No. 673,604. Patented May 7, 1901.

F. C. IELFIELD.

MAIL CANCELING AND POSTMARKING MACHINE.

(Application filed Oct. 16, 1900.)

(No Model.) 3 Sheets—Sheet 1.

Fig. 1.

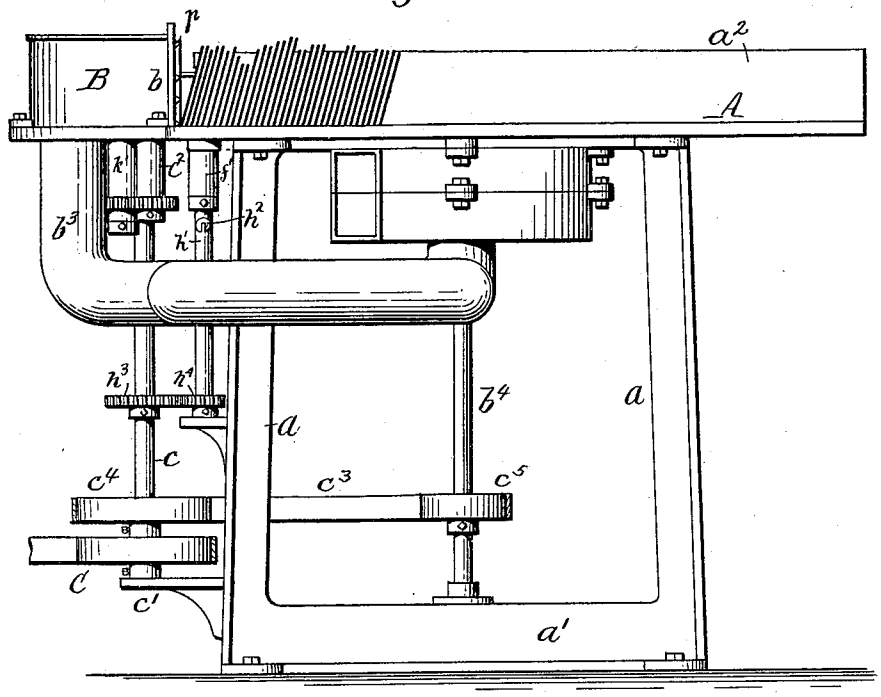
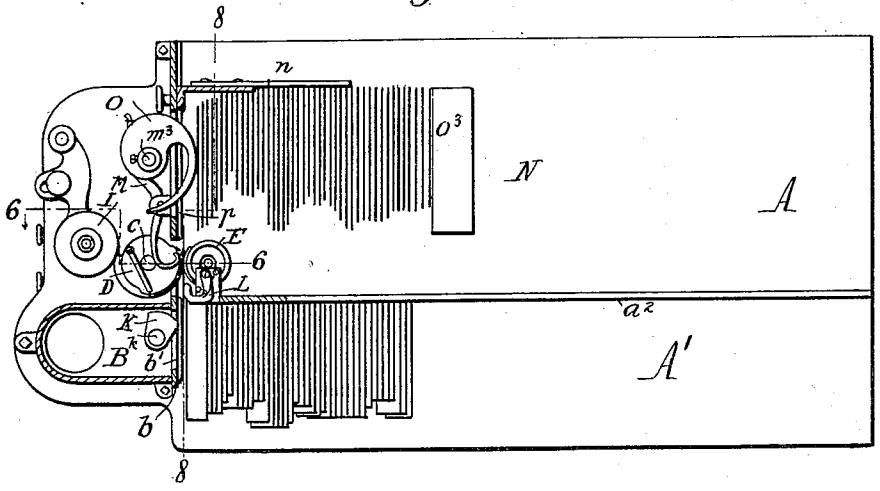


Fig. 2.



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Fig. 3.

