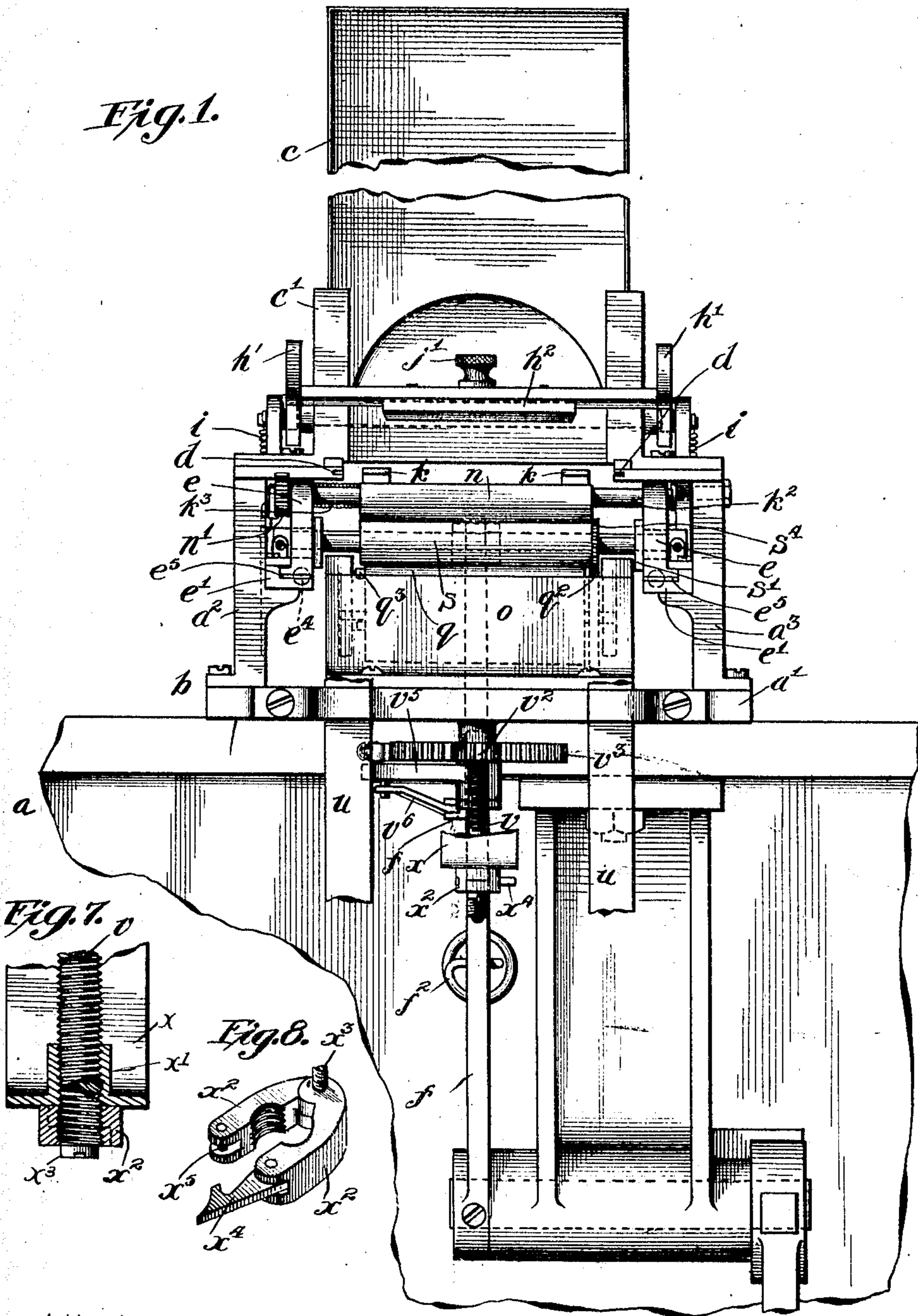


No. 871,560.

PATENTED NOV. 19, 1907.

C. A. BELKNAP.  
ADDRESSING MACHINE.  
APPLICATION FILED JAN. 30, 1907.

5 SHEETS—SHEET 1.



Attest:

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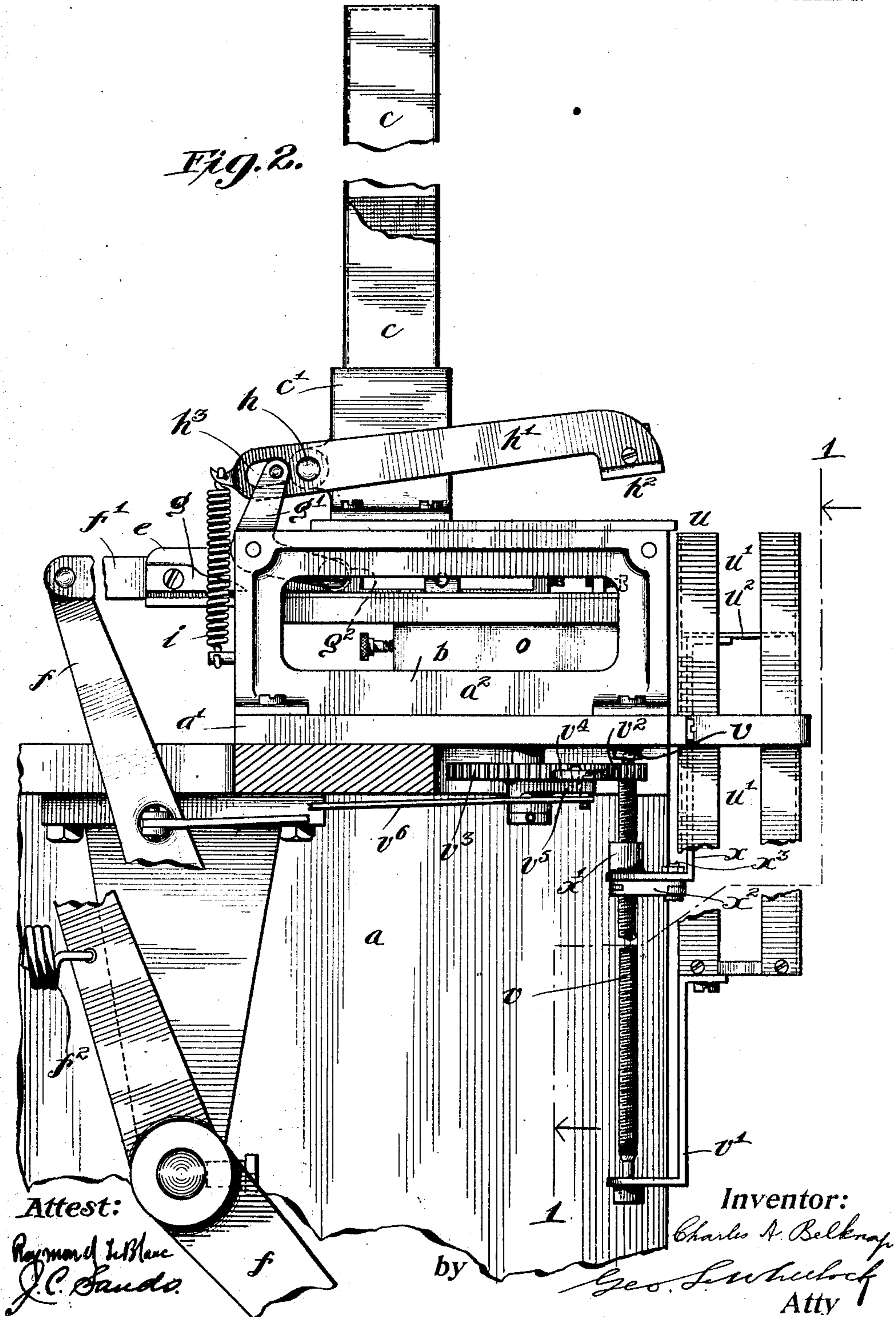
Charles A. Belknap  
by Geo. L. Wheelock  
Atty

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5 SHEETS—SHEET 2.



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6 SHEETS—SHEET 3.

