

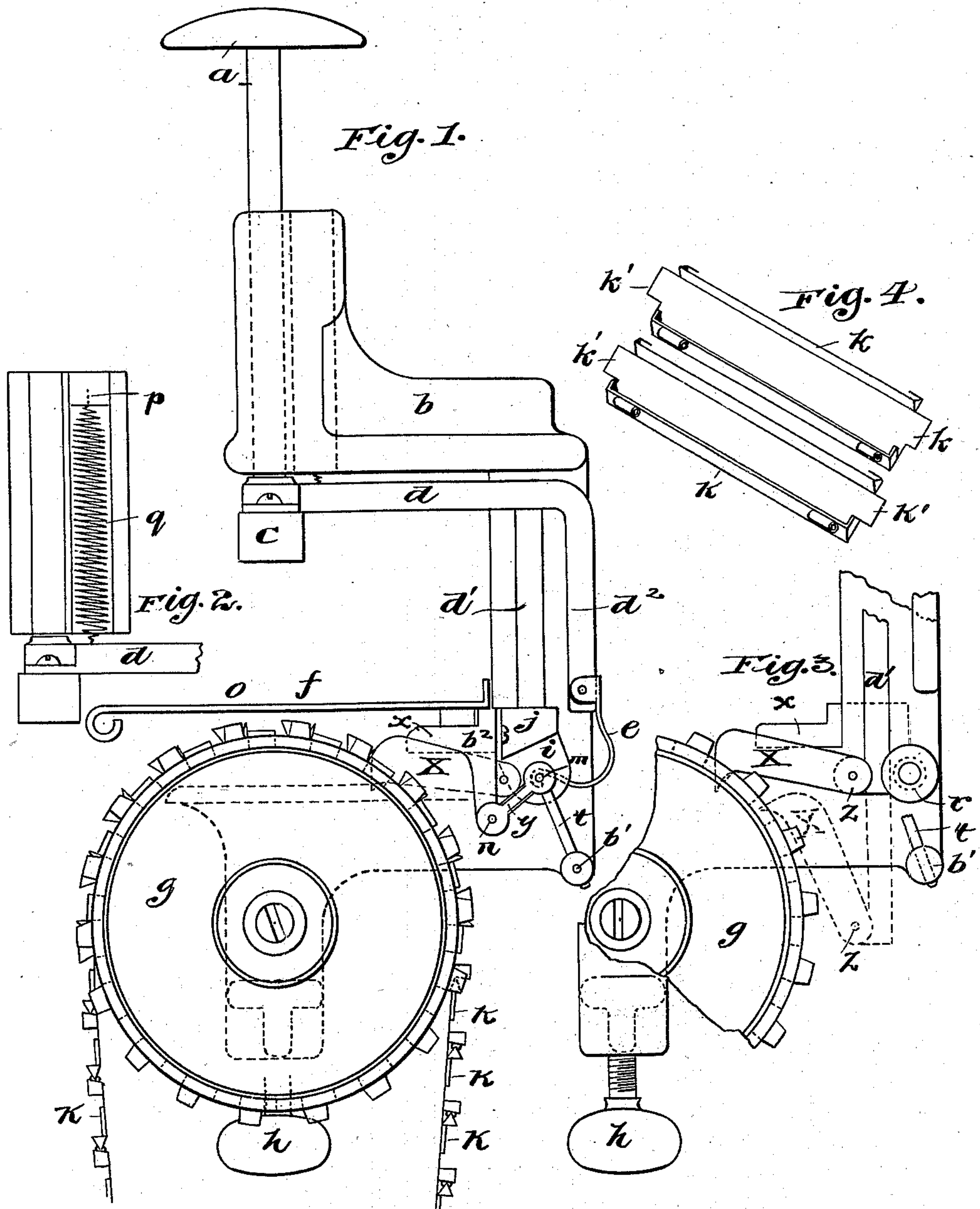
(No Model.)

3 Sheets—Sheet 1.

J. S. DUNCAN.
ADDRESSING MACHINE.

No. 558,936.

