

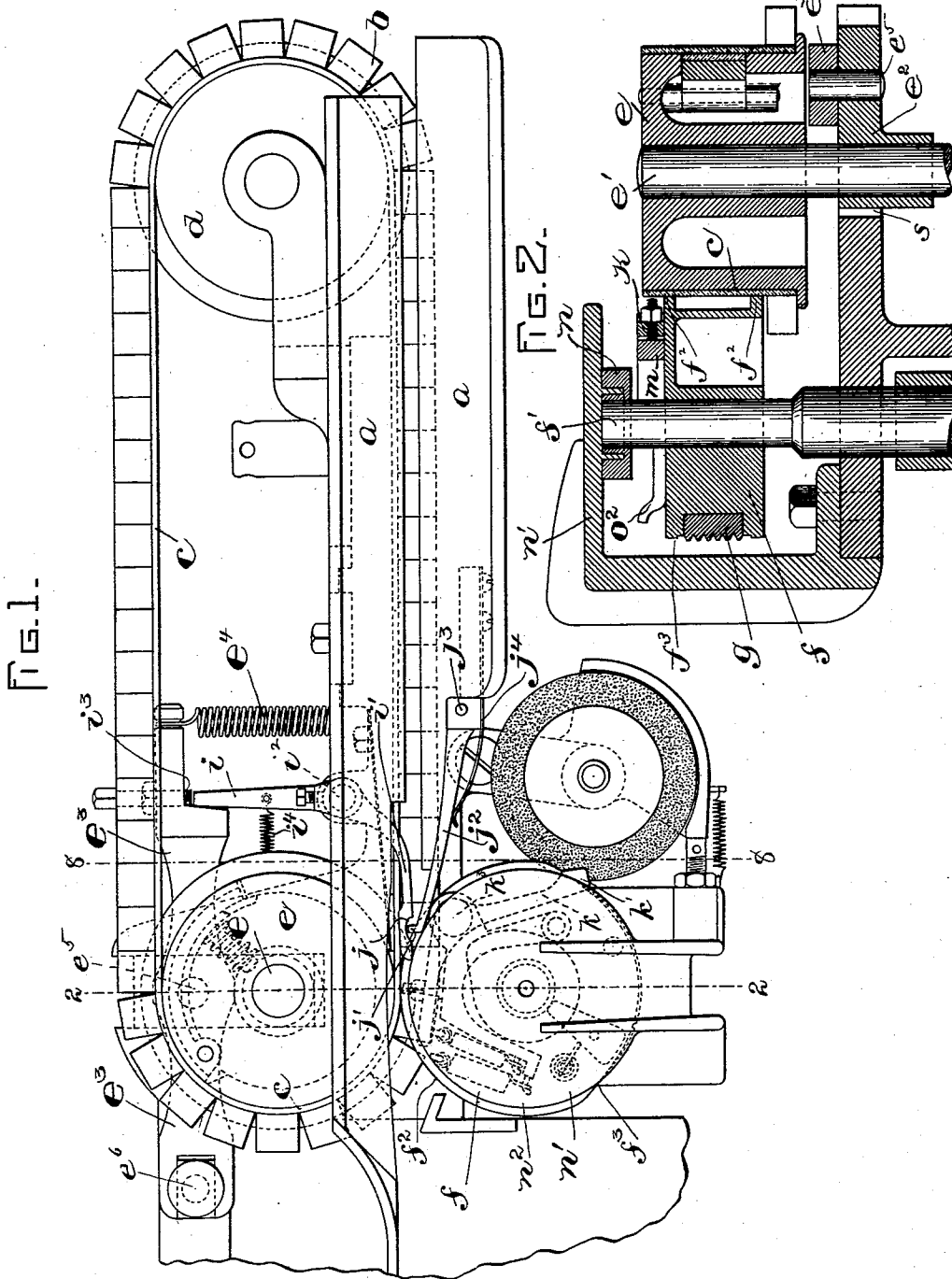
(No Model.)

4 Sheets—Sheet 1.

J. S. HANSEN.
MAIL MARKING MACHINE.

No. 572,085.

Patented Nov. 24, 1896.



