Oct. 6, 1931. A. ROSENTHAL 1,826,525

PRINTING MACHINE

Filed Aug. 1, 1930 6 Sheets-Sheet 1

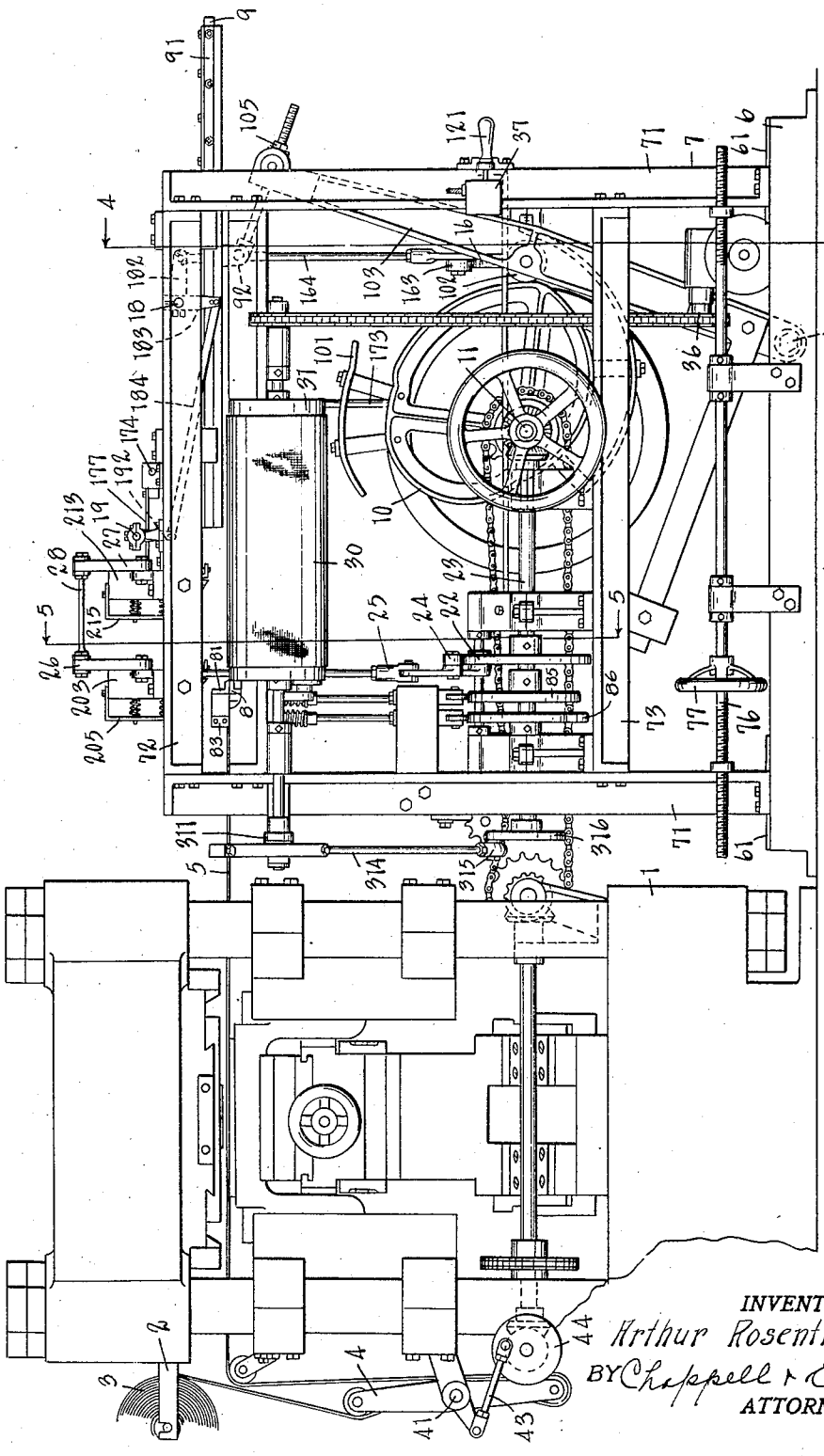


Fig. 1

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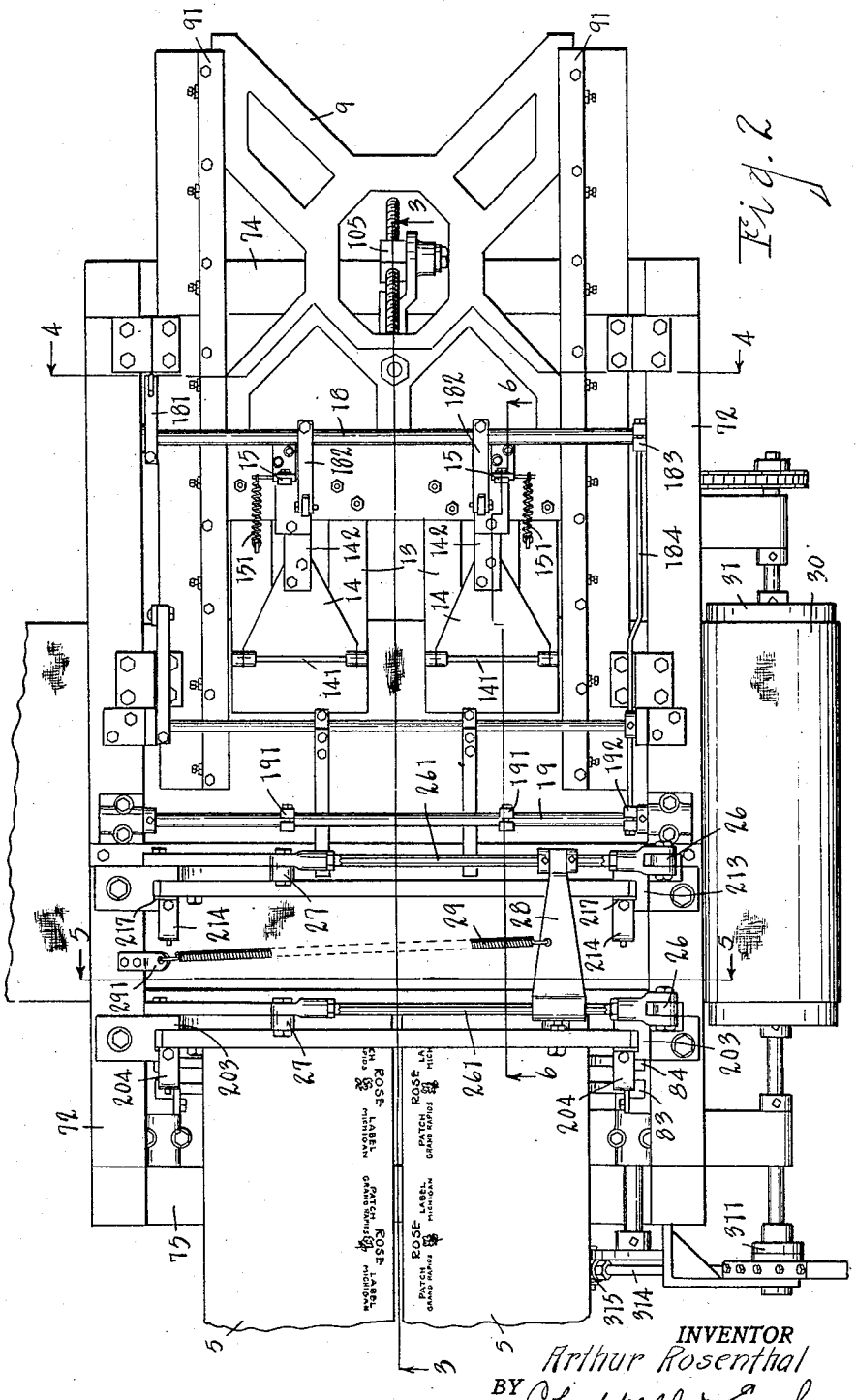


