Aug. 9, 1927. 1,638,544

L. H. MORSE

PRINTING PRESS

Filed March 9, 1925 7 Sheets-Sheet 1

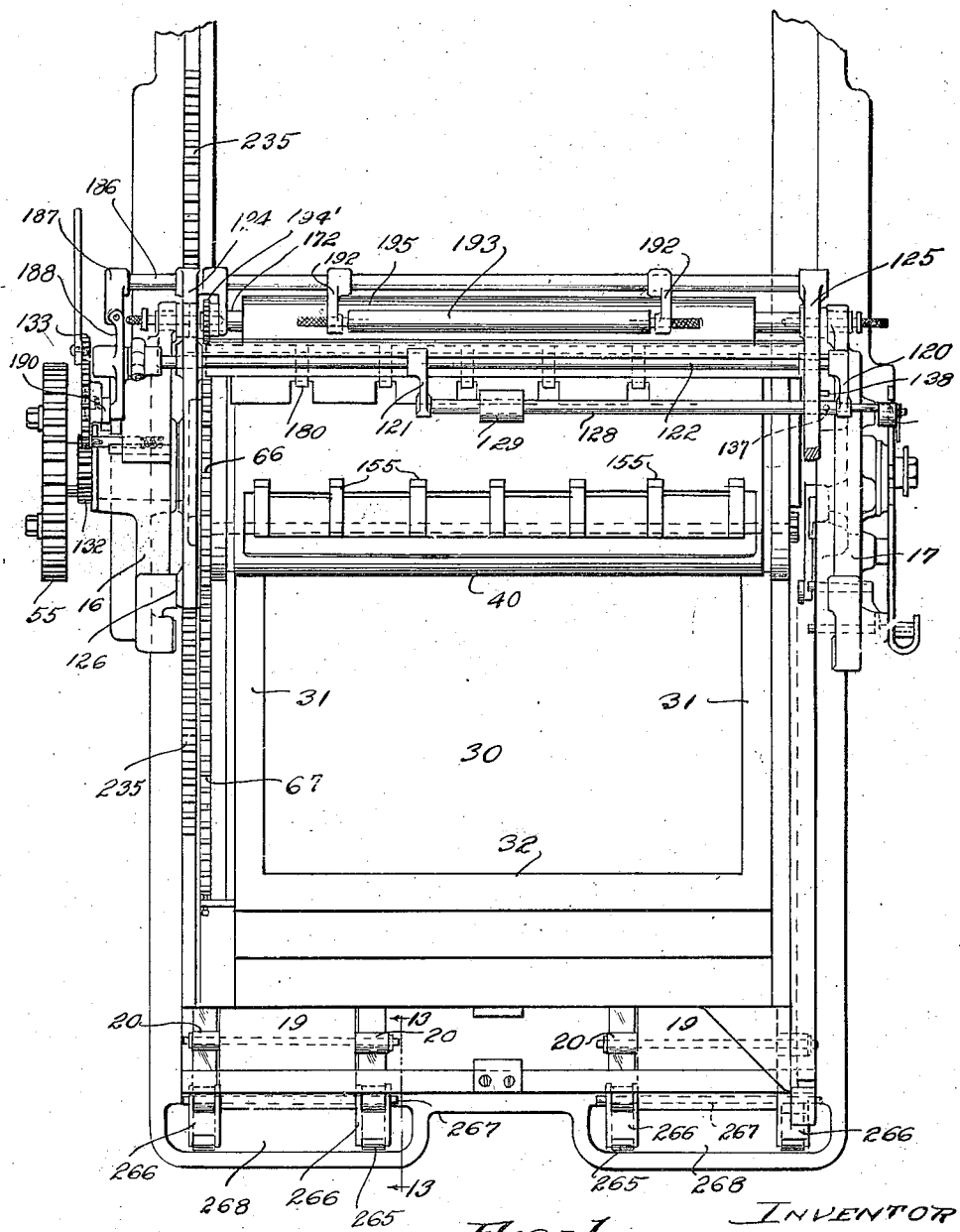


FIG. 1

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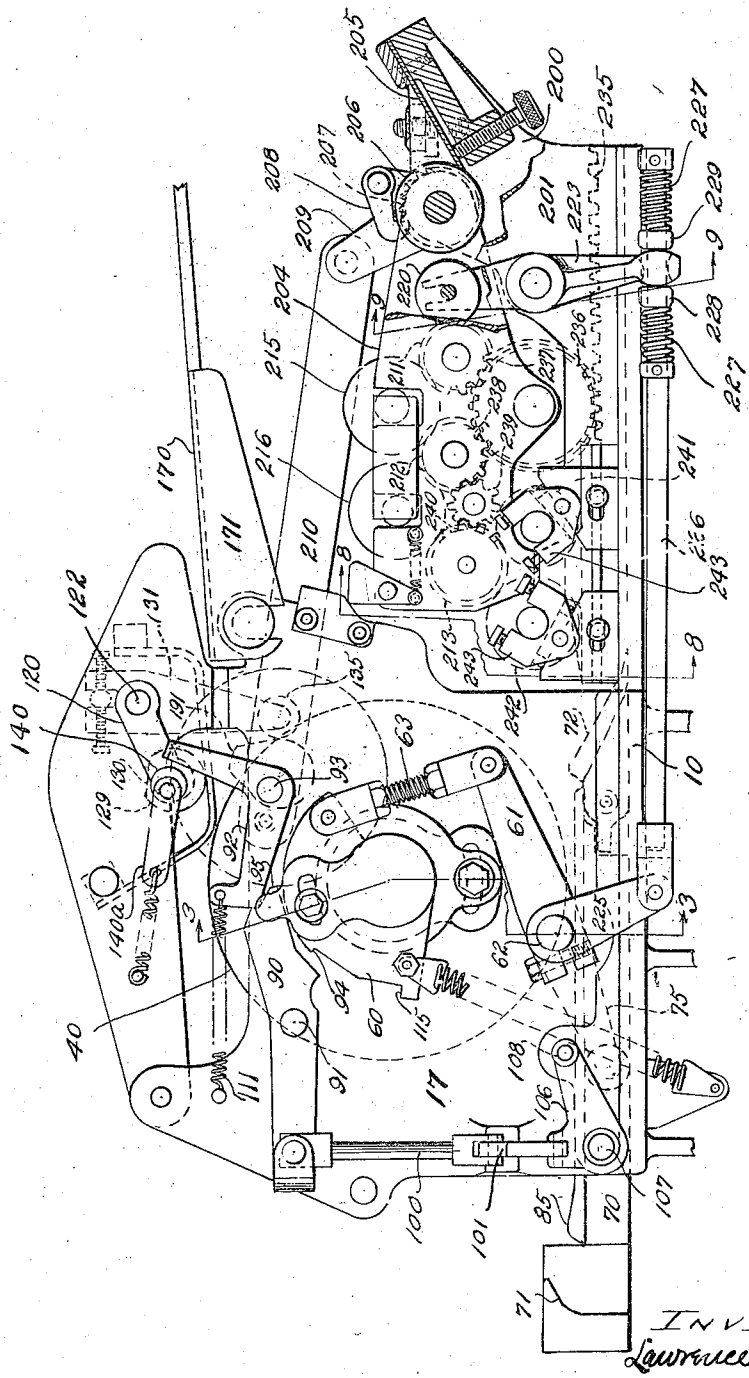


FIG. 2.

