

No. 752,821.

PATENTED FEB. 23, 1904.

L. S. BURRIDGE.
TABULATING DEVICE FOR TYPE WRITING MACHINES.

APPLICATION FILED JAN. 18, 1902.

NO MODEL.

3 SHEETS—SHEET 1.

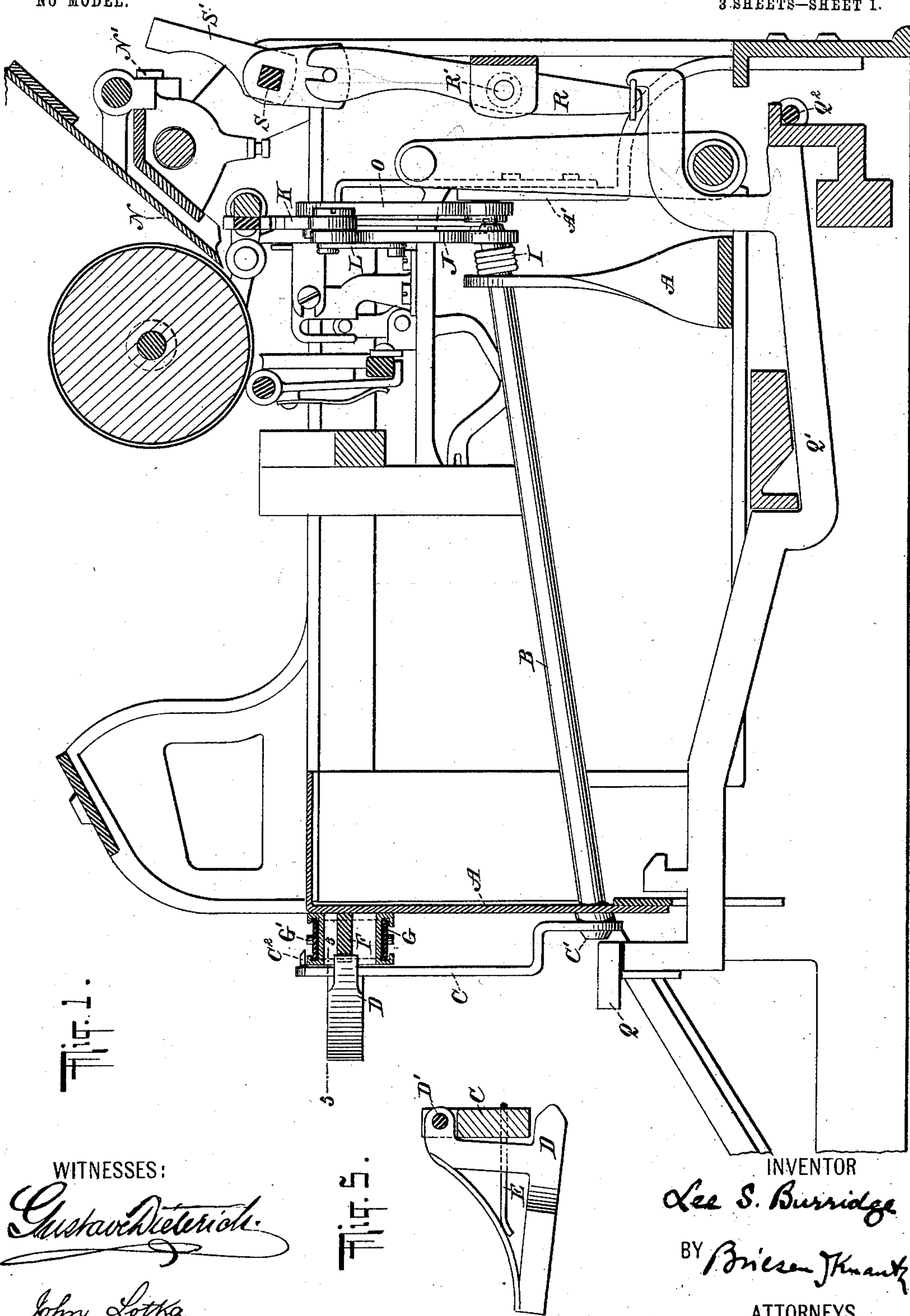


Fig. 1.