WITNESSES

A. D. Harrison
J. P. Davis.

INVENTOR:

John S. Hansen
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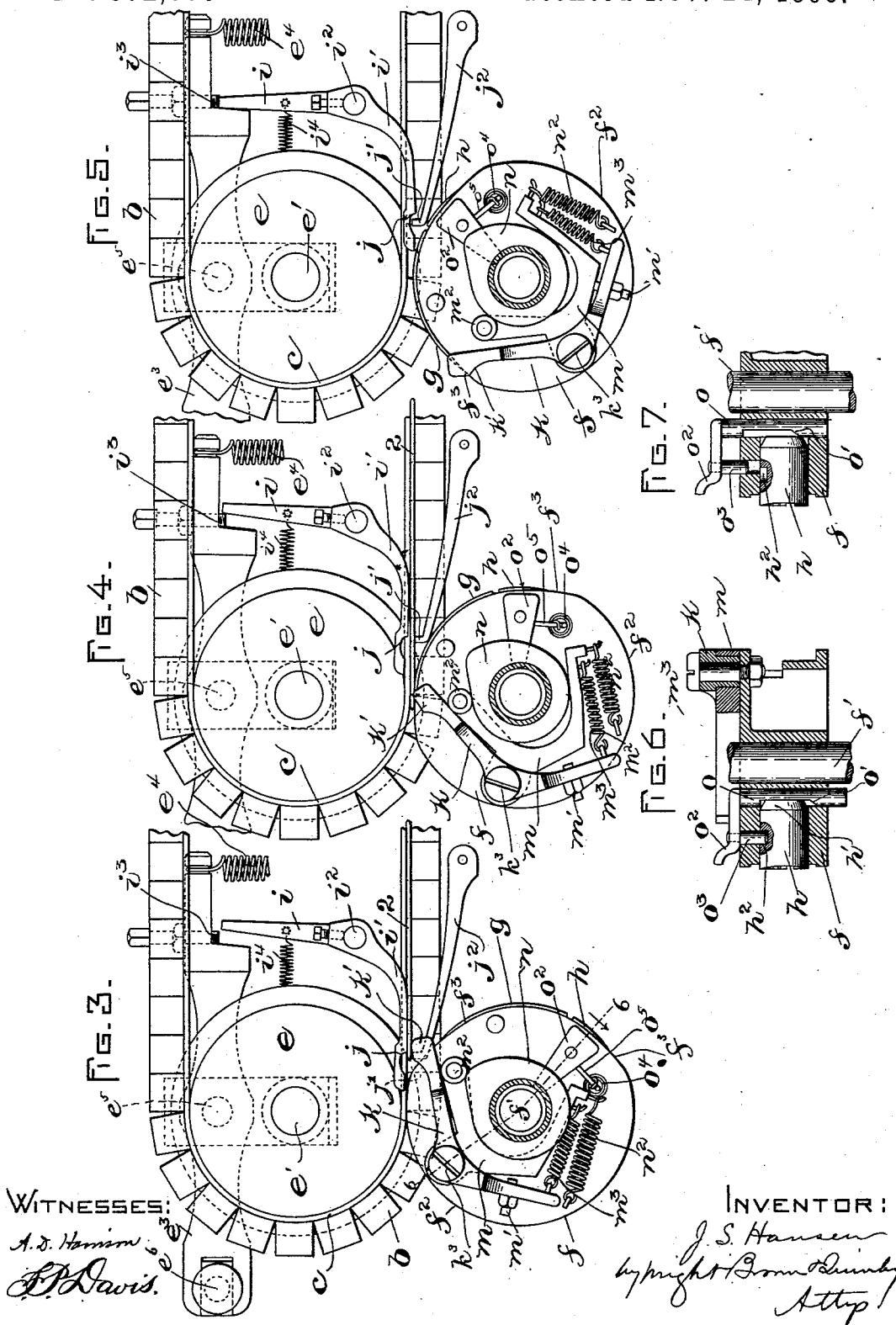
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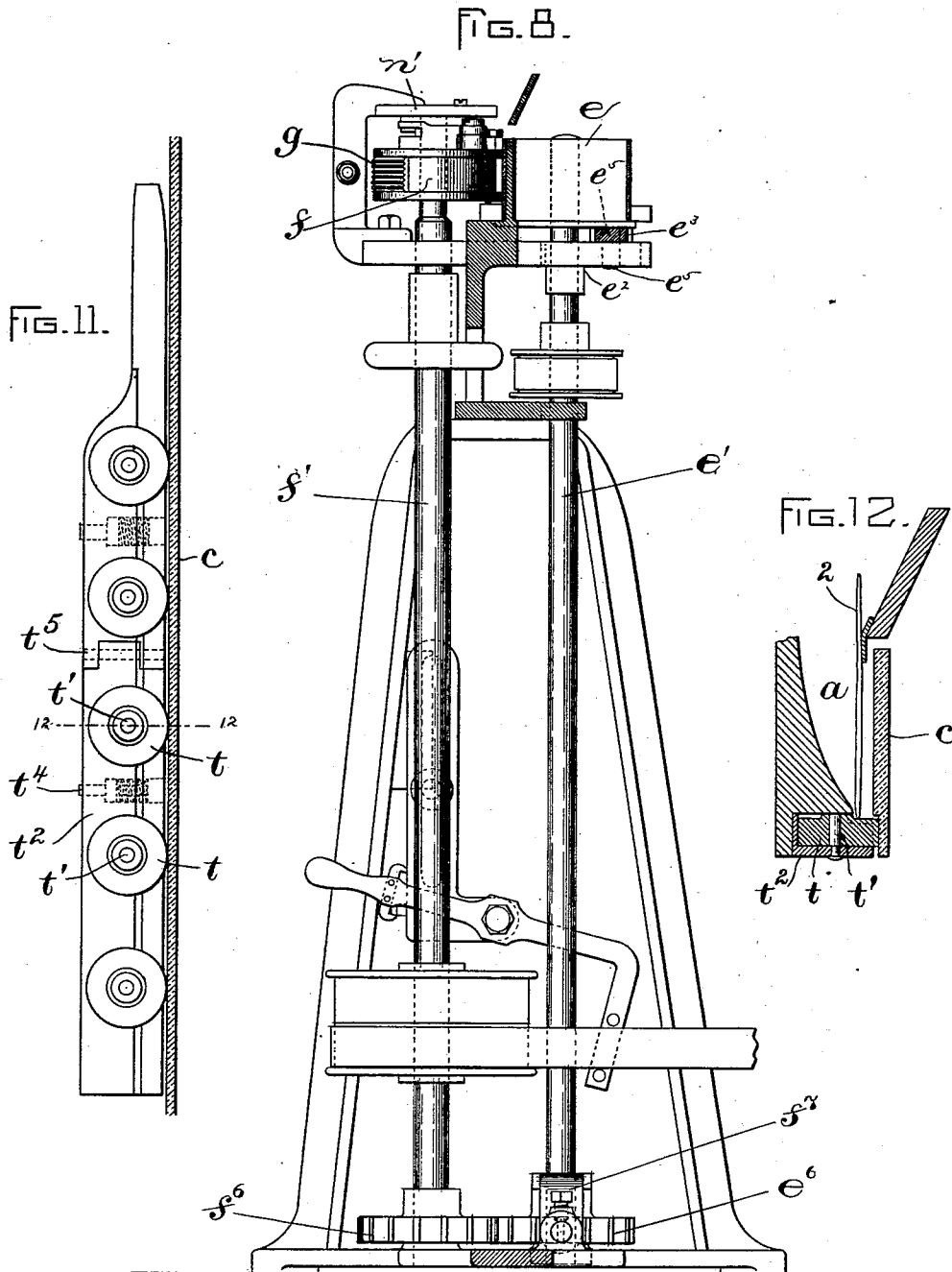
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WITNESSES:

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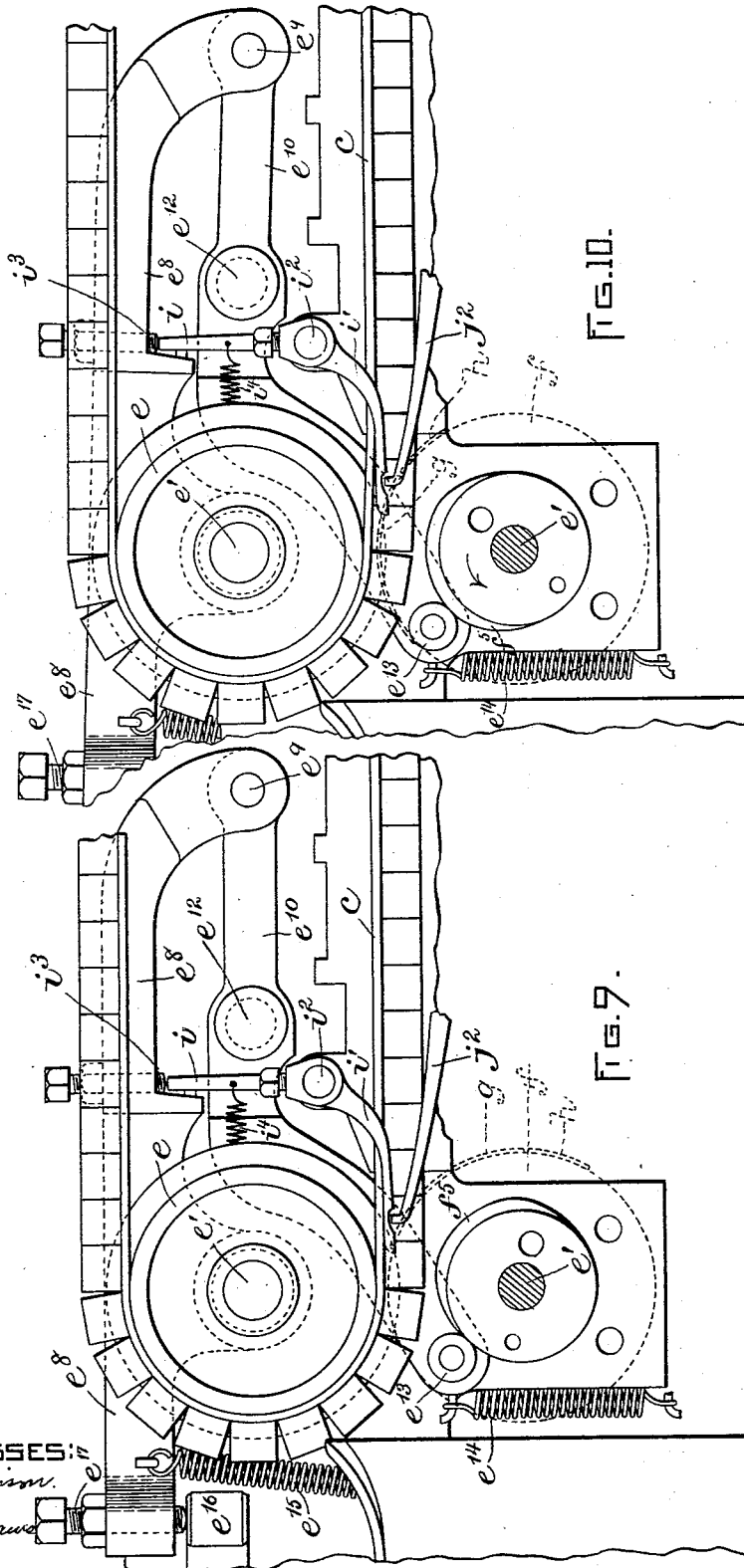
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J. S. HANSEN.
MAIL MARKING MACHINE.