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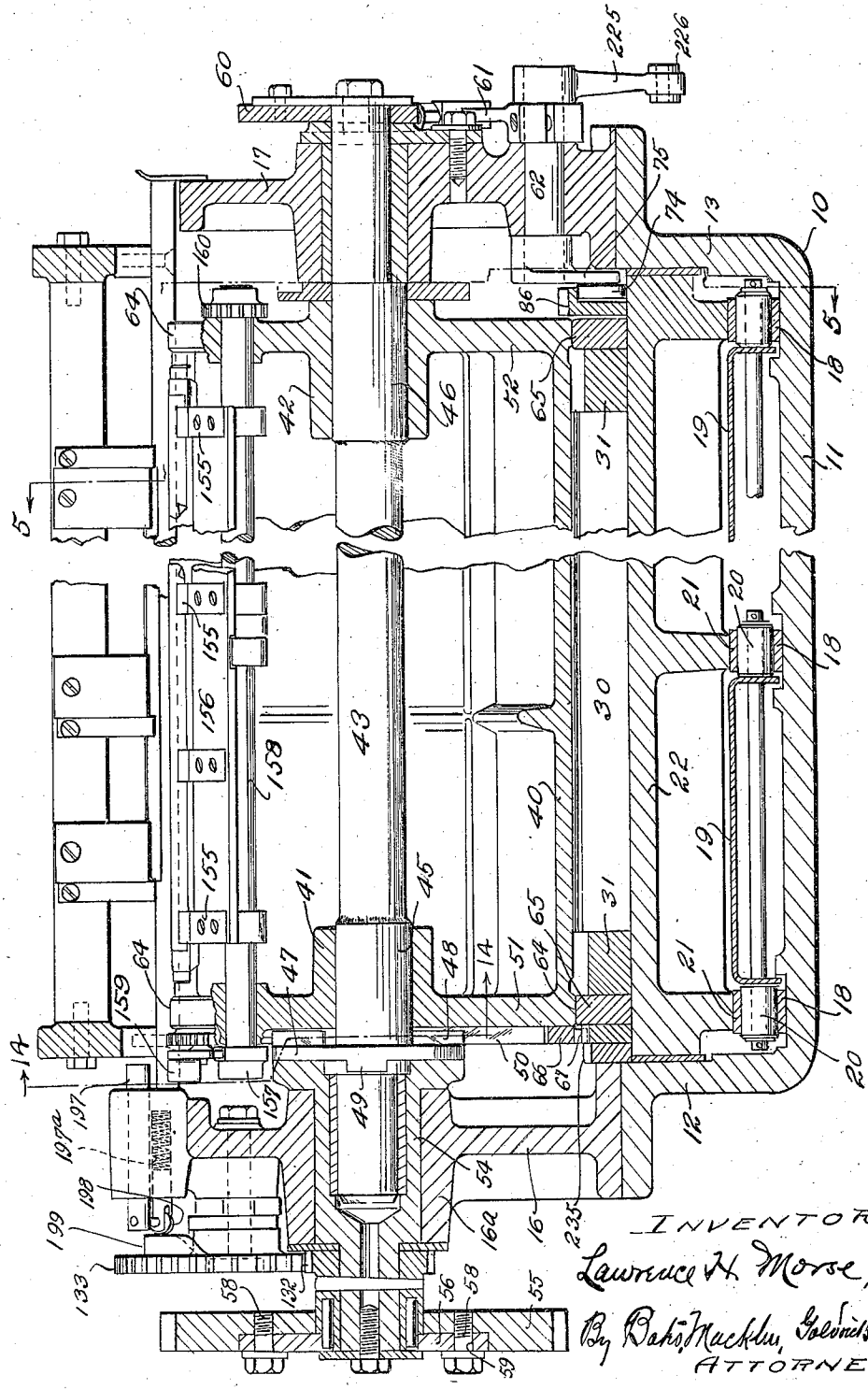


FIG. 3

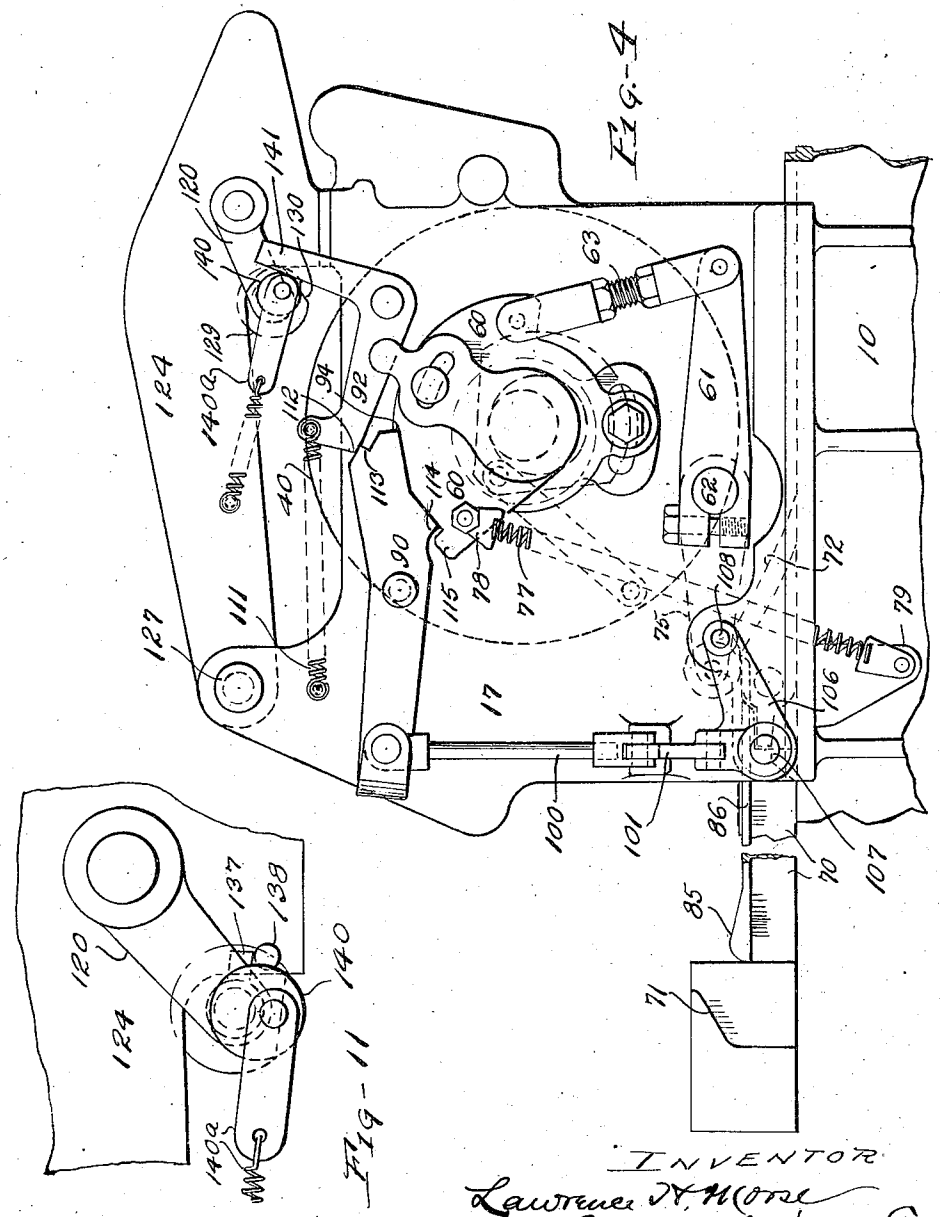
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Aug. 9, 1927. 1,638,544

