United States Patent [19]

Neal

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[54] **OFFSET PRESS NUMBERING ASSEMBLY**

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[52] **U.S. Cl.** **101/76,** 101/247

[51] **Int. Cl.** **B411 45/00**

[58] **Field of Search** 101/76, 77, 247

[56] **References Cited**

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Assistant Examiner—Paul T. Sewell
Attorney—Morton S. Adler

[57] **ABSTRACT**

A serial numbering machine assembly is incorporated with a conventional offset printing press for the printing of numbers on checks, invoices, statements and similar forms where numbering is desired. Adjustments are provided to print at different selected places on the form, to render the number machine inoperative if desired, and, when the offset press is in operation, to render the number machine inoperative if no printed material is released from the press.

7 Claims, 8 Drawing Figures

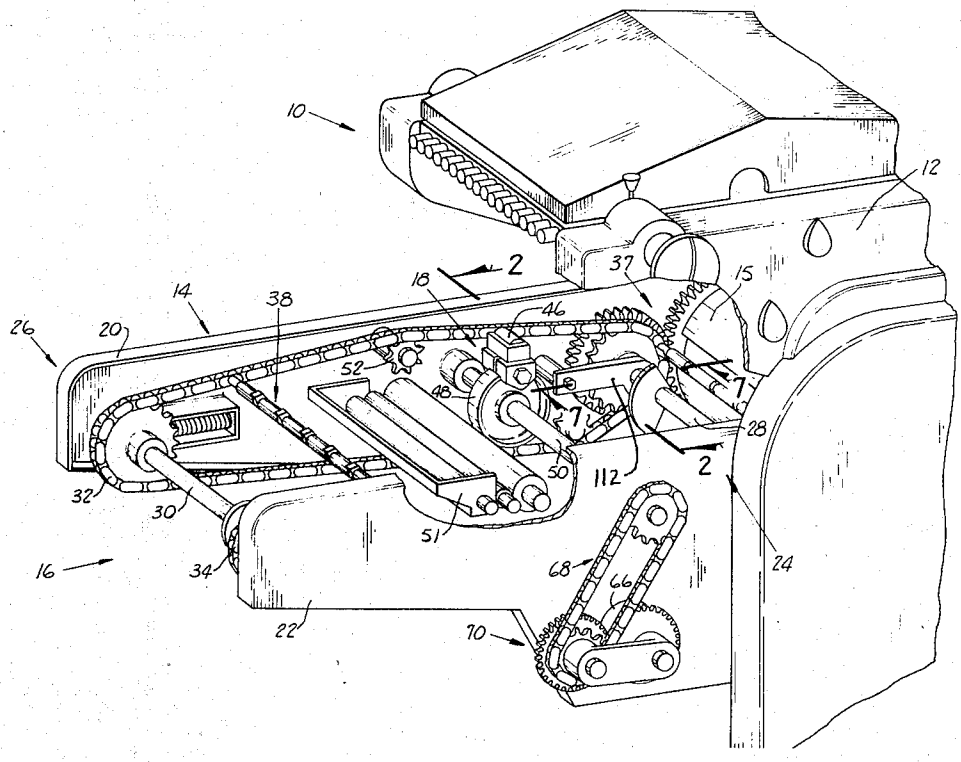
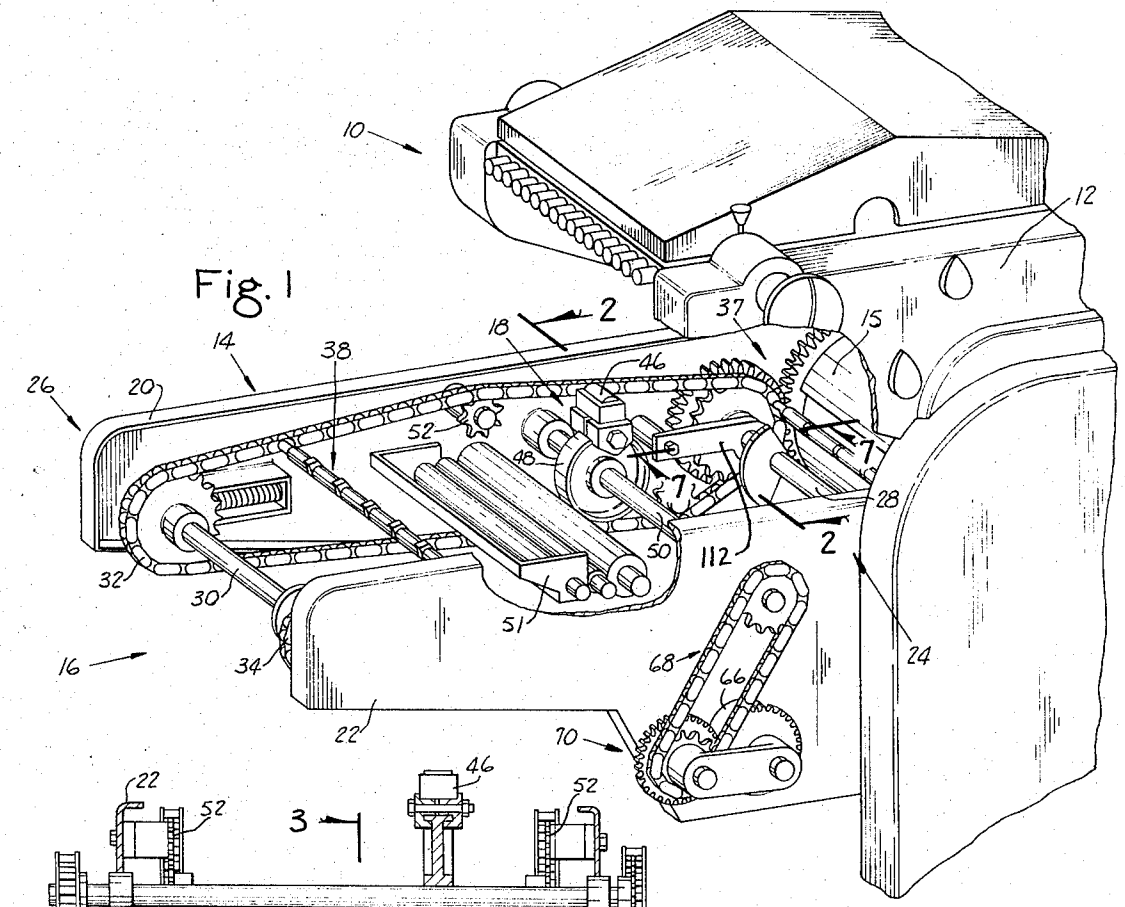


