Dec. 31, 1935. S. ANTHONY 2,026,116

PRINTING MACHINE

Original Filed Nov. 18, 1931

Fig. 1

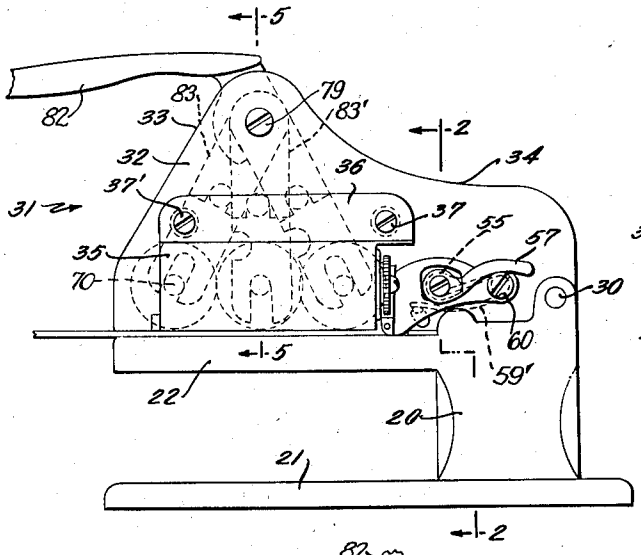


Fig. 2.

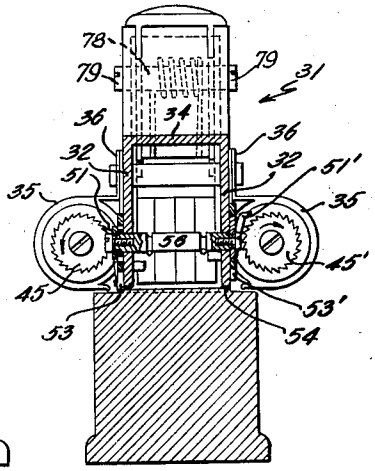


Fig. 3.

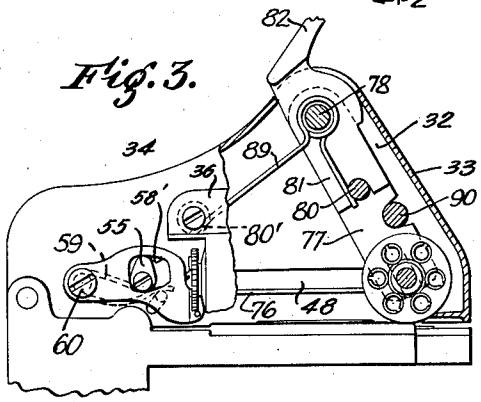


Fig. 4.

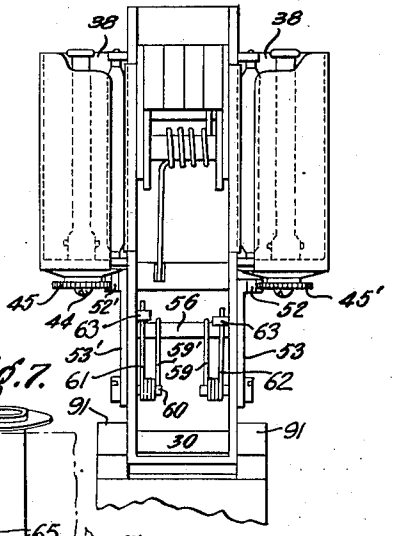


Fig. 5.

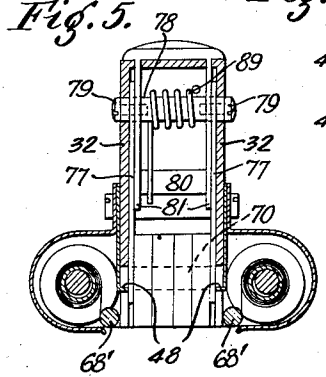


Fig. 6.

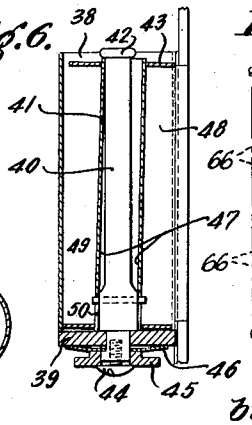
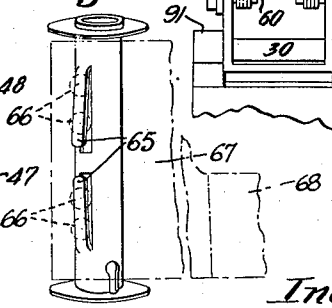


Fig. 7.



