June 16, 1925. 1,542,129

B. P. HAYES

STRIP FEEDING MECHANISM FOR ADDING MACHINES

Original Filed Feb. 27, 1920 2 Sheets-Sheet 1

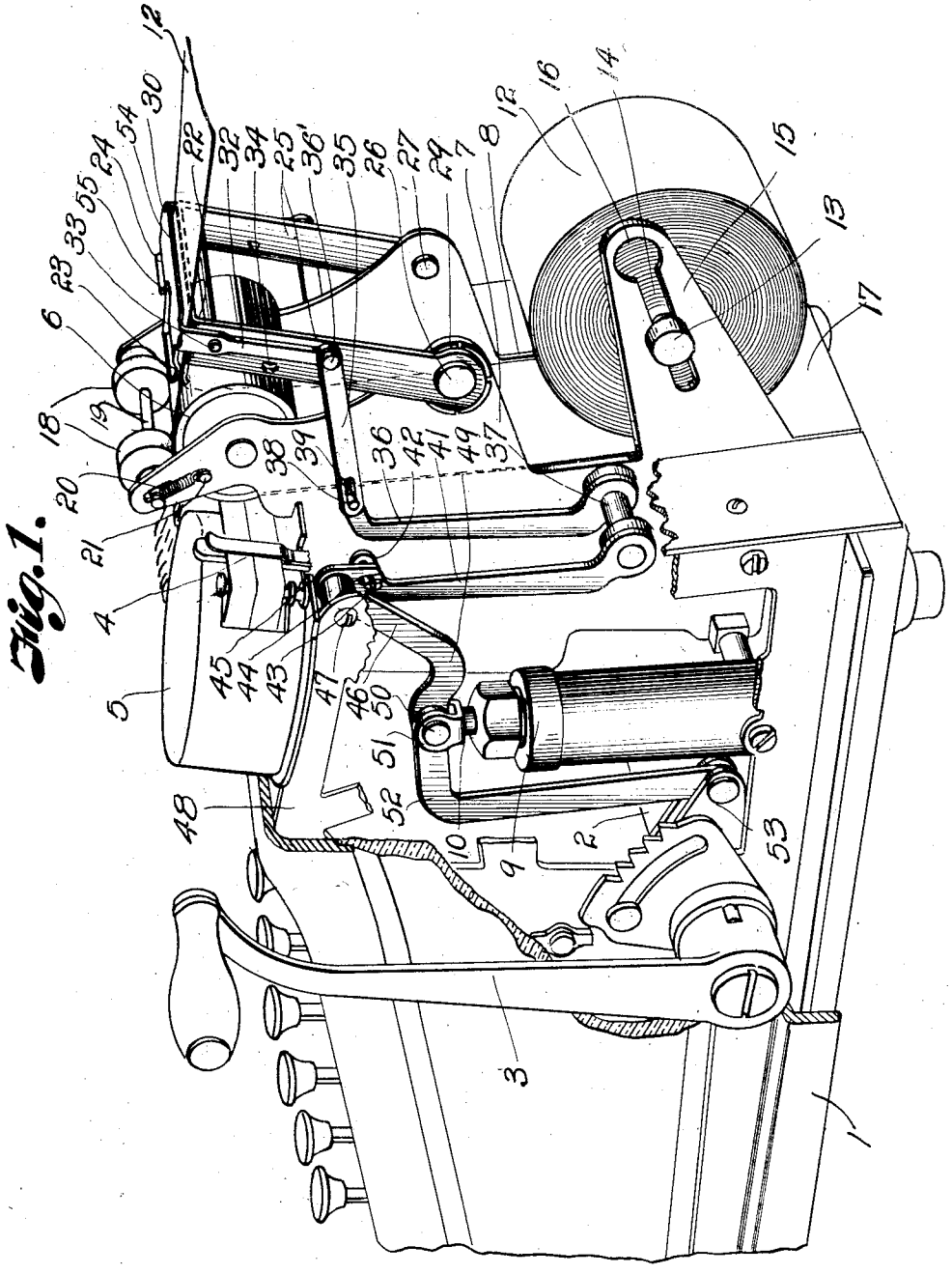


Fig. 1.

