

(No Model.)

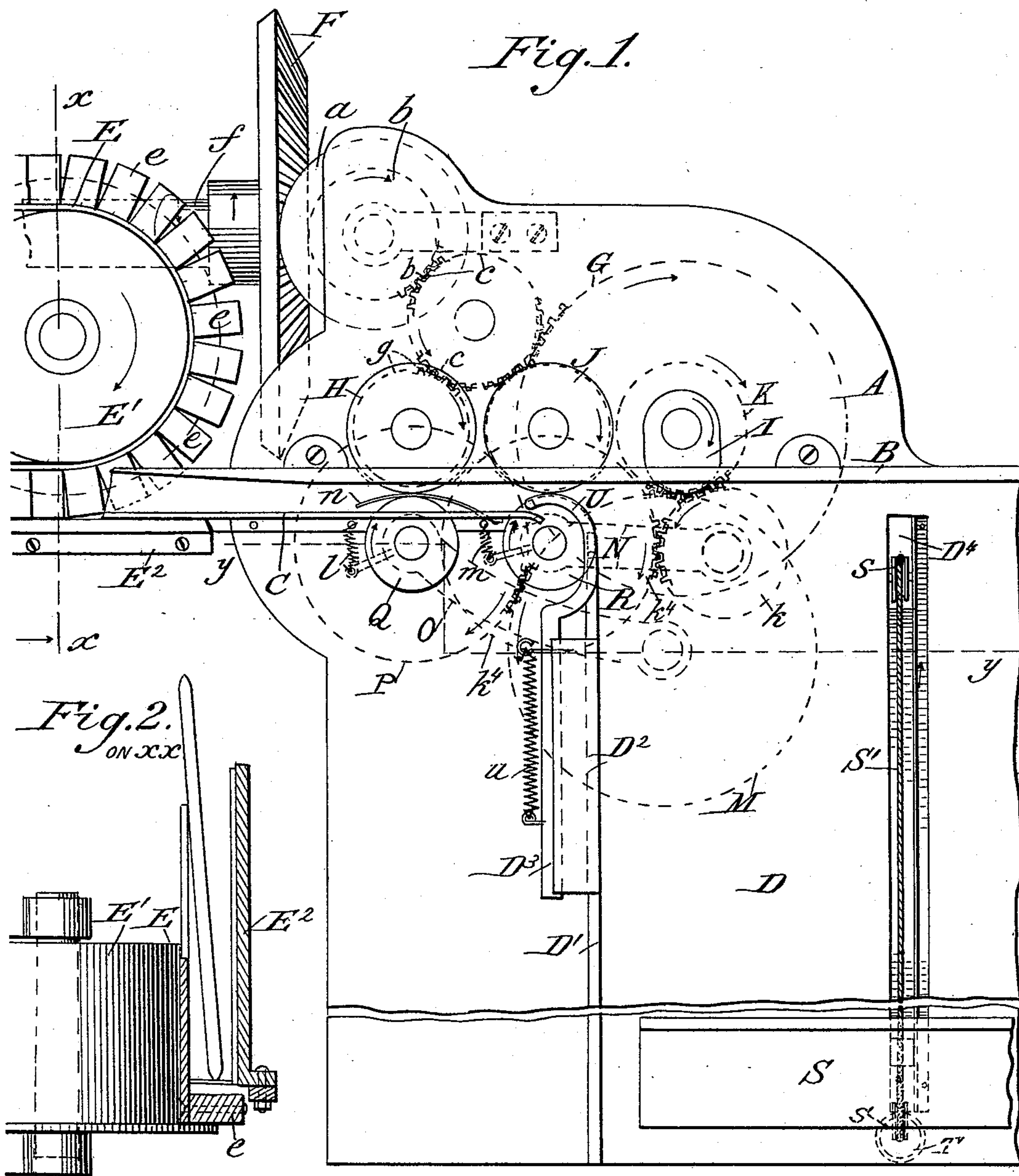
4 Sheets—Sheet 1.

M. V. B. ETHRIDGE.

FEEDING MECHANISM FOR STAMP CANCELING MACHINES.

No. 496,872.

Patented May 9, 1893.



Attest:

H. H. Schott
Ann L. Boyden

Inventor:

Martin W. B. Ethridge,
per Fred E. Parker, Atty.

(No Model.)

4 Sheets—Sheet 2.

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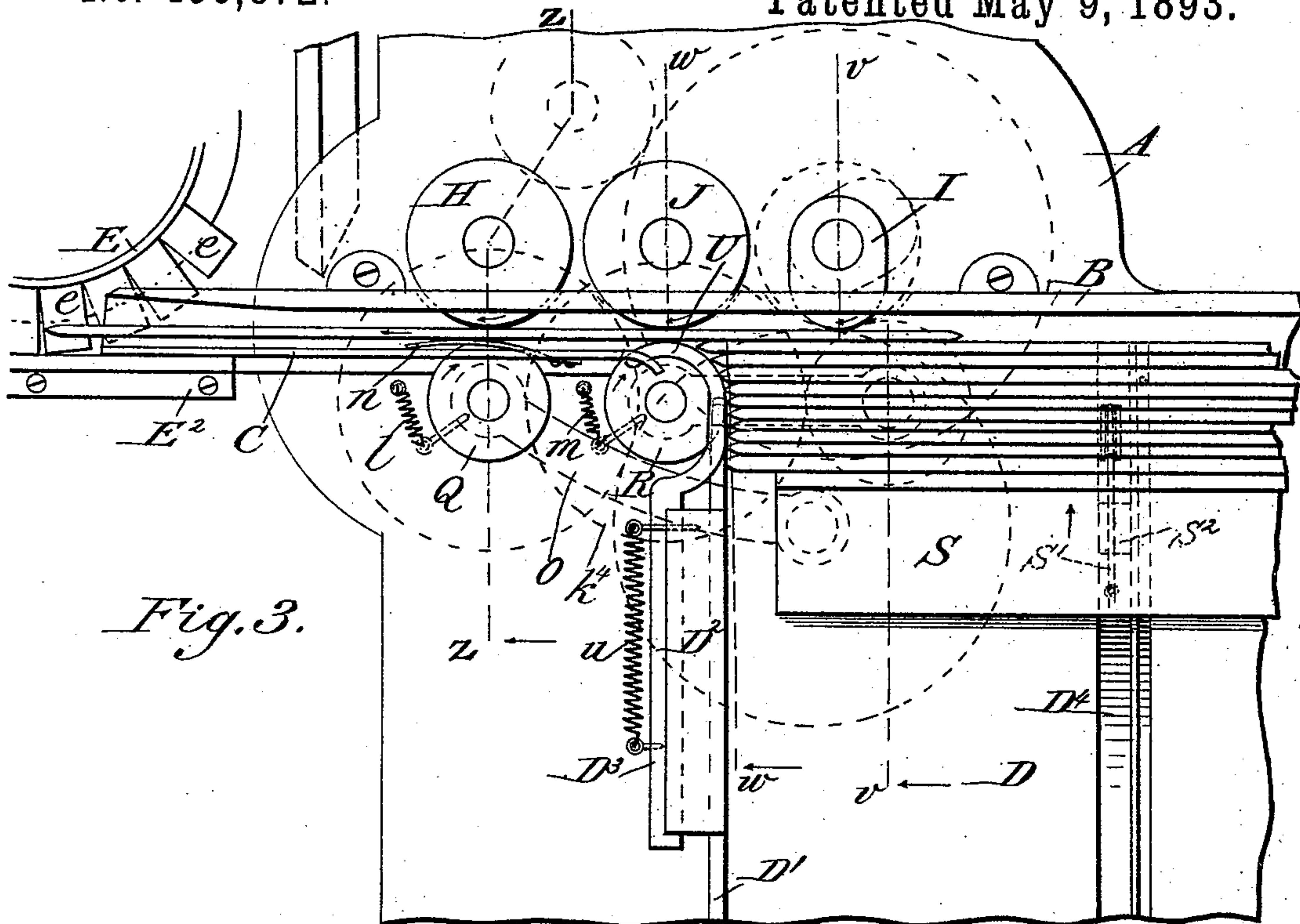


Fig. 3.

