

(No Model.)

4 Sheets—Sheet 1.

J. S. DUNCAN.
ADDRESSING MACHINE.

No. 579,706.

Patented Mar. 30, 1897.

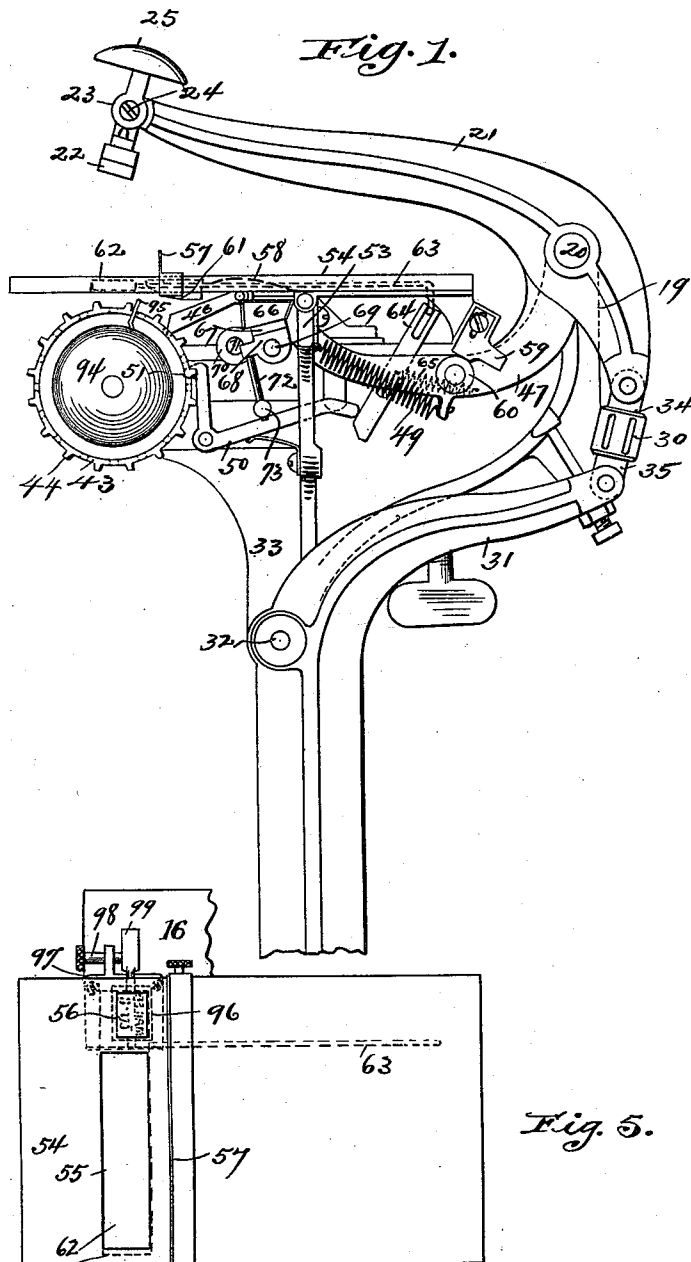


Fig. 5.