Patented Apr. 28, 1896.



Witnesses,
J. M. Mann
Frederick Goodwin

Inventor,
Joseph S. Duncan
By *Field, Fowler & Luthman*
Attys.

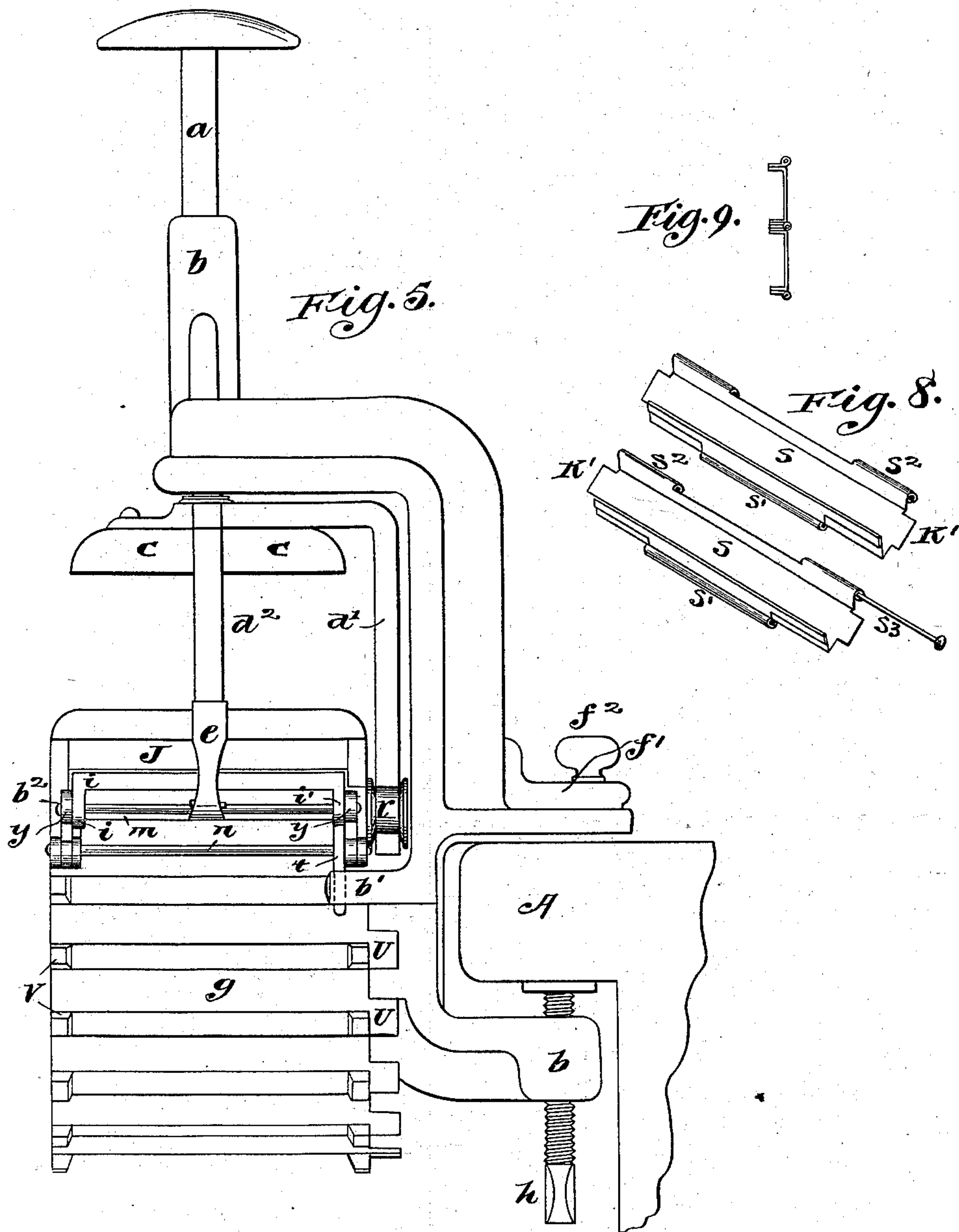
(No Model.)