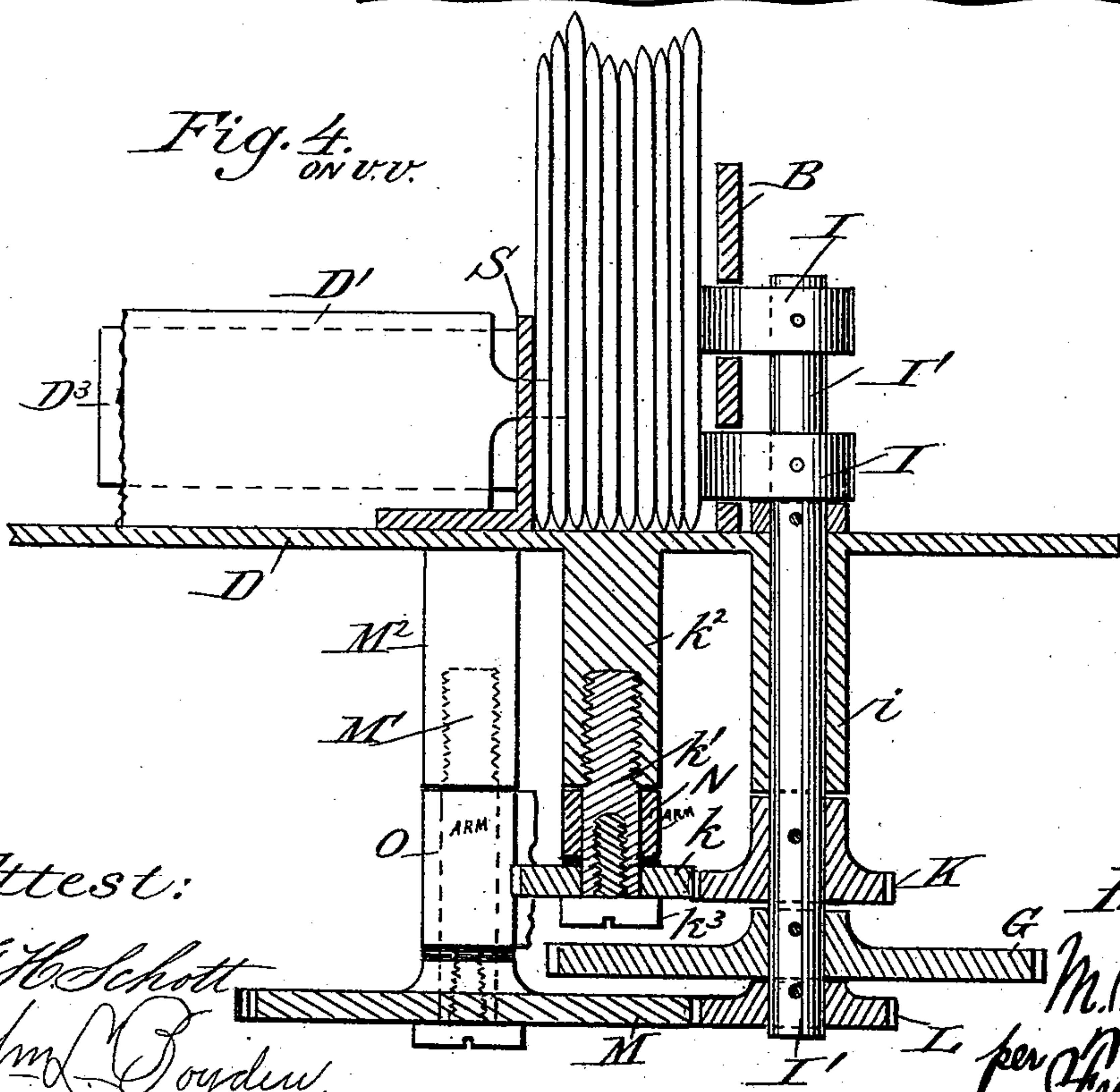


Fig. 4.
on v.v.

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M. V. B. Ethridge
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(No Model.)