Fig. 5.

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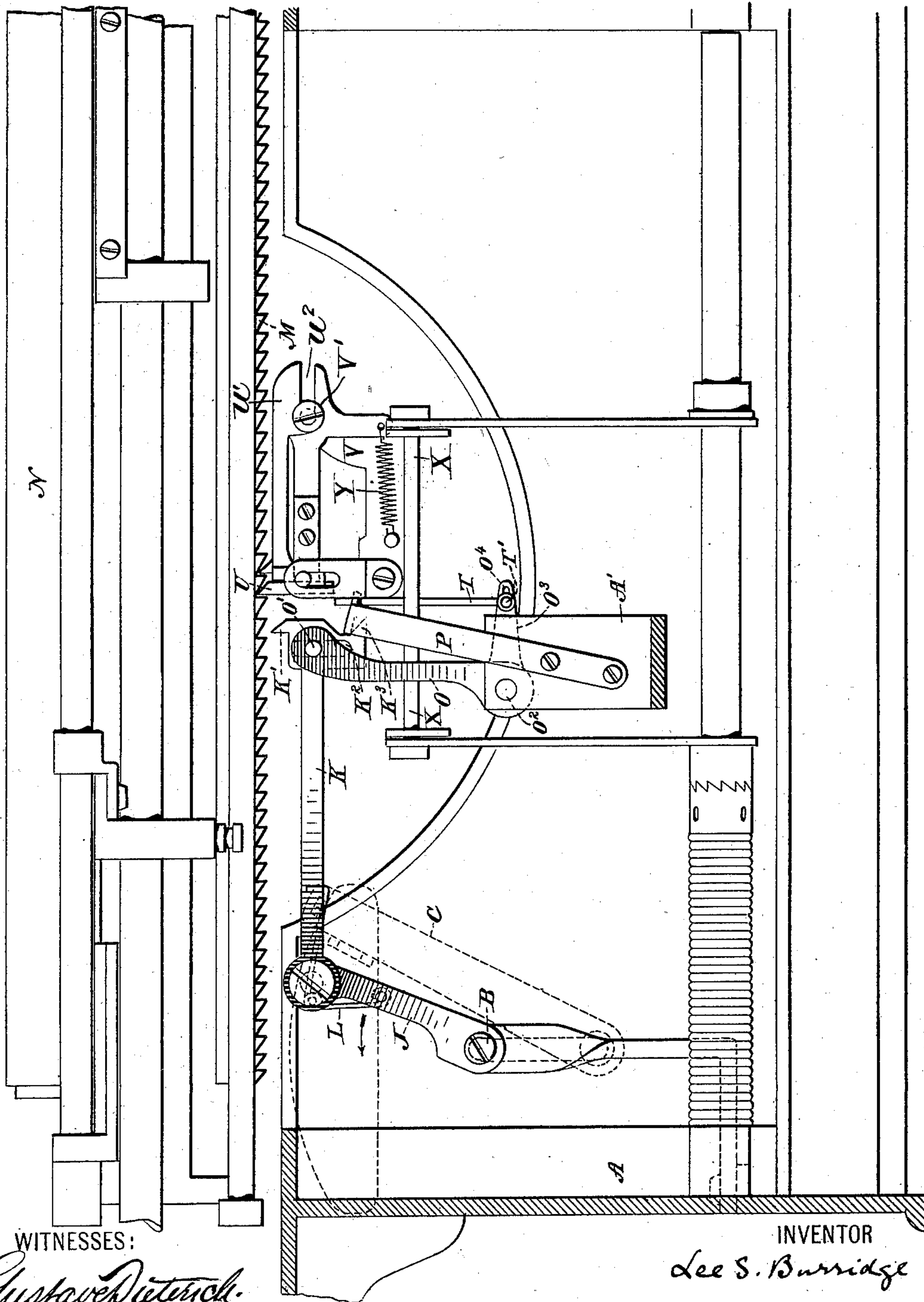
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