March 17, 1936. L. H. MORSE 2,033,950

INKING MECHANISM FOR PRINTING MACHINES

Original Filed Aug. 30, 1932 2 Sheets-Sheet 1

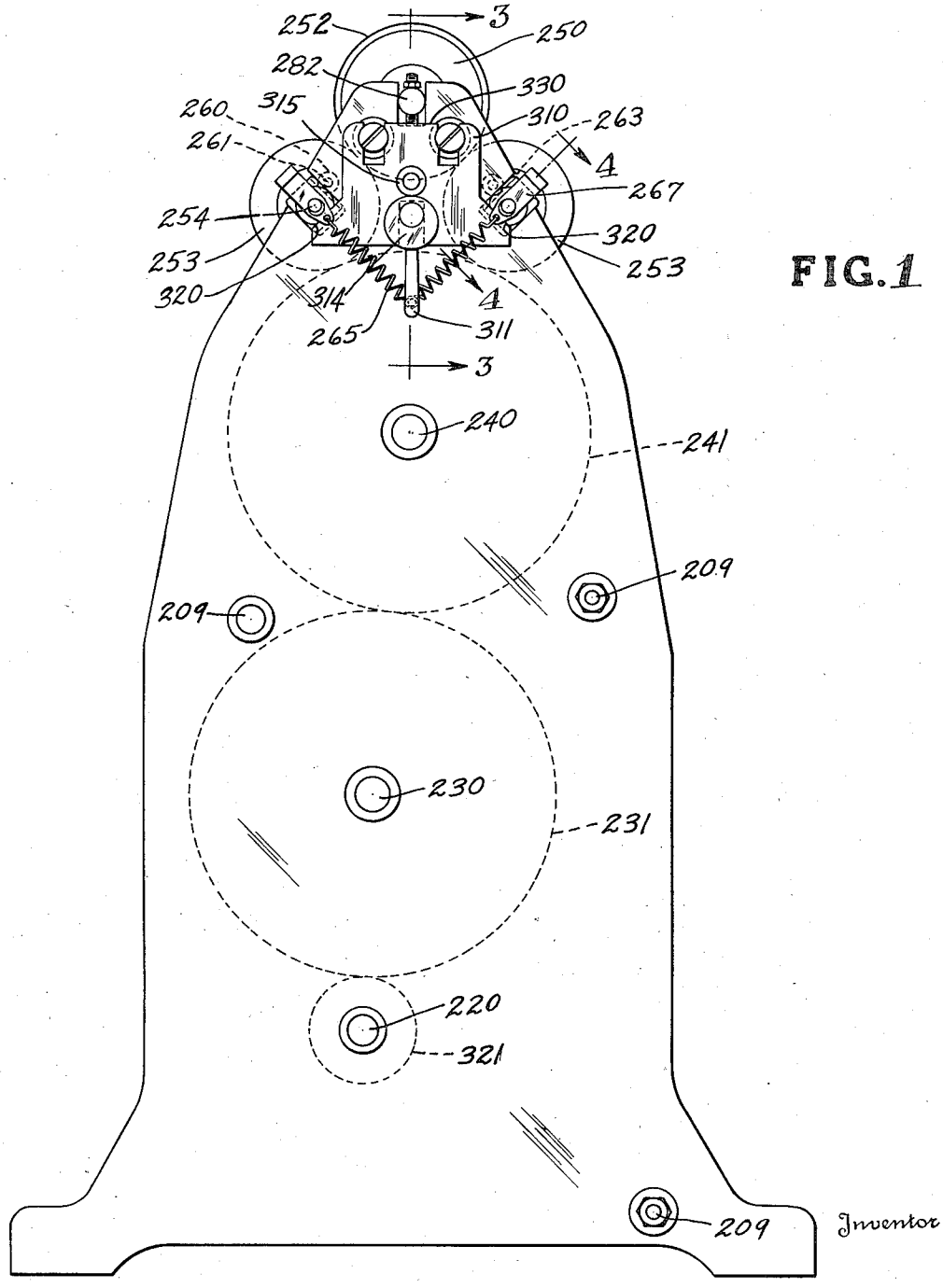


FIG. 1

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FIG. 2.

