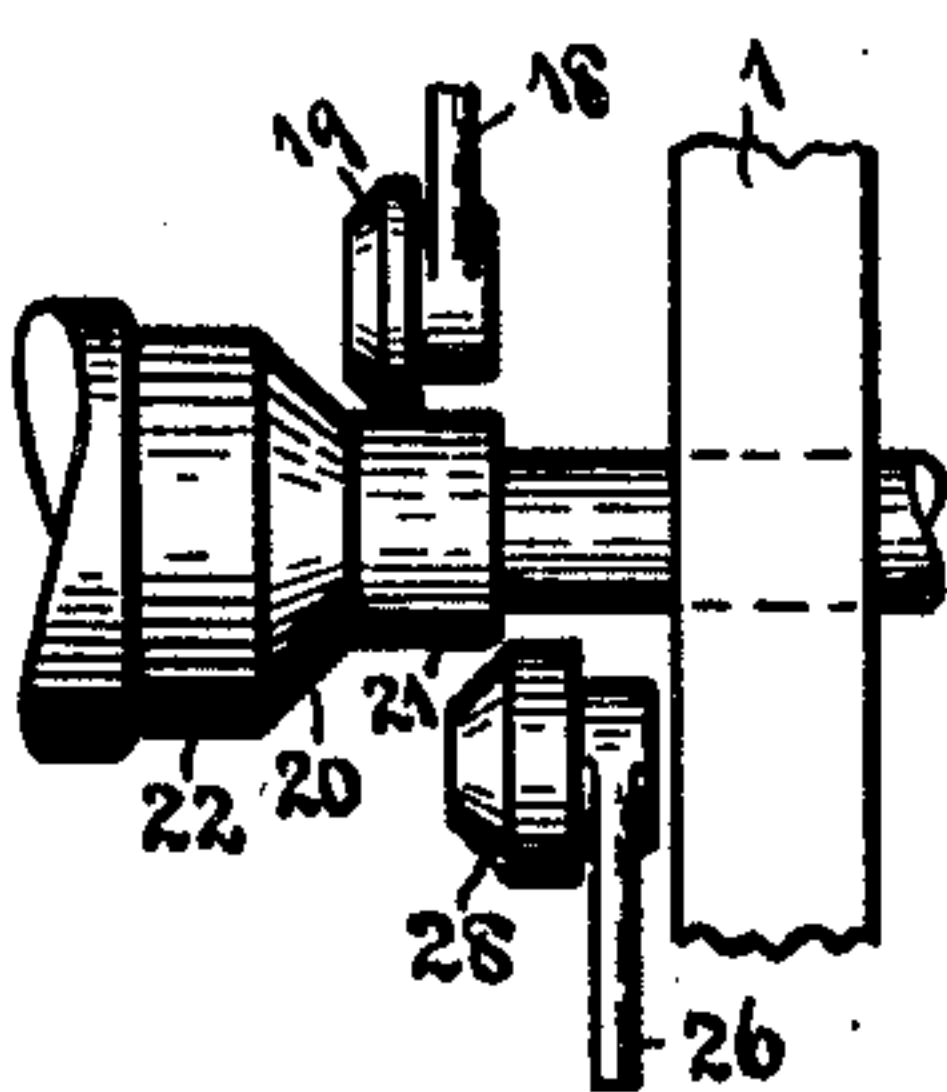


Fig. 6.