Fig. 2

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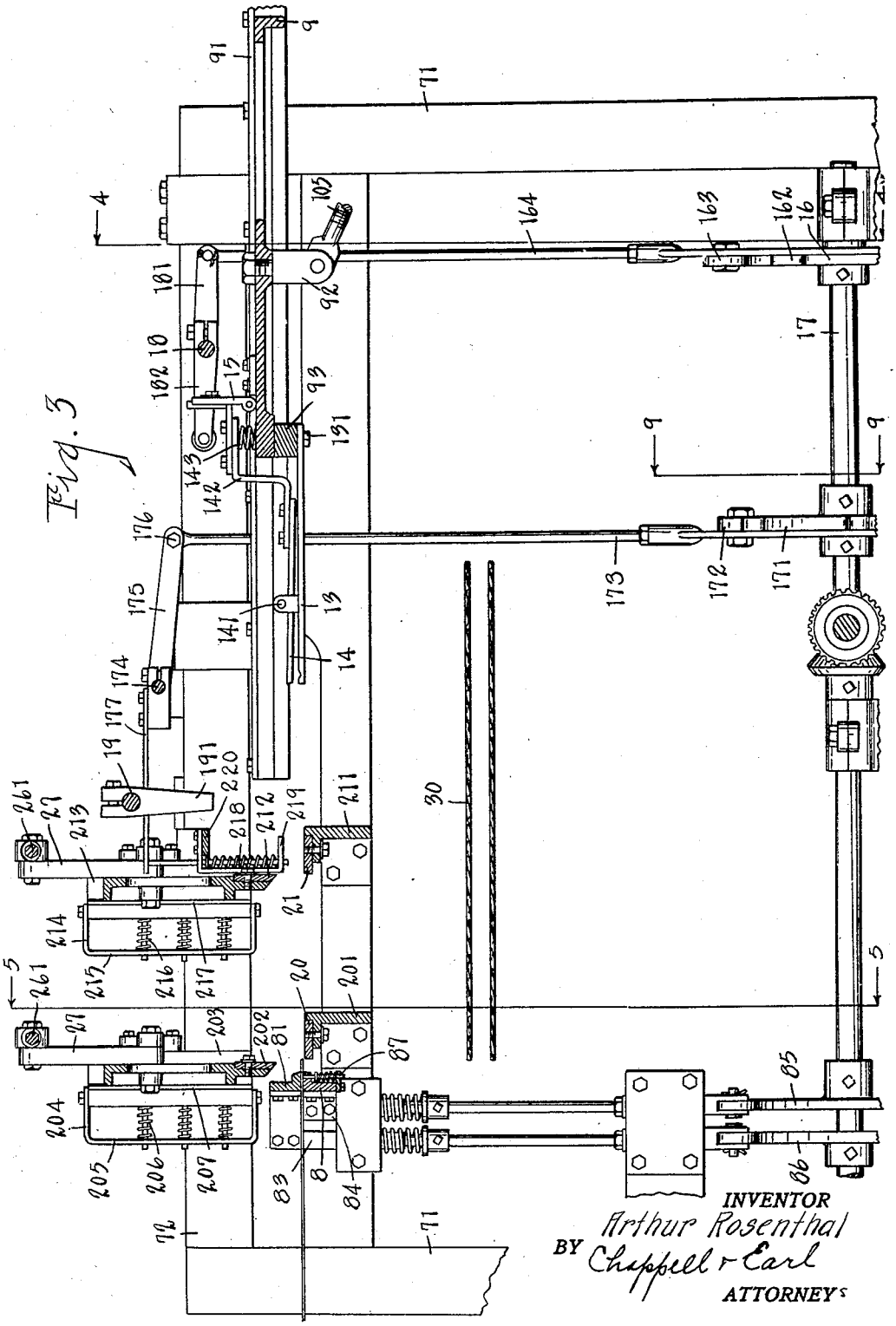