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Filed March 9, 1925 7 Sheets-Sheet 4



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Aug. 9, 1927. 1,638,544

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Filed March 9, 1925 7 Sheets-Sheet 5

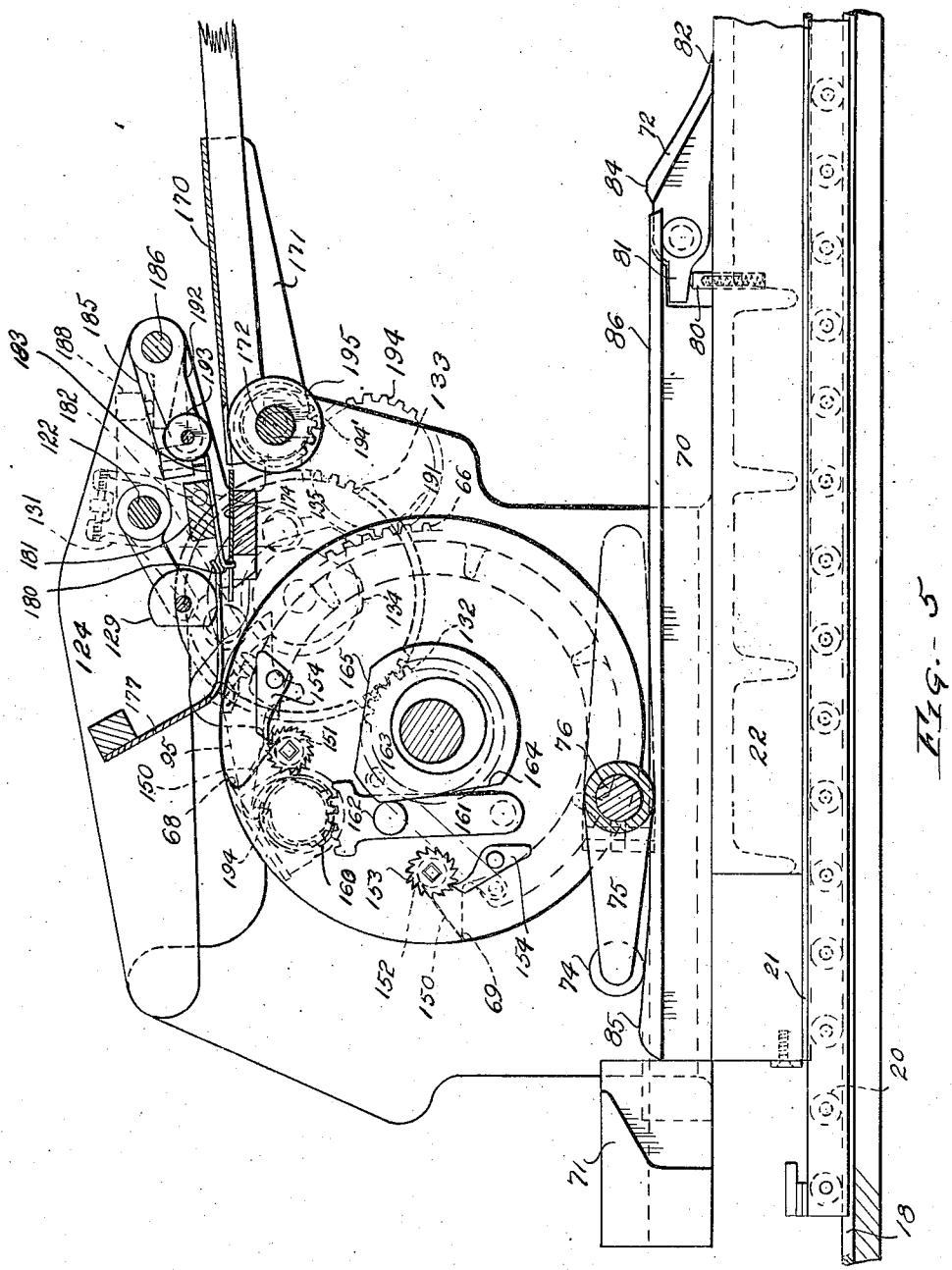


Fig. 5.

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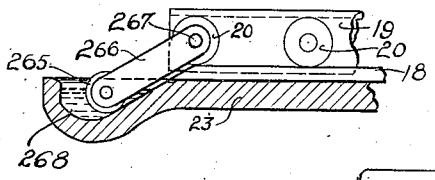