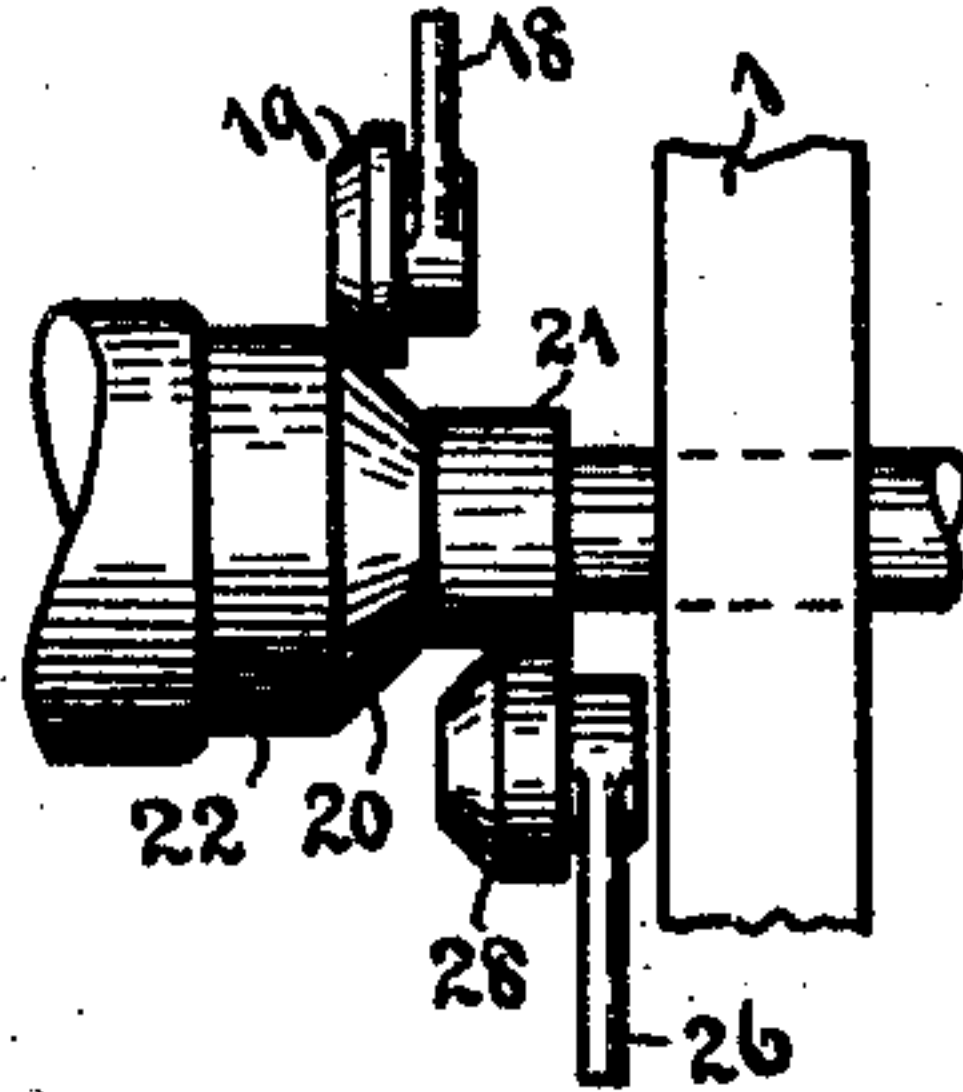


Fig. 7.