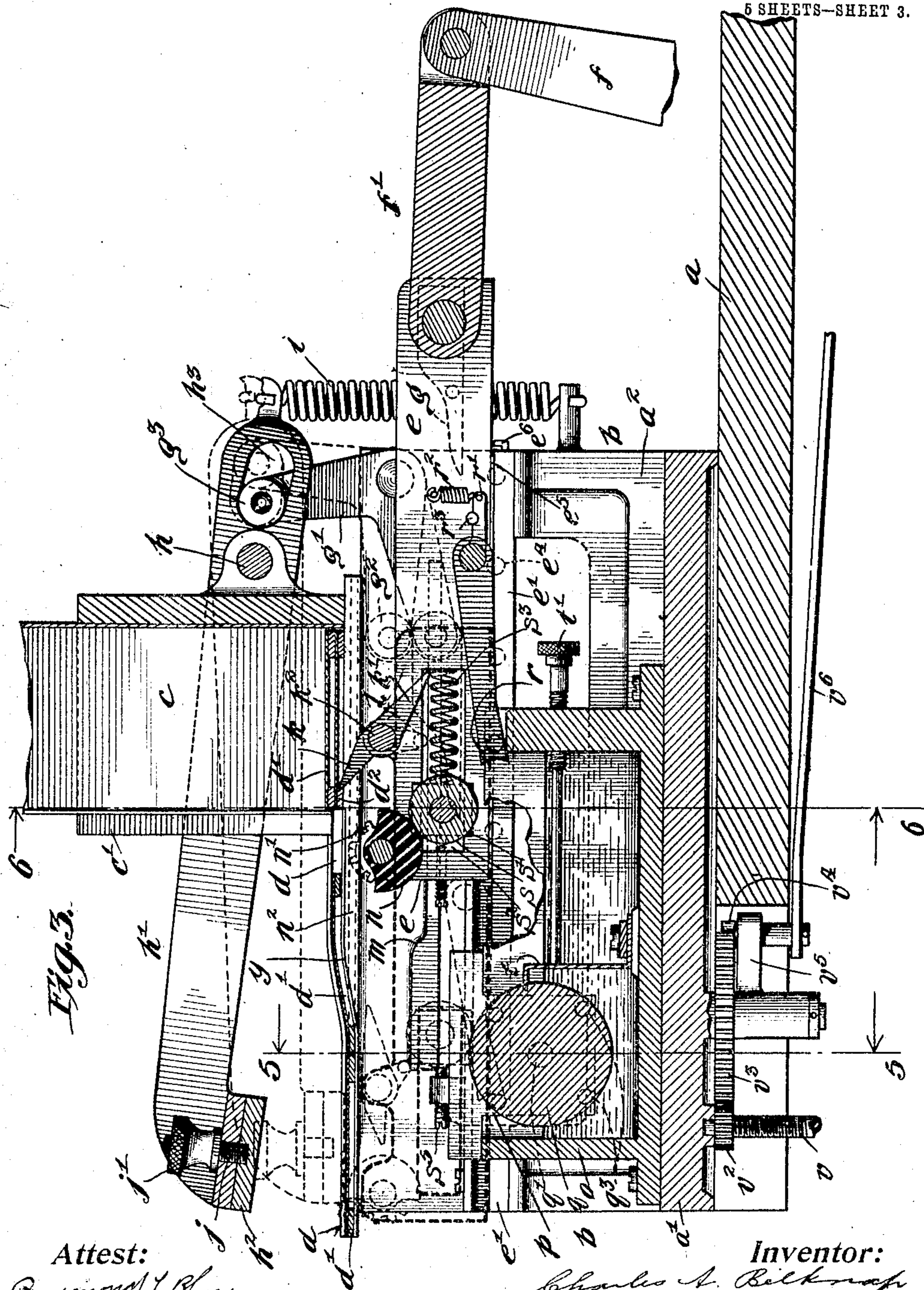


Fig. 3.

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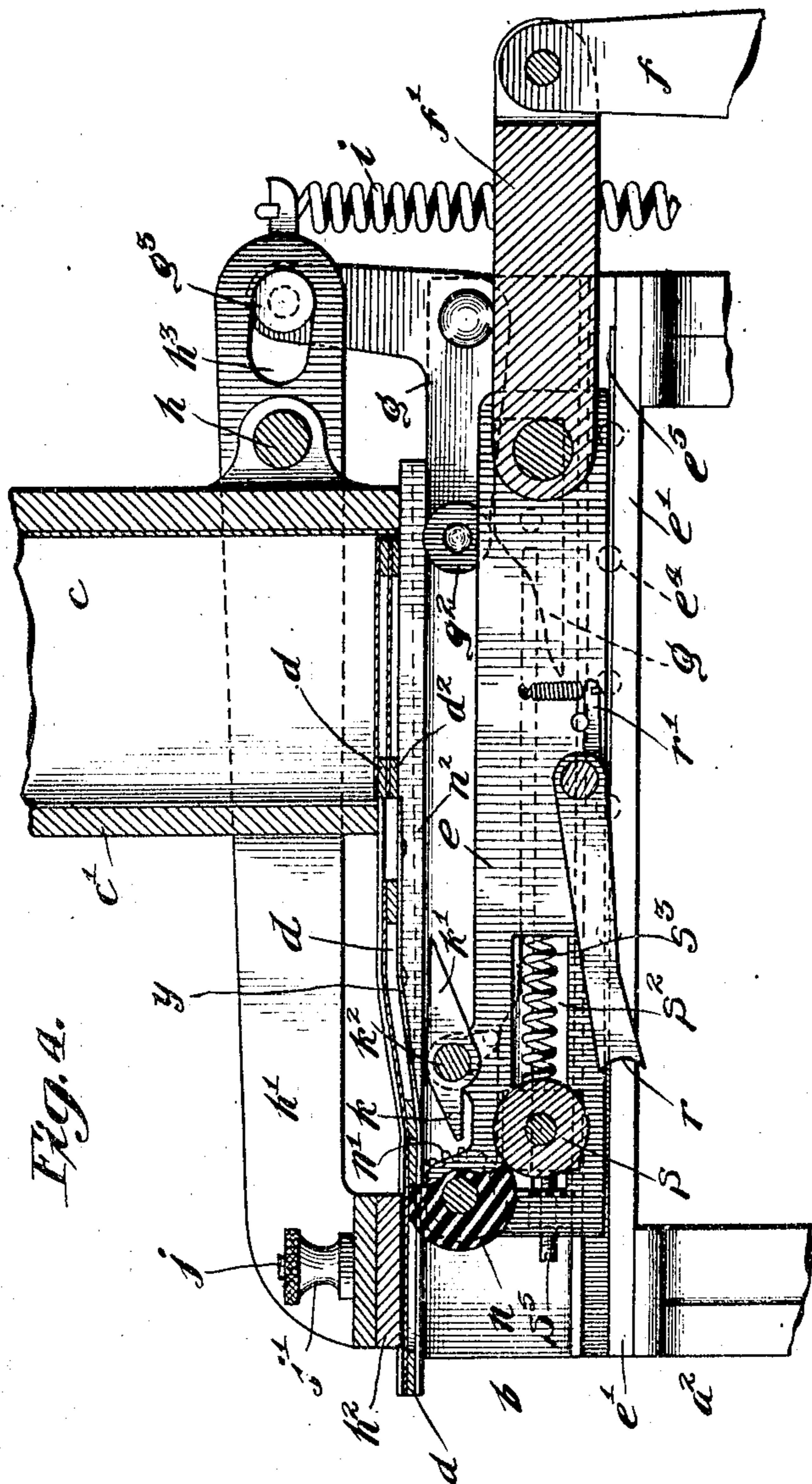
Geo. L. Wheelock  
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C. A. BELKNAP.  
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APPLICATION FILED JAN. 30, 1907.