3 Sheets—Sheet 2.

J. S. DUNCAN.
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Patented Apr. 28, 1896.



Witnesses,

F. D. Mann,
Frederick Goodrum

Inventor,

Joseph S. Duncan
By *Offield Towle Luthicam*
Att'y.

(No Model.)

3 Sheets—Sheet 3.

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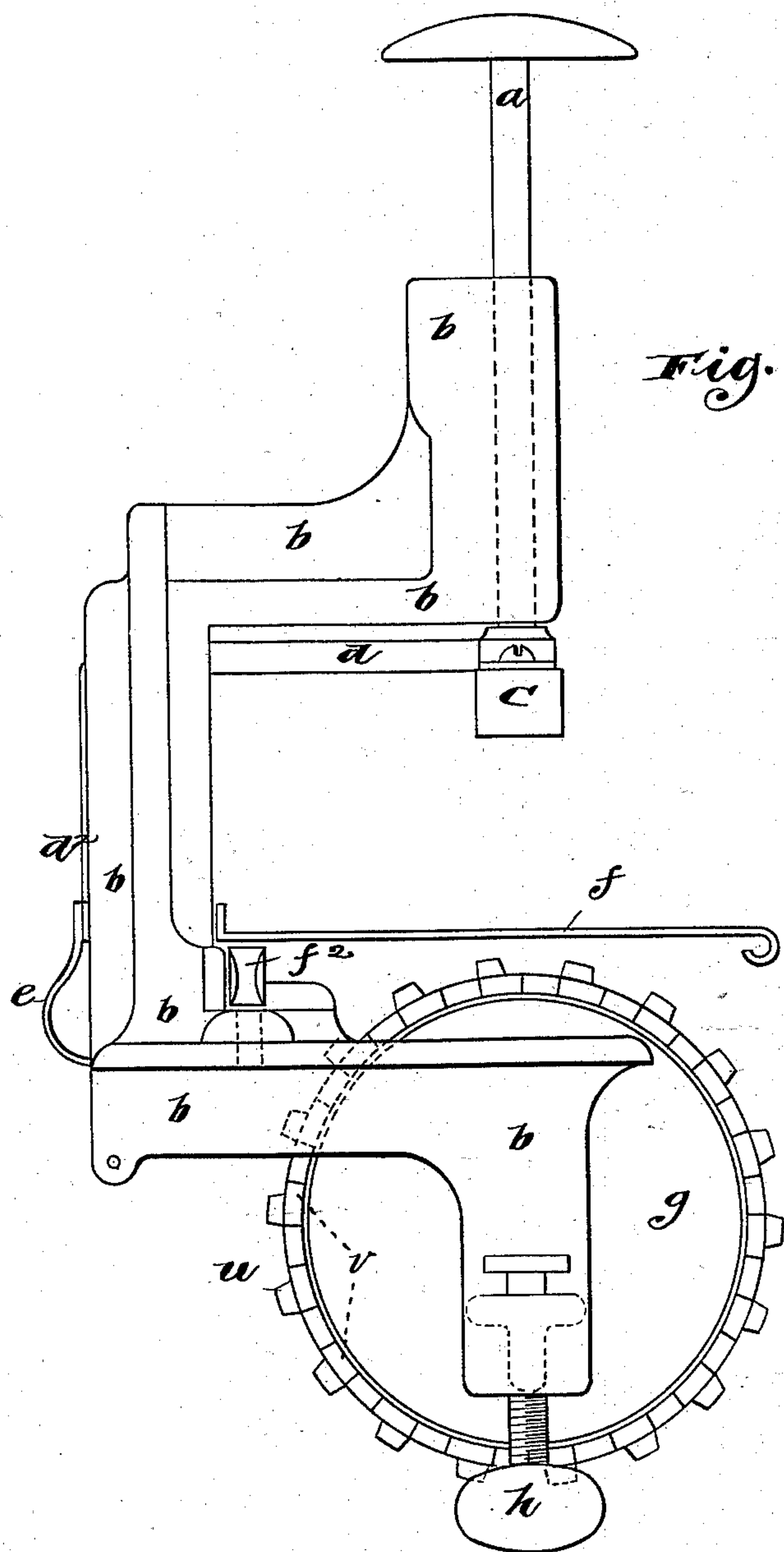


Fig. 6.