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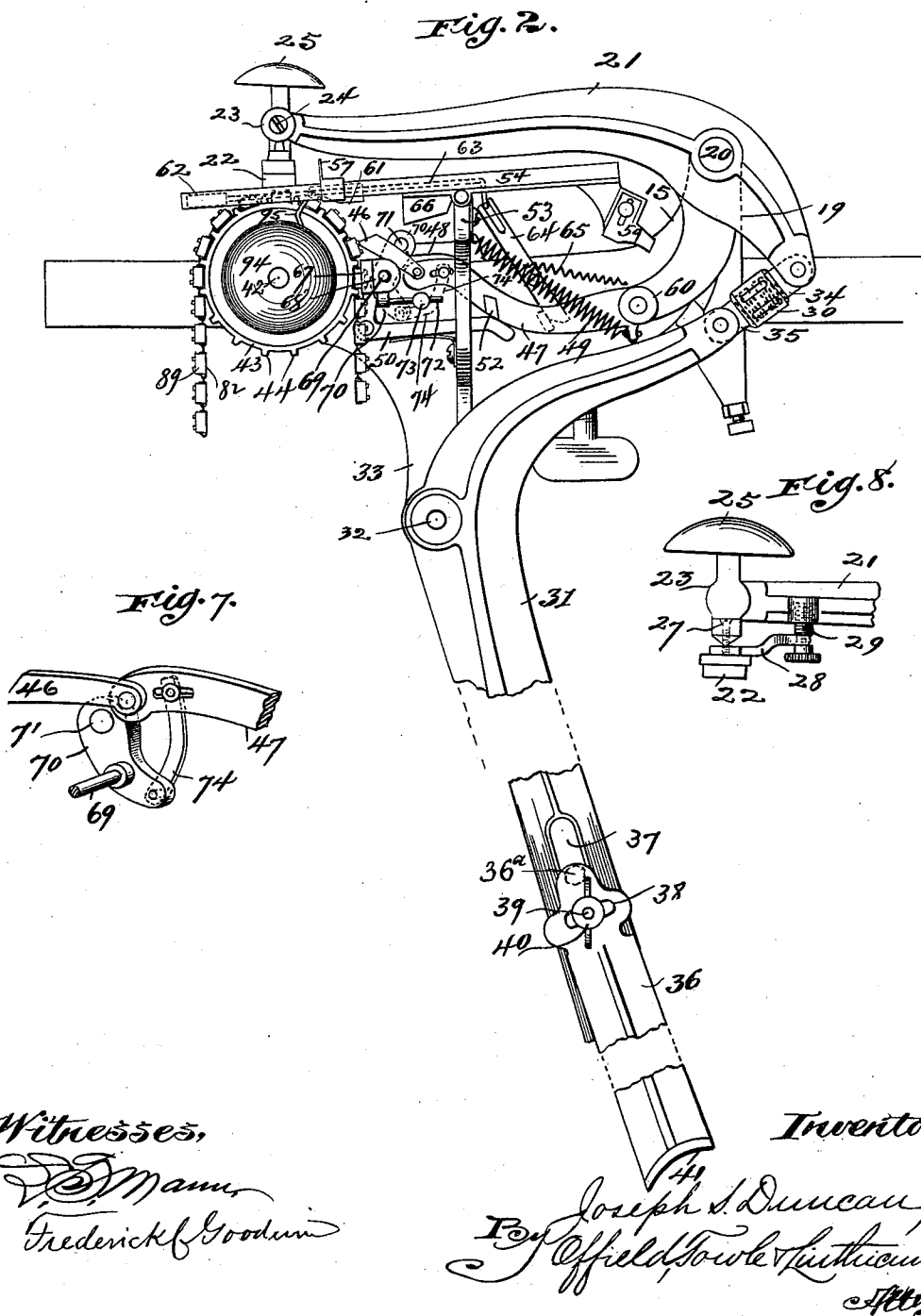
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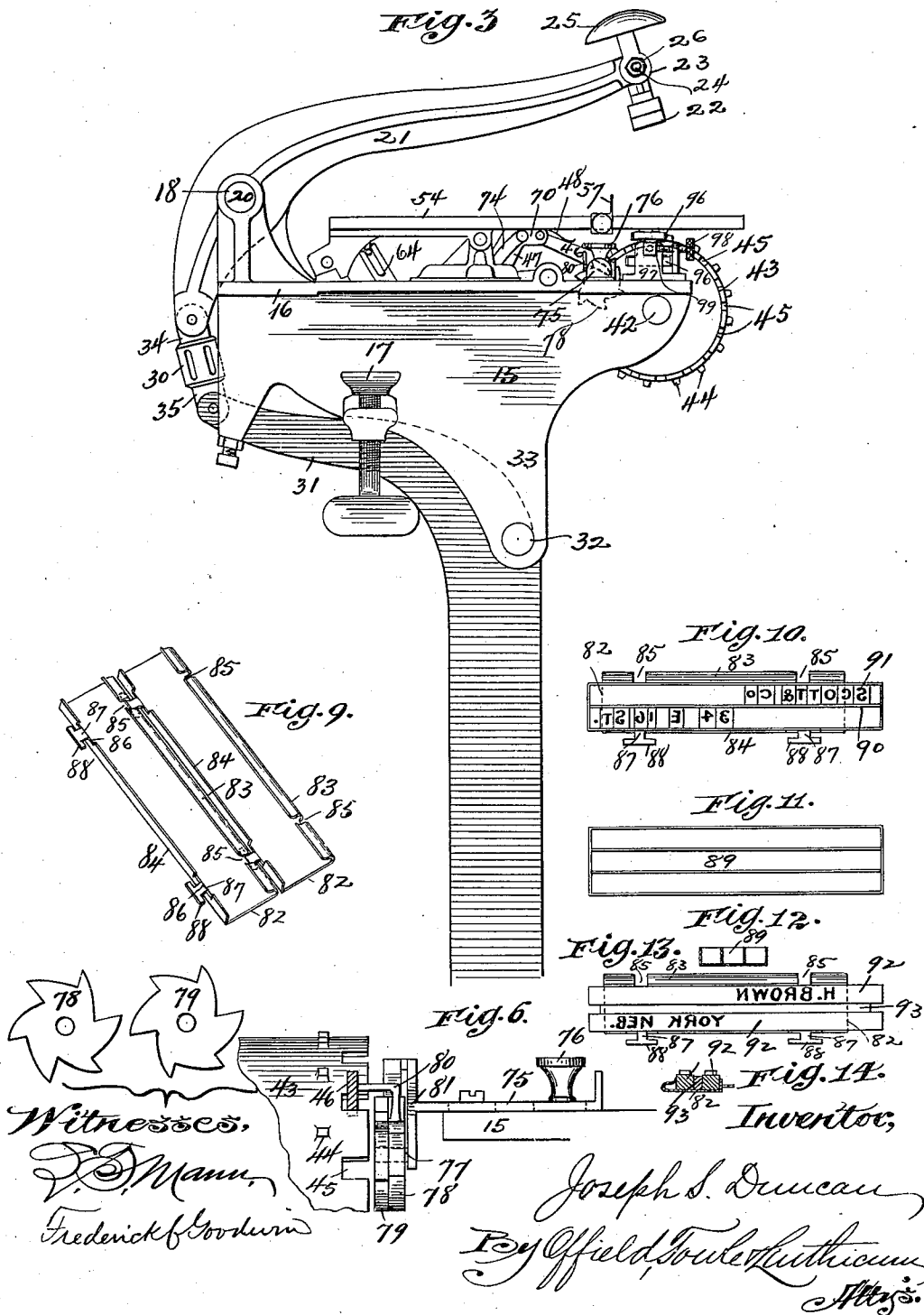