Fig. 1



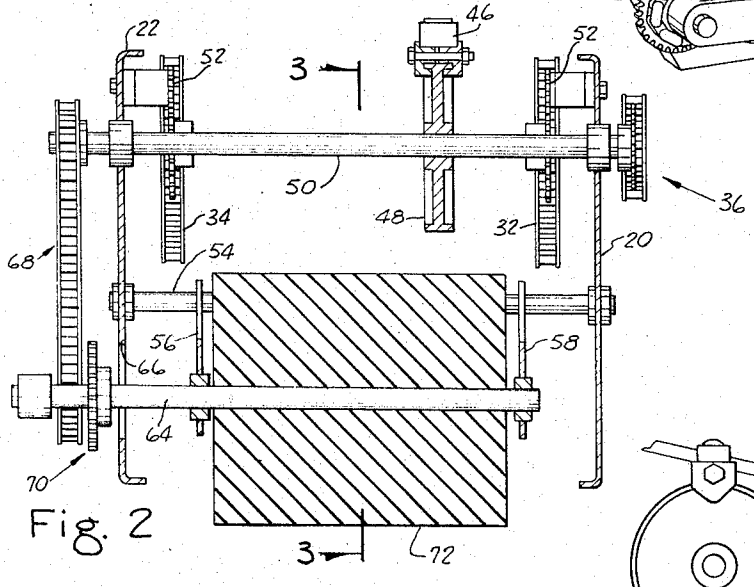


Fig. 2

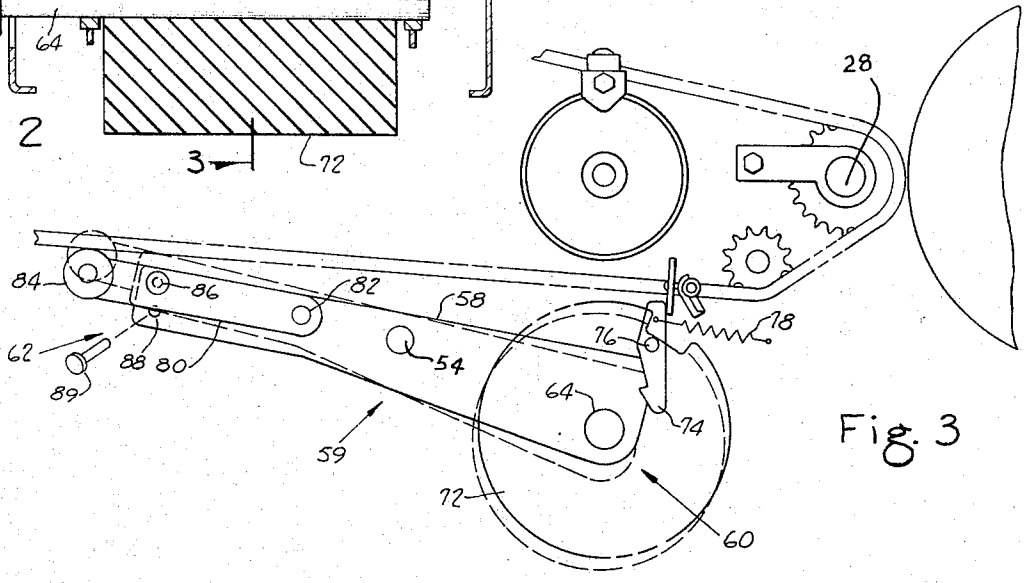


Fig. 3

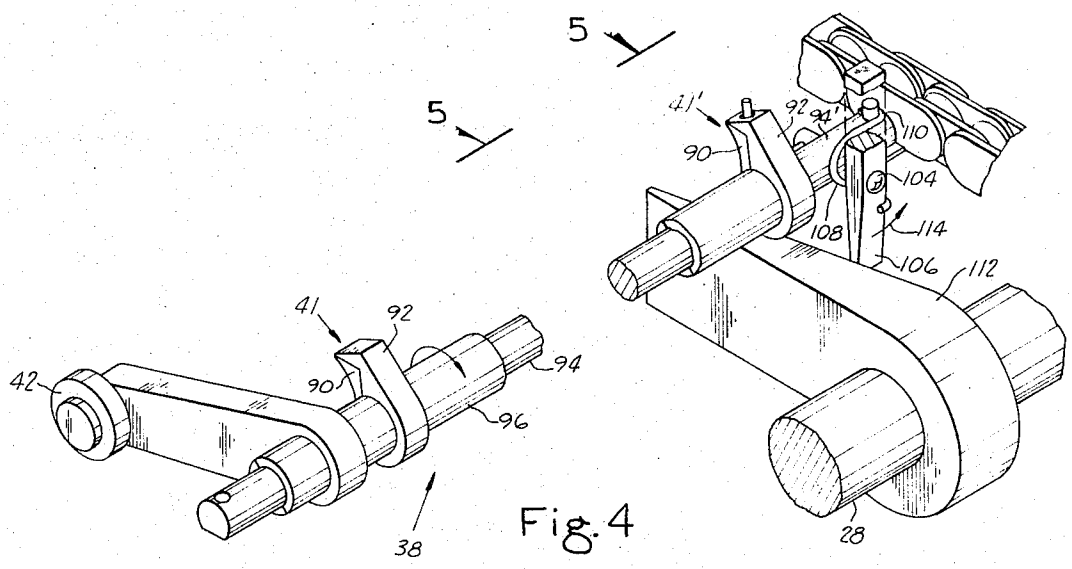


Fig. 4

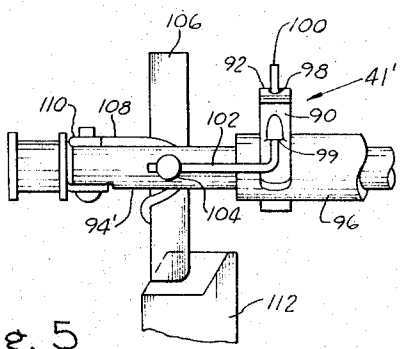


Fig. 5

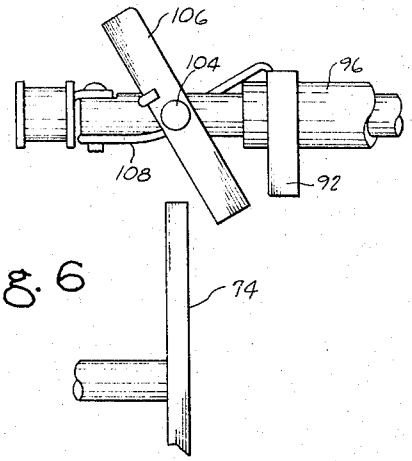


Fig. 6

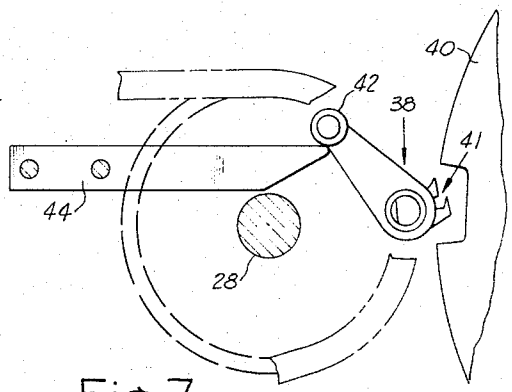


Fig. 7

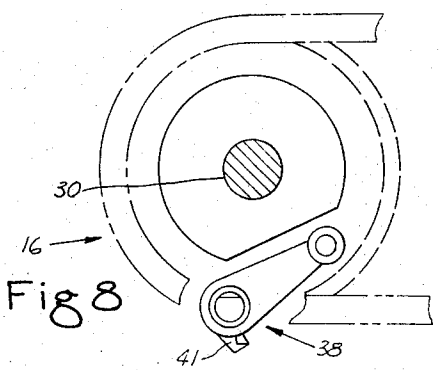


Fig 8

OFFSET PRESS NUMBERING ASSEMBLY

BACKGROUND OF THE INVENTION

This invention relates to a serial numbering machine assembly incorporated as a regular component of a conventional offset printing press.

The use of a serial numbering machine per se is an old expedient for which no invention is claimed and in the art of printing presses, such numbering machines have long been employed in association with what is known as the letter press as exemplified in U.S. Pat. Nos. 400,599 and 3,348,478. The direct printing from plates distinguishes the letter press from the offset press which employs a transfer arrangement not requiring plates as is well known and for this reason, the conventional use of a numbering machine as it is used with the printing apparatus of the letter press is not possible with the offset press. As a result, it has been more or less the accepted practice when serial numbers are desired on material run on an offset press to have such material re-run on a suitable numbering machine for such purpose and this, of course, requires additional time, labor and expense.

U.S. Pat. No. 3,046,877 in 1962 discloses so far as is known, the first proposed numbering machine designed for use with the offset press. This patent, however, provides for a separate or auxiliary numbering machine to be used in conjunction with the offset press and further requires a rather complex electrical circuitry for the operation of such auxiliary machine. In addition, this patent permits the printed material to travel free on a conveyor between the press and the auxiliary number printer which can present certain disadvantages, as are apparent.

