Sept. 18, 1934. H. P. BROWNSEY 1,973,700

MECHANISM FOR CONTROLLING THE INK FEED IN PRINTING APPARATUS

Filed Feb. 27, 1932 6 Sheets-Sheet 1

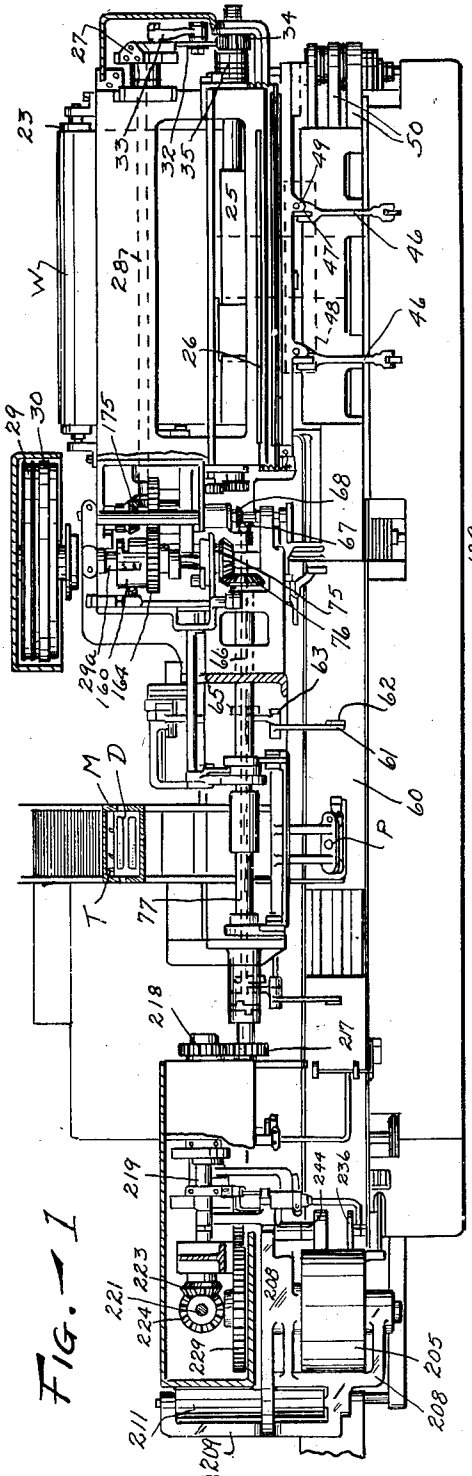


FIG. 1

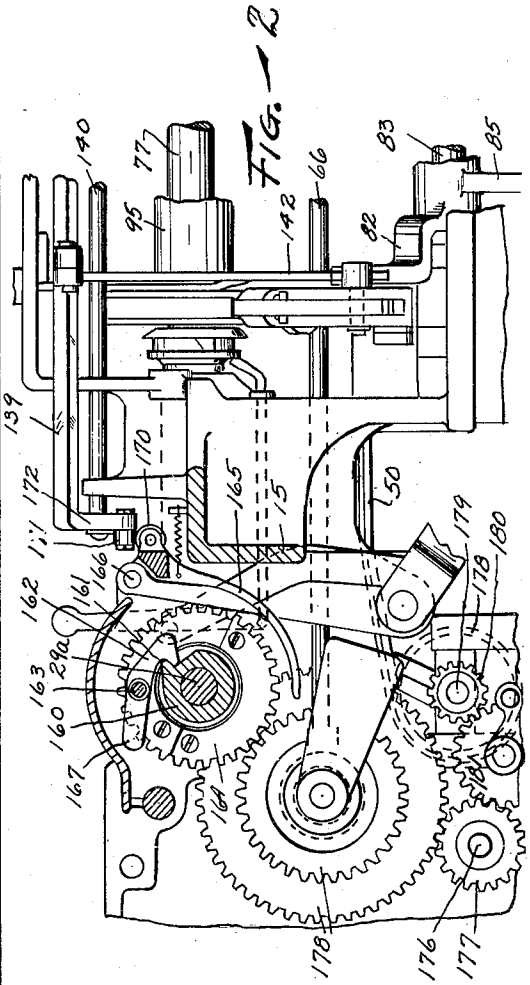


FIG. 2

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MECHANISM FOR CONTROLLING THE INK FEED IN PRINTING APPARATUS

Filed Feb. 27, 1932 6 Sheets-Sheet 2

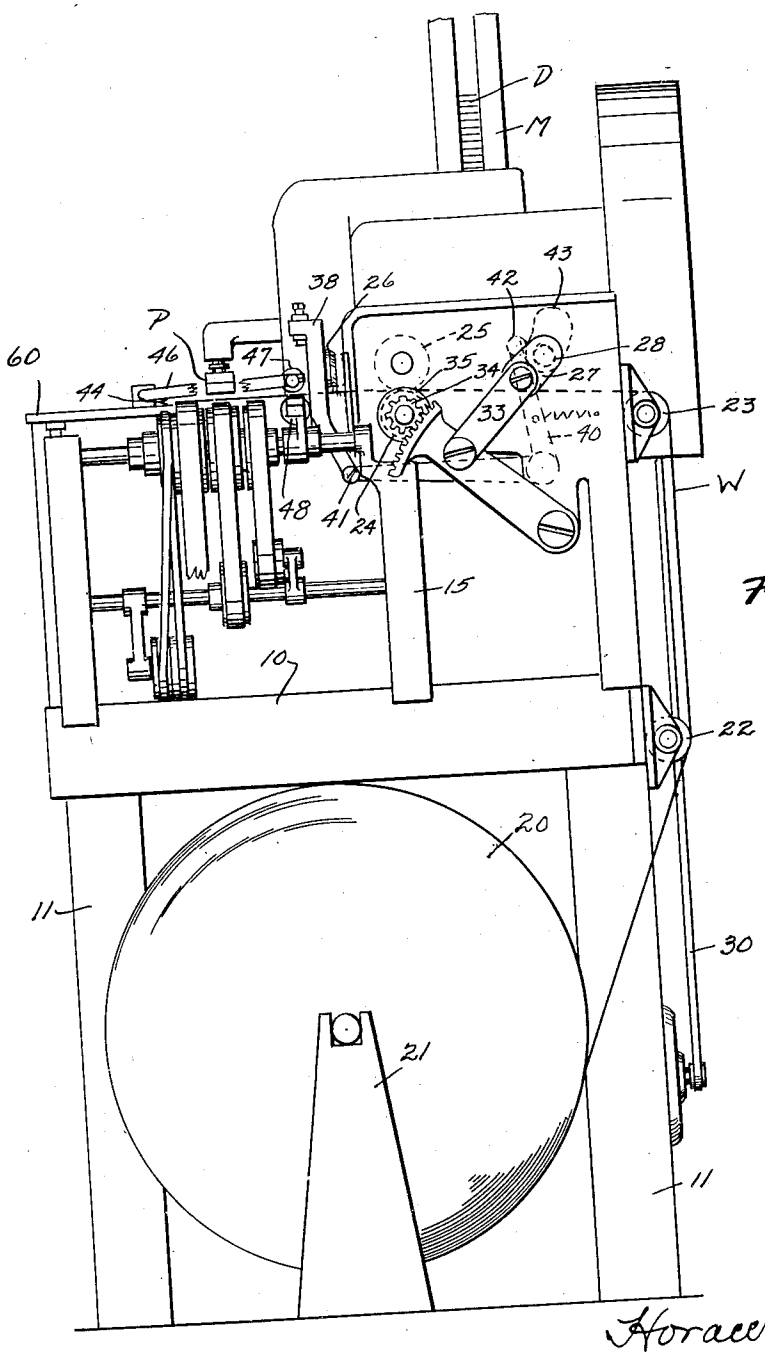


FIG. 3

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MECHANISM FOR CONTROLLING THE INK FEED IN PRINTING APPARATUS

Filed Feb. 27, 1932 6 Sheets-Sheet 3

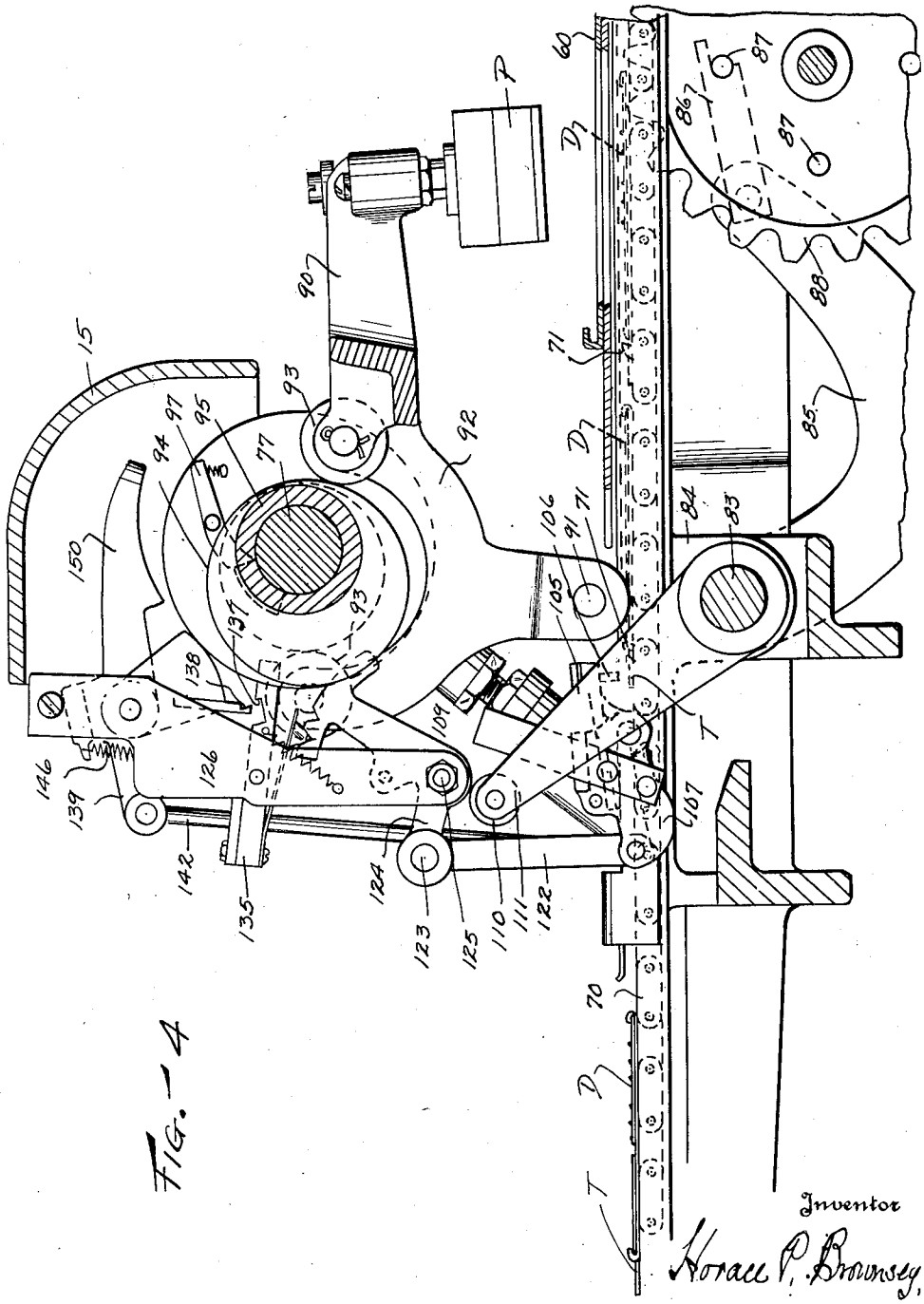


FIG. - 4

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MECHANISM FOR CONTROLLING THE INK FEED IN PRINTING APPARATUS

Filed Feb. 27, 1932 6 Sheets-Sheet 4

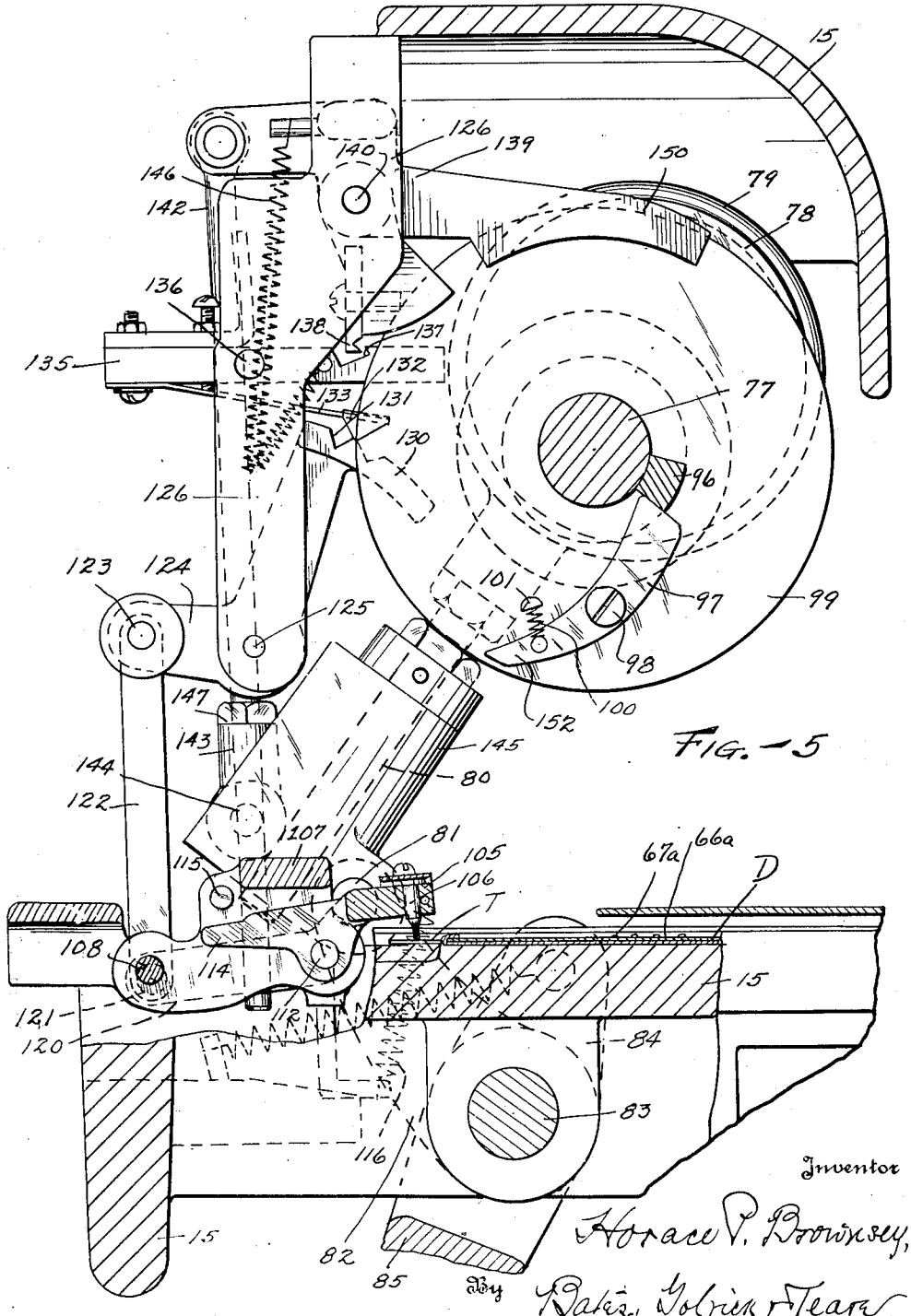


FIG. -5

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MECHANISM FOR CONTROLLING THE INK FEED IN PRINTING APPARATUS

Filed Feb. 27, 1932 6 Sheets-Sheet 5

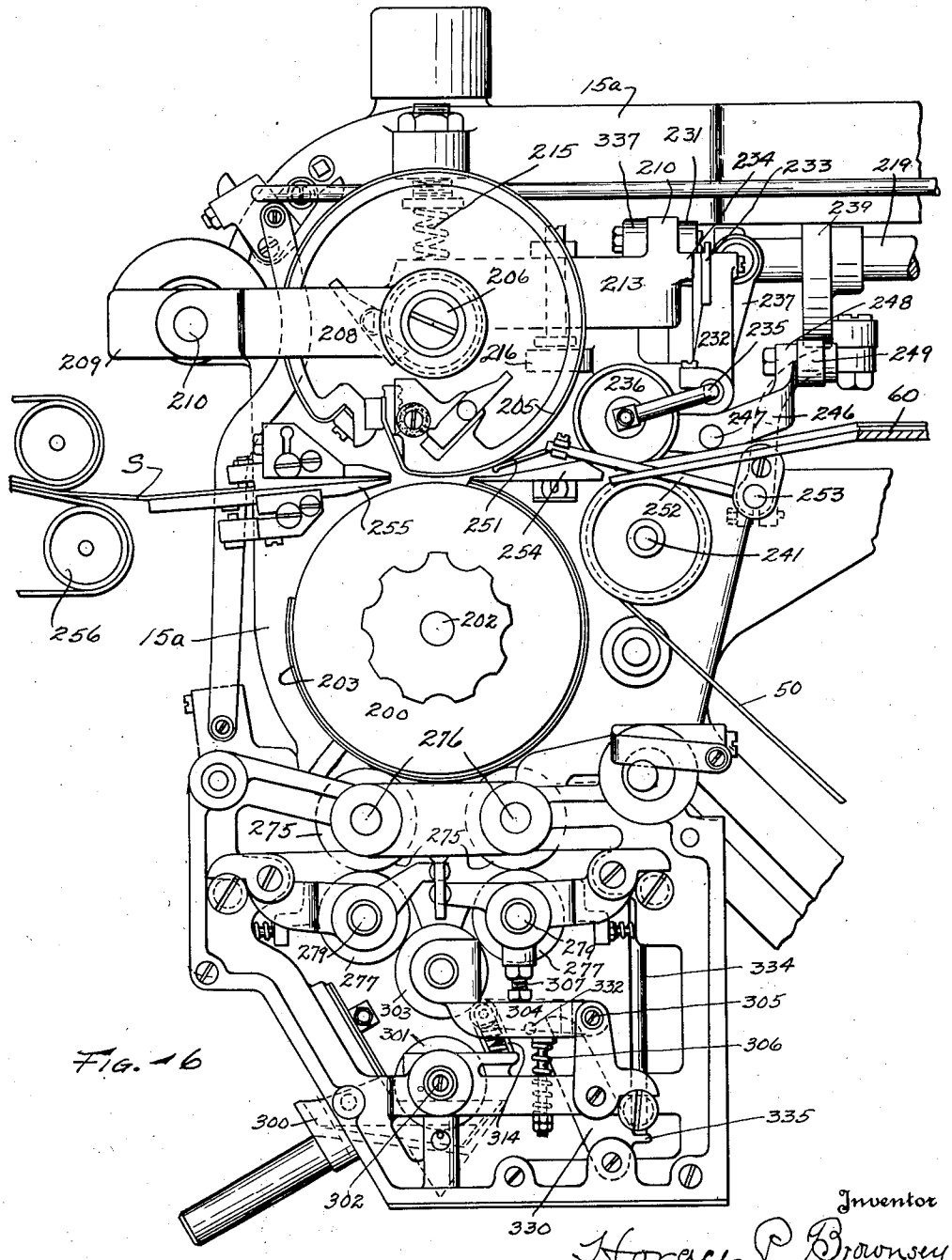


FIG. 16

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MECHANISM FOR CONTROLLING THE INK FEED IN PRINTING APPARATUS

Filed Feb. 27, 1932 6 Sheets-Sheet 6

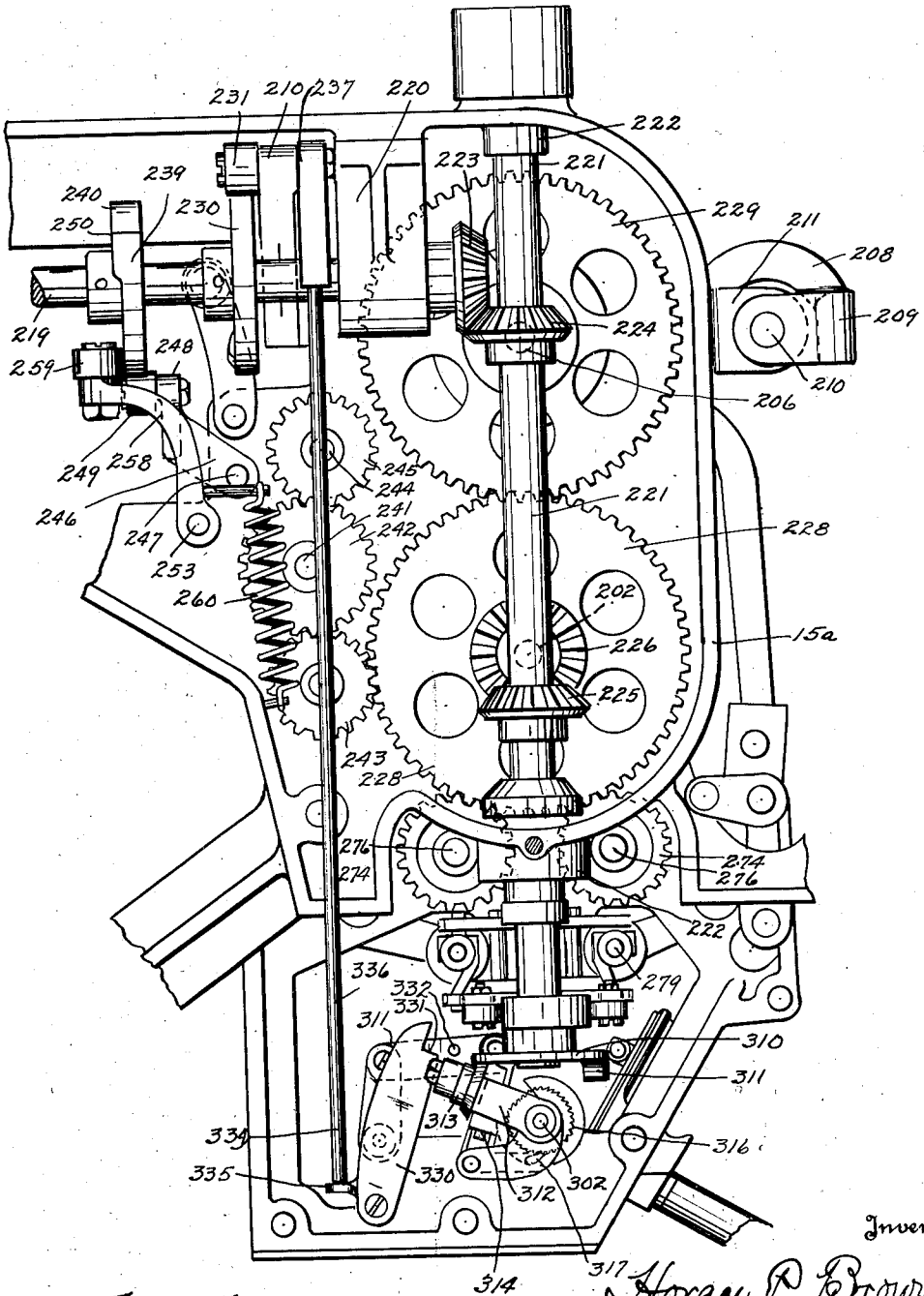


Fig. 7

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UNITED STATES PATENT OFFICE

1,973,700

MECHANISM FOR CONTROLLING THE INK FEED IN PRINTING APPARATUS

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Application February 27, 1932, Serial No. 595,583

7 Claims. (Cl. 101—58)

The invention relates to printing machinery, and particularly to inking devices for supplying ink to the printing members of such machinery. More specifically, the invention is concerned with an inking mechanism, so arranged that the form rolls will not become over-supplied with ink, when for any reason a non-printing cycle of operation occurs. This, therefore, is the general object of my invention.