Fig. 3

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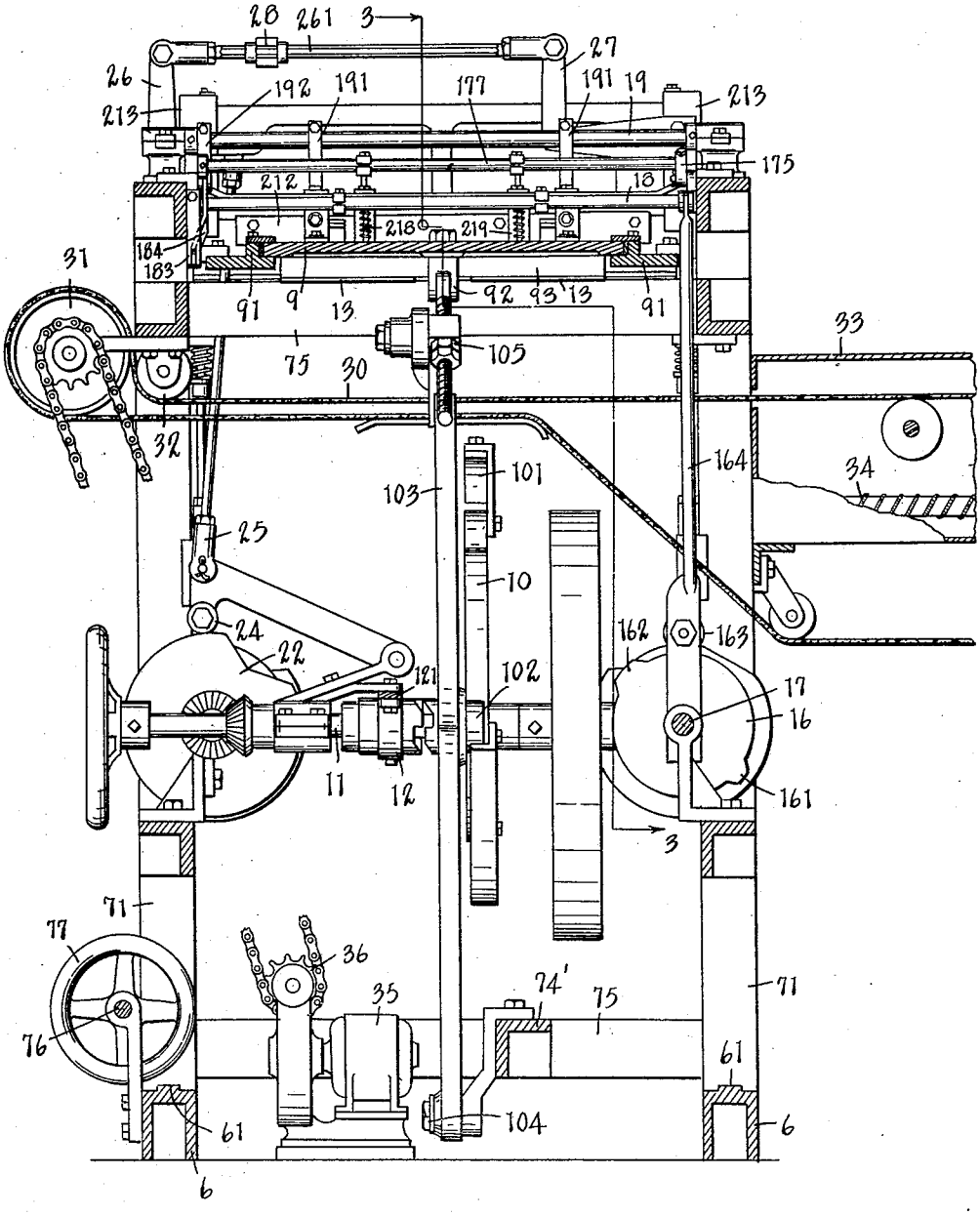


Fig. 4

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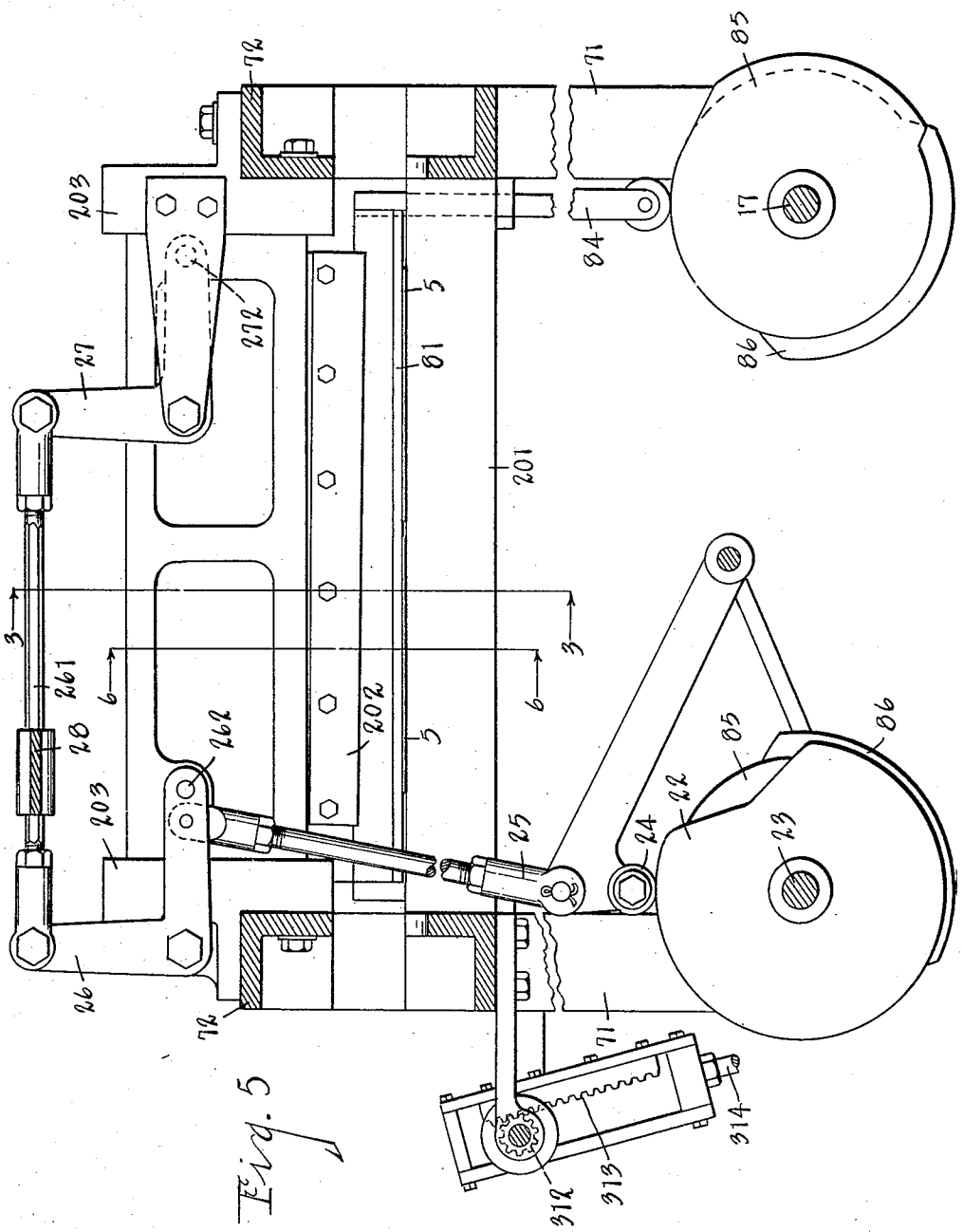