No. 572,085.

Patented Nov. 24, 1896.



WITNESSES:

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UNITED STATES PATENT OFFICE.

JOHN S. HANSEN, OF BOSTON, MASSACHUSETTS, ASSIGNOR TO THE AMERICAN
POSTAL MACHINES COMPANY, OF SAME PLACE.

MAIL-MARKING MACHINE.

SPECIFICATION forming part of Letters Patent No. 572,085, dated November 24, 1896.

Application filed November 25, 1895. Serial No. 569,968. (No model.)

To all whom it may concern:

Be it known that I, JOHN S. HANSEN, of Boston, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Mail-Marking Machines, of which the following is a specification.

The present invention relates to machines such as are now widely used in post-offices for stamp-canceling and postmarking mail-matter, and more particularly to machines into which pieces of mail-matter are faced or fed singly by the operator, and commonly known as "hand-feed" machines.

The principal objects of the invention are to simplify the construction and yet accomplish all that more complicated machines do; to reduce the number of parts subject to wear to a minimum and by mechanical arrangement diminish their liability to get out of order or adjustment and lessen the objectionable noise incident to running the machine; to render more positive the automatic feeding of mail-matter to the printing devices, thereby securing greater accuracy and uniformity in cancellation; to make more regular the postmarking of special kinds or sizes of letters, and particularly those inclosed in square envelopes, and to provide a more rapid and convenient means for interchanging the postmarking dies on the printing-cylinder, thereby saving valuable time.

To the above ends the invention consists in the improvements which I will now proceed to describe and claim.

The accompanying drawings, forming a part of this specification, illustrate an embodiment of the invention.