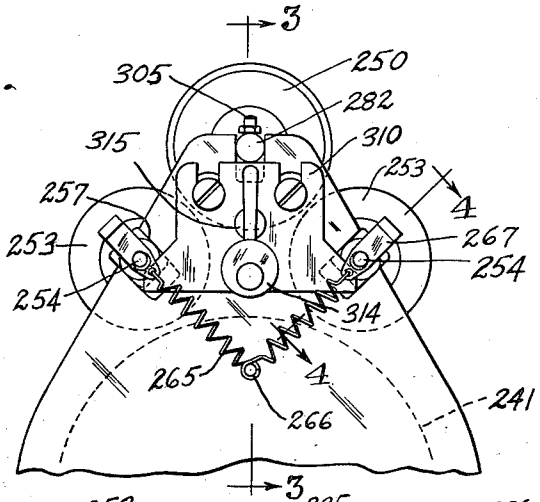
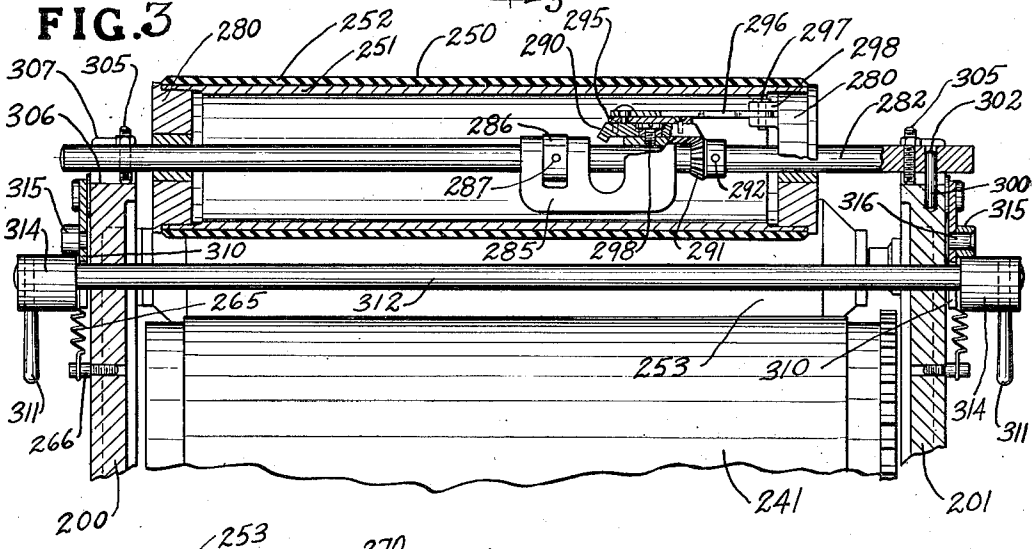


FIG. 3



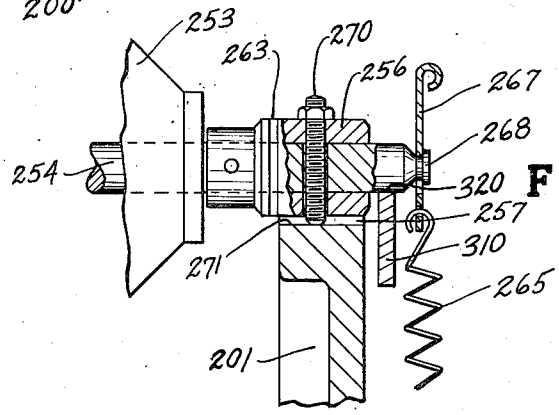


FIG. 4.

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UNITED STATES PATENT OFFICE

2,033,950

INKING MECHANISM FOR PRINTING MACHINES

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Original application August 30, 1932, Serial No. 631,031. Divided and this application January 15, 1934, Serial No. 706,789

6 Claims. (Cl. 101—352)

This invention is a division of my copending application for Letters Patent, Serial No. 631,031, filed August 30th, 1932, and relates to an improved inking mechanism for printing machines. The present invention is especially concerned with an inking mechanism for a small printing machine, and is especially adaptable for use in small rotary printing presses, suitable for office use. The general object of the invention is to devise an inking mechanism that shall be efficient in operation and, at the same time, so simple in its manipulation that it may be readily used in printing presses by those not especially skilled in the planographic art.

My inking mechanism, though not confined to the performance of any particular process, is well adapted for use in a press of the planographic process type, where the plate is given a chemical treatment to make its non-image areas receptive to an ink repellant, which is continuously supplied to the plate cylinder, either through the medium of the ink itself, or through the medium of an independent repellant applicator.