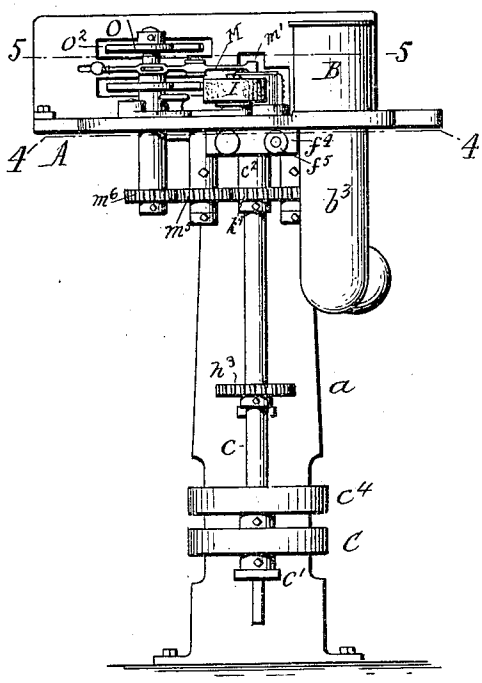


Fig. 4.

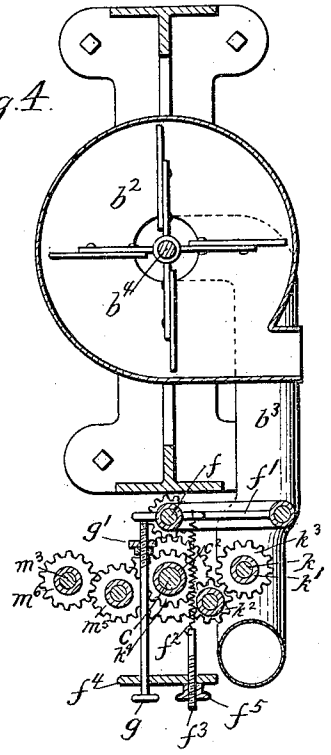
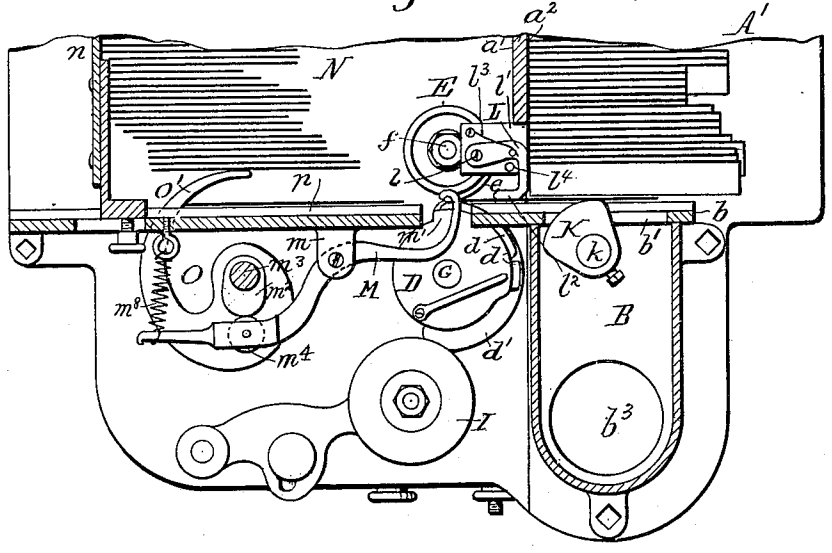


Fig. 5.



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Fig. 6

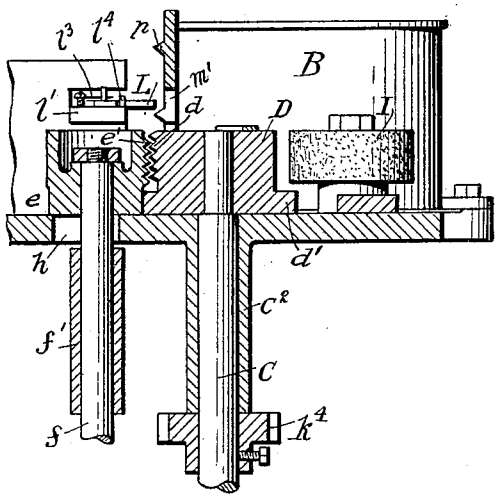


Fig. 7.