Figure 1 shows a top plan view of the machine with the parts in what may be considered their normal adjustment, that is, that adjustment which obtains when no letter is in the machine and the impression and printing cylinders are not ready to receive a letter. Fig. 2 shows a cross-section on line 2 2 of Fig. 1. Figs. 3, 4, and 5 are views somewhat similar to Fig. 1, illustrating different adjustments of parts at different stages in the operation. Fig. 6 shows a section on line 6 6 of Fig. 3. Fig. 7 shows a similar section, showing a part of the printing-cylinder and

the manner of ejecting the postmarking die. Fig. 8 shows a section on line 8 8 of Fig. 1. Figs. 9 and 10 are top views showing portions of the machine with a different arrangement of mechanism for moving the impression cylinder and band laterally. Fig. 11 represents a top view of a portion of the hopper, showing rolls used as a substitute for the ledge shown in other figures on the band *c*. Fig. 12 represents a section on line 12 12, Fig. 11.

Referring for the present to Figs. 1 to 8, inclusive, the letter *a* designates the hopper, into which the pieces of mail-matter are deposited, one by one, by the operator and along and out of which they are carried by a sectional ledge *b* on a continuously-moving band *c*, the latter being supported at one end by an idler *d* and at the other end by the impression-cylinder *e*. A piece 2 of mail-matter is shown in Figs. 3 and 4 as being carried along by the ledge *b*, and for convenience I will hereinafter term said piece a "letter."

The impression-cylinder *e* is affixed on a shaft *e'*, which just below the cylinder is embraced by a bearing *e''*, Figs. 2 and 8, fitted in a slot *s* in the frame of the machine, so as to permit lateral vibration of the shaft and cylinder. A lever *e'''* is pivoted at *e''* to the frame of the machine at a point beyond the impression-cylinder and at a point intermediate of its ends is jointed to the bearing *e''* by a pin *e''''*, Fig. 2. A spring *e'''''* is attached at one end to the free end of said lever and at the other end to the frame of the machine, said spring keeping the impression-cylinder and the band in contact with the printing-cylinder *f* during the printing operation unless prevented by the detents hereinafter described. The printing-cylinder is affixed to a shaft *f'*, which is journaled in stationary bearings on the machine-frame. The printing-cylinder has a cam for a purpose hereinafter described, said cam being preferably disposed in two cam-shaped ribs or flanges *f''* *f'''*, which extend over a considerable part of the periphery of the printing-cylinder, the part *f'''* of said periphery from which the canceling and postmarking dies *g* *h* project being of shorter radius than the said cams, the two portions alternating, so that said cams and dies are alternately in position to act on

the band *c*, the arc of the surfaces of the cams being outside of the acting faces of the dies.

The printing-cylinder bears directly against the band *c* where the latter lies over the cylinder *e*, as clearly shown in Fig. 2. The described formation of the perimeter of the printing-cylinder causes a lateral vibration of the impression cylinder and band if the latter are free to move laterally, the cams *f*² acting to push the impression cylinder and band outward, and the spring *e*⁴ moving said parts back when permitted by the low part of the periphery of the cylinder.

To prevent inking the band and to properly time each letter in its entrance between the impression-band and printing-cylinder, I provide the means next described.

i represents an arm or detent secured to a pivot *i*², which is journaled in a fixed bearing on the frame. Said detent is arranged so that it may stand in the path of a set-screw *i*³ in the lever *e*³ and has an arm *i*¹, which stands in the path of a letter propelled by the band *c* and presents an elongated surface extending substantially parallel with the path of the letter and adapted to bear against the back of the letter. A spring *i*⁴ acts to hold the detent in this position, as shown in Figs. 1 and 5.

The arm *i*¹ of the detent is curved to slightly deflect an approaching letter and thereby engage its forward end with a stop-finger *j*¹. Said arm *i*¹ is recessed at *j* for the reception of said stop-finger *j*¹, which is formed on the end of an arm *j*², the latter being pivoted at *j*³ to the machine-frame and pressed inwardly by a spring *j*⁴.

An approaching letter is deflected by the detent-arm *i*¹ against the stop-finger *j*¹ and remains there until freed by a positively-acting agent of the following description: A lever *k* of angular form is pivoted at *k*³ to the printing-cylinder and has at one end a forked clamping-foot *k*¹, which by an outward movement of said lever may be projected beyond the periphery of the printing-cylinder. Said clamping-foot is formed to move over and bestride the stop-finger *j*¹ and press a letter which may be detained thereby away from said finger and against the detent-arm *i*¹ and the carrying-band, the arm *i*¹ being thus displaced and the detent *i* thrown out of the path of the set-screw *i*³. The continued rotation of the printing-cylinder causes the clamping-foot to continue to press and hold the letter against the moving band *c*, said foot and band carrying the letter forward between the printing-cylinder and the band *c*, the impression-cylinder being released by the displacement of the detent *i*, so that it presses the letter against the printing-cylinder.

