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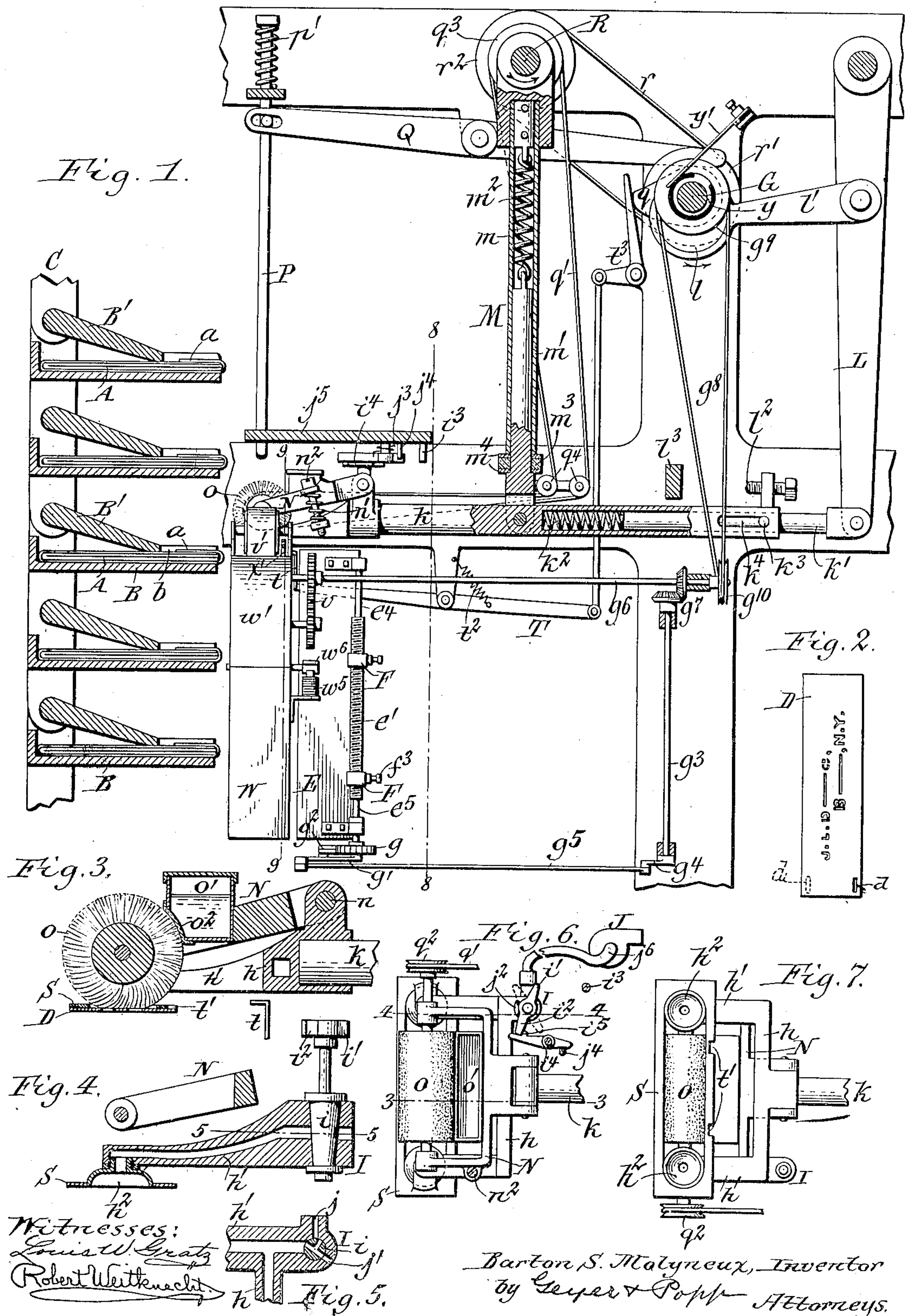
B. S. MOLYNEUX.

PATENTED MAY 19, 1908.

## ADDRESSING MACHINE.

APPLICATION FILED MAY 31, 1904.