FIG. - 13

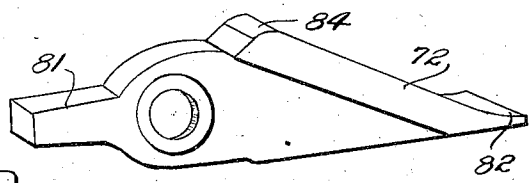


FIG. - 12

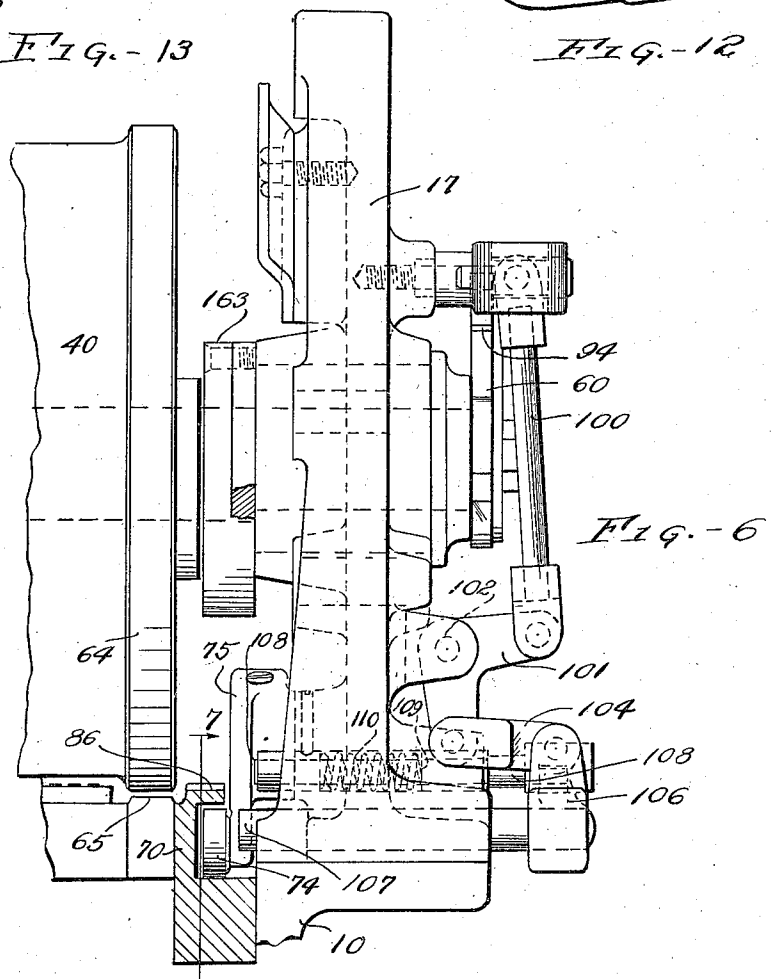


FIG. - 6

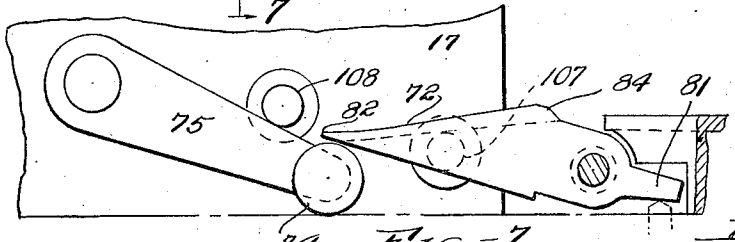


FIG. - 7

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Aug. 9, 1927. 1,638,544

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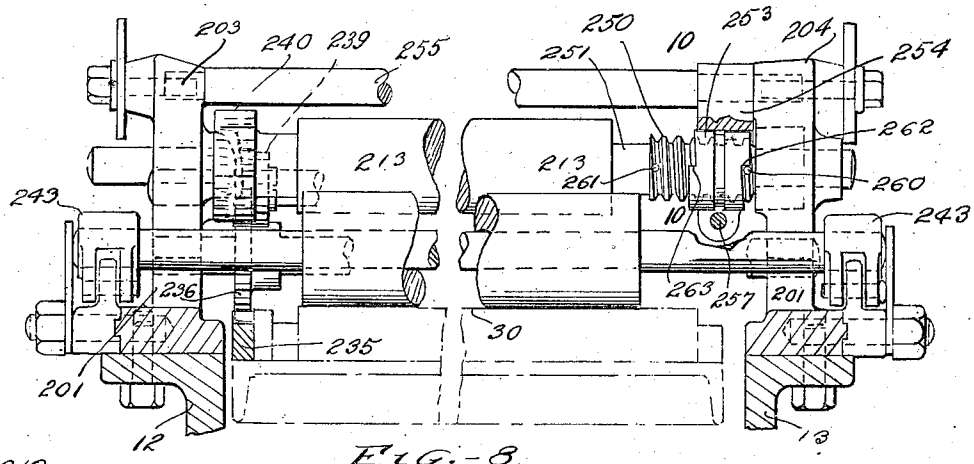


FIG. - 8

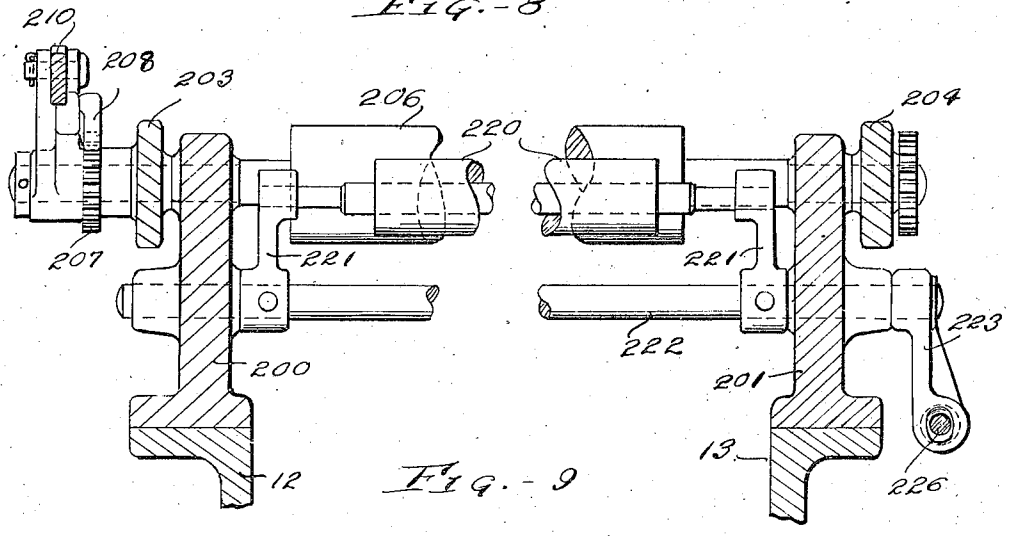


FIG. - 9

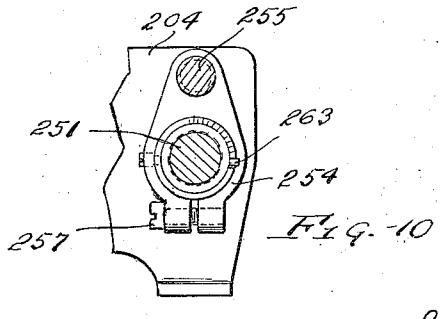


FIG. - 10

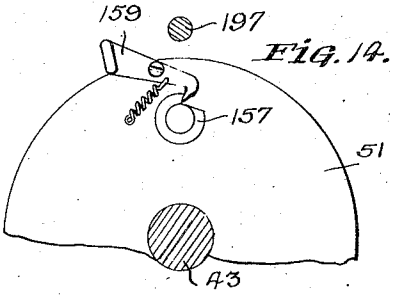


FIG. 14.

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Patented Aug. 9, 1927. 1,638,544

UNITED STATES PATENT OFFICE.

LAWRENCE H. MORSE, OF CLEVELAND, OHIO, ASSIGNOR TO THE AMERICAN MULTIGRAPH COMPANY, OF CLEVELAND, OHIO, A CORPORATION OF OHIO.

PRINTING PRESS.

Application filed March 9, 1925. Serial No. 14,013.

This invention relates to printing presses and is concerned particularly with bed and cylinder type of presses. The general object is to provide a printing press which shall operate rapidly and efficiently, in which the paper shall be gripped without tearing and in which likelihood of damage to any of the parts or fouling from ink is provided against by the use of safety mechanisms. This includes effective mechanism for turning the platen to active position only when paper is present, also an arrangement whereby the ductor roll of the ink mechanism does not function if the machine is operated without paper, whether from neglect of the operator or failure of the feeding machine.

Further objects and features of the invention will become apparent from the description of that embodiment of my invention illustrated in the accompanying drawings, wherein I have shown a preferred form. The essential characteristics will be summarized in the claims.