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Fig. 2.

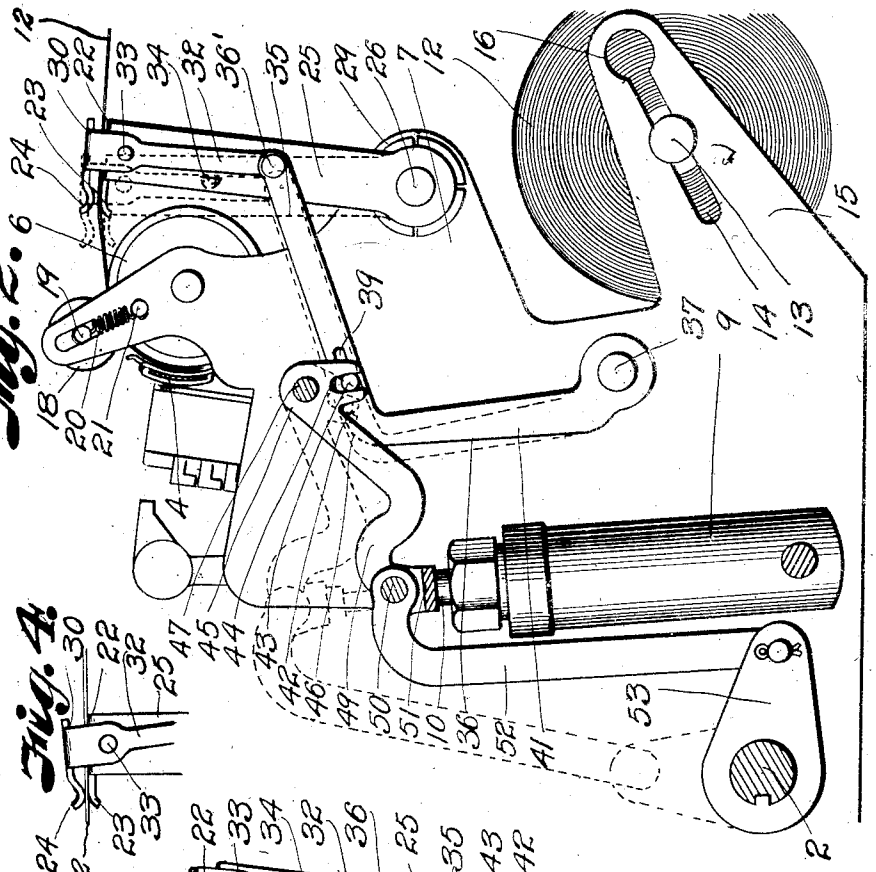
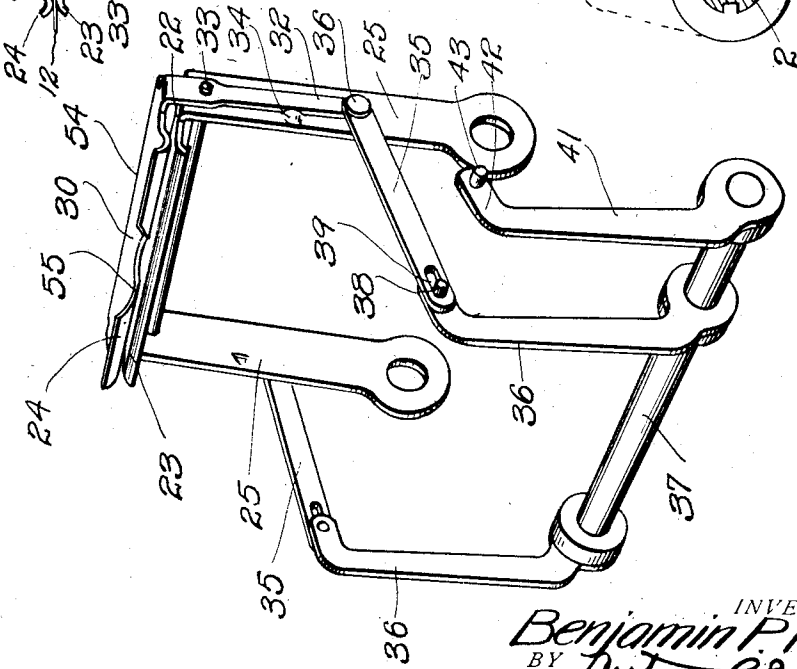


Fig. 4.