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UNITED STATES PATENT OFFICE

2,026,116

PRINTING MACHINE

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Original application November 18, 1931, Serial No. 575,775. Divided and this application January 8, 1935, Serial No. 872

12 Claims. (Cl. 101—336)

This application is a division of parent application Serial No. 575,775, filed November 18, 1931 relating to stamping or printing machines, particularly machines for printing sales slips and the like with embossed plates suitable for use as customers' tokens. The machine comprises a base and a pressure head movable toward and from the base with an ink ribbon and a roller for compressing the sheet or sheets to be printed between the ink ribbon and printing plate. The parent application is directed especially to the relationship between the ribbon and head and to the pressure roller, whereas this application is directed more particularly to the ribbon holding and feeding mechanism.

Objects of the invention are to provide mechanism of the type referred to which facilitates the insertion and removal of the ribbon spools, which affords quick and easy access to the mechanism for adjustment and repair, and which involves a simple and reliable construction and arrangement of parts.

For the purpose of illustration a typical embodiment is shown in the accompanying drawing in which,

Fig. 1 is a front elevation showing the position of the parts when the pressure roller is at the end of its travel across the printing plate;

Fig. 2 is a transverse section taken on the line 2—2 of Fig. 1;

Fig. 3 is a rear elevation, certain parts being broken away to show the interior mechanism;

Fig. 4 is a front view of the presser head when turned about its pivot to upright position with respect to the base member;

Fig. 5 is a transverse section taken on the line 5—5 of Fig. 1;

Fig. 6 is a longitudinal section of one of the ribbon-spool casings; and

Fig. 7 is a perspective view of a form of ribbon spool that may advantageously be used with the stamping machine.

In the particular embodiment chosen for the purpose of illustration, 20 is a base member comprising a base 21 and a horizontal platform 22 for supporting the printing plate, which may be a customer's token, for example a plate such as disclosed in my Patent No. 1,899,072, granted February 28, 1933.

Pivotally connected to the base member by the stud 30 is the pressure head 31, said head consisting, in the present instance, of an elongated, hollow box-like member having parallel walls 32 connected at their upper extremities by an inclined front plate 33, and a curvilinear top and rear plate 34. Arranged on opposite sides of the pressure head respectively are two ribbon-spool casings 35, said casings being shown in the present instance as extending longitudinally of the head. Each casing consists of a cylindrical portion slightly larger in diameter than the ribbon spool to be received therein, and a flat portion 36 formed integral with said cylindrical portion, each casing being secured to the pressure head in any suitable manner, as by screws 37 and 37' passing through said flat portion and threaded into the side walls of the pressure head. The forward end 38 of each spool housing is open, and attached to the closed rearward end 39 is a centrally-disposed, longitudinally-extending pin 40, said pin being slightly longer than the ribbon spool 41 which is mounted thereon and having an end button 42 on its projecting end, said button overlapping the end flange 43 of said spool when, during the operation of the machine, the ribbon exerts tension on the two ribbon spools. In the present instance the means employed to secure the pin to the base of the spool casing comprises a screw 44 passing through the ratchet 45 and threading into the reduced end shank of the pin.

Various means for attaching the pin to the rear end of the casing to permit slight movement of the pin with respect to the axis of said casing will readily occur to those skilled in the art. In the present illustrative form of my invention, this means comprises the cupped steel washer 46, whereby a certain amount of resiliency is imparted to the connection of the pin to the casing base 39, thereby effecting a frictional control of said pin and the spool when the ratchet pawl is operative. It will be noted that the greater portion of the pin is of smaller diameter than the bore 47 of the spool so that by virtue of the tension of the ribbon, the spools will tip slightly toward each other and their flanges will be in frictional engagement with the plate 48, hereinafter more fully described, which plate forms part of the channel for the roller axle and may be considered as forming a portion of the casing. By means of such frictional engagement of the spool flange with the plate 48 the requisite drag is exerted on the spools and the ribbon is always kept taut.

To interconnect each spool with its ratchets 45 or 45', a pin-and-slot connection 49—50 between the pin 40 and the barrel of the spool is provided in the present instance, although it is to be understood that various other modes of connection may be employed. To effect inter-

mittent feeding of the ribbon, I provide pawls 51 and 51' arranged to engage the ratchets 45 and 45' respectively. Each pawl is mounted, as shown at 52 and 52', on one of the cam levers 53 or 53', each pivotally connected to the side walls of the pressure head. Each cam lever is so positioned that when the pressure head is closed on the base member, the end of one of them only will project beyond the lower edge 54 of the side walls of the pressure head so that when the said head is closed, the cam lever will be raised sufficiently to cause the pawl carried thereby to rotate the ratchet one notch ahead.