In the drawings, Fig. 1 is a plan view of my printing press, with the paper feeding tray, inking mechanism and paper receiving tray removed; Fig. 2 is a fragmentary side elevation of the central portion of my printing press, the supporting frame of the press being broken away and a portion of the inking mechanism being shown in section; Fig. 3 is a cross-section taken substantially along the plane indicated by the line 3—3 on Fig. 2; Fig. 4 is a fragmentary side elevation, viewed from the left side of the machine, of the impression cylinder supporting and actuating means and the associated parts; Fig. 5 is a section taken along the lines 5—5 of Figs. 1 and 3 showing the bed and cylinder parts in a different position; Fig. 6 is a fragmentary sectional rear elevation of one end of the impression cylinder showing one of its supporting brackets and certain of the cylinder raising and lowering mechanisms associated therewith; Fig. 7 is a fragmentary cross-section taken along the lines 7—7 of Fig. 6; Fig. 8 is a fragmentary sectional front elevation of a portion of the inking mechanism taken along the line 8—8 of Fig. 2; Fig. 9 is a fragmentary section through the inking mechanism taken along the line 9—9 of Fig. 2; Fig 10 is a fragmentary section taken along the line 10—10 of Fig. 8; Fig. 11 is an enlarged fragmentary view of a portion of the mechanism shown in Fig. 4, in a different position; Fig. 12 is a perspective of the pivoted cam which forms part of my cylinder raising and lowering mechanism; Fig. 13 is a fragmentary cross-section as indicated by the lines 13—13 on Fig. 1; Fig. 14 is a detail in elevation of the latching mechanism which controls the gripping fingers, being a fragmentary vertical section on the line 14—14 on Fig. 3.

The printing press comprises a bed suitable for holding a printing chase which is arranged to be reciprocated by mechanism not shown in this application, but which is well set out in my prior application Serial No. 602,192, filed November 20, 1922. It is to be understood that the mechanism for reciprocating the bed may be of any known type as well. A printing cylinder adapted to pick up sheets of paper and carry them into engagement with the printing chase is arranged to be driven in one direction synchronously with one of the reciprocations of the type bed, that is to say, the peripheral speed of the cylinder is the same as the speed of the type bed. Suitable means for rotating the cylinder is also shown in my prior application above referred to.

The press is shown as having a base portion 10 which has a floor portion 11 and side wall portions 12 and 13. Supported by the members 12 and 13 I have shown side frame brackets 16 and 17. The type bed 22 is carried on the floor portion and may bear upon rail members 18, secured to the floor 11. Antifriction means such as bearing rollers 20, connected together by channel shaped spanning members 19 are shown as bearing upon the rails 18 and against similar rails indicated at 21 secured to the lower side of the bed. A printing chase 30 is shown as carried on the bed between side and end frame strips 31 and 32.

The frame brackets 16 and 17 serve to

support the printing cylinder or platen, as shown in Figs. 2 and 3. The cylinder is indicated generally at 40 and has end walls 51 and 52 and hub portions 41 and 42 through which a shaft 43 extends. The shaft has at its ends eccentric cylindrical portions 45 and 46. Provision is made whereby the platen may be raised and lowered by the partial rotation of these eccentric portions while driving the platen through an Oldham coupling member 47, having perpendicularly disposed tongues 48 and 49. The tongues 48 bear in a groove 50 in the end wall 51 of the cylinder, while the other tongues bear in similar grooves in a flanged tubular member 54 shown as extending through the boss portion 16ª of the bracket 16 and carrying at its outer end a driving wheel 55, which serves to rotate the cylinder. The wheel 55 is capable of adjustment so that the cylinder may be turned with reference to the bed to register the impression surface of the platen with the type chase. The adjusting means may comprise a circular plate 56 shown as rigid on the cylindrical member 54, the plate being provided with screws 58 which, rigid with the driving wheel 55, extend into slots 59 in the plate. Adjustment is made by loosening these screws 58 and turning the plate with reference to the wheel.

The mechanism for effecting the turning down of the cylinder at the proper time so that a sheet carried by the platen is brought into contact with the printing chase is shown in Figs. 1 to 5 and includes a peculiarly shaped platen operating plate 60 adjustably and rigidly secured to one end of the shaft 43. The plate is arranged to be rotated to the right from the position shown in Fig. 2 by an adjustable link 63 which connects the plate to a lever 61 rigid on a rock shaft 62 and arranged to be operated by cams shiftable with the type bed. When the plate is so rotated the eccentric cylindrical portions 45 and 46 of the shaft 43 cause the platen to be lowered as shown in Figs. 3 and 4, while when the plate 60 is turned to the position shown in Fig. 2 the platen is raised out of engagement with the type bed.

For effecting the raising and lowering of the platen cylinder in proper timed relation to the reciprocations of type, the type bed carries an overhanging cam member 70 as shown in Figs. 2 and 5 and also end cam members 71 and 72, the latter being pivoted. These cam members cooperate with a roller 74 carried on a lever 75, rigid with the rock shaft 76 to which the cylinder operating lever 61 is also rigidly secured. To raise the platen or cylinder the plate 60 as shown in Fig. 4 is provided with a tension spring 77, secured to the plate at 78 and to a bracket 79 on the main frame of the printing press. The spring normally tends to rotate the plate 60 to the left as shown in Fig. 4, holding the cylinder out of contact with the type bed. The roller 74 therefore is normally swung downwardly from the position shown in Fig. 5, to that shown in Fig. 2 where it remains beneath the overhanging brow 86 of the traveling cam 70.

If the type bed is reciprocated toward the rear of the machine, that is to say the left end as shown in Figs. 2 and 5, the pivoted cam 72 engages the roller 74 and is thereby rocked upwardly against the action of the spring pressed plunger 80 engaging an arm 81 on the cam. The cam thus assumes the position shown in Fig. 7 until its end 83 clears the roller, whereupon it snaps down to its normal position on the bed. The forward reciprocation of the type bed therefore will cause the cam to raise the roller which rides upon the incline on the cam 72 lowering the cylinder into engagement with the bed through the rock arm lever and plate arrangement just described.

Suitable latching mechanism will be hereafter described for holding the arm 75 in its raised position so that the impression platen will be maintained in its lowered position until the forward stroke of the type bed is completed. The rearward end of the brow cam 70 is provided with a rise 85 which tends to effect a still greater rotation to the right of the plate 60 and is for the purpose of tripping the latching mechanism at the end of the printing stroke, and the cam 71 acts to throw the lever 75 positively downward where it may be held in its normal or lowered position by the overhanging ledge 86 during the succeeding rearward stroke of the type bed.

The latching mechanism above referred to comprises a latching member 90 pivoted at 91 to the frame bracket member 17, and an auxiliary latching member 92 also pivoted to the bracket at 93. The plate 60 is provided with a notch 94 on its periphery which cooperates with the pointed end 95 of the latch 90 when the plate is rotated to the extreme right as shown in Fig. 4. I have arranged for causing the latch 90 to assume its latching position by the arrangement shown in Figs. 4 and 6 wherein the left hand end of the lever is shown as adapted to engage the upper end of a link 100, which connects the latch to one arm of a bell crank 101 secured to the frame at 102. The other arm of the bell crank is normally pulled outwardly as shown particularly in Fig. 6 by means of a short connecting link 104 and a spring pressed yoke 106. The yoke is carried rigidly by plungers 107 and 108 which extend inwardly through the frame bracket 17 into the path of the pivoted cam 72 and the lever 75 respectively. One of these plungers, namely 108, is shown as having

a shoulder 109 against which a spring 110 is adapted to press to normally hold the plunger in its outermost position and through the linkage just described rotating the lever 90 into engagement with the plate 60. It follows that when the plate 60 is rotated to the right by the action of the roller 74 engaging the cam 72 the front end 95 of the lever 90 will be pressed downwardly into the path of the notch 94. When the lever 90 is held in its raised position with regard to the plate 60 by the auxiliary latching arm 92, it places the pin 107 in the path of the cam 72 so as to raise the cam as it traverses the pin 107 as shown in Fig. 7. The pin 108 meanwhile overlies the arm 75 to hold the roller 74 in its position on the type bed. But if the lever 92 is tripped when the type bed is in its extreme rearward position, the pin 107 is withdrawn and the cam 72 drops to the position shown in Fig. 4 while the pin 108 no longer holds the arm 75 in lowered position. It follows that the consequent return movement of the type bed will cause the arm 75 to be raised so as to lower the platen to printing position, where it will be held by the latch 90.