The foot *k*¹ is thrown outwardly to engage an approaching letter, as shown in Fig. 3, by means of a cam *n*, affixed to the frame of the machine, and a lever *m*, pivoted at *k*³ to the printing-cylinder and provided at one end

with a roll *m*², which is held in contact with said cam by a spring *n*². A set-screw *m*¹ on the lever *k* is arranged to bear on the lever *m*, and is drawn toward said lever by a spring *m*³, connecting the two levers, said spring permitting the fork *k*¹ and lever *k* to conform to the thickness of the letter interposed between said foot and the band *c*, the set-screw bearing against the lever *m*, as shown in Fig. 5, when the foot is not in contact with a letter. The cam *n* is fastened to a cap-piece *n*¹, Fig. 2, affixed to the frame of the machine and extending over the printing-cylinder, whose shaft has a bearing in said cam.

It will be observed that the clamping-foot is located so as to immediately follow the cams *f*² of the printing-cylinder and grasps the forward end of the letter in advance of the canceling-die *g*.

The operation is as follows: When the roll *m*² is on the high part of the cam *n*, the foot *k*¹ is projected, as shown in Fig. 3, and pushes the waiting letter 2 away from the stop-finger *j*¹ and against the carrying-band and the detent-arm *i*¹, thereby displacing said arm and throwing the detent *i* out of the path of the set-screw *i*³ in lever *e*³, so as to permit the spring *e*⁴ to press the impression cylinder and band toward the printing-cylinder. (See Fig. 4.) The letter now being clamped between the foot *k*¹ and the band *c* is carried between the band and the printing-cylinder and marked by the dies of the latter. When the low part *f*³ of the printing-cylinder cam has passed the impression-roll, the action of the cams *f*² against the band moves the impression-cylinder and its supporting-lever *e*³ outward, and the detent *i* springs in front of the screw *i*³.

When no letter passes between the printing-cylinder and the band, the detent *i* remains in its operative position and prevents contact between said cylinder and band, as shown in Fig. 5. The dies *g* *h* are thus prevented from inking the band.

The post-marking die *h* is fitted to slide in and out of a socket in the printing-cylinder (see Figs. 6 and 7) and has in one side a recess *h*². A rod *o* is fitted to slide in a transverse orifice in the printing-cylinder and is recessed in one side, as shown, and one end of the recess constitutes an inclined face *o*¹ to act against the inner end of the die, which end is received in the recess of the rod and is preferably beveled. The said slide-rod has a handle *o*², to which a pin *o*³ is fastened, said pin being adapted to engage the recess *h*² in the die. A spring *o*⁴, Figs. 3, 4, and 5, fastened at one end to an arm *o*⁵ on the handle *o*² and at the opposite end to the printing-cylinder, holds the slide-rod in the position shown in Fig. 6, thus keeping the pin in engagement with the recess of the die and locking the die in the cylinder. To extract the die, it is only necessary to raise the handle *o*², thus withdrawing the pin *o*³, unlocking

the die, and causing the beveled face o' to force the die outwardly, as shown in Fig. 7, so that it may be readily grasped and removed.

Provision for quickly removing and securing the die is of considerable importance, as in large offices the post-marking die has to be altered at frequent intervals.

The shafts e' and f' extend some distance downward, and at their lower ends carry intermeshing gears e^6 and f^6 , Fig. 8. The shaft e' is journaled in a pivotal bearing f^7 , which permits the necessary lateral movements of the impression-cylinder. It will be seen that the pivotal point of the shaft-bearing f^7 is so remote from the impression-cylinder that the swinging movement of the gear e^6 is not sufficient to affect its operative relation with the gear f^6 .