6 SHEETS—SHEET 4.



**Attest:**

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***Inventor:***

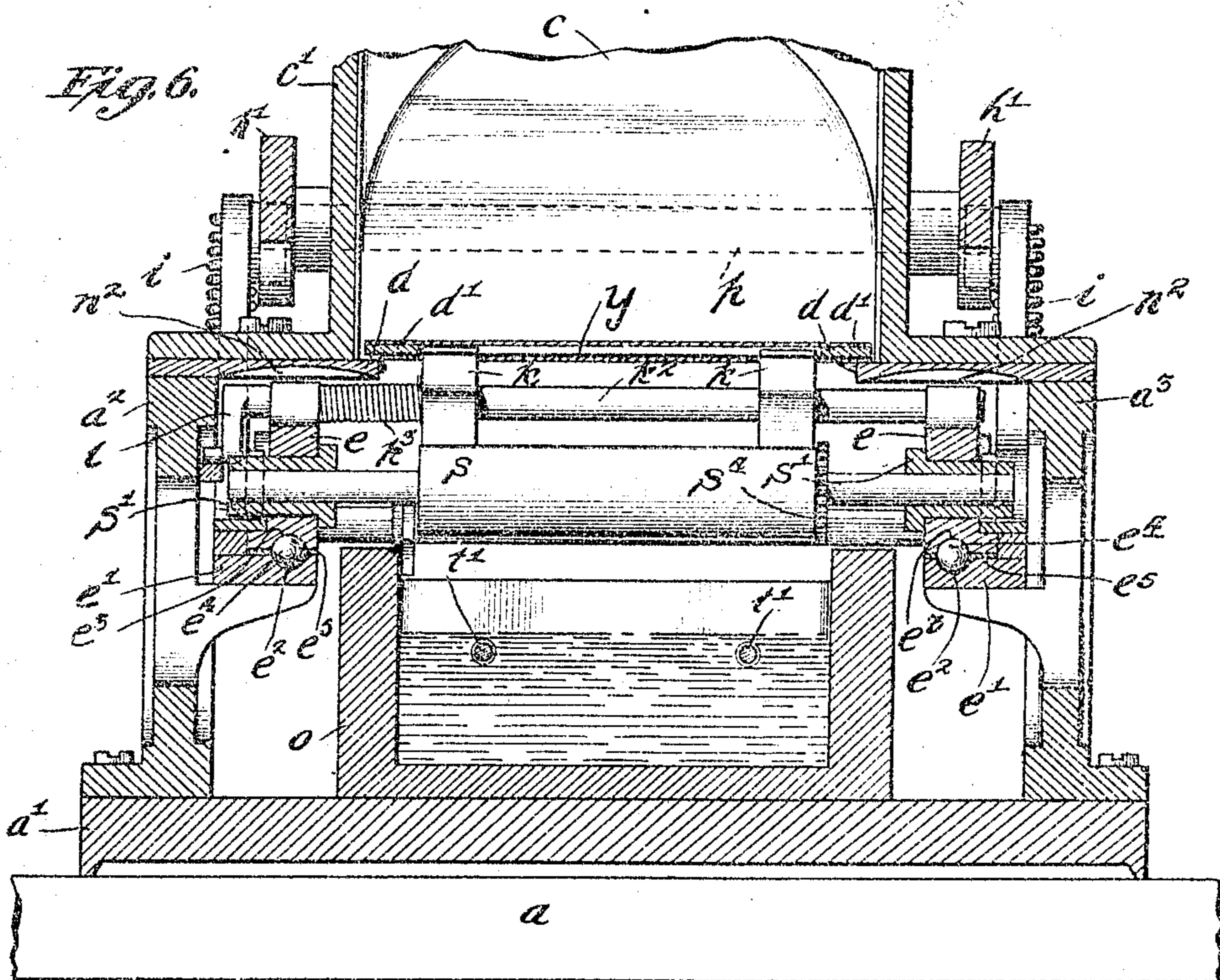
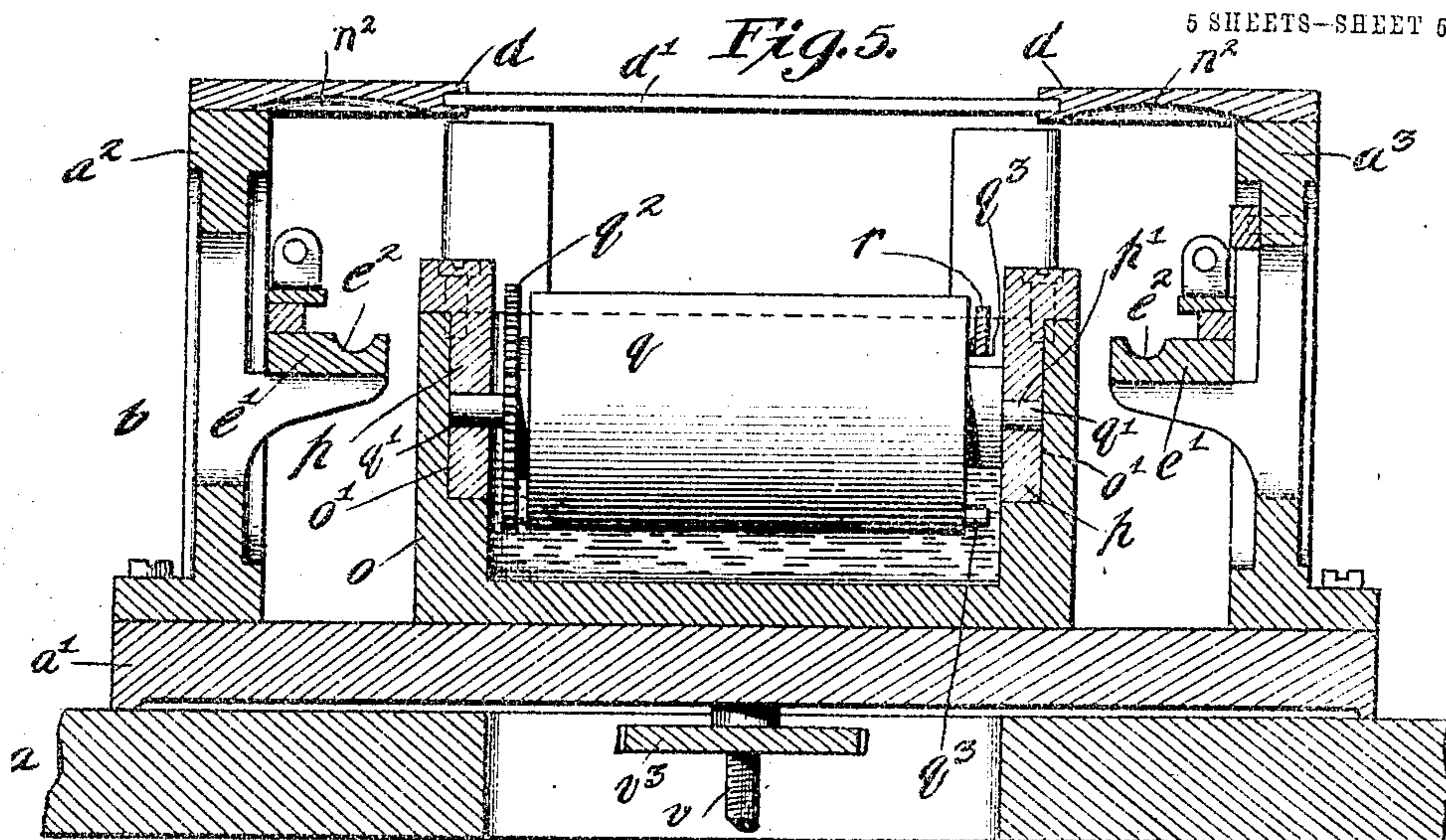
Charles N. Belknap  
by Geo. L. Wheelock  
Attv.

