United States Patent

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[33] **Germany**
[31] **A 54251**

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[54] **DEVICE FOR FEEDING VOUCHERS TO A PRINTING LOCATION IN A VOUCHER-PRINTING BOOKKEEPING MACHINE OR THE LIKE**
7 Claims, 7 Drawing Figs.

[52] **U.S. Cl.** **197/127,** 197/135
[51] **Int. Cl.** **B41j 13/00**
[50] **Field of Search** ..... 197/127, 128, 135, 136, 135 A, 138, 138.5

[56] **References Cited**

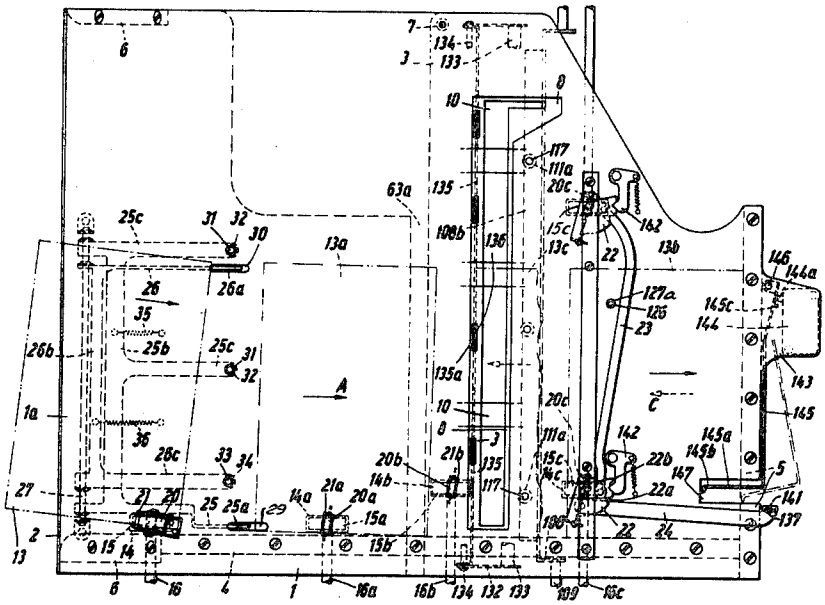
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ABSTRACT: Apparatus for drawing in manually disoriented vouchers of varying dimensions to a bookkeeping machine and automatically positioning them so that they are imprintable at a location always having the same spacing from two edges thereof includes a voucher blocking and adjusting device controllable by the voucher per se and having a plurality of transfer rollers located separate from one another above a printing table, and a plurality of voucher pressure rollers extending transversely to the travel direction of the voucher. A guide ledge is located adjacent the transfer rollers and extends in travel direction of the voucher, the transfer rollers and the pressure rollers cooperating with the guide ledge for feeding the voucher in the travel direction thereof. Also included are a device for blocking backward passing of the voucher at a location thereof above and in registry with the printing location, a sensing member sensing the presence of the voucher at the printing location, and a printing mechanism at that location. A cam-operated control mechanism is driven by a motor connected in an electric circuit having means controllable by the voucher per se for starting and stopping the motor.

