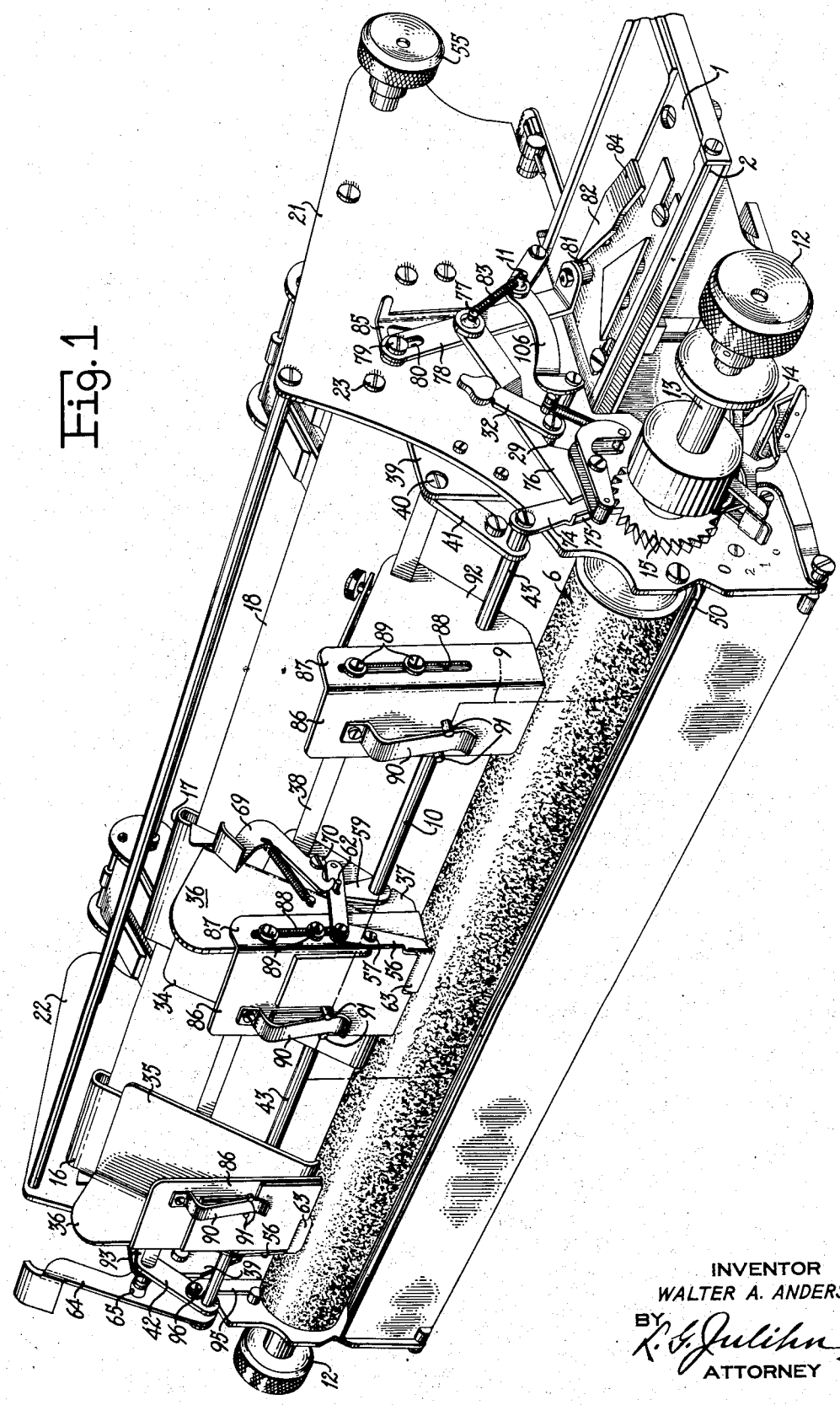
Dec. 24, 1940. W. A. ANDERSON 2,226,151

PAPER CARRIAGE FOR ACCOUNTING MACHINES