2 SHEETS—SHEET 1.



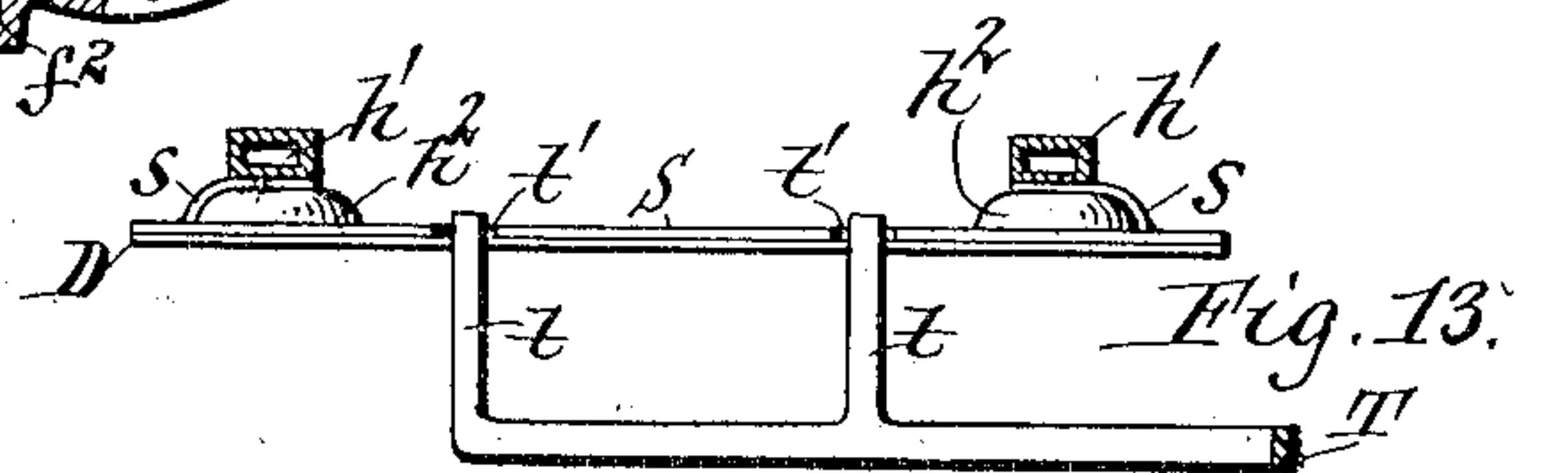
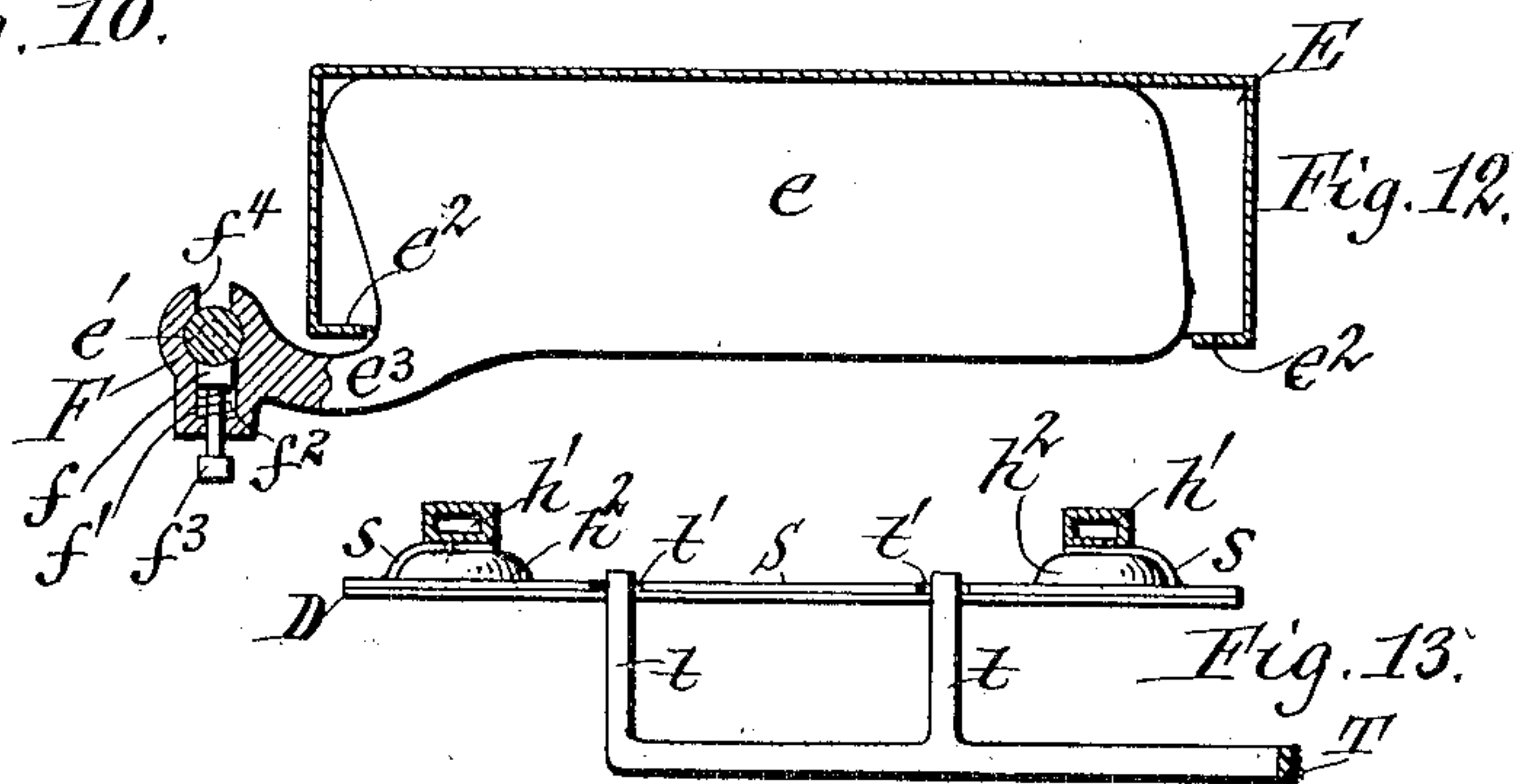
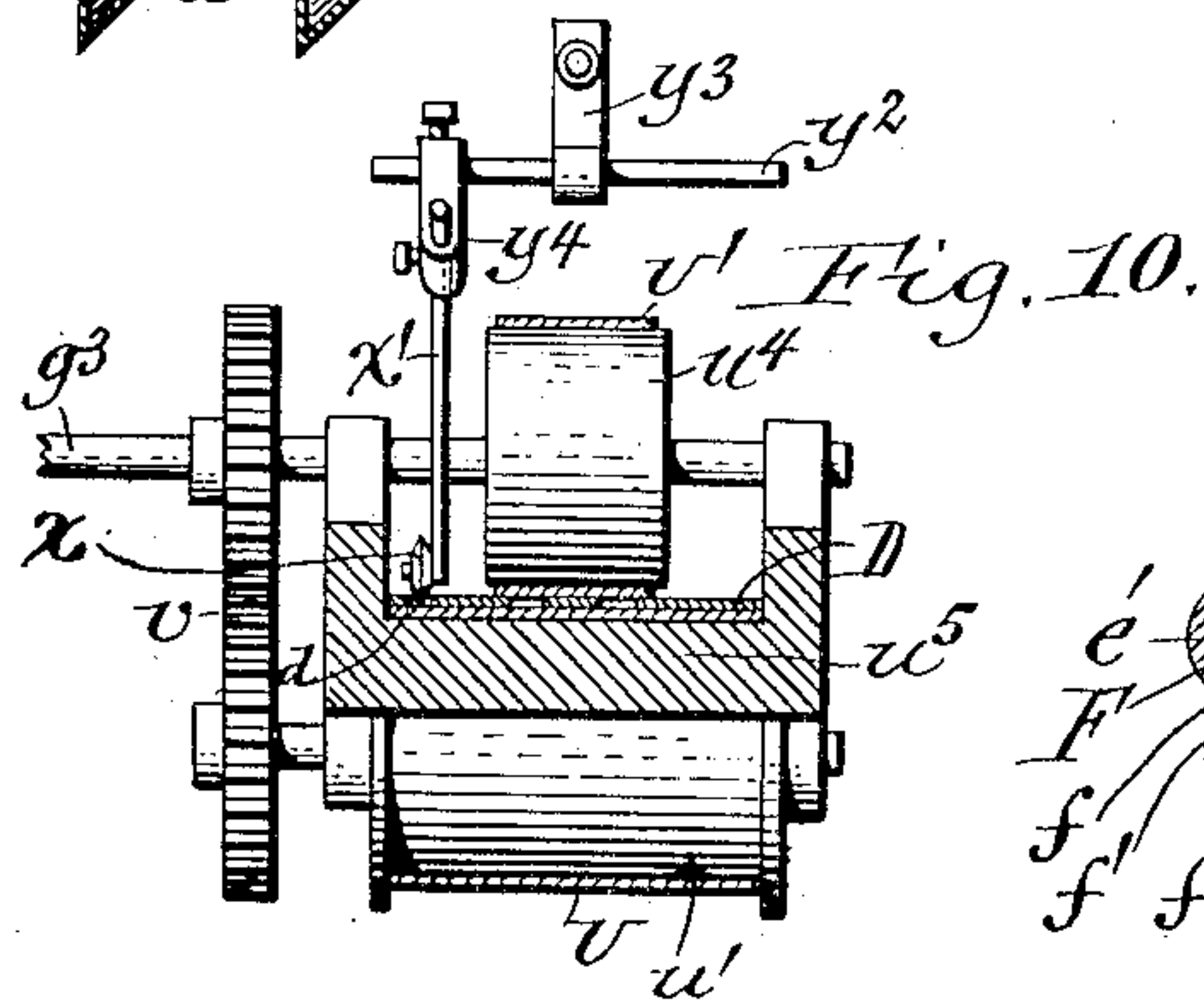
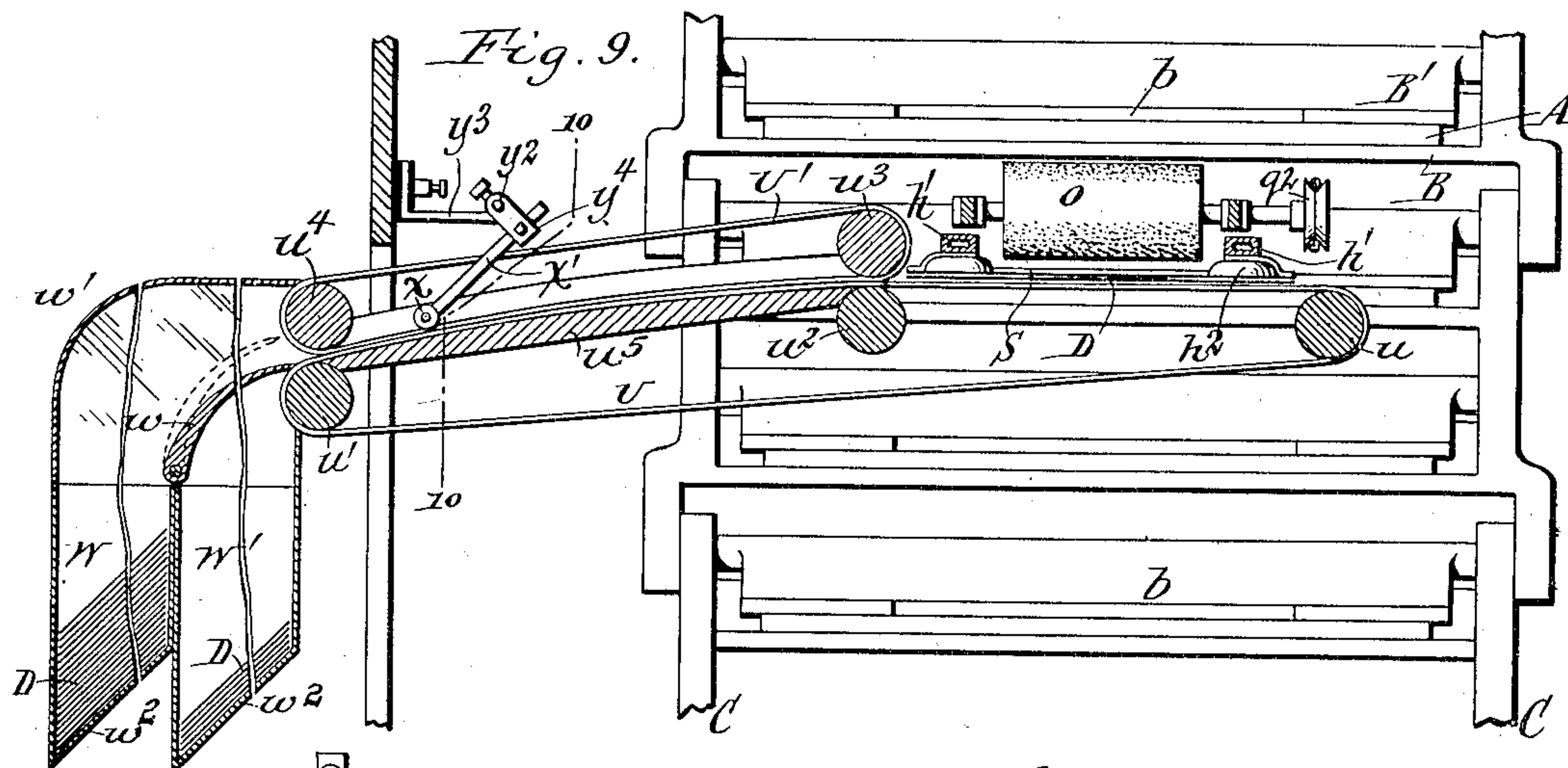
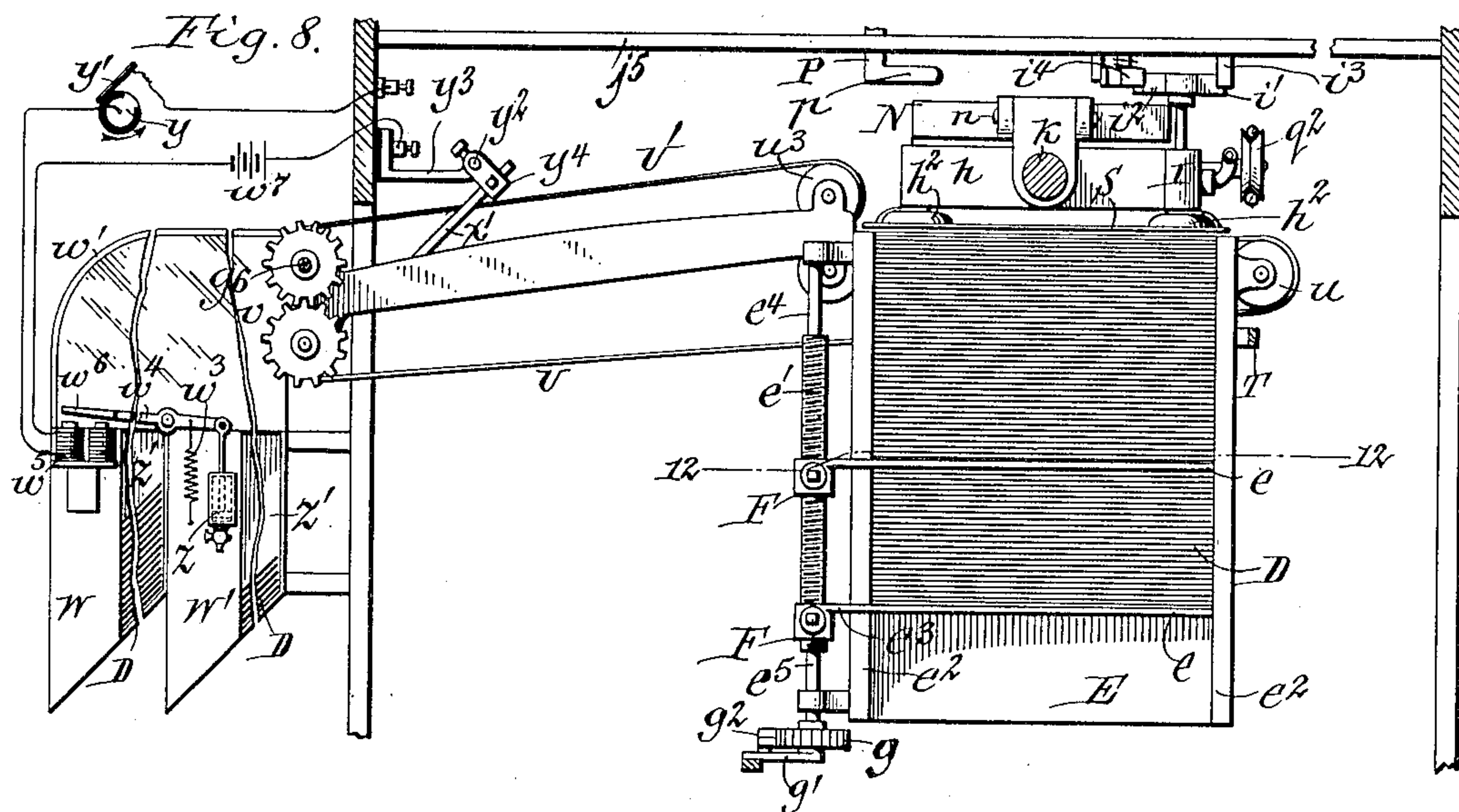
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2 SHEETS—SHEET 2.