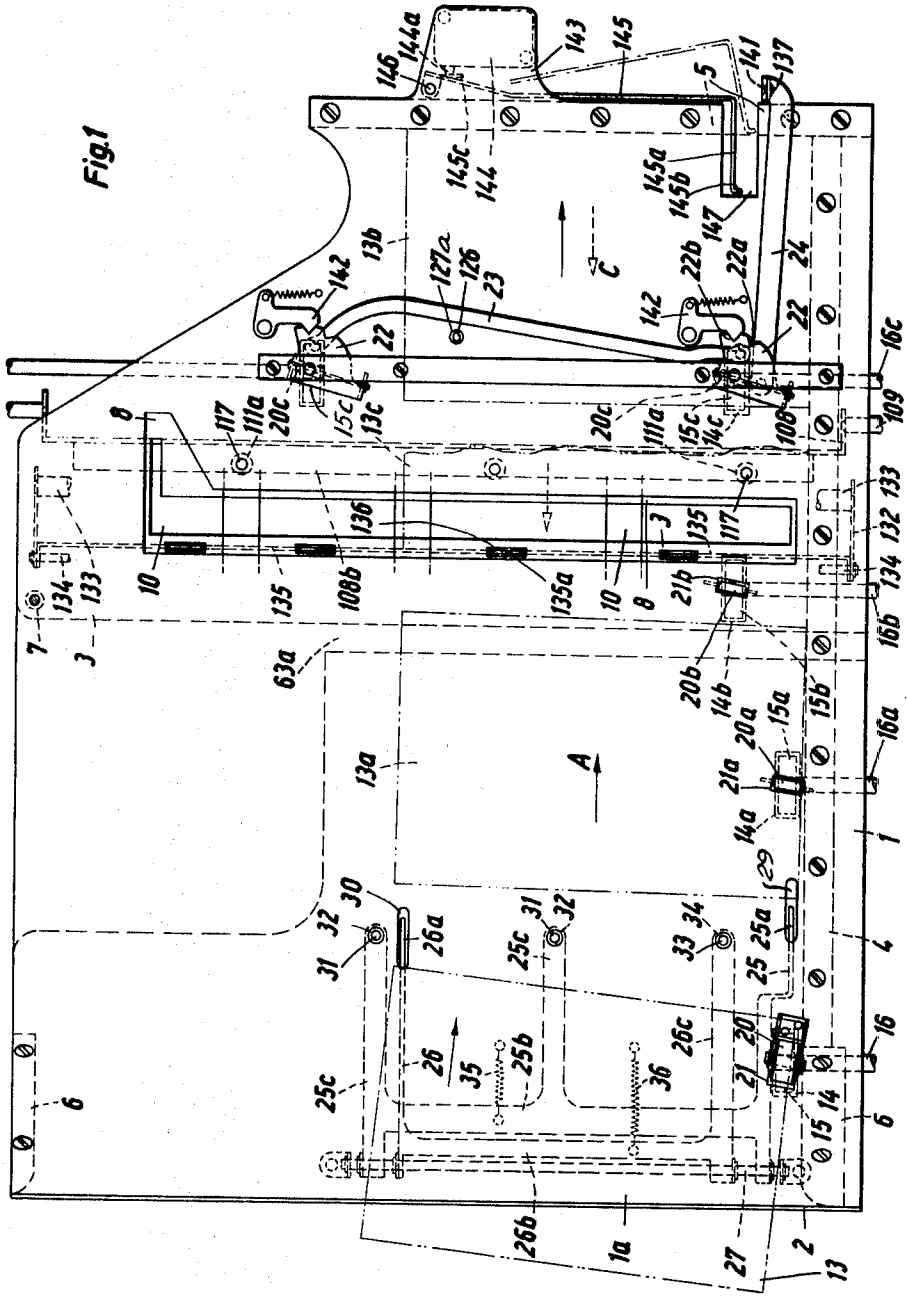


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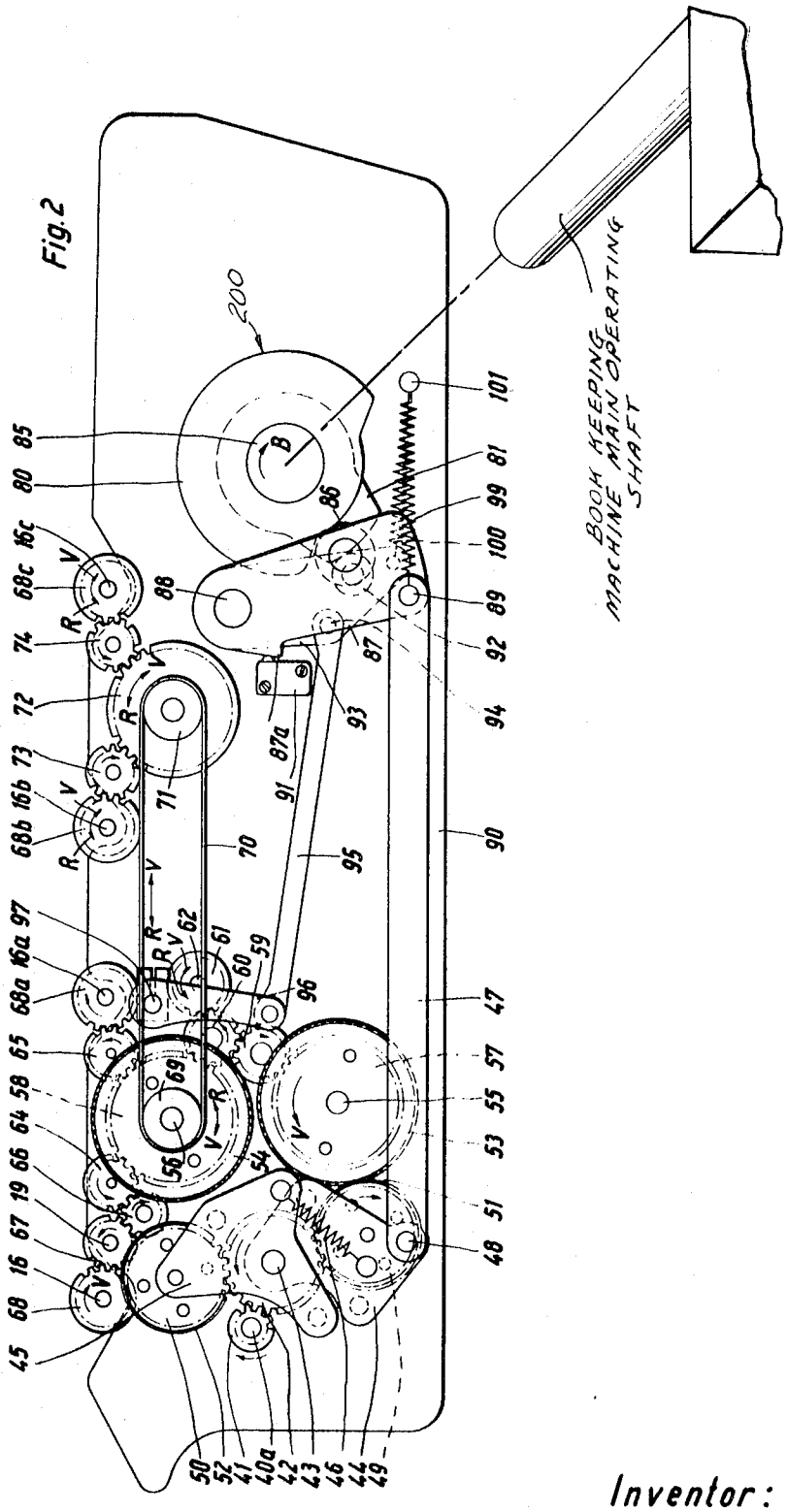
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Fig.1



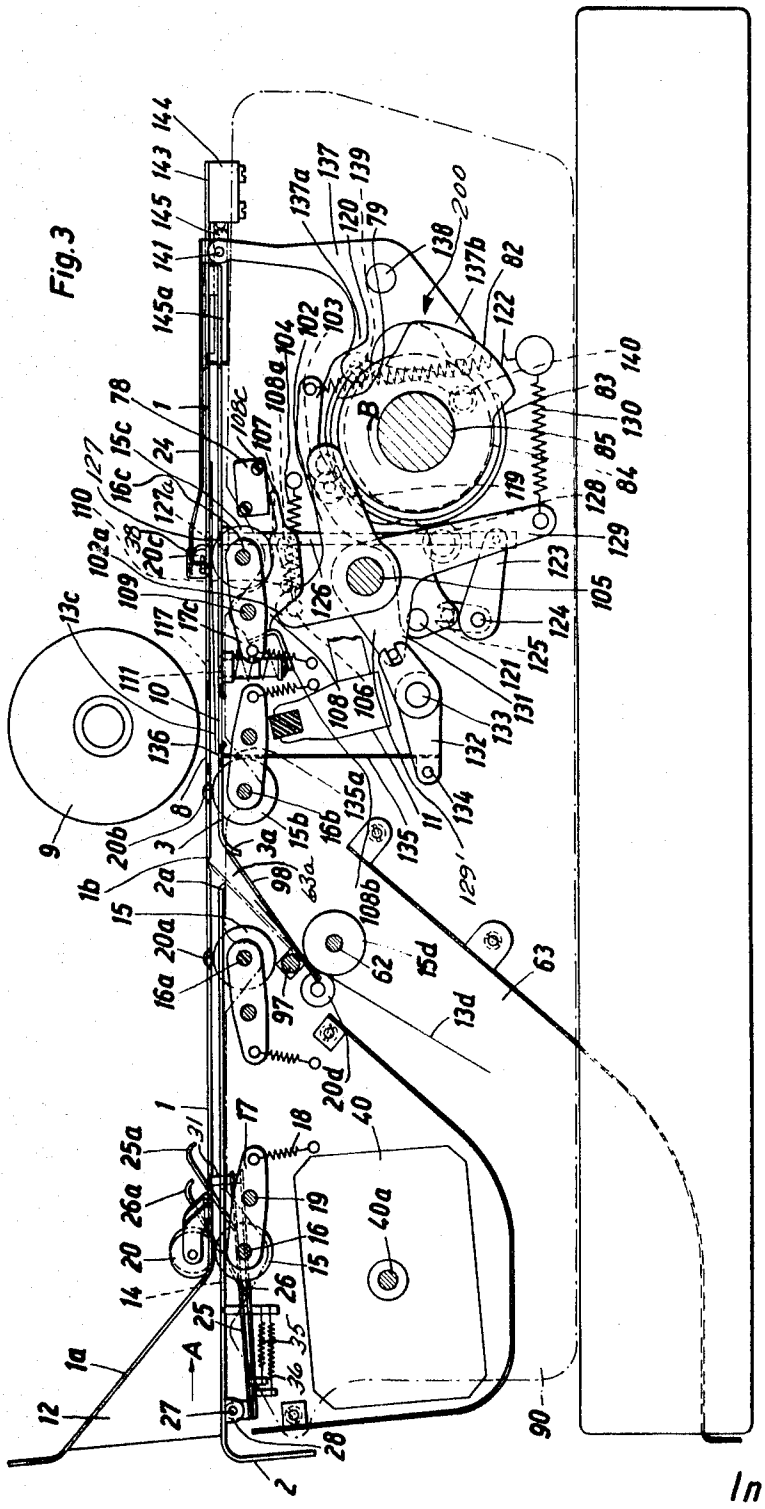
Inventor:
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Fig. 2



Inventor:

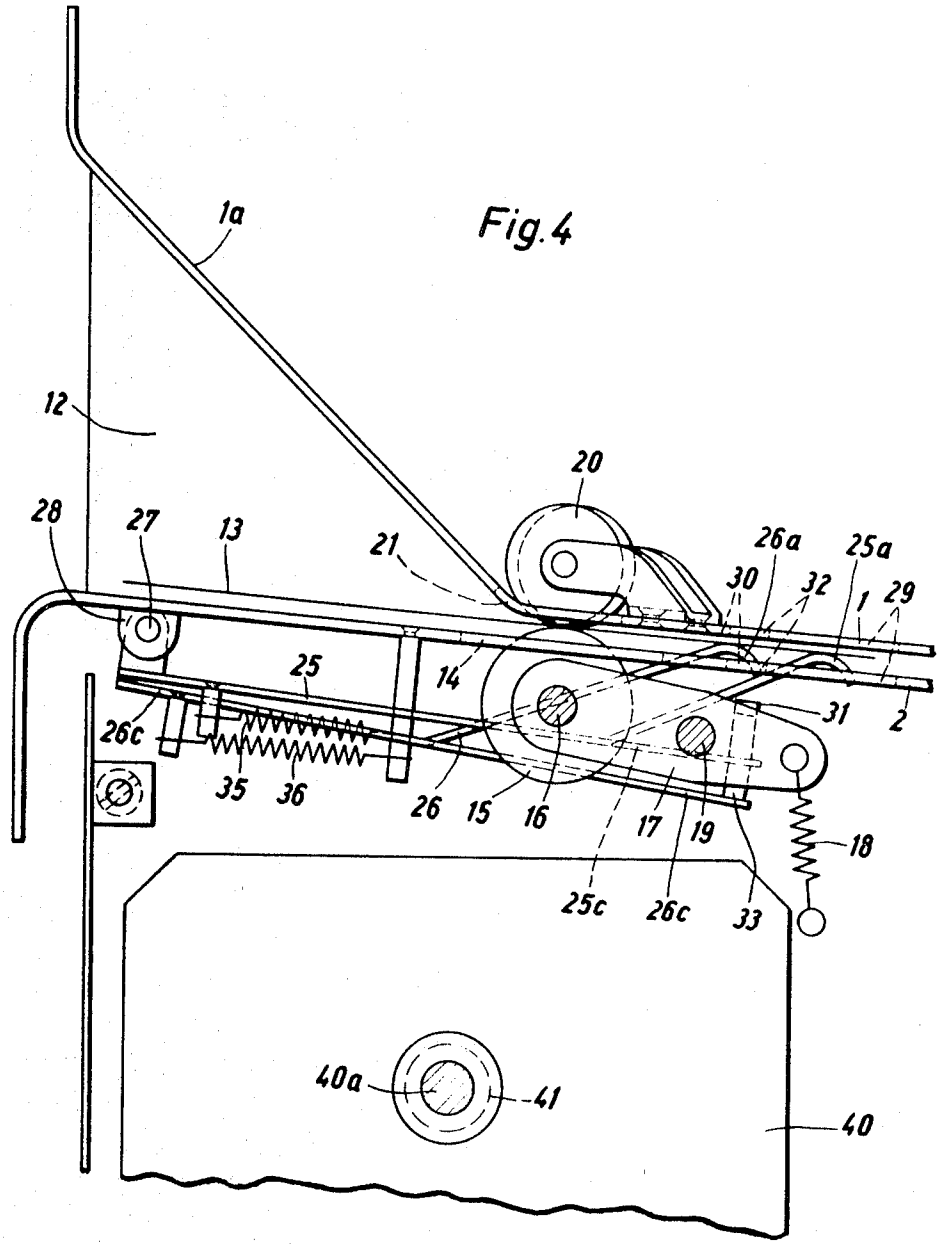
Fig. 3



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Fig. 4



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Richard King

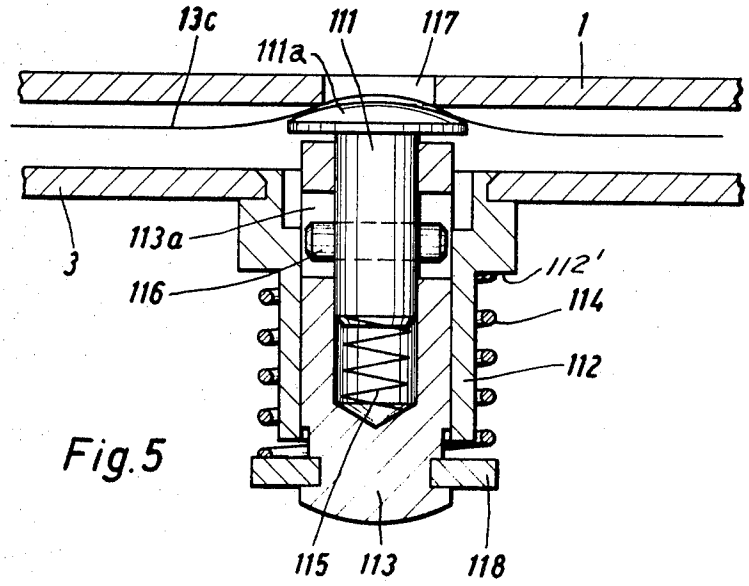
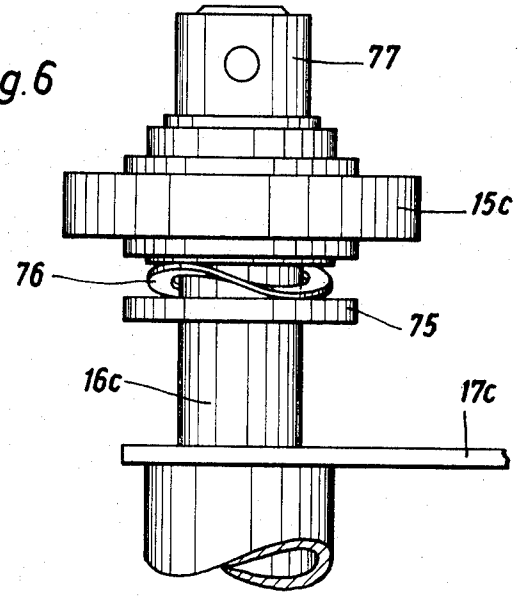


Fig.5

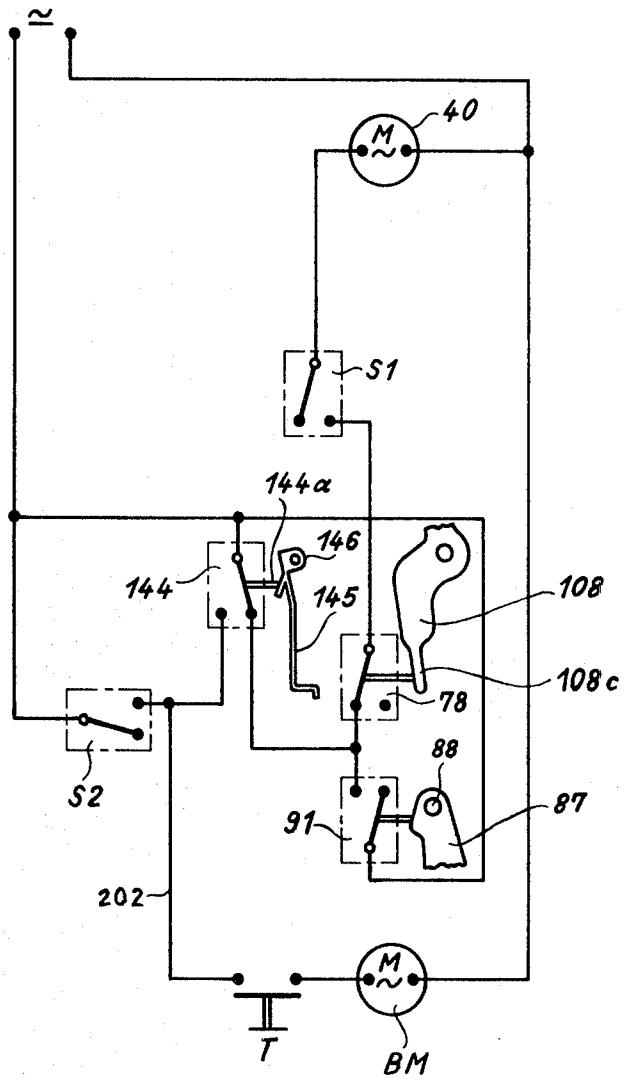
Fig.6



Inventor:

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Fig. 7



DEVICE FOR FEEDING VOUCHERS TO A PRINTING LOCATION IN A VOUCHER-PRINTING BOOKKEEPING MACHINE OR THE LIKE

My invention relates to a method and device for feeding vouchers to a printing location in a voucher-printing bookkeeping machine or the like.

A prime objective of the invention is always to draw vouchers of different size accurately to the printing location in the printing mechanism so that particularly for machine-readable characters, the printing always occurs exactly at the same position at always the same spacing from one side and from one of either the leading or trailing edge of the voucher. This is necessary for machine-readable characters so that the printing of the voucher can be recognized without any trouble during the analysis thereof in a reading apparatus.

Known mechanisms for transporting the voucher to the printing location generally employ a displaceable printing table upon which the voucher that is to be imprinted must be manually placed accurately on previously marked-out locations (German Pat. No. 355,619) or within abutment corners or angles (German Pat. No. 1,036,547). These methods of inserting or introducing the voucher to the printing location have the disadvantage that an exact positioning of the voucher must be carried out manually, requiring special attention and thereby causing a greater expenditure of time on the part of the servicing personnel.

Other heretofore known devices for a preselected specific line printing, employ adjustable line keys with a displaceable printing table (German Pat. No. 598,916), wherein the keys limit the path of the printing table in the direction of feed of the vouchers that are being imprinted, or call for a rubber gripper for advancing the vouchers with a nonmovable printing table (German Pat. No. 1,083,582), wherein the path of the gripper is manually adjusted.