A more specific object is to provide printing machinery having changeable printing forms arranged to be selectively printed with an inking device arranged to eliminate an oversupply of ink to a permanent printing form whenever an undesired changeable printing from causes a non-printing cycle of operations.

Another object is to provide an inking mechanism for a printing machine, which mechanism will be so arranged that it may be continuously operated while other parts of the machine are intermittently operated, or pass through idle cycles of operation, and which inking mechanism will be arranged to prevent the printing form from becoming over-supplied with ink during such idle or non-printing cycle of operation.

Further objects of the invention will become more apparent from the following descriptions, referring to a preferred embodiment of the invention illustrated in the accompanying drawings. The essential and novel characteristics of the invention will be set forth in the appended claims.

In the embodiment of the invention illustrated in the accompanying drawings, Fig. 1 is a plan view, in which certain parts are broken away, of a printing machine embodying my invention; Fig. 2 is a sectional detail view of a portion of the driving mechanism of the machine; Fig. 3 is a fragmentary elevation of the right hand end of the machine, as viewed in Fig. 1; Fig. 4 is a transverse sectional view of a portion of the changeable form feeding and printing mechanisms; Fig. 5 is a transverse sectional view drawn to an enlarged scale, illustrating the mechanisms employed to determine whether or not a printing device is to be used in a printing operation; Fig. 6 is a front elevation of the permanent-form printing mechanism; Fig. 7 is a rear elevation of the permanent-form printing mechanism.