No. 871,560.

PATENTED NOV. 19, 1907.

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APPLICATION FILED JAN. 30, 1907.

5 SHEETS—SHEET 6.



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# UNITED STATES PATENT OFFICE.

CHARLES A. BELKNAP, OF NEW YORK, N. Y., ASSIGNOR TO STANDARD ADDRESSING MACHINE COMPANY, OF NEW YORK, N. Y., A CORPORATION OF NEW YORK.

## ADDRESSING MACHINE.

No. 871,560.

Specification of Letters Patent.

Patented Nov. 19, 1907.

Application filed January 30, 1907. Serial No. 351,797.

To all whom it may concern:

Be it known that I, CHARLES A. BELKNAP, a citizen of the United States, residing at New York, in the borough of Brooklyn and State of New York, have invented certain new and useful Improvements in Addressing-Machines, of which the following is a specification.

This invention has relation to machines for addressing wrappers for newspapers and other printed matter, envelopes, etc., and for any other purposes where printing is accomplished through the medium of stencil cards.

The main objects of the present invention are to provide an addressing machine of simple and cheap, yet durable construction, so that an addressing machine may be placed upon the market at a very low price. The high price of addressing machines as now constructed practically precludes their use by a large number of possible customers.

One of the important objects of the present invention is to provide a ball bearing machine so as to reduce noise and friction to a minimum.

These being some of the objects in view, my invention consists of certain features of construction and combinations of parts to be hereinafter described and then claimed, with reference to the accompanying drawings, in which a desirable form of my invention is shown, and in which

Figure 1 is a front elevation partly in section on the line 1—1, Fig. 2. Fig. 2 is a side elevation parts being broken away. Fig. 3 is a vertical central section, showing in full lines the carriage in its extreme rear position, and in dotted lines the carriage in its extreme forward position, the concomitant parts being similarly in full and dotted lines. Fig. 4 is a similar vertical central section of the same parts above the ink font, these parts being in an intermediate position. Fig. 5 is a transverse section on the line 5—5, Fig. 3 the inking roll being in elevation. Fig. 6 is a transverse section on the line 6—6, Fig. 3. Fig. 7 is a sectional detail of a portion of the follower mechanism. Fig. 8 is a perspective view of the feed nut therefor.

Referring to the drawings, a suitable supporting bench or table  $a$  is shown as supporting the main frame  $b$  of the addressing machine. The main frame, as appears from the cross section Figs. 5 and 6, comprises three parts, a lower or base portion  $a'$ , and two

side portions  $a^2$ ,  $a^3$ . As is customary in machines of this type, two stencil card boxes or receptacles are used at one time. The card supply box  $c$  is supported on top of the machine, and is usually in the form of a box which constitutes a drawer adapted to be inserted into a cabinet. This combined card box and drawer is usually inserted into a suitable socket or receiver  $c'$ .

The side portions  $a^2$ ,  $a^3$ , of the frame  $b$  are provided with opposite parallel guides  $d$  which receive the cards  $d'$  that are supplied from the card supply box  $c$ . The guides are, as shown in Fig. 3, bent for the purpose of preventing smudging of the cards by ink from the impression roll below, before it is desired that the impression roll act to print. The guides extend to the platen end of the machine, being lower at their forward ends than at their rear ends.

Mounted between the side portions  $a^2$ ,  $a^3$ , of the machine frame is a reciprocating carriage  $e$  which rests and slides upon guide rails  $e'$ . These guide rails and the carriage are respectively provided in adjacent surfaces with longitudinal grooves  $e^2$ ,  $e^3$ , forming raceways for anti-friction balls  $e^4$ . Ball retaining strips  $e^5$  space the balls apart and move along with the carriage to a greater or less extent. Preferably suitable stops  $e^6$  are provided to confine the ball retaining strips to limits of motion.