Filed June 29, 1938 3 Sheets-Sheet 1

Fig. 1



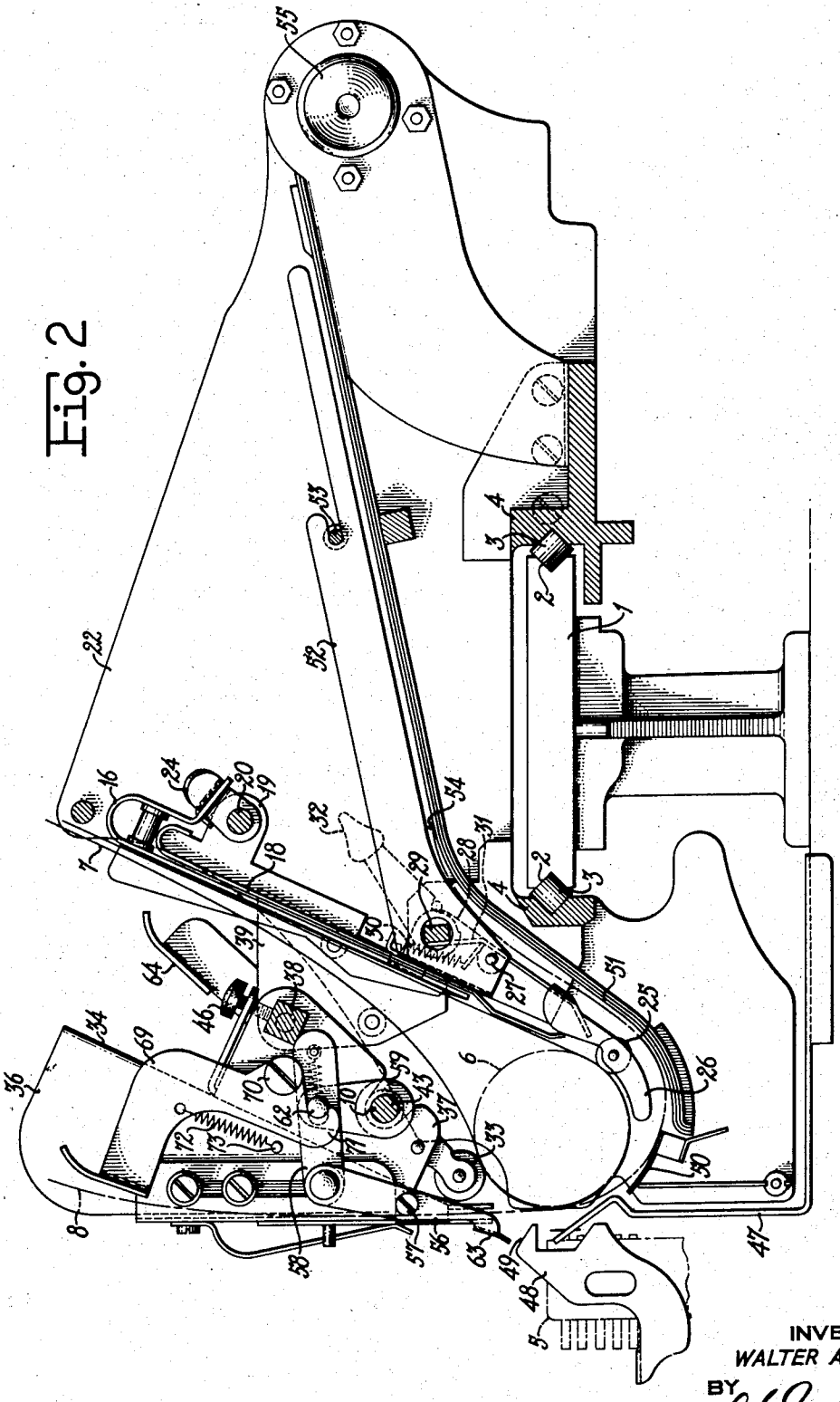
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Fig. 2