Fig. 3.



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UNITED STATES PATENT OFFICE.

BENJAMIN P. HAYES, OF KANSAS CITY, MISSOURI.

STRIP-FEEDING MECHANISM FOR ADDING MACHINES.

Original application filed February 27, 1920, Serial No. 361,743. Divided and this application filed July 5, 1921, Serial No. 482,344. Renewed May 8, 1925.

To all whom it may concern:

Be it known that I, BENJAMIN P. HAYES, a citizen of the United States, residing at Kansas City, in the county of Jackson and State of Missouri, have invented certain new and useful Improvements in Strip-Feeding Mechanism for Adding Machines; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the figures of reference marked thereon, which form a part of this specification.

My invention relates to record strip feeding mechanism for adding or like machines, and is a division of my application for patent filed February 27, 1920, Serial No. 361,743.

In adding or like machines wherein amounts are consecutively entered in the machine and accumulated upon a register, the individual amounts are usually printed upon a record strip which must be advanced following each entry, mechanism operable from the main machine being provided to effect the stepped advance, and it is the object of the present invention to provide simple and accurate operating mechanism for effecting such stepped advance at each operation of the main machine.

In accomplishing this object I have provided improved details of construction, the preferred form of which is illustrated in the accompanying drawings, wherein the strip advancing mechanism is shown in connection with an adding machine which, for convenience, is illustrated as that forming the subject matter of my co-pending application.

In the drawings:

Fig. I is a perspective view of my improved strip advancing mechanism, and a portion of an adding machine, illustrating the combination of the strip advancing mechanism with the main machine, parts of the latter being broken away for better illustration.

Fig. II is a side elevation of the strip advancing mechanism, a part of the machine frame, and the operating crank shaft.

Fig. III is a detail perspective view of the strip advancing jaws and their actuating levers.

Fig. IV is a detail side elevation of the operative portions of the jaws showing a record strip engaged thereby.

Referring more in detail to the drawings:

1 designates generally an adding machine comprising a crank shaft 2 and its operating handle 3, and printing mechanism indicated by the linked ribbon 4 carried by the drums 5 and extending across a rotatable platen 6 that is supported by frame plates 7—8, which are included in the assembly of the main machine.

Type, and means for striking the type against the inked ribbon to effect the printing impression, are included in the main machine, but form no part of the present invention and are not illustrated, in order to avoid encumbering the description of the present invention.

The main machine also includes a dash pot 9 for cushioning return movement of the crank shaft and operative parts of the main machine, and for convenience the operating mechanism for the strip feed is connected with the dash pot piston rod 10, although the invention should not be limited to such operating mechanism, as any lever connection between the strip feed and the main crank shaft may be substituted for the specific means herein shown.

The record strip 12 is carried on a roller 13, rotatably mounted in slots 14 in arms 15, extending in parallel relation from the rear of the frame plates 7—8, the slots being inclined downwardly toward the machine, so that the roller may feed by gravity as the diameter of the strip rolls diminishes, and maintain the run of the strip to the printing position in the same fixed path, the outer ends of the slots 14 opening into the enlarged mouths 16 adapted for receiving the heads on the roller, so that the roller may be projected therethrough to seat in the inclined slots, the roller being reduced in diameter between its ends so that the outer portions form heads which serve to retain the roller in position after it has been seated in the slots. The run of the strip between the roller and printing position is along the back plate 17 of the main machine, so that it is guided between the inked ribbon and platen. After reaching the printing position the strip runs over the platen to which it is held by pressure rolls 18 on a shaft 19 which is urged toward the platen

by springs 20 connected with the shaft 19, and with studs 21 on the frame members 7—8.