In Fig. 7, I have shown the relation of the pins to the cam 72 and the lever 75, whereby the pin 108 serves as a safety device for retaining the platen in raised position irrespective of the operation of the spring 77 at the point when the type bed is approaching its rearward position. Whether paper is being fed, the cam may pass over it on the return stroke of the type bed. Now if for any reason the spring 77 should fail to act to hold the platen in raised position and the lever 75 down, the roller 74 might engage the pointed end of the cam and either suddenly stop the machine or break the cam. This is effectively prevented by the pin 108 overlying the arm 75 so long as the lever 90 is maintained in raised position by the non-feeding of paper.

I have arranged for holding the latch 90 out of engagement with the plate 60 by the auxiliary latch 92 above referred to. This latch is normally moved downwardly by a spring 111 secured to the latch at one end and to the bracket 17 at the other, tending to rotate the lever to the left about its pivot. The nose 112 of this latch arm is adapted to coact with a notch 113 in the right hand end of the latch 90 when the lever is raised out of contact with the plate, as shown in Fig. 2. The means for raising the latch arm comprises a heel 114 on the lever 94 which is engaged by a projection 115 on the plate when the roller 74 rides over the high point of the cam 72 or when the roller engages the high portion 85 of the cam 70, on either end of the stroke of the type bed. The exact cooperation of these parts will be later set out more in detail.

Means for operating the latch 92 to cause the latch 90 to hold the impression platen in lowered position whenever a sheet of paper is fed to the machine may comprise a foot operated treadle such as shown in my prior application above referred to, or a paper controlled device such as shown in the application of Henry C. Osborn, Serial No. 616,924, filed February 5th, 1923. I have shown the latter in this embodiment. This device consists of a pivoted frame composed of arms 120 and 121 rigidly carried on a rock shaft 122 journalled in frame members 124 and 125 which are shown as pivotally secured to the brackets 16 and 17 at 126 and 127 respectively. The arms carry a freely rotatable shaft 128 which in turn carries a friction roller 129 having a flat side 130. The roller is above the path of the paper to be printed and is adapted to be carried downwardly into engagement therewith by an arm 131 rigid with the right hand end of the shaft 122. This arm is actuated on every second revolution of the cylinder to move the roller 129 into engagement with the paper by reason of a two-to-one gearing shown at 132 and 133 on the extreme right hand side of the machine, the gear member 132 being rigid with the shaft 43 of the cylinder as shown in Fig. 3. The gearing acts to cause the lowering of the roller through a cam 134 (Figs. 2 and 5), bearing against a roller 135 on the lower end of the arm 131.

The operation of the flat sided roller will be more apparent from the description of the paper feeding mechanism to follow, but for the present it is sufficient to assume that the roller is rotated only when the machine acts to feed paper. The normal position of the roller 124 is shown in Fig. 2 with its flat side uppermost, and, as paper is being advanced toward the impression platen, the roller is lowered and is turned by the frictional engagement with the paper to substantially the position shown in Fig. 11, where it is held with the flat side downward and out of engagement with the paper by an eccentrically mounted link and spring connection 140a which temporarily holds stop pins 137 and 138 on the shaft 128 and the frame member 124 respectively against each other as shown in Fig. 11. The pins are disengaged when the arms 120 are again raised. Rigid on the extreme left hand end of the shaft 128 is an eccentric cam member 140 which is turned by the frictional engagement of the roller 129 with the paper, to bear against the upwardly extending arm 141 of the auxiliary latch 92 as shown in Fig. 4. The auxiliary latch 92 is accordingly thrown from engagement with the latch 90 whenever the paper is fed, and it therefore follows that when the type bed is in position to lower the impression platen, upon the engagement of the pivoted cam 82 carried thereby with the roller 74, the for-

ward end of the lever 90 is allowed to lower into engagement with the plate 60 to hold the cylinder in its lowered position in engagement with the type bed. If no paper is fed and gripped by the platen gripping fingers the roller 129 will simply lower and will not be rotated by the paper to operate the eccentric member 140. The plate 60 will therefore be prevented from rotating to platen lowering position by reason of the pin 107 overlying the arm 75 whenever the latch 91 is in raised position as shown in Fig. 2.

The means for feeding sheets to the impression platen and the means for gripping the sheets and carrying them around the impression platen or cylinder into engagement with the type will now be described with particular reference to Figs. 1, 2, 3, and 5. The impression platen 40 is in the nature of a hollow drum having bearer rings 64 at its ends adapted to engage bearer strips 65 on the bed plate whenever the platen is in lowered position and provided with a circular toothed rack 66 meshing with a horizontal adjustable register rack 67 on the type bed. The drum is open at one side and substantially closed at its ends as shown in Fig. 3. The edges of the opening in the drum define the impression surface of the platen. Over these edges designated 68 and 69 and around the drum, it is customary to draw a tympan sheet of varying thickness to build up the platen surface so that a sheet carried thereon will be pressed uniformly upon the type. Such a tympan sheet is shown at 150 in Figs. 3 and 5 and it is shown as retained on the drum by rollers 151 and 152 which are maintained in position to apply tension to the tympan sheet by ratchets 153 and pawls 154.

Bearing upon one edge of the drum and immediately against the tympan sheet I have shown gripper fingers 155. These fingers are shown as rigidly mounted on a bar 156 and shaft 158 which is journaled in the ends of the drum. The fingers are adapted to be swung away from the edge of the drum by springs (not shown) and to be swung into contact therewith by reason of a cam, gear and sector mechanism positioned at the left hand end of the drum as shown in Fig. 5. The gear is designated 160, and is rigid with one end of the shaft 158 and meshes with a sector 161 having a roller 162 bearing upon a disc cam 163 having flattened surfaces 164 and 165. In Fig. 5 the sector is shown in position just before the outward swinging of the fingers is effected to eject a printed sheet.

The paper is fed from a stack on a table 170, removably secured by brackets 171 to the ends of a shaft 172 extending between the frame brackets 16 and 17. Suitable guide plates 174, 176 and 177 are shown as carried rigidly by the arms 124 and 125 the first of which receives the end of the paper, a sheet at a time from the table 170; the others guide it toward the uppermost region of the platen surface. In my prior application the paper was fed to a predetermined position against rigid stop fingers from which position the gripper fingers moving rapidly in an arc grasped the fed edge of the paper and carried it about the drum. In the present instance I have provided pivotally mounted stop fingers 180 normally in the path of the fed paper, and mounted on a bar 181 pivoted at 182 to the arms 124 and 125. The bar is provided with a forwardly extending projection 183 which is shown in Fig. 1 in position to be engaged by an arm 185 on a rock shaft 186 also journalled in the arms 124 and 125. At the extreme right hand end of this shaft 186, is an arm 187 which underlies an arm 188 of a lever 189 carrying a roller 190. The roller 190 bears against the rise in a second cam 191 rigid on the member 133 of the two-to-one gearing, heretofore mentioned, at the proper time with relation to the revolutions of the impression platen so that the cam operates to lower the arm 185 and consequently to lift the stop fingers 180 out of the path of the paper. At the same time, a friction roller 193 carried by arms 192 rigid with the rock shaft 186 carry the paper into engagement with a coacting set of feed rollers 195 beneath the paper which I have shown adapted to be continuously driven through an idler gear 194 in mesh with the gear 66 on the platen and driving a gear 194′ rigid on the roller shaft 172.