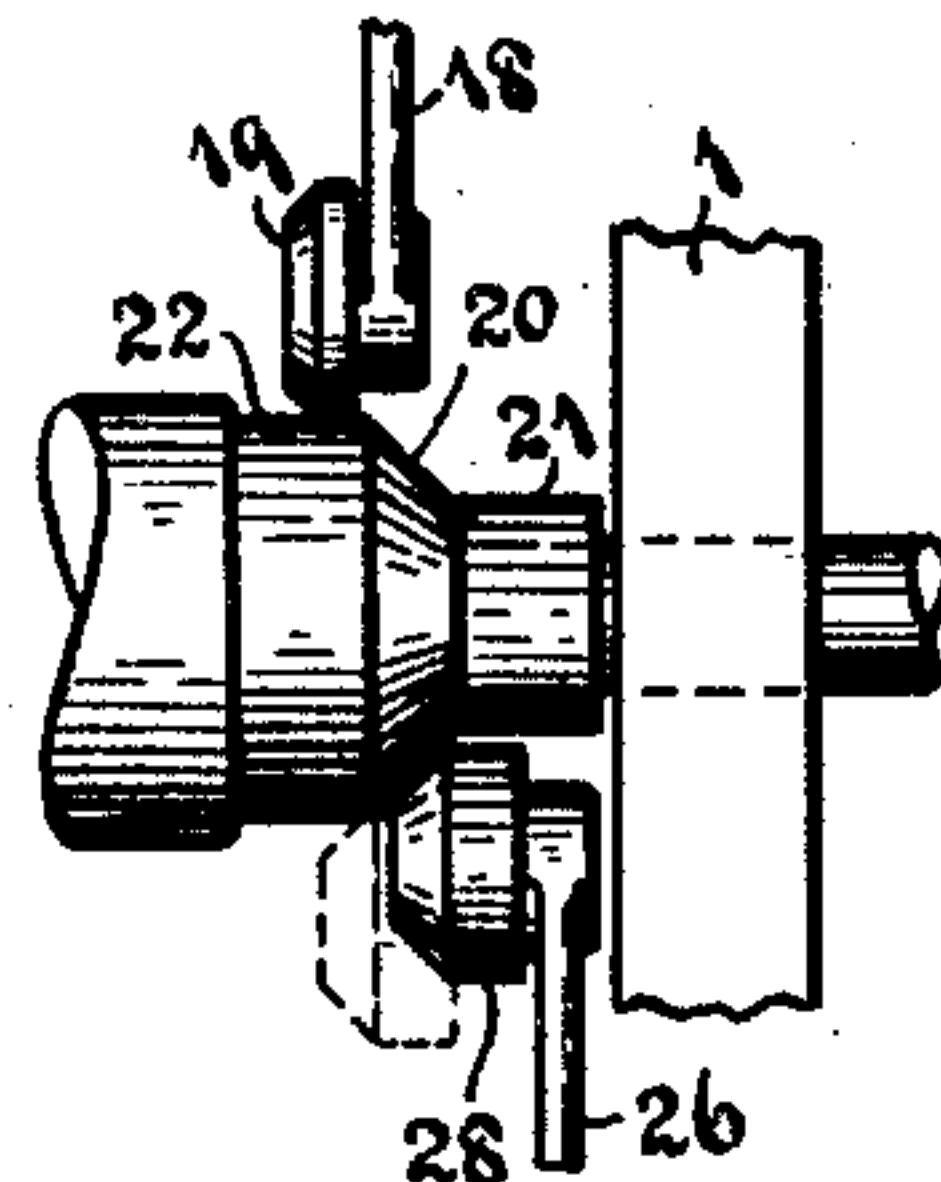


Fig. 8.

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UNITED STATES PATENT OFFICE.

SAMUEL HOLLINGSWORTH, OF PLAINFIELD, NEW JERSEY, ASSIGNOR TO AMERICAN SALES BOOK COMPANY, OF ELMIRA, NEW YORK, A CORPORATION OF NEW YORK.

INKING APPARATUS FOR PRINTING-MACHINES.

966,094.

Specification of Letters Patent.

Patented Aug. 2, 1910.

Application filed March 9, 1908, Serial No. 420,045. Renewed December 13, 1909. Serial No. 532,905.

To all whom it may concern:

Be it known that I, SAMUEL HOLLINGSWORTH, a citizen of the United States, residing at Plainfield, in the county of Union and State of New Jersey, have invented certain new and useful Improvements in Inking Apparatus for Printing-Machines, of which the following is a specification.

This invention relates to improvements in the mechanism for operating the fountain and ductor rolls of an inking apparatus; and my object is to provide means for operating said rolls by means of the reciprocations of the ink distributing, or vibrator, roll; and, further, to provide means for adjusting the degree of partial rotation to be imparted to the fountain roll for each oscillation of the ductor roll.

I attain my objects by constructing the apparatus in the manner illustrated in the accompanying drawings, in which—

Figure 1 represents a plan view of an inking apparatus embodying my improvements, with portions thereof cut away; Fig. 2, a side elevation thereof with the side frames removed; Fig. 3, a detail in section, illustrating the adjusting device for the fountain roll mechanism; Fig. 4, a plan view of a portion of Fig. 3; Fig. 5, a sectional detail on the line $x-x$ in Figs. 3 and 4; and Figs. 6, 7, and 8, details illustrating the several positions assumed by the operating levers for the ductor and fountain rolls during the reciprocations of the vibrator roll.

Like numerals designate like parts in the several views.

Mounted between the side-frames 1, 1, are the plate cylinder 2, the ink distributing, or vibrator, roll 3, and the composition inking rolls 4, 4, all arranged in the usual manner, and driven from the main gear train of the printing machine by means of the gears 5, 6, 7, and 8. The vibrator roll is carried by the shaft 9, which is adapted to be reciprocated in its bearings, in the usual manner, by means of the grooved collar 10, fastened to one end thereof and engaged by a roller carried on the bell crank lever 11. This lever is oscillated by means of a connecting rod 12, coupled to an operating crank, or the like, (not shown), which is driven from the main gear train at some suitable point on the machine.

The inking fountain, 13, is supported at

the end of the side-frames, and is to be constructed in the usual manner. The fountain roll, 14, is also of the usual construction, and arranged in the usual manner with respect to the ink fountain.

The ductor roll 15, which carries the ink from the fountain roll to the vibrator, is formed upon a shaft, the ends of which are loosely mounted in bearings in the upper ends of the rock arms 16, fastened to the shaft 17, which is journaled in the side frames below the ductor roll. Fastened to this shaft 17 is a lever 18, provided at its free end with a roller 19, having a portion of its peripheral surface of conical form. This roller is positioned to ride upon the conical cam 20 on the vibrator roll, as said roll reciprocates. The cam 20 lies between two cylindrical surfaces 21 and 22 of such diameters, respectively, that, when the roller 19 rests upon the surface 21, the ductor roll will engage the vibrator; and, when the roller rests upon the surface 22, the ductor roll will be thrown over into engagement with the fountain roll. The lever 18, and its roller 19, will be held in engagement with the vibrator cam by means of a suitably located spring, not shown.