Accordingly, with the above observations in mind, one of the important objects of the present invention is to incorporate a numbering machine of a type commonly used with letter presses into an offset printing machine where the function of the numbering machine is accomplished before the printed material is fully released from the offset press unit.

A further object is to provide a numbering machine as characterized which may be selectively rendered inoperative if numbering is not desired or when a preliminary test run is made before the numbering is to be started.

Still another object is to provide for positive and continuous contact control of the printed material during its initial printing and numbering.

Another object of this invention is to provide an automatic deactuating control for the numbering machine effective during the operation of the offset press when no printed material is released and thereby preventing the operation of the numbering machine in the absence of any printed material on which a number is to be printed.

SUMMARY

This invention utilizes a serial numbering machine of a well known type that has been accommodated for incorporation with the delivery machine component of a conventional offset printing press. The normal function of the delivery component is to receive the material printed and carry it to a point of deposit. The numbering machine is mounted to the periphery of a roller that in turn is journalled on a shaft operatively connected to available mechanism which operates the conventional gripping devices on the delivery component. A suitable inking system is arranged on the delivery component for cooperation with the printing machine.

Means are provided to selectively lock the printing machine in inoperable or non-printing position, if desired, and a sheet or paper detection means is provided whereby if the press is in operation but the material to be printed has been exhausted or none is discharged to the delivery component, the printing machine is automatically moved to a non-printing position and there will be no movement or change of numbers on the numbering machine.