An important feature of my improved inking mechanism is the provision for the ready separation of the form rollers from the plate roller and from the distributor or ink supply rollers, while permitting the parts to be restored without disturbing the adjustment of the relation of the form roller to the plate roll and to the other rolls of the inking system.

Another feature is to provide a mechanism whereby a single manually operable means is provided to separate the form rollers from the plate and to separate the form roller from the supply roller without disturbing the adjusted relationship between the various members.

My invention is hereinafter more fully described in connection with the drawings, which show an approved embodiment of my improved inking mechanism incorporated in a rotary offset planographic printing machine, suitable for carrying out dry lithographic printing processes.

In the drawings, Fig. 1 is a side elevation of a simplified form of printing press incorporating my improved inking mechanism; Fig. 2 is a fragmentary elevation of the machine shown in Fig. 1, with certain parts of the inking mechanism shown in different positions; Fig. 3 is a vertical section through the inking mechanism shown in Fig. 2; Fig. 4 is a fragmentary section as indicated by the lines 4—4 of Fig. 2.

Referring to the drawings it will be seen that I have incorporated my invention on a simplified form of offset printing press. Such press is especially adapted for use in connection with dry lithographic processes heretofore mentioned.

As shown in Figs. 1 and 3, such press comprises, in general, a pair of end frame members 200 and 201 which are tied together by suitable transverse frame members 209. Mounted in the vertical frame plates 200 and 201 are shafts 220, 230 and 240 which carry the platen roll 241, the transfer roll 231 and the pattern roller 241 respectively. The pattern roll, the transfer roll and the platen roll may be rotatably mounted on their respective shafts and geared together to be driven in the usual manner. For simplification these rolls are substantially in vertical alignment and the platen rollers considerably smaller than the other two rolls to conserve space.

The inking mechanism comprises, as shown, an ink supply roll 250, which preferably comprises a cylindrical tube 251, covered with felt or other ink retaining material 252. This roll is supplied with ink by the operator and acts as a reservoir to supply ink to a pair of form rolls 253, which take the ink from the supply roll and distribute it to the pattern roll 241.

As shown in the drawings, each of the form rolls 253 are rotatably mounted on respective shafts 254. Each end of the shafts have pinned thereto, rectangular blocks 256, which are slidably mounted in diagonally extending guideways 257 adjacent the top of the frame plates 200 and 201 in such a manner that the rolls 253 may bear against the upper surfaces of the pattern roll 241 and be separated from each other.

The rolls 253 are restrained against endwise movement in the frame by washers 260, which are secured to the frame by set screws 261 and engage slots 263 in respective blocks 256.

The rolls 252 are normally retained in contact with the pattern roll 241 by tension springs 265, one end of each of which is carried by a pin 266 secured to the frame, while the other ends thereof are attached to clips 267 which are removably mounted on the projecting ends of respective shafts 254. The pressure of the respective rolls 253 against the pattern roll is limited or regulated by adjusting screws 260 and 270, which threadingly engage the blocks 256 and extend through the shaft contacting with the bottom-most surfaces 271 of the recesses 257.

The ink supply roller 250 is arranged to be reciprocated in a direction parallel with its axis. To this end the tube 251 is secured to a pair of end bushings 280, which are rotatably and slid-

ably journalled on the shaft **282**, the shaft being restrained from rotary and axial movements, as will be hereinafter more fully described. Rotatably mounted on the shaft **282**, within the tube **251**, is a bearing block **285**, which is restrained from longitudinal movement relative to the shaft by a suitable collar **286** secured to the shaft by a pin **287**. Rotatably mounted on the bearing block is, as shown in Fig. 8, a bevelled gear **290**, which meshes with a bevelled pinion **291** rigidly secured to the shaft **282** by a pin **292**. Secured to the outer surface of the gear **290** is a bearing plate **295**, eccentrically pivoted to which is one end of a link **296**, the other end of which is pivoted on a pin **297** carried by ears **298** of the right-hand bushing **280** of the roll **250**.

The operation of the various rolls is as follows:

When the pattern roll is rotated it frictionally drives the two form rolls **253**, which in turn frictionally drive the ink supply roller **250**. The rotation of the roll **250**, due to the link connection **296**, causes the bearing block **285** to rotate on the shaft **282**, causing the gear **290** to rotate about its axis **298**, thereby driving the connecting rod **296**, causing the roll to be reciprocated axially on its shaft **282**.

