Dec. 31, 1935. S. ANTHONY 2,026,115

STAMPING OR PRINTING MACHINE

Filed Nov. 18, 1931 2 Sheets-Sheet 1

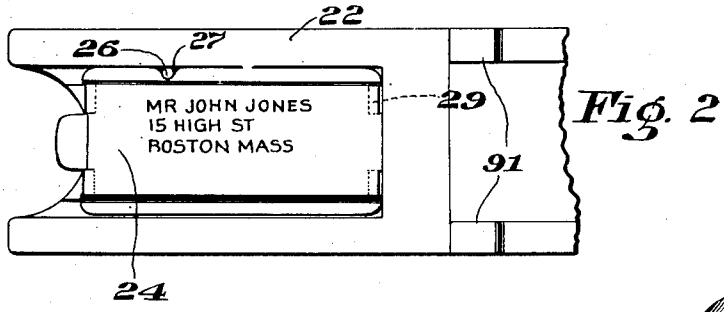


Fig. 2

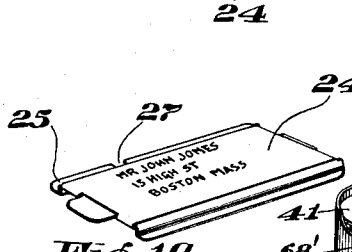


Fig. 1a

Fig. 1b

Fig. 1

Fig. 3

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Fig. 4

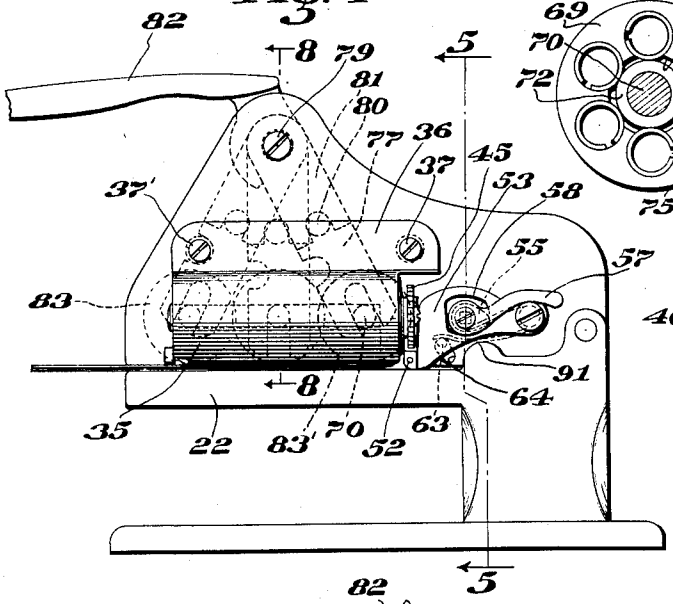


Fig. 11

Fig. 5

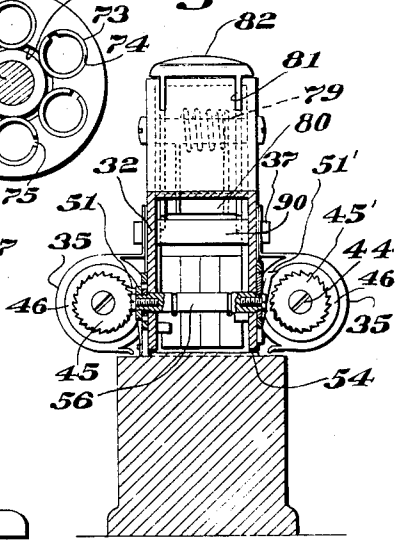


Fig. 12



Fig. 6

Fig. 7

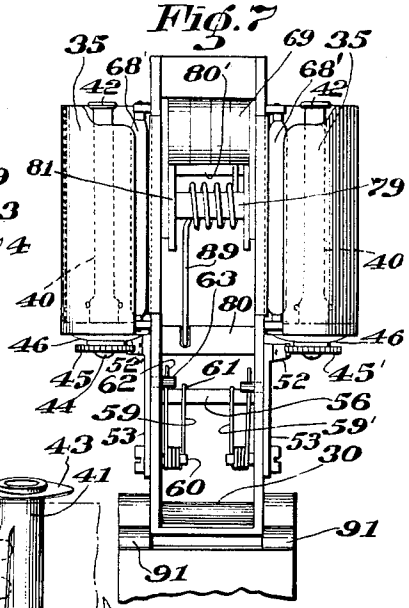


Fig. 8

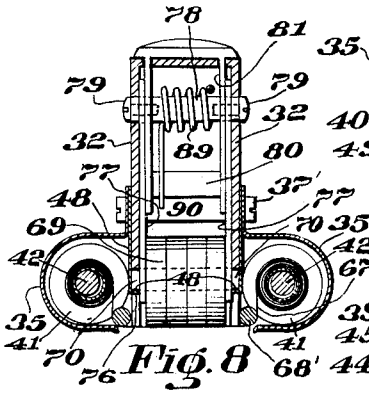


Fig. 9

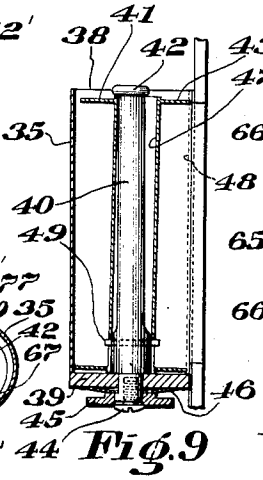
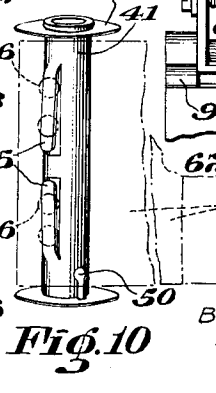


Fig. 10



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UNITED STATES PATENT OFFICE

2,026,115

STAMPING OR PRINTING MACHINE

Stanley Anthony, Boston, Mass., assignor to Farrington Manufacturing Company, Boston, Mass., a corporation of Massachusetts

Application November 18, 1931, Serial No. 575,775

5 Claims. (Cl. 101—274)

This invention relates to stamping or printing machines for applying sales data to salesmen's manifold books. Heretofore the use of similar machines of the impact type resulted in too much noise by reason of the heavy blow required in order to print through the interposed several thicknesses of paper and carbon, and where a number of such stamping machines are installed in comparatively close proximity, the noise becomes a nerve-disturbing element. Another undesirable feature of the impact machine is that the force of the impact depends on the operator's variable delivery of the same causing, oftentimes, a faint imprint, whereas in the roller type of a machine the pressure of the roller is controlled by a spring of a predetermined and constant tension.