Fig. 5

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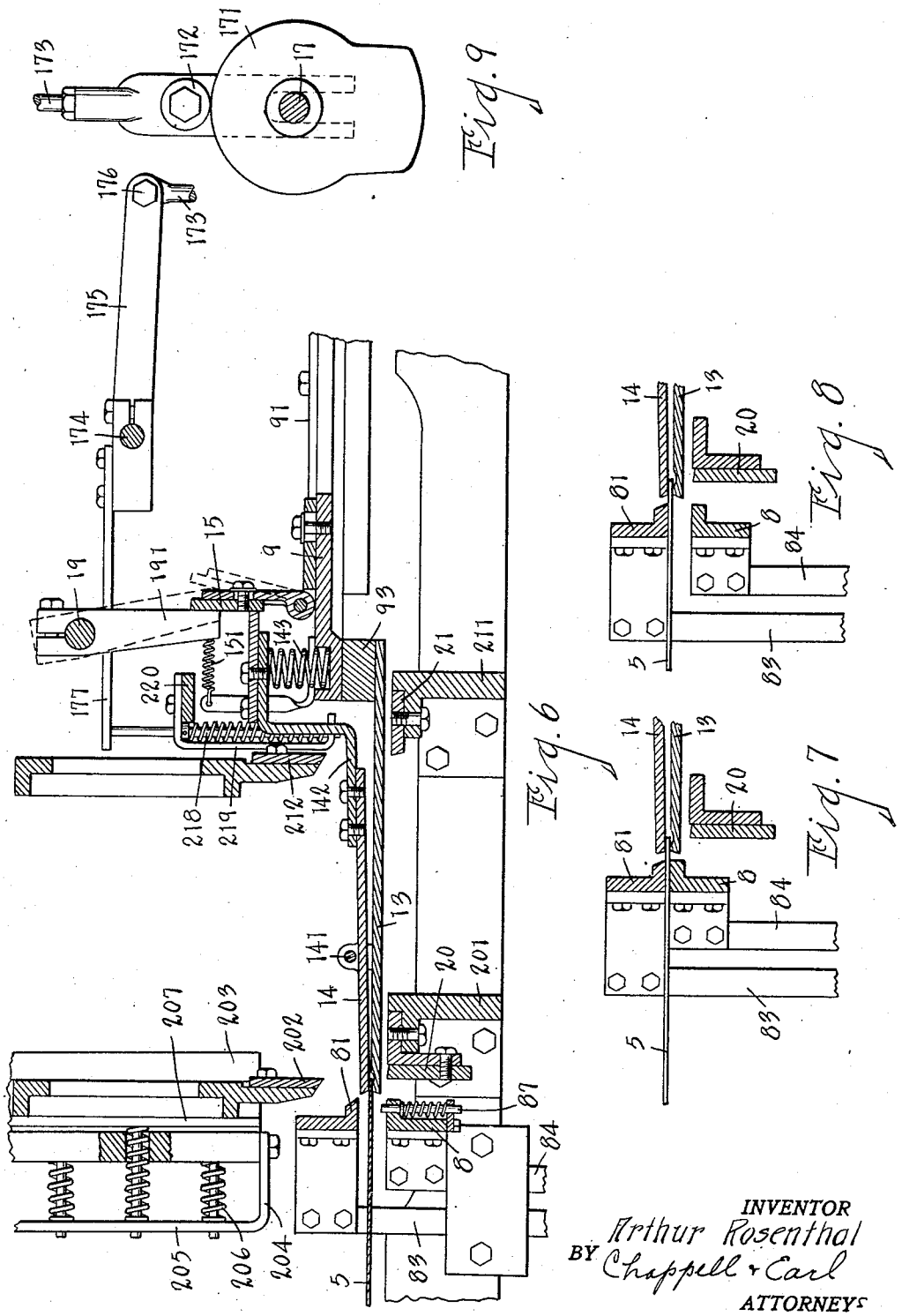


Fig. 9

Fig. 8

Fig. 7

Fig. 6

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Patented Oct. 6, 1931

1,826,525

UNITED STATES PATENT OFFICE

ARTHUR ROSENTHAL, OF GRAND RAPIDS, MICHIGAN

PRINTING MACHINE

Application filed August 1, 1930. Serial No. 472,382.

This invention relates to improvements in printing machines. It relates more particularly to the feed means and the method of delivering paper from the web to be printed on an intaglio press and then cutting, and delivering to a drier.

The objects of the invention are:

First, to provide a feed means which will handle the paper effectively without disturbing the fresh ink placed thereon.

Second, to provide an improved holder means for holding the web.

Third, to provide an improved feed jaw means for grasping the web and advancing it.

Fourth, to provide improved cut-off means to cut the sheets from the web.

Fifth, to provide improved means to deliver to a drier.

Sixth, to provide improved automatic control means whereby the drier conveyor will be continued in operation automatically on stopping the printing machine.