As will be apparent from Fig. 2, the ratchet 45 is rotated intermittently in a counterclockwise direction, thereby drawing the ribbon off the spool mounted on the pin to which the ratchet 45' is connected; and the ratchet 45' is rotated in a clockwise direction, thereby drawing the ribbon off the spool mounted on the pin to which the ratchet 45 is attached. Retrograde movement of the ratchets is prevented by the resiliency of the cupped washer 46.

The means for placing one pawl in operative position and the other in inoperative position comprises the cams 55 and 55' mounted on the cross-shaft 56 and disposed 90° apart. By means of the lever 57 rigidly connected to said cross-shaft the latter may be given a partial rotation, with the result that when said lever is in the position shown in Fig. 4 the cam 55 is in an inactive position within its follower slot 58', permitting the cam lever 53 to descend to its lowermost or operative position, whereby the closing of the head on the base member will cause the lower end of said cam lever to strike the platform 22, thereby oscillating said cam lever about its pivot and effecting the engagement of the pawl 51 with its ratchet. However, when said lever is raised, the cam 55 coacts with its follower slot and elevates the cam lever 53 to an inoperative position above the casing edge 54, the cam lever 53' simultaneously descending to its operative position as the cam 55' turns to an inactive position within its follower slot, in which position of the parts the closure of the head on the base member will effect the step-by-step clockwise rotation of the ratchet 45. One of the cam levers 53 or 53', raised as aforesaid when the pressure head is closed, is brought back to its original position with its free end projecting beyond the lower edge of the pressure head walls by means of a spring 59 or 59', each spring being coiled about a stud 60 and terminating in two straight portions 61 and 62, resting respectively beneath the cross-shaft 56 and above a laterally-projecting pin 63 riveted to the respective cam plates and passing inward through slots cut in the pressure head walls.

While the ends of the ribbon may be secured in a variety of ways to the spools 41, I prefer, as shown in Fig. 7, to provide the barrel of each spool with a pair of oppositely-disposed tongues 65, each of which may preferably be cut out of the barrel itself, and the inner ends of which are slightly spaced apart from each other, the end of the ribbon having several holes 66 punched therein so that, as shown in said figure, the end of the ribbon may be threaded over the tongues. Each end of the ribbon 67 preferably is provided with a short length 68 which is colored distinctively from the ink-carrying portion thereof, so that the operator can conveniently ascertain when the ribbon has been almost completely unwound from one of the spools. Rollers 68' may be provided for guiding the ribbon across the pressure head.

It frequently happens that the embossed letters on the printing plate differ slightly in height, therefore producing incomplete imprints, and for that reason it is desirable to so construct the pressure roller as to compensate for such height variations. In the present instance this is accomplished by dividing the roller in sections as described and claimed in the aforesaid parent application.

The pressure roller is preferably arranged for movement longitudinally of the head and transversely of the ink ribbon. In the present instance two runways are formed on the vertical sides of the pressure head for receiving the ends of the axle 70, and while said runways or guiding grooves may be cut into said sides themselves or be built thereon in a variety of ways I prefer, for economy of construction and in order further to protect the ribbon spools, to form said grooves by the inturned laterally-extending ends 76 of the plates 48 above-mentioned, said plates preferably being attached to the respective sides of the pressure head by the same screws 37 which are employed to secure the ribbon casings 35 thereto, as shown most clearly in Fig. 8. The means employed in the present instance for imparting a right-line motion to the roller, consists of a pair of arms 77 arranged in parallel relation and pivoted to the head by the stud 78, said stud being held in position by the end screws 79. The free ends of said arms are connected by a transverse stud 80 arranged to receive the bifurcated lower end of the lever 81 which, in the present form, consists also of two parallel arms pivoted about the stud 78, and integral with the lever 82. The bifurcated lower ends of the arms 77 take over the ends of the roller axle 70, as shown in Fig. 1 so that when the lever 82 is rotated about its pivot from the position shown in Fig. 3 to the substantially horizontal position shown in Fig. 1, the roller will be moved from its normal forward position indicated at 83 in Fig. 1 to its extreme rearward position indicated at 83', thereby pressing the ink ribbon against the sheet or sheets to be printed, which sheets usually consist of a customer's record sheet and two salesman's record sheets which are, respectively, a tissue sheet and a sheet having a double-faced sheet of carbon 88 interposed therebetween. The pressure exerted by the roller on the ink ribbon and on the manifold sheets arranged between the ink ribbon and the printing plate will result in making an impression of the printing plate inscription on all three sheets. For maintaining the lever 82 in its normal position (Fig. 3) a spring 89 may be employed, said spring having its central portion coiled around the stud 78, and its end portions engaging the stud 80 which connects the propelling arms 77, and the stud 80' secured to the two side plates of the pressure head by the screws 37 used for attaching the spool casings to said head. The movement of the pressure roller longitudinally of the head is limited by said stud 80' and the transverse stud 90, which is secured to the walls of the pressure head by the screws 37', or by the length of the roller channels.