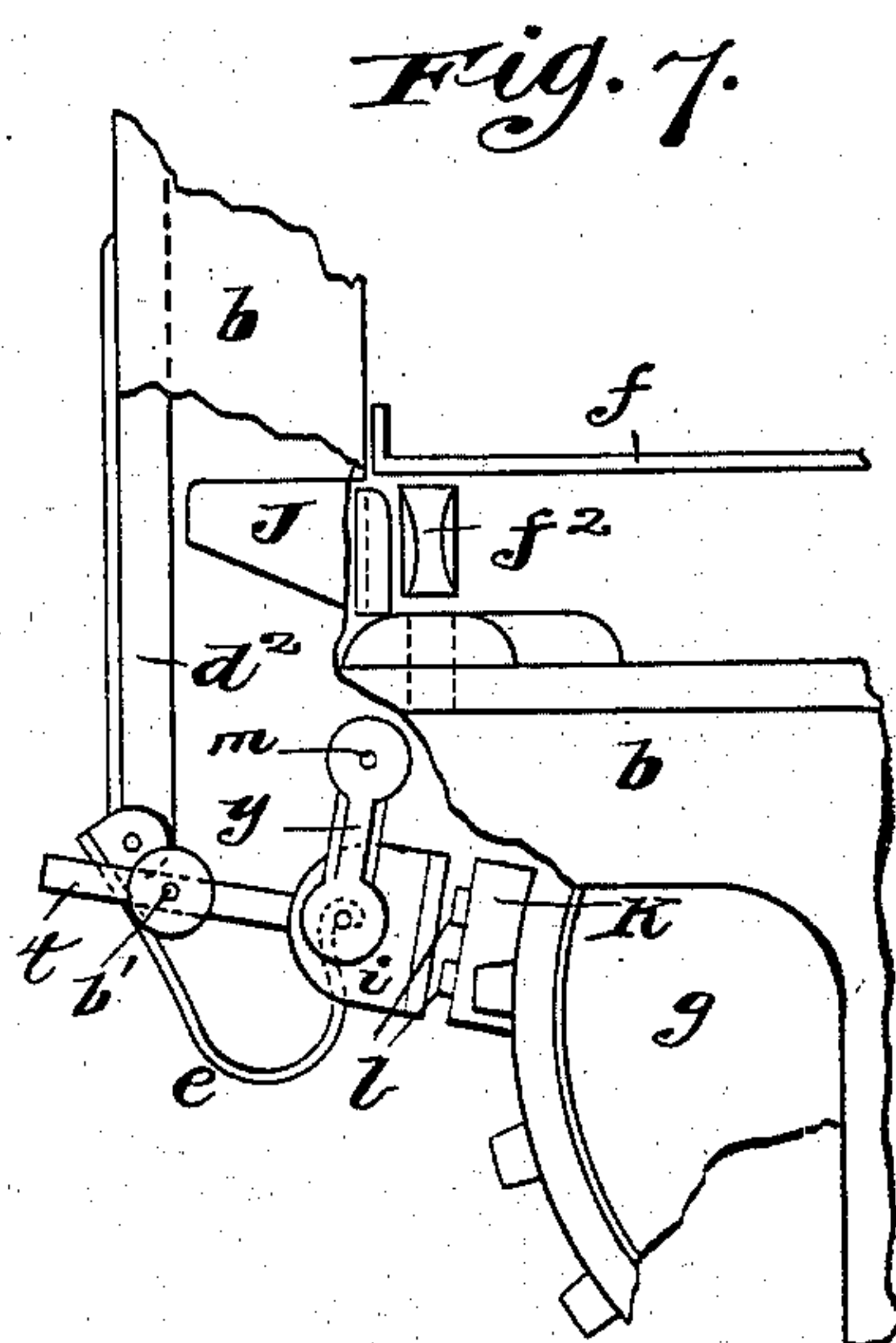


Fig. 7.