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Fig. 5

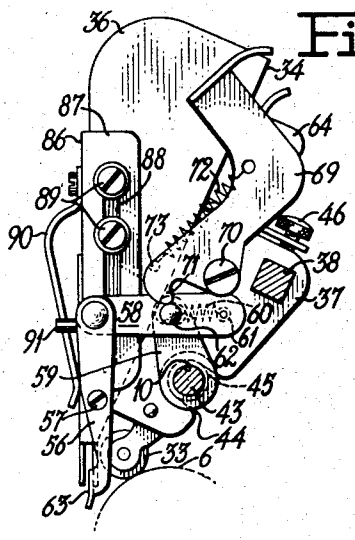


Fig. 3

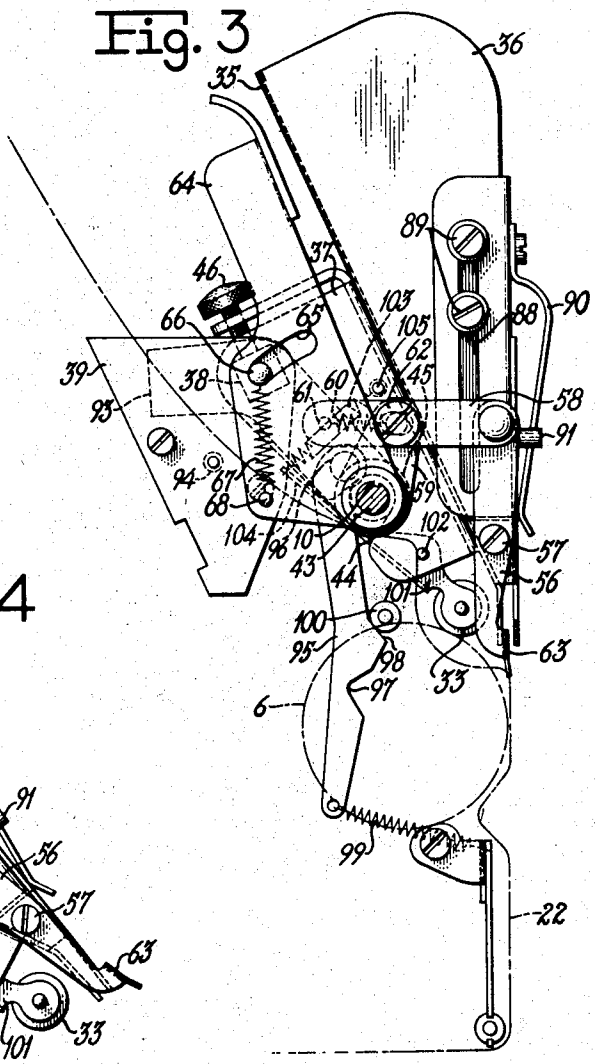
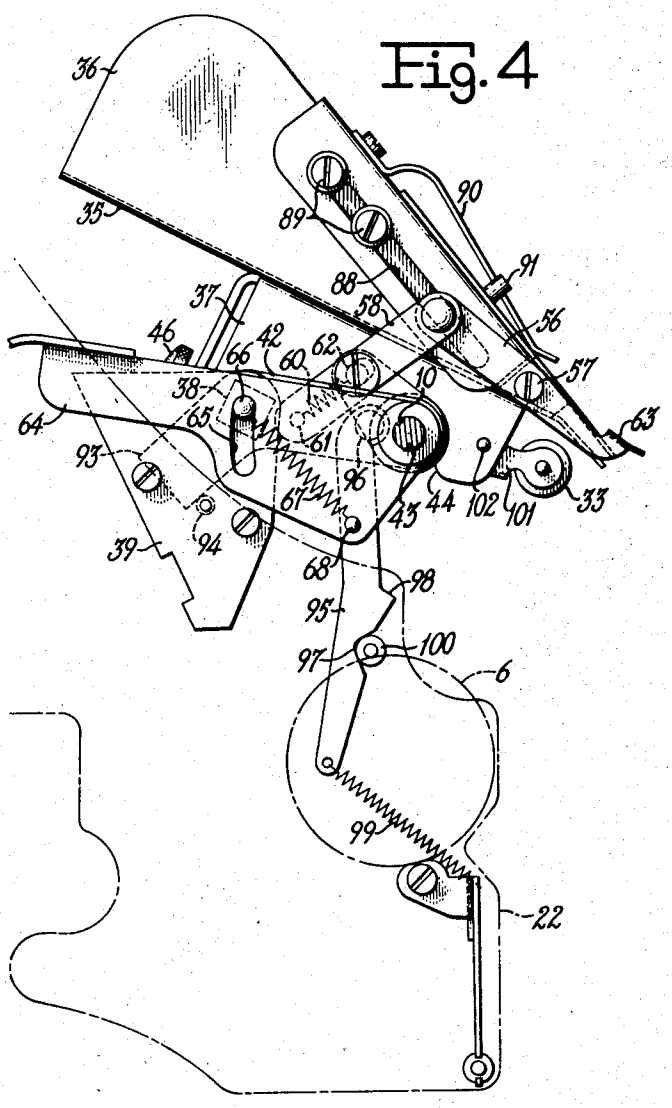