In all types of machines of this general class, difficulty has been experienced in the reversal of the carbon ribbon, the ribbon spools and the feeding mechanism therefor having been enclosed within the housing of the machine, and such arrangement, in addition to requiring the services of a skilled attendant, resulted also in the impossibility of keeping the feeding mechanism free from accumulated dust, and the ribbon itself protected from oil used to lubricate moving parts.

The object of the present invention is to provide a device of this character in which the ribbon spool casings are located on the outside of the pressure head and therefore fully protected from oil that may accumulate inside said head, and in which such spools may be readily removed from their casings to renew the ribbon without the use of tools, and without dissassembling the machine.

Another object of my invention is to provide such a device in which the ribbon-feeding mechanism is located outside the housing and in full view so that the operator may readily observe and remedy any operating difficulty. A further object is to provide a novel means for operating the pressure roller longitudinally of the pressure head and transversely of the ink ribbon, such mode of operation completely eliminating the difficulty heretofore experienced of distorting and bunching the ribbon when the pressure roller operated longitudinally thereof.

A further object of my invention consists in a novel reverse ribbon-feed actuated by means outside the pressure head, a novel means of securing the ribbon to the spool barrel, and a novel indicator to show when the end of the ribbon has been rolled off one of the spools.

A further object of my invention is to provide a multi-part pressure roller made up of units having yielding pressure to compensate for irregularities in the several lines of type on the printing plate.

Various other objects of my invention will hereinafter appear in the detailed description of the illustrative embodiment of my invention shown in the accompanying drawings.