The ink supply roll **282** is prevented from axial movement by a pin **300**, which is secured to the frame member **201** and slidably engages an opening **302** in the shaft. The pressure between the roll **250** and the distributor rolls **253** is regulated by a pair of set screws **305**, which threadingly engage the ends of the shaft **282**, and abut the lower faces **306** of the vertically extending guideways **307**, in which the roll is mounted.

When the machine is to be stopped, it is highly desirable that the rolls **241**, **253** and **251** be separated from each other. I therefore provide mechanism whereby this separation is simultaneously accomplished by the operator. As shown, I slidably mount plates **310** on the outer faces of the frame members **200** and **201** for vertical movement. When the machine is in operation the position of these plates is that shown in Fig. 6. However, when the operator desires to separate the rolls he grasps a lever **311**, and turns it 180°, rotating a cam shaft **312**, each end of which is provided with a cam **314** arranged to engage rollers **315** rotatably mounted on studs **316** carried by respective plates **310**. The action is such that the plates are moved upwardly, causing bevelled surfaces **320** thereof to engage the ends of the shafts **254**, camming such shafts outwardly in their guideways and moving their respective rolls **253** from contact with the pattern roll **241**.

The operation of the plates **310** is such that as the rolls **253** are moved out of contact with the pattern roll **241**, the ink supply roll **250** is simultaneously raised out of contact with the rolls **253**. In the construction shown, the arrangement is such that as soon as the surface **320** of the cam plate contacts with the shafts **254**, the uppermost surfaces **330** of the cam plates will contact with the extended ends of the ink supply roll shaft **282** and cause it to be raised simultaneously with the movement of the two form rolls. It will be noted, however, that the ink supply roll is raised vertically and hence raised as fast as the cam plate, whereas the form rolls are moved in an inclined direction by cam surfaces **320**, which causes them to move outwardly in their guideways at a somewhat slower rate of speed than the movement of the cam plate. Therefore, all of the rolls may be simultaneously separate from each other by the simple movement of the lever **311**, and can be left standing in the separated position as long as desired.

I claim:

1. In a printing machine, the combination with a form of a form roller, adapted to coact with the form and having a movable bearing, and an ink supplying roller adapted to coact with the form roller and having a movable bearing, a movable member having a direct abutting connection with said bearing for the supplying roller and an inclined sliding connection with said bearing for the form roller.

2. The combination with a rotary printing member, a pair of parallel form rollers adapted to engage the same, an ink supply roller contacting with both form rollers, all of said rollers having movable bearings, shiftable plates at the opposite ends of the machine, having a direct connection with the bearings for the supply roller and having an inclined sliding connection with the bearings for the form rollers, a rock shaft, and a pair of cams thereon adapted to operate the two plates simultaneously.

3. The combination of a rotary drum, a frame adapted to carry a pair of ink transfer rollers adapted to coact with the form, an ink supply roller coacting with both transfer rollers, mechanism at one end of the frame for moving one end of the supply roller away from the transfer rollers in a direction radial of the drum, and for simultaneously moving one end of the transfer rollers away from the form in oppositely inclined directions, a second means at the other end of the frame for similarly moving the opposite ends of the rollers, means interconnecting said aforesaid means including a pair of cams, and a common operating member for said cams.

4. The combination with a rotary printing member, a pair of spaced parallel form rollers adapted to engage the same, an ink supply roller, contacting with both form rollers and bridging the space therebetween, all of said rollers having movable bearings, plates at the opposite ends of the machine said plates being shiftable in a direction toward the bearings for the supply roller and having an inclined sliding connection with the bearings for the form rollers, a pair of cams adapted to operate respective plates, and means to operate said cams simultaneously.

5. An inking system for a printing machine comprising in combination two form rollers and a supply roller coacting with both form rollers, all of said rollers having movable bearings, means for guiding said bearings in respectively different directions, and an operating device having a direct abutting connection with the bearings for the supply roller and inclined sliding connections with the bearings for the form rollers, to effect a separation of the form rollers from the form and the supply roller from the form rollers by a single movement of said operating device.

6. The combination, in a printing machine, with a pair of frame plates and a form cylinder mounted between them, of a pair of form rollers adapted to coact with the form and a supply roller adapted to coact with the form rollers, a pair of plates slidably mounted on the frame plates respectively and acting against the supply roller and having oppositely inclined surfaces acting against the form rollers, to separate the form rollers from the form and the supply roller from the form rollers, and means for moving said plates as a unit.

LAWRENCE H. MORSE.