Witnesses,
J. S. Mann,
Frederick Goodwin

Inventor,
Joseph S. Duncan
By Offield, Towle & Luthicam
Attys.

UNITED STATES PATENT OFFICE.

JOSEPH S. DUNCAN, OF SIOUX CITY, IOWA, ASSIGNOR TO THE ADDRESSO-
GRAPH COMPANY, OF CHICAGO, ILLINOIS.

ADDRESSING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 558,936, dated April 28, 1896.

Application filed August 2, 1893. Serial No. 482,214. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH S. DUNCAN, a citizen of the United States, residing at Sioux City, in the county of Woodbury and State of Iowa, have invented a new and useful Addressing-Machine, of which the following is a specification.

My invention relates to improvements in addressing-machines in which a chain of detachable type-plates is suspended over a rotating drum and a plunger or stamper capable of being driven downward upon the top of the drum carries a platen into contact at each movement of the machine with one of the type-plates, which are inked from a suitable inking device; and the objects of my improvement are to provide, first, a type-belt easily removable and capable of being compactly stored away when not in use; second, an inking device having a direct bearing on the type, without rolling or sliding, and in which the ink-pad is normally closed from air and dust; third, a simple and accurate means of rotating the type-belt so as to bring the name-plates successively under the platen; fourth, to dispense with all pulleys for the type-belt, suspending it from a single drum; fifth, to provide a detachable link which will retain the printing-surface and yet allow it to be easily removed, and in which any link can be easily removed from the chain, and, sixth, to produce a small compact addressing-machine capable of being easily clamped to the edge of a desk or table. I attain these objects by means of the mechanism illustrated in the accompanying drawings, which are full size, and in which—

Figure 1 is a side elevation of the entire machine, except that the endless type-belt is broken away, showing that portion of it which passes over the drum and its lower end; Fig. 2, a vertical section of the frame, showing the plunger-hole and the tension-spring controlling the plunger; Fig. 3, a portion of the mechanism displaying the gravity-pawl; Fig. 4, a perspective view of two detached link-plates of the type-belt; Fig. 5, a rear elevation of the entire machine with the type-belt removed; Fig. 6, a side view opposite from Fig. 1, type-belt removed; Fig. 7, a detail showing inking device in position occupied

when envelop is in contact with type; Figs. 8 and 9, a perspective view and a cross-section of another form of link.

Similar letters refer to similar parts throughout the series of views.

The endless type-belt is composed of the link-plates $k k k$, &c., which will be hereinafter fully described. The projections k' , when the belt is in position, fall between the sprockets v of the drum g , causing the belt to revolve with the drum. Drum g is journaled, as shown, on a horizontal axis, on which it is adapted to turn freely. This axis is rigidly fixed to the main frame b , which I prefer to have of malleable iron, steel, or brass. This frame has several turns or angles, and at its upper end is pierced vertically, as shown in Fig. 2, for the passage of the plunger a and the tension-spring q . It is necessary that the plunger a should be held normally in the position shown in Figs. 1, 5, and 6. To accomplish this, I prefer to use the spiral spring q , the upper end of which is confined in some way as to the block p , as shown. The lower end is attached to arm d . The envelop-support f is made, preferably, of sheet metal and is provided at o with a transverse opening, directly under which a link-plate K is normally at rest. Directly over the opening o is the platen c , which, when forced down upon an envelop suitably placed on the envelop-support, springs the envelop-support downward until the type, through opening o , is brought into contact with the envelop, postal card, or other surface upon which it is desired to print.