In the accompanying drawings, I have illustrated my invention as applied to an address printing machine, which is arranged to cut successive sheets from a continuous web, and print the address or a plurality of addresses on each sheet through the medium of a suitable printing couple and a series of address printing plates arranged to be fed successively to the printing position and coact with the printing couple to register successive addresses on successive sheets. Such a machine is, in general, described in the patent application of Emmet C. Hartley, Serial No. 459,599, filed June 6th, 1930.

As shown in the drawings hereof, the addressing machine comprises a main frame 10, supported by suitable legs 11. Mounted on the frame are the various mechanisms, which form the complete machine; among these are the paper feeding mechanism, the address plate feeding mechanism, the printing couple for the changeable forms or address printing plates, a permanent-form printing mechanism, and power means to drive the various mechanisms.

A selector mechanism is arranged so that certain of the address printing plates may be skipped, that is, not printed from. This mechanism renders inactive all of the various mechanisms, except the address plate feeding mechanism, which acts to discharge the selected plate from the printing position and bring the next successive plate to such position, whereupon, if the next plate is to be printed, the entire series of mechanisms will be automatically caused to function and perform their several operations as though no interruptions had occurred.

The paper feed mechanism in the embodiment illustrated will now be described, with reference particularly to Figs. 1 and 3. The supply of web material such as the paper roll 20 is mounted in suitable standards 21 on the machine supporting surface. The web of material is led from such roll upwardly over and around suitable idler rollers 22 and 23 to the bite of a pair of feed rolls, 24 and 25, which serve to intermittently feed the web to a shear 26, which cuts the web into sheets of a predetermined size.

The feed roll 25 is driven by an intermittently acting mechanism, from a continuously rotating shaft 28 which is driven through suitable gearing by a pulley 29 connected to a suitable source of power, such as a motor, by a driving belt 30. Rigidly connected to the shaft 28 is a crank arm 27 which oscillates a segmental gear 32 through the medium of a connecting link 33. The segmental gear, in turn, oscillates a gear 34, which is loosely mounted on the shaft of the lower feed roll 24. The gear 34 is rigidly connected to one member of a roller clutch, indicated at 35 in Fig. 1, the other member of which is drivingly connected to the roller shaft. The clutch arrangement is such that when the gear 34 is swung in one direction, a feeding movement will be imparted to the roller

24, but, when the gear 34 is swung in the reverse direction, this movement will have no effect upon the roller. This provides an intermittent feed for the rollers 24 and 25, thereby intermittently feeding predetermined lengths of the web W.

The web of paper is cut into strips by the shear 26 during the time the feed rolls 24 and 25 are idle. The shear 26 is carried on a suitable carriage 38, mounted or guided in suitable ways for a vertical reciprocating movement. The shear is operated by a bell crank 40 having a loose pivotal connection 41 with the shear mechanism, and provided with a roller 42, arranged to coact with a continuously rotating cam 43, rigidly mounted on the shaft 28. The arrangement of the cam is such that the shear will be reciprocated during the idle period of the feed rolls 24 and 25.