The objects and purposes of this invention together with the details of the operation outlined and the advantages of the same will be more fully described and developed in relation to the more detailed description of the accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a fragmentary perspective view of the discharge end of an offset printing press with its associated delivery component and showing the incorporation with the delivery component of a serial numbering machine in accordance with this invention,

FIG. 2 is a view, partly in section, taken on the line 2—2 of FIG. 1,

FIG. 3 is a view in phantom lines taken from the line 3—3 of FIG. 2 of the delivery component of the offset press unit illustating the arrangement of my numbering machine adaptation and the adjustable positions of the lower complementary roller to render the printing machine inoperable,

FIG. 4 is a perspective view showing one of several like paper gripping assemblies on the delivery component adapted for purposes of this invention and including the paper detector apparatus for rendering the printing machine inoperative at times.

FIG. 5 is an elevational view taken from the line 5—5 of FIG. 4 showing one position of the detector device,

FIG. 6 is a view showing the opposite side of the device in FIG. 5 but in a different working position,

FIG. 7 is a schematic view showing the material pickup end of the delivery machine in relation to the printing machine, and

FIG. 8 is a schematic view showing the material release end of the delivery machine.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

Referring to the drawings, there is shown sufficient of an offset printing machine 10 to illustrate the invention to be described. Machine 10 is a conventional offset printer for which no invention per se is claimed and as shown the discharge end of the printing apparatus is designated generally by the numeral 12. Numeral 14 refers generally to what is known as the delivery machine disposed relative to end 12 to receive printed matter or sheets 15 as they are discharged from end 12 and to deliver them to a point of deposit 16 as is well known. My numbering machine assembly designated generally by the numeral 18 is cooperatively arranged relative to the delivery machine 14 as best seen in FIG. 1 and to facilitate the understanding of this arrangement as will appear, a brief description of the conventional construction and operation of the delivery machine 14 will be given.

Machine 14 includes the spaced sides 20 and 22 disposed in relation to end 12 of the offset press so as to define a pickup end 24 and a discharge end 26. A shaft 28 is mounted between sides 20 and 22 at end 24 and a second shaft 30 is mounted between sides 20 and 22 at end 26. Adjacent the inner opposed sides 20 and 22 are the respective endless chains 32 and 34 which are mounted on suitable sprocket wheels on shafts 28 and 30 in a well known manner as shown and for which more detailed description is not given since no invention is involved here in such arrangement. Movement of chains 32 and 34 is provided by a suitable drive mechanism which is operatively associated with appropriate drive means 37 that is a part of the offset press 10 all in the well known manner. Connected to chains 32 and 34 in a predetermined spaced relationship are a plurality of material pickup devices for which one is best seen in FIG. 1 and designated generally by the numeral 38 and in the conventional operation of this device, as is well known, chains 32 and 34 will move from left to right as viewed in FIG. 1 with the spacing of the pickup devices 38 being arranged so that as each sheet of printed material 15 is discharged from the press, there will be a pickup device 38 positioned to receive and grip such sheet 15 which is then carried to the point of deposit 16. This is illustrated schematically in FIG. 7 where a paper pickup device 38 is shown in relation to the drum 40 that is part of the offset press. The gripper devices 41 on pickup 38 as seen in FIG. 7 are operable by well known cam arrangement designated generally by the numerals 42 and 44 and at end 26 of the delivery machine 14, a release of the printed material is illustrated schematically in FIG. 8 where again the gripping fingers 41 of the pickup unit 38 are cam operated all in a well known manner. Thus far described, the components of the delivery machine 14 referred to are well known in their usual relationship to the offset press 10 and it is in this environment where I have adapted a conventional numbering machine by associating it in assembly 18 with the delivery machine 14 as I will now describe.

The numbering machine 46 which I have used is of conventional construction which includes a well known arrangement of a series of printing wheels having serial numbers thereon that can be advanced in various arrangements as is well known each time the printing numbers are inpressed upon a sheet to be printed and no invention is claimed in machine 46 per se. I have mounted machine 46 to the periphery of a suitable roller or drum 48 that in turn is mounted on shaft 50 for rotation therewith as seen in FIGS. 1 and 2. Shaft 50 is suitably connected to the drive mechanism 36 in any well known manner and a conventional inking device 51 cooperates with machine 46 as is well known. To provide clearance of the pickup devices 38 relative to the numbering machine 46, I have preferably installed the idler wheels 52 to elevate the chains 32 and 34 and it will be understood that such clearance is effected by timing the movement of the pickup devices 38 to coincide with the printing phase wherein machine 46 is disposed downwardly.