Rigidly attached to the plunger a is the arm d , preferably of steel, which gives off the two branch arms d' and d^2 , which actuate the pawl X and the movable ink-pad i , respectively. Plunger a , platen c , and arms d' and d^2 are all rigidly joined or may be all of one piece and are all moved downward by hand or other power applied to the plunger a and are normally drawn up by spring q . If deemed advisable, the arm d^2 may be dispensed with and arm d' lengthened and turned upward in such a manner as to carry the spring e , in which case the three arms d , d' , and d^2 would become essentially one long rod with several angles and turns.

At one end of the drum *g*, and preferably at that side of the machine next the desk and extending horizontally from the periphery, are the teeth *v v*, &c., adapted to be acted upon by pawl X and so spaced that a rotation of the drum by the space represented by one tooth moves the type-belt forward the width of one link-plate, bringing a new name under opening *o*. Pawl X is loosely hinged to arm *d'* at *z*, so that its weight causes its curved beak to fall between two of the teeth *v*. It may be provided with a spring, but I prefer the simpler construction shown. It is normally in the position shown in Fig. 1 and the continuous lines in Fig. 3, its top held against its stop *x* and by pressure thereon its point firmly wedged between two of the teeth *v*, thereby holding the drum *g* firmly in position and permitting no movement thereof, either backward or forward. Arm *d* and pawl X are held from lateral motion by the flanged roller *r*. When the plunger is driven down for the purpose of printing an address, arm *d'* and its pawl X are depressed to the position shown by the dotted lines in Fig. 3, the pawl slips backward over the tooth *v* back of it, drops its beak into the space between the teeth next back of the one formerly occupied by it, and on the plunger being released the tension-spring draws the mechanism up to its normal position, the pawl is forced to the position shown in Fig. 1, having forced the drum forward one step and brought a new type-plate under platen *c* ready for a new impression. The point of pawl X moves more slowly than the arm which actuates it, and as it nears its normal position of rest the pressure of its curved beak on the tooth in front of it gradually ceases and brings the drum to a gradual stop, which is in many ways preferable to a sudden stop. The compound leverage of the pawl enables a weaker spring to control the plunger than if applied directly to the drum or type-belt.

Any appropriate inking device may be used; but in practice I prefer that shown in the drawings, invented by me for this purpose. It consists of the stationary ink-pad *j* and its coöperating mechanism, which I will now describe.

The arm *d*², formerly referred to, carries, hinged to it at its lower end, the curved flat spring *e*. Spring *e* is at its lower end movably attached to the rod *n*, which forms the outer side of the swinging bail. The end pieces of the bail are marked *y*. Pad *i* swings and turns upon the bail on pierced lugs. (Marked *i'*.) The threadless bolt *b* fits loosely and is freely movable in a passage made for it in frame *b*, as shown by dotted lines in Fig. 5. The head of bolt *b* is pierced for the passage of the guide *t*, which fits it loosely enough to have free longitudinal motion. The rod *m* is movably attached at each end to the connecting-piece *y*. These two connecting-pieces *y*, with rod *m*, form a swinging bail, turning on rod *n* as a center.

The connecting-pieces *y* are rigidly attached to rod *n*, which turns as they swing. In practice it may be preferable to dispense with one of the end pieces *y* and extend rod *n*, bending it so as to form both sides and one end of the swinging bail. Spring *e* is so adjusted as to normally press the movable ink-pad *i* firmly against the stationary ink-pad *j*. The surface of the latter is kept inked and the movable pad is freshly inked at every contact with it. These pads may be composed of any suitable substance. I prefer a construction similar to that of the ordinary inking-pads in common use.

When the plunger is forced downward in operating the machine, the depression of arm *d*² forces spring *e* downward, carrying with it rod *m* and movable pad *i*. The connecting-pieces *y* force the movable pad to travel downward in the segment of a circle. At the same time guide *t*, turning upon bolt *b'* as on a pivot, reverses the pad *i*, spring *e* continues its pressure, forcing the freshly-inked pad upon a link of the type-belt, as shown in Fig. 7, in which *l* represents the type in the link-plate *k*. By this device the type in each link-plate are freshly inked just before use.