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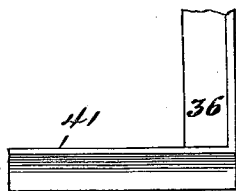
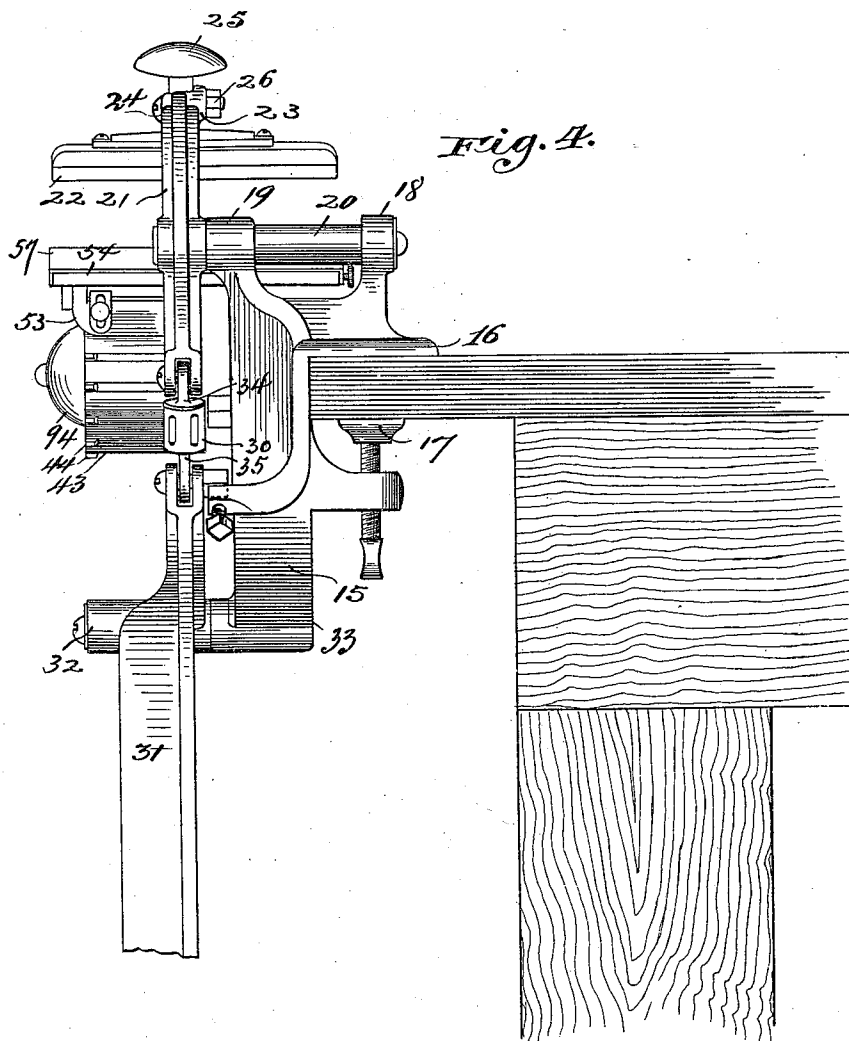
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J. S. DUNCAN.
ADDRESSING MACHINE.