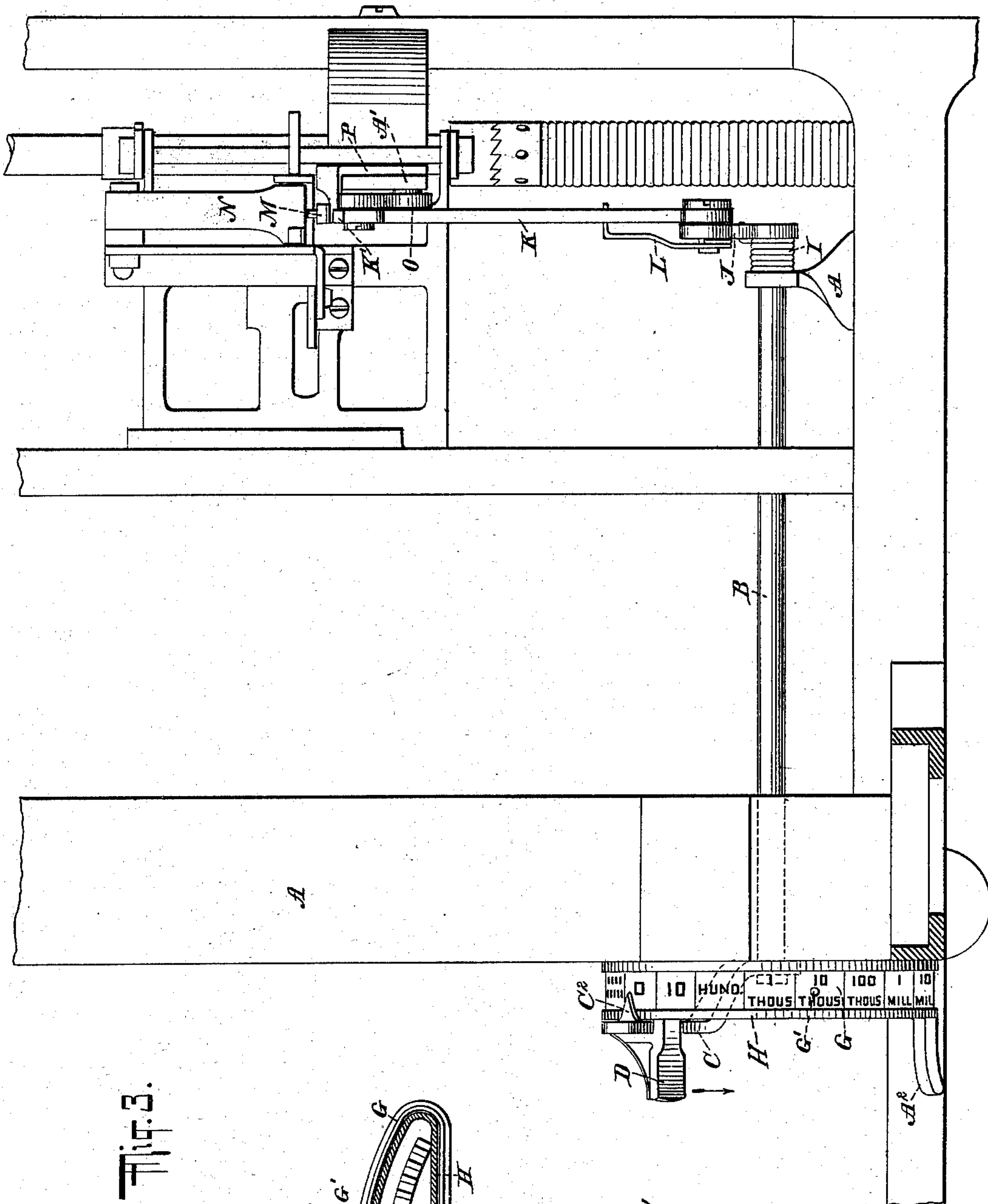
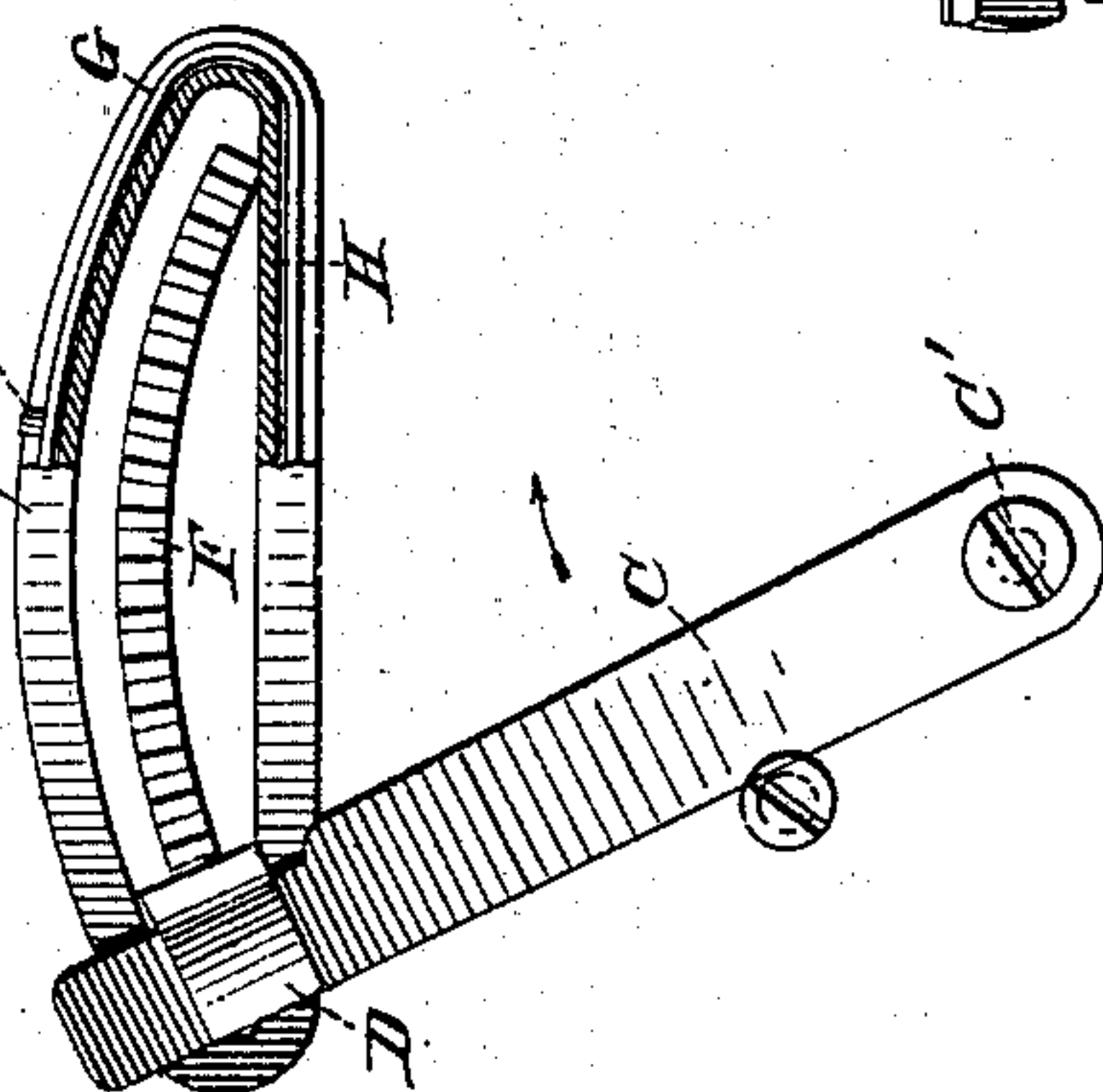