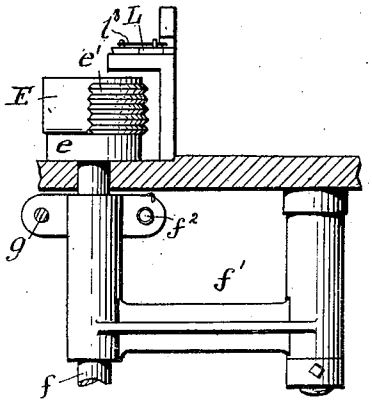
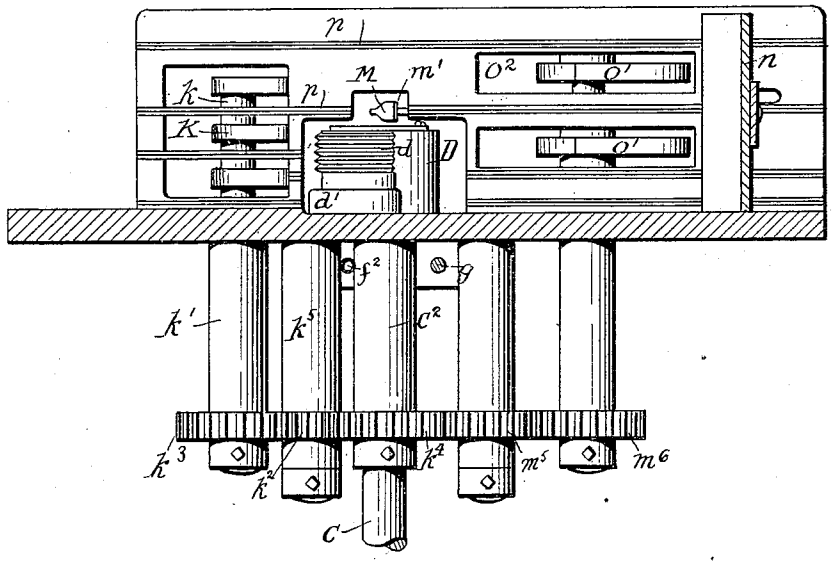


Fig. 8.



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UNITED STATES PATENT OFFICE.

FRED C. IELFIELD, OF SILVERCREEK, NEW YORK, ASSIGNOR TO COLUMBIA POSTAL SUPPLY COMPANY, OF SAME PLACE.

MAIL CANCELING AND POSTMARKING MACHINE.

SPECIFICATION forming part of Letters Patent No. 673,604, dated May 7, 1901.

Application filed October 16, 1900. Serial No. 33,260. (No model.)

To all whom it may concern:

Be it known that I, FRED C. IELFIELD, a citizen of the United States, and a resident of Silvercreek, in the county of Chautauqua and State of New York, have invented a new and useful Improvement in Mail Canceling and Postmarking Machines, of which the following is a specification.

This invention relates to a printing or marking machine which is more especially designed for canceling and postmarking mail-matter and in which a suction-current is employed for separating the foremost piece of a stack of mail or other matter from the succeeding pieces preparatory to feeding it to the printing or marking devices, the pieces being successively drawn by the air-current against the upright wall or face-plate of a suction-head which extends across the front end of the feed-chute and from which the pieces are fed to the printing or marking devices. A machine of this kind is shown and described in an application for Letters Patent of the United States filed by me on the 21st day of October, 1899, Serial No. 734,281.