Devices are further known wherein the path of advancement or the transport path of the vouchers is limited by scalelike lugs that are stamped in the vouchers (German Pat. No. 1,160,674).

Furthermore generally known are perforated vouchers, having a direction of introduction or advancement resulting necessarily from the perforations, and an advancing distance resulting from sensing holes stamped therein.

The heretofore known devices have the disadvantage that either the vouchers are perforated and provided with holes that are of the same width or there is no assurance of accurate advancement of the vouchers to the printing location.

It is accordingly an object of my invention to provide a method and device for feeding vouchers to a printing location in a voucher-printing bookkeeping machine or the like which avoids the aforementioned disadvantages of the heretofore known methods and devices of this general type.

It is more particularly an object of my invention to provide a method and device of the foregoing type which will exactly place a voucher in printing position at the printing location.

With the foregoing and other objects in view, I provide, in accordance with my invention, a method of feeding a voucher which comprises the steps of passing a voucher initially in a given direction toward and beyond the printing location with one of the lateral edges of the voucher extending, above the printing location, more forwardly than the other lateral edge thereof, reversing the direction of movement of the voucher and passing it back toward the printing location with one of the lateral edges of the voucher being guidingly in engagement with a guide member therefor extending in the given direction, stopping the backward passing of the voucher at a location wherein the voucher is above and in registry with the printing location, sensing the presence of the voucher in the registered location and locking the voucher in printing position at the location, and, after imprinting the voucher, ejecting the voucher from the machine.

The device of my invention comprises means for carrying out the foregoing steps of the method and, more particularly, comprises a voucher blocking and adjusting device controllable by the voucher per se and having a plurality of transfer rollers located separate from one another above the printing table of the device, a plurality of voucher pressure rollers extending transversely to the travel direction of the voucher, a guide ledge located adjacent the transfer rollers and extending in the travel direction of the voucher, the transfer rollers and the pressure rollers cooperating with the guide ledge for feeding the voucher in the travel direction thereof, a motor-driven, cam-operating control mechanism, and electric circuit means controllable by the voucher per se for starting and stopping the motor for the control mechanism whereby the voucher is advanced in the travel direction thereof toward and beyond the printing location, is reversed in direction and moved backwardly to the printing location, is blocked from further movement at the printing location, is sensed and locked in registry with the printing location, and is ejected from the device.

Other features which are considered as characteristic for the invention are set forth in the appended claims.

The construction and method of operation of the invention, however, together with additional objects and advantages thereof will be best understood from the following description of specific embodiments when read in connection with the accompanying drawing, in which:

FIG. 1 is a plan view of the device for feeding vouchers in accordance with the invention, showing a reversing drive for lateral guidance of the voucher in a reverse direction to the printing location;

FIG. 2 is a lateral elevational view of the device of FIG. 1 showing the drive for reversing the feed direction of the voucher and control mechanism for feeding and ejecting the voucher;

FIG. 3 is a lateral elevational view of the device of FIG. 1 as seen behind the sidewall of FIG. 2 showing the control mechanism for blocking the voucher, laterally guiding the voucher in reverse direction, sensing the voucher and locking the voucher in printing position;

FIG. 4 is an enlarged view of the upper left-hand side of FIG. 3 showing the voucher inlet funnel and the voucher blocking and adjusting mechanism;

FIG. 5 is a sectional view of a fragment of FIG. 3 including a longitudinal sectional view of the spring-biased voucher stressing member;

FIG. 6 is a longitudinal view of a friction drive for a transfer roller in accordance with the invention; and

FIG. 7 is a circuit diagram for the device of my invention as connected to a bookkeeping machine motor.

Referring now to the drawing and first particularly to FIGS. 1 to 6 thereof, there is shown a device for feeding in vouchers which has the construction of a printing table, including an upper printing table plate 1 and a lower printing table plate formed of two parts 2 and 3, the upper plate 1 being located above, spaced from and parallel to the lower plate 2, 3 (FIG. 3). The spacing between the plates 1 and 2,3 is defined by a voucher guide ledge 4 extending on one side of the spacing in the direction of voucher feed represented by the arrow A, a rear divided abutment or stop ledge 5, spacer members 6 and a screw-spacer ring 7. The upper printing table plate 1 is formed with an elongated recess 8 (FIGS. 1 and 3) extending transversely to the voucher feed-in direction A, and above which printing or type wheels 9 are located (FIG. 3). The lower printing table plate portion 3 is formed with a recess 10 similar to and located beneath the recess 8 and forming an access opening for printing hammers 11 located therebelow.

The forward portion 1a (FIGS. 3 and 4) of the upper printing table plate 1 forms with the lower printing table plate portion 2 lying therebelow, a feed-in funnel 12 for manually feeding in vouchers 13. At the end of the funnel opening, there extends a transfer roller 15 in the form of a friction wheel through a recess 14 formed in the lower plate portion 2, the transfer roller 15 being mounted on a drive shaft 16 carried at one end of a swinging lever 17. The lever 17 is pivotable about a shaft 19 fixed to the frame of the device. A tension spring 18 secured at one end to the frame of the device and at the other

end thereof to the other end of the swinging lever 17, tends to urge the transfer roller 15 in an upward direction, as viewed in FIG. 3, through the recess 14, so that it presses with the frictional surface thereof against a voucher pressing roller 20 mounted transversely with respect to the feed-in direction A (FIG. 1). The roller 20 is disposed in a transversely extending recess 21 formed in the upper printing table plate 1 and located above the transfer roller 15. Two additional transfer rollers 15*a* and 15*b* extend through respective recesses 14*a* and 14*b*, and with respective transversely disposed and non-pivotable voucher pressing rollers 20*a* and 20*b* extending into respective recesses 21*a* and 21*b* are located separated from one another in the vicinity of the voucher guiding ledge 4 above the printing table plates 1 and 2.

Behind or downstream of the recesses 8 and 10 of the printing mechanism in the direction A, two further transfer rollers 15*c* are mounted on a shaft 16*c*, which is in turn mounted on an oscillating lever 17*c* (FIGS. 3 and 6), and are operatively engageable through corresponding recesses 14*c* with swingable voucher pressing rollers 20*c*. The rollers 20*c* are swingable by linkages which include two pivotable bearing plates 22 which are connected to one another by a link-rod 23, and a thrust-rod 24 articulatingly connected at one end to one of the bearing plates 22 and at the other end thereof to a hereinafter more fully described control drive.

Voucher Blocking and Adjusting Device

Behind the inlet funnel 12 there is located a blocking and adjusting device releaseable by the voucher 13 proper. The blocking and adjusting device is formed of two levers 25 and 26 (FIGS. 1, 3 and 4) that are independent of one another and that are pivotally mounted on a common shaft 27 attached at the underside of the lower printing table plate 2. The shaft 27 is secured at both ends to angle-shaped holder plate 28. The levers 25 and 26 are formed with a bend or angle and the free end 25*a* and 26*a* respectively of the angle-forming portions of the lever 25 and 26 respectively are arcuate in shape and extend through respective recesses 29 and 30 formed in the printing table plates 1 and 2 into the plane of movement of the voucher 13. The lever 25 is of multiarmed E-shaped construction, both ends of the crosspiece 25*b* of the E-shaped structure being mounted on the shaft 27. The leg 25*a* of the lever 25 is located adjacent the voucher guiding ledge 4 and extends into the plane of movement of the voucher 13 and functions as an operating lever when engaged by the voucher 13. Both of the other free legs 25*c* of the lever 25 are provided at the ends thereof with a blocking pin 31 which, in the inoperative condition of the lever 25, extends through bores 32 formed in the printing table plates 1 and 2 into the plane of movement of the voucher 13 and blocks the inlet slot between both printing table plates 1 and 2, as shown in FIG. 3.

The free leg 26*a* of the lever 26 located between the legs 25*c* (FIG. 1) of E-shaped lever 25, and which is U shaped and has a crosspiece 26*b*, which is also mounted at both ends thereof on the shaft 27, serves as operating lever when engaged by the voucher 13 proper. A leg 26*c* of the U-shaped lever 26 is, as shown in FIG. 1, located between the operating lever 25*a* and the leg 25*c* located in the center of the E-shaped lever 25, and is provided at the free end thereof with a blocking pin 33 which in the normal position thereof extends into the plane of movement of the voucher 13 through an opening 34 formed in the printing table plates 1 and 2. The levers 25 and 26 are pivotable by tension springs 35 and 36 with the respective lever ends 25*a* and 26*a* thereof counterclockwise about the shaft 27 (FIGS. 3 and 4) into the plane of movement of the voucher 13. The position of the levers 25 and 26 is shown in FIG. 3 without the voucher 13 and in FIG. 4 with the inserted and partly drawn-in voucher 13.