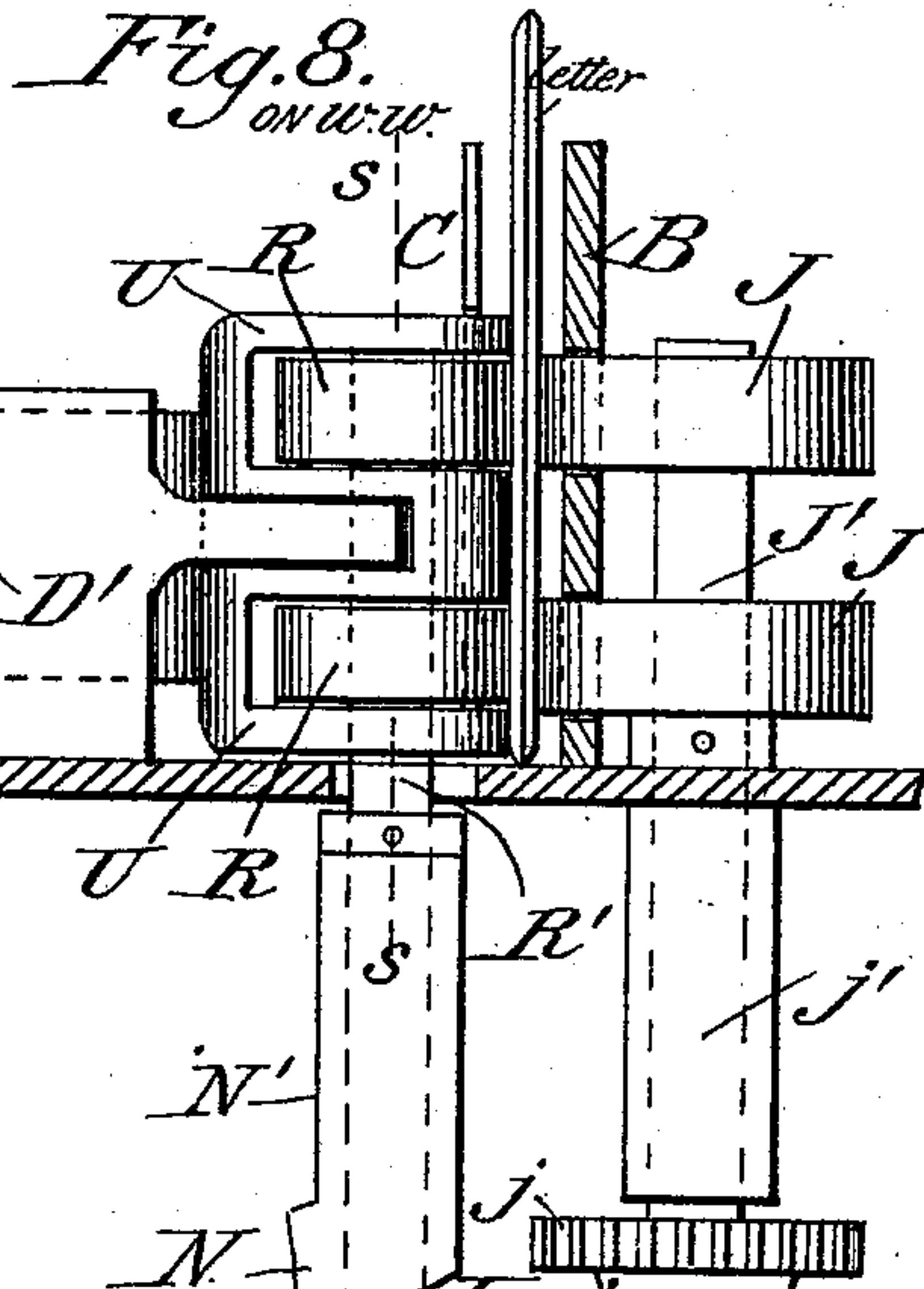
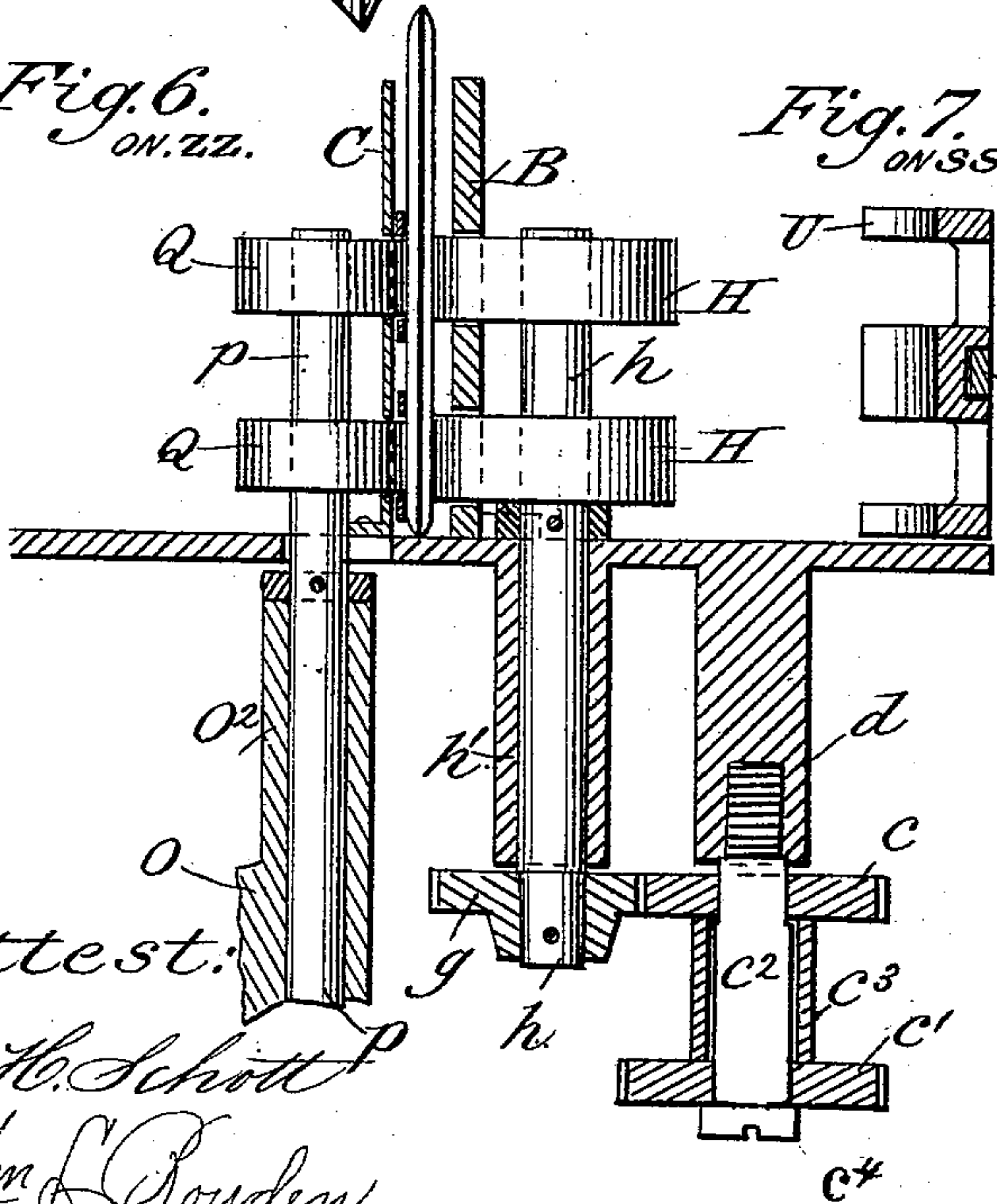
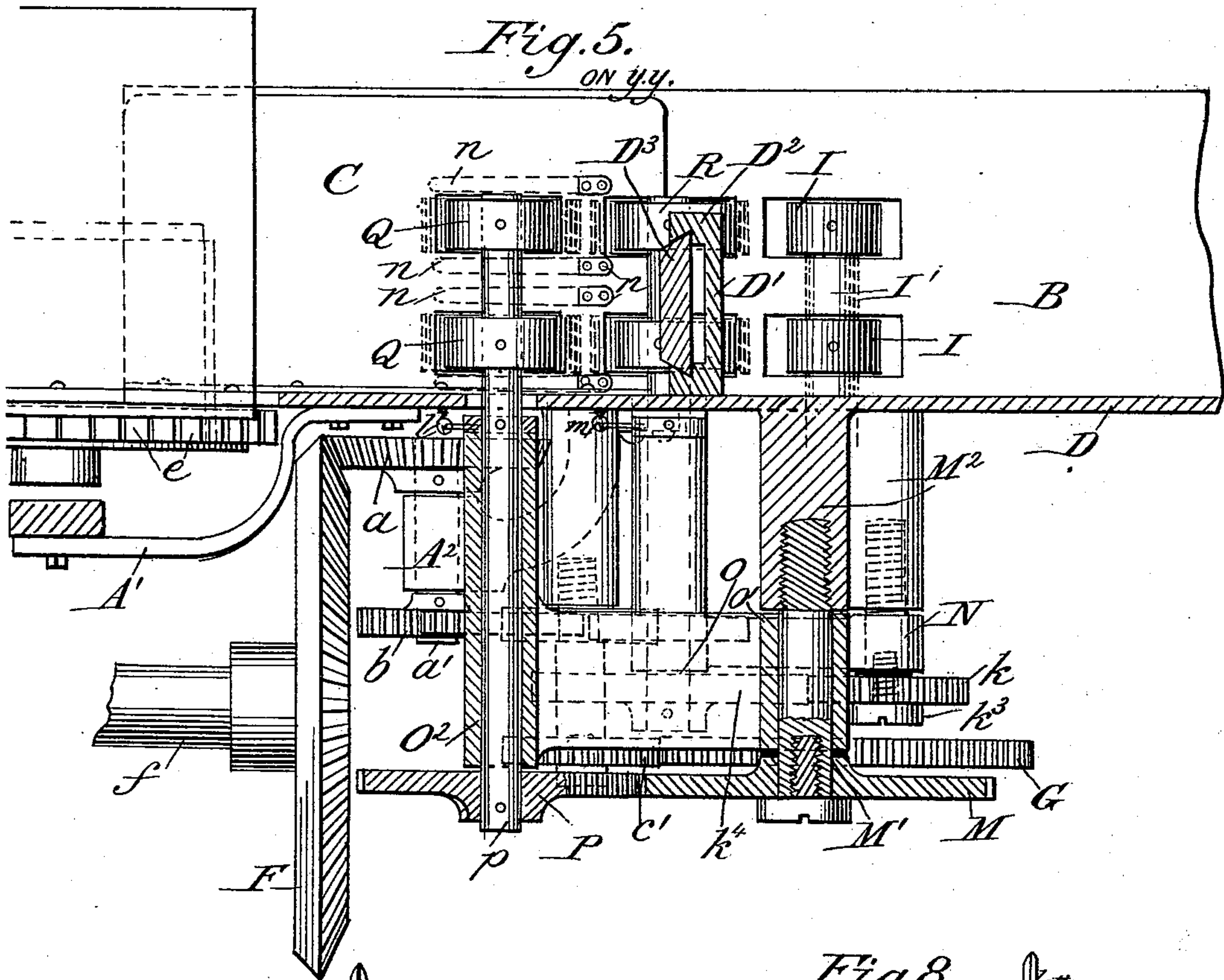
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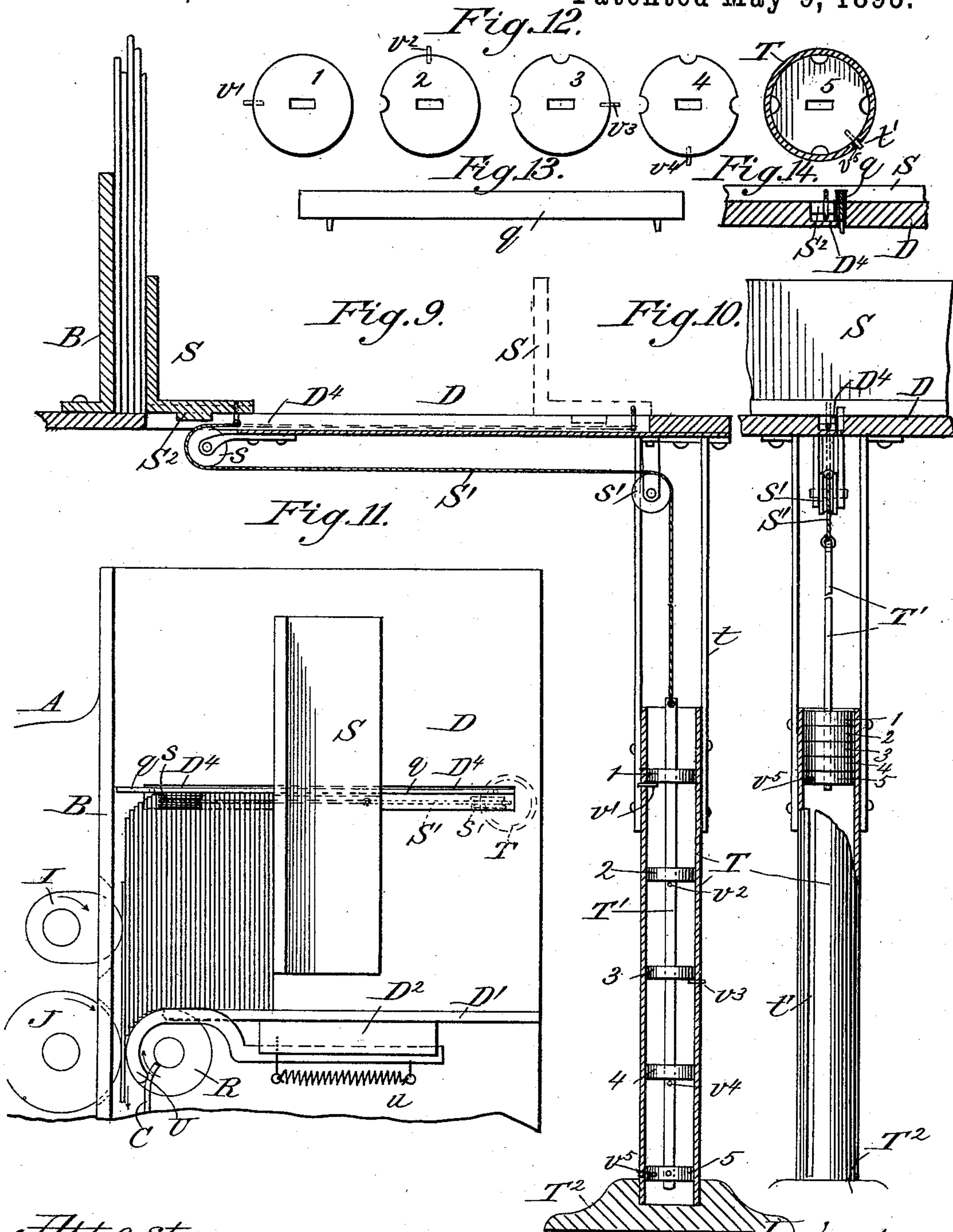
4 Sheets—Sheet 4.