The rigidity of the machine is greatly increased by arranging the pair of oppositely-disposed bearings 91, extending upwardly from the base member, to clasp the lower edges of the side walls 32 therebetween when the pressure head is closed and thus lock the same against side movement, thereby producing a clearer print.

Having thus described an illustrative embodiment of my invention without, however, limiting the same thereto, what I claim and desire to secure by Letters Patent is:

1. In a printing machine, a pressure head having an additional casing at each side adapted to receive a ribbon spool, each casing having a spool mounting therein secured to the rear end of the casing and each casing having an open front end freely exposing said spool mounting.

2. In a printing machine, a pressure head having an additional casing at each side and each casing having an open front end and a closed rear end, and a ribbon spool receiving pin secured to the rear end of each casing and freely accessible through the front open end of the casing.

3. In a printing machine, a pressure head having a pair of ribbon-spool casings outside the head each containing a ribbon spool receiving pin accessible through an open end of the casing.

4. A stamping machine comprising a printing head, a ribbon-spool casing having an open side fast to the side of the head, one end of the casing being closed and the other end open, a ribbon-spool pin extending axially of the casing from the closed to the open end, and mechanism at the closed end for rotating said pin.

5. A stamping machine comprising in combination, a pressure head and two open-ended, oppositely-disposed ribbon-spool casings secured to said head.

6. A stamping machine comprising in combination, a pressure head and ribbon-spool mountings secured to said head, each of said mountings having an enclosing casing with an exposed open end, so that mounted ribbon spools are accessible from the exterior of said pressure head.

7. A stamping machine comprising in combination, a pressure head, two open-ended, oppositely-disposed ribbon-spool casings secured exteriorly of said head, a centrally-disposed pin for receiving a ribbon spool secured to the base of each casing and extending longitudinally therethrough, each pin being slightly longer than its spool to project through the central bore of the spool to be mounted thereon, and a button on the projecting end of each pin adapted to overlap the end flange of its spool.

8. A stamping machine comprising in combination an enclosed pressure head, two open-ended, oppositely-disposed ribbon-casings carried outside of said head, a centrally-disposed pin for receiving a ribbon spool secured to the bottom of each casing and extending longitudinally thereof, the bore of each spool being slightly larger than the diameter of said pins whereby the flanges of said spools may be drawn into frictional engagement against the head.

9. A stamping machine comprising in combination a base member, a pressure head pivotally connected to said base member, ribbon spools mounted on opposite sides of said pressure head respectively in parallel relation to each other, and means actuated by closing said head on said base member for imparting intermittent rotational movement to one of said spools.

10. A stamping machine comprising in combination a base member, a pressure head pivotally connected to said base member, ribbon spools mounted on opposite sides of said pressure head respectively in parallel relation to each other, a ratchet operatively connected to each ribbon spool, a cam lever pivoted to said pressure head and normally projecting below the lower edge thereof, and a pawl secured to said cam lever, the projecting end of said cam lever being arranged to coact with said base member when said head is closed on the latter and thereby impart vertical movement to said pawl.

11. A stamping machine comprising in combination a base member, a pressure head pivotally connected to said base member, ribbon spools mounted on opposite sides of said pressure head respectively in parallel relation to each other, a cam lever disposed on either side of said head, a pawl secured to each said cam lever, a ratchet operatively connected to each said ribbon spool, and means for placing one pawl in operative position with respect to its ratchet and simultaneously throwing the other pawl to inoperative position.

12. A printing machine comprising a base member, a pressure head member movably mounted on the base to move toward and from the base member, and a ribbon-feeding pawl mounted on one of said members in position to be actuated by engagement with the other member when the pressure head is moved toward the base.

STANLEY ANTHONY.