One of the objects of my present invention is to provide the machine with a positive and reliable time-stop or front-registering gage which insures the proper registration of the stamped front end of each piece of mail-matter with the die of the printing or marking roller, regardless of the varying length of the different pieces of mail-matter, so that the canceling-mark is invariably printed squarely upon the stamp.

My invention has the further objects to reduce the contact area between the letter or other piece of mail-matter and the face-plate of the suction-head for facilitating its removal from the same by the feeders, to improve the construction and operation of the retarding device interposed between the feeding and the printing rollers, to improve the construction of the printing and impression rollers with a view of obtaining a clear impression, and to improve the machine in other respects.

In the accompanying drawings, consisting of three sheets, Figure 1 is a side elevation of my improved machine. Fig. 2 is a top plan view thereof. Fig. 3 is a front elevation of the machine. Fig. 4 is a horizontal section in line 4 4, Fig. 3. Fig. 5 is a similar section of the front portion of the machine in line 5 5, Fig. 3, on an enlarged scale. Fig. 6 is a fragmentary vertical section in line 6 6, Fig. 2, on an enlarged scale. Fig. 7 is a fragmentary transverse vertical section of the machine, on an enlarged scale, showing the horizontally-swinging arm which carries the yielding impression-roller. Fig. 8 is a transverse vertical section in line 8 8, Fig. 2, on an enlarged scale.

Like letters of reference refer to like parts in the several figures.

A is the horizontal table of the machine, which is supported on a stationary frame, which may be composed, as shown, of upright end pieces or standards a and a longitudinal bar a', which connects the lower ends of said end pieces. The table is provided at the front side of the machine with a longitudinal feed-chute A′ for the matter to be printed or canceled and postmarked, which chute is formed by the surface of the table and a longitudinal wall or partition a^2, against which the stamped ends of the pieces of mail-matter are squared, as shown in Fig. 2.

B is the upright stationary suction head or chamber, having its face-plate b arranged transversely across the front end of the feed-chute A′. The pieces of mail-matter are successively drawn against this face-plate from the front end of the stack in the chute by a suction-current which acts upon the foremost piece through an opening b', formed in the face-plate, as shown in Figs. 2 to 5 and 8. The suction-current is induced by any suitable means—for instance, as shown, by a fan b^2, arranged underneath the table A and having its eye connected with the suction-head by a pipe b^3.

c is the main driving-shaft of the machine, arranged vertically at the front end of the same and supported at its lower end in a step-bearing c' and near its upper end in a bearing c^2, depending from the table. C is the driving-pulley, mounted on this shaft. The fan b^2 is mounted on a vertical shaft b^4, which is driven from the main shaft by a belt c^3, running around pulleys c^4 and c^5, secured to said shafts, respectively, as shown in Fig. 1.

The canceling and postmarking devices receive the separated pieces of mail-matter from the face-plate *b* of the suction-head and are arranged above the table A beyond the inner or rear side of the feed-chute A'. They consist of a horizontal printing-roller D, having suitable canceling and postmarking dies *d* on its periphery and an impression-roller E, between which rollers the pieces of mail-matter pass successively.

The printing-roller D is mounted on the upper end of the main driving-shaft *c*. As shown in Figs. 2 and 5, the body or main portion of the printing-roller, which carries the dating and canceling dies, is segmental in form and projects beyond the remaining portion of the periphery of the roller, so that only the dies are inked. This roller is provided at its lower end with a segmental flange *d'*, which, in conjunction with a similar opposing flange *e* on the impression-roller E, serves to feed the pieces of mail-matter onward. The flange *d'* of the printing-roller projects slightly beyond the face of the printing-dies and runs in contact with the flange *e* of the impression-roller when there is no mail-matter between these rollers, thereby keeping the impression-roller out of contact with said printing-face when the machine runs idle and preventing smutting of said roller and soiling of the back of the mail-matter running against the same. The separating-flange *d'* does not project so far beyond the die or stamp of the printing-roller as to prevent the mail-matter from being properly canceled and marked, but extends beyond said face only about the thickness of a sheet of writing-paper, so as to allow the impression to be delivered upon the thinnest mail-matter, and yet prevent the die from touching the impression-roller and smutting the same while the rollers run idle.