With the foregoing objects in view, my invention comprises in general a base member provided with a stamping-plate-supporting anvil, a pressure head pivotally connected thereto, and a pressure roller pivoted within said head and arranged for movement longitudinally thereof, together with ribbon spools arranged on either side of the printing head and in parallel relation to each other so that the ribbon feed is transverse of said head, and the movement of the pressure roller is transverse of said ribbon.

My invention comprises also an intermittent pawl-and-ratchet ribbon feed arranged to be actuated every time the pressure head is closed on the base member, and a cam arrangement whereby one of the pawls is placed in operative position with respect to its ratchet and the other simultaneously put into neutral position for reversing the direction of the ribbon feed.

My invention contemplates also the use of open-ended forwardly-projecting ribbon-spool casings permitting the instant removal of the spools and completely enclosing and protecting the ribbon, and also means for mounting the spools in said casing in such manner that the tension of the ribbon will exert a frictional drag on the same and keep the section of ribbon with which the roller co-operates always taut.

An illustrative embodiment of the invention is shown in the accompanying drawings in which

Figure 1 is a perspective view of a stamping or printing machine;

Fig. 1*a* is a perspective view of a printing plate, herein shown as a customer's token;

Fig. 1*b* is a perspective view of salesmen's manifold sheets;

Fig. 2 is a fragmentary plan view of a portion of the anvil, with a printing plate mounted thereon;

Fig. 3 is an end view of the anvil showing the printing plate mounted thereon, and the salesman's manifold sheets placed in printing position thereon;

Fig. 4 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. 5 is a transverse section taken on the line 5—5 of Fig. 4;

Fig. 6 is a rear elevation, certain parts being broken away to show the interior mechanism;

Fig. 7 is a front view of the presser head when turned about its pivot to upright position with respect to the base member;

Fig. 8 is a transverse section taken on the line 8—8 of Fig. 4;

Fig. 9 is a longitudinal section of one of the ribbon-spool casings;

Fig. 10 is a perspective view of a form of ribbon spool that may advantageously be used with the stamping machine;

Fig. 11 is a side elevation on an enlarged scale of one of the units of the multi-part pressure roller after the springs have been placed in position;

Fig. 12 is a perspective view on an enlarged scale of one of the flat springs used in each unit of the pressure roller.

In the particular drawings selected for more fully disclosing the principle underlying my invention, 20 is a base member comprising a base 21 and a horizontal platform 22 supporting the anvil 23 on which the printing plate 24, which may be a customer's token, is placed. The said anvil is provided with grooves arranged to receive the said flanges 25 of the printing plate, and with a pin 26 so disposed as to take into an identification notch 27. The anvil also has lateral notches 28 for receiving the tongues 29 of the printing plate, preferably formed of ductile metal, which tongues are bent under the supporting channelled backing plate of light gauge metal which has sufficient stiffness for the purpose, all as set forth in my co-pending application, Serial No. 553,995, filed July 30, 1931.

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 either side of the pressure head are two ribbon-spool casings 35, 35, said casings being shown in the present instance as extending longitudinally of the head, and consisting 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, 37' passing through said flat portion and threaded to 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 spools which carry the same. In the present instance the means employed to secure the pin to the base of the spool casing is a screw 44 passing through the ratchet 45 and threaded into the reduced end shank of the pin. Various modes of attaching the pin to the rear end of the casing to permit of slight movement of said 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, the means shown consists in 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 ensure the intermittent rotational movement of the spools with the ratchets 45, 45', a pin-and-slot connection 49, 50 between the pin 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.

In order to ensure the intermittent feeding of the ribbon, I provide pawls 51, 51' arranged to engage the ratchets 45, 45', respectively. Each pawl is mounted, as shown at 52, 52', on one of the cam levers 53, 53' each pivotally connected to the side walls of the pressure head.

Each cam lever 53, 53' 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. 5, 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, and the other in neutral, position consists in the present instance of the cams 55, 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. When, however, said lever is raised, the cam 55 co-acts with its follower slot and elevates the cam lever 53 to an inoperative position above the casing edge 54, and the cam lever 53' simultaneously descends to its operative position as the cam 55' turns to an inactive position within its follower slot, in which position the closure of the head on the base member will effect the step-by-step clockwise rotation of the ratchet 45. Each cam lever 53, 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 58, 58', each spring being coiled about the stud 60 and terminating in two straight portions 61, 62, resting respectively beneath the cross-shaft 56 and above laterally-projecting pins 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. 10, 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: In the absence of an automatic reversal of the feed, this feature has been found to be desirable. Rollers 68' may be provided for guiding the ribbon across the pressure head.