The strip feeding mechanism engages the strip after it leaves the platen, and comprises a pair of jaws 23 and 24, the jaw 23 being located beneath the strip and mounted on arms 25 that are pivotally mounted at their lower ends on the frame members 7—8, the preferred construction of this jaw frame comprising a U-shaped strip of metal, having the jaw proper projecting forwardly from its base or upper end, and the free ends of the arms of which are pivotally mounted on studs 26 and 27, carried by the frame members 7—8, friction washers 29 being located between the arms and frame members, and the studs having heads which retain the arms against the tension of said washers, thereby permitting pivotal movement of the arms without lost motion.

The complementary jaw frame, including the jaw proper 24, also comprises a U-shaped strip 30, which overlies the strip 22, and the base of which is spaced from the base of the strip 22 to permit the record strip to pass freely therebetween when the jaws are open.

The complementary frame 30 comprises arms 32 which are pivotally mounted on the arms 25 by studs 33, so that the complementary jaw frame may have pivotal movement on the primary jaw frame to open and close the jaws, as will presently be more fully described.

Pivotal movement of the complementary jaw member to open the jaws is limited by an engagement of the arms 32 with bosses 34 on the primary jaw arm 25, so that when the arms are swung to contact with the bosses, the passage between the jaws 23 and 24 is open to permit said jaws to pass freely over the record strip to assume position relative thereto, whereby the strip may be advanced upon the closing of the jaws and rocking of the jaw frames.

The opening and closing of the jaws and advancing movement of the jaw frames is effected through links 35 pivotally mounted on studs 36' on the lower ends of the complementary jaw arms 32 and operatively connected with the arms 36 on a rock shaft 37 rotatably mounted in the frame members 7—8, connection between the links 35 and arms 36 being by pin and slot 38—39, the pin and slot connection being provided to effect a slight delay in operation of the strip advancing jaws upon return movement of the main crank shaft to insure clearance of the type prior to movement of the strip.

The rock shaft 37 also carries an actuating arm 41 having an elbow 42 at its free end, provided with a laterally directed pin 43 that seats in a slot 44 in the head 45 of a bell crank lever 46 that is pivotally mounted on a stud 47 projecting inwardly from a frame plate 48 of the main machine. The arm 49 of said bell crank lever is pivotally mounted on a stud 50 on the yoke 51 carried on the end of the piston rod of the dash pot 9, so that when the dash pot piston is reciprocated, the bell crank lever arm 41 and rock shaft 37 are actuated to reciprocate the strip jaws and open and close the jaws during their reciprocation. The piston rod is reciprocated in the dash pot by means of a lever 52 pivotally connected with arms 53 rigidly mounted on the crank shaft 2, so that when the shaft is rocked forward and back upon manipulation of the handle and return mechanism forming part of the main machine, the dash pot piston and its rod are reciprocated, cushioning operation of the machine and effecting operation of the strip feeding mechanism.

The rear edge of the upper jaw 24 is preferably provided with a cutting edge 54, against which the strip may be drawn to effect its severance, and the front edge of the jaw is preferably provided with a finger slot 55 to facilitate threading the strip between the jaws.

Assuming the parts to be constructed and assembled as described, when the operating handle is moved forwardly the bell crank lever 46 and lever 52 work as a toggle, rocking the bell crank lever so that its slotted head is moved forwardly, rocking the arm 41 and rock shaft 37 forwardly. This forward movement of the rock shaft carries the arm 36 forwardly, so that the pins 38 engage the forward ends of the slots 39 in the links 35, moving the links forwardly. This forward movement of the links 35 draws the lower ends of the complementary jaw frame forward against the bosses 34 on the primary jaw frame arms 25 and spreads the complementary jaw 24 away from the primary jaw 23 to open the passage therebetween, so that the jaws may move freely over the strip. Movement of the link 35 continues after engagement of the arms 32 with the bosses 34, so that the primary jaw frame is moved forwardly toward the platen, a distance corresponding to the desired advance of the record strip. After such forward movement of the parts, rearward movement of the crank shaft returns the links and levers to the first position, such return movement causing the pins 38 to engage the rear ends of the slots 39 and move the links 35 rearwardly, thereby rocking the complementary jaw frame to close the complementary jaw 24 toward the main jaw 23 and grip the record strip, continued movement of the parts inducing rearward movement of both jaw frames so that the record strip is carried forwardly the desired space distance.