Fig. 4



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UNITED STATES PATENT OFFICE

2,226,151

PAPER CARRIAGE FOR ACCOUNTING MACHINES

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Application June 29, 1938, Serial No. 216,460

7 Claims. (Cl. 197—128)

This invention relates to paper carriages for accounting machines, and more particularly to paper holding apparatus therefor.

In modern accounting practice it is frequently necessary to enter only a single line of posting on each form, making it desirable to remove and insert the forms in rapid succession. Also, it is frequently necessary to print upon bank checks or short memorandum slips that do not have sufficient length to be held in printing position by the usual paper holding devices.

An object of the present invention, therefore, is to provide a paper holding mechanism for long work forms, having means for properly holding such forms in printing position and being operable either manually or automatically to an open or closed position, whereby to facilitate the insertion and removal of the forms during successive one-line printing operations.

Another object of the invention is to provide an adjustable means for supporting and holding relatively short length forms, such as checks and the like, in printing position on the carriage platen.

With these and incidental objects in view, the invention consists in certain novel features of construction and combinations of parts, the essential elements of which are set forth in appending claims, and a preferred embodiment of which is hereinafter described with reference to the drawings which accompany and form part of this specification.

In the drawings:

Figure 1 is a perspective view of a carriage embodying the invention,

Figure 2 is a right side elevation of the carriage, with the improved paper holding mechanism latched in open position,

Figure 3 is a detail left side elevation of the improved paper holding mechanism in closed position,

Figure 4 is a view similar to Figure 3 but with the paper holding structure shown in the position to which it is moved when rear fed paper is to be inserted around the platen, and

Figure 5 is a detail right side elevation of the latch for maintaining the paper holding mechanism in open position.

The invention is illustrated in connection with the type of carriage used on the machine disclosed in the application of Oscar J. Sundstrand, Serial No. 581,800, filed December 18, 1931 which matured as Patent No. 2,194,270, March 19, 1940. It is adapted to be used on the type of carriage disclosed in United States Patent No. 2,060,954, issued to Oscar J. Sundstrand, on November 17, 1936, or on that disclosed in the United States applications of Walter A. Anderson, Serial No. 92,164, filed July 23, 1936 and Serial No. 192,675, filed February 26, 1938 which matured as Patent No. 2,185,424, January 2, 1940.

Carriage in general

Referring to Figure 1, the carriage is mounted for movement along a track 1. The track is provided with grooves 2 (Figure 2) to receive rolls 3, received also by oppositely disposed grooves in carriage frame 4. As the carriage moves from right to left, it is stopped in various columnar positions so that type bars 5 on the accounting machine may print on work forms fed around the platen 6. The mechanism for tabulating the carriage from column to column and for returning it to its initial position is disclosed in Patent No. 2,194,270. The carriage is adapted to accommodate rear fed paper such as a journal sheet 7 and front fed paper such as a ledger sheet 8 (Figure 2), as well as small forms such as a check 9 (Figure 1. The platen may be rotated manually by knobs 12 secured to each end of the platen shaft 13, and may be rotated automatically during operations of the machine by a feed pawl 14 cooperating with teeth on a ratchet wheel 15 secured to shaft 13. The mechanism for operating pawl 14, together with the adjustable mechanism therefor, is fully disclosed in Patent No. 2,060,954.

Mechanism for guiding and feeding rear fed forms

Referring to Figures 1 and 2, the rear fed form 7 passes downwardly between guides 16 and 17, and over a paper table 18 extending across the entire width of the carriage and having at its opposite ends ears 19. The ears are apertured to receive the opposite ends of a rod 20 secured to side plates 21 and 22 of the carriage by two screws, one of which is shown at 23 (Figure 1). The paper table extends downwardly to a point quite close to platen 6, and is held at its lower end by screws (not shown). The guides 16 and 17 are arranged to lie over table 18 and are curved on their upper ends, as shown in Figure 2. Finger pieces such as 24 are secured to guides 16 and 17 and are apertured to receive rod 20. The finger pieces grip rod 20 sufficiently to retain the guides in any position to which they are adjusted along rod 20.

