July 16, 1929. J. A. HULT 1,721,022

WORK EJECTING MECHANISM FOR PRINTING APPARATUS

Filed March 3, 1928 3 Sheets-Sheet 1

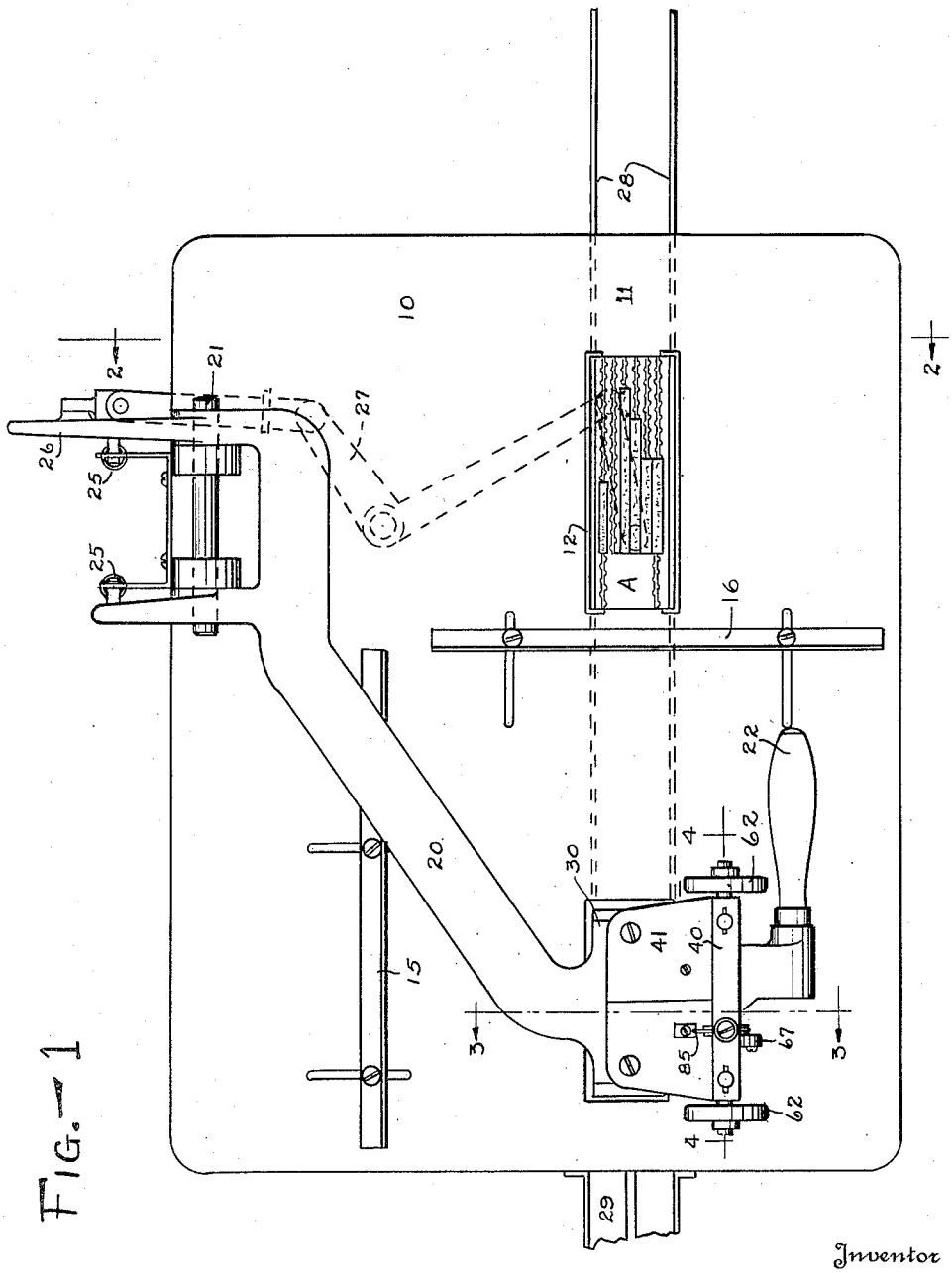


FIG. 1

Inventor

John A. Hult,

By Baker, Macklin, Volrick & Fear

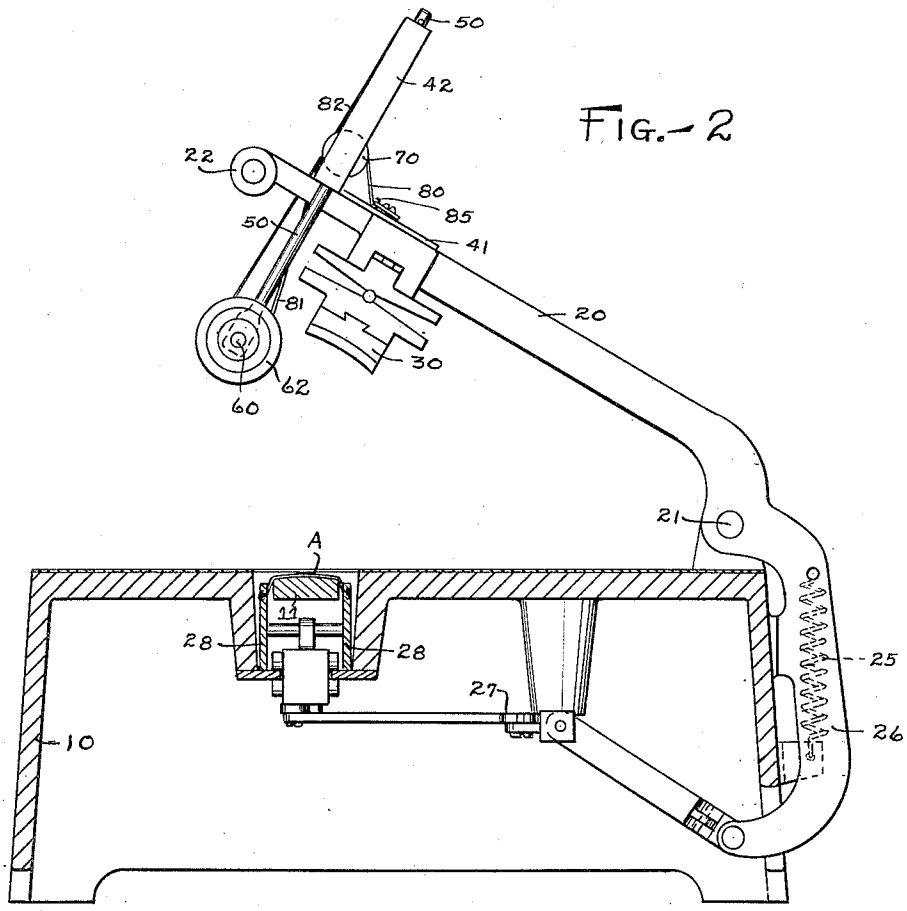
Attorneys

July 16, 1929. J. A. HULT 1,721,022

WORK EJECTING MECHANISM FOR PRINTING APPARATUS

Filed March 3, 1928 3 Sheets-Sheet 2

FIG.-2



Inventor

John A. Hult,

By Dabo Macklin Cobden & Sears

Attorneys

July 16, 1929. J. A. HULT 1,721,022

WORK EJECTING MECHANISM FOR PRINTING APPARATUS

Filed March 3, 1928 3 Sheets-Sheet 3

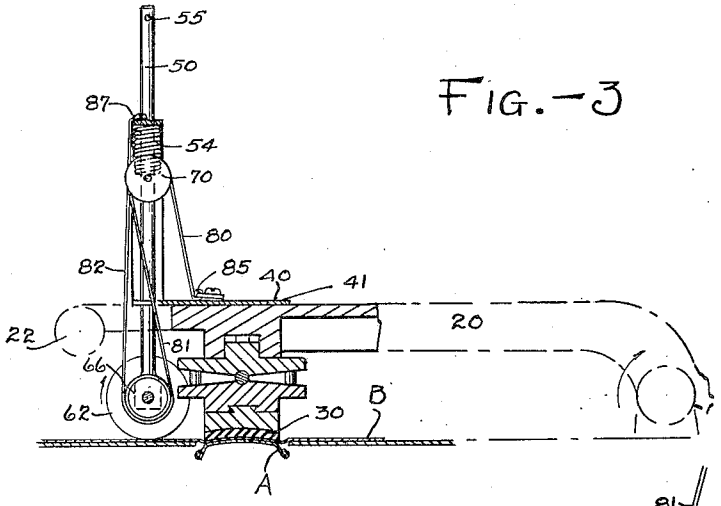


FIG.-3

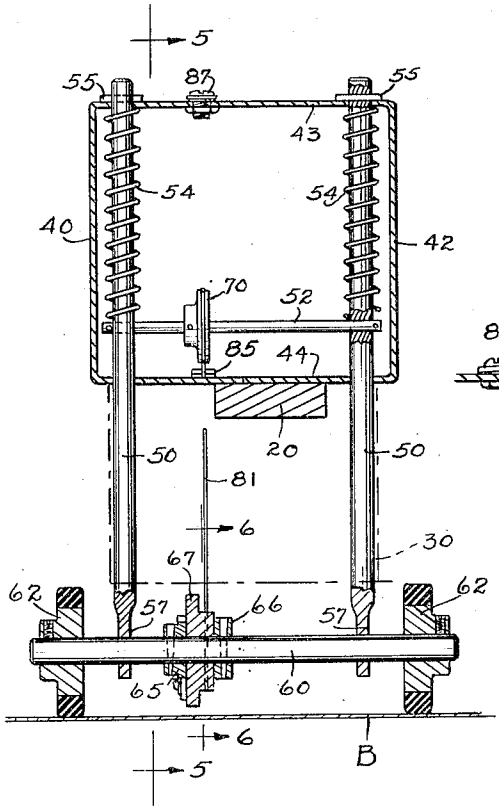


FIG.-4

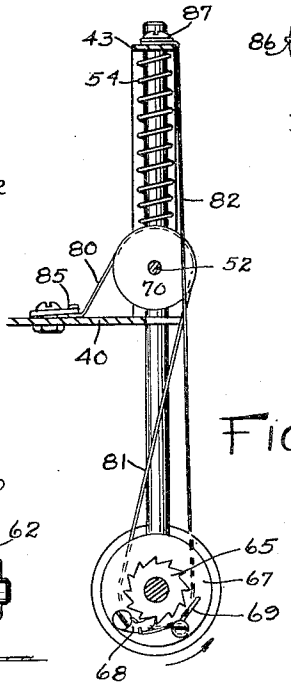