With reference now to FIG. 2, a pivot shaft 54 is rotatably journalled at respectively opposite ends in the sides 20 and 22 and a pair of elongated spaced arms 56 and 58 are secured intermediate their ends to shaft 54 for pivotal movement therewith as best seen in FIG. 3. Arms 56 and 58 as thus arranged define a supporting carriage 59 having a forward end 60 and a rearward end 62. A shaft 64 is rotatably supported at the forward end of arms 56 and 58 as seen in FIG. 2 and such shaft 64 extends through a slot 66 in side 22 where it is operatively connected to the chain drive assembly 68 seen in FIGS. 1 and 2. Drive 68 is operatively connected to shaft 50 for rotating shaft 64 and the lower gearing assembly 70 of the chain drive 68 provides a floating connection so that the horizontal plane of shaft 64 can be lowered or raised as will be referred to more in detail. A suitable impression roller 72 is mounted on shaft 64 for cooperative relationship with the numbering machine 46. Thus far described, a sheet of printed material 15 released from the offset press and picked up by the pickup assembly 38 as illustrated in FIG. 7 would be carried from end 24 of the delivery machine 14 to end 26 and during this travel would pass between roller 72 and the numbering machine 46 with the numbering machine passing into contact with the impression roller 72 in a synchronized relationship with the time of passage therethrough of each sheet of paper 15. By rotating the drum 48 which carries the numbering machine 46, it will be understood that the time of contact of the numbering machine 46 with roller 72 can be selectively determined to vary the location on the printed material where the number may be desired. It will also be understood and appreciated that there can be a plurality of drums 48 and number machines 46 if desired and, alternatively, drum 48 can be made in the form of an elongated cylinder to accommodate a plurality of numbering machines 46. In any of these suggested embodiments, the operation of the numbering operation would be the same.

While the adaptation of a conventional numbering machine 46 to the conventional offset press as above described substantially improves the efficiency of such press over present techniques, the numbering machine assembly 18 provides additional innovations to accommodate various requirements that may be present. Since the numbers on the numbering machine 46 will be advanced each time the numbering machine moves into contact with roller 72, it can be appreciated that if the press is permitted to run after the last printed sheet has been released with the delivery machine operating correspondingly, there would be a number of revolutions of the numbering machine resulting in the advancement of numerals each time machine 46 contacted roller 72 but no materials on which to print and if a proper chronology of numbers is desired on later material, the numbering machine would have to be reset. Likewise, there may be situations where initially, a few sheets of printed material may be put through the press on a test run but on which the numerals would not be required or desired but here again, the numbers would be advanced and require re-setting. Accordingly, I have provided for rendering the printing machine 46 inoperative either on a selective basis by the operator or an automatic basis relative to a detection apparatus responsive to the absence of any printed material in the offset press and this is accomplished in the following manner.

Referring to FIG. 3, the position of the impression roller 72 to be engaged by the numbering machine 46 in its rotation as described is represented by the uppermost of the phantom lines shown for roller 72 and such roller is held in this position by a catch or pawl 74 mounted on a pin 76 that is suitably secured to side 20.

Pawl 74 engages the forward edge of arm 58 and is yieldingly held in engaged position by spring 78 secured in any suitable manner. When pawl 74 is disengaged from arm 58, roller 72, being relatively heavy on the order of 20 pounds more or less, will drop downwardly to the position shown by the lowermost of the phantom lines in FIG. 3 and in this position, the numbering machine 46 will rotate without contact with roller 72 and, of course, without the advancement of any of the serial numbers. Pawl 74 can be disengaged manually or automatically as will later be described and if it is desired to intentionally place roller 72 out of contact with the numbering machine 46 for such purposes as a test run or preliminary run of printed materials that are not to be numbered, this is done as follows.

At the rear end 62 of carriage 59 an elongated bar 80 is pivotally secured at one end to arm 58 by a pin 82 and such bar projects beyond the rearward end of arm 58 where it carries a small roller wheel 84. The pin 82 is spaced inwardly from the rear end of arm 58 and bar 80 is provided with the opening 86 closely adjacent the rearward end of arm 58. An opening 88 at the rearward end portion of arm 58 can be placed in registration with opening 86 when pawl 74 is released and the carriage 59 rotates on the shaft 54. With openings 86 and 88 in registration, this position can be maintained by the insertion of a pin 89 in a well known manner so that by this arrangement, carriage 59 can be selectively locked into its lowermost position which will render the function of the numbering machine 46 inoperable.