Fig. 3.

WITNESSES:

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Fig. 4.



INVENTOR

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UNITED STATES PATENT OFFICE.

LEE S. BURRIDGE, OF NEW YORK, N. Y., ASSIGNOR, BY MESNE ASSIGNMENTS, TO UNDERWOOD TYPEWRITER COMPANY, OF NEW YORK, N. Y., A CORPORATION OF NEW JERSEY.

TABULATING DEVICE FOR TYPE-WRITING MACHINES.

SPECIFICATION forming part of Letters Patent No. 752,821, dated February 23, 1904.

Application filed January 18, 1902. Serial No. 90,307. (No model.)

To all whom it may concern:

Be it known that I, LEE S. BURRIDGE, a citizen of the United States, residing in the city of New York, borough of Manhattan, county and State of New York, have invented certain new and useful Improvements in Tabulating Devices for Type-Writing Machines, of which the following is a specification.

My invention relates to tabulating devices for type-writing machines, and has for its object to provide a device of this class in which provision is made for bringing the carriage to any desired space or position within the limits of the required use; the invention being based upon the principle of first having the carriage jump to the left against a tabulating-stop of any approved construction and then moved back toward the right by means of my improvement as many spaces as required for writing the particular figure or item or for making corrections.

Another feature of my invention consists in combining with a mechanism of the character indicated above a stop or locking mechanism adapted for use in connection with that class of type-writers in which the escapement or feed mechanism comprises a loose dog which when released from the carriage-rack moves longitudinally thereof.

In the accompanying drawings I have shown one form of my invention, and while this form may be described as the preferred form of the improvement I desire it to be understood that I do not wish to restrict myself to the details thereof, but that various modifications may be made without departing from the nature of my invention as defined in the appended claims.

In the drawings, Figure 1 is a sectional elevation of a type-writing machine having my improvement applied thereto. Fig. 2 is a rear view of the machine. Fig. 3 is a plan with part of the frame in section. Fig. 4 is a detailed front elevation of the indicator, and Fig. 5 is a detailed horizontal section of the back-spacing arm and finger substantially on line 5 5 of Fig. 1.

It will be understood that the drawings do

not show every part of the type-writing machine, as those would only confuse the showing of my invention. The machine illustrated by the drawings is one of the front-strike type and, more particularly, an Underwood machine.

Upon the frame A is journaled a rock-shaft B, inclined upwardly from front to rear in the specific construction shown and carrying at its front end an operating-arm C, which extends in front of the frame A and carries at its upper end a touch index or finger D, pivoted about a vertical axis D' and engaged by a spring E, which has a tendency to throw said finger outward and out of engagement with a toothed segment F, having its center of curvature at the pivot C' of the arm C. The arm C carries at its upper end an index or pointer C², arranged to indicate upon a normally stationary scale G. In the particular instance shown the scale is adjustable longitudinally, and for this purpose the scale is produced upon a tape or like material which is endless and may be sealed upon a track or casing H, as shown in Figs. 1 and 4. In order that the scale may be readily shifted by hand, I may provide a pin G', projecting therefrom, but clear of the path of the pointer C². The scale G has indications thereon, as shown in Fig. 3, corresponding to each space, and for the sake of clearness I have exaggerated the relative size of the divisions in said figure, it being understood that in practice each division corresponds to one space. A spring I has a tendency to throw the shaft B, with the arm C, back to the position shown in Fig. 4 and also indicated in dotted lines in Fig. 2. The rear end of the shaft B carries an arm J, which is pivotally connected with a link K, pressed upward by means of a spring L. This link K carries a back feed-dog K', adapted to engage the teeth of the rack M, which is secured to the carriage N in the customary way. The link further has a vertical slot K², into which projects a pin O', carried by an arm O, which is fulcrumed at O² upon a bracket A', forming part of the type-writer frame. From this bracket also extends a retaining and

guiding arm P, adapted to take over a heel portion K^3 at the lower end of the link K, this heel portion having an inclined upper surface. It will be understood that in the position shown in Fig. 2 the spring L forces the heel K^3 against the upper end of the retaining-arm P. When the arm C is moved in the direction indicated by the arrow, the spring L will cause the dog K' to rise into engagement with the rack M, and thus the carriage will be moved back any desired number of spaces, according to the extent of the movement given to the arm C. The graduation or scale G clearly indicates the number of spaces which the carriage is fed back. So far as described, the construction is a back-feed or back-spacing mechanism, which may be used for moving the carriage backward from any position—as, for instance, for the purpose of making corrections.