M. V. B. ETHRIDGE.

FEEDING MECHANISM FOR STAMP CANCELING MACHINES.

No. 496,872.

Patented May 9, 1893.



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UNITED STATES PATENT OFFICE.

MARTIN V. B. ETHRIDGE, OF EVERETT, MASSACHUSETTS.

FEEDING MECHANISM FOR STAMP-CANCELING MACHINES.

SPECIFICATION forming part of Letters Patent No. 496,872, dated May 9, 1893.

Application filed March 20, 1891. Serial No. 385,788. (No model.)

To all whom it may concern:

Be it known that I, MARTIN V. B. ETHRIDGE, a citizen of the United States, residing at Everett, in the county of Middlesex and State of Massachusetts, have invented certain new and useful Improvements in Feeding Mechanism for Stamp-Canceling Machines; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My present invention relates to an improvement in feeding mechanism for stamp canceling and post marking machines.

The object of the invention is to provide simple, efficient and rapidly operating means for automatically delivering or feeding mail matter consisting of letters, cards, newspapers and the like, of various sizes and thicknesses (said mail matter having been previously faced into bundles or packages, that is, the individual letters or other pieces, arranged with the attached postage stamps on each, in the same or approximately the same relative position) into the hopper or letter-conveying chute; the letters being fed into this hopper individually and thus deposited upon an endless moving carrier by means of which they meet the printing devices and each piece of mail matter is brought separately under their action so as to receive the cancellation and postmark upon its face or the receiving or transit mark upon its back as the case may be.

The mechanical appliances involved in the present invention constitute in reality what might be termed a separate machine from the canceling machine proper, the function of this separate machine being that of automatically feeding faced-and-bunched matter into the canceling devices singly or individually. Therefore, although my present invention performs a secondary and subordinate function—that of feeding—while the main and primary function—that of canceling—is performed by the canceling mechanism proper; and said invention is therefore always to be used in connection with a canceling and post-marking machine, yet it might if desired be a structure separate and independent from the mechanical devices which make up the

canceler, applicable for use with various kinds of canceling machines and readily removable from any one of which it may at any time be employed.

In my improved stamp-canceling and post-marking machines covered by numerous prior patents the letters are faced directly into the machine and upon a moving support contained therein by which each letter is automatically adjusted or aligned, this being done without previously bunching the letters into packages as ordinarily practiced. By connecting with one of these improved stamp-canceling machines, a feeding mechanism of the type presented in this application, I make a complete apparatus operating automatically, not only as to the canceling work but also as to the feeding of the letters into the machine, but it will be particularly observed that it takes no longer and is no more difficult a task to face the mail matter into one of my improved canceling machines just alluded to, than it is to face the letters into bundles or packages. My present feeding mechanism therefore is not generally found to be a necessity in post offices where the facing of the mail matter for the machine has to be done by the clerks in the office, because since my canceling machine operates with such great facility and ease upon unfaced matter, it would be a waste of time and labor to attach an automatic feeding mechanism requiring the matter to be placed therein faced in bundles whereby it would be necessary for the clerks to face into bundles for the automatic feeding the matter which might just as well be faced directly into the canceling machine proper. Therefore my present automatic feeding mechanism will be found to possess the highest utility in those post offices where large quantities of mail-matter are deposited in the mails by the sender, ready-faced for the operation of canceling. It is the custom of many persons who send large quantities of mail-matter, especially advertising matter or letters of a similar character, to tie up these letters in bundles or packages before placing them in the post office. With all such matter an automatically operating feed mechanism for the purpose of adapting my improved canceling machine to work more rapidly upon faced matter of this character, is preferable so that

I have devised the present feeding mechanism to be applied for use in connection with my stamp-canceling machines now in use.

This automatic feed mechanism or feed attachment for canceling machinery will generally be so connected with the mechanism of the canceler as to be actuated by the same power as that which drives the canceling devices. The canceling machines with which I preferably use it are those covered by my United States patent, No. 323,799, dated August 4, 1885, and Patent No. 378,391, dated February 21, 1888, and Patent No. 424,868, dated April 1, 1890, or those covered in my pending applications for patent, filed November 23, 1889, Serial No. 331,356, and that filed February 18, 1891, Serial No. 381,883, although of course I may use the feeding mechanism in conjunction with other kinds of canceling machinery. In the general form of stamp-canceling machines to which I have just alluded, notably the machine embraced within the terms of the description found in the two pending applications, there is a moving carrier or support for conveying the letters and other pieces of mail-matter to the printing devices; which moving carrier preferably comprises a vertical belt having shoulders on its lower edge and passing around rollers which support and actuate it. With a belt of this kind the mail matter is caused by gravity to assume an upright position on the shouldered edge and each individual piece of mail matter is propelled endwise through the machine. There is also a printing roller with its face in close proximity to the moving belt and directly opposite to one of the band rollers, which serves also as an impression roller. Either the printing roller or the impression roller is yieldingly arranged so that one of them will have an oscillatory or vibratory motion, while the other will have no motion except its ordinary rotary motion. The oscillating roller is so held by suitable mechanical devices that when no letter is passing it will be out of contact with the conveying belt, which in consequence will not be soiled or otherwise defaced, but when a letter does pass, the restraining action upon the oscillating roller will be overcome and the printing roller will occupy a printing position close enough to the belt to print the mail-matter which may be passing. In this machine is a letter hopper or receptacle of which the aforesaid moving belt is a part, said letter hopper consisting in its entirety of the moving support having a series of projections on the lower edge, a vertical plate opposite said support secured rigidly to the machine frame alongside of the moving support and parallel thereto, a facing table and an incline above the support and between it and the facing table. In the ordinary use of the machine the letters which are thrown in a heap upon the facing table are fed singly therefrom into this hopper. My improved feeding mechanism to be hereinafter pre-

sented likewise feeds the letters singly into this hopper but is preferably located at one end of the hopper so that the letters are automatically delivered to the hopper at that point.