The journal sheet 7 then passes between platen 6 and rear feed rolls 25. Rolls 25 are supported in trucks 26 pivoted at 27 on brackets 28 secured

by screws (not shown) to table 18. Brackets 28 are apertured to receive a flat sided shaft 29 journaled in the side plates of the carriage. Springs 30 connected between an offset lug on trucks 26 and a formed lug on brackets 28 tension the trucks clockwise about pivots 27 to bring rolls 25 into frictional contact with the platen. Upstanding lugs 31 on trucks 26 lie adjacent one of the longer flat sides of shaft 29 when the rolls are in this position. Manipulative levers 32 (Figures 1 and 2) are secured to each end of shaft 29. When it is desired to move the feed rolls away from the platen, it is only necessary to rotate one of the levers 32 forwardly a slight extent. This causes an edge of shaft 29 to move lugs 31 toward the left and rotate trucks 26 counter-clockwise about pivots 27 thereby moving rolls 25 away from the platen.

From rolls 25, the paper continues around the platen and passes under auxiliary feed rolls 33, and then upwardly out of the carriage. In order to facilitate insertion of this form between feed rolls 33 and the platen, rolls 33 are mounted on the front feed paper structure which is arranged to be swung upwardly about shaft 38 as a pivot, to remove the rolls from contact with the platen. This swinging structure is more fully described below.

Mechanism for guiding and holding front fed paper

For introducing front fed sheets, right and left guide chutes 34 and 35, respectively, are provided. These chutes are formed with sides 36 which act as edge guides, and are secured on separate brackets 37 (Figure 3). Brackets 37 are apertured (Figure 5) to receive a square shaft 38 extending across the carriage and journaled in plates 39 (Figure 1) secured on the carriage side walls and secured in position by screws such as 40. Forwardly extending arms 41 and 42 are mounted on shaft 38 adjacent plates 39 and are connected at their forward ends by a shaft 43. The lower ends of brackets 37 are recessed as at 44 (Figure 5) to fit snugly in annular grooves provided in collars 45 slidably mounted on rod 43. Thumb screws 46 threaded in brackets 37 and bearing against shaft 38 maintain the brackets and chutes in their laterally adjusted position along shafts 38 and 43.

The paper is passed downwardly through the chutes and is directed under the platen first by the upper portion of a plate 47 secured to the frame of the accounting machine. One or more deflectors 48 are provided adjacent type bars 5 and have surfaces 49 to prevent the paper from catching on the ends of the type if the paper should have a tendency to curl in that direction. Plate 47 deflects the paper toward a front feed lip 50 secured between the carriage side plates 21 and 22. Further insertion of the paper causes it to be deflected upwardly between the rear feed rolls 25 and a guide plate 51 secured between the carriage side plates. Further movement brings the paper into contact with the lower edges of deflectors 52 supported on pivots 27 and a rod 53. The paper then continues rearwardly between deflectors 52 and plate 51 until it strikes adjustable paper stops 54, one of which is shown in Figure 2. Stops 54 may be adjusted along plate 51 by turning a knob 55. The details of this adjustable stop mechanism are disclosed in application Serial No. 92,164.

After the paper is fully inserted, it is necessary that it be held firmly in position during the printing operations. To accomplish this there are provided on each of the chutes 34 and 35 clamping members 56 pivoted on screws 57. A link 58 is pivotally connected to the upper end of each clamp 56, and, by pin and slot connection 62, is connected to upstanding arms 59 fixed on collars 45. Springs 60 (Figure 5) connected between studs 61 on the rear ends of links 58 and the pins of the pin and slot connection 62 normally tension clamps 56 counter-clockwise, as viewed in Figure 1, causing lips 63 formed on the lower ends of the clamps to yieldingly press the paper against the rear walls of chutes 34 and 35 to hold it in position for printing.