Objects pertaining to details and economies will appear from the description to follow. A preferred embodiment of my invention is illustrated in the accompanying drawing, in which:

Fig. 1 is a front elevation view of a printing press with my improved feed means incorporated, the printing press being of a well-known design of intaglio press.

Fig. 2 is an enlarged detail plan view of my improved feed and cut-off means, the printing press being omitted but the printing on the webs being indicated.

Fig. 3 is a still further enlarged detail longitudinal sectional elevation taken on the irregular plane indicated by lines 3—3 of Figs. 2, 4 and 5, some parts being omitted and others shown in full lines.

Fig. 4 is an enlarged detail sectional elevation view on the irregular plane indicated by section lines 4—4 of Figs. 1, 2 and 3.

Fig. 5 is a much enlarged detail sectional elevation taken on the plane indicated by line 5—5 of Figs. 1, 2 and 3, showing the cut-off shears and cam actuating means therefor.

Fig. 6 is an enlarged detail sectional view taken on a plane corresponding to line 6—6 of Figs. 2 and 5, showing the clamping jaws completely open and the feed jaws engaged ready to feed.

Fig. 7 is an enlarged detail sectional elevation view on a plane corresponding to the plane of said line 6—6 of Figs. 2 and 5 showing the feed jaws grasping the projecting end of the web while it is firmly held by the clamping jaws.

Fig. 8 is a similar view to Fig. 7 showing the lower holding jaw separated and lowered as will appear when the paper web is released. (Fig. 6 shows the complete separation of the jaws by the further elevation of the upper jaw entirely clearing the web and permitting its free movement without scraping when the feed jaws advance the same.)

Fig. 9 is an enlarged detail sectional view on line 9—9 of Fig. 3 showing details of the cam mechanism which is used for actuating the feed jaws and the clamping jaws.

The parts will be identified by their numerals of reference which are the same in all the views.

1 is an intaglio printing press of usual design to which I have added brackets 2 for carrying the paper roll 3 and an auxiliary feed and paper-tensioning device 4 to insure the proper and even delivery of the paper from the rolls to the printing press during the feeding operation. 5 are the webs of paper, one, two or any number being available.

6 is the base of my improved feeding and cut-off machine. 7 is the frame of the machine consisting of uprights 71, 71, side rails 72, 73 and end means 74, 75. The base 6 is provided with ways 61 on the top along which the frame 7 is adjusted by means of a double-ended screw 76 controlled by the handwheel 77, see Figs. 1 and 4.

The paper webs 5 are delivered through the intaglio press as indicated in Fig. 1 and are passed to my cutting machine where they are held by the pairs of holding jaws 8, 81. These jaws are carried on upright guide bars 83, 84, see Figs. 3, 6, 7 and 8, and are controlled by cams 85, 86 in pairs acting on the lower ends of plungers connected to said guide bars.

These jaws grip the paper web at the proper

level to be sheared to cut off the sheets. The cams then first close after the cutting off, operate to elevate the clamping jaws 8, 81, to the position indicated in Fig. 7 when it is possible for the feed jaws to grasp a projecting end of the paper web.

After the feed jaws engage, the cams then operate to drop the lower jaw 8 as seen in Fig. 8 to the level of the bottom fixed shear cutter, leaving the upper clamp in contact with the upper side of the sheet. The cams then further operate to raise the upper clamp 81, as seen in Fig. 6, thus completely releasing the web, when the same can be advanced without being rubbed either on the upper or lower side by the jaws or anything else.

The webs are fed two sheet lengths in the present machine. Thereupon the upper clamp drops into contact with the lower clamp 8, the spring pressed pins 87 being provided on each clamp 8 to insure even contact when the upper clamp 81 descends, thus to insure the paper being held securely in the said clamp. When the sheets are cut from the web this operation is repeated.

Auxiliary spring clamp pins 218 are carried by brackets 219 on cross bar 220 to cooperate with the upper face of fixed knife 21 to clamp the first sheet and hold it in position to be cut off.

These auxiliary clamps 218 are also actuated from the cam shaft 17. A cam 171 with cam roller 172 actuates the plunger or pitman 173 which actuates rockshaft 174 through rockshaft arm 175 to which said pitman is pivoted at 176.

Spring finger 177 carried by rockshaft 174 projects over the upper end of the spring clamp plunger 218 and forces the same downward against the springs into engagement with the paper web resting on the upper side of the fixed knife blade 21.

The reciprocating feed carriage 9 is supported on suitable ways 91 at the top of the frame 7, see particularly Fig. 2. The reciprocation of this feed carriage is controlled by the cam 10 having outside guides 101 to embrace and act upon the carriage control lever in a properly timed manner. The cam roller 102 is supported on the carriage lever 103 which is fulcrumed at 104 on a cross bar 74' at the base of the machine. The upper end of the carriage lever 103 is connected by adjustable screw links 105 to a bracket 92 on the under side of the carriage 9.

The cam 10 is carried on the driven shaft 11 which is controlled by clutch 12 having the usual hand lever 121, such control means not being detailed as it is ordinary clutch control construction.

The carriage 9 carries two pairs of identical feed jaws one for each web. The lower jaw 13 of each pair is stationary and is secured by bolts 131 to the cross bar 93 of the carriage 9. The upper jaw 14 is fulcrumed at 141 and carries a projecting arm 142 under which is disposed spring 143 to hold the said jaw firmly closed. A pivoted latch plate 15 is provided for the projecting arm of the upper jaw and is held yieldingly in position by the spring 151. A cam means is provided for opening the jaws to release the paper feed after it is fed.

The cam 16 is carried on the cam shaft 17 as seen in Fig. 4 and is provided with projections 161 and 162 oppositely disposed. The cam roller 163 is carried by plunger 164 which is connected to operate rockshaft 18 and is connected to the rockshaft arm 181. This rockshaft 18 is provided with actuating arms 182, 182, one for each pair of jaws, and the jaws are opened by these arms being depressed. The pivoted latch plate 15 engages the projections at the rear end of each upper jaw 14 and holds the same in open position. The jaws remain in open position until they have been advanced to the position to engage the projecting ends of the paper webs 5, when the latches are released.