The front printing table plate 2 and the rear printing table plate 3 as considered in the direction of movement of the voucher 13 are bent downward arcuately at the ends 2*a* and 3*a* thereof which are located opposite and spaced from one another, so that between both lower printing table plates 2 and 3 a wide slot opening 63*a* is formed which communicates with an ejection or discharge channel 63, which is hereinafter described more fully.

Drive Mechanism for Drawing In the Voucher

The drive mechanism for drawing in the voucher 13 is in the form of a friction wheel-reversing drive which includes an electrical motor 40 having a rotary shaft 40*a* on which there is mounted a toothed pinion 41 (FIG. 2) continually meshing with an intermediate gear 42.

A lower rocking arm 44 and an upper rocking arm 45 are pivotally mounted on the axis 43 of the intermediate gear 42. Both rocking arms 44 and 45 are connected to one another by a tension spring 46, and are connected by a tension rod 47 which is pivotally secured to the lower rocking arm 44 on a pivot pin 48 with a control mechanism 200 described more fully hereinafter. On each of the rocker arms 44 and 45 there are mounted respectively drive gears 49 and 50 which continually mesh with the intermediate gear 42. The drive gears 49 and 50 are provided respectively with friction wheel rims 51 and 52 which act on friction wheels 53 and 54 associated therewith, which are mounted on shafts 55 and 56 that are secured to the frame of the machine. Depending upon the position of the rocker arms 44 and 45, either the friction wheel 53 is driven by the driving gear 49 or the friction wheel 54 is driven by the driving gear 50, whereby the friction wheel drive 51,53 for advancing the voucher 13 and the friction wheel drive 52, 54 for reversing the direction of movement of the voucher 13 are respectively effective. Gears 57 and 58 are secured respectively to the friction wheels 53 and 54. The gears 57,58 remain continually meshed with intermediate gears 59 and 60 which are mounted on the frame of the machine, so that the gears 57 and 58 rotate in opposite directions.

The intermediate gear 60 which meshes with the gear 58 simultaneously meshes with a gear 61, which is located on the shaft 62 for passing the voucher 13 into the ejection or discharge channel 63. The gear 58 further meshes with two intermediate gears 64 and 65 which are mounted on the frame of the machine. The intermediate gear 64 is connected by means of two additional intermediate gears 66 and 67 with a driving gear 68 mounted on a shaft 16. The intermediate gear 65 transfers the movement of the gear 58 to a drive gear 68*a* which is mounted on a shaft 16*a*.

A toothed sheave 69 fixed to the gear 58 transfers the rotary motion of the gear 58 by means of a toothed belt or chain 70 to a cooperating sheave 71 mounted on the frame of the machine and to the gear 72 fixed thereto. The gear 72 is connected through intermediate gears 73 and 74 with the shafts 16*b* and 16*c*, respectively, for the transfer rollers 15*b* and 15*c*, respectively. The transfer rollers 15*c* (FIG. 6) are loosely mounted on the shaft 16*c*, which is in turn mounted on an oscillating lever 17*c* (FIGS. 3 and 6), and the torque of the shaft 16*c* is transferred through a friction clutch, formed of a ring 75 mounted on the shaft 16*c* and a wave-shaped spring disc 76, frontwards to the transfer roller 15*c*. An adjusting ring 77 or the like located at the end of the shaft 16*c* serves as the axial counterbearing for the transfer roller 15*c*.

HControl Mechanism

The control mechanism 200 is shown in FIGS. 1, 2 and 3 and is formed of six different cams 79–84 which are securely mounted on a control shaft 85. The control shaft 85 is connected by a gear transmission with a nonillustrated bookkeeping machine or the like and is driven by the main drive shaft thereof.

The cam 79 controls the sensing of the voucher 13 and acts on a roller 119 of a roller lever 120 which is pivotally mounted on a pin 121 secured to the frame of the machine and is continually biased by a tension spring 122 into engagement with the cam surface of the cam 79. An angular lever 123 which is

mounted on a shaft 124 is operatively connected with the roller lever 120 by a pin and slot connection 125. At the front end of the lever 123 there is pivotally connected a voucher sensing member 126 constructed in the form of a sensing rod which has a free end that extends into a recess 127 passing through both printing table plates 1 and 3. The sensing rod drive 120–125 inclusive of the voucher sensing member 126 is connected with a conventional blocking mechanism of a nonillustrated printing mechanism.

The cam 80 as shown in FIG. 2 controls the reversing drive 42–54 and is in rolling engagement with a roller 86 of one-armed lever 87 which is pivotally mounted on a pin 88 fixed to the frame of the machine. The tension rod 47, which is connected at one end to the rocker arm 44, is secured at the other end thereof to pivot pin 89 located at the free end of the lever 87.

A nose-shaped cam surface 87*a* on lever 87 cooperates with an electric switch 91 fastened to the sidewall 90 of the machine frame.

The switch 91 is electrically connected in series with the motor 40. The cam disc 81 controls the ejection or discharge of the voucher 13 and is secured behind the cam disc 80, as shown in FIG. 2 on the shaft 85 and is connected with a roller 92 of a lever 93 which is pivotally mounted on the pin 88. A tension rod 95, which is connected to a lever 96, is mounted by means of a pin 94 on the lever 93. The lever 96 is mounted on a shaft 97, secured between the sidewalls 90 of the voucher feeding device. On the shaft 97, as shown in FIG. 3, there is provided in the ejection or discharge channel 63, a flap 98 which serves as a part of the side of the channel 63 and which is swingable with the free end thereof through a slot opening 21 located between the printing table plates 2 and 3 into the path of movement of the bookkeeping voucher 13 to a position as shown by the dot-dash lines.

The levers 87 and 93 are biased tightly against the cam surfaces of the cam discs 80 and 81 respectively by tension springs 99 and 100, respectively, which are suspended from a pin 101, fixed to the frame wall 90.

Behind the sidewall 90, as shown in FIG. 3, a cam disc 82 for controlling the locking of the voucher 13 is mounted on the control shaft 85. An angular lever 102 has a roller 103 at one end thereof which follows the cam surface of the cam disc 82 and is continually biased into engagement therewith by a tension spring 104. The angle lever 102 is pivotally mounted on frame-fixed pin 105 and is provided with a pin 106 on which a spring 107 is secured. Above the lever 102, a lever 108 is located at the sidewall 90 on a shaft 109 which is located between both sidewalls 90. The lever 108 has an entraining pin 110 which abuts the free leg 102*a* of the angular lever 102. The abutment of the entraining pin 110 is effected by the spring 107 which is connected at the other end thereof in an eye 108*a* of the lever 108. At the free end of the lever 108 there is provided an angular rail 108*b* which abuts three spring-biased voucher stressing pins 111 (FIGS. 1,3 and 5).

The spring-biased voucher stressing pins 111 are located in a row parallel to the recesses 8 and 10 of the printing table plates 1 and 3. As shown in FIG. 5, each stressing or pressing pin 111 is formed of a hollow cylindrical member 112 which is riveted into a hole formed in the lower printing table plate 3. The hollow member 112 serves for receiving a cylindrical hollow pin 113, which is displaceable within the hollow member 112 against the biasing action of a spring 114 which abuts at one end thereof against a collar or external shoulder 112' of the hollow member 112 and at the other end thereof against a lock washer 118. The pressure pin 111 is longitudinally displaceable within the hollow pin 113 against the biasing force of a spring 115, and is limited in upward motion as shown in FIG. 5 and secured by a fixing pin 116 passing through a longitudinal hole 113*a* formed in the hollow pin 113. The pressure pin 111 is provided with a mushroom-shaped head 111*a* having a diameter greater than that of the associated recess 117 formed in the plate 1.