My present letter-feeding mechanism is not only designed to deliver the letters singly into the letter-hopper which I have just referred to, but it is also designed to furnish means for keeping the package or bundle of faced letters in proper position so that one letter may be taken therefrom at each action of the feeding mechanism, it therefore becoming necessary to have a variable-pressure-feed device or follower acting upon this bundle so that it may be pushed forward automatically and kept at all times close against the feeding cams which act to remove the letters individually from the packs. This work is commonly done by hand. In the ordinary mode of operating stamp canceling machinery where a bundle of letters ready faced is placed in the machine, the operator keeps the packages of letters up against the mechanical devices by using a follower or pusher which he propels with his hand. His constant attention is therefore required. I aim to provide automatic means for this purpose so that a bundle of several hundred letters may be placed in the machine and then the machine left unattended and allowed to feed these letters singly into the hopper. With this automatic bundle feed many advantages will be derived. One operator will be readily enabled to run several machines.

My invention therefore consists essentially in the several constructions and combinations hereinabove alluded to and also in numerous details in the arrangement, construction and combination of all the parts of the mechanism, substantially as will be hereinafter described and claimed.

In the annexed drawings illustrating my invention: Figure 1 is a plan view of my improved feeding mechanism for stamp-canceling and post-marking machines. Fig. 2 is an enlarged detail cross section on the line *xx* of Fig. 1, showing the end of the letter hopper of the canceling machine into which my improved feeding mechanism shoots the letters. Fig. 3 is another plan view similar to Fig. 1 but showing the mechanical parts in a different position and illustrating the passage of a letter from the pack through the automatic feeder into the canceling hopper. Fig. 4 is a vertical cross section on the line *vv* of Fig. 3. Fig. 5 is a vertical cross section on the line *yy* of Fig. 1, certain parts being shown in elevation. Fig. 6 is a sectional elevation on the line *zz* of Fig. 3. Fig. 7 is a cross section on the line *ss* of Fig. 8. Fig. 8 is a sectional elevation on the line *ww* of Fig. 3. Fig. 9 is a vertical section of the letter-table and accompanying parts representing the construction and mode of operation of the improved variable pressure mechanism which governs the progress and position of the letter bundle or

package. Fig 10 is another sectional view of the same taken at right angles to the section of Fig. 9. Fig. 11 is a top plan view of the letter platform or table, the bundle of letters thereon, the pusher or follower therefor, and certain other parts which are shown in outline. Fig. 12 is a plan view of the series of weights which constitute a part of the variable pressure mechanism operating to feed the bundle. Fig. 13 is a detail view of a removable strip which is used in connection with the letter platform for certain purposes. Fig. 14 is a detail section of the letter platform.

Like letters and numerals of reference designate corresponding parts throughout all the different figures of the drawings.

Referring to Figs. 1 and 2 it will be observed that I have therein delineated the end of the letter hopper belonging to my stamp-canceling machine, into which letter-hopper my improved feeding mechanism is to deliver the letters singly.

E denotes the vertical belt having on its lower edge, the shouldered projections *e e e* said belt passing around the roll *E'* which supports and actuates it at one end, and directly opposite to this vertical belt *E* is the parallel longitudinal plate *E²*. In Fig. 2 a letter is shown ready to be transferred from the hopper or chute of the feeding devices into the canceling-hopper.

It is unnecessary to describe or illustrate the hopper of the canceler at any greater length than I have already done, since said hopper has been fully described and claimed in other patents.

A designates the main frame of my improved feeding mechanism for stamp-canceling machines. This frame may be of any suitable and desired construction to enable the several mechanical parts of the feeding mechanism to be conveniently and effectively arranged in connection therewith so as to perform their several functions at the proper time and in the proper way.

D indicates a horizontal bed, platform or table, of suitable size and shape, it being designed to receive upon its upper surface a bundle or package of letters which letters are to be fed singly to the canceler. This table D may be supported in any convenient way in connection with the main frame A.

In Fig. 5 I have shown a bracket *A'* which is secured to a part of the frame of the canceling machine proper and which is bolted to the under side of the table D so as to support the letter. The main frame A and table D may however be arranged in any suitable way. This feeding mechanism is preferably situated at the right hand end of the canceling machine inasmuch as the packing devices are preferably located at the left hand end of said machine.

B denotes a vertical rigid wall, partition or plate located on table D at right angles thereto and at one end thereof, one end of said

wall B being in close proximity to the letter-hopper of the canceler. Parallel to the upright partition B and at a short distance therefrom is a parallel plate or wall C, which as seen in Figs. 1 and 3, preferably extends only about half the length of the wall B and it forms in connection with the wall B a letter-chute, hopper or receptacle which has its end or mouth close to the letter-hopper of the canceler, so that a letter may pass through said feed-hopper between walls C and B, as shown in Fig. 3 and likewise in Fig. 2, and be handed into the hopper of the canceling machine and aligned upon the moving support therein. The package or bundle of letters resting upon the platform D is designed to lie against the wall B so that the letters may be taken singly off the pack and carried through the feed-hopper between walls C and B as shown in Fig. 3; see also Figs. 4 and 11.

F indicates a large bevel gear wheel on the end of a horizontal shaft *f* which is one of the shafts of the main canceling machine, the gear F being the drive gear which transmits power to actuate my improved feed mechanism. It will be manifest that power can be derived from some other source as well as to take it from the canceling mechanism, but it will be found an easy and simple way to drive the feed mechanism, to thus connect it with one of the shafts of the canceler.

The bevel gear F—see Figs. 1 and 5—engages a horizontal bevel pinion *a* which is pinned to the upper end of a shaft *a'* supported in the hanger *A²* depending beneath the platform D and fixedly secured thereto. The vertical shaft *a'* carries at its lower end a horizontal gear wheel *b* which is pinned thereto or otherwise securely fixed upon the shaft. The gear or pinion *b* meshes with a horizontal pinion *c*. The pinion *c* rotates upon a stud *c²* which is screwed into a projection *d* on the under side of the table D, said stud *c²* having a vertical position and being provided on its lower end with a head *c⁴*. The pinion *c* is formed integral with another similar pinion *c'*, there being between the two pinions a connecting integral sleeve *c³* which surrounds the stud *c²*—see Fig. 6. The pinion *c* intermeshes with a pinion *g* connected rigidly to the lower end of an upright shaft *h* which is supported in a tubular socket or bearing *h'* said shaft *h* passing up through the main frame behind the wall B and carrying a pair of horizontal rollers *H H* which work through slots in wall B—see Figs. 1 and 6—said rollers *H H* being feed rollers and projecting only sufficiently far through the slots in wall B into the space between walls B and C, to enable their peripheries to come into frictional contact with the letters which pass through the said feed-hopper. The pinion *c* engages also with a pinion *j* lying in the same plane with the pinion *g* but not intermeshing therewith, said pinion *j* being securely connected to the lower end of the vertical shaft *J'* which is supported in a tubular box or

bearing j' , and said shaft J' extends upward parallel to the shaft h and behind the wall B and carries another pair of horizontal feed rollers J J similar to the rollers H H and which likewise work through slots in the wall B in the same manner as do the feed rollers H—see Fig. 8. It will thus be observed that the rollers J and H are feed rollers whose peripheries act frictionally upon the letters to feed them forward through the space between the walls B and C, said rollers J and H having the same direction of rotation as shown by the arrows in Fig. 1. I have represented two rollers J and also two rollers H but there may be obviously any number of them.

The pinion c' meshes with a gear wheel G,—see Fig. 5. Gear wheel G is rigidly secured on the vertical shaft I' —see Fig. 4—which is supported in a tubular box or bearing i formed in the main frame and said shaft I' extends upward behind the wall B and parallel to the shafts h and J' . The shaft I' carries thereon a pair of cams I, I, which work through slots in the wall B, said cams being arranged similarly to the feed rollers H and J. There may be any number of the cams I, either two or any other number as may be preferred. These cams I are feed cams. They act upon the pack of letters to feed one of said pack forward by frictional contact therewith. As the cams rotate and press frictionally upon the letter pack which pack is being pressed up against them as shown in Fig. 4, the result, as will be readily perceived, will be to cause the letter with which the cams come in contact to be fed forward, being thus removed from the pack, and the feed rollers J and H will serve to propel it along into the feed-hopper and deliver it to the hopper of the canceling machine.