Witnesses:  
Louis W. Gratz  
Robert Weitzel

Barton S. Molyneux, Inventor  
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# UNITED STATES PATENT OFFICE.

BARTON S. MOLYNEUX, OF BUFFALO, NEW YORK, ASSIGNOR TO MOLYNEUX AUTO-MAILING MACHINE COMPANY, OF PIERRE, SOUTH DAKOTA, A CORPORATION OF SOUTH DAKOTA.

## ADDRESSING-MACHINE.

No. 888,343.

Specification of Letters Patent.

Patented May 19, 1908.

Application filed May 31, 1904. Serial No. 210,383.

*To all whom it may concern:*

Be it known that I, BARTON S. MOLYNEUX, a citizen of the United States, residing at Buffalo, in the county of Erie and State of New York, have invented new and useful Improvements in Addressing-Machines, of which the following is a specification.

This invention relates to a machine for addressing articles such as newspapers, magazines &c.

The object of this invention is the production of an addressing machine for this purpose employing disconnected address stencils which is simple and durable in construction, which enables the addressing to be effected rapidly and at comparatively small cost and which automatically separates the stencils of the active subscribers from those whose subscriptions have expired.

In the accompanying drawings consisting of 2 sheets: Figure 1 is a fragmentary longitudinal sectional elevation of my improved addressing machine. Fig. 2 is a plan view of one of the stencils which is used in addressing the articles. Figs. 3 and 4 are fragmentary longitudinal sections, on an enlarged scale, in lines 3—3 and 4—4, Fig. 6. Fig. 5 is a fragmentary horizontal section in line 5—5, Fig. 4. Fig. 6 is a top plan view of the stencil carrying and brushing device and connecting parts. Fig. 7 is a bottom plan view of the same. Figs. 8 and 9 are fragmentary vertical cross sections in lines 8—8 and 9—9, Fig. 1. Fig. 10 is a cross section, on an enlarged scale, in line 10—10, Fig. 9. Fig. 11 is a fragmentary sectional view of the stencil retaining frame. Fig. 12 is a horizontal section, on an enlarged scale, in line 12—12, Fig. 8. Fig. 13 is a cross section, on an enlarged scale, showing the means for detaching the stencil from the carrying device.

Similar letters of reference indicate corresponding parts throughout the several views.

The articles which are intended to receive different addresses may be of various kinds and presented successively to the addressing mechanism by a supporting mechanism of any suitable kind. The machine shown in the drawings is designed more particularly for placing the addresses of subscribers on magazines, newspapers and similar flat articles A which have been previously inclosed in a wrapper *a*. Each of these wrapped articles is supported by a clamp or holder composed of a lower fixed jaw B and an upper

movable jaw B<sup>1</sup>, the latter having a recess *b* at its front end of sufficient size to expose that part of the top of the wrapper which is intended to receive the address. A plurality of these holders is mounted on a vertically-movable carrier consisting preferably of an endless chain C which latter may be operated in any desired manner for presenting the newspapers in its holders successively to the addressing mechanism. A presenting mechanism suitable for this purpose is shown and described in an application for patent filed by myself January 22, 1903, Serial No. 140,172.