Reference is now made to FIGS. 4, 5, and 6 where I will describe the arrangement with the pickup jaw or gripper assembly of a paper detection means responsive to the presence or absence of gripped material for automatically rendering the numbering machine 46 inoperable when the offset press 10 is operating but no printed material is passing therethrough. The paper pickup assembly 38 as seen in FIG. 4 comprises a plurality of gripper assemblies 41 and will be moving in a clockwise direction. The gripper assemblies 41 include the respective jaws or claws 90 and 92 with claws 90 affixed to a shaft 94 and claws 92 attached to a cylinder 96 rotatably journalled on shaft 38 whereby the movement of claws 92 toward and away from claws 90 is cam operated as previously described in a well known manner. That is illustrated schematically in FIGS. 7 and 8. The end of shaft 94 which is adjacent side 20 is more particularly designated for purposes of description here as seen in FIG. 4 by the numeral 94' and likewise the gripper assembly at end 94' is designated in FIG. 5 by the numeral 41' since the apparatus to be described is oriented relative to the pawl 74 previously described.

The outer end of jaw or claw 92 overlies the corresponding end of jaw 90 as shown and I have provided the respective passageways 98 and 99 in the jaws 90 and 92 which are in registration when the jaws are closed. In this position, an L-shaped rod has its vertical arm 100 slidably disposed through passageways 98 and 99 so as to be capable of projecting upwardly therefrom as seen in FIG. 4. The horizontal arm 102 of this rod extends parallel to the axis of shaft 94' and passes through a stub shaft or pin 104 that extends transversely through shaft 94' as seen in FIG. 5. On the opposite side of shaft 94', the elongated trip lever 106 is secured at approximately its longitudinal center to pin 104 as best seen in FIG. 6. A spring member 108 is attached to shaft 94' as at 110 and is cooperatively associated with pin 104 and lever 106 as seen in FIG. 5 to normally hold lever 106 in a vertical position. Further, by this arrangement, the movement of lever 106 in a clockwise direction as viewed in FIG. 5 will cause pin or shaft 104 to correspondingly rotate and move the vertical arm 100 of the rod downwardly through passageways 98 and 99. As the pickup assembly 38 moves toward the press 10 with the movement of chains 32 and 34, the lever 106 as seen in FIG. 5 will ride against the wedge-shaped cam 112 that extends from shaft 28 rearwardly as shown and is progressively wider from its rearward end to its point of attachment on shaft 28. Thus, as lever 106 moves toward shaft 28 in contact with cam 112, such lever will be rotated in the direction of the arrow 114 in FIG. 4 which will be the clockwise direction as viewed in FIG. 5 and as indicated, this will withdraw rod arm 100 from the gripper assembly 41'. With such rod withdrawn, the gripper assembly 41 will normally accept any sheet of paper released from the printing machine and if there is paper present, it will be gripped in a normal manner. However, as the lever 106 clears the cam 112, the spring 108 normally tends to return the rod arm 100 to the position shown in FIG. 5 but if paper has been picked up by the pickup assembly 41', the vertical arm 100 of the rod member will contact the paper and the force of spring 108 is designed not to overcome the paper obstruction so that lever 106 will be maintained in an angular position as seen in FIG. 6 and will move toward the rear end 26 of the delivery machine without making any contact with the pawl or catch 74 so that the impression roller 72 is maintained in its functioning position relative to the numbering machine 46 and such machine will print numbers as intended. On the other hand, if the pickup assembly 41' should move past the press and receive no paper, spring 108 will return lever 106 to the vertical position shown in FIG. 5 and in this position it will engage the upper end of the pawl 74 as seen in FIG. 3 and release it from the carriage 59 whereby the numbering machine 46, while rotating with drum 48, will be out of contact with roller 72 so that none of the serial numbers will be advanced.