It is my intention to employ the mechanism herein described in connection with a tabulating device of any approved construction. Thus I have shown in Fig. 1 a tabulating-key Q upon a lever Q' , fulcrumed at Q^2 and connecting operatively through the medium of an arm R, fulcrumed at R' , with a rocking rod S, carrying a tabulating stop or stops S' , adapted to be thrown into the path of a projection N' on the carriage N. Only one tabulating-stop is shown in the drawings, the use of a plurality of them being very common. In operation, therefore, the tabulating-key is depressed in the customary way, so as to free the carriage from the escapement in any approved manner and allow it to be propelled by its driving-spring until it is stopped by the engagement of the projection N' with the stop S' . This arrests the carriage in the proper position for tabulating work, say, at the space where the decimal-point will be printed. If now it is desired to write, say, a figure in the thousands-column, the operator takes hold of the arm C, or rather of the finger D thereon, and by pressing said finger toward the right causes it to engage and slide over the teeth of the segment F, the purpose of which is merely to enable the operator to readily stop the arm C in the exact position corresponding to the intended column. To facilitate the manipulation of the finger D, the type-writer frame may be provided with a projection A^2 , so that the operator may engage the finger D with the thumb of the right hand, while his forefinger rests against the projection A^2 . When the index C^2 points to the thousands-division of the scale G, the finger D is released, and under the influence of the spring I the shaft B, together with the parts connected therewith, returns to its original position. During the first movement, however, the dog K' engages the rack M, as previously stated, and feeds the carriage to the right the desired number of spaces in the case under consideration. During the return movement of the

arm J the heel K^3 slides on the guiding-surface of the arm P, so as to move the dog K' out of engagement with the rack M and leave the carriage locked by the escapement mechanism. In some cases it may be found convenient to adjust or shift the scale G—for instance, when in tabulating work it is found that most of the items begin, say, in the hundreds-column. In this case the scale would be shifted so that the pointer C^2 , instead of indicating the units-column, as in Fig. 3, would register with the hundreds-division of the scale G, so that whenever an item would have to be written down, the first figure of which would be in the hundreds-column, the operator would simply depress the tabulating-key Q. Items of higher denominations would require the use of the back-spacing arm C in same manner as before described, while items of a smaller denomination would be written by simply first pressing the ordinary spacing-key the required number of times before depressing a type-key. Of course this adjustment or shifting of the scale G would not affect the operation in the least—that is, the carriage would stop at the same point as before the shifting of the scale; but this point would correspond, say, to the hundreds-column instead of the units-column. It will be obvious that the scale G is not to be shifted while a table is being written.

In some type-writing machines there is employed an escapement comprising a loose dog, which when released from the carriage-rack moves lengthwise of the rack to move into operative relation to an adjacent tooth of the rack. The drawings indicate an escapement commonly employed in Underwood typewriters, the loose dog U being rigidly secured to a slide U' , having a longitudinal slot U^2 , into which fits the guide and fulcrum pin V' , secured to the dog-carrier V. This carrier is adapted to rock transversely of the rack M about the axis X. A spring Y, secured to the carrier at one end and to the slide U' at the other end, tends to pull the said slide and the loose dog in the direction contrary to the feed movement of the carriage—that is, toward the left in Fig. 2. The spring which drives the carriage is, however, much stronger than the spring Y, so that normally the slide U' will be in the position shown in Fig. 2. When, however, the carrier V is swung transversely and the loose dog U thus becomes disengaged from the rack M, the spring Y will move the released dog to the feed position preparatory to the next feed movement of the carriage in the well-known manner. Inasmuch as the loose dog has a pin-and-slot connection at $U^2 V'$ with the dog-carrier V said loose dog can yield downward (against the tension of the spring Y, which thus has a double function) when the carriage is moved back by the back-feed dog K' or in any other manner. If my invention was applied to such