The address is applied to each article to be mailed by means of a stencil D bearing a perforated address over which ink is brushed after the stencil is applied to the article as is commonly practiced in stenciling. This stencil is preferably constructed of an oblong strip or sheet of water-proof and insulating material such as paraffined or oiled paper which is light, thin and durable and permits of being used repeatedly without becoming unduly worn. The perforated address is placed lengthwise in the center of this strip so as to leave a plain margin on the same, as shown in Fig. 2, for use in holding the stencil while being carried from the supply stack to the article to be addressed and from the latter to the delivery mechanism. The stencils preparatory to being used are stacked or piled within a casing or magazine E having an open top to permit the stencils to be fed off successively from the top of the stack in a horizontal position.

The stack is moved upwardly in the same measure as the stencils are fed off from the top thereof for the purpose of keeping the top of the stack in its proper position relatively to the feeding-off device. This elevating mechanism may be variously constructed, that shown in the drawings consisting essentially of a table, follower or platform *e*, and a rotary upright screw shaft *e*<sup>1</sup>. The rear side of the stack casing is open and provided with two inwardly-projecting vertical flanges *e*<sup>2</sup> which engage the ends of the stack and confine the same within the casing. The table *e* is inserted in the casing through the open rear side thereof and provided with an arm *e*<sup>3</sup> having a sleeve F which embraces the screw shaft. This sleeve carries a screw nut section *f* which is movable laterally in a socket *f*<sup>1</sup> in the sleeve and normally held in engagement with the thread of the screw



shaft by means of a spring  $f^3$ . As the screw shaft turns it raises the nut section together with the table and the pile of stencils. The nut section is provided with a finger piece  $f^3$  whereby the same may be withdrawn from the thread of the screw shaft for permitting the table to be shifted quickly relatively to the screw shaft when adjusting a new lot of stencils to the feeding-off device. At its upper and lower ends the screw shaft is provided with reduced or contracted plain portions  $e^4$ ,  $e^5$ . The sleeve has its bore constructed of substantially the same diameter as the central large threaded part of the shaft so as to fit the same comparatively snug. On that side of the sleeve opposite the nut section the same is provided with a laterally opening slot  $f^4$  which is equal in width to the diameter of the reduced portions of the screw shaft. For connecting the table with the screw shaft the slotted portion of its sleeve is first slipped over the lower contracted part  $e^5$  of the shaft and then moved upwardly so that the bore of the sleeve engages with the enlarged or threaded portion thereof in which position it is retained by the spring pressed nut section. The table remains in its coupled position with the screw shaft and is raised thereby until its sleeve reaches the upper contracted part of the shaft when the further upward movement of the table is arrested. When the table reaches this position another table carrying an additional supply of stencils is applied to the lower end of the screw shaft and then moved upwardly until the top of the new lot bears against the underside of the table above carrying the lot which is nearly exhausted. The upper table can now be withdrawn rearwardly from between the upper and lower parts of the stack and its sleeve may also be detached from the upper contracted portion of the shaft by slipping the sleeve thereof off from the upper part of the shaft this being possible by means of the slot in the sleeve. In this manner the supply of stencils can be replenished at the bottom of the stack without interfering with those at the top thereof, thereby permitting the machine to be run without interruption.

The screw shaft  $e^1$  may be actuated by any suitable means but is preferably rotated intermittently from a main horizontal shaft  $G$  in the upper part of the machine by means of a ratchet wheel  $g$  applied to the lower end of the screw shaft, a ratchet arm  $g^1$  provided with a pawl  $g^2$  engaging with the teeth of the ratchet wheel, an upright shaft  $g^3$  provided with a crank  $g^4$  at its lower end which is connected by a rod  $g^5$  with the ratchet arm, a longitudinal intermediate shaft  $g^6$  connected by bevel gears  $g^7$  with the upright shaft and a belt  $g^8$  passing around pulleys  $g^9$ ,  $g^{10}$  on the main and the intermediate shafts, as shown in Fig. 1.

The stencils are carried successively from the top of the supply stack to the article to be addressed and then to the delivery mechanism by means of a carrying or feeding device. This feeding device comprises preferably a pneumatic gripper which consists essentially of a U-shaped frame having a hollow cross bar  $h$ , two hollow arms  $h^1$  projecting horizontally forward and downwardly-projecting suction cups  $h^2$  arranged on the ends of the arms and having their cavities connected by the conduit formed in the cross bar and arms of the frame. This gripper is reciprocated horizontally so that its suction cups pass from the top of the supply stack to the article holders in front of the same and then back again to the supply stack. While the suction cups of the gripper are over the stencil supply stack, the air is exhausted from the same causing the uppermost stencil of the stack to be drawn against the cups and adhere firmly thereto. The stencil is moved forwardly by the gripper to the article holder where the address on the stencil is marked upon the article by a suitable inking device and then the stencil is carried away from the article holder to the delivery mechanism. This delivery mechanism is preferably located between the supply stack and the path of the article holders, as shown in Fig. 1 of the drawings. When the stencil on its return movement with the gripper reaches the delivery mechanism the interior of the suction cups is disconnected from the air exhausting device and connected with the atmosphere, thereby venting the cups or breaking the vacuum therein which releases the stencil and permits the same to drop upon the delivery mechanism.

The means for alternately connecting the suction cups with the exhausting device and the atmosphere consists preferably of a valve  $I$  mounted on the gripper frame and having its rotary vertical plug  $i$  provided with oppositely projecting arms or tappets  $i^1$ ,  $i^2$  which are adapted to engage respectively with a fixed stop  $i^3$  and a yielding stop or latch  $i^4$ . At the end of the backward movement of the gripper its suction tappet  $i^1$  engages the stop  $i^3$  and turns the valve plug in the direction for connecting the gripper conduit with a port  $j$  leading to the eye of a fan  $J$  or other exhausting or suction device, causing the stencil to be drawn against the gripper which latter at this time is over the supply stack. During the forward movement of the gripper the opposite tappet  $i^2$  of the valve plug engages the latch  $i^4$  and deflects the same so that the position of the valve is not disturbed during its forward movement in which it connects the suction cups of the gripper with the air exhausting device. When the stencil during its return movement with the gripper reaches a position over the delivery mechanism, the venting tappet  $i^2$  of the valve en-



gages a shoulder  $i^5$  on the latch causing the valve plug to be turned in the opposite direction for connecting the gripper conduit with the vent port  $j^1$  leading to the atmosphere, as shown in Fig. 5, whereby the stencil is released from the gripper and permitted to drop upon the delivery mechanism below the same. As the gripper continues its backward movement the venting tappet  $i^2$  deflects the latch so that the latter clears the path of the venting tappet. During the last part of the return or backward movement of the gripper its suction tappet engages the fixed stop  $i^3$  and is turned thereby in the direction for connecting the gripper conduit with the exhaust device, as shown by dotted lines in Fig. 6.

The oscillating movement of the tappets and that of the valve plug may be limited by any suitable means, for instance, by a stop  $j^2$  arranged on the exterior of the valve casing in position to be engaged alternately by the tappets of the valve plug. The latch is pivoted to turn horizontally and held with its free end or shoulder in the path of the venting tappet by means of a spring  $j^3$ , the movement in this direction being limited by a stop  $j^4$  which is engaged by a tail on the latch. The latter together with the stops may be supported upon any suitable stationary part of the machine, for instance, on a cross bar or plate  $j^5$  arranged above the gripper. The suction port of the gripper valve may be movably connected with the air exhausting device, the preferred means for this purpose consisting of a flexible tube  $j^6$ . The preferred means for horizontally reciprocating the gripper between the stencil supply stack and the article holder is shown in the drawings and is constructed as follows:

$k$ ,  $k^1$  represent the two sections of a telescopic rod, the tubular outer section  $k$  of which is connected at its front end to the rear part of the gripper while the inner section  $k^1$  slides at its front end in the outer section and is connected at its rear end to the lower end of a non-extensible rock arm L. The latter is pivoted at its upper end on the main frame and may be oscillated by any suitable means, for instance, by an eccentric  $l$  arranged on the main driving shaft and having its surrounding strap connected by a pitman  $l^1$  with the rock arm. The sections of the gripper shifting rod are yieldingly held in an extended position by means of a spring  $k^2$  arranged in the tubular outer section and bearing at its ends against the bottom of the bore therein and the front end of the inner section, as shown in Fig. 1. The extension of these sections relatively to each other is limited by means of a pin  $k^3$  arranged on the inner rod section and engaging with the rear end of a longitudinal slot  $k^4$  formed in the outer section. During the main part of the forward movement of the shifting rod under the ac-

tion of the eccentric, the sections of the same remain distended and operate as though the rod were constructed of one piece. When the stencil during its forward movement with the gripper and rod has reached the proper position over the article in the holder, the continued forward movement thereof is arrested while the positively moving actuating mechanism completes its stroke in that direction. The stop device for this purpose may be variously constructed but consists preferably of an adjusting screw  $l^2$  arranged in a lug on the tubular section of the rod and adapted to engage with a stop  $l^3$  arranged on the main frame. As the rear section of the reciprocating rod completes its forward movement under the action of the eccentric, the gripper is not affected thereby and only results in compressing the spring  $k^2$ . During the subsequent backward movement of the front rod section under the action of the eccentric, the same moves independent of the rear section and the stencil carrying gripper until the pin  $k^3$  again engages the rear end of the slot  $k^4$  after which the parts again move backwardly together up to the rear end of the stroke. By this elastic or slack connection between the gripper and its actuating mechanism it is possible to employ an actuating device such as an eccentric the throw of which is always constant, positive and smooth and permits of accurately adjusting the point at which the stencil is arrested during its forward movement for properly applying the address to the article in the holder. This slack connection between the gripper and its actuating mechanism also furnishes a period of rest at the front end of the stroke of the gripper during which period the stencil is applied to the article in the holder and the address thereof brushed upon the article.

During the horizontally-reciprocating movement of the gripper, the same is elevated slightly above the top of the supply stack, the article in the holder and the delivery mechanism so as to avoid interference therewith. For this purpose the front section of the carrying rod is pivotally connected with the upper part of the frame by an extensible or telescopic rock arm or link M, the upper tubular section  $m$  of which is pivoted on the frame while the lower inner section  $m^1$  is pivoted at its lower end on the gripper rod and is yieldingly connected with the upper section by means of a spring  $m^2$ . The upward movement of the lower arm section relatively to the upper section is limited by a stop which is preferably constructed in the form of a cushion so as to avoid jarring between these parts when they come together. This cushion consists of a rubber washer  $m^3$  arranged upon the lower arm section between two metal washers  $m^4$  the lower one of which engages with a shoulder on the lower arm section while the upper washer is adapted to en-



gage with the lower end of the upper arm section, as shown in Fig. 1. During the forward and backward movement of the gripper rod, the same is held in its elevated position by the spring  $m^2$  the movement in this direction being limited by the rubber buffer on the lower arm section engaging with the lower end of the upper arm section. The length of the non-extensible rock arm L and the extensible rock arm M in its shortened condition is the same so that the gripper and its rod remain in a horizontal position while traveling backward and forward. When the gripper is momentarily at rest in its foremost position, the same is depressed sufficiently to engage the stencil held thereby with the article in the adjacent holder and at the same time the address is brushed through the stencil upon the article. The devices whereby this is accomplished are preferably constructed as follows:

N represents a brush frame of U-shaped construction which is arranged above the gripper frame and pivotally connected thereto at its rear end by a horizontal pin  $n$ . The brush frame is normally held in an elevated position relatively to the gripper frame by means of a spring  $n^1$  interposed between lugs on the brush and gripper frames, the separation of these frames being regulated by means of a screw  $n^2$  which connects these lugs and passes through the spring for holding the latter in place.

O represents a rotary inking brush arranged transversely between the suction cups above the stencil and journaled in the front ends of the arms of the brush frame. Normally the lower side of this brush is held out of contact with the stencil by the spring  $n^1$  which elevates the brush frame. Ink may be supplied to this brush in any suitable manner, for instance, by means of an ink fountain  $o^1$  mounted on the brush frame and an absorbent pad  $o^2$  whereby the ink is delivered through an opening in the lower part of the fountain upon the periphery of the brush.

P represents a vertically-movable shifting bar whereby the gripper and brush frames are depressed. This bar is guided on the main frame above the brush and gripper frames and provided at its lower end with an enlargement or finger  $p$ . Normally this bar is held in an elevated position by a spring  $p^1$  so that its lower end is above the path of the brush frame. The shifting bar is so arranged that when the brush frame reaches the front end of its movement it stands underneath the lower end of said bar. While the brush frame is in its foremost position the shifting bar is depressed and engaged with the brush frame causing the latter to be moved downwardly. The spring  $n^1$  is sufficiently stronger than the spring  $m^2$  so that the brush and gripper frames are held rigidly in a distended position relatively to each other causing

these frames to move downwardly in this position and straining the spring  $m^2$  while the shifting bar is effecting the first part of its downward movement in engagement with the brush frame. After the downward movement of the gripper has been arrested by engagement of its stencil with the article in the holder the continued downward movement of the shifting bar overcomes the tension of the spring  $n^1$  causing the brush frame to be depressed relatively to the gripper frame during the last part of the downward movement of the shifting bar, whereby the brush is engaged with the stencil and brushes the ink on its periphery through the stencil onto the article in the holder. During the first portion of the subsequent upward movement of the shifting bar the spring  $n^1$  expands first and raises the brush frame upwardly to the limit of its adjusting screw and thereafter the gripper frame together with the stencil and other parts connected therewith is elevated by the spring  $m^2$ , thereby raising the stencil from the marked article preparatory to carrying the same backwardly to the delivery mechanism. A convenient means for effecting the downward movement of the shifting bar P consists of a rock lever Q pivoted on the main frame and having its front arm connected with the shifting bar while its rear arm is engaged by a rotary cam  $q$  on the main shaft, as shown in Fig. 1. The means shown in the drawings for effecting the rotary movement of the inking brush consists of a belt  $q^1$  passing at one end around a pulley  $q^2$  on the brush shaft and at its opposite end around a pulley  $q^3$  on a countershaft R while its intermediate parts pass around idle rollers  $q^4$  mounted on the lower part of the telescopic rock arm, and a belt  $r$  passing around pulleys  $r^1$ ,  $r^2$  on the main and countershafts. For convenience, the countershaft R serves as a pivot for the upper section of the extensible rock arm M which latter is provided at its upper end with a hub loosely mounted on this shaft.

In order to hold the stencil firmly upon the article and prevent the same from becoming displaced while the brush is operating upon the same, a retaining frame S is provided which is constructed to engage only with the marginal portion of the stencil leaving the central part which bears the address exposed and accessible to the inking brush. The latter moves toward and from the stencil through the open central part of the retaining frame. The latter frame is of substantially the same dimensions as the stencil and its face or underside is flush with the face or edge of the suction cups so that these parts bear uniformly on the stencil. The retaining frame may be constructed and secured to the gripper frame in any suitable manner but is preferably constructed to fit closely around the suction cups and provided with up-



wardly-opening ears  $s$  which are perforated and clamped between the arms of the gripper frame and the suction cups, the cups being preferably provided with screw threaded shanks or nipples passing through said ears and entering screw threaded sockets in said arms, as shown in Fig. 4.

In order to insure the removal of the stencils when the same reach the delivery mechanism on their return movement with the gripper, a stripping device is provided comprising one or more hook shaped strippers or fingers  $t$  arranged in rear of the delivery mechanism and mounted on one arm of a rock lever  $T$ . During the first part of the backward movement of the gripper with the stencil, these fingers are in an elevated position, as represented in Figs. 3 and 13, so that their upper ends stand in the path of the stencil. When the stencil reaches the delivery mechanism its lower or rear edge engages the stripping fingers the latter being then quickly lowered below the path of the stencil retaining frame, causing the hooks of the fingers to engage the top of the stencil and forcibly removing the same from the suction cups if the stencils have a tendency to adhere to the cups. The retaining frame is provided in its rear edge with notches  $t^1$  which are in line with the hooks of the stripping fingers and permit these hooks to move downwardly into engagement with the stencil. In the lowered position of the stripping fingers the same are out of the path of the retaining frame permitting the latter to continue its rearward movement unobstructed to the stencil supply stack preparatory to lifting the next stencil from the same. The oscillating movement of the stripper lever  $T$  may be effected in various ways. As shown in the drawings, this lever is turned in the direction for lowering the stripping fingers by means of a spring  $t^2$  while the reverse movement of the lever for raising the stripping fingers is produced by means of an elbow lever  $t^3$  having one of its arms connected by a rod with the stripper lever while its opposite arm is engaged by the same cam  $q$  which actuates the shifting bar  $P$ .