The severed strip is now ejected from the shearing mechanism onto a set of conveyor belts 50, which serve to progress the sheets or strips to the printing mechanisms. The ejector may comprise pivoted arms 46 which carry rollers 47 arranged to coact with a continuously rotating roll 48. Normally, the roller 47 is held or retained out of contact with the roller 48 by a compression spring 44. However, as the shearing member 38 approaches its lowermost position, a pin 49 carried by such member strikes the levers 46, carrying the roller 47 downwardly to contact with the paper which rests on the lower roller 48. The cam 43 is so constructed that the levers 46 will be retained in their feeding position with the roller 47 contacting with the strip long enough to carry the strip onto the feed belts 50, which progresses the strip across a table 60 to the printing mechanisms.

The sheets W which are deposited on the conveyor belts 50 are carried over the table 60 into a position below the platen P. During this movement each sheet is engaged by a stop finger 61 which is moved to position the sheet below a platen P, which is arranged to make impressions on the sheets from suitable printing devices D (Fig. 1). The printing devices D are stored in a magazine M disposed rearwardly of the platen P and are withdrawn from the magazine and moved in a step-by-step manner into printing position below the platen.

The stop fingers 61, which orient the sheets in the printing position below the platen P are arranged to be lowered into slots 62 of the table to interrupt the progress of the sheets W. The stop fingers 61 are pivotally mounted on the frame as at 63 and have rearwardly extending arms 64 provided with suitable rollers (not shown) which are arranged to engage cams 65 rigidly secured to a cam shaft 66. The cam shaft is operated through the medium of suitable bevel gears 67 and 68 from the drive shaft 29*a*, which is driven by the main driving pulley 29, heretofore described. The arrangement of the cams 65 is such that the sheet is stopped in printing position, and, after it has been printed, the fingers are raised and the sheet permitted to pass to the permanent-form printing mechanism hereinafter to be described.

The printing devices D may be similar to those shown in Patent No. 1,821,108, issued to V. J. Mohler, September 1st, 1931. Such printing devices comprise, as shown in Figs. 1 and 5, a frame upon which is mounted a printing plate 66*a*, having embossed printing characters 67*a*, and provided with suitable selectors or identification tabs T, the purpose of which will be hereinafter more fully explained.

The printing plate feeding mechanism is best illustrated in Figs. 4 and 5, and, as shown, comprises a chain 70, having upstanding lugs 71, arranged to engage the bottommost plate or printing device in the magazine and carry it forward with the chain, discharging it therefrom in any well-known manner. The chain 70 is intermittently progressed, the movement of the chain taking place during the non-printing stroke of the platen P, and the chain being idle during the printing stroke.

The printing device feed is operated from the driving pulley 29 heretofore described. Rigidly secured to the shaft 29*a*, which is driven directly from the pulley 29, is a bevel gear 75, meshing with a bevel gear 76 carried by a shaft 77. Rigidly secured to the shaft 77, as shown in Fig. 5, is an eccentric disk 78, rotating within a ring 79, of a connecting rod 80. The connecting rod 80 is pivotally connected as at 81 to an arm 82, rigidly mounted on a shaft 83, rotatably carried in bearings 84 depending from the frame 15. Rigidly secured to the shaft 83 is an arm or lever 85, to which is pivotally connected a pawl 86, arranged to intermittently engage pins 87 on the chain driving sprocket 88, thereby imparting an intermittent movement to such sprocket from the continuously rotating shaft 77. This results in feeding the printing devices one at a time into position below the platen P.

The platen is likewise operated from the main driving pulley 29. As shown, the platen is rigidly secured to an operating arm 90 pivotally mounted, as at 91, on the frame 15, and provided with a yoke portion 92 carrying rollers 93, arranged to engage operating cams 94, which are secured to a sleeve 95 and are selectively driven from the main drive shaft 77.

The sleeve 95, which operates the platen through the cam mechanism 94, is arranged to be selectively coupled to the continuously rotating driving shaft 77. Rigid with the sleeve 95, as shown in Fig. 5, is a lug 96, arranged to be engaged by the nose of a pawl 97, pivotally mounted as at 98, on a disk 99 which is fast on the shaft 77. A compression spring 100, pivotally mounted as at 101 on the disk, normally acts on the tail of the pawl to hold the nose thereof in engagement with the lug 96. When the nose of the pawl is disconnected from the lug, the sleeve 95 is consequently disconnected from the shaft and the platen P is not operated. This, however, does not affect the operation of the printing plate feed mechanism, heretofore described.

The operation of the pawl 97, which controls the movement of the platen P, is brought about by the cooperation of a suitable detecting member 105 with the indentification means or tab T on the printing devices D. In the present instance, this identifying means is in the form of a projecting tab, and the detecting member 105 is provided with one or more pins 106, removably mounted in selected openings therein to cooperate with the tab which is located at a predetermined position on a printing device, and thereby determine the selection. After this the printing device feed operates to move such selected printing device into printing position, and the next succeeding device into the selector position.

The detecting member 105 is moved toward the printing device which lies in the selective position, one step to the rear of the printing po-

sition by mechanism associated with the plate feed rock shaft 83. The detector member 105 is pivotally mounted on a rocker 107, which, in turn, is pivoted on the frame 15, at 108, and an arm 109, rigid with the rocker 107, is engaged once for each operation of the printing mechanism, by a roller 110 carried by a lever 111 rigidly carried by the rock shaft 83. This moves the detecting member toward the path of the printing device D in the selective position, once for each cycle of operation of the printing mechanism.

As heretofore mentioned, a latch 97 is normally held in engagement with the lug 96 of the platen driving sleeve 95 by a spring 100. However, when a printing plate is presented, having a tab arranged to coact with one of the pins 106, suitable mechanism is put into operation, to move the latch out of engagement with the lug, thereby rendering the printing mechanism ineffective for the next cycle of operation. When a pin engages a tab, the movement of the detecting member is arrested, as shown in Fig. 5. When, however, the detecting member moves to a position beyond that in which it would have been stopped had it engaged a tab, the latch 97 remains unaffected, and the printing operation continues.

The detecting portions of the selecting mechanism are operated from the printing device feed rock shaft 83. The detector 107 which is a casting or rocker pivotally mounted on the bed as at 91, has a bar 109, rigidly secured thereto and arranged to be engaged by the roller 110 to pivot the rocker about the pivotal mounting 108 thereof. As best shown in Fig. 5, the selector member 105 is pivotally mounted as at 112 on the rocker 107, and includes an arm 114, normally urged by a spring 116 into engagement with a pin 115, carried by the rocker. Rigidly secured to the selector member 105 is a rearwardly extending arm 120, pivotally connected as at 121 to a link 122, which, in turn, is pivoted as at 123 to a bell crank 124, carried on a shaft 125, mounted in a frame member or bracket 126.

The arrangement is such that when the selector member 105 is rocked, moving downwardly, the pins 106 thereof not contacting with a tab, the pivots 108 and 121 will remain coincident, and no motion will be imparted to the lever 122 or bell crank 124. When, however, a pin strikes a tab on a printing device, the movement of the selector member 105 is arrested, while the rocker 107 continues in its movement and carries the pivot 112 between the rocker and the selector arm downwardly, thereby causing the arm 120 of the selector to be drawn downward, bringing the pivots 121 and 108 out of their coincident relationship and rockking the bell crank 124 about its pivot 125.

The bell crank 124 is provided with an arcuate shaped lip 130 in the face of which is a notch 131, in which the nose 132 of a spring member 133 normally rests. However, when the pin 105 strikes a tab, the bell crank 124 is rocked to a position camming the member 132 upwardly, thereby rocking a notched arm 135 about its pivot 136, raising the notch 137 thereof into position to engage a latch 138, depending from a bell crank 139, which is pivoted as at 140 to the frame member 126.