No. 579,706.

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UNITED STATES PATENT OFFICE.

JOSEPH S. DUNCAN, OF CHICAGO, ILLINOIS, ASSIGNOR TO THE ADDRESSO-
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ADDRESSING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 579,706, dated March 30, 1897.

Application filed September 16, 1895. Serial No. 562,625. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH S. DUNCAN, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Addressing-Machines, of which the following is a specification.

This invention relates to that class of devices which are used for addressing envelopes, newspaper-wrappers, postal cards, and for printing the headings on mimeograph letters. These are the more general uses, but machines of this character are adapted to a great many special uses which do not require particular enumeration.

The machine which forms the subject-matter of this invention has some features which are described and claimed in my pending application, Serial No. 482,214, filed August 2, 1893. The features common to both of said machines may be briefly described as follows: An endless type-belt composed of hinged link-plates is suspended upon a single drum or cylinder having a step-by-step revolution and adapted by the said revolution to bring the type-surfaces successively into position for printing. A reciprocating platen forces the surface to be printed into contact with the type-characters mounted upon the link-plates of the type-belt, and at each actuation of the platen an impression is produced, and upon the return of the platen the drum is fed forward one step, thus bringing a new set of type-characters into the printing position. An inking mechanism is provided, consisting of a swinging ink-pad which receives ink from a stationary supply-pad and applies it to the faces of the type-characters in advance of the latter being brought into the printing position. In the machine shown in my said application a reciprocating plunger carrying the platen was employed, and the machine was adapted for hand operation only.

In my present improvements I have changed the construction of many of the parts. I have added mechanism whereby the machine may be worked by foot-power, thus leaving the operator with both hands free for the more rapid performance of his work. I have also added to the machine a date-line holder, whereby a date or other information common

to all of the addresses may be added at the end of each address. I have also provided mechanism whereby the feed of the drum may be effected after two or three operations instead of at each impression, as in my previous machine; and such mechanism is adapted also to prevent the action of the feeding apparatus, so that an impression may be repeated indefinitely. I have also devised a new and superior form of link-plate. These plates are articulated together in a peculiar manner. I have contemplated mounting in these plates two different kinds of type-characters. In one form I employ a separate holder adapted to hold one or more lines of movable type, and in another form I propose to employ printing-bars, one or more of which are mounted in each link-plate and locked therein.

My invention consists in the novel devices and combination of devices hereinafter described, and particularly pointed out in the claims.

In the accompanying drawings, Figure 1 is a side elevation of the upper part of the machine, the operating-lever being partly broken away. Fig. 2 is a similar view, broken sections of the operating-lever added and showing the movable parts in a different position. Fig. 3 is an elevation of the opposite side of the machine and in corresponding position to that shown in Fig. 1. Fig. 4 is a rear view of the machine, part of the operating-lever broken away and showing the machine mounted upon a supporting-table. Fig. 5 is a plan view of a perforated plate having a type-aperture and carrying ink-pads, one of which is movable. Fig. 6 is a detail of the duplicating mechanism. Fig. 7 is a detail of the bell-crank operating-lever and its connections. Fig. 8 is a detail of the platen-head and means for adjusting it. Fig. 9 is a perspective view of two of the link-plates connected. Fig. 10 is a plan view of the same with a movable type-holder and movable type therein. Figs. 11 and 12 are respectively plan views in cross-section through a three-line holder. Figs. 13 and 14 are respectively a plan and a cross-section of a link-plate with two printing-bars therein and showing the means for securing the bars in the plate.

In the drawings, 15 represents a frame or head-block which may have a foot 16 adapted to rest on the top of a table and cooperating with the movable clamp 17 to affix the machine in position for use. This frame or head 15 has two upstanding lugs 18 19, in which are provided bearings for the journal 20. On this journal is mounted a pivoted arm or printing-lever 21, which carries at its forward extremity the platen. In the construction shown in Fig. 1 the platen (marked 22) is carried upon the swinging head 23, the latter being pivoted on the stud 24 and provided with a rounded striking-knob 25. The pivot 24 has a set-nut 26, so that the platen may be adjusted in the arc of a circle, so as to bring its face in proper relation to the face of the type.