On the vertical shaft I' is rigidly secured a pinion K which is located above the gear wheel G and also a pinion L is securely fixed to the lower end of shaft I' below the gear wheel G—see Fig. 4. The pinion K meshes with another horizontal pinion k which rotates upon a stud k' which is screwed into a downward projection k^2 on the main frame. The screw stud k' is provided with a headed screw k^3 which supports the pinion k . Pinion L intermeshes with a gear wheel M which rotates upon a screw stud M' which is screwed into the downward projection M^2 on the main frame, said screw stud M' being provided at its lower end with the headed screw which supports the gear wheel M and keeps it in place. Of course this arrangement of studs, screws, &c., is only one of many devices that might be employed for the purpose and I reserve the liberty of varying these precise details in any way that experience may suggest.

On the screw stud k' is fulcrumed a rocker arm N. This arm is shown in dotted lines in Fig. 1 and it is represented partially in Figs. 4, 5 and 8. Its swinging end is provided with an upright tubular bearing or socket N' which carries a vertical shaft R' which extends up-

ward through the table D in front of the wall B and partly in front of the plate C, said shaft R' carrying a pair of horizontal rollers R R whose peripheries work contiguous to the peripheries of the opposite rollers J J. See Fig. 8. The vertical shaft R' is kept in place within its rocker arm socket N' by means of a suitable collar pinned to the shaft above the socket N' . On the lower end of shaft R' is a gear wheel k^4 which engages the pinion k and is driven thereby. In this way the rollers R R are actuated. m designates a spring which is fastened to a projection on the rocker arm N near the bearing N' and also to the plate or wall C, the action of this spring being to draw the end of the rocker arm toward the wall C and thus keep the rollers R R normally adjacent closely to the peripheries of the feed rollers J J. This construction however allows the rollers R R to be yielding so that letters of varying thicknesses may pass between the rollers R and J. The rollers R R however are not feed rollers. They are check rollers or back pressure rollers. By observing the arrows in Figs. 1 and 3 and by observing the gearing connections it will be seen that the rollers R rotate in a direction the reverse of the direction of rotation of rollers J and H. These rollers R serve to prevent two letters from being fed through the feeder at the same time. If the cams I should succeed in taking off more than one letter from the letter-pack, as if two letters should accidentally adhere the oppositely-rotating hinderance roller or rollers R will retard and push back that one of the letters on its side and in contact with which its periphery comes, allowing the other one or the one in contact with the peripheries of the feed rollers J to pass between the rollers while the other is held in check to await the passage of the first. In order to guard more fully against any possibility of the entrance of two letters into the feed-hopper, I provide a second pair of reversely rotating check rollers Q Q arranged similarly to the pair of rollers R R and working through slots in the wall C with their peripheries closely contiguous to the peripheries of the adjacent feed rollers H H, so that if the check rollers R R should from any cause fail to thrust back all of the letters, which might be attempting to pass through, excepting the one which it is proper to permit to pass, then the rollers Q will come into play to assist the rollers R and thus to guard effectually against the passage of more than one letter at a time, from the feeding devices into the hopper of the canceling machine. The rollers Q Q are mounted on the vertical shaft p —see Figs. 5 and 6, and this shaft is carried in the tubular bearing or socket O^2 formed in one end of a rocker arm O, whose other end has a socket O' , which surrounds the screw stud M' which we have heretofore seen carries loosely thereon the gear wheel M which is actuated by the intermeshing pinion L. On the lower end of the vertical shaft p

is a gear wheel P rigidly secured thereto. This gear wheel P meshes with gear wheel M and is actuated thereby. In this way the shaft *p* and the check rollers Q Q are driven in the same direction as the other hinderance rollers R, but in a direction the reverse of that of the companion pair of feed rollers H. Thus it will be observed that the shaft of the rollers Q Q is journaled in an oscillating rocker frame or arm in a manner similar to the journaling of the shaft of the other check rollers R. A spring *l* connected to the bearing O² has its other end fastened to the plate C and acts to draw the rocker arm toward said plate so that the check rollers Q may be kept with their peripheries closely adjacent to the peripheries of the feed rollers H, but makes the positions of the check rollers yielding so that they may accommodate themselves relatively to the feed rollers when pieces of mail matter of varying thicknesses pass between them.

On the platform D at right angles thereto is a vertical partition or wall D' which is likewise at right angles to the wall B and has its end separated a short space from said wall so that the letters may pass between the end of wall D' and the opposite face of wall B. The letters after they have been placed in a bundle upon the platform D will have their ends abutting against the face of the wall D' while the pack will lie lengthwise against the wall B as shown in Figs. 3 and 11. The wall D' is formed with a horizontal longitudinal dovetailed groove or socket D² of suitable length and size—see Figs. 3 and 5—and adapted to receive a sliding bar D³ which is provided at the end nearest the wall B with a curved finger or series of fingers U, said fingers being integral with the slide D³. These fingers U are arranged in close relation to the reversely-rotating rollers R. The arrangement of fingers U is exemplified in Fig. 8, where it will be seen that I preferably provide three of the curved fingers U, one of which lies intermediate between the two rollers R R, while the other two lie, one above the upper roller R and the other below the lower roller R, while the adjoining end of the wall D' has a projecting tongue entering a slot in the middle finger U, all as clearly represented in the detail view of Fig. 8. The curved ends of the fingers U are therefore substantially coincident in position with the peripheries of the rollers R and these curved fingers bear close up against the peripheral faces of the adjacent feed rollers J.

u designates a spring which is connected by a suitable pin or otherwise to the slide D³ and also to the slide socket D² as shown in Fig. 3, the action of this spring being to keep the curved fingers U tensioned against the rollers J. Thus I provide yielding fingers. These fingers are not flexible but are stiff and rigid, but being connected to a spring-provided slide they have a yielding character so

that they can adjust themselves horizontally with respect to the faces of the rollers to which their ends are closely adjacent. The purpose of these fingers is obvious, it being to hold letters which are being fed, close against the face of the feeding rollers so that they may act successfully thereon to propel the letter forward. In addition to the curved fingers U I provide a series of one or more horizontal springs *n* which may be used if desired to accomplish a similar purpose to that of the fingers U. The springs *n* are arranged inside of the trough or chute formed between the walls B and C and they bear against the face of the other feed rollers H. Springs *n* are clearly shown in Figs. 1, 3 and 5. They are riveted or otherwise firmly secured to the front side of the wall C and project through small slots in said wall into the space between the walls B and C so as to bear with an even tension close up against the rollers H. As shown in Fig. 5 I preferably have several of the springs *n*. These springs are simply flat narrow strips of spring metal. They serve to hold the letters close against the feed rollers H so that the latter may act to propel a letter forward. The action of spring *n* is supplementary in its nature to the action of the fingers U, that is to say, when the fingers U are employed, the rollers J will do the main amount of feeding and the spring *n* will serve to assist the rollers H in completing the feed. The reversely rotating rollers Q and R will perform their backing function to keep all the letters retarded except the one which ought to pass and that one will be fed forward by the feed rollers, while the fingers U and spring *n* operate to hold the letters being fed, close against the surface of the feeding rollers and thus will prevent the small check rollers from exerting any perceptible amount of frictional contact upon the progressing letters.

I will now proceed to describe the automatically operating device which exerts the variable pressure upon the letter-package and keeps said package automatically in proper position to allow one of its letters to be taken therefrom at a time and delivered to the feed rollers which transfer it onward into the hopper of the canceling machine. This variable pressure feed for the letter-package is fully illustrated in Figs. 9, 10, 11, 12, 13 and 14 and to these figures I now refer.

S designates a follower or pusher consisting simply of a movable wall having a face at right angles to the platform D and having a right angled part which slides upon the platform D. Between the vertical face of the follower S and the vertical face of the wall B a greater or less quantity of letters which have been faced into a bundle or package, is confined as shown in Fig. 11. In the platform D is a slot or groove D⁴ cut at right angles to the wall B and this slot or groove receives a tongue S² on the bottom of the horizontal part

of the follower S. By means of this tongue S^2 , the follower S is guided in its movement back or forward.

q designates a stick having pins in the edge thereof, which pins are adapted to enter holes in the face of the platform D and said stick is designed to be placed upon the platform D to form a ridge or guard parallel to the side D' so that a quantity of postal cards or short letters may be placed on the platform D. The stick q will serve to keep this short matter in proper position with its ends close against the side D' and will prevent the individual pieces from becoming displaced or thrust out of position endwise as the package travels forward under the pressure of the follower S. When the stick q is used, it being readily removable at any time as will be obvious, it will be necessary to have the under side of the horizontal part of the follower S provided with a transverse slot to receive the stick q as is shown in Fig. 14, so that the follower can slide along over the upper edge of the stick q .

s represents a grooved pulley carried in a short arm secured underneath the table D at a point not far from where the wall B is mounted.

s' represents another grooved pulley carried in a downwardly projecting arm underneath the platform D at a suitable point, preferably near the edge thereof distant from wall B. A rope, cord, or other suitable means such as a wire or cable is connected to a pin or in any other suitable manner to the under side of the follower S and it passes around the pulley s and the pulley s' and has its end connected to the end of a flat bar T' .