To assure accurate timing of the selector mechanism, the bell crank 131 is operated by means of a link 142 directly from the operating shaft 80 of the plate feeding mechanism. As shown, the link 142 comprises a rod, which is slidably embraced by a block 143, pivoted as at 144, to a member 145, rigidly secured to the operating rod 80 of the plate feed mechanism. This arrangement is such that the bell crank is raised and lowered in timed relationship with the plate feed and platen operating mechanisms. A suitable spring 146 having one end thereof connected to the frame member 126 and the other to the bell crank 139 normally retains a shoulder 147 of the rod 142 in contact with the pivoted member 143, and at the same time retains an outwardly extending arm 150 of the bell crank 139 in its uppermost position. The arm 150 is arranged so that when it is in its lowermost position, as shown in Fig. 5, it will engage the tail 152 of the pawl 97 and cam the latter out of contact with the lug 96. When, however, the arm 150 is in its uppermost position, the pawl will not be engaged by the arm, permitting the printing operation to continue.

When the notched member 135 is raised, due to the action of the selector mechanism, as heretofore described, the latch 138 is engaged by the notch and retaining the arm 150 of the bell crank 139 in its lowermost position, as shown in Fig. 5. Hence, when the pawl 97 arrives at the upper portion of its travel, it will be thrown out of contact with the lug 96, and the platen will be rendered inoperative during the next cycle of rotation of the shaft 77. If, however, the next plate does not have a tab to coact with the selector, the subsequent operation of the selector mechanism will rock the bell crank 124 to its normal position, wherein the lug 132 is engaged in the notch 131, and the latch 138 will become disengaged from its respective notch 137, permitting the spring 146 to return the arm 150 of the bell crank 139 to its uppermost position, whereupon the latch 97 will again engage the lug 96, permitting the printing of the address plate, which is in the selective position, upon the next cycle of operation, at which time such plate will have been advanced to the printing position below the platen P.

The selective mechanism is so arranged that it will also control the operation of the sheet feed belts 50 and the web feed mechanism, but will not affect the operations of the plate feeding mechanism or the selector mechanism, which latter is directly operated from the plate feed. To this end, the plate feeding mechanism is driven directly from the shaft 29*a*, as heretofore described, while the web feed mechanism and the belts 50 are driven from the shaft 29*a* through the medium of a suitable clutch 70, which is arranged to be controlled by the selector mechanism.

The clutch mechanism is best illustrated in Fig. 2, and comprises a sleeve 160, which is rigidly mounted on the drive shaft 29*a*, and provided with a shoulder 161, arranged to be normally engaged by a pawl 162, pivoted as at 163, to a gear 164, which is rotatably mounted on the shaft 29*a* and normally clutches the gear for driving engagement with the shaft. When, however, the selector mechanism is operated to cause the platen to become disengaged from its driving shaft 80 as heretofore described, a rock arm 165, pivoted as at 166 to the frame 15, is brought into engagement with the outer end 167 of the pawl 162, camming it outwardly out of contact with the shoulder 161 of the driving shaft, thereby breaking the driving connection between the shaft and the gear 164.

The lever 165 is operatively controlled by the selector mechanism. As shown, the lever 165 is provided with a roller 170, arranged to be engaged by a roller 171, carried by an arm 172, which is rigidly secured to the bell crank 139 of the selector mechanism. The result is that when the nose 150 of the bell crank is lowered into a position to draw the latch 97 from contact with the lug 96 to disengage the platen from its driving shaft, the roller 170 will cause the arm 165 to swing about its pivot and engage the latch 162, breaking the driving connection between the main drive shaft 29a and the gear 164.

The gear 164 is drivingly connected to the web feed mechanism. As shown in Figs. 1 and 2, the driving mechanism for the web feed is operated through the medium of the shaft 28, as heretofore described. Such shaft is connected by suitable bevel gearing 175, to a shaft 176, rigidly secured on which is a spur gear 177, meshing with one gear member of a composite gear 178, the other member of which meshes with the gear 164, heretofore described. Therefore, when the connection between the gear 164 and the driving shaft 29a is broken, the feed of the paper web W will be stopped.

The sheet progressing belts 50 are likewise driven from the main drive shaft 29a through the medium of the clutch mechanism and the gear 164. As shown in Fig. 2, the belts 50 are driven from a driving pulley 178 which is rigidly secured to a shaft 179. This shaft is driven by a gear 180, rigidly secured to the shaft and meshes with an idler gear 181, which, in turn, meshes with the pinion 177, heretofore described, and which is driven through the medium of the composite gear 178 from the gear member 164. It therefore follows that when the selector mechanism operates to throw the platen into inactive position, it likewise stops both the paper feed belts 50 and the web feed mechanism.

The permanent-form printing mechanism is arranged at one end of table 60, heretofore described, and is constructed to print the body portion or fixed data on the sheets in proper relation to the impressions previously made thereon from the changeable printing form. This permanent-form printing mechanism is best illustrated in Figs. 1, 6 and 7 and is generally illustrated, described and claimed in the application of C. G. Kranz, Serial No. 513,946, filed February 6th, 1931. The table 60 (Fig. 1) leads from the changeable form printing mechanism and the feeding belts 50 thereof to direct the printed sheets S between the cylinders of the permanent-form printing couple.

The permanent form printing mechanism includes an impression cylinder 200 mounted on a horizontal shaft 202 suitably journaled in bearings in the frame 15a. This impression cylinder carries on its periphery an electroplate or other printing form 203. The impression cylinder is arranged lowermost in the printing couple and is adapted to print on the underside of the sheets on which side the previously performed printing impressions will have been made from the changeable printing forms.

The other member of the permanent-form printing couple comprises a platen cylinder 205 mounted on a shaft 206, which is journaled in arms 208 of a swinging yoke 209 so that it may be bodily swung vertically to and from the impression cylinder. The yoke 209 is pivotally mounted on a shaft 210 arranged in an elongated bearing 211 (Fig. 1) carried by the frame 15a. The platen cylinder is normally urged downwardly into printing relation with the impression cylinder by a spring 215 acting on one of the arms 208 of the yoke 209, and adjustable so that the pressure exerted thereby may be regulated. A stop lug 216 is provided to limit the downward movement of the platen.

The impression roll 200 and the platen roll 205 are driven from the continuously operating drive shaft 77, which drives the changeable form platen, heretofore described. The shaft 77 is provided with a spur gear 217 meshing with a spur gear 218 on a horizontally disposed driving shaft 219 mounted in bearings 220 in the frame of the machine. A vertical shaft 221 is journaled in bearings 222 in the frame and is driven by bevel gears 223 and 224 from the horizontal drive shaft 219. The printing cylinder 200 is positively driven from the vertical shaft 221 by bevel gears 225 and 226. The platen or impression cylinder 205 is secured on the horizontal shaft 206 and is positively driven by meshing gears 228 and 229, respectively, which are mounted on the shafts 202 and 206. These gears are of the same size and therefore the cylinders will be rotated at the same peripheral speed.