In order to cause the canceling-ribs of the printing-roller to deliver a good impression upon comparatively thin mail-matter, the impression-roller is provided in its periphery with grooves or depressions *e'*, which are arranged directly opposite the raised canceling-ribs of the printing-roller D, and said ribs are raised to such an extent that they project slightly into said grooves when there is no mail between the rollers, as shown in Fig. 6.

The impression-roller is mounted on the upper end of a vertical shaft *f*, which is journaled at the free end of a horizontally-swinging arm *f'*, pivoted upon an arbor depending from the under side of the table A, as shown in Figs. 4 and 7. The impression-roller is free to recede from the printing-roller for accommodating itself to mail-matter of different thicknesses and is drawn toward the printing-roller by a spring f^2, attached at one end to the arm *f'* and at its opposite end to an adjusting-screw f^3. This screw passes through an unthreaded opening formed in a lug f^4, depending from the table A, as shown in Figs. 3 and 4, and is provided with a thumb-nut f^5, which bears against the outer side of said lug. Upon turning this nut in one or the other direction the adjusting-screw f^3 is moved lengthwise in its opening and the spring f^2 is tensioned accordingly.

g is an adjustable stop which limits the forward or approaching movement of the yielding impression-roller. This stop consists of a longitudinal screw which engages in a screw-threaded opening formed in a lug *g'*, arranged on the under side of the table A, and which bears at its inner end against the front side of the swinging arm *f'*, as shown in Fig. 4. The stop-screw *g* extends outwardly through the lug f^4 and terminates in a knob for turning it. By means of this stop-screw the forward movement of the impression-roller can be limited to keep the same out of contact with the printing-roller and at the same time adjust the same at the proper distance from the printing-roller to print and feed the thinnest mail-matter. The shaft of the impression-roller passes through a slot *h*, formed in the table and curved concentric with the shaft, and the latter is driven from an upright shaft *h'*, with which its lower end is connected by a flexible or universal joint h^2 of any suitable construction. The shaft *h'* is in turn driven from the main shaft *c* by intermeshing gear-wheels h^3 h^4, secured to said shafts, respectively.

I is an inking-roller of any ordinary construction, which is held against the printing-roller by any suitable means.

K is a feeder or stripper which removes the pieces of mail-matter from the opening of the suction-head B and delivers the same to the printing and impression rollers. This feeder preferably consists of one or more rotary horizontal segments arranged in the suction-head and secured one above another to a vertical shaft *k*. This shaft is journaled in a bearing *k'*, depending from the table, and is driven in the proper direction from the main shaft *c* through an idler k^2, which meshes with gear-wheels k^3 k^4, secured to the feeder-shaft *k* and the main shaft *c*, respectively, as shown in Fig. 8. The idler k^2 is secured to a vertical shaft, which turns in a bearing k^5, carried by the table. The segmental feeder is projected through the suction-opening once during every revolution, so as to engage against the face of the foremost piece of mail-matter and carry the same onwardly between the printing and impression rollers, as shown in Figs. 2 and 5. The feeder-segments may be constructed of leather or soft rubber or provided with a facing of such material, or any other suitable material forming a reliable gripping-surface.

As shown in Figs. 2 and 5, the inner wall a^2 of the feed-chute A' terminates at a short distance from the face-plate of the suction-head, so as to leave an intervening passage for the mail-matter, and this face-plate extends across the width of the table to form a guide for the mail-matter. The printing and impression rollers are arranged on opposite sides of this abutment, and the latter is pro-

vided opposite the printing-roller with an opening, through which said roller projects.