In the construction shown in Figs. 9 and 10 the cam which displaces the impression cylinder and band is attached to the printing-cylinder shaft f' below the printing-cylinder f , said cylinder being represented only by dotted lines in said figures in order that the cam, which is lettered f^5 , may be fully shown. The impression-cylinder shaft e' is journaled in a lever e^8 , which is pivoted at e^9 to one end of a lever e^{10} , the latter being connected by a pivot e^{12} to a fixed part of the machine and having at its other end a roll e^{13} , which is held against the cam f^5 by a spring e^{14} . The lever e^8 is held by a spring e^{15} against a fixed stop or rest e^{16} , said lever having an adjustable bearing-screw e^{17} , which limits its movement toward said stop. The set-screw i^3 , which coöperates with the detent i in the same manner as in the previously-described construction, is mounted on the lever e^8 . The clamping-foot k' and its operating devices are not shown, but their operation is the same as in the previously-described construction. The cam f^5 and spring e^{14} oscillate the lever e^{10} on its pivot or fulcrum e^{12} , the cam moving the lever in one direction and the spring in the opposite direction.

When the roll f^{13} is upon the lower part of the cam f^5 , as shown in Fig. 9, the lever e^8 and the impression-cylinder and its band are moved outwardly, the lever e^8 turning on the rest e^{16} as a fulcrum, so that the detent i is free to assume its normal position in the path of the set-screw i^3 . When the said roll is on the higher part of the cam, as shown in Fig. 10, the lever e^8 is moved inwardly; but when the detent is in its normal position it limits the inward movement of the lever e^8 on its fulcrum e^{16} and the impression cylinder and band, preventing the latter from coming in contact with the dies g h of the printing-cylinder, the lever e^8 rocking on the detent as a fulcrum and the screw e^{17} separating from the rest e^{16} . When there is no letter to transmit the pressure of the clamping-foot k' to the detent-arm i' , the detent remains in its normal position; but when a letter arrives and is acted on by the clamping-foot to displace the detent the lever e^8 is permitted to

swing inwardly on its fulcrum e^{16} to a sufficient extent to cause the band to press the letter against the dies of the printing-cylinder, the extent of the inward movement of the impression cylinder and band being determined by the adjustable bearing-screw e^{17} .

The cam f^5 is timed to move the impression roll and band inwardly just as the dies are approaching their printing position, so that if a letter is in place the band is moved inwardly in time to press the letter against the dies.

Among the advantages resulting from my improvements may be mentioned the following:

First. The elongated arm i' , presenting an elongated or extended surface to the side of the letter, is adapted to be supported in position to hold the detent i out of its locking position by even the thinnest and most yielding piece of mail-matter, so that there is no liability of the return of the detent i to its locking position when a very thin letter is passing, the elongation of said arm i' being also sufficient to keep the detent in its displaced position until the dies g and h have acted on the letter.

Secondly. The lever m , continuously held against the fixed cam, and the clamping-foot-carrying lever k , yieldingly connected with the lever m , permit the described movements of the foot and its conformation to the thickness of the letter without noise or rattle, such as would be caused if the foot-carrying lever were operated directly by the fixed cam, in which case the said lever would have a more or less distinctly audible contact with the cam.

Thirdly. The gearing is reduced to the minimum, only the gears e^6 and f^6 being required.

The fixed stop e^{16} and the adjustable bearing-screw e^{17} , which limit the approach of the impression cylinder and belt toward the printing-cylinder, constitute an important feature of my invention. They enable the distance between the belt and printing-cylinder to be adjusted so that a space of any desired width will exist between the two. In practice the adjustment will be such that the belt will run as close to the printing-cylinder as possible without actual contact therewith. The adjusting devices enable the position of the impression-cylinder during the printing operation to be adjusted so that whatever may be the thickness of the belt its outer surface will be at the proper distance from the printing-cylinder.

An advantage claimed for the arrangement shown in Figs. 9 and 10 over former arrangements, wherein the letter-displaced detent constitutes a fulcrum, is that whereas in such former arrangements the impression-surface is caused or allowed to impinge against the printing-cylinder in the rocking of the lever on the detent as a fulcrum in the present case such rocking of the lever is limited by the abutment of the screw e^{17} against the rest

e^{16} , and the impression-surface is thereby prevented from coming against the printing-cylinder and is only brought to position for effective coöperation therewith when the detent is displaced. Thus the constant blows of the impression-surface against the printing-cylinder heretofore experienced are obviated.