In the construction shown in Fig. 8 the head 23 is rigid with the arm 21, and the platen 22 is secured to the head by means of the screws 27. An arm 28, through which the screws also pass, extends rearwardly and has a pivotal connection with an adjusting-screw 29, by the manipulation of which the arm 28 may be rocked, the supporting-screws 27 being adapted to give the platen 22 a slight rocking movement to provide for the necessary adjustment. This adjustment is very slight, the necessity for any adjustment arising from the difference in the thickness of the sheets to be impressed. The arm 21 extends rearwardly of its pivot and is connected through the instrumentality of the link 30 with a pivoted operating-lever 31. The latter is pivoted at 32 to a depending bracket 33 of the frame 15. The link 30 is preferably in the form of a sleeve threaded on its interior and engaging the threaded ends of short link-sections 34 and 35, pivoted, respectively, at their opposite ends to the arm 21 and the lever 31.

The lower end of the operating-lever 31 is constructed in sections, as shown in Fig. 2, the lower section being marked 36 and secured to the upper so as to be adjusted both longitudinally thereof and angularly thereto. For this purpose the lower end of the lever 31 is provided with a slot 37, and the section 36 is provided with a transverse slot 38. A stud 36^a (shown in dotted lines, Fig. 2, and carried by the member 36) enters the slot 37 and forms a guide in the adjustment of the parts 31 and 36 with reference to each other. A bolt 39 and a winged nut 40 serve to clamp said members together in any position in which it may be desired to adjust them. The purpose of the vertical adjustment is to adapt the machine to the convenience of the operator, while the angular adjustment is intended for the same purpose and also to vary the length of the stroke. The lower extremity of the section 36 carries a foot-plate 41. It will be observed that this construction is not analogous to the ordinary foot-treadle movement. The lever 31 swings on the pivot 32, while the arm 21 swings on the pivot 20, and the operating-lever 31 therefore moves to and fro in

the arc of a circle having a long radii, and the movement is much easier than is the operation of the ordinary foot-treadle. It will further be noted that the lever 31 projects rearwardly from its pivot and is connected to the lower end of the arm 21, the link being short. By comparing the position of the parts in Figs. 1 and 2 of the drawings it will be seen that the link and the upper end of the arm 31 form toggle members, and when the lever 31 is oscillated on its pivot 32 this toggle is straightened out from the position shown in Fig. 1 until the pivots are brought into line, as shown in Fig. 2. This gives the greatest power at the conclusion of the stroke, that is, when the impression is being made, while but little power is needed in simply swinging the platen downward toward the face of the type. This makes the machine very easy to operate and is, as before stated, quite different from the ordinary foot-treadle movement.

At the forward extremity of the bracket 33 is provided a bearing for the drum-shaft 42, and upon the said shaft or stud is mounted the drum 43. Said drum has upon its periphery and near its opposite ends circumferential projections or lugs 44, spaced at distances apart corresponding to the width of the link-plates hereinafter described. The inner end of said drum extends beyond the projections and is provided with a series of notches 45, as shown in Figs. 3 and 6. A driving-pawl or feed-dog 46 engages in said notches to feed the drum forward step by step. Said pawl is pivotally mounted at its rear end upon an arm 47, which is integral with the arm 21, and a light spring 48 is intended to hold said pawl down to its work. The depression of the arm 21 will therefore effect the depression of the forward end of the arm 47, withdrawing the pawl 46 from its normal engagement with a slot 45 of the drum, and the spring 48 will hold the pawl 46 down in position to engage the next succeeding slot in the end of the drum upon the return movement of the platen. A spring 49 returns the platen to its normal position, and during the upward movement of the platen the pawl engages and feeds the drum forward one step.

A locking mechanism is provided and comprises an elbow-lever 50, pivoted on the bracket 33 and having an upright member carrying a locking-tooth 51. The rear member of the locking-lever is engaged by a lug 52 on the arm 47. A bracket extending parallel to and in the rear of the drum and marked 53 supports a pivoted plate 54, (shown in plan view in Fig. 5,) having a perforation 55 above the drum and of a length corresponding to the desired length of the line to be impressed. Said plate may also have a second aperture 56, or the aperture 55 may be continued when it is desired to use a date-line. Said plate is pivoted upon the bracket 53 and is adapted to be rocked on its pivot by the striking of the platen 22 on its upper surface. A gage 57 is mounted upon the plate, and the envelop