a type-writer with only the parts described hereinbefore, it is obvious that upon the return movement of the back-feed dog K' the carriage would not remain in the position to which it was brought by the action of said dog, but would under the influence of its driving-spring be fed forward as much as the loose dog would allow—that is, ordinarily one space. To avoid the loss of time and of accuracy which this useless movement would entail, I provide a mechanism connected with the back-feed dog and arranged to be projected into the path of the loose escapement-dog, so as to prevent any movement of the latter lengthwise of the rack when the back-feed dog is operated. A very simple form of such a locking mechanism is shown in the drawings. Here the arm O has an extension O³, provided with a slot O⁴, into which takes a pin T' at the lower end of the rod T, movable vertically in a guide, which may form part of the arm P. This rod is so arranged that when raised it will come into the path of the loose dog U of the escapement in such a manner as to prevent this dog from moving in the customary manner lengthwise of the rack without, however, interfering with the transverse pivotal movement of the loose feed-dog. In this case the parts would assume the position shown in Fig. 2 after the tabulating-key Q would have been depressed and allowed to return to its original position. Then upon moving the arm C the rod T would first rise into the path of the loose dog U, so as to hold this dog against longitudinal movement, and thereupon the back-feed dog K' would engage the rack M in the same manner as hereinbefore described. Of course in the normal position the rod T is clear of the loose dog U, so as not to interfere with the normal working of the escapement.

I desire it to be understood that where in the claims I use the term "spacing mechanism" I give it a broad or generic meaning and do not employ it as a mere synonym of "back-spacing mechanism."

What I claim is—

1. In a type-writing machine, the combination with two parts, viz: a carriage and a frame, of a spacing mechanism comprising an element movably mounted on one of said parts and capable of a variable throw, an indicator mounted on the same part so as to indicate the movement of said element irrespective of the position of the carriage on the frame at the beginning of such movement, and a cooperating element on the other part, said elements being arranged to engage each other and to give the carriage a movement the extent of which may be observed on the indicator and depends on the throw given to the movable element of said spacing mechanism.

2. In a type-writing machine, the combination, with an adjustable tabulating-stop arranged to arrest the carriage at a stated point

in the printing direction, of a back-spacing mechanism provided with denominational indications.

3. In a type-writing machine, the combination with two main parts, viz: the frame and the carriage, of a tabulating-stop arranged to arrest the carriage at a stated point in the printing direction, and a back-spacing mechanism comprising an element movably mounted on one of said main parts, an indicator mounted on the same part so as to indicate the movement of said element irrespective of the position of the carriage on the frame at the beginning of such movement, and a cooperating element on the other part.

4. In a type-writing machine, the combination with two parts, viz: a carriage and a frame, one movable relatively to the other, of a feed mechanism comprising a loose dog, a back-spacing mechanism, and a locking mechanism operatively connected with the back-spacing mechanism, to lock the loose dog against movement lengthwise of the movable part when the back-spacing mechanism is operated.

5. In a type-writing machine, the combination with two parts, viz: a carriage and a frame, one movable relatively to the other, of a feed mechanism comprising a loose dog movable lengthwise of the movable part to bring about the feed movement thereof, a back-spacing mechanism, a locking mechanism normally out of the path of the loose dog, and an operative connection from the back-spacing mechanism to the locking mechanism to throw the latter into the path of the loose dog and thus prevent the latter from moving to the feed position.

6. In a type-writing machine, the combination with two parts, viz: a carriage and a frame, one of which is movable relatively to the other, of a spacing mechanism comprising a rock-shaft mounted on one of said parts, an arm or link connected with said rock-shaft and carrying a dog to engage a cooperating member on the other part, and a guide for normally keeping said dog out of engagement with said cooperating member and for guiding it to said member during the active movement of the spacing mechanism.

7. In a type-writing machine having a tabulating-stop, two separately-operative mechanisms, one for causing the carriage to jump in the printing direction against said stop, and the other having a variable throw to move the carriage in the opposite direction one or more letter-spaces, and means for indicating the denominational position of the carriage during the operation of the last-named mechanism.

8. The combination with two parts, viz: a carriage and a frame, one of which is movable relatively to the other, of a tabulating-stop movably mounted on one of said parts and adapted to be projected so as to come into arresting contact with a cooperating stop on the

other part, to arrest the movable part in its path in one direction, and a back-spacing device for moving the movable part with its stop away from contact with the stop on the other part and means to indicate the denominational position of the carriage relatively to the position at which it is arrested by the coöperation of the said stops.