L, Figs. 2, 5, and 7, is a yielding retarding-arm which is arranged between the feeding mechanism and the marking mechanism for the purpose of allowing but a single piece of mail-matter to pass to the rollers at a time and holding back any additional piece or pieces if more than one piece is separated from the stack in the feed-chute by the air-current and fed forward by the feeder, which may happen at times in operating on postal cards or other thin matter. This retarding-arm is arranged horizontally and is pivoted at its rear end by a vertical pin l to a horizontal bracket l', which projects rearwardly from the partition a^2 of the feed-chute. The partition a^2 is provided above the bracket l' with a horizontal slot or notch, as shown in Fig. 7, in which the front portion of the arm plays. The arm is provided at its free front end with a retarding-face l^2, which extends lengthwise of the guide-plate b and stands in the normal position of the arm substantially parallel with said plate. The pivot of the arm is arranged rearwardly beyond the retarding-face in the direction in which the mail-matter moves toward the marking mechanism and out of line with the retarding-face, the path of the mail-matter lying between the retarding-arm and the guide-plate. This peculiar relative arrangement of the retarding-face and the pivot of the retarding-arm causes the latter when the retarding-face is struck by the mail-matter to swing backwardly in a direction opposite to that in which the mail-matter moves, and this backward movement of the arm brushes back any additional pieces of mail-matter and allows but a single piece to pass by the arm. The latter is pressed toward the guide-plate by a spring l^3, and the movement of the arm toward the guide-plate is limited by a pin l^4, secured to the bracket l'.

M is a movable time-stop or registering-gage, against which the pieces of mail-matter are registered before being allowed to pass between the printing and impression rollers, so that the canceling lines or characters are printed squarely upon the stamp of the mail-matter. This time-stop consists of a horizontally-swinging rock-lever pivoted between its ends to a bracket m, which projects from the outer side of the face-plate b. The front arm of this lever extends inwardly through an opening m', formed in the face-plate, and projects during its forward stroke across the letter-path at a point directly above the meeting portions of the printing and impression rollers, so as to form a momentary stop, against which the front ends of the pieces of mail-matter strike before passing between the printing and impression rollers.

The rock-lever M is rapidly vibrated in one direction by a rotary horizontal cam m^2, which is secured to a vertical shaft m^3 and bears against an antifriction-roller m^4, journaled on the rear end of said lever. The shaft m^3 is driven from the main shaft c through an intermediate idler-gear m^5, which meshes with gear-wheels m^6 k^4, secured to said shafts. The rock-lever is vibrated in the other direction by a spring m^8, connected at one end to the face-plate and at its opposite end to the rear arm of the lever. When the salient portion of the cam m^2 rides over the roller of the rock-lever, it rocks the lever in the proper direction to cause its front arm to project across the letter-path, while when the narrow portion of the cam is opposite said roller the spring rocks the lever in the opposite direction, thereby causing the front arm of the rock-lever to recede and allow the gaged piece of mail-matter to pass onward. The movement of this stop is so timed relatively to the speed of the feeder K and the printing-roller D that the stop is projected when the advancing end of the die of the printing-roller arrives opposite the impression-roller and remains in its projected position long enough to arrest any piece of mail-matter which is fed forward by the feeder whether long or short.

N is a receiving-chute which receives the marked mail-matter from the printing and impression rollers and which is arranged in rear of the feed-chute A′ and parallel therewith. The table A forms the bottom of this chute, and its side walls are formed by the partition a^2 and a longitudinal wall n.