This release is accomplished by means of the rockshaft 19 which has a pair of projecting fingers 191 for engaging the latch 15, indicated by dotted lines in Fig. 6, swinging the same to one side and permitting the spring 143 to close the jaws and engage the pojecting ends of the paper webs. The rockshaft 19 is actuated from rockshaft 18 which carries the downwardly projecting arm 183 which connects by link or pitman 184 to the downwardly projecting arm 192 on rockshaft 19.

Thus cam 16 at one end of the travel of the carriage closes the jaws and at the opposite end releases the jaws so that they will engage the paper webs. The cam 16 is driven at the same rate of revolution as the cam for controlling the carriage, and is thus provided with two projections to accomplish this work.

The holding jaws are timed to hold the paper until the feed jaws grasp the same and then these jaws are opened as indicated in Fig. 6 and their relative position in action is further shown in Figs. 7 and 8 to permit the grasping of the web and the feeding of the same forward as already explained. The web has theretofore been printed as indicated in Fig. 2 by the intaglio press on its opposed edges in close relation to each other, thereby accomplishing the printing of a double line of letterheads by a narrow printing surface.

When the paper web is fed forward the length of two sheets it is necessary that these sheets be effectively severed. This is done by the cutter means which I have provided, and which is also cam actuated. Two pairs of cutter knives are shown which are identical except that the cutter knife farthest removed from the holding jaws is provided with auxiliary clamping pins to position and

clamp the webs in proper relation to the lower cutting blade of the shears.

A pair of stationary shear blades 20, 21 are carried by cross bars 201 and 211 disposed across the frame of the machine. Above these are reciprocating shears 202 and 212, respectively cooperating therewith. These shears are reciprocated in suitable guides 203 and 213, respectively, on opposite sides of the machine. They are held resiliently against their guides by the spring structures 204 and 214, respectively.

These consist of loop bar 205 and 215 within which are disposed compression springs 206 and 216 which act upon guide plates 207, 217 for the ends of the movable shears to hold them yieldingly against their guides.

The shears are actuated by a cam 22 carried on a cam shaft 23, see Fig. 5. This acts upon cam roller 24 which is connected by pitman 25 to bell crank arm 26 which is connected to bell crank arm 27 by adjustable connecting link 261. There are pairs of bell crank arms 26 and 27 pivotally connected to the shears in each instance at 262 and 272, so that the shears are swung up and down in unison and in parallel relation by the said bell cranks.

The connecting arms 261 are coupled together by a cross bar 28, see Fig. 2, and a spring 29 is connected to bracket 291 on the top frame bar 72 and holds said knives yieldingly in elevated position, so that, when they are operated by the cam, they are brought down and cooperate with the fixed blades and cut off the paper at the two points indicated. Knife 213 is thus operated because harnessed to knife 203. The paper web is fed past knife 203 and the parallel connection is necessary. The paper is held by the jaws until it is completely severed.

The sheets when severed must be carefully delivered to a drier and I have provided an endless conveyor 30 to receive the same. This is driven by drum 31, see particularly Fig. 4. The upper run of the conveyor is held in close proximity to the lower run by the idler 32. The conveyor carries the sheets into the drier 33, see Fig. 4, which may be provided with electric heater units 34, or the heat may be provided by gas jets or any suitable means, as an air current. The details of the heater are not involved in this invention.

The conveyor drum 31 is driven intermittently from the ratchet hub 311. This is provided with a pinion 312 which is acted upon by rack 313. The action of this rack is, of course, by reciprocation of the pitman 314 thereof which is connected to a wrist pin 315 on disk 316 as seen in Fig. 1.

An auxiliary electric feed motor 35, see Fig. 4, is provided with ratchet sprocket connection 36 to drier feed drum 31. This motor is switched in automatically by the switch 37 connected to clutch lever 121, see Fig. 1, so that when the power is cut off by shifting the clutch lever, the electric feed motor is started and drives the feed to advance the sheets through the drier. Otherwise the sheets in the drier would become scorched if the drier was an especially effective one, and at any rate would remain too long for the effective and accurate drying of the ink.

The paper is tensioned and fed by an auxiliary feed. Tension rolls 4 are supported on a rocker pivoted at 41. This rocker is actuated by a wrist pin 43 on disk 44 geared to be driven from the driving shaft, as seen in Fig. 1.

I have described the parts of my machine and I will now show the operation for the better understanding of the relation of the parts.

Rolls of paper 3 are supported on the bracket 2 and threaded through the tension auxiliary feed rollers 4. The tension device rocks and draws off a quantity of paper from the roll 3 which roll is under tension. When the feed jaws act they simply take up the slack paper drawn out by the rocking tension roll without actuating the roll and consequently the tension on the paper for each operation is the same. After being engaged by the feed jaws ready to feed, as seen in Fig. 6, the cam 10 actuates the feed carriage drawing the web forward two sheet lengths. The upper clamp 81 then drops against the lower clamp 8 causing the paper web to be engaged by the plunger pins 87 and thus equalizing and insuring an even clamping of the sheets from side to side.

Cam shaft 17 then operates the cam 171 and through its connection rocking rockshaft 175 forcing the spring fingers 177 into contact with clamping plunger pins 218 which clamp this portion of the advanced sheet securely in place against the bottom knife 21 to hold the same. Thereupon the cam 22 acts on cam lever 24 and through its connections pulls on the bell crank 26 which operates both movable cut-off knives 202 and 212 cutting off the sheets.

Cam shaft 17 also actuates cam 162 and through its connections 164 rocks the rockshaft 18 forcing the rockshaft arms 182 downwardly, acting upon the projection of the upper jaw 14 and opening the same. When the knives 202 and 212 are raised, the clamping plungers 218 are also raised and the severed sheets drop smoothly and evenly upon the upper run of conveyor 30 and are carried laterally into the drier 33.

The jaws 14 having been opened and the knives having been raised and held at rest, the cam acts upon the feed carriage and advances the jaws 14 to engaging position. As these jaws approach the engaging position, the holding jaws 8 and 81 are elevated to the

position seen in Fig. 7 so that the feed jaws very readily grasp the ends of the web 5 projecting from the holding jaws. Then when they are released by the actuation of the rockshaft 19 tripping the latch plate 15 and releasing the jaws at that point the web end is grasped. The holding jaw 8 is then lowered by the actuating cam and the upper jaw 81 is raised through the plunger 83. The main cam then acts to feed the web forward and the process is completed.