The preferred form of delivery mechanism for taking care of the stencils as they are discharged from the gripper is constructed as follows:  $U$  represents a main lower endless belt which has its inner receiving portion arranged horizontally underneath the place where the gripper releases the stencil while its delivery portion extends laterally to one side of the machine. This belt passes at its ends around receiving and delivering pulleys  $u, u^1$  while its intermediate part passes around a guide pulley  $u^2$ .  $U^1$  represents an upper auxiliary delivery belt which is arranged above the main or lower delivery belt and co-operates with the delivery portion thereof for carrying the stencils successively away

from the gripper. This auxiliary belt passes at opposite ends around a receiving roller or pulley  $u^3$  arranged above the guide pulley of the lower belt, and a delivery roller or pulley  $u^4$  arranged above the delivery roller of the lower belt. When the stencil is released from the gripper it drops on the receiving portion of the lower belt  $U$  and is carried laterally thereby to the side of the machine where receptacles are provided for the same, this movement of the stencil being rendered more positive by means of the auxiliary belt engaging with the top of the stencil after reaching the delivery portion of the main belt whereby the stencil is firmly gripped between the auxiliary belt and the delivery portion of the main belt and reliably propelled from the gripper to the side of the machine. For the purpose of increasing the grip of the belts upon the stencils, those portions of both belts between the guide and delivery pulleys are deflected upwardly by means of a board or table  $u^5$  having a convex top, as shown in Fig. 9. As the belts pass through this table, they receive an upward curvature together with the stencil between the same, thereby increasing the hold of its belts on the stencil and causing the latter to be moved forward with certainty. The two belts are caused to move in unison by means of intermeshing gear wheels  $v$  arranged on the shafts of their delivery pulleys and motion may be imparted to the same in any suitable manner, for instance, by connecting the longitudinal shaft  $g^6$  with the shaft of the upper delivery roller  $u^4$ .

If desired, the stencils may be discharged from the carrying belts into a receptacle or box of any kind where they are collected until again required for addressing a new lot of mail matter to the same list of subscribers. When the machine is intended for addressing newspapers, magazines or similar articles, the subscriptions for which expire at different times, means are provided for automatically separating or sorting the stencils of subscribers whose subscriptions have expired from the stencils of the subscribers whose subscriptions have not expired and are still in force. The means for this purpose is preferably constructed as follows:  $W, W^1$  represent two collecting receptacles or boxes arranged one in front of the other below the discharge ends of the stencil carrying belts.  $w$  represents a switch which is pivoted at its lower end between the receiving boxes at the upper ends thereof and curves upwardly with its free end to a point near the delivery rollers of the carrying belts. When the switch is shifted to the position in which its free end is below the path of the stencils as they are ejected from the carrying belts, as shown in Fig. 9, the stencils are directed by the switch from the belts into the outer receptacle  $W$  while upon raising the switch so that its free end is above the path of the stencils, as



shown by dotted lines in Fig. 9, the stencils issuing from the belts will be directed downwardly into the inner receptacle  $W^1$ . The switch is preferably inclosed by a hood  $w^1$  which forms an upward continuation of the boxes and is provided with glass sides so that the operation of the switch may be visible. The bottom  $w^2$  of each box is preferably inclined outwardly, as shown in Fig. 9, which causes the stencils to stack uniformly upon each other instead of piling up promiscuously in the boxes.

The shifting of the switch  $w$  is effected automatically by a mechanism which is controlled by the stencils. Normally the switch is retained in the position shown in Fig. 9 by means of a spring  $w^3$  connected with the inner arm of a rock lever  $w^4$  on the switch shaft. The switch is turned in the opposite direction for discharging the stencils into the inner box by means of an electro magnet  $w^5$  which attracts an armature  $w^6$  on the outer arm of the rock lever. The circuit of the electro magnet contains a battery  $w^7$  and one of its terminals is formed by the main carrying belt which is constructed of a strip of sheet metal while the other terminal is formed by a brush  $x$  engaging with the upper operative part of the main belt. The brush is constructed in the form of a roller which is pivoted on the lower end of a rod  $x^1$ . Each of the stencils is provided in its marginal portion with a selecting or sorting slit or perforation  $d$  the location of this slit being determined according to the time when the subscription of the particular subscriber expires. The stencils representing the class of subscribers whose subscriptions expire at the same time have their selecting perforations all arranged in the same longitudinal line or place but the stencils of each class of subscribers whose subscriptions expire at different times have their selecting perforations arranged in different longitudinal lines or places on the stencils. If therefore the stencil of a subscriber whose subscription is still active is carried forward between the carrying belts, the brush will be held out of engagement from the contact belt  $U$  during the entire time that the stencil is passing between the same by the solid or unbroken part of the stencil which acts as an insulator, thereby retaining the switch  $w$  in the position shown in Fig. 9 in which the active stencil will be discharged into the outer box. If the stencil of an inactive subscriber whose subscription has expired is carried forwardly by the carrying belts the selecting perforation therein will be presented to the brush permitting the latter to pass through the perforation into engagement with the contact belt and close the electric circuit of the electro magnet causing the latter to turn the switch  $w$  into the position shown by dotted lines in Fig. 9 whereby this stencil will be delivered

into the inner box which receives the inactive stencils of expired or discarded subscriptions. The electric circuit is automatically held open at all times excepting when a stencil is due between the terminals of the magnet. This is preferably done by means of a commutator switch composed of a rotary collar  $y$  mounted on the main shaft and having metallic and insulated sections on its periphery and a brush  $y^1$  engaging with the periphery of the collar and mounted on the adjacent part of the main frame. This switch is so timed that the circuit is closed at this point after the front edge of the stencil has passed underneath the brush and lifted the same from the metal belt  $U$  and again opens the circuit before the brush passes off the rear end of the stencil. By this means the electric circuit for energizing the electro magnet will only be closed when the stencil of a subscriber whose subscription has expired passes with its opening underneath the brush in which case the contact brush touches the metal belt and causes the switch  $w$  to be shifted for directing the respective stencil into the inner box.

The upper delivery belt  $U^1$  is made of insulating material such as cotton or rubber so that the same will not interfere with the operation of the electrical detector and the same is narrower than the metallic belt so as to leave room on opposite sides thereof for exposing the selecting perforations in the stencils. The brush  $x$  is capable of transverse adjustment relatively to the exposed upper surface of the stencils and metal belt so that the same may be shifted for every run of the addressing mechanism and pick out or discard the stencils of subscribers whose subscriptions expire at that particular run. The means shown in the drawings for effecting this transverse adjustment of the contact consists of a supporting rod  $y^2$  arranged transversely above the auxiliary belt, an arm  $y^3$  carrying the supporting rod, and a block  $y^4$  which is adjustably connected with the brush rod and said supporting rod.

When the class of subscribers whose subscriptions are about to expire have their selecting perforations formed in the stencils, as shown in full lines in Fig. 2, the brush is adjusted to engage with all the stencils along this part thereof, whereby the expired or inactive stencils will be separated from those that are still active. Assuming that the class of subscribers whose subscriptions expire during the next run have their selecting perforations located as indicated by dotted lines in Fig. 2, the brush will be adjusted to trail over the stencils along this part of the same. By thus automatically discarding or sorting the expired from the unexpired subscriptions the expense of keeping a separate record for this purpose is eliminated.

In order to prevent the switch from imme-



diately resuming its normal position after being turned by the electro magnet, a dash pot  $z$  is provided the plunger of which is connected with the inner arm of the switch rock lever  $w^1$ . When the circuit through the magnet is momentarily closed by the brush  $x$  passing through the selecting perforation of one of the stencils, the dash-pot prevents the immediate return of the switch from the position shown in dotted lines to that shown in full lines, Fig. 9, notwithstanding the fact that the circuit at the brush is again immediately broken by the solid insulating portion of the stencil in rear of its selecting perforation. The operation of this dash-pot is so timed that it holds the switch in this discarding position a sufficient length of time to permit the inactive stencil to reach the inner or discard box and then resumes its normal position in which the stencils of the active subscribers are directed into the outer active box. The side of each gathering box is provided with a vertical slot  $Z^1$  through which the operator can observe the piling up of the stencils and through which the same may be removed from time to time and filed away for the next run.

In my improved addressing machine, the stencils are not provided with individual retaining frames or holders for keeping them in shape while in use this being unnecessary inasmuch as the single retaining frame carried by the gripper serves as a holder or retainer successively for each stencil. By this means not only is a great saving in cost effected but the stencils can also be stored more compactly and a greater number can be placed in the supply stack at one time thus reducing the amount of attention required of the operator in running the machine.