O is a rotary stacking device which is arranged at the front end of the receiving-chute N and which presses the mail-matter backward in the same immediately after a piece is delivered to the front end of the chute, and which recedes out of the way before the delivery of the next piece. This stacking device preferably consists of one or more volute or scroll-shaped cams secured horizontally to the shaft m^3 above the table A and terminating in horns o'. During the rotation of these cams they are projected through horizontal slots o^2, formed in the adjacent portion of the face-plate b, and bear with their outer or face sides against the front end of the stack of mail-matter in the receiving-chute, as shown in Figs. 2 and 5. The stacking-cams project through these slots and press the stack of mail-matter backwardly during about one half of their rotation and recede to the rear side of the face-plate during the other half of their rotation. These cams are so timed relatively to the printing and impression rollers that the horns or salient portions of the cams are projected through the slots and caused to act upon the front end of the stack immediately after a piece of mail-matter is delivered to the receiving-chute by the printing and impression rollers, and so that the cams are retracted out of the way while the next piece of mail-matter is being delivered in front of the stack. By making the stacking-cams of scroll form, with projecting horns or end portions, as shown, the pieces of mail-matter are delivered against the inner side of the horns or end portions while the

cams are receding behind the face-plate, and the horns thus momentarily separate the front of the stack from the last-delivered piece of mail-matter on the inner side of the cam-horns, thereby leaving a free and unobstructed space in front of the stack for the incoming piece of mail-matter and preventing bunching or uneven stacking of the matter.

O^3 is the usual receding abutment in the receiving-chute, against which the mail-matter is banked in a well-known manner.

p represents raised horizontal ribs arranged on the face-plate and extending from end to end thereof. The mail-matter bears against the comparatively sharp edges of these ribs in passing from the suction-head to the stacker. These ribs reduce the friction between the mail-matter and the face-plate and facilitate the movement of the matter through the machine. These ribs also extend across the suction-opening and by keeping the mail-matter out of contact with the flat face of the plate around this opening prevent the pieces of mail-matter from adhering to the face-plate too strongly and enable the feeder to more easily overcome the force of the suction and remove the pieces of mail-matter. It sometimes happens that a letter becomes crumpled transversely at its ends before reaching the canceling and marking machine. When the mail-matter bears directly against the flat face of the face-plate, such a crumpled letter projects more or less into the suction-opening, and its advancing end is liable to strike against the front edge of the suction-opening and become buckled. By providing a face-plate with projecting ribs such a crumpled piece of mail-matter is carried clear of the edge of the suction-opening and prevented from striking the same. The portions of the ribs which extend across the suction-opening also serve as guards which prevent small pieces of mail-matter from being drawn into said opening.

It sometimes happens that the stamped corner of an envelop or other piece of mail-matter is bent over, and when this occurs the folded corner is liable to catch under the printing-roller or the impression-roller and cause buckling or tearing of the piece of mail-matter. To prevent this, the front portion of the table A, opposite the suction-opening *b'* and the feeder K, is raised slightly above the plane of the rear portion of the table on which the printing and impression rollers are located, and the lower ends of these rollers extend below the raised portion of the table, as shown in Fig. 8. By this construction the lower edge of the mail-matter is raised above the lower end of said rollers, and a piece of matter having a bent or turned-over corner cannot catch under the rollers.

The operation of my improved machine is as follows: The mail-matter to be marked is placed edgewise in the feed-chute A' in an inverted position, with the stamped side facing the face-plate and the stamped ends squared against the partition a^2. The sliding abutment O^3 of the receiving-chute is shifted to the front portion of the chute, and the machine is then set in motion. The operator, placing his hand against the rear end of the stack of matter, pushes the same forward to bring the front end of the stack within the suction range of the air-current. The current acting upon the foremost piece of mail-matter separates the same from the stack and draws the piece against the ribs of the face-plate, the separated piece covering the suction-opening entirely or partly and shutting off the air-current correspondingly. The piece is drawn against the face-plate and remains resting against the same until the feeder is projected through the suction-opening and removes the piece and drives the same past the retarding-finger against the time-stop or registering-gage M, which latter projects at this instant across the path of the mail-matter. The time-stop now quickly recedes and allows the printing and impression rollers to seize the piece and carry it forward between the rollers, thereby canceling and postmarking the piece. The marked piece is then delivered into the front end of the receiving-chute N by the momentum imparted to the piece by the rapidly-rotating printing and impression rollers, whereupon it is pressed backward into the chute by the stacker, as hereinbefore described. The feeder is driven at a somewhat higher speed than the time-stop.