FIG.-5

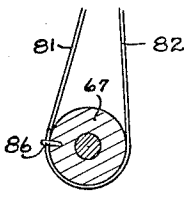


FIG.-6

Inventor

John A. Hult

By Parks Mackin Gothier & Fear

Attorneys

Patented July 16, 1929. 1,721,022

UNITED STATES PATENT OFFICE.

JOHN A. HULT, OF CLEVELAND, OHIO, ASSIGNOR TO THE AMERICAN MULTIGRAPH SALES COMPANY, OF CLEVELAND, OHIO, A CORPORATION OF OHIO.

WORK-EJECTING MECHANISM FOR PRINTING APPARATUS.

Application filed March 3, 1928. Serial No. 258,781.

This invention relates to mechanism for automatically discharging a printed product following the impression stroke. The invention is well adapted for embodiment in an addressing machine employing individual address plates and a manually operable platen.

My invention is of the same generic type of that shown in an application of Clifton Chisholm, Serial No. 258,770 filed contemporaneously herewith, with claims dominating the present application. Both cases have mechanism carried by the platen arm and serving to engage the paper on the printing stroke of such arm and remaining in engagement during a portion of the reverse stroke and during the latter period having a movement to eject the printed work.

One of the objects of my invention is to simplify the mechanism as much as practicable without interfering with the effectiveness of the operation. The means by which I accomplish this is hereinafter more fully explained in connection with the drawings, and the essential novel features are summarized in the claims.