The addressing machine is operated in any approved manner, as by means of a foot actuated lever  $f$ , which, by means of a link  $f'$  is connected with the carriage. A returning spring  $f^2$  acts on the foot lever to return it after each actuation by the foot. Said carriage is provided preferably at one side, with a cam portion  $g$  shown in dotted lines in Figs. 3 and 4, and this cam portion is adapted to engage with a rock and bell-crank lever  $g'$  pivoted to the frame of the machine, the engaged end of said lever carrying an anti-friction roller  $g^2$ .

Mounted to swing on a pivot or shaft  $h$  suitably supported from the socket  $c'$  on the frame is a platen frame  $h'$ , said platen frame carrying at its outer end a suitable platen  $h^2$ . Said bell-crank lever has an anti-friction roller  $g^3$ , which is received and engages in an elongated slot  $h^3$  in the rear end of said frame, which end is acted upon by a suitable spring  $i$  tending to elevate the platen and platen frame from the position shown in dotted

lines Fig. 3 to that shown in full lines. The roller  $g^3$  and the slot  $h^3$  practically form a pin-and-slot connection between the frame  $h'$  and the bell-crank lever  $g'$ . Suitable means are preferably provided to enable the platen  $h^2$  to be removed, such as a bolt  $j$  and a nut  $j'$ . The platen is so positioned on the platen frame as that when it moves to printing position it will lie intermediate of and transverse to the guides  $d$ , and so that it will be positioned centrally relatively to a card  $d'$  which has moved to printing position.

A card catcher  $k$ , having a weighted portion  $k'$ , is pivoted to rock with or on a shaft or pivot  $k^2$ , which is mounted on the carriage  $e$ , near the forward end of the carriage. The function of the card catcher  $k$  is to engage by its toe with the inner edge of the forward portion or cross bar  $d^2$  of a stencil card at the lower end of the card supply box  $c$ . To accomplish such arrangement, the carriage has such a rearward limit of motion as to bring the toe of the card catcher substantially into the position shown in Fig. 3. In moving rearwardly to this position, the toe of the card catcher engages with the frame of the card and is deflected. The engagement with the card is preferably made sure by supplementing the weighted portion of the card catcher by a spring  $k^3$  coiled upon the shaft or pivot  $k^2$  and fixed at one end to the shaft and at the other end to the shaft bearings. (See Fig. 6).

A crank  $l$  on the pivot of the card catcher  $k$  is adapted, as the carriage is moved forward, to engage a cam shoulder  $m$  on the frame of the machine, the highest point of which is extended forwardly a suitable distance, so that the said crank is engaged by the said cam shoulder and is held in a rocked position against the action of the weighted portion  $k'$  and the spring  $k^3$ . This construction and operation disengages the card catcher from the second card next to the forward card just before the second card reaches its position, as shown in Fig. 3, and the card catcher is held disengaged thereafter and during the printing, and until the carriage is returned.

Underneath the card guides  $d$  and at the forward end of the carriage  $e$  there is mounted an impression roll  $n$  of suitable printer's composition, to provide a soft surface. This impression roll may either be segmental, as shown, or it may be a complete roll. If segmental, it is so timed during printing as that its curved surface will engage throughout its area the stencil portion of the card and press it against the article to be printed, which has been introduced under the platen. An apron  $y$  is located underneath and between the card guides  $d$  for the purpose of preventing smudging or dirtying the card frames by the impact of the impression roll  $n$ , which is very apt to occur if the roll be a complete roll instead of the segmental roll shown.

The shaft of the impression roll  $n$  carries a pinion  $n'$  which is adapted to mesh with the teeth of a longitudinal rack  $n^2$  underneath one of the card guides  $d$ , so that as the carriage is reciprocated, the impression roll is turned.

Suitable means are provided for supplying ink to the impression roll, and preferably comprise an ink font or reservoir  $o$  suitably fixed to the frame  $b$  of the machine, said font having, as shown in Figs. 5 and 6, closed and imperforate, but recessed ends, the recesses  $o'$  being open at their upper ends. Into the upper open ends of the recesses  $o'$  are received preferably solid slide boxes  $p$ , having bearings  $p'$ , and between which is located an inking roll  $q$ , having a shaft  $q'$  turning in said bearings.

At one end of the inking roll  $q$  are arranged a gear wheel  $q^2$  and at the other end pins  $q^3$ , which pins are spaced at equal distances apart. These pins are successively engaged as the carriage is reciprocated forwardly several times by a roll actuating pawl  $r$ , having a tail portion  $r'$  that is moved by a spring  $r^2$  fixed to the carriage against a stop  $r^3$ , thereby limiting the movement of the pawl in one direction. So limited in its movement, the pawl clears the rear portion of the ink font  $o$  as the carriage is moved forwardly, and one of the pins  $q^3$  on the inking roll is positively engaged by the forward end of the pawl and the roll turned substantially a quarter revolution. The turning of the inking roll  $q$  also carries the gear wheel  $q^2$  with it, for the purpose of turning an intermediate transfer roll  $s$ . The transfer roll  $s$  is mounted by means of its shaft in sliding boxes  $s'$ , which are guided in slots  $s^2$  in the carriage  $e$ , springs  $s^3$  being provided to impel the transfer roll to the position shown in full lines Fig. 3. It will be seen that as the reciprocating carriage is moving forward to its full extent, the transfer roll  $s$  is brought in contact with the inking roll  $q$ , and the springs  $s^3$  are contracted.

It is obvious that, to prevent the passage of the transfer roll  $s$  past the inking roll  $q$ , the transfer roll must stop short of the highest point of the inking roll, as the carriage moves still further. When the transfer roll is brought to stop against and in contact with the inking roll, a pinion  $s^1$  on the shaft of the transfer roll meshes with the gear  $q^2$  of the inking roll, and said transfer roll is rotated from the inking roll and its surface inked.