It frequently happens that type on the printing plate differs slightly in height, producing thereby incomplete imprint, and for that reason it is desirable to so construct the pressure roller as to compensate for such height variations.

In the present instance the pressure roller is made up of a number of independent co-axial discs 69, herein shown as four in number, and said discs are mounted on the roller shaft 70 in such manner that each may assume a position eccentric with said shaft by virtue of resilient means interposed between each disc and shaft. One way in which this result may conveniently be accomplished is shown in Fig. 6 and on a larger scale in Fig. 11. Each disc is provided with a central bore 71, receiving, in the present instance, a ring 72, the outside diameter of which is slightly smaller than the diameter of said bore, although it will readily be understood that said ring may be omitted, and that the diameter of the axle 70 may be made but slightly smaller than the diameter of said bore. A plurality of holes 73, herein shown as six in number, and equi-distantly positioned, are drilled longitudinally through the disc intermediate the circumference and the center thereof, and each of said holes is so positioned as to intersect the bore 71. Disposed in each of said holes is a cylindrical spring 74, the circular length of which is slightly less than the circumference of the hole in which it is placed, so that the ends thereof do not quite meet, as shown at 75. A portion of each spring, in the present instance about one-sixth of the circumference thereof, projects into the central bore 71, and each is tangent to the ring 72, if the same be employed, or to the axle 70, if said ring be not used, and a larger axle having a diameter equal to that of said ring is substituted for the smaller axle and ring.

As above set forth, the pressure roller, preferably constructed as shown in Fig. 11, is arranged for movement longitudinal of the head and transverse 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. 4 so that when the lever 82 is rotated about its pivot from the position shown in Fig. 6 to the substantially horizontal position shown in Fig. 4, the roller will be moved from its normal forward position indicated at 83 (Fig. 4) to its extreme rearward position indicated at 83', thereby pressing the ink ribbon against the manifold sheets 84, which sheets usually consist of a customer's record sheet 85 and two salesmen's record sheets which are, respectively, a tissue sheet 86 and a sheet 87 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, in the present instance, result in making an impression of the printing plate inscription on all three sheets. For maintaining the lever 82 in its normal position (Fig. 6), 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. A stamping machine comprising in combination, a pressure head, ribbon spools mounted on either side of said pressure head, the axes of said spools being parallel with each other and longitudinal of said head, a pressure roller disposed within and pivotally connected to said head, and means for moving said roller longitudinally of said pressure head and transversely of the section of ribbon passing across said pressure head from one of said spools to the other.

2. A stamping machine comprising in combination, a pressure head, a pressure roller disposed within said head, an axle for said pressure roller, a plate secured to said head on either side thereof and extending beyond the lower edges thereof,

each said plate terminating in a laterally-extending end portion projecting at right angles from the plane of said plate, the lower edges of said pressure head and said laterally-extending portions forming slots disposed longitudinally of said head for receiving the respective ends of said axle.

3. In a stamping machine, a pressure roller comprising a plurality of co-axial discs, each having a central bore, an axle for said discs, said axle having a diameter slightly smaller than that of said central bore and each said disc being provided with a plurality of holes intersecting said central bore, and a cylindrical spring disposed in each of said holes, each said spring being tangent to said axle and the circular length thereof being less than the circumference of the hole in which it is placed.

4. A printing machine having, in combination, a bed and a pressure head hinged together for closing and opening movements, means exteriorly of said head for supporting an ink ribbon between said bed and head and transversely thereof, and means for traversing a roller longitudinally of said bed and head when they are closed and in printing relation.

5. A stamping machine having, in combination, a pressure head, two ribbon spools mounted at opposite sides of said head respectively with their axes parallel and longitudinal of the head, a pressure member disposed within said head, and means for moving said member longitudinally of said pressure head and transversely of the section of ribbon passing across said pressure head from one of said spools to the other.

STANLEY ANTHONY.