In the drawings, Fig. 1 is a plan of an addressing machine embodying my invention; Fig. 2 is a vertical transverse section of the same, as indicated by the line 2—2 on Fig. 1, this view showing the platen arm in its normal or standing position; Fig. 3 is a sectional side elevation of the platen arm and the mechanism which it carries, in printing position, this view being a vertical section on the line 3—3 on Fig. 1; Fig. 4 is a sectional front elevation of the ejecting mechanism itself; Fig. 5 is a cross section of the mechanism of Fig. 4 as indicated by the line 5—5 on Fig. 4; Fig. 6 is a detail illustrating the anchorage of the operating cord of the ejector, being a vertical section as indicated by the line 6—6 on Fig. 4.

In the embodiment shown in the drawings, 10 indicates the bed or frame of a flat-bed addressing machine. Extending transversely across this frame is a channel 11 along which the address plate may travel from a magazine 12 to printing position, after which it is discharged at the left hand side of the machine.

A manually operated impression arm 20 is shown in the drawings as pivoted to the bed at 21 adjacent the rear end of the arm, while at the forward end is an operating handle 22, and a short distance behind the handle is a platen 30 adjustably carried by the arm in usual manner. The impression arm 20 is normally maintained elevated, as shown in Fig. 2, by a suitable spring or springs 25 attached to rear extensions of the arm. The rear extension 26 is connected by a suitable system of linkage 27 with a reciprocating slide 28 in the channel 11.

As the arm 20 is depressed to effect the printing, by means of a plate directly below the platen 30, the slide 28 is carried toward the right so that the bottom-most address plate A, Figs. 1 and 2, may drop from the magazine 12 onto the slide in front of a shoulder thereon; then as the platen moves upwardly, the linkage mechanism described moves the slide toward the left carrying the bottom-most plate from the magazine into position immediately at the left thereof. The same movement carries the plate which has just been printed from by the platen into a receptacle 29 at the extreme left of the machine, and at the same time carries an intermediate plate which was standing at the left of the magazine into printing position beneath the platen.

As usual with addressing machines of the type so far described, the envelope or card to be addressed is placed by hand beneath the platen while it is elevated, such card or envelope being positioned, if desired, by engaging one or both of the guides 15 and 16 shown in Fig. 1. The mechanism of the present invention acts automatically following the printing to eject the card or envelope toward the front. This mechanism will now be described.

As shown in the drawing, I have secured to the top of the platen arm, a stationary bracket 40 shown as a plate-like member having a horizontal portion 41 secured to the arm and an upright open frame portion 42 having upper and lower cross portions 43 and 44. Slidably mounted in each of these cross portions are a pair of parallel, approximately upright, rods 50. These rods are connected by a cross bar 52, shown as passing through the plungers. The two rods are pressed downward by helical springs 54 surrounding them and com-

pressed between the frame bar 43 and the cross rod 52. Suitable pins 55 extending through the upper portions of the rods limit their downward movement. At their lower ends these rods are formed into bearings 57 in which is journalled a shaft 60.

The shaft 60 has secured to its opposite ends rubber-tired wheels 62. Between the rods 50, I pin to the shaft 60 a pair of collars 65 and 66 and between these collars I journal on the shaft a pulley 67. The collar 65 has ratchet teeth about it, as shown in Fig. 5, and the pulley 67 carries a pawl 68 pressed by a spring 69 into engagement with the ratchet teeth.

Mounted on the shaft 52 is a pulley 70. I have shown the pulley attached to the shaft and the shaft journalled in the rods 50, although, if desired, the pulley might rotate on the shaft. 80 in each of the figures indicates a cord, wire or other flexible member which is anchored at 85 to the bracket 40, thence passes upwardly over the pulley 70, thence downwardly in the reach 81 beneath and around the pulley 67, to which it is anchored at 86 (Fig. 6), thence upwardly in the reach 82, the upper end being finally anchored to the top portion 43 of the frame 40 as shown at 87.

When the platen arm is lowered to effect printing, the rollers 62 come into engagement with the envelope (indicated by B in Figs. 3 and 4) before the platen 30 engages the paper. Then as the downward movement of the arm 20 continues, the rods 50 are shoved upwardly through the frame 40. This movement raises the pulley 70 and pulls upwardly on the reach 81 of the cord, which rotates the pulley 67 in the direction to carry the pawl 68 idly around over the ratchet teeth 65. Thus, when the platen 30 comes into printing, co-acting with the envelope over the address plate A, as shown in Fig. 3, the floating frame (i. e. the rods 50, shafts 52 and 60) carrying the two rollers 62 rises relative to the platen arm to the limit of the movement of the frame, as indicated by the compressed springs 54 in Fig. 3. There is however, no rotation of the rollers 62, and hence no disturbance of the envelope.