The cam disc 83 serves for controlling the limit of the voucher reverse travel and is operatively engaged by a roller 128 of an angular lever 129 (FIG. 3). A tension spring 130 fixed at one end to the frame wall 90 and at the other end to the angular lever 129 maintains the roller 128 continually in engagement with the cam disc 83. The free leg 129' of the reversing angular lever 129 is coupled by a pin and slot connection 131 with one end of an intermediate lever 132 which is pivotally mounted on a shaft 133 that extends between and is fixed to the two sidewalls 90. The other end of the lever 132 is articulatingly coupled with a blocking plate 135 mounted between the sidewalls 90 on a shaft 134 the blocking plate 135 having noses or extensions 135*a* at the upper edge thereof as viewed in FIG. 3 which pass through recesses 136 (FIGS. 1 and 3) formed in the lower printing table plate 3.

The cam disc 84 serves for controlling the reverse travel of the voucher 13 and is operatively engaged with a fork-shaped roller lever 137, which is pivotally mounted on a frame-fixed pin 138. The roller lever 137 has a roller 139 pivotally carried by a portion 137*a* of the forked end thereof. The other fork portion 137*b* is engageable with a roller 140 mounted on the cam disc 84 when the cam disc 84 has turned suitably far enough. At the other end of the lever 137, the tension rod 24 for swinging the pressure roller 20*c* is mounted on a hinge pin 141. To arrest or lock the bearing plates 22, they are provided with triangular notches 22*a* and 22*b* at the circular periphery thereof wherein a spring-biased detent latch 142 is engageable, as shown in FIG. 1.

The rearward portion of the printing table plate 1 in the feed direction A of the voucher 13, as shown in FIG. 1, is provided with an earlike extension 143 beneath which a switch 144 is mounted. The switch 144 is of the two-pole type and is connected in series with the motor-energizing circuit of a bookkeeping machine or the like (not shown) and with the energizing circuit of motor 40 of the voucher feeding device of the instant application. Forward of the switch 144 in the feed direction A of the voucher 13 as shown in FIG. 1 there is connected a switch lever 145 turnably mounted on a pin 146 and having a bent or angular end 145*a* which normally extends into a recess 147 formed in the printing table plates 1 and 3 so that an abutment surface 145*b* thereof lies in the plane of movement of the voucher 13*c*. A short ear 145*c* on the switch lever 145 is engageable with a switch pin or pushbutton 144*a* of the switch 144.

Operation

After depressing a key T and S1 (FIG. 7) of a nonillustrated bookkeeping machine or the like adapted to effect the printing of the voucher 13, the energizing circuit to the electric motor 40 through an electric cable 202, a delay line S1 and the switch 144 is closed, whereby the motor 40 is actuated. The energizing circuit of the motor of the bookkeeping machine or the like remains broken at the switch 144, and the control shaft 85 on which the cam discs 79–84 are mounted remains stationary, as shown in FIGS. 2 and 3.

In the stationary condition of the main shaft of the bookkeeping machine and therewith of the control shaft 85, the friction wheel 51 mounted on the rocker arm 44 is in operative engagement with the friction wheel 53, and through the transmission gears 57, 58, 59, 60 and 64–67, the belt drive 69–71 and the gears 72–74, the drive gears 68–68*c* rotate the drive shafts 16–16*c* of the transfer rollers 15–15*c*, respectively, in a direction of the arrows V.

The voucher 13 inserted by hand through the inlet opening 12 in an inclined or transverse position relative to the direction of feed A thereof (FIGS. 1 and 4) engages at the left-hand side of its leading edge the end 26*a* of the lever 26 which extends through the recess 30 into the plane of movement of the voucher 13. Consequently, the lever 26, as shown in FIG. 4, is pivoted clockwise about its pivot axis 27, and the blocking pin 33 swings out of the plane of movement of the voucher 13 below the printing table plate 1. The voucher 13 is

simultaneously engaged at the right-hand side of its leading edge, as shown in FIG. 1, by the motor-driven transfer roller 15 and the voucher stressing roller 20 and is automatically advanced in the direction A.

Due to the fact that the voucher stressing roller 20 is inclined with respect to the transfer roller 15, the voucher 13 is slid in the direction toward the voucher guiding ledge 4. As the voucher 13 advances further in the direction A, it strikes the lower pin 31 of the lever 25, as viewed in FIG. 1, and turns about the pin 31 in a counterclockwise direction until the lateral edge thereof adjacent the voucher guiding ledge 4 abuts against the voucher guiding ledge 4. The leading edge of the voucher 13 in the direction A, as shown in FIG. 1, accordingly forces the lever end 25*a* downwardly and the lever 25 pivots clockwise, and the blocking pin 31 consequently moves out of the plane of movement of the voucher 13, and the further advance of the voucher 13 in the feeding direction A is thereby freed by the voucher 13 which is now straightened out instead of inclined to the direction of travel A. The voucher 13 is then continually and automatically advanced by the inclined voucher stressing rollers 20, 20*a*, 20*b* and 20*c* through the motor-driven transfer rollers 15, 15*a*, 15*b*, 15*c* with the lateral edge of the voucher 13 sliding along the voucher guiding ledge 4 from the voucher position 13*a* to the voucher position 13*b* at the end of the printing table 1, 3.

When inserting an unsuitably small voucher or when a voucher of suitable size is improperly inserted so that its narrow lateral edge is the leading edge, the voucher will not come into engagement with the actuating lever end 26*a*, and the blocking pin 33 will remain in the normal plane of motion of the inserted voucher, thereby preventing the drawing in or feeding of a voucher which is too small or which is turned 90° from its normal insertion position.

Before the voucher 13 abuts the blocking ledge 5 at the end of its forward path A, as shown in FIG. 1, the leading edge thereof engages the abutment edge 145*b* of the switch lever 145 and pivots the lever 145 to the phantom position thereof shown in FIG. 1, thereby depressing the pushbutton 144*a* of the switch 144, switching on the bookkeeping machine motor BM and switching off the motor 40 of the voucher feeding device of the instant application. Thereby the control shaft 85 is rotated in the clockwise direction of the arrow B, as shown in FIGS. 2 and 3.

Before the bookkeeping machine motor BM is switched on by the switch 144, the control mechanism is in the hereinafter-described functional condition. In the stationary position of the control shaft 85, the roller 92 of the lever 93 lies on the rising cam surface of the cam disc 81 and the lever 93 is located in its most left-hand stationary position, as viewed in FIG. 2. Accordingly, the lever 96 is swung to the left-hand side of FIG. 2 through the tension rod 95 and the flap 98 of the ejection channel 63 which is mounted on the shaft 97 lies against the bent end 3*a* of the lower printing table plate 3, as shown in FIG. 3, so that the plane of movement of the voucher 13 is not blocked.

The cam disc 82 (FIG. 3) is engaged on the circular cam surface thereof by the roller 103 of the lever 102. In the stationary position of the control shaft 85, the lever 108 engageable with the spring-biased voucher stressing pins 111 is turned counterclockwise, and the voucher stressing pins 111 remain sunken below the travel plane of the voucher 13. Simultaneously, an extension 108*c* of the lever 108 actuates a microswitch 78 in the energizing circuit of the drive motor 40 to switch on the motor 40.

In the stationary position of the control shaft 85, the roller 128 of the angular lever 129 engages the circular portion of the cam surface of the cam disc 83 so that the blocking plate 135 is maintained through the lever 132 in its drawn-in position outside the voucher movement plane between the upper and lower printing table plates 1 and 3, as shown in FIG. 3. Furthermore, the roller 139 lies just in front of the lobe of the cam disc 84 in the stationary position of the control shaft 85 and the forked lever 137 is located in its counterclockwise pivoted end position thereof. Accordingly, through the tension rod 24 (FIG. 1), the two bearing plates 22 are pivoted so that the detent latches 142 engage in the triangular notches 22*b*, and the voucher stressing rollers 20*c* are pivoted so that, in the rotary direction V of the drive gear 68*c* (FIG. 2) and the shaft 16*c*, the voucher 13*b* which is to be advanced (FIG. 1) is passed with its lateral edge located inclined or transverse to the guiding edge 4.