The apertures of arms 59 are provided with keys lying in a key slot 10 in shaft 43. This insures rotation of arms 59 with shaft 43, but permits them to be moved along the shaft. A lever 64 is secured to the left end of shaft 43 for rotating the shaft to release clamps 56 from contact with the front fed paper. An arcuate slot 65 (Figure 3) in lever 64 embraces an extended pin 66 in shaft 38 to limit the rotation of shaft 43. A spring 67, superior in strength to springs 60, is connected between pin 66 and a stud 68 secured in lever 64, whereby the lever and parts connected therewith are tensioned clockwise to their normal position, i. e., with clamps 56 in closed position, as shown in Figure 3. To release the clamps, it is merely necessary for the operator to press lever 64 rearwardly. This movement rotates shaft 43, taking up the lost motion in the pin and slot connection 62 and moving links 58 rearwardly to rock clamps 56 about screws 57 to their open position, as shown in Figure 2. A lever 69 (Figures 1 and 5) pivoted on a screw 70 secured in bracket 37 is arranged to latch the clamps in open position against the tension of spring 67. The lower end of this lever is formed with a hook 71, which rests on top of pin 62 when clamp members 56 are in closed position, as shown in Figure 5. A spring 72 connected between this lever and a stud 73 on the side 36 of chute 34, tensions the lever counter-clockwise of screw 70 and holds the lower edge of hook 71 in contact with pin 62. Upon movement of lever 64 and link 58 toward the rear of the machine, lever 69 swings counter-clockwise and hook 71 engages pin 62 to latch clamps 56 in open position. The form 8 is then inserted and lever 69 pressed rearwardly to release shaft 43 for forward rotation under the tension of spring 67. During this movement, arms 59 take up part of the lost motion in pin and slot connections 62 and cause clamps 56 to press firmly against the paper under the tension of spring 60. After the printing operation has been completed, the form may be withdrawn without releasing clamps 56, the tension exerted upon the clamps by spring 60 being of an amount only sufficient to firmly but yieldingly hold the paper.

Frequently it is desirable to have the clamps 56 open automatically as the carriage returns after a printing operation. To accomplish this, the following means are provided.

A depending lever 74 (Figure 1) secured on the right end of shaft 43 has a flange 75 lying in the path of an arm 76. Arm 76 is pivoted at its rear end on a stud 77 secured in a lever 78, and is guided by shaft 29 for forward and rearward movement, arm 76 resting on the shaft between lever 32 and the carriage sidewall. The lever 78 is pivoted on a screw stud 79 for oscillating movement, the screw passing through a slot 80 in the upper end of the lever. The lower end of lever 78 carries a roll 81 arranged to en-

gage, during the return movement of the carriage, a cam plate 82 secured on carriage bed 1. A guide bar 106 fixed to sidewall 21 confines lever 78 against lateral displacement. A spring 83 connected between stud 77 and a stud 11 on bar 106 tensions the lever downwardly and rearwardly. On the return stroke of the carriage, roll 81 engages cam 82 and swings lever 78 forward, thrusting arm 76 forward, and rocking lever 74 and shaft 43 to release clamps 56. Lever 69 then latches clamps 56 in open position in the same manner as when lever 64 is operated to release the clamps. After roll 81 passes plate 82, spring 83 returns it to its rear position shown in Figure 1. Then during the working stroke of the carriage, roll 81 engages an inclined surface 84 of plate 82 and raises lever 78 against tension of spring 83, to allow it to pass over the plate. The automatic clamp release mechanism may be disabled, when desired, by raising lever 78 sufficiently to place roll 81 above the horizontal plane of cam 82. A latch 85 is provided to hold lever 78 in this elevated position. The latch is pivoted on stud 77 and is swung forwardly into engagement with stud 79 to hold lever 78 in elevated position. This mechanism is fully disclosed in the Sundstrand Patent No. 2,060,954.

Mechanism for supporting checks or other like forms

Referring now to Figures 1 and 2, plates 86 are provided with flanges 87 having elongated slots 88 through which pass screws 89 secured in sides 36 of chutes 34 and 35, whereby the plates 86 may be vertically adjusted thereon. Each of these plates carry flat spring clips 90, the lower ends of which pass between stationary pins 91 fixed on plates 86. Pins 91 provide a stop for the upper edge of checks or short forms and assist in locating these forms in correct printing position. An auxiliary bracket 92 may be provided on rods 38 and 43 to accommodate the checks in an offset relation to the ledger sheets, if desired. This bracket is similarly provided with a vertically adjustable plate 86 carrying a spring clip 90 and pins 91.