The forward position of the yielding boxes  $s'$  on the carriage  $e$  and the transfer roll, is determined by means of a contact screw  $s^5$  tapped into the forward end of the carriage. A doctor  $t$  mounted in the ink font and adjusted by a screw spindle  $t'$ , acts to regulate the supply of ink to the inking roller. It will be observed that when the transfer roll

is taking its ink from the inking roll, the impression roll  $n$  is separated from and independent thereof, there being no contact of the transfer and impression rolls until the springs  $s^3$  are permitted to bring the transfer roll against the impression roll.

At the forward end of the machine a card receiving box or hopper  $u$  is disposed, it being supported from the frame of the machine so that its upper part will be so positioned relatively to the discharge end of the card guides  $d$  that a card which has just been used for printing will be discharged into it upon the next forward reciprocation of the carriage. Obviously the card receiving box or hopper may be attached firmly and permanently to the machine and itself serve as the collecting medium for the used cards and the cards removed therefrom through the side openings  $u'$  in quantities conveniently grasped by the hand, or the said box or hopper may serve to receive an emptied card supply box  $c$ .

Improved means are in the present machine provided for the purpose of causing the cards to be properly deposited in the card receiving box or hopper  $u$ . To accomplish this result the box or hopper  $u$  contains a movable bottom  $u^2$  constituting a follower, which is so governed and controlled during the operation of the machine that it shifts the distance of the approximate thickness of a card before another card is deposited in the box. For this purpose a screw or spindle  $v$  is supported at its lower end so as to turn in the bearing of a hanger  $v'$  supported from the card receiving box  $u$ . The upper end of said spindle  $v$  carries a pinion  $v^2$  which meshes with a larger gear wheel  $v^3$  mounted to turn on a portion of the frame of the machine. A spring pressed pawl  $v^4$  mounted on a pivoted arm  $v^5$  takes against the teeth of the gear wheel  $v^3$  to turn the gear, and hence the screw spindle, to accomplish which the arm  $v^5$  is connected by a link  $v^6$  to the foot lever  $f$ . Said follower  $u^2$  is supported from a leg  $x$ , the foot of which supports a sleeve  $x'$ , through which the screw spindle  $v$  passes. The foot of said leg  $x$  supports sections  $x^2$  of a follower nut, said sections being pivotally supported on a pin  $x^3$ , and one of them carrying a pivoted latch  $x^4$  which is adapted to engage with a latch pin  $x^5$  on the other section, thus holding the two sections of the divided nut together and causing the threads therein to mesh properly with the thread of the screw spindle  $v$ . It will appear that at each actuation of the platen and carriage of the machine, the screw spindle  $v$ , acting through the nut  $x^2$ , moves the follower downwardly a short distance. When the card receiving box or hopper  $u$  has received its full quota of used stencil cards, it is time to unlock the sections of the follower nut  $x^2$  so that by one

movement by hand the follower  $u^2$  may be moved forwardly and back to starting position.

Easy movement of the carriage and comparatively noiseless operation thereof, as well as the proper functioning of the other parts of the machine influenced by the carriage, is effectuated through the medium of the ball bearings between the carriage and the guide rails of the machine.

It will be seen that during the operation of the machine the card catcher  $k$  removes the lowermost card from the card supply box  $c$  and eventually carries it to printing position, and a more or less number of reciprocations of the carriage is necessitated before bringing the card to printing position, depending upon the length of the card guides. The mounting of the card-catcher and the impression roll on the carriage results in both of them being compelled to move forward at the same speed. When the carriage first starts to move forward, and before the impression roll  $n$  has reached impression position, the platen  $h^2$  and its frame are moved from the full line position shown in Fig. 3 to the dotted line position there shown. Also when the impression roll is rolling over the surface of the stencil card, which for the moment is used for printing, it has been separated from and is removed from the transfer or intermediate roll  $s$ , which, during such operation, is being inked for the renewed inking of the impression roll after the same has been brought in contact with the transfer roll, such inking being effectuated through the medium of the pinion and rack,  $n'$ ,  $n^2$ . The position of the parts carried by the carriage, just as the printing of the stencil card is starting, is shown in Fig. 4, at which time it will be seen that the impression roll  $n$  is about to leave the transfer roll  $s$ .

The construction and operation shown and described is the preferred one, and I desire it understood that the invention is not limited to the construction shown, as various changes are within the scope and spirit of the invention.

Having thus described my invention, what I claim as new is:

1. In an addressing machine, the combination of a frame provided with guide-rails, a carriage guided on said rails, an impression-roll on the carriage, card-guides, bearing balls between the carriage and the rails, card-forwarding means mounted on the carriage, and a platen against which said roll acts.

2. In an addressing machine, the combination of a frame provided with guide-rails, a carriage guided on said rails, an impression-roll on the carriage, card-guides, bearing balls between the carriage and the rails, ball-retaining strips between the opposed surfaces of the guide-rails and carriage and hav-

ing openings to receive the balls, card-forwarding means mounted on the carriage, and a platen against which said roll acts.

3. In an addressing machine, the combination of a frame provided with guide-rails, a carriage guided on said rails, an impression-roll on the carriage, card-guides, bearing balls between the carriage and rails, said carriage and rails having longitudinal grooves forming raceways for the balls, card-forwarding means mounted on the carriage, and a platen against which said roll acts.

4. In an addressing machine, the combination of a frame provided with card-guides, guide-rails, means adapted to bear on both sides of a card and for making an imprint through it, a carriage guided on said guide-rails and actuating said imprint means, card-forwarding means mounted on the carriage, bearing balls between the carriage and the guide-rails, said carriage and rails having longitudinal grooves forming race-ways for the balls, and ball-retaining strips between the opposed surfaces of the guide-rails and the carriage.