When the machine is thrown out of gear by the manipulation of the clutch lever 121, the auxiliary feed comes into operation and the drier belt is run continuously until all sheets are delivered therefrom.

I have shown my improved machine organized to print two sheets or letterheads at an operation. By advancing the webs a single sheet length at a time the plurality of presses can be made use of to produce two color work. By increasing the number of presses three colors, four colors or more could be printed. In this event a single sheet length would be fed at a time and the machine would be organized accordingly.

Having thus described my invention what I claim as new and desire to secure by Letters Patent is:

1. In a machine of the class described, the combination of an intaglio press with feed rolls for a plurality of webs, a rocking tension device to serve as an auxiliary feed coupled to a wrist pin on a driven gear, a pair of holding jaws held yieldingly together by suitable springs and supported on suitable guide bars at each end, yielding spring pins carried by the lower jaw disposed to contact with the upper jaw, a cam means for actuating the guide bars to close the upper jaw onto the lower jaw and grasp the paper web at the correct elevation for cutting, said cam means being timed to raise the holding jaws above the cutting shears for the engagement of the projecting end of the web by feed jaws, a feed carriage having a pair of feed jaws to engage the projecting ends of the webs, spring latching means for holding the said feed jaws in open position, means to release the latch to cause the feed jaws to engage the end of the web, the said holding jaw cams being timed to then drop the lower holding jaw to the cutting level and elevate the upper jaw to entirely free the said webs and permit them to advance, cam means on the said frame for actuating the feed jaws to feed the paper the length of two sheets, a main pair of cutter knives, the fixed lower knife being at the level of the said holding jaws in lowered position, a reciprocating knife above and cooperating therewith having spring means to hold the same yieldingly in place, a second pair of cutter knives comprising a fixed cutter blade at the level of the first fixed cutter blade, and a cooperating reciprocating blade, spring clamping plungers to cooperate with the lower blade to clamp the web for cutting, a rockshaft having spring fingers for forcing the said clamping fingers against their springs to clamp the web against the lower knife, a cam connection to said rockshaft, an operating lever for the said feed jaws to permit the said latch to hold the same, a rockshaft having trip fingers with cam connection for tripping the said latch to release the jaws to permit them to clamp the ends of the webs of paper, a drier means, an endless conveyor delivering thereto, intermittent ratchet operating means, a rack and reciprocating pinion for operating said conveyor, a drier embracing the said conveyor to dry the cut-off sheets, and an auxiliary electric motor having a ratchet connection to the drier conveyor to operate the same when the machine is thrown out of gear having a switch disposed to be closed automatically when the feeding and cutting machine is thrown out of gear by the clutch lever therefor.

2. In a machine of the class described, the combination of an intaglio press with feed rolls for a plurality of webs, a pair of holding jaws held yieldingly together by suitable springs and supported on suitable guide bars at each end, yielding spring pins carried by the lower jaw disposed to contact with the upper jaw, a cam means for actuating the guide bars to close the upper jaw onto the lower jaw and grasp the paper web at the correct elevation for cutting, said cam means being timed to raise the holding jaws above the cutting shears for the engagement of the projecting end of the web by the feed jaws, a feed carriage having a pair of feed jaws to engage the projecting ends of the webs, spring latching means for holding the said feed jaws in open position, means to release the latch to cause the feed jaws to engage the end of the web, the said holding jaw cams being timed to then drop the lower holding jaw to the cutting level and elevate the upper jaw to entirely free the said webs and permit them to advance, cam means on the said frame for actuating the feed jaws to feed the paper the length of two sheets, a main pair of cutter knives, the fixed lower knife being at the level of the said holding jaws in lowered position, a reciprocating knife above and cooperating therewith having spring means to hold the same yieldingly in place, a second pair of cutter knives comprising a fixed cutter blade at the level of the first fixed cutter blade, and a cooperating reciprocating blade, spring clamping plungers to cooperate with the lower blade to clamp the web for cutting, a rockshaft having spring fingers for forcing the said clamping fingers against their springs to clamp the web against the lower knife, a cam connection to said rockshaft, an operating lever for the said feed jaws to permit the said latch to hold the same, a rock-

shaft having trip fingers with cam connection for tripping the said latch to release the jaws to permit them to clamp the ends of the webs of paper, a drier means, an endless conveyor delivering thereto, intermittent ratchet operating means, a rack and reciprocating pinion for operating said conveyor, a drier embracing the said conveyor to dry the cut-off sheets, and an auxiliary electric motor having a ratchet connection to the drier conveyor to operate the same when the machine is thrown out of gear and having a switch disposed to be closed automatically when the feeding and cutting machine is thrown out of gear by the clutch lever therefor.

3. In a machine of the class described, the combination of an intaglio press with feed rolls for a plurality of webs, a pair of holding jaws held yieldingly together by suitable springs and supported on suitable guide bars at each end, yielding spring pins carried by the lower jaw disposed to contact with the upper jaw, a cam means for actuating the guide bars to close the upper jaw onto the lower jaw and grasp the paper web at the correct elevation for cutting, said cam means being timed to raise the holding jaws above the cutting shears for the engagement of the projecting end of the web by feed jaws, a feed carriage having a pair of feed jaws to engage the projecting ends of the webs, spring latching means for holding the said feed jaws in open position, means to release the latch to cause the feed jaws to engage the end of the web, the said holding jaw cams being timed to then drop the lower holding jaw to the cutting level and elevate the upper jaw to entirely free the said webs and permit them to advance, cam means on the said frame for actuating the feed jaws to feed the paper the length of two sheets, a main pair of cutter knives, the fixed lower knife being at the level of the said holding jaws in lowered position, a reciprocating knife above and cooperating therewith having spring means to hold the same yieldingly in place, a second pair of cutter knives comprising a fixed cutter blade at the level of the first fixed cutter blade, and a cooperating reciprocating blade, spring clamping plungers to cooperate with the lower blade to clamp the web for cutting, a rockshaft having spring fingers for forcing the said clamping fingers against their springs to clamp the web against the lower knife, a cam connection to said rockshaft, an operating lever for the said feed jaws to permit the said latch to hold the same, a rockshaft having trip fingers with cam connection for tripping the said latch to release the jaws to permit them to clamp the ends of the webs of paper, and a drier means.