As a result, the paper is fed rapidly forward under the gripper fingers just as they are caused to be lowered against the edge of the platen by the action of a sector roller 162 engaging one of the circular portions of the cam 163. The friction roller 129 above referred to with respect to the tripping mechanism now acts to withdraw the auxiliary latch 92 out of engagement with the end of the latch 90 which drops to engage the abutment of the plate 60 when the plate is rotated to lower the platen as previously described.

To enable the platen gripper fingers to hold the paper while it is being carried about to receive an impression from the type bed, and to cause them to subsequently release the paper at the proper time for delivery of the printed sheet, I preferably employ the latching mechanism for the gripper fingers herein shown, which operates in connection with the two-to-one gearing 132 and 133 previously referred to. This mechanism as shown in Figs. 1, 3 and 5 comprises a notched member 157 rigid on one end of the shaft 158 which cooperates with a latch 159 pivoted to the end wall 51 of the impression platen.

This latch has a cam portion (Fig. 14) adapted to engage a spring pressed plunger 197 carried by the frame member 16. The latch normally engages the shoulder on the member 157 by reason of a tension spring. Whenever the gripper fingers are thrown into paper engaging position on the impression platen, the plunger 197 is retracted from the path of the cam end of the latch by a spring 197a allowing the latch to engage the member 157 and hold the fingers in paper engaging position. After the paper has been printed the platen completes a second rotation while still holding the paper and then the plunger 197 is thrown into the path of the cam on the latch 159 by reason of a cam 199 on the gear 133 engaging a roller 198 carried by the plunger. This occurs when the platen is about in the position shown in Fig. 5 and further rotation causes the release and ejection of the printed sheet. Any suitable discharging mechanism and receiving tray may be used in connection with this machine, such for instance as is shown in my prior application.

By reason of feeding of the paper in the manner described the fingers need only raise slightly to grip the paper and need not operate at very great speed. Moreover the fed edge of the paper suffers no damage by reason of any sudden blow of the fingers as was apt to be the case with my former mechanism.

The ink distributing mechanism will now be described in connection with Figs. 2, 8, 9, and 10. This inking mechanism comprises a set of rollers which as shown are driven by the rack and gear connection between the type bed and the rolls. The rolls are suitably journalled in bracket members supported by the side frame members 12 and 13. I have shown standards 200 and 201 rising from the side frame members which serve to support pivoted roller carrying brackets 203 and 204. An ink fountain is shown in Fig. 2 as positioned across rearwardly extending portions of the frame members 200 and 201 and comprises a plate 205 the forward end of which is adapted to bear against the lower side of a cylinder 206 so that a channel for receiving ink is formed between the plate and the cylinder. The cylinder is arranged to be rotated by the two-to-one gearing previously described through the agency of a ratchet and pawl connection 207 and 208 at the right of the machine operated by an arm 209 and link 210 which connects the arm to the gear 133. Other rolls or cylinders exclusive of the ductor roll may be connected together by gearing and comprise the distributor rolls shown at 211, 212, and 213. Composition rolls 215 and 216 are shown as journalled in slots at the top of the pivoted frame members 203 and 204 in frictional contact with the positively driven rolls; and form rolls 241 and 242 supported on pivoted arms 243 are similarly driven.

Ink is fed to this system of rollers by a ductor roll 220 journalled in the slotted upward ends of arms 221 rigid on a rock shaft 222. The rock shaft carries at its outward end an arm 223 at the left side of the machine and this arm is arranged to reciprocate the ductor roll backwardly and forwardly from the fountain roll 206 to the first of the series of distributor rolls 211 only when the printing platen is lowered to the type bed. It will be remembered that the type bed is raised and lowered by the action of a rock shaft 62 operated by cams on the bed plate and I utilize this movement, which occurs only when paper is fed to the machine, to reciprocate the ductor roll. The connection between the rock shaft 62 and the arm 223, as shown in Fig. 2, comprises an arm 225 rigid on the rock shaft and a connecting link 226. The link is provided with compression springs 227 which press against sleeves 228 and 229, slidable on the link, which sleeves engage the forward and rearward faces of the lower end of the arm 223. A resilient connection between the arms 223 and 225 is thereby effected in case the ink should accumulate and harden on the ductor roll or in case any foreign matter should become interposed between the ductor roll and the cooperating rollers, thereby avoiding any likelihood of breaking any of these or the associated parts of the machine.

The inking rollers, as shown in Figs. 2 and 8, may be conveniently driven by a rack 235 on the right hand side of the type bed (left as shown in Fig. 8). The rack is shown in mesh with a gear 236 which in turn meshes with gears 237 and 238 carried rigidly by the rollers 211 and 212 respectively. The gear 238 is in mesh with an idler gear 239 which drives a gear 240 on the roller 213.

The form rolls 241 and 242 engage an ink distributing plate (not shown) and also the type as shown in broken lines in Fig. 8; and to more completely distribute the ink on these rollers 241 and 242, I have arranged the roller 213 to be reciprocated transversely of the machine. The reciprocating mechanism comprises a threaded member 250 rigid on the shaft 251 of the roller 213. The teeth of the gear 240 are long enough so that the roller may be shifted to and fro along the rollers 212 and 213 for a little distance without becoming disengaged from the idler 239. The threaded member 250 engages a nut 253 which is held by a split clamping member 254 shown in Figs. 8 and 10 as secured at its upper end against rotation by a cross bar 255 extending between the frame members 203 and 204. The nut is adjustably clamped by this split member by reason of a screw 257 so that the frictional contact between the nut and its holder may be only slightly

greater than the frictional contact between the threads of the member 250 and the nut. At either end of the screw 250 I have shown pins 260 and 261 which are arranged to abut shoulders 262 and 263 on the nut when the roller is shifted to either its extreme left or right hand position. It results that if the frame carrying this reciprocable roller should be lifted for the purpose of adjusting any of the rollers or for inspecting or removing the form rolls, and the position of the type bed should be changed with relation to the reciprocable roll before the frame is put back into place, the re-engagement with the gear teeth will not cause the inking mechanism to jam even if the screw 250 is already in its extreme right or left hand position because in such a case one or the other of the two pins 260 or 261 would simply engage the respective shoulder on the nut and the nut would turn idly within the clamping member 254 until the rotation is reversed.

A feature of my invention is the mechanism for oiling the rollers 20 upon which the type bed rests as well as the bearing surfaces of the rails 18 and 21. I have heretofore experienced a great amount of difficulty in accomplishing this due to the fact that oil cannot readily be dammed in open channels without causing waste, particularly where the channels are long and the rollers operate at a moderately high speed. For example the oil becomes unfit for use by reason of being exposed over a large area to dust in the air or it is spilled from the channels by the damming effect of the moving rollers. To eliminate these and other difficulties I have provided oil pick-up rollers 265 on either end of the type bed as shown in Figs. 1 and 13. These rollers are shown as supported on arms 266 pivoted to the bearing shafts 267 for the extreme rollers 20. When the chain of rollers is moved to either of its extreme positions, as the extreme rearward position shown in Fig. 1, the rollers 265 dip into oil reservoirs 268 supported on the frame 10. Subsequently the rollers are carried along between the rails 18 and 20 to distribute oil thereto. The other rollers 20 pick up enough oil in traversing the rails to satisfactorily lubricate their bearings as well as their peripheral surfaces.