I claim as my invention:

1. In a machine of the character described, the combination of a plurality of holders for supporting articles to be addressed, a supply device for supporting a stack of unused address stencils, a delivery device for receiving the used address stencils, a pneumatic gripper for shifting said stencils, means for moving said gripper successively from the supply device to the holders, to the delivery device and back to the supply device, a suction device having an air conduit, and a valve mechanism operating to connect the gripper with the conduit of said suction device while the gripper is moving from the supply device to the holders and to the delivery device and to connect said gripper with the atmosphere when the gripper reaches the delivery device and while moving the latter to the supply device, substantially as set forth.

2. In a machine of the character described, the combination of a plurality of article holders, a device for supplying unused stencils arranged in front of said holders, a delivery device receiving the used stencils and

arranged between said holders and the stencil supplying device, a pneumatic gripper which carries the stencils successively from the supplying device to the holders and delivery device, a valve moving with said gripper and capable of connecting said gripper either with a suction device or with the atmosphere, tappets arranged on the stem of said valve, and stops coöperating with said tappets for moving said plug alternately in opposite directions for reversing the connection of the gripper with the suction device and atmosphere, substantially as set forth.

3. In a machine of the character described, the combination of a plurality of article holders, a device for supplying unused stencils arranged in front of said holders, a delivery device receiving the used stencils and arranged between said holders and the stencil supplying device, a pneumatic gripper which carries the stencils successively from the supplying device to the holders and delivery device, a valve moving with said gripper and capable of connecting said gripper either with a suction device or with the atmosphere, tappets projecting from opposite sides of the stem of said valve, a stop arranged to be engaged by one of said tappets for shifting the valve so as to connect the gripper with said suction device when the same is over the stencil supply device, and a yielding stop arranged in the path of the other tappet and permitting the latter to move forward freely from the stencil supplying device to the article holders but turning said last mentioned tappet for connecting the gripper with the atmosphere when the same reaches the delivery device during its backward movement, substantially as set forth.

4. In a machine of the character described, the combination of a plurality of article holders, a device for supplying unused stencils arranged in front of said holders, a delivery device receiving the used stencils and arranged between said holders and the stencil supplying device, a pneumatic gripper which carries the stencils successively from the supplying device to the holders and delivery device, a valve moving with said gripper and capable of connecting said gripper either with a suction device or with the atmosphere, tappets projecting from opposite sides of the stem of said valve, a stop arranged to be engaged by one of said tappets for shifting the valve so as to connect the gripper with said suction device when the same is over the stencil supply device, and a pivoted stop having a shoulder which is normally held by a spring in the path of the other tappet and operating to connect said gripper with the atmosphere when the same reaches said delivery device during the backward movement of the gripper, substantially as set forth.



5. In a machine of the character described, the combination of a plurality of article holders, means for supplying address stencils, a gripper for carrying said stencils from the supplying device to the article holders comprising a hollow cross bar, hollow arms projecting forwardly from said bar, and suction cups arranged on said arms and connected by the conduit in said bar and arms, and an inking device for coöperating with said stencils while the gripper is holding the same over said articles, substantially as set forth.

6. In a machine of the character described, the combination of an article support, a stencil supplying device, a single pneumatic gripper for carrying the stencils from said supplying device to said support, and a single stencil retaining frame permanently connected with said gripper and adapted to bear against the stencils successively, substantially as set forth.

7. In a machine of the character described, the combination of a support for an article to be addressed, means for supplying stencils each of which has a perforated address on its central part, a gripper for carrying the stencils from said supplying device to said support, a retaining frame connected with said gripper and constructed to engage only with the margin of the stencils leaving the central address bearing part thereof unobstructed, and an inking brush arranged above the opening in the central part of the retaining frame and adapted to coöperate with the central part of the stencil carried by the gripper, substantially as set forth.

8. In a machine of the character described, the combination of a support for an article to be addressed, means for supplying stencils each of which has a perforated address on its central part, a gripper operating to carry the stencils successively from said supply means to said support and comprising two suction cups arranged to engage opposite ends of a stencil, and a retaining frame arranged around said cups and constructed to bear against the margin of the stencil leaving the central address bearing part thereof unobstructed, substantially as set forth.

9. In a machine of the character described, the combination of a support for an article to be addressed, means for supplying stencils each of which has a perforated address on its central part, a gripper operating to carry the stencils successively from the supply means to said support and comprising a hollow cross bar, hollow arms projecting forwardly from the cross bar, suction cups secured to the front ends of said arms and connected by the conduit in the arms and bar, and a retaining frame arranged around the cup and constructed to bear against the margin of the stencil and having ears each of which is clamped between one of said cups and the

arm to which it is attached, substantially as set forth.

10. In a machine of the character described, the combination of a support for the articles to be addressed, means for supplying address stencils, a gripper operating to carry the stencils successively from the supplying means to said support, a stencil inking brush arranged above the gripper, and a brush frame carrying said brush and movably supported on the gripper, substantially as set forth.

11. In a machine of the character described, the combination of a support for the articles to be addressed, means for supplying address stencils, a gripper operating to carry the stencils successively from the supplying means to said support, a rotary stencil inking brush arranged above the gripper, and a brush frame supporting said brush and pivoted on the gripper, substantially as set forth.

12. In a machine of the character described, the combination of a support for the articles to be addressed, means for supplying address stencils, a gripper operating to carry the stencils successively from the supplying means to said support, a stencil inking brush arranged above the gripper, a brush frame carrying said brush and movably connected with the gripper, and means for yieldingly holding said brush frame in an elevated position relatively to the gripper, substantially as set forth.

13. In a machine of the character described, the combination of a support for the articles to be addressed, means for supplying stencils each of which has a perforated address in its central part, a gripper operating to carry the stencils successively from the supply means to said support and comprising a U-shaped carrying frame and suction cups secured to the arms of said frame, a rotary stencil inking brush arranged between the arms of the carrying frame, a U-shaped shifting frame having its cross bar pivoted on the cross bar of the carrying frame while its arms pivotally support said brush, a spring for raising said shifting frame relatively to the carrying frame, and an adjusting screw connecting the carrying and shifting frames, substantially as set forth.

14. In a machine of the character described, the combination of an article support, means for supplying address stencils, a gripper for carrying the stencils successively from said supplying means to said support, an actuating member having a positive forward and backward movement, an elastic connection between said actuating member and the gripper constructed to permit the actuating member to continue its forward movement independent of the gripper, and an adjustable stop for limiting the forward movement of the gripper, substantially as set forth.



15. In a machine of the character described, the combination of an article support, means for supplying address stencils, a gripper for carrying the stencils successively from said supplying means to said support, an actuating member having a positive forward and backward movement, an elastic connection between said actuating member and the gripper constructed to permit the actuating member to move forward independent of the gripper, an adjustable stop for limiting the forward movement of the gripper and means for moving said gripper perpendicularly relatively to its forward and backward movement, substantially as set forth.

16. In a machine of the character described, the combination of a support for articles to be addressed, means for supplying address stencils, a gripper for carrying the stencils successively from said supplying means to said support, a rock arm having a positive oscillating movement, a telescopic connecting rod having one of its members connected with the gripper while its other member is connected with said rock arm, a spring for extending the members of said connecting rod, and a stop for limiting the forward movement of the gripper, substantially as set forth.

17. In a machine of the character described, the combination of a support for the articles to be addressed, means for supplying address stencils, a gripper for carrying the stencils successively from said supplying means to said support, a rock arm having a positive oscillating movement, a telescopic connecting rod having its outer member connected with the gripper and its inner member connected with the rock arm, a spring interposed between said members and operating to distend the same, a pin arranged on the inner member and projecting through a longitudinal slot in the outer member, and a stop arranged on the outer member and adapted to engage a stationary part of the machine, substantially as set forth.

18. In a machine of the character described, the combination of a support for articles to be addressed, means for supplying address stencils, a stencil gripper, means for moving said gripper horizontally from the supply means to said support, and means for moving said gripper vertically for engaging the stencil carried thereby with the article to be addressed, substantially as set forth.

19. In a machine of the character described, the combination of a support for the articles to be addressed, means for supplying address stencils, a stencil gripper, a rod supporting said gripper, a non-elastic support for the rear part of said rod, and an elastic support for the front part of said rod, substantially as set forth.