In the situation where the lever 106 is in the vertical position shown in FIG. 5 so that it trips the pawl 74 to lower the carriage 59, the the weight of roller 72 will cause carriage 59 to pivot about shaft 54 to move roller 72 to its lowermost position as seen in FIG. 3 and thus the roller wheel 84 at the rear end of the carriage will be elevated to the dotted line position shown and thus as the lever 106 reaches the rear end 26 of the delivery machine 14, it will engage roller 84 to depress end 62 of carriage 59 and correspondingly elevate end 60 whereby carriage 59 is engaged by pawl 74 so that roller 72 will be in its contact position with machine 46. This operation is repeated each time the gripper assembly 41' fails to receive a sheet of paper so that as long as the press is operated without discharging any printed material, the carriage 59 will be automatically lowered whereby the numbering machine 46, while rotating with drum 48, will not be in contact with the impression roller 72 and consequently there will be no advancement of the serial numbers. Likewise, as previously described, carriage 59 can be locked in its lowermost position to maintain the numbering machine 46 inoperable when desired. Accordingly, from all of the foregoing, it is thought that a full and complete understanding

of the construction and operation of this invention will be had and appreciated.

I claim:

1. In an offset printing machine of the type having a printing apparatus and a delivery machine associated therewith for normally receiving material acted on by the printing machine and delivering it to a point of deposit, said delivery machine including a drive means operatively associated with said printing machine and a pickup jaw assembly operable to grip material released by the printing machine, the combination therewith of:

a first shaft rotatably mounted to said delivery machine,

a serial numbering machine mounted on said first shaft for rotation therewith,

an elongated carriage pivotally mounted intermediate its length to said delivery machine,

a second shaft rotatably mounted on one end of said carriage,

an impression roller mounted on said second shaft for rotation therewith,

the pivoting of said carriage causing said impression roller to move between an upper and lower position defining the respective printing and out of printing positions of said impression roller relative to said numbering machine,

said first and seconds shafts being operatively connected to the drive means on said delivery machine,

a releasable latch member on said delivery machine engageable with and normally holding said carriage in a position defining the printing position of said impression roller relative to said numbering machine,

paper detection means on said pickup jaw assembly responsive to the presence and absence of gripped material therein,

said paper detection means being movable during its travel with said delivery machine to and from different angular positions relative to the presence and absence of in the pickup jaw assembly, and

in the absence of such material, said paper detection means being positioned to act against and release said latch member whereby the weight of said impression roller at one end of said carriage causes said carriage to pivot by gravity to place said impression roller in out of printing position.

2. A machine as defined in claim 1 including:

said latch member being selectively manually operable to effect pivotal movement of said carriage to the out of printing position of said impression roller.

3. A machine as defined in claim 1 including:

said latch member being spring loaded to yielding maintain its locked position,

a trip lever carried by said delivery machine and travelable with the regular components thereof in the receipt and delivery of material from the printing machine,

said trip lever being pivotable to first and second positions whereby in said first position it is capable of contacting and releasing said latch member in its line of travel and in said second position it moves free of contact with said latch member,

means on said delivery machine responsive to the presence and absence of material released by said printing machine, and

said last mentioned means in the absence of material released by said printing machine acting on said lever to move it to said first position and in the presence of such material acting on said lever to move it to its second position.

4. A machine as defined in claim 1 the combination therewith of:

said latch member being spring loaded and engaged with said carriage to normally yieldingly hold it in printing position,

a rod slidably arranged in said jaw assembly,

a pivotable spring loaded lever carried by said delivery machine and operably connected to said rod for moving it into and out of said jaw assembly,

a cam on said delivery machine engagable by said lever in the normal travel of said jaw assembly,

the engagement of said lever with said cam causing pivotal movement of the lever from its original position to a second position and corresponding movement of said rod out of the jaw assembly and synchronized with the position of the jaw assembly to receive and grip material from the printing machine,

said lever moving out of engagement with said cam with movement of said jaw assembly out of material receiving position relative to said printing machine so that it is capable of pivotal movement to its original position to effect movement of said rod into said jaw assembly in the absence of material in the jaw assembly, and

in the absence of such material, said lever being returned to its original position to engage and release said latch to move said carriage out of printing position.

5. A machine as defined in claim 4 including:

the release of said latch causing the latched end of said carriage to move downwardly and the opposite end to move upwardly, and

said lever after releasing said latch, moving with said jaw assembly to engage the other end of said carriage and effect its return to its latched position.

6. A machine as defined in claim 4 including:

the presence of material in said jaw assembly serving as an obstruction to the movement of said rod into said assembly whereby said lever is held in its second position where it moves free of contact with said latch and said carriage is maintained in printing position.

7. A machine as defined in claim 4 including:

said latch being manually releasable, and

a manually operable lock means on said carriage to selectively hold said carriage out of printing position.

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