5. In an addressing machine, the combination of card-guides constructed to engage opposite portions of the cards and to prevent displacement except in the direction of feeding movement of the cards, a carriage, a card catcher pivoted on the carriage, means acting directly on the card catcher for throwing it into engagement with the edges of the cards, and means separate therefrom and acting directly on the card catcher for positively disengaging the catcher from a card.

6. In an addressing machine, the combination of card-guides constructed to engage opposite portions of the cards and to prevent displacement except in the direction of feeding movement of the cards, a carriage, a card catcher movably mounted on the carriage to engage the edge of a card and adapted to be tilted, and a cam positively engaging and tilting the card catcher to disengage it from a card.

7. In an addressing machine, the combination of card-guides constructed to engage opposite portions of the cards and to prevent displacement except in the direction of feeding movement of the cards, a carriage, a card catcher pivoted on the carriage, a spring acting on the catcher to hold it in engagement with the edge of a card, and a cam for positively disengaging the catcher from the edge of the card.

8. In an addressing machine, the combination of card-guides constructed to engage opposite portions of the cards and to prevent displacement except in the direction of feeding movement of the cards, a carriage, a card catcher pivoted on the carriage to engage the edge of a card, a crank-arm on the card catcher, and a cam engaged by the crank-

arm for positively disengaging the catcher from a card.

9. In an addressing machine, the combination of a carriage, an impression roll mounted thereon, a platen-actuating cam mounted on the carriage, and a platen actuated by said cam to move it to printing position.

10. In an addressing machine, the combination of a carriage, a segmental impression roll mounted thereon, a platen-actuating cam mounted on the carriage, a platen actuated by said cam to move it to printing position, and means actuating the segmental impression roll to cooperate with the platen.

11. In an addressing machine, the combination of a carriage, an impression roll mounted thereon, a pinion on the roll, a rack with which the pinion meshes, a platen-actuating cam mounted on the carriage, and a platen actuated by said cam to move it to printing position.

12. In an addressing machine, the combination of a carriage, an impression roll mounted thereon, card guides, a protecting apron between the card guides and the impression roll, a platen-actuating cam mounted on the carriage, and a platen actuated by said cam to move it to printing position.

13. In an addressing machine, the combination of a carriage, an impression roll mounted thereon, an idle transfer roll also mounted on the carriage, a platen-actuating cam also on the carriage, and a platen actuated by said cam to move it to printing position.

14. In an addressing machine, the combination of a carriage, an impression roll mounted thereon, a platen-actuating cam mounted on the carriage, a platen, a bell-crank lever connected with the platen, said cam engaging said bell-crank lever, and means for moving the platen from printing position.

15. In an addressing machine, the combination of card guides a carriage, means on the carriage for feeding the cards an inking roll, a spring-pressed transfer roll, said carriage during its forward movement bringing said transfer roll in contact with said inking roll and compressing its spring and an impression roll for printing through the cards.

16. In an addressing machine, the combination of card guides a carriage, means on the carriage for feeding the cards an inking roll, a spring-pressed transfer roll mounted on the carriage, an impression roll also on said carriage and adapted to contact with said transfer roll and a platen against which the impression roll acts.

17. In an addressing machine, the combination of a card-receiving box or hopper containing a follower, means comprising a card catcher for feeding cards into said box, and means actuated from the card-feeding means

during the receding movement of the card catcher from the said box for progressively shifting the said follower step by step as the cards are successively deposited into the box.

5 said follower-shifting means comprising meshed gears, and a pawl taking against one of said gears and being suitably connected with said card feeding means, the other of said gears being suitably connected with said  
10 follower.

18. In an addressing machine, the combination of card-guides, a platen, a card catcher for feeding the cards, a laterally movable impression-roll, and means for simultaneously and at the same speed moving  
15 the card catcher and the impression-roll towards the printing position.

19. In an addressing machine, the combination of card-guides, a platen, a card  
20 catcher, a laterally movable impression-roll, a carriage on which the card catcher and said roll are mounted to feed the cards and to move the roll to printing position, and means for throwing the card catcher out of action  
25 during the printing.

20. In an addressing machine, the combination of a carriage, an impression-roll mounted thereon, a platen, a crank-lever, a pin-and-slot connection between the crank-  
30 lever and platen, and means for actuating said crank-lever from the carriage to move the platen to printing position.

21. In an addressing machine, the combination of card guides, a platen, a card  
35 catcher for feeding the cards, a laterally

movable impression-roll of segmental shape, means for simultaneously moving the card catcher and the impression-roll towards the printing position, and means for throwing the card catcher out of action during the  
40 printing.

22. In an addressing machine, the combination of card guides, a platen, a card catcher for feeding the cards, a stationary  
45 rack, an impression-roll provided with a pinion meshing with said rack, and means for simultaneously and at the same speed moving the card catcher and impression roll towards the printing position.

23. In an addressing machine, the combination of a carriage, an impression roll  
50 mounted thereon, card guides, a protecting apron between the card guides and the impression-roll, a movable platen, and means on the carriage for actuating said platen. 55

24. In an addressing machine, the combination of card-guides, a carriage, a card catcher on the carriage for feeding the cards to printing position, means operated by said carriage for bearing upon both sides of a card  
60 to make an imprint through it, and means for throwing the card catcher out of action during the printing.

Signed at New York, N. Y. this 8th day of January 1907.

CHARLES A. BELKNAP.

Witnesses:

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GEO. L. WHEELOCK.