T represents a cylinder or tube having its lower end supported in a base T^2 , while the upper end of the tube T is connected and made fast with the platform D by means of stays or braces t . Within the cylinder T , I arrange a series of flat horizontal weights, represented in plan view in Fig. 12 and designated by the reference figures 1, 2, 3, 4 and 5. These weights are provided each with a central oblong slot substantially equal in size to a cross section of the flat bar T' and said flat bar T' passes through each of these weights as shown in Fig. 11 and is adapted to move freely in each of the oblong slots. The weights are kept normally in place at suitable distances apart within the cylinder T by means of pins v' v^2 v^3 v^4 which project inwardly from the wall of the cylinder T and sufficiently far to afford a support beneath the weights 1, 2, 3 and 4 respectively, while weight 5 is securely pinned to the lower end of the bar T' and is provided with a projecting pin v^5 which enters and moves freely within a vertical longitudinal slot t' so that said weight 5 and consequently bar T' can never be displaced from their true position by any irregular rotation that might happen to take place. The pins v' v^2 v^3 and v^4 are as already stated fixed at suitable vertical distances apart and it will be particularly noted

that they are likewise arranged at points not directly below each other but a quarter of a circle distant from each other. The weights 2, 3, 4 and 5 are provided with peripheral notches. Weight 2, has one notch, weight 3 has two notches, which are a quarter of a circle distant from each other, weight 4 has three notches which are a quarter of a circle distant from each other and weight 5 has four notches which are a quarter of a circle distant from each other. Weight 1 has no notch as none is necessary. The purpose of this arrangement is to enable the rod T' to be lifted and to carry with it all of the weights 1, 2, 3, 4 and 5 as shown in Fig. 10 and then to permit said rod to descend with its weights and to get rid of them one by one so that the pressure pulling upon the cord S' during the descent of rod T' may be gradually decreasing in proportion to the gradual decrease of pressure which is needful to keep the letter-package close up against the wall B. It is therefore evident that by having the weights provided with peripheral notches and having each weight resting upon a single pin located at points so that all the weights below it may pass by it which they are permitted to do by their notches, the gradual lessening of the force pulling upon the cord S' will take place. When the rod T' is lifted, the lower weight 5 will ascend until it strikes the weight 4 and weight 5 will readily pass pin v^4 since it has a notch cut out at the point where the pin v^4 would otherwise strike the weights. As the bar T' continues to ascend therefore, the weight 5 will carry the weight 4 until it strikes the weight 3 and the notches in the weights 4 and 5 will permit said weights to pass by the pin v^3 carrying the weight 3 upward until it meets the weight 2 when the notches in the weights 3, 4 and 5 will allow said weights to pass by the pin v^2 , carrying upward the weight 2, until it strikes weight 1, when the notches in weights, 2, 3, 4 and 5 will allow said weights to pass by the pin v' and lift the weight 1, so that the bar T' will be in the position shown in Fig. 10 where it is carrying the weight of all the five weights. When bar T' is in the position shown in Fig. 9, it is supporting only one weight, to wit: weight 5, and it will be evident that the weight upon the bar is variable according to the different positions that it occupies and the different number of weights that it may be pulling out at any one time.

Suppose the follower S to be in the position shown in dotted lines in Fig. 9, then the bar T' will be in the position shown in Fig. 10 where it has considerable weight at the end thereof and therefore the force exerted upon the cord S' and consequently upon the follower S to force the letter forward is considerable. When the follower is in this position with a large package of letters between it and the wall B it requires a strong force against the outside of the letter-pack to push said pack forward. When a part of the letters

however have left the pack the force needed to keep the pack properly pressed up against the wall B may be less and as the follower will by this time have advanced several notches and the bar T' will have descended, weight 1 will be deposited upon its supporting peg v' and consequently the force exerted upon the follower S will be lessened to that extent and so the diminution of the force exerted to press the follower against the letter-pack will vary and become less and less according as the letter-pack diminishes in size so that when only a few letters are left the pressure of follower S against them will be very slight indeed, as it must needs be in order to have the machine operate successfully. The cams I I would be ineffective to take the letters away from a follower which was pressing with as much force against a half dozen letters lying between it and wall B, as would be necessary to press a large bundle of letters. Thus the variable pressure which feeds the letter-package is an absolute necessity for successful operation. By means of this contrivance much labor and trouble are avoided. The large bundle of letters placed upon the platform D with the follower S against them will be fed surely and gradually forward under the proper amount of pressure to the feeding-cams whose action upon each successive letter with which they come in contact will be to detach the letter from the pack and deliver it to the feed rollers, the check rollers acting to prevent more than one letter from entering under the action of the feed-rollers at the same time and thus all the letters will be transferred into the hopper of the canceling machine. With this automatic pressure feed device for the letter-package the machine needs no attention after the bundle of letters has been placed therein until after all the letters have been stamp-cancelled. One man can attend to several machines and that with ease and facility. Therefore this device in connection with the automatic stamp-canceling devices and the automatic packing arrangement constitutes the stamp-canceling apparatus, complete in every particular. A bundle of uncanceled letters placed in one end of the machine is quickly transmuted into a bundle of canceled letters at the other end of the machine. This is done quickly and without any trouble on the part of the operator.

It is unnecessary to restate at this point at any greater length the detailed operation of the mechanism which I have herein presented for the purpose of feeding letters into the hopper of a canceling machine, as said operation will be fully understood from the foregoing description contained in the specification.

It will be obvious that I am not restricted to the precise structure and arrangement of the several mechanical parts which I have introduced into the mechanism of my machine but that these parts and features may vary

within wide limits accordingly as experience may suggest or wisdom dictate and therefore whatever re-arrangement of certain of the parts and novel illustration of certain of the elements may occur will be included within the invention as I now claim it.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In combination with the letter hopper of a stamp-canceling or post-marking machine, which hopper consists essentially of a vertical moving support for the letters and a parallel vertical wall closely adjacent thereto, the herein described automatically-operating feeding-mechanism, comprising essentially a feed hopper or trough having parallel vertical walls and with its mouth contiguous to the aforesaid machine hopper, a letter platform on which the pack of letters is arranged, a feeding cam which feeds the letters singly off the pack, a feeding roller or rollers that receive and feed the letters through the feed hopper after they leave the cam, thus delivering them into the letter hopper of the canceling machine, a yielding finger or springs acting against the said roller or rollers so that the letter may pass between them, substantially as described.

2. In an automatically-operating feed mechanism for stamp-canceling and post-marking machinery, the combination of a cam operating to detach a letter from the pack, a series of two or more feed rollers, a yielding arranged finger operating in connection with the first feed roller and a spring operating against the second feed roller and two or more reversely rotating hinderance rollers situated opposite the peripheries of the feed rollers and the yielding arranged rocker arms in which the said feed rollers are carried substantially as described.

3. The combination in an automatically-operating feed mechanism for stamp-canceling and post-marking machinery, of a cam, a feed roller and a yielding journaled reversely rotating check roller situated opposite the feed roller, together with a yielding finger in contact with the feed roller, substantially as described.

4. The herein-described improvement in stamp-canceling and post-marking machinery, which consists in the combination with stamp-canceling mechanism, a feed mechanism for conveying the letters to the stamp-canceling mechanism, which feed mechanism includes a horizontal feed cam or cams, of a horizontal letter platform on which the package or bundle of letters is arranged in a position with the sides against the aforesaid feed cam or cams and an automatically operating pressure mechanism which feeds forward the letter package or bundle with a steady positive motion, said mechanism consisting of a follower between which and an adjacent stationary wall the bundle or package of letters is confined, a cord or rope connected to said follower, an

upright shaft or rod provided with a series of detachable weights and a suitable support or casing within which the series of weights is located and are automatically removed singly from the rod so that the pressure of the follower upon the bundle of letters may vary in proportion to the size of the bundle and the force required to propel the same forward, substantially as described.