It is apparent that the operation de-

scribed takes place at each operation of the main machine, and that while the strip forwarding mechanism operates synchronously with the main machine, it is practically independent thereof, and while simple in construction and operation, will effect a positive feed of the strip to present fresh surfaces for printing upon successive operations of the main machine.

What I claim and desire to secure by Letters-Patent is:

1. Strip advancing mechanism for adding or like machines, comprising complementary jaw frames, one pivoted to the other and the carrying frame having pivotal mounting to afford long and short radial movement of the respective frames, operating mechanism connected with the jaw frame having short radial movement, whereby the jaw frames are moved relative to each other, and an abutment on the long radius frame engageable by the short radius frame, whereby the frames are moved as a unit.

2. In strip advancing mechanism for adding or like machines, complementary jaw frames, each comprising a jaw member, one frame pivoted to the other and the carrying frame having pivotal mounting whereby the respective frames have relatively long and short radial movement, operating mechanism connected with the jaw frame having short radial movement whereby one jaw is moved relative to the other to close the jaws, and an abutment on the long radius frame, engageable by the short radius frame when the latter is moved in the opposite direction, whereby the jaw members are opened and moved as a unit.

3. In strip advancing mechanism for adding or like machines, complementary jaw frames, each comprising a jaw member, one frame pivoted to the other, and the carrying frame having pivotal mounting to afford short and long radial movement of the frames respectively, operating mechanism connected with the jaw member having short radial movement, whereby the jaws are moved relative to each other to close and effect swinging movement of the frames as a unit in one direction, and abutments on the long radius jaw frame engageable by the short radius frame when the latter is moved in the opposite direction, whereby the members are opened and moved as a unit in the opposite direction.

4. Strip advancing mechanism for adding or like machines, comprising a jaw set consisting of separate frame members, each having a jaw, one of the frame members being pivotally mounted on the other and the carrying member having pivotal support, an abutment on the carrying member engageable by the carried member, and means for operating the carried member to effect engagement thereof with the abutment, whereby the jaws are spaced and the set moved as a unit when the carried member is rocked in one direction, and the jaws are opened and the set moved as a unit in the opposite direction when operation of said carried member is reversed.

5. In combination with a main actuator, a jaw set comprising a pivotally mounted carrying frame having a jaw, a complementary frame pivotally mounted on the carrying frame and having a jaw co-operative with the jaw on the carrying frame to grip a record strip, means for limiting opening movement of the carried frame and effecting movement of the set as a unit, said means comprising links and lever mechanism connected with the links and with the main actuator.

6. In combination with a main actuator, a rock shaft, an arm on the rock shaft, a lever mechanism connected with the actuator and operable on said arm to rock said shaft, a pivoted frame comprising a gripper jaw and abutments, a complementary frame pivoted on the first named frame comprising a jaw co-operative with the jaw on the first named frame, and having arms adapted for engagement with said abutments when the complementary frame is moved to spread the jaws, links on the complementary frame arms, and connection between the rock shaft and said links.

7. In combination with a main actuator, record strip advancing mechanism comprising a pivotally mounted frame having a jaw and abutment bosses, a complementary frame mounted on the first named frame, having a jaw and having arms adapted for engagement with said bosses when the complementary frame is moved to spread the jaws, links connected with the complementary frame arms, a rock shaft, means on the rock shaft for actuating said links, a bell crank lever having a slotted head, an arm on the rock shaft having a pin located within the slot in said head, and lever mechanism connected with the bell crank lever and with the main actuator for operating the record strip advancing mechanism upon operation of the main actuator.

In testimony whereof I affix my signature.

BENJAMIN P. HAYES.