or other material to be addressed is laid upon the upper surface of said plate in front of the gage and covering the apertures 55 and 56 therein. As the platen descends it strikes upon the paper and carries it down upon the type which are then positioned beneath the apertures. A spring 58 returns the plate to its normal position. In order to rock said plate and to cause it to move a pad carried thereby into contact with the type for inking them, a cam-block 59 is mounted upon the rear end of the plate and is adapted to ride upon a roller 60, carried by a stud on the arm 47. The cam-plate 59 is preferably made adjustable, and either it or the roller 60 may be made laterally movable, so as to free them from engagement in order to permit the plate 54 to be elevated at its front end for placing the type-chain on the drum. The plate 54 carries one or more pads, one of which is stationary and is marked 61. This pad has its lower face inclined, and said inclined face is intended to impinge the type-characters in advance of their being brought into printing position, so as to distribute the ink upon the face of the type. The plate 54 may also be provided with a sliding pad 62 to be used in cases where the addresses are to be repeated and where the dater is used, and it acts also as a distributing-pad for consecutive printing. This sliding pad is mounted in suitable ways formed in the plate 54 and is actuated by a rod 63, which has a bent end entering a slot in the lever 64, pivoted on the frame of the machine and normally retracted by a spring 65. A lug on the arm 47 engages the lever 64 below its pivot, so as to rock it and move the pad 62 forward away from the opening 55, under which it normally rests as the platen descends. This pad is therefore actuated at each printing movement.

The principal means for supplying ink to the printing-faces comprise a stationary pad saturated with ink and contained within a casing 66, which is carried by the bracket 53. The lower side of this case is open and the pad thereof exposed. An ink transferring or applying pad 67, which receives its supply from the pad fixed in the stationary case 66, is mounted in a swinging case 68, pivoted upon a stud 69, carried by a crank 70, mounted on a rock-shaft 71, having its bearing in the frame of the machine. The case 68 has a pin 72 rigidly connected therewith and eccentrically to the axis of the case, said pin passing through an aperture in a rocking stud 73. A link 74 connects the arm 47 with the extremity of the crank 70, the upper end of the link being preferably connected to the arm 47 by a slot-and-pin connection, so as to adjust the throw of the crank. Evidently when the arm 21 is depressed, carrying the platen toward the face of the type, the arm 47 will, through the instrumentality of the link 74, throw the crank, causing the stud thereof to swing the case 68 downwardly in the arc of a circle of which the rock-shaft 71

is the center, and the guide-pin 72 will cause the said case to rock on the stud, turning the face of the pad 67 from a horizontal into a vertical position, in which position it is brought into contact with the face of the type-characters carried upon the drum. A return of the platen to the normal position returns the pad 67 into contact with the supply-pad in the case 68, so that ink is applied to a line of type at each actuation of the printing mechanism.

The mechanism above described is adapted to the depression of the platen, the rotation of the drum, and the supplying of ink, and said mechanism is so arranged that the drum is fed forward one step at each actuation. It may be desired, however, to print from the same type-characters twice or thrice in succession, and in some cases it may be desired to print the same address a greater number of times. I have therefore added to the machine a simple means whereby the feed may be interrupted to accomplish these desired ends. Upon the frame of the machine I mount a sliding plate 75, movably clamped to the frame by the set-screw 76 and having a downturned end carrying a stud 77. On said stud are mounted two disks 78 79. The disks 78 79 may be secured together, but for convenience of manufacture are shown as separately formed. Each of said disks is provided with ratchet-teeth, which are adapted to be engaged by a bent pawl 80, carried by the feeding-dog 46. The disks 78 and 79 are shown in detail to the left of Fig. 6. The disk 79 has six ratchet-teeth, with two deep cuts on opposite sides of its center, said deepened portions permitting the dog 80 to enter to sufficient depth so as to permit the driving-pawl 46 to drop into and engage with a notch 45 in the drum 43. The surface of the disk between these deep notches is so high that the point of the dog 80 and also the point of the pawl 46 is kept raised, so as to prevent the feeding. It is obvious therefore that the feed of the drum 43 will only occur twice at each complete revolution of the disk 79, because, although the point of the dog 80 engaging upon the several teeth advances the disk step by step at each actuation of the printing mechanism, the pawl 46 is held out of engagement except when the dog 80 falls into one of the deep depressions between the ratchet-teeth of the disk 79. The disk 78 is of like construction except that it has three deepened cuts in its periphery and permits the drum to be fed three times at each revolution.

The disks 79 and 78 may be brought into coöperative position with the dog 80 by the sliding of the plate, and by moving the latter over until the point of the dog 80 rides upon the surface 81 the point of the pawl 46 will be held elevated and out of contact with the notches 45 in the drum, and therefore the feeding of the latter will be entirely suspended. If it be desired to feed at each actuation of the printing mechanism, the plate

75 is moved back until the disks are carried out of the path of the dog 80, and then the driving-pawl 46 will engage at each actuation of the printing mechanism, as before described.