When it is desired to print a single line on each of a group of checks or memorandum slips, it is merely necessary to loosen screws 89 slightly and insert the check or short form such as 9 (Figure 1) under the spring clips 90 and with its top edge abutting pins 91. The plates 86 are then moved bodily upward or downward to bring the desired line on the check into printing position. Screws 89 are then tightened to hold plates 86 in adjusted position. The operator then merely inserts and removes the checks in succession as the printing operations are completed.

To facilitate the insertion of rear fed forms, the front feed structure above described is arranged to be swung upwardly and forwardly from the position shown in Figure 3 to the position shown in Figure 4. To do this, the operator merely grasps the shaft 43 and pulls upwardly, brackets 37 and the other parts swinging about shaft 38 as an axis. Arm 42 (Figure 4) has a rearward extension 93 arranged to abut a stud 94 secured on the inner side of plate 39 to limit this movement of the front feed structure.

A depending arm 95 pivoted on a stud 96 on arm 42 is provided with a notch 97 and a cam face 98 on its forward edge. A spring 99 connected between the lower end of arm 95 and the carriage frame tensions the arm forwardly against an inwardly projecting stud 100 secured on the carriage sidewall 22. When the front feed structure is in closed position, as shown in Figure 3, cam face 98 bears against stud 100 and under tension of spring 99 maintains the structure firmly in this position. When the structure is raised to the position shown in Figure 4, notch 97 engages stud 100 and maintains the structure in raised position to permit easy access to the platen while introducing rear fed forms. Feed rolls 33 (Figure 3) are mounted in trucks 101, pivoted at 102 in brackets 37. Springs 103 connected between extensions 104 of the trucks and studs 105 secured in brackets 37 tension rolls 33 clockwise about pivots 102. By these parts, when the structure is closed rolls 33 yieldingly contact platen 6 and assist in feeding the rear fed paper.

While the form of mechanism herein shown and described is admirably adapted to fulfill the objects primarily stated, it is to be understood that it is not intended to confine the invention to the one form of embodiment herein disclosed, for it is susceptible of embodiment in various forms all coming within the scope of the claims which follow.

What is claimed is:

1. In a machine of the class described having printing mechanism and a traveling paper carriage carrying a platen, the combination of a chute on the carriage for introducing work sheets from in front of the platen, a clamping means on the chute to hold the work sheets in printing position, means carried by the carriage and operable to move the clamping means to releasing position while the chute remains stationary with respect to the platen, and means on a stationary part of the machine operable to release the clamping means during travel of the carriage.

2. In a traveling paper carriage having a platen, the combination of a chute for introducing work sheets from in front of the platen, a clamping means including front and back members mounted on the chute to hold the sheets, and means operated by travel of the carriage to release the clamping means.

3. In a traveling paper carriage having a platen, the combination of a chute for introducing work sheets from in front of the platen, a clamping means including front and back members mounted on the chute to hold the sheets, means automatically operable during travel of the carriage to release the clamping means, and means co-acting with the releasing means for maintaining the clamping means in released position.

4. In a traveling paper carriage having a platen, the combination of a chute for introducing work sheets from in front of the platen, means carried by the chute and movable relatively thereto, for holding the work sheets stationary in relation to the platen, and means operated by travel of the carriage for rendering the holding means ineffective at a predetermined point in the carriage travel by moving the holding means relatively to the chute.

5. In a traveling paper carriage having a platen, the combination of a chute for introducing work sheets from in front of the platen, the chute being adjustable to accommodate work sheets of different widths, a clamping means including front and back members mounted on the chute to hold the sheets, and means auto-

matically operable during travel of the carriage to release the clamping means.

6. In a traveling paper carriage having a platen and being adapted for the insertion of both rear and front fed work sheets, the combination of a chute for introducing work sheets from in front of the platen, a clamping means including front and back members mounted on the chute to hold the sheets, and means automatically operable during travel of the carriage to release the clamping means, the said clamping means being supported for pivotal movement upwardly away from the platen to facilitate the introduction of rear fed work sheets.

7. In a paper carriage having a platen, the combination of a chute for introducing work sheets from the front of the platen, a clamping means including front and back members mounted on the chute to hold the sheets, and means operable by the machine, as an incident to its operation, to release the clamping means.

WALTER A. ANDERSON.