Now, on the upstroke of the platen arm 20, the springs 54 maintain the rollers 62 in engagement with the envelope for the first portion of such stroke, the springs 54 extending and the frame 40 rising on the substantially stationary rods 50. In this movement the two anchorages 85 and 87 of the cord 80 rise, while the axes of the two pulleys 70 and 67 remain stationary. Accordingly, the reach 81 of the cord slackens and the reach 82 pulls, with the result that the pulley 67 is rotated in the direction of the arrow in Figs. 3 and 5. In this movement, the pawl 68 in engagement with the ratchet 65 turns the shaft 60, and hence, the two rubber-tired wheels 62 in the direction to feed the envelope forwardly out of the machine, and this result is accomplished before the wheels 62 are bodily lifted.

It will be seen that my ejecting mechanism is very simple in construction and is self-contained, so that it may be readily attached as a unit to impression arms of existing addressing machines. The ejecting rollers remain in contact with the addressed envelope for a sufficient time, and have a sufficient rotative movement, to effectively discharge the envelope early in the upstroke of the platen arm.

I claim:—

1. The combination with a reciprocating printing member, of a paper ejecting device carried thereby and comprising a wheel adapted to be brought by the printing stroke into engagement with the paper, and means for rotating said wheel following the printing impression to discharge the paper.

2. The combination with a reciprocating impression arm and a platen carried thereby, of a rotatable wheel carried by the platen arm in such manner as to be movable thereby into engagement with the paper, and mechanism for automatically rotating said wheel in contact with the paper after the platen has cleared the paper.

3. The combination with an impression arm and a platen carried thereby, of a wheel carried by the platen arm in such manner as to be bodily shiftable as well as rotatable thereon and mechanism actuated by the movement of the platen arm away from the paper for rotating said wheel in contact with the paper after the platen has cleared the paper.

4. The combination of an impression arm, a platen carried thereby, a floating frame carried by the arm, a rotatable wheel mounted on the frame, a spring intending to press said frame toward the plane of the paper, and means whereby the movement of the platen arm away from the paper causes rotation of the wheel in a direction to discharge the paper.

5. The combination of an impression arm, a platen carried thereby, a bracket carried by the arm, a floating frame slidably mounted in the bracket and spring pressed toward the plane of the paper, a shaft mounted in said floating frame, a pair of wheels on said shaft, and mechanism for rotating the shaft as the impression arm rises from the printing position.

6. The combination of an impression member, a platen carried thereby, a floating frame slidably mounted on the impression arm and spring pressed toward the plane of the paper, a member adapted to engage the paper and mounted on the floating frame ad-

jacent its lower end in such manner that it may be turned thereon and means whereby the rising of the impression member relative to the floating frame causes rotation of said paper engaging member in a direction to discharge the paper.

7. The combination of a pivoted impression arm, a platen carried thereby, a pair of rods slidably mounted in an approximately upright direction in the impression arm, a shaft mounted in said rods, a wheel on said shaft, springs acting on the rods to force the wheel against the paper as the platen is coming into printing position, and means causing a rotation of the wheel forwardly to eject the paper as the platen recedes from printing position.

8. The combination of an impression member, a platen carried thereby, a paper engaging wheel carried by said member and a ratchet drive for said wheel controlled by movement of the impression member and arranged to cause rotation of the wheel when the impression arm rises.

9. The combination of an impression arm, a platen carried thereby, a floating frame carried by the impression arm, a paper engaging wheel mounted in the frame to turn on an axis, and a ratchet drive for said wheel controlled by relative movement between the impression arm and the floating frame and arranged to cause rotation of the wheel when the impression arm rises.

10. The combination of an impression arm, a platen carried thereby, a slidable frame mounted in the arm, a spring pressing said frame toward the plane of the paper, a roller carried by said frame and adapted to engage the face of the paper, a ratchet wheel and pawl for turning said roller, and an operating connection from such ratchet mechanism causing the wheel to rotate when the platen rises.