Any mode of uniting links recessed for type or engraved may be used with my invention, but I prefer the two forms of peculiarly-constructed recessed link-plates *k* and *s*, (shown in Figs. 4, 8, and 9,) united in an endless chain or type-belt, and carrying rubber or other suitable type or stamps fixed in the recesses of the links, which may be of any suitable substance, preferably metal. This endless chain may be as long as the height of the drum from the floor will permit, and is thrown over the drum, where it hangs suspended by its own weight, no other support being necessary. The link-plates are oblong in shape, and at each end each link is provided with the projection *k'*, adapted to lie between the sprockets of the drum. Each link-plate has its edges turned up so as to form a recess, as shown, for the reception of the type *l*.

In Fig. 4 is shown a form of link in which one side of each link is provided with two eyes and the opposite side with two hooks, adapting them to be snapped together.

The link-plate *s* is formed of one piece of sheet metal stamped into shape. The metal is turned up at the sides, then doubled back upon itself, and the hinge-eyes *s'* and *s*² crushed into their tubular form for the passage of the retaining-pin *s*³. As shown, each link has on one side the two eyes *s*² and on the other side the eye *s'*, which fits between the eyes *s*² of any other link. The pin *s*³ passes through the three eyes in the manner of an ordinary loose-pin hinge.

I prefer to make the type of rubber and to press them in with sufficient force to cause them to retain their position by compression. In practice I have each address upon a soft-

rubber stamp made to fit the recess in the link-plate, but it is obvious that by dividing the recess into compartments rubber or other suitable type may be used and set in singly. I have not shown the type in the drawings, as a similar use of type is an old device, and I make no claim as to the type itself.

The stop x marks the limit of the upward movement of pawl X and forces the beak of the pawl down between the teeth v in such a manner as to hold the drum normally firmly in position. This stop should be made of some hard substance, as steel.

The support for the inking device is marked b^2 , and may be a part of the frame b , or rigidly connected therewith.

The envelop-support f is provided with a foot f' , which is pierced for the passage of the machine-screw f^2 , by which it is firmly held in place. When desired, by loosening this screw the envelop-support may be swung inward, leaving the space above the drum free. The type-belt can then be readily removed. It is obvious that the envelop-support may be hinged, so as to turn up, if deemed best.

Whenever a name in the list becomes obsolete, it may be removed from the link and another be substituted. Should the list decrease, the blank links may be readily removed. If the list be too long, it may be divided into two or more type-belts, which are capable of being compactly rolled up or hung away in a small space when not in use.

A represents the edge of a desk to which in Fig. 4 the machine is represented as clamped by means of the proper form of frame and the screw h . The machine may be furnished with a cabinet, in which case this feature might be modified.

I claim as my invention and desire to secure by Letters Patent—

1. In addressing-machines, an endless type-belt composed of hinged link-plates suspended upon a single drum or pulley having a step-by-step revolution, and adapted by said revolution to bring the type-surfaces successively into position for printing, substantially as above set forth and for the purposes specified.

2. In machines for printing a predetermined list of addresses or other forms, an endless type-belt suspended by its own weight over a single drum or pulley and provided with hinged link-plates with stamping or printing surfaces; a platen capable when properly actuated, of forcing the surface to be printed into contact with the type-belt; and mechanism for imparting to the drum or pulley and the type-belt a step-by-step revolution and bringing the link-plates successively into co-operation with the platen, all substantially as above set forth and for the purposes specified.

3. In addressing-machines, the endless type belt or chain composed of hinged link-plates and suspended by its own weight as shown over a single drum or pulley having a surface adapted to engage the type-belt, as by sprockets fitting between projections thereon; a

spring-controlled plunger carrying a platen adapted to press the surface to be printed upon the printing-surface, but normally disengaged therefrom; a pawl coöperating with appropriate teeth on the drum, and so connected with the plunger as to produce no movement of the drum when the platen is brought into coöperation with the type-belt, and to cause the drum and type-belt to rotate the width of one link-plate when the plunger returns to its normal position, all substantially as above set forth and for the purposes specified.