5. In a feeding mechanism for stamp-canceling machines the combination with a feed cam or roller, of a horizontal letter platform on which the bundle or package of letters rests with their edges on the platform so that the sides of the letters may be in contact with the feed cam and a letter hopper into which the letters are fed singly by means of the aforesaid feed cam, a vertical follower sliding automatically over the surface of the letter platform and acting to feed the package of letters toward the feed cam or roller, and mechanical devices for propelling said follower with a pressure which diminishes accordingly as the size of the letter package diminishes said mechanical devices consisting of the cord S' connected to the said follower and passing around suitable pulleys, an upright rod T' to which the said cord is fastened, an upright supporting cylinder or hollow chamber, a series of weights located one above the other within said cylinder, said weights having central openings through which the rod T' is vertically movable and suitable supports or projections on the inner surface of the hollow chamber T on which the said weights may rest, substantially as described.

6. The combination of the hopper of a stamp-canceling machine, a feeding mechanism consisting essentially of a cam, a feed roller or rollers, a yielding finger or spring and a yieldingly journaled reversely rotating check roller and a variable pressure automatic feed device for the bundle or package of letters.

7. The combination of the feed cams or rollers, a check roller or rollers and curved finger or fingers U , a socket D^2 , a slide D^3 within said socket with which slide the fingers U are integral and a spring u for governing said slide, substantially as described.

8. The combination of the letter-table, the trough or chute consisting of the upright walls B and C , a feed cam or cams I , a feed roller or rollers, a series of one or more springs n projecting into the aforesaid chute in contact with the feed roller and one or more yieldingly arranged check rollers, substantially as described.

9. The combination of a letter table D , a cam I , a follower S for feeding the bunch of letters against the cam, the feed rollers J and H , the reversely rotating check rollers Q and R carried in rocker arms, a series of springs n projecting into contact with the peripheries of the rollers H , a series of curved fingers U in contact with the peripheries of rollers J , said fingers U being integral with a slide D^3 sup-

ported in a socket D^2 and governed by a spring u , substantially as described.

10. The combination of the main frame, a vertical shaft I' , horizontal feed cams I thereon, the gear wheel G likewise thereon, an actuating gear b intermediate gear c between the gear b and gear G , a feed roller or rollers actuated by the gear c , a rocker arm N , carrying a shaft R' having check rollers R thereon and a rocker arm O carrying shaft p having check rollers Q thereon said rocker arms N and O being pivotally mounted on studs, together with suitable gearing whereby the check rollers are actuated from the shaft I' , substantially as described.

11. The combination with a letter table and a vertical follower moving horizontally thereon and acting against a bundle or package of letters confined between it and an adjacent vertical stationary wall, in connection with which wall is arranged one or more feed cams which act upon the letter package to detach the letters singly and feed them forward, of a rod provided with a series of detachable weights and connected by suitable means with the said follower so that as the follower advances, its pressure may be diminished in consequence of the removal of the said weights singly from the rod and thus the feed cam or cams be permitted to act with the required amount of friction upon the letters so as to accomplish their function, substantially as described.

12. The combination with a letter chute or platform and a vertical follower S moving horizontally thereon and designed to feed the bundle or package of letters forward to the feeding devices said bundle being confined between the follower and an adjacent stationary wall, of a cord or rope connected to said follower or pusher and an upright shaft or rod provided with a series of detachable weights which are located within a suitable support or casing and are automatically removed singly from the rod so that the pressure of the follower upon its bundle of letters may vary in proportion to the size of the bundle and the force required to propel the same forward against the feeding devices, substantially as described.

13. The combination of the letter platform, the vertical follower S which moves horizontally thereon and is adapted to feed forward a bundle of letters confined between it and an adjacent upright wall, the cord S' connected to the said follower and passing around suitable pulleys, an upright rod T' to which the said cord is fastened, an upright supporting cylinder or hollow chamber T , a series of weights 1, 2, 3, 4 and 5, located one above the other within said cylinder said weights having central openings through which the rod T' is vertically movable and suitable supports or projections on the inner surface of the hollow chamber T on which the said weights may rest said weights being peripherally notched and all the parts arranged so that

the rod may in certain positions sustain the weight of all the weights and may gradually be relieved of the weights, substantially as described.

5 14. The combination with a letter hopper, of a stamp canceling or post-marking machine, of an automatically-operating feed mechanism, comprising a feed hopper or trough, a horizontal letter platform, horizontal feed
10 rollers acting to feed the letters singly off the pack which is located on said platform and transfer them into the aforesaid feed hopper, a vertical follower which is horizontally movable along on the said table so as to propel
15 forward the bundle of letters that is confined between it and the adjacent rigid wall in connection with which the feed rollers are arranged, together with automatic operating mechanism which advances said follower with
20 a variable degree of pressure so that as the size of the letter package diminishes, the pressure will diminish and thus the needed amount of pressure to propel the letters to the action of the feeding mechanism may be
25 had at all times.

15. The combination with a slotted letter-table and a tongued follower sliding thereon, of a cord S' connected to said follower and passing around pulleys s s', a cylinder T, a
30 rod T' connected to the cord S', a series of centrally slotted weights, 1, 2, 3, 4 and 5 on the said rod T', said weights being peripherally notched as described and suitable pins or similar supports on the inner surface of
35 the cylinder T to uphold the weights at the proper time, substantially as described.

16. The combination with the follower or pusher S, of a rod T' depending beneath the letter platform and connected with the pusher
40 by a cord or cable S', a series of centrally slotted weights on the said rod T' said weights being peripherally notched as described and suitable pins or supports to uphold the weights at the proper time, substantially as specified.

45 17. The combination with the letter hopper, of a stamp-canceling machine, which hopper consists of a vertically moving belt having a shouldered lower edge, of automatically-operating mechanism for delivering the letters
50 singly into said hopper, comprising a feed cam, a feed roller, a yielding presser finger against the feed roller and a reversely rotating check roller.

18. The combination of the hopper of a letter-canceling machine, which hopper consists of a moving belt having a shouldered lower edge, and a parallel upright rigid plate located alongside of the moving support, of automatically-operating means for delivering the let-

ters singly into said hopper consisting of one 60 or more cams arranged to act upon the letter-pack, one or more feed rollers arranged to convey letters from the cams to the hopper, one or more reversely rotating check rollers for preventing the passage of more than one 65 letter at a time and yieldingly arranged pressure fingers acting to hold the letter in contact with the periphery of the feed roller, substantially as described.

19. The combination of the letter-hopper 70 of a canceling machine, which hopper consists of a vertical belt having a shouldered lower edge, a rigid longitudinal plate opposite said belt, the automatically-operating means for delivering the letters singly into said hopper 75 consisting essentially of a letter-platform having a feed chute or hopper, a series of one or more cams which act on the letter-pack, a series of one or more yieldingly journaled hinderance 80 rollers whose peripheries are contiguous to the peripheries of the feed rollers and a yieldingly arranged finger which acts to hold the letter against the feed roller together with an automatically-operating variable pressure fol- 85 lower or pusher acting upon the bundle or package of letters, substantially as described.

20. The combination of the cams I I, their shaft I' having thereon gear G and pinions K and L, the feed rollers J J, their shaft J' hav- 90 ing pinion j, the double pinion c c', said pinion c being engaged by pinion b driven by some suitable actuating gear and said pinion c likewise engaging pinion j, while pinion c' engages gear G, the check rollers R R, their 95 shaft R' having thereon gear wheel k' engaging intermediate the wheel k which meshes with pinion K, said shaft R' being mounted in the rocker arm N, substantially as described.

21. In combination with the letter hopper 100 of a stamp-canceling or post-marking machine, an automatically operating feed mechanism, comprising a feed hopper or trough, a letter platform, a feeding cam which feeds the letters singly off the pack, a feed roller or roll- 105 ers which receives and feeds the letters after the cam starts them, a yielding finger or spring acting against the feed roller and one or more yieldingly journaled pressure rollers rotating reversely and situated opposite to the feed 110 roller or rollers, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

MARTIN V. B. ETHRIDGE.

Witnesses:

HENRY B. BOLTON,
WM. L. BOYDEN.