By switching on the bookkeeping machine motor BM through the switch 144 and by a delay circuit S2 of known function in the bookkeeping machine, the control shaft 85 is driven in the direction of the arrow B as the bookkeeping operation is being carried out. When the drive motor 40 of the voucher feeding device according to the invention is inoperative, the roller 92 (FIG. 2) of lever 93 moves after a short forward run, on the cam surface of the cam disc 81, backward, and the lever 93 is swung due to the tension of the spring 100 counterclockwise about the pin 88. Accordingly, the tension rod 95 secured at the pin 94 is drawn toward the right-hand side, as viewed in FIG. 2, and the lever 96 mounted on the shaft 97 swings counterclockwise, whereby the flap 98 (FIG. 3) mounted on the shaft 97 and functioning as part of the wall of the ejection channel 63 swings counterclockwise and with the free edge thereof comes to rest in the transverse groove 1*b* (FIG. 3), formed in the upper printing table plate 1. Thereby, the ejection of the voucher 13 in the direction of the ejection channel 63 is adjusted.

In the same adjustment phase, the roller 128 (FIG. 3) on the angular lever 129 is drawn inwardly by the tension of the spring 130 into the sunken portion of the cam surface of the cam disc 83. Accordingly, the angular lever 129 swings counterclockwise about the pin 105, the movable voucher blocking member 135 is raised through the recess 136 formed in the lower printing table plate 3 through the intermediate lever 132 mounted on the shaft 133 which swings clockwise, and the blocking member 135 blocks the reverse path of movement C of the voucher 13*c* (FIG. 1) between the upper and lower printing table plates 1 and 3. At the end of these adjustments of the voucher ejection flop 98 and the movable blocking member 135, the roller 139 (FIG. 3) on the forked lever 137 is raised and the lever 137 swings about its pivot pin 138 in clockwise direction, so that the push rod 24 is shoved toward the right-hand side of FIG. 3. Accordingly, the bearing plates 22 coupled by the link-rod 23 swing counterclockwise and therewith the inclined voucher stressing rollers 20*c* which are rotatably mounted on the bearing stand 38, so that the inclined position of the voucher stressing rollers 20*c* lies in the reversed position opposite to the voucher travel direction A. Thereby, by rotating the drive gear 68*c* on the shaft 16*c* in the direction R (FIG. 2), i.e. counterclockwise for the reverse travel direction of the voucher 13, the lateral edge of the voucher 13*b* adjacent the guide ledge 4 when transferred in the direction of the dotted arrow C (FIG. 1), slidingly abuts the voucher guiding ledge 4.

After the resulting reversal of the lateral voucher guidance, the lever 87 is swung clockwise about the bearing pins 88 thereof by the cam disc 80 (FIG. 2), and the pushbutton of the switch 91 is depressed in the switch 91 by the nose 87*a* of the lever 87, whereby the drive motor 40 of the voucher feeding device of the invention is again switched on. Simultaneously, the motion of the lever 87 is transferred through the tension rod 47 to the lower rocker arm 44 and the latter swings clockwise. Accordingly, the friction wheel rim 51 of the drive gear 49 is disengaged from the friction wheel 53, and the upper rocker arm 45 also simultaneously swings clockwise due to the tension of the spring 46, so that friction wheel rim 52 of the drive gear 50 engages with the friction wheel 54.

As soon as the friction wheel 54 is in operative engagement with the friction wheel rim 52, the drive wheels 68, 68*a*, 68*b* and 68*c* rotate counterclockwise in the direction of the arrow R through the action of the gears 57–61 and 64–74 (FIG. 2), so that the voucher 13 (FIG. 1) located at the end of the printing table against the abutment ledge 5 is moved backwards

slidingly along the guide ledge 4 in the direction of the dotted arrow C until the leading edge of the voucher 13*c* in the direction C, as shown in FIG. 1, comes into abutment with the nose 135*a* of the movable voucher blocking member 135 and therewith through the previously secured abutment of the lateral edge thereof against the guide ledge 4 and is transferred to an always even and trouble-free printing position in registry with the printing location above the recesses 8 and 10 between the type or printing wheels 9 and the printing hammers 11. As soon as the voucher 13 is located in registry with the printing position at 13*c*, the angular lever 102 is swung counterclockwise about its axis 105 through the cam disc 82 and the roller 103. Through the tension spring 107 and the entrainer pin 110, the lever 108 follows the movement of the angular lever 102 and swings clockwise about its axis 109. With this swinging motion, the abutment extension 108*c* is moved away from the switch 78, which causes interruption of the energizing circuit of the motor 40, whereby the voucher feeding drive is shut off.

Since the rear transfer rollers 15*c*, as viewed in the direction of travel A, are driven through a friction clutch 75, 76 (FIG. 6), including a wave-shaped spring disc 76, mounted on the shaft 16*c*, which is in turn mounted on an oscillating lever 17*c* (FIGS. 3 and 6), both transfer rollers 15*c* on the shaft 16*c* are stopped as soon as the voucher 13*c*, located between the transfer rollers 15*c* and the voucher stressing rollers 20*c*, is prevented from moving by the movable voucher blocking member 135. Simultaneously with the swinging of the lever 108, the spring-biased voucher stressing pins 111 are raised by an entrainer plate 108*b* and they press the voucher 13*c* lying thereabove lightly into the recesses 117 (FIG. 5) formed in the upper printing table plate 1, and the voucher 13*c* is therewith immovably locked in printing position. In connection with the voucher locking action due to the spring-biased voucher stressing pins 111 and the shutting off of the motor 40, the roller 119 of the roller lever 120 is moved by the tension of the spring 122 into the sunken cam path of the cam disc 79, and the roller lever 120 mounted on the shaft 121 is swung in a clockwise direction.

This movement is transferred through the pin and slot connection 125 to the lever 123, so that the voucher sensor 126 presses through the recess 127 against the voucher 13*c* located thereabove in the printing location.

If no voucher 13 is located above the recess 127 formed in the lower printing table plate 3, the voucher sensing rod 126 can pass through the recess 127*a* formed in the upper printing table plate 1, i.e. travels over a greater path than the normal path when a voucher 13 is present there. This increased lift of the voucher sensing rod 126 is transferred in a conventional manner to a nonillustrated blocking device from the printing mechanism, so that printing occurs only when the sensing rod 126 is blocked and its possible vertical movement as seen in FIG. 3 is therewith limited.

While the voucher 13 is located in the printing location there occurs, in a conventional manner, an impact by the printing hammers 11. After the voucher 13*c* has been imprinted, the voucher sensor 126, the spring-biased voucher stressing pins 111 and the movable voucher blocking member 135 return to their normal rest position through the cam discs 79, 82 and 83. At the end of this return motion of the control members 111, 126 and 135, the switch 78 is actuated through the abutment extension 108*c* of the lever 108 and the motor 40 is switched on again, so that a further reverse motion of the voucher 13*c* takes place in the direction C. With this reverse motion, the voucher 13 strikes against the flap 98 which has been swung into the plane of the voucher travel, and the voucher 13*d* is gripped by the transfer roller 15*d* and idler roller 20*d* within the discharge channel 63 and is ejected from the voucher feeding device of the invention.

During the ejection operation of the voucher 13*d* the roller 140 comes into contact with the forked end 137*b* of the forked lever 137 with further rotation of the cam 84, and the forked lever 137 swings counterclockwise, so that the bearing plates 22 swing clockwise through the push rod 24 and are returned to the starting position. At the end of this control motion, the reversing drive 42–54 and the flap 98 which serves as part of the wall of the ejection channel 63 are returned to their starting position by means of the cam disc 84 through the cam discs 80 and 81, and through the aforementioned delay circuit S1 in the bookkeeping machine or the like, the motor 40 is switched off.

By means of this device of my invention it is possible to print vouchers of different size at the same printing location and namely the printing location is always exactly fixed in a specific spacing parallel to the lower edge and the right-hand lateral edge of the voucher 13 through the reverse movement along the guide ledge 4 up to the blocking member 135.