The type-carrying mechanism is composed of an endless belt of what are denominated "link-plates." These link-plates are of peculiar construction and are best shown in the perspective view Fig. 9. The body of the plate is marked 82, and it has at one of its side margins an upstanding inwardly-curved flange 83 and at the opposite margin an upstanding straight flange 84. The free margins of these flanges are slightly inturned, so as to constitute springs, and the flange 83 provides a recess by its curved portion. The flange 83 is cut away or notched, as at 85, thus providing an opening for the reception of a link, which is formed out of the substance of the flange 84. The latter is also cut away, as at 86, the metal being turned outwardly and forming a T-shaped link, the shank of which is marked 87 and the head 88. These links serve to articulate the plates together, the head 88 seating itself within the recess in the curved flange of an adjoining plate and the shank working freely in the opening thereof. It will thus be seen that each of the plates has at one edge a pair of links and at the opposite edge openings to receive the links of an adjoining plate; also, that each link is formed from a single sheet or plate of metal which can be readily bent into the form desired and the links there- of provided without waste. The purpose of curving the flange is to provide a suitable recess for the head of the link, and the purpose of turning the flanges inwardly or toward each other is to enable them to tightly grasp the type-holder or type-bars. The links can be rapidly articulated, and when joined may move with all the requisite freedom to enable them to turn readily with the drum. The width of the plate corresponds to the spacing of the lugs 44, each plate fitting closely between two lugs at each end of the drum.

It is not necessary that the plates should be of a length to engage between the lugs on the ends of the drum, as the holders or type-bar carried by the plates may be made to engage said lugs, and, in fact, this is the usual arrangement.

I have shown a machine adapted for two kinds of type-carriers. In Figs. 10, 11, and 12 I have shown a holder composed of a shallow metal tray 89, divided into two longitudinal compartments by a partition 90, as shown in Fig. 10, while in Figs. 11 and 12 I have shown a wider holder, having three compartments to contain three lines of type. The type marked 91 are movable and may be of rubber. When of this material, they can be forced into the holders so as to maintain themselves in place, and by their use the advantage of changing the address at will is attained. In Figs. 13 and 14 I have shown what may be designated as "type-bars" or "slugs"

92. Each bar will contain an address or line of type-characters, and one or more bars may be mounted in each link-plate. I have shown two bars mounted side by side in Figs. 13 and 14, and in order to hold them in the plates the wedge 93 may be driven between them. These type-bars may be made by the linotype process, or they may be the ordinary stereotype-slug. In using the type-bars or slugs no holders therefor are necessary.

From the foregoing description it will be apparent that this machine may be used in several ways. First, it may be employed as a hand-machine, the operating foot-lever being disconnected, and when the foot-lever is used it is not necessary of course to disconnect the striking-head, which is used for the hand operation. The machine may be used for printing a series of addresses in consecutive order, or by adjusting it, as previously described, it may be made to duplicate the names or print each name twice or thrice or to repeat any selected name indefinitely. It may also be used with movable type or with the type-bars, and obviously the construction of the link-plates enables the adding or removing of addresses and the consequent lengthening or shortening of the chain very rapidly.

I have shown an alarm mechanism consisting of a bell 94, Fig. 1, which is carried on the end of the stud upon which the drum rotates, and one of the links will be so extended as to engage the lever 95, operating the bell-clap. By means of this alarm the operator is notified when the several addresses upon the belt have been impressed, or, in other words, when the belt has performed a complete revolution.

I have shown what I designate as a "dater," which comprises a revoluble type-holder 96, journaled in a plate or frame 97, attached to the frame of the machine at the end of the drum. This type-holder has two of its faces provided with seats to receive a type-form. These seats are preferably of unequal width, one being adapted to hold a two-line form and the other a three-line form. By revolving the holder upon its journal either of the forms may be brought into position, and thereby a single or double date-line, together with the word "mailed" or any other desired term, may be imprinted at the end of each address. In order to fix the holder in the adjusted position, the set-screw 98 is employed, which impinges the squared end 99 of the journal of the holder.

The several parts are timed so as to operate in the following manner: Assuming that the duplicator or triplicator is not in use, upon the depression of the platen the movable ink-pad is depressed and rocked forward, so as to apply the ink to the surface of the type-belt. By the same movement the locking-dog is released and the driving-pawl disengaged from the drum and carried back in position to engage a new tooth. The sliding pad carried

by the slotted plate moves out from beneath the aperture before the platen reaches the type-face. At the initial movement of the platen the roller 60 travels back into the recess or notch of the cam 59, permitting the spring 58 to slightly lift the forward end of the plate 54 sufficiently to free the pad 62 from the face of the type. On the feeding movement the parts are so arranged that the movable pad 67 first recedes slightly before the point of the pawl 46 engages the drum, the pawl in this movement riding upon the upper end of the locking-dog 50.