After each printing operation, the platen cylinder is raised by a cam 230 on the drive shaft 219. A lateral extension 213 of one of the yoke arms 208 carries a roller 231 which rides on the periphery of the cam 230. This cam includes a high portion which engages the roller to raise the platen cylinder at a predetermined time in the operation thereof, which will be immediately after the completion of a printing impression.

The platen cylinder is prevented from contacting with the printing surface of the printing cylinder when no sheet is present between the cylinders, thereby preventing the impression of offsets on the platen cylinder. For this purpose, I provide a lever 232 arranged to be swung into and out of the path of movement of a lug 234 on one end of the yoke arm 213. The lever 232 is mounted on a shaft 235 having a right-angularly extending end portion carrying a light feeler wheel 236 at the free end thereof, which is positioned over the guideway 60 in the path of the sheets.

When there is no sheet present beneath the feeler wheel, it will drop an amount sufficient to swing the arm 232 to position the lug 233 under the lug 234 to hold the platen cylinder yoke in its raised position. However, when a sheet is present, the feeler wheel rides thereon and the lug 233 is held from the path of movement of the lug 234, thereby permitting the downward movement of the platen cylinder. At the rear end of the shaft 235 there is an upstanding arm 237 having a roller 238 engaging a cam member 239 on the shaft 219.

The cam member 239 includes a high portion 240 arranged to swing the arm 237 and the shaft 235 to move the stop lug 233 from the path of the lug 234. The cam 239 is so timed that it does not perform this operation until after the feeler wheel 236 has operated to determine whether or not a sheet is present in the guideway 60. This arrangement serves to hold the yoke in an upper position until the proper time for the start of a new printing operation. The cam is arranged to positively actuate the locking arm 232 as the pressure of the yoke on the stop lug 233 is too great to be overcome by the action of the feeler wheel on the sheet.

When the sheets follow each other in regular

succession the feeler wheel will drop into the space therebetween and rise on each succeeding sheet to swing the stop lug 233 out of the path of the yoke before it is lowered by the cam 230, and hence, during normal succession of the sheets, the feeler arm performs no work except the swinging of the arm 232.

The sheets are fed into position on the guideway 60 by a pair of feed rollers, not shown, but located at the end of the guideway 60 adjacent the printing and platen cylinders, in position to feed the sheets S into printing position. The lowermost of these feed rollers is mounted on a shaft 241 in the frame and driven by a gear train which includes a gear 242 mounted on the shaft 241 and meshing with an idler gear 243 which is driven from the gear 228 heretofore described. The upper feed roller is mounted on a shaft 244 having a gear 245 meshing with and driven by the gear 242. The shaft 244 is journaled in an arm of a lever 246 pivotally mounted on the frame at 247 so that the shaft 244 and the feed roller carried thereby may be raised and lowered with respect to the feed roller on the shaft 241. The lever 246 has a rearward extension 248 carrying a roller 249 which rides on the periphery of the cam members 239 on the shaft 219.

The action of the cam 239 on the roller rocks the lever 246 to move the feed roller carried by the shaft 244 into engagement with the sheet just at the time the register device, to be described, releases the sheet for movement into registration with the printing cylinder surface. The cam 239 raises the lever 246 sufficiently to permit the sheet to pass between the feed rollers but not sufficiently to disengage the gears 245 and 242.

The register device, which times the entrance of the sheet to the bite of the printing couple, consists of a hooked finger 251 on one end of an arm 252 mounted on a rock shaft 253 journaled in the frame. The hooked finger is arranged to operate adjacent the end of a short guide chute 254 positioned adjacent the printing couple and the feed rollers. This finger acts as a stop against which the end of the sheet strikes, and thereby delays the movement of the sheet until it will register with the printing form on the printing cylinder when released and moved into contact therewith. When this finger is raised the sheet will move between the printing and impression cylinders to be gripped therebetween and be moved by the frictional engagement of the cylinders with the sheet. After moving past the cylinders the sheet is discharged into a guide 255 and thence between delivery belts 256.

The fingers 251 which time the progress of the paper to the printing couple are operated by the cam 239. The rock shaft 253 has an upstanding arm 258 carrying a roller 259 riding on the cam face 250 of the cam 239. This cam face has a high spot which is timed with the rotation of the cylinders to actuate the register finger at the proper time. The register finger and the parts associated therewith are yieldably urged into position by the spring 260.

The printing cylinder is inked by an inking mechanism supported in the frame 15a and positioned beneath the printing cylinder. The frame carries two inking rollers 275 which are mounted on shafts 276 journaled in the side members of the frame. The shafts 276 have gears 274 which mesh with and are driven by the large gear 228 on the printing cylinder shaft. Beneath the form rollers 275 is a pair of ink distributing rollers 277. These distributing rollers have shafts 279 which are journaled in suitable bearing members 280, carried by the frame 15a.

An ink fountain in the form of a removable receptacle 300 is positioned in the extreme lower portion of the frame, and a fountain roller 301 is mounted below the distributing rollers on a shaft 302 which is journaled in bearings in the frame so that the roller is partly immersed in the ink contained in the receptacle.

The ink is carried from the fountain roller to the distributing rollers by means of a transfer roller 303 which is adapted to be oscillated between said rollers. For this purpose it is supported in the arms of a yoke 304 which is pivoted at 305 to the frame. The transfer roller 303 is yieldingly urged upwardly into contact with the distributing rollers by means of the spring 306 positioned between the frame and the yoke. One of the bearing members 280 has a downwardly extending adjustable stop screw 307 which is engaged by the transfer roller yoke 304 and serves as an upward limit stop to regulate the degree of contact pressure of the transfer roller on the distributing rollers.

The transfer roller is periodically oscillated by means of a face cam 310 mounted on the lower end of the vertical shaft 221. This cam has a high spot 311 which actuates a bell crank lever 312 (Fig. 7) the hub of which is pivoted on the shaft 302 of the fountain roller. The upper arm of this bell crank has a roller 313 which rides on the cam 310, and the lower arm has a yielding spring link connection 314 with the transfer roller yoke 304.

When the bell crank is operated by the cam 310 it swings the transfer roller downwardly into contact with the fountain roller and then upwardly into contact with both distributing rollers. The lower arm of the bell crank 312 also carries a pivoted pawl 315 (Fig. 2) which engages a ratchet wheel 316 on the fountain roller shaft 302, and as the bell crank 312 oscillates it rotates the mountain roller step by step to bring fresh ink upon the upper side of the fountain roller.

From the foregoing description, it will be apparent that when an address plate or changeable platen form passes through the machine, the tab thereon will determine whether or not it will be printed from or discharged without having an impression made therefrom. It is also apparent that when a printing device, which is not to be printed from, passes through the machine, that the paper feed mechanism and the web feed mechanism, as well as the platen mechanism, will go through an idle cycle of operation, the paper sheet being retained in its position on the table 60, to be advanced only when a selected printing device passes through the machine. It is likewise apparent that because of the stopping of the sheet feeding belt, there will be no sheet passed through the range of the feeler wheel 236, of the permanent-form printing mechanism. This, therefore, will cause a separation between the platen and the impression cylinder of such mechanism, preventing offset of the printing form on the platen cylinder.