The fountain roll, at one end, is provided with a ratchet wheel 23, engaged by pawl 24 mounted upon the lever 25, said lever being actuated in turn by means of a second lever 26, loosely mounted upon the shaft 17, the two levers being provided at 27 with intermeshing gear segments, as shown more clearly in Fig. 2. The free end of the lever 26 is provided with a roller 28, having one portion of its surface coned to correspond with the cam 20, said roller engaging and being actuated by the cam 20, in the same manner as described in connection with roller 19; and it will be evident that, as the roller 18 rides up on the cam, pawl 24 will be actuated to move the ratchet wheel one or more teeth, according to how far up the cam the roller 28 is permitted to go.

In order to adjust the throw of the lever 26, so as to impart a greater or less degree of rotation to the fountain roll, and thereby regulate the feed of the ink to the ductor roll, I provide means for shifting the lever 26 upon the shaft 17, so as to give the roller 28 a lateral adjustment relative to the cam 20, and thereby cause it to ride up said cam

more or less at each reciprocation of the vibrator roll. This adjusting device comprises a key 29, which passes through a slot 31 cut through the shaft 17, the ends of said key passing also through transverse slots 30, formed in the hub of the lever 26. The slots 30 are of sufficient width to permit of the relative motions of the shaft 17 and the lever 26 when actuated by the rollers 19 and 28 respectively, as they ride up and down the cam. The key 29 is notched at the center and engaged by the end of an adjusting screw 32, which passes out through the end of the shaft, and is provided with a suitable turning knob. The key is held against the end of the adjusting screw, and moved in the opposite direction, by means of a coiled spring 33, as shown in Fig. 3. By means of this sliding key, the lever 26 may be adjusted laterally in either direction, so as to cause the roller 28 to approach or recede from the cam, thereby increasing or diminishing the throw of the lever 25 and the pawl 24, so that the latter will be drawn back a greater or less number of teeth on the ratchet wheel to impart a greater or less degree of rotation to the fountain roll. By means of this arrangement, the ductor roll may be given a longer period of contact with the vibrator roll and with the fountain roll, than is customary in this type of inking apparatus, by so arranging the length of the reciprocations of the vibrator roll that the roller 19, after riding up or down the cam 20, may ride for a greater or less period upon the cylindrical surfaces 21 and 22; and this period of contact may be further increased or diminished by varying the speed of the reciprocations relatively to the number of rotations of the vibrator roll; this latter adjustment being accomplished, in any suitable manner, through the operating mechanism for the crank lever 11. It will also be noted that the fountain roll will have motion imparted to it while the ductor roll is being held in contact therewith, thus effectively delivering the ink to a greater or less extent of surface on the ductor roll according to the adjustment of the ratchet mechanism.

The relative movements of the levers 18 and 26, and their rollers 19 and 28, respectively, will be understood from an inspection of Figs. 6, 7, and 8, which show the relative positions thereof during one left to right movement of the vibrator roll. The full line and broken line positions of the roller 28 in Fig. 8 represent the two extremes in the lateral adjustment of the lever 26.

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

1. The combination, with vibrator, ductor and fountain rolls, of means actuated by the reciprocations of the vibrator roll for imparting motion to the ductor and fountain rolls.

2. The combination, with vibrator, ductor and fountain rolls, of a shaft provided with rock arms in which the ductor roll is mounted to oscillate between the vibrator and fountain rolls, and means actuated by the reciprocations of the vibrator roll for oscillating said shaft.

3. The combination, with vibrator and fountain rolls, of a ratchet mechanism for turning the fountain roll, and means actuated by the reciprocations of the vibrator roll for imparting motion to said ratchet mechanism.

4. The combination, with vibrator and fountain rolls, of a conical cam on the vibrator roll, a shaft provided with rock arms, a ductor roll journaled in said arms, and a lever fastened on said shaft, said lever being engaged by the cam, as the vibrator reciprocates, to oscillate the shaft.

5. The combination, with vibrator and fountain rolls, of a conical cam on the vibrator roll, a ratchet mechanism for turning the fountain roll, an oscillating lever engaged by said cam as the vibrator reciprocates and adapted to impart motion to the ratchet mechanism, and means for adjusting said lever to increase or diminish its distance of travel upon said cam.

6. The combination, with vibrator, ductor and fountain rolls, of a conical cam on the vibrator roll having cylindrical surfaces of different diameters at the sides thereof, a shaft between the vibrator and fountain rolls provided with rock arms in which the ductor roll is journaled, a lever fastened upon said shaft and having its free end adapted to ride upon said cam and cylindrical surfaces as the vibrator reciprocates, a ratchet mechanism for turning the fountain roll, a lever adapted to impart motion to the ratchet mechanism loosely mounted upon the shaft and having its free end also adapted to ride upon said cam and cylindrical surfaces, and means for adjusting said lever longitudinally upon the shaft.

In testimony whereof I have affixed my signature, in presence of two witnesses.

SAMUEL HOLLINGSWORTH.

Witnesses:

WILLIAM RUDDY,
HENRY EGGERDING.