4. In addressing-machines, a type-belt carrying the printing-surfaces, and passing over a drum provided with sprockets adapted to engage projections on the type-belt and carry its printing-surfaces successively into position to coöperate with the platen; an envelop-support adapted to support the surface to be printed in such position that the platen may force said surface into contact with the printing-surfaces of the type-belt; teeth or projections on the drum adapted to engage an actuating-pawl, and so placed as to move the type-belt forward one link when the drum is forced forward one tooth; a plunger held in its normal position by a spring, and having rigidly attached to it the platen and an arm or arms adapted to actuate the inking device and pawl; a pawl loosely hinged to said arm, and having a beak held normally firmly wedged against a stop, and between two of the teeth of the drum, and adapted, when the plunger is moved so as to bring the platen into coöperation with the type-belt, to slide back and fall back of the next tooth of the drum, and on its return to its normal position, to force the drum to rotate one step; an inking device consisting of a stationary ink-pad, a movable ink-pad having its surface normally in contact with the inked surface of the stationary pad but capable of separation therefrom by swinging upon a bail, and having a guide adapted to reverse it in swinging and thus bring its inked surface into contact with one of the printing-surfaces of the type-belt, said bail being connected with the plunger-arm by a spring connection adapted to permit the swinging of the bail, and to force the movable ink-pad into contact with each of the printing-surfaces of the type-belt successively as the machine is operated; all substantially as above set forth and for the purposes specified.

5. In inking devices for addressing-machines, a stationary ink-pad having an inked surface; a movable ink-pad having its surface normally in contact therewith; a swinging bail turning upon a fixed center, and to the outer side of which the movable ink-pad is movably attached, and upon which said ink-pad swings; a guide rigidly fixed to the movable pad and loosely confined near its end so as to adapt it to reverse the movable pad as it swings and present its inked surface to the printing-surface; and a curved

spring attached to the bail and to its actuating mechanism, as the arm d^2 , all substantially as above set forth and for the purposes specified.

5 6. In inking devices for addressing-machines, the stationary ink-pad j ; the movable ink-pad i ; the swinging bail carrying the movable ink-pad and adapted to turn upon a fixed center, as the rod n ; the guide t loosely con-
10 fined as by the bolt b' so as to permit the swinging of the bail, and to reverse the pad i in swinging; the spring e and the arm d^2 , all substantially as above set forth and for the purposes specified.

15 7. In addressing-machines, the frame b ; the plunger a , with its platen c ; the arm d' ; the pawl X attached thereto; the journaled drum g , with its sprockets u and its teeth v ; the arm d^2 ; the spring e pivoted thereto; the
20 stationary ink-pad j ; the movable ink-pad i adapted to turn on its swinging bail and provided with its guide t adapted to reverse the pad i ; the type-belt composed of the hinged link-plates; all in combination substantially
25 as above set forth and for the purposes specified.

8. In addressing-machines the combination of the type-belt composed of the hinged link-

plates s ; the rotating drum g with its sprockets
 u and its teeth v ; the pawl X; the plunger a 30
with its arms d , d' , and d^2 ; the inking device above described, consisting of the stationary ink-pad j , the movable ink-pad i , the guide t and the swinging bail; the pivoted connecting-spring e ; and the frame b ; all substan- 35
tially as above set forth and for the purposes specified.

9. In addressing-machines, the combination of the plunger a ; the platen c ; the frame b ; the arms d , d' , and d^2 ; the spring e ; the en- 40
velop-support f , with its opening o , its foot f' pivoted on the screw f^2 ; the inking device, with its support b^2 , its stationary ink-pad j , its movable ink-pad i with its pierced lugs i' , its rods m and n , its end pieces y and its 45
guide t with its loose pivot b' ; the roller r ; the pawl X with its stop x ; the journaled drum g with its sprockets u and its teeth v , the type-belt composed of the hinged link-plates s ; the frame b and the clamp-screw h , 50
all substantially as above set forth and for the purposes specified.

JOSEPH S. DUNCAN.

Witnesses:

C. W. BRITTON,
A. S. WILSON.