20. In a machine of the character de-

scribed, the combination of a support for articles to be addressed, means for supplying address stencils, a stencil gripper, a rod carrying said gripper, a non-extensible rock arm carrying the rear end of said rod, and an extensible rock arm carrying the front part of said rod, substantially as set forth.

21. In a machine of the character described, the combination of a support for articles to be addressed, means for supplying address stencils, a stencil gripper, a rod carrying said gripper, a non-extensible rock arm carrying the rear end of said rod, a telescopic rock arm supporting the front part of said rod, and a spring operating to contract the members of the extensible rock arm, substantially as set forth.

22. In a machine of the character described, the combination of a support for the articles to be addressed, means for supplying address stencils, a gripper operating to carry the stencils successively from the supply means to said article support, an inking brush arranged above the gripper, a brush frame movably connecting the brush with the gripper, a spring for raising the brush frame relatively to the gripper, and a shifter bar arranged to engage the brush frame for depressing the latter and also the gripper through the medium of said spring, substantially as set forth.

23. In a machine of the character described, the combination of a support for the articles to be addressed, a vertical magazine for containing a stack of stencils, a vertical screw shaft having a contracted portion, a sleeve mounted on said shaft and having a bore of the same diameter as the threaded portion of said shaft and a laterally opening slot as wide as the diameter of the contracted part of the shaft, and a table supporting said stack and connected with said sleeve, substantially as set forth.

24. In a machine of the character described, the combination of a support for the articles to be addressed, a vertical magazine for containing a stack of stencils, a vertical screw shaft having a contracted portion, a sleeve mounted on said shaft and having a bore of the same diameter as the threaded portion of said shaft and a laterally opening slot as wide as the diameter of the contracted part of the shaft, a screw nut section mounted on said sleeve and engaging with the thread of the shaft, and a table supporting said stack and connected with said sleeve, substantially as set forth.

25. In a machine of the character described, the combination of a support for the articles to be addressed, a vertical magazine for containing a stack of stencils, a vertical shaft having a large central screw threaded part and contracted unthreaded portions at its upper and lower ends, a sleeve mounted on the shaft and having a bore of the same

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diameter as the large threaded part of said shaft and a laterally opening slot as wide as the contracted parts of the shaft, a screw nut section arranged in a pocket in said sleeve, a  
 5 spring for holding said nut section in engagement with the thread of the shaft, a finger piece for withdrawing the nut section from said thread, and a table supporting said stack and connected with said sleeve, substantially as set forth.

26. In a machine of the character described, the combination of an upright endless belt, holders arranged on said belt and constructed to support the articles to be addressed, means for applying stencils to said  
 15 articles, and a horizontal delivery belt independent of said carrier and receiving the stencils from said applying means, substantially as set forth.

27. In a machine of the character described, the combination of an upright endless belt, holders arranged on said belt and constructed to support the articles to be addressed, means for applying stencils to said  
 20 articles, and a horizontal delivery belt moving transversely relatively to said carrier and adapted to receive the stencils successively from said applying means, substantially as set forth.

28. In a machine of the character described, the combination of an electric circuit having a pair of electric switch contacts which are normally in engagement with each other, a stencil of insulating material having  
 35 a selecting perforation, means for propelling said stencil between said contacts, and causing the solid parts of the stencil to separate the contacts and open the circuit thereof while the selecting perforations permit the  
 40 contacts to bear against each other and close said circuit, a switch for directing the stencils to different places, and an electro-magnet arranged in said circuit and controlled by said contacts, substantially as set forth.

29. In a machine of the character described, the combination of an electric circuit having a pair of electric switch contacts, a stencil of insulating material having a selecting perforation, means for propelling  
 50 said stencil between said contacts and causing the solid parts of the stencil to separate the contacts and open the circuit thereof while the selecting perforations permit the  
 55 contacts to bear against each other and close said circuit, a switch for directing the stencils to different places, an electro-magnet arranged in said circuit and controlled by said contacts, and means for adjusting the  
 60 engaging point of said contacts transversely relatively to the line of movement of the stencils for adapting the contacts to different locations of said perforations transversely of the stencils, substantially as set forth.

30. In a machine of the character de-

scribed, the combination of a support for the articles to be addressed, a magazine for holding a stack of address stencils, feeding means for removing the stencils successively from the magazine and applying the same to said  
 70 articles, and a stencil delivery mechanism comprising a lower belt arranged underneath the path of said feeding means between the article holders and the magazine, and an upper belt engaging with the lower belt on one side of the path of said feeding means, substantially as set forth.

31. In a machine of the character described, the combination of a support for the articles to be addressed, a magazine for holding a stack of address stencils, feeding means for removing the stencils successively from the magazine and applying the same to said  
 80 articles, and a stencil delivery mechanism comprising a lower belt arranged underneath the path of said feeding means between the article holders and the magazine, an upper belt engaging with the lower belt on one side of the path of said feeding means, and a convex table supporting the cooperating parts of said belts and producing a deflection in the same, substantially as set forth.

32. In a machine of the character described, the combination of a support for the articles to be addressed, a magazine for holding a stack of address stencils which are constructed of insulating material and each provided with a selecting perforation, feeding means for removing the stencils successively from the magazine and applying the same to said articles, a delivery mechanism receiving the stencils from said feeding means, receptacles for the active and inactive stencils, a switch for directing the stencils into either of  
 105 said receptacles, an electro-magnet operating said switch, and a pair of switch contacts which form the terminals of the electric circuit containing the electro magnet and which are separated by the solid part of the stencils passing between them but permitted to engage each other through the selecting perforations thereof, substantially as set forth.

33. In a machine of the character described, the combination of a support for the articles to be addressed, a magazine for holding a stack of address stencils which are constructed of insulating material and each provided with a selecting perforation, feeding means for removing the stencils successively from the magazine and applying the same to said articles, a delivery mechanism receiving the stencils from said feeding means and comprising a metallic belt, receptacles for the active and inactive stencils, a switch for directing the stencils from said belt into either of said receptacles, an electro magnet for shifting said switch, and a brush engaging with the operative portion of said belt and forming with the latter the terminals of the  
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electric circuit containing the electro-magnet, said terminals being separated by the solid part of the stencils passing between the same and permitted to engage through the selecting perforations therein, substantially as set forth.

34. In a machine of the character described, the combination of a support for the articles to be addressed, a magazine for holding a stack of address stencils which are constructed of insulating material and each provided with a selecting perforation, feeding means for removing the stencils successively from the magazine and applying the same to said articles, a delivery mechanism receiving the stencils from said feeding means and comprising a metallic belt, receptacles for the active and inactive stencils, a switch for directing the stencils from said belt into either of said receptacles, an electro magnet for shifting said switch, a brush engaging with the operative portion of said belt and forming with the latter the terminals of the electric circuit containing the electro-magnet, said terminals being separated by the solid part of the stencils passing between the same and permitted to engage through the selecting perforations therein, and a commutator for controlling the period during which the terminals are effective, substantially as set forth.

35. In a machine of the character described, the combination of a support for the articles to be addressed, a magazine for holding a stack of address stencils, feeding means for removing the stencils successively from said stack and applying the same to said articles, a delivery mechanism which receives the stencils from said feeding mechanism, re-

ceptacles for the active and inactive stencils, a switch for directing the stencils from the delivery mechanism into either of said receptacles, an electro-magnet for shifting said switch in one direction, a spring for shifting the switch in the other direction, a dash-pot for retarding the effect of said spring, and a pair of contacts forming the terminals of the electric circuit containing the magnet and controlled by the stencils, substantially as set forth.

36. In a machine of the character described, the combination of a support for the articles to be addressed, a magazine for holding a stack of address stencils which are classified and each provided with a selecting perforation, the stencils in each class having their perforations in the same place and the perforations of the several classes being lengthwise out of line with each other, feeding means for carrying the stencils successively from the stack to said support, a delivery mechanism receiving the stencils from the feeding mechanism, and an electro-magnetic separating device for separating the stencils according to their class comprising a lower metallic belt forming part of the delivery mechanism, a brush engaging with the operative part of the belt, and a support on which the brush is adjustable transversely of the path of the stencils, substantially as set forth.

Witness my hand this 28th day of May, 1904.

BARTON S. MOLYNEUX.

Witnesses:

THEO. L. POPP,  
E. M. GRAHAM.