4. In a machine of the class described, the combination of an intaglio press with feed rolls for a plurality of webs, a pair of holding jaws held yieldingly together by suitable springs and supported on suitable guide bars at each end, yielding spring pins carried by the lower jaw disposed to contact with the upper jaw, a cam means for actuating the guide bars to close the upper jaw onto the lower jaw and grasp the paper web at the correct elevation for cutting, said cam means being timed to raise the holding jaws above the cutting shears for the engagement of the projecting end of the web by feed jaws, a feed carriage having a pair of feed jaws to engage the projecting ends of the webs and having means to actuate the same.

5. In a machine of the class described, the combination of an intaglio press with feed rolls for a plurality of webs, a pair of holding jaws having means for actuating the same, yielding spring pins carried by the lower jaw disposed to contact with the upper jaw, a cam means for actuating the guide bars to close the upper jaw onto the lower jaw and grasp the paper web at the correct elevation for cutting, said cam means being timed to raise the holding jaws above the cutting shears for the engagement of the projecting end of the web by feed jaws, a feed carriage having a pair of feed jaws to engage the projecting ends of the webs, spring latching means for holding the said feed jaws in open position, means to release the latch to cause the feed jaws to engage the end of the web, the said holding jaw cams being timed to then drop the lower holding jaw to the cutting level and elevate the upper jaw to entirely free the said webs and permit them to advance, cam means on the said frame for actuating the feed jaws to engage the ends of the webs to feed the paper the length of two sheets, a main pair of cutter knives, the fixed lower knife being at the level of the said holding jaws in lowered position, a reciprocating knife above and cooperating therewith having spring means to hold the same yieldingly in place, a second pair of cutter knives comprising a fixed cutter blade at the level of the first fixed cutter blade, and a cooperating reciprocating blade, spring clamping plungers to cooperate with the lower blade to clamp the web for cutting, a rockshaft having spring fingers for forcing the said clamping fingers against their springs to clamp the web against the lower knife, a cam connection to said rockshaft, an operating lever for the said feed jaws to permit the said latch to hold the same, a rockshaft having trip fingers with cam connection for tripping the said latch to release the jaws to permit them to clamp the ends of the webs of paper, and a drier means.

6. In a machine of the class described, the combination of an intaglio press with feed rolls for a plurality of webs, a pair of holding jaws with means for actuating the same, yielding spring pins carried by the lower jaw

disposed to contact with the upper jaw, a cam means for actuating the guide bars to close the upper jaw onto the lower jaw and grasp the paper web at the correct elevation for cutting, said cam means being timed to raise the holding jaws above the cutting shears for the engagement of the projecting end of the web by feed jaws, a feed carriage having a pair of feed jaws to engage the projecting ends of the webs, spring latching means for holding the said feed jaws in open position, means to release the latch to cause the feed jaws to engage the end of the web, the said holding jaw cams being timed to then drop the lower holding jaw to the cutting level and elevate the upper jaw to entirely free the said webs and permit them to advance, cam means on the said frame for actuating the feed jaws to engage the ends of the webs to feed the paper the length of two sheets, a main pair of cutter knives, the fixed lower knife being at the level of the said holding jaws in lowered position, a reciprocating knife above and cooperating therewith having spring means to hold the same yieldingly in place, a second pair of cutter knives comprising a fixed cutter blade at the level of the first fixed cutter blade, and a cooperating reciprocating blade, an operating lever for the said feed jaws to permit the said latch to hold the same, a rockshaft having trip fingers with cam connection for tripping the said latch to release the jaws to permit them to clamp the ends of the webs of the paper, and a drier means.

7. The combination of a printing press, feed rolls for a plurality of webs, a tension device comprising a rocker formed with a plurality of rolls over which said webs are disposed to serve as an auxiliary feed, means for rocking the tension device, a feed means beyond the said press for feeding the web therethrough, and cut-off means associated with said feed means.

8. In a machine of the class described, the combination of a printing press, feed rolls delivering webs thereto, a pair of holding jaws beyond the said printing press, cut-off shears beyond the holding jaws, feed jaws and means for engaging the projecting ends of the webs beyond the holding jaws, and cam means for actuating the holding jaws to first elevate the jaws above the cutting shears then after the feed jaws have engaged the web drop the lower jaw to the cutting level and raise the upper jaw to clear the web while the same is advanced and then clamp the web at the level of the cutter.

9. In a machine of the class described, the combination of a printing press, means for delivering a web therethrough, holding jaws for the said web, feeding jaws adapted to engage the end of said web comprising a relatively fixed lower jaw and a movable upper jaw, spring means for holding the movable upper jaw closed, a spring latch to hold the upper jaw open, means for opening the upper jaw to release the web, and means to trip the latch to permit the jaws to close when in proper engaging position.

10. In a structure of the class described, a pair of holding jaws, means for actuating the same, and a plurality of reciprocating yielding spring fingers on one of said jaws and projecting above the face thereof to insure even engagement of the web across the jaw.

11. In a machine of the class described, a printing press, means for delivering a web therethrough, holding jaws, feeding jaws, pairs or shears, clamping spring plungers for the said web, and spring fingers for forcing the plungers into engagement with the web.

12. In a machine of the class described, the combination of a printing press, means for delivering a web therethrough, means for cutting a plurality of sheets from the said web, a drier having a laterally delivering conveyor, a ratchet means for actuating the same intermitttently, and a rack and pinion cooperating therewith.

13. In a machine of the class described, the combination of a printing press, means for delivering a web therethrough, means for cutting sheets from the web, a drier having a conveyor delivering laterally thereto, an auxiliary feed motor for operating the said conveyor, and switch means for connecting said motor when the machine is thrown out of gear to cause the drier to complete its operation.

In witness whereof I have hereunto set my hand.

ARTHUR ROSENTHAL.