I claim:

1. Apparatus for drawing in manually disoriented vouchers of varying dimensions to the printing location of a voucher-printing bookkeeping machine or the like and automatically positioning the vouchers so that they are imprintable at a location always having the same spacing from two edges thereof, comprising means for passing a voucher initially in a given direction toward and beyond the printing location with one of the lateral edges of the voucher extending, above the printing location, more forwardly than the other lateral edge thereof, said means for passing a voucher comprising motor means connected in an energizing circuit, a voucher blocking and adjusting device controllable by the voucher per se and having a plurality of transfer rollers located separate from one another above a printing table of the device and a plurality of voucher pressure rollers extending transversely to the travel direction of the voucher, means for reversing the direction of movement of the voucher and passing it back toward the printing location, a guide member for the voucher extending in said given direction and guidingly engageable by one of the lateral edges of the voucher as the voucher passes back toward the printing location, said guide member comprising a guide ledge located adjacent the transfer rollers and extending in the travel direction of the voucher, said transfer rollers and said pressure rollers cooperating with said guide ledge for feeding the voucher in the travel direction thereof, means for blocking the backward passing of the voucher at a location wherein the voucher is above and in registry with the printing location, means for sensing the presence of the voucher in printing position at said registered location, means for imprinting the voucher at said registered location, means for ejecting the voucher from the machine, a cam-operating control mechanism, including means for locking the voucher in registry with the printing location, motor means for driving said control mechanism, and electric circuit means controllable by the voucher per se for starting and stopping the motor means for said control mechanism whereby the voucher is advanced in the travel direction thereof toward and beyond the printing location, is reversed in direction and moved backwardly to the printing location, is blocked from further movement at the printing location, is sensed and locked in registry with the printing location and is ejected from the apparatus, said control mechanism including a control shaft carrying a plurality of cam discs connectable to the main operating shaft of a bookkeeping machine, said control mechanism further including a cam disc cooperating with a roller lever for simultaneously switching over to a reverse direction drive for the voucher and switching over an electrical switch connected in the energizing circuit of the motor means for passing a voucher, said control mechanism further comprising a friction wheel reversing drive having switchable portions located on a two-part rocker arm means, the two parts of said rocker arm means being elastically coupled to one another by a tension spring.

2. Apparatus for drawing in manually disoriented vouchers of varying dimensions to the printing location of a voucher-printing bookkeeping machine or the like and automatically positioning the vouchers so that they are imprintable at a location always having the same spacing from two edges thereof, comprising means for passing a voucher initially in a given

direction toward and beyond the printing location with one of the lateral edges of the voucher extending, above the printing location, more forwardly than the other lateral edge thereof, said means for passing a voucher comprising a voucher blocking and adjusting device controllable by the voucher per se and having a plurality of transfer rollers located separate from one another above a printing table of the device and a plurality of voucher pressure rollers extending transversely to the travel direction of the voucher, means for reversing the direction of movement of the voucher and passing it back toward the printing location, a guide member for the voucher extending in said given direction and guidingly engageable by one of the lateral edges of the voucher as the voucher passes back toward the printing location, said guide member comprising a guide ledge located adjacent the transfer rollers and extending in the travel direction of the voucher, said transfer rollers and said pressure rollers cooperating with said guide ledge for feeding the voucher in the travel direction thereof, means for blocking the backward passing of the voucher at a location wherein the voucher is above and in registry with the printing location, means for sensing the presence of the voucher in printing position at said registered location, means for imprinting the voucher at said registered location, means for ejecting the voucher from the machine, a cam-operating control mechanism including means for locking the voucher in registry with the printing location, motor means for driving said control mechanism, and electric circuit means controllable by the voucher per se for starting and stopping the motor means for said control mechanism whereby the voucher is advanced in the travel direction thereof toward and beyond the printing location, is reversed in direction and moved backwardly to the printing location, is blocked from further movement at the printing location, is sensed and locked in registry with the printing location and is ejected from the apparatus, wherein said printing table comprises an upper printing table plate and two lower printing table plates disposed in a common plane, one behind the other in the initial travel direction of the voucher, said upper plate on the one hand, and said lower plates on the other hand, being spaced from one another by said guide ledge and by an abutment ledge located at the end of the travel path of the voucher in said initial travel direction, said plates being formed with a plurality of recesses, said plurality of transfer rollers and said plurality of voucher pressure rollers extending through said recesses for engaging the voucher to pass the same in said travel direction thereof, inlet funnel means for inserting the voucher into the device, said voucher blocking and adjusting device being located downstream of said inlet funnel means and comprising a plurality of multiarmed actuating levers swingable into the plane of movement of the voucher, the arms of said actuating levers being provided with blocking pins for blocking the advancement of the voucher, wherein said control mechanism includes means for the lateral reverse guidance of the voucher comprising a cam disc having a descending cam path and a roller mounted thereon, said cam disc being operatively engageable with a forked lever for forward and reversed switching thereof, said forked lever, through a push rod and link-rod, being movable to switch a plurality of bearing plates of said voucher pressure rollers for the reverse travel motion of the voucher into opposite inclined positions relative to the travel direction of the voucher.

3. Apparatus according to claim 2 wherein said bearing plates of said control mechanism are formed with detent notches, and, including spring-biased detent latches engageable in said notches.

4. Apparatus for drawing in manually disoriented vouchers of varying dimensions to the printing location of a voucher-printing bookkeeping machine or the like and automatically positioning the vouchers so that they are imprintable at a location always having the same spacing from two edges thereof, comprising means for passing a voucher initially in a given direction toward and beyond the printing location with one of the lateral edges of the voucher extending, above the printing location, more forwardly than the other lateral edge thereof, said means for passing a voucher comprising a voucher blocking and adjusting device controllable by the voucher per se and having a plurality of transfer rollers located separate from one another above a printing table of the device and a plurality of voucher pressure rollers extending transversely to the travel direction of the voucher, means for reversing the direction of movement of the voucher and passing it back toward the printing location, a guide member for the voucher extending in said given direction and guidingly engageable by one of the lateral edges of the voucher as the voucher passes back toward the printing location, said guide member comprising a guide ledge located adjacent the transfer rollers and extending in the travel direction of the voucher, said transfer rollers and said pressure rollers cooperating with said guide ledge for feeding the voucher in the travel direction thereof, means for blocking the backward passing of the voucher at a location wherein the voucher is above and in registry with the printing location, means for sensing the presence of the voucher in printing position at said registered location, means for imprinting the voucher at said registered location, means for ejecting the voucher from the machine, a cam-operating control mechanism including means for locking the voucher in registry with the printing location, motor means for driving said control mechanism, and electric circuit means controllable by the voucher per se for starting and stopping the motor means for said control mechanism whereby the voucher is advanced in the travel direction thereof toward and beyond the printing location, is reversed in direction and moved backwardly to the printing location, is blocked from further movement at the printing location, is sensed and locked in registry with the printing location and is ejected from the apparatus, said printing table comprising an upper printing table plate and two lower printing table plates disposed in a common plane, one behind the other in the initial travel direction of the voucher, said upper plate on the one hand, and said lower plates on the other hand, being spaced from one another by said guide ledge and by an abutment ledge located at the end of the travel path of the voucher in said initial travel direction, said plates being formed with a plurality of recesses, said plurality of transfer rollers and said plurality of voucher pressure rollers extending through said recesses for engaging the voucher to pass the same in said travel direction thereof, inlet funnel means for inserting the voucher into the device, said voucher blocking and adjusting device being located downstream of said inlet funnel means and comprising a plurality of multiarmed actuating levers swingable into the plane of movement of the voucher, the arms of said actuating levers being provided with blocking pins for blocking the advancement of the voucher, said voucher ejection means comprising an ejection slot located between said lower printing table plates, and a flap serving as part of a wall for guiding the voucher out of the apparatus.

5. Apparatus according to claim 4 wherein said voucher ejection means includes an ejection channel for the voucher, communicating with said ejection slot, said flap forming a wall portion of said ejection channel and being pivotable on a shaft within the said ejection channel, said shaft on which said flap pivots being operatively connected through a lever transmission with a cam disc.

6. Apparatus according to claim 5 wherein said lower printing table plate located behind the other printing table plate in the initial travel direction of the voucher has a curved end, and said upper printing table plate is formed with a transverse groove on the underside thereof, the free end of said pivotable flap being blockable by said curved end during feeding in of the voucher, and being engageable in said transverse groove during ejection of the voucher.

7. Apparatus according to claim 6 wherein at least one of said transfer rollers and one of said voucher pressure rollers are located in said ejection channel, said flap, during travel of the voucher in the reverse direction, serving as means for guiding the voucher between said one transfer roller and said one voucher pressure roller located in said ejection channel.