The oiling feature above described and the arrangement of the spacer for positioning the bearing rollers form the subject matter of my divisional application No. 107,048 filed May 6th, 1926.

It will be seen that I have provided a printing press of the character shown wherein the paper is being advanced while it is gripped by the cylinder grippers, thus making the feeding more certain and reducing the chances of tearing the paper. Not only is the platen turned down to active position only when paper is fed, but the ductor roll is coupled with such mechanism so that it operates only when paper is fed, preventing fouling of the inking mechanism in case the machine is operated without paper. The yielding connections to the ductor roll and the mechanism described for reciprocating the distributing roll prevent damage in case of accumulation of ink or misplacement of parts. Efficiency of the machine has been further increased by the arrangement of carrying the supporting rolls for the bed and lubricating them, to provide for easier reciprocation.

Having thus described my invention, I claim:

1. In a printing press, the combination of a printing couple, a variable cam on one member thereof, mechanism actuatable by the cam for causing the couple to coact and means controlled by the paper for varying said cam effect.

2. In a printing press, the combination of a type bed and an impression platen, a cam on the type bed, mechanism actuatable by the cam for moving the platen into co-action with the bed, and means controlled by the movement of paper for rendering said cam effective.

3. In a printing press, the combination of a reciprocating type bed, a rotary impression platen mounted on an eccentric, a cam on the type bed, mechanism operable by the cam to turn the said eccentric, mechanism for feeding paper, and mechanism controlled by the paper for rendering said cam effective.

4. In a printing press, the combination of a reciprocating type bed, a rotary impression platen mounted on an eccentric, a paper gripper on the platen, a variable cam on the type bed, mechanism operable by the cam to turn the said eccentric, mechanism for feeding paper to the gripper and mechanism controlled by the paper when drawn along by the gripper for rendering said cam effective.

5. In a printing press, the combination of an impression cylinder, a reciprocating type bed, a variable cam on the type bed, mechanism actuatable thereby when the cam is in one position for moving the cylinder to active position, and mechanism for controlling the position of the cam.

6. In a printing press, the combination of an impression cylinder, a reciprocating type bed, a pivoted cam on the type bed, mechanism actuatable thereby when the cam is in one position for moving the cylinder to active position, paper feeding mechanism, and mechanism actuatable thereby for controlling the position of the cam.

7. In a printing press, the combination of a reciprocating type bed, a cylinder

platen, mechanism for causing the bed and platen to coact including a pivoted cam on the type bed and a member adapted to ride on one face thereof as the bed travels in one direction, and means for moving said cam whereby the roller on the reverse movement rides on another face of the cam into another position.

8. In a printing press, the combination of a reciprocating type bed, a cylinder platen, eccentric mounting for the platen, mechanism for turning the eccentric having a shiftable roller, a guide on the type bed for the roller, a pivoted cam on the bed having one face engaging the roller as the bed travels in one direction to clear the roller, and means for moving said cam whereby another face of it engages the roller on the reverse movement.

9. In a printing press, the combination of a reciprocating type bed, a rotary impression platen, an eccentric mounting for the platen, mechanism including a lever and roller for controlling such eccentric mounting, a guide on the bed coacting with the roller in one of its positions, a movable cam on the bed adapted to shift the roller from the guide to another position or leave it unshifted according to the position of the cam, and mechanism dependent on the paper for controlling the position of the cam.

10. In a printing press, the combination of a reciprocating type bed, a cylinder platen, an eccentric on which the same is mounted, lever mechanism for turning the eccentric, a roller carried by the lever mechanism, a guide carried by the type bed adapted to coact with the roller, a traveling cam adapted to be carried on the type bed and adapted to pass over the roller, said cam being pivoted to allow it to swing to clear the roller, and mechanism adapted to swing the cam into the path of the roller on the return movement.

11. In a printing press, the combination of a reciprocating type bed, a cylinder platen, an eccentric on which the same is mounted, lever mechanism for turning the eccentric, a roller carried by the lever mechanism, a guide carried by the type bed adapted to coact with the roller, a traveling cam adapted to be carried on the type bed adapted to pass over the roller, said cam being pivoted to allow it to swing to clear the roller, paper feed mechanism, mechanism between the paper feed mechanism and the cam acting automatically when the paper is present and moving to swing the cam into the path of the roller on the return movement, whereby the eccentric is turned to move the platen into active position.

12. In a printing press, the combination of a reciprocating type bed, a cylinder platen normally out of coaction with the type bed, mechanism for moving the platen into coaction, a pivoted cam carried by the type bed and adapted in one position to coact with said mechanism for moving the platen into active position and in another position to clear said mechanism, whereby the platen does not so move on the return stroke, mechanism for gripping and feeding paper including a roller adapted to engage the paper and be partially rotated thereby when the paper moves, and connecting mechanism between said roller and said cam.

13. The combination of a reciprocating type bed, an impression cylinder normally out of coaction with the type bed, mechanism for moving the cylinder into coaction, a spring tending to return said cylinder, and a cam on the type bed acting positively to return the cylinder in case of failure of the spring.

14. In a printing press, the combination of a printing couple, mechanism for moving one member of the couple into coaction with the other, an inking device having a shiftable part, mechanism connecting said shiftable part to said mechanism for moving one member of the couple, and a yielding device in said connecting mechanism.

15. In a printing press, the combination of a reciprocating type bed, an impression cylinder, mechanism for moving the cylinder to active position, an inking device having a shiftable ductor roll, mechanism connecting said shiftable ductor roll to the mechanism for moving the platen to active position, and a yielding device in said connecting mechanism.

16. In a printing press, the combination of a reciprocating type bed, a rotary impression platen, an eccentric mounting for the same, lever mechanism for turning the eccentric to bring the platen into active position, a device including a ductor roll, and operating the mechanism therefor, mechanism connecting the ductor roll with said lever mechanism, said connecting mechanism including a yieldable device adapted to yield when the ductor roll contacts with another member.

17. The combination of a reciprocating type bed, an impression cylinder, lever mechanism for moving it with reference to the bed, inking mechanism for the type bed including a shiftable ductor roll, lever mechanism on which the same is mounted, mechanism for connecting said two lever mechanisms including a rod and a pair of yielding springs enabling the completion of a positioning movement of the platen even if the ductor roll does not make its normal movement.

18. The combination of a reciprocating type bed, an impression cylinder, eccentric mounting therefor, lever mechanism for

turning the mounting, inking mechanism for the type bed including a fountain roll, a distributor roll and an intermediate shiftable ductor roll, lever mechanism on which the same is mounted, mechanism for connecting said two lever mechanisms including a rod and a pair of yielding springs enabling movement of the platen after the ductor roll contacts with either the fountain roll or the distributor roll.

In testimony whereof, I hereunto affix my signature.

LAWRENCE H. MORSE.