11. The combination of an impression arm, a platen carried thereby, a paper engaging wheel carried by the impression arm, a pulley for turning said wheel and a flexible member embracing the pulley and connected in such manner that it turns the pulley to drive the wheel when the platen arm rises.

12. The combination of an impression arm, a platen carried thereby, a slidable frame carried by the impression arm, a paper engaging wheel carried by the frame, a pulley for turning said wheel, and a flexible member embracing the pulley and connected in such manner that it turns the pulley to drive the wheel when the platen arm rises relative to the frame.

13. The combination of an impression arm, a platen carried thereby, a sliding frame carried by the impression arm, a paper engaging roller rotatively mounted in the frame, a pulley connected with said roller, another pulley on the frame, and a flexible member anchored at its ends to the impression arm and passing over one pulley and under the other.

14. The combination of an impression arm, a platen carried thereby, a frame slidably mounted in the impression arm, a paper engaging roller rotatively mounted in the frame, a driving pulley connected with said roller, another pulley carried by the slidable frame, and a cable anchored to the impression member and then passing over the second pulley and downwardly beneath the first pulley and upwardly and again anchored to the impression arm.

15. The combination of an impression member, a platen carried thereby, a frame slidably mounted on the impression member, a paper engaging wheel rotatively mounted in the frame, a driving pulley connected with said wheel, another pulley carried by the slidable frame, a flexible member anchored to the impression member and then passing over the second pulley and downwardly beneath the first pulley and upwardly and again anchored to the impression member, and a ratchet connection between the first pulley and the paper-engaging wheel.

16. The combination of an impression arm, a platen carried thereby, a slidable frame carried by the arm and spring pressed toward the plane of the paper, a paper engaging wheel rotatably mounted in the lower end of the frame, a pulley rotatably mounted in the lower end of the frame, a pulley rotatably mounted in said frame and having a ratchet connection with said wheel, a second pulley mounted in the frame, and a cable anchored at one end to the impression arm and passing thence about the second pulley, thence about the first pulley and having its other end anchored to the frame, whereby movement of the impression arm relative to the sliding frame rotates the first mentioned pulley, the ratchet connection between such pulley and said wheel being in the direction to rotate the wheel as the impression arm rises following the printing stroke.

17. The combination with a bed, a pivoted impression arm carrying a platen, a bracket carried by the impression arm, a pair of rods slidably mounted in the bracket, springs pressing said rods downwardly longitudinally thereof, a shaft carried by said rods near their lower end, wheels on said shaft adapted to engage the face of paper to be acted on by the platen, a pulley having a ratchet connection with said shaft, and means for rotating said pulley consequent upon relative movement between the impression arm and slidable rods.

18. The combination of a pivoted impression arm carrying a platen, a bracket car-

ried by the impression arm, a pair of rods slidably mounted in the bracket, springs pressing said rods downwardly longitudinally thereof, a shaft carried by said rods near their lower end, wheels on said shaft adapted to engage the face of paper to be acted on by the platen, a pulley having a ratchet connection with said shaft, a second pulley carried by said rods, and a flexible driving member anchored at one end to the impression arm passing thence upwardly over the second pulley and thence downwardly about the underside of the first pulley, thence upwardly and finally anchored to the bracket on the impression arm.

19. The combination with a printing mechanism, of a bodily movable paper ejecting device comprising a pair of wheels with elastic tires, means for bringing them into engagement with the paper preceding the impression for maintaining them in such engagement during the impression and means for rotating them as a unit following the printing impression to discharge the paper.

20. The combination with a printing mechanism of a paper ejector comprising a paper engaging wheel rotatably mounted in a frame and having a ratchet connection with the wheel, a second pulley mounted in said frame, a cable anchored at one end and passing thence about the second pulley, thence about the first pulley and having its other end anchored, whereby movement of the points of anchorage relative to the said frame may rotate the first mentioned pulley and thereby rotate the paper engaging wheel through the ratchet connection.

In testimony whereof I hereunto affix my signature.

JOHN A. HULT.