9. The combination with two parts, viz: a carriage and a frame, one of which is movable relatively to the other, of a tabulating-stop movably mounted on one of said parts and adapted to be projected so as to come into arresting contact with a coöperating stop on the other part, to arrest the movable part in its path in one direction, and a back-spacing device for moving the movable part in the opposite direction one or more letter-spaces so as to bring the said stops out of engagement and means to indicate the distance between the said stops.

10. The combination with two parts, viz: a carriage and a frame, one of which is movable relatively to the other, of a spacing mechanism having a variable throw to move said movable part the distance of one or more letter-spaces at one stroke or throw of said spacing mechanism, and a touch-indicator connected with said mechanism to indicate the number of letter-spaces corresponding to each throw of the spacing mechanism.

11. The combination with two parts, viz: a carriage and a frame, one of which is movable relatively to the other, of a spacing mechanism having a variable throw to move said movable part the distance of one or more letter-spaces at one stroke or throw of said spacing mechanism, and a touch-indicator connected with said mechanism to indicate the number of letter-spaces corresponding to each throw of the spacing mechanism, said touch mechanism comprising a finger and a toothed surface over which said finger is adapted to sweep.

12. The combination with two parts, viz: a carriage and a frame, one of which is movable relatively to the other, of a spacing mechanism having a variable throw to move said movable part the distance of one or more letter-spaces at one stroke or throw of said spacing mechanism, and a touch-indicator connected with said mechanism to indicate the number of letter-spaces corresponding to each throw of the spacing mechanism, said touch mechanism comprising a toothed surface and a finger adapted to sweep over said surface and carried by the spacing mechanism, said finger being spring-pressed so that it will have a tendency to keep out of engagement with the rack.

13. The combination with two parts, viz: a carriage and a frame, one of which is movable relatively to the other, of a spacing mechanism

having a variable throw to move said movable part the distance of one or more letter-spaces at one stroke or throw of said spacing mechanism, and a touch-indicator connected with said mechanism to indicate the number of letter-spaces corresponding to each throw of the spacing mechanism, said touch mechanism comprising a toothed surface, a spring-pressed finger carried by a part of the spacing mechanism and having a tendency to keep out of engagement with said toothed surface, and a projection or finger-hold located on that side of the frame toward which said spring-pressed finger moves during the active stroke of the spacing mechanism.

14. The combination of two parts, viz: a carriage and a frame, one movable relatively to the other, a spacing mechanism for feeding the movable part one or more letter-spaces at one throw of said mechanism, the latter comprising an operating member, and a projection or finger-hold located on that side of the frame toward which the said operating member moves during the active stroke of the spacing mechanism.

15. The combination of two parts, viz: a carriage and a frame, one movable relatively to the other, a spacing mechanism for feeding the movable part one or more letter-spaces at one throw of said mechanism, an index arranged to move with said spacing mechanism, and a relatively stationary indicator or scale coöperating with said index, said scale being adjustable to vary its indications.

16. The combination of two parts, viz: a carriage and a frame, one movable relatively to the other, a spacing mechanism for feeding the movable part one or more letter-spaces at one throw of said mechanism, an index arranged to move with said spacing mechanism, a relatively stationary indicator or scale coöperating with said index, and a support or guide upon which said scale is arranged to slide longitudinally for adjustment.

17. The combination of two parts, viz: a carriage and a frame, one movable relatively to the other, a spacing mechanism for feeding the movable part one or more letter-spaces at one throw of said mechanism, an index arranged to move with said spacing mechanism, a relatively stationary endless indicator or scale coöperating with said index, and a support or guide which is encircled by said scale and upon which the scale is arranged to slide lengthwise for adjustment.

In testimony whereof I have hereunto set my hand, in the presence of two subscribing witnesses, this 16th day of January, 1902.

LEE S. BURRIDGE.

Witnesses:

JOHN LOTKA,
EUGENE EBLE.