In Figs. 11 and 12 I show a series of rolls t arranged at the bottom of the hopper a to support the letters in their passage through the hopper instead of the sectional ledge b carried by the belt, said ledge being omitted. Said rollers are horizontally arranged and are mounted on vertical axes t' , which are supported by a holder t^2 , suitably secured to the frame of the machine. The axes t' of the rolls are at one side of the letter-path, so that the letters bear on the upper sides of the rolls, near the peripheries thereof, as shown in Fig. 12. The rolls bear against the band and are rotated thereby, the portions of the rolls on which the letters bear being thus caused to move in the same direction with the band. The holder t^2 is here shown as pressed toward the band to maintain a suitable frictional contact between the rolls and band, this pressure being effected by spring-bolts t^3 , movable in sockets in the holder and bearing on the frame at one side of the hopper. The holder is preferably made in sections hinged together at t^5 , so that when it is being applied and removed it will not require as much room at the end of the machine as it would if made rigid from end to end.

I claim—

1. In a mail-marking machine, the combination with a marking and an impression cylinder arranged in juxtaposition and one journaled in fixed bearings and the other in a support movable toward and from the one in fixed bearings and yieldingly pressed toward the same, and a letter-displaced detent engaging said movable support to separate the cylinders; of a lever pivoted to a fixed support and engaging said movable support, and means associated with the cylinder in fixed bearings and coacting with said lever and with said detent to effect outward movement of the opposed cylinder.

2. In a mail-marking machine the combination of an impression and a marking cylinder one being journaled in stationary bearings and positively rotated; an elongated carrier with bearings intermediate of its ends for the other cylinder; a rest for one end of said elongated carrier constituting a fulcrum therefor; a lever coupled with the opposite end of said carrier and pivoted to a fixed support; means associated with the cylinder in stationary bearings for vibrating said lever; and a letter-displaced detent engaging the carrier at a point between its cylinder-bearing and the end coupled with the lever and constituting a fulcrum for the carrier to rock upon in the absence of matter to be marked, substantially as described.

3. In a mail-marking machine, the combi-

nation of an impression and a marking cylinder one being journaled in stationary bearings and positively rotated; an elongated carrier with bearings intermediate of its ends for the other cylinder; a rest for one end of said elongated carrier constituting a fulcrum therefor; an adjusting-screw in that end of the carrier and bearing against the rest; a lever coupled with the opposite end of the said carrier and pivoted to a fixed support; means associated with the cylinder in stationary bearings for vibrating said lever; and a letter-displaced detent engaging the carrier at a point between its cylinder-bearing and the end coupled with the lever and constituting a fulcrum for the carrier to rock upon in the absence of matter to be marked, substantially as described.

4. In a mail-marking machine, the combination of a letter-carrying band, a printing-cylinder journaled in fixed bearings at one side of the band, an impression-cylinder at the opposite side of the band, said cylinder having a band-supporting surface which is adjustable relatively to the printing-cylinder, so that the band may be either operatively or inoperatively supported by the impression-cylinder, a detent which normally holds the said band-supporting surface in its inoperative position, said detent having an arm or extension formed to bear on the back of a letter, a letter-clamping lever and an auxiliary lever mounted on the printing-cylinder, said clamping-lever being capable of a limited independent movement, a stationary cam coöperating with the auxiliary lever, and springs controlling said levers, as set forth.

5. In a mail-marking machine, a printing-cylinder having a die-receiving socket and a die-ejecting slide movable transversely in said socket and recessed to receive the inner end of the die with one end of said recess inclined whereby withdrawal of the slide ejects the die, substantially as described.

6. In a mail-marking machine, a printing-cylinder having a die-receiving socket and a die-ejecting slide movable transversely in said socket and recessed to receive the inner end of the die with one end of said recess inclined whereby withdrawal of the slide ejects the die, and a spring connecting the slide with the cylinder and resisting withdrawal of the former.

7. In a mail-marking machine, a printing-cylinder having a die-receiving socket, a die-ejecting slide movable transversely in said socket, and a die-locking pin connected with said slide.

8. In a mail-marking machine, the combination with the hopper, the band, and printing mechanism at one end of the hopper, of a series of horizontally-arranged rolls adapted to support and convey the letters in the hopper, said rolls being in rolling contact with the band.

9. In a mail-marking machine, the combi-

nation with the hopper, the band, and printing mechanism at one end of the hopper, of a series of horizontally-arranged rolls adapted to support the letters in the hopper, and means
5 for pressing said rolls yieldingly against the band.

In testimony whereof I have signed my

name to this specification, in the presence of two subscribing witnesses, this 5th day of September, A. D. 1895.

JOHN S. HANSEN.

Witnesses:

HENRY B. REED,
A. D. HARRISON.