The improvements above described increase the efficiency of the machine and extend the field of its usefulness, and while some of the details of construction may be varied it will be found that the several cooperating mechanisms are, both as to their structure and arrangement, well adapted to the attainment of the objects for which the machine is designed.

It will be understood that several of the accessories of this machine may be conveniently and are preferably omitted when it is desired to be used only for the printing of a series of addresses, as, for example, the duplicating, triplicating, and repeating mechanism, as well as the sliding pad, and also the dating attachment are all readily removable and that the machine is entirely operative without them. In fact, the duplicating arrangement may be entirely removed by the removal of the screw which holds the sliding plate 75 to the bed of the machine.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is as follows:

1. In an addressing-machine, the combination with a revoluble drum adapted to support an endless type-belt, a pivoted arm carrying a platen, a pivoted operating-lever having its upper end extended rearwardly from its pivot and a link connecting said rearward extension and the platen-carrying arm, said link being composed of three members, one of which is a threaded sleeve having threaded engagement with the others of said members, substantially as described.

2. In an addressing-machine, the combination with a revoluble drum, of an endless type-belt mounted thereon, a stationary ink-supply pad and a transferring-pad carried by a pivoted frame, a rock-shaft having a crank thereon and a stud on which the said frame is pivoted and means for rocking said shaft upon its pivot whereby to move said transfer-pad out of contact with the supply-pad and into contact with the printing-face on the type-belt, substantially as described.

3. In an addressing-machine, the combination with a revoluble drum, of an endless type-belt suspended thereon, a pivoted arm having a platen, said arm having a rigid extension, a driving-pawl pivoted to said extension, an ink-transferring pad mounted in a rocking frame, a rock-shaft having a crank

and a stud on which said rocking frame is mounted and a link connecting the pivoted arm and the crank of the rock-shaft whereby the depression of the platen effects the application of ink to the type-belt and the rotation of the drum one step, substantially as described.

4. In an addressing-machine, the combination with a revoluble drum carrying an endless type-belt, of a driving-pawl for advancing said drum step by step, said pawl having a lateral projection or dog and ratchet-disks rotatably mounted adjacent to said pawl and having dissimilar teeth, said ratchet-disks being movable so as to bring the one or the other into operative position with reference to the pawl, substantially as and for the purpose described.

5. In an addressing-machine, the combination with a revoluble drum, of an endless type-belt having printing-forms thereon, a pivoted plate forming the support for the material to be printed and having an aperture above the drum, and a sliding pad moving in ways in said plate, and means for rocking said plate upon its pivot and for sliding the pad in the intervals between the impressions, substantially as described.

6. In an addressing-machine, the combination with a drum for supporting an endless type-belt having printing-forms thereon, a pivoted plate adapted to support the material to be printed and having an aperture above the drum, a pivoted arm carrying the platen, a rigid projection upon said arm provided with a second projection and a cam carried by the pivoted plate and adapted to be engaged by said second projection, a sliding pad and means for moving said pad, the several parts being timed to operate in due order and relation, substantially as and for the purpose described.

7. A type-belt for addressing-machines, composed of a series of detachable link-plates, each of said plates having upturned margins converged toward each other and constituting spring-clamps for retaining type or type-holders and one of said margins being recessed or notched and the other having T-headed links adapted to enter the notches of an adjoining plate, whereby the several link-plates may be articulated to form the endless belt, substantially as described.

8. An endless belt for addressing-machines, composed of a series of hinged links, duplicates of each other, and each having one of its margins upturned and curved in cross-section and notched transversely, and the other margin whereof is provided with integral T-headed links, the shanks whereof are adapted to enter the transverse notches of an adjoining link and the heads whereof are adapted to seat themselves in the seat formed by the curved flange and type-characters or printing-forms mounted in said plates and between the flanges thereof, and adapted to

confine the heads of the links in their seats, substantially as described.

9. In an addressing-machine, the combination with a revoluble drum, of an endless
5 type-belt mounted thereon and having type-forms from which addresses are printed and a holder mounted at the end of the drum and adapted to be rocked or revolved about a

fixed axis and having two or more of its surfaces adapted to hold type-forms for imprint- 10-
ing dates or other matter adjacent to each address, substantially as described.

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