The permanent-form printing mechanism, while operating in a specific timed relation to the various other mechanisms of the machine, is actually printing the permanent form on the last sheet printed by the changeable form, at

the time that the printing mechanism of the changeable form becomes idle, due to a plate having been selected to pass through the machine without having an impression made therefrom. Hence, the arrangement of the permanent-form printing mechanism is such that it is in operation continuously, the platen and the impression cylinder thereof being separated once for each cycle of operation. This separation is maintained during the complete cycle of operation, when, because of the operation of the selector, a printed sheet is not passed into the bite of the paper detector rollers or feelers 236 of the permanent-form printing mechanism.

It will be readily seen that since the inking mechanism of the permanent printing form is rotating constantly, then, when the printing form does not contact with a sheet, the supply of ink thereto will become abnormal. Hence, upon the passage of the next sheet through such printing mechanism, there is apt to be a blurring of the characters thereon, due to the excess ink upon the type.

Ordinarily, when a paper detector is used solely as a paper detector, in a machine where there is no selector, which may occasionally cause a plurality of cycles to pass without paper being fed to the permanent printing form, the excess amount of ink is negligible. Then too, in the ordinary form of printing mechanism there is seldom an interruption in the feeding of sheets to such mechanism. However, when a selector is used there are sometimes more idle cycles of the mechanism than there are active cycles. It follows, therefore, that not only is the ink apt to become excessive upon the printing form and cause smudges or blurring of the printed matter, but that this is apt to occur at frequent intervals, and oftentimes causes a great portion of the printed matter to be blurred.

To prevent an excess amount of ink from accumulating on a printing form during idle cycles of the printing mechanism, because of the operation of the selector, I propose to interrupt the supply of ink thereto. I find that this can be readily accomplished by interrupting the movement of the transfer roller 303, which feeds the ink from the fountain roller to the distributor rollers 277 and 278. By so doing I find that sufficient ink will be passed from the transfer roller to the distributing rollers 277 and to the form rollers 275 and to the impression surface. Hence, when the next sheet of paper passes through the mechanism, there will be sufficient ink thereon to cause a good impression to be made upon the sheet, but not such excess as would cause blurring.

The continuous rotation of the various rolls in contact with each other and with the impression cylinder aid materially in preventing the drying of the ink on the impression cylinder, with the probable result of faintness of ink upon the sheet, following the interrupted cycle of operation. To this end I find it convenient to place a suitable stop mechanism to prevent the lowering of the transfer roller into contact with the fountain roller, when a sheet is not passed beneath the feeder roller 236, due to the operation of the selector.

The mechanism I have devised for accomplishing the above result is best shown in Fig. 7. As there appears, I pivotally mount a lever 330 on the frame 15*a* in such a manner that a shoulder 331 of the lever may engage a pin 332 on the arm 311, which carries the transfer roller. The arrangement is such that when the lever 330 is rocked to the right in Fig. 7, it will engage the pin and prevent the lowering of the transfer roller. Due to the resilient connecting link 314 between the pin and its operating mechanism, this movement will have no effect upon the operation of the cam and its roller. The lever 330 is normally retained in a disengaged position, as shown in Fig. 7, by a rod 334, the lower end of which is arranged to engage a lip 335 on the lever 330. This rod is secured to an arm 337, which is pivotally mounted on the lateral extension 210 and the yoke arm 208, which carries the roller 231, heretofore described. Hence, whenever the platen cylinder is raised into its uppermost position because of the absence of a sheet of paper, as heretofore described, the rod 334 will be raised an amount sufficient to permit the latch 330 to engage the pin 332, preventing the lowering movement of the transfer roller.

It will be seen that the mechanism just described effectively prevents the printing form from becoming covered with an excess amount of ink, and at the same time insures sufficient ink being placed thereon as will take care of the next succeeding sheet to be printed. At the same time, the constant rotation of the ink rollers and their contact with one another and with the printing surface, prevent the ink on such surface from becoming dry and thereby giving a faint copy on the sheet.

I claim:

1. In combination, a printing couple, an inking mechanism therefore including a form roller, a fountain roller, and a transfer roller, resilient pressure means to oscillate the transfer roller between the form roller and the fountain roller, a detector responsive to the absence of material to be printed, and an abutment controlled by said detector to oppose the movement of the transfer roller toward the fountain roller without interfering with the operation of the mechanism normally moving the transfer roller.

2. In combination, a rotary printing couple, means to periodically separate the members of said couple, a detector responsive to the presence or absence of material to be printed, and an abutment controlled thereby to maintain the printing couple separated when no material is present, an inking system for said couple and including a form roller, a transfer roller and a fountain roller, resilient means to periodically oscillate the transfer roller between the fountain roller and the form roller, an abutment to oppose the movement of the transfer roller toward the fountain roller, and means connected to said first named abutment to control the movement of the last named abutment.

3. The combination of a rotary printing couple, means to periodically bring the members of the couple into coaction, a detector responsive to the presence or absence of material to be printed by the couple, means controlled by the detector to maintain the printing couple separated when no material is present, an inking system for said couple including a distributing roller, a transfer roller, and a fountain roller, periodically acting resilient means to move the transfer roller into contact with the fountain roller, and mechanism connected with the detector to interrupt said movement of the transfer roller.

4. The combination of a rotary printing couple, means to periodically bring the members of the couple into coaction, a detector responsive to the

presence or absence of material to be printed by the couple, means controlled by the detector to maintain the printing couple separated when no material is present, an inking system for said couple including a distributing roller, a transfer roller, and a fountain roller, resilient means tending to press the transfer roller against the distributing roller, periodically acting mechanism normally moving the transfer roller away from the distributing roller and into contact with the fountain roller, said mechanism having incorporated in it a resilient connection enabling the operation of the driving portion of the mechanism even if the transfer roller does not move away from the distributing roller, and means connected with the detector for preventing movement of the transfer roller away from the distributing roller.

5. In a selective printing machine, the combination of a printing couple arranged to be driven continuously whether paper is present or absent, an inking device arranged to supply ink to said printing couple, mechanism to feel sheets of paper successively to the printing couple, selector means to positively interrupt the sheet feeding means for a variable number of cycles of operation of the printing couple, and means operating automatically consequent upon such interruption to cause the inking device to fail to deliver ink to the printing couple during those cycles of operation of the latter when no sheet is passed thereto.

6. In a printing machine, the combination of a rotary printing cylinder, an ink distributing roller, an ink supply roller and a transfer roller arranged to intermittently contact with said ink supply and said distributing roll, means to feed members having selective indicia thereon, selector means arranged to cooperate with said indicia to determine whether or not a sheet is to be fed to said printing cylinder without interfering with the continuous rotation of the cylinder, and means responsive to said selector mechanism through the medium of the sheet feeding mechanism to maintain the transfer roller in contact with the distributor roller and out of contact with the supply roller during the cycle of operation of the printing cylinder, in which no sheet is passed thereto.

7. In combination a rotary printing couple, means for continuously rotating the members of the couple, means for feeding sheets of paper thereto, means for positively stopping the feed without interfering with the continuous movement of the members of the couple, a detector responsive to the presence or absence of the paper, means controlled by the detector to maintain the printing couple separated without interfering with the continuous movement of the members of the couple when no sheet is present, an inking system for said couple including a distributor roller, a fountain roller, and an intermediate transfer roller, and means to periodically oscillate the transfer roller between the fountain roller and the distributor roller and to maintain the transfer roller out of engagement with the fountain and in engagement with the distributor roller, during those cycles of operation when the members of the couple are separated.

HORACE P. BROWNSEY.