It will be observed that my improved time-stop is not tripped or otherwise actuated by the pieces of mail-matter themselves, but, on the contrary, is an independent stop which acts upon the pieces and is positively operated by a moving part of the machine. It is therefore positive and reliable in action and effects the proper registration of thin and flexible pieces of mail-matter, as well as of thick and stiff pieces. This registering device is very simple in construction, not liable to get out of order, exceedingly rapid in operation, and permits the machine to be run at a high rate of speed without liability of buckling or otherwise damaging the mail-matter.

I claim as my invention—

1. In a mail-marking machine, the combination with the marking mechanism, of a feed-chute, a suction-head facing the feed-chute and provided with an opening in its face-plate into which an air-current is drawn, a segmental feeder arranged in said suction-head and adapted to be projected through said opening to move the separated piece of mail-matter to the marking mechanism, a time-stop arranged to be projected across the path of the mail-matter between the feeding mechanism and the marking mechanism, and means whereby said time-stop is positively projected and withdrawn in unison with the movement of the marking mechanism, substantially as set forth.

2. The combination with a feed-chute in which the mail-matter is stacked, a marking

mechanism, and a feeding mechanism by which the mail-matter is moved to the marking mechanism, of a pivoted retarding-arm having its retarding-face arranged in a plane longitudinal of the direction of the feed movement and parallel thereto and having its pivot arranged beyond its retarding-face in the direction in which the mail-matter moves past the arm and out of line with the retarding-face, substantially as set forth.

3. The combination with a feed-chute for the mail-matter to be marked, a marking mechanism, a feeding mechanism by which the mail-matter is moved to the marking mechanism, and a guide-plate arranged between said feeding mechanism and said marking mechanism, of a pivoted retarding-arm having its retarding-face arranged in a plane longitudinal of the guide-plate and parallel thereto and having its pivot arranged beyond its retarding-face in the direction in which the mail-matter moves past the arm and out of line with the retarding-face, substantially as set forth.

4. In a mail-marking machine, the combination with the feed-chute, of a suction-head having its face provided with projections which hold the pieces of mail-matter clear of the flat face of the suction-head, substantially as set forth.

5. In a mail-marking machine, the combination with a feed-chute, of a head which faces said chute and which has its face provided with transverse ribs for receiving and guiding the foremost piece of mail-matter, and a feeder which projects from said head and impinges against the piece of mail-matter resting against said ribs, substantially as set forth.

6. In a mail-marking machine, the combination with the feed-chute, of a suction-head facing the feed-chute and having its face provided with raised horizontal ribs which hold the mail-matter out of contact therewith, substantially as set forth.

7. In a mail-marking machine, the combination with the feed-chute, of a suction-head provided in its face with a suction-opening and having its face provided with transverse ribs which extend across said opening, substantially as set forth.

8. In a mail-marking machine, the combination with a feed-chute, of a suction-head provided in its face with a suction-opening and having its face provided with transverse ribs against which the foremost piece of mail-matter rests, and a feeder which projects through said opening and impinges against said piece of mail-matter, substantially as set forth.

9. In a mail-marking machine, the combination with the marking mechanism, and a receiving-chute, of a guide-plate arranged in rear of the marking mechanism and extending across the front end of the receiving-chute and provided with ribs or projections which hold the pieces of mail-matter clear of the flat face of the plate, substantially as set forth.

10. In a mail-marking machine, the combination with a substantially horizontal support or chute for the mail-matter, of upright marking and impression rollers arranged above said support or chute and extending with their lower ends below the level of the same, substantially as set forth.

Witness my hand this 11th day of October, 1900.

FRED C. IELFIELD.

Witnesses:
THEO. STEWART,
GEO. H. SHOFNER.