

No. 882,058.

W. R. FOX.

PATENTED MAR. 17, 1908.

TABULATOR FOR TYPE WRITERS.

APPLICATION FILED MAY 6, 1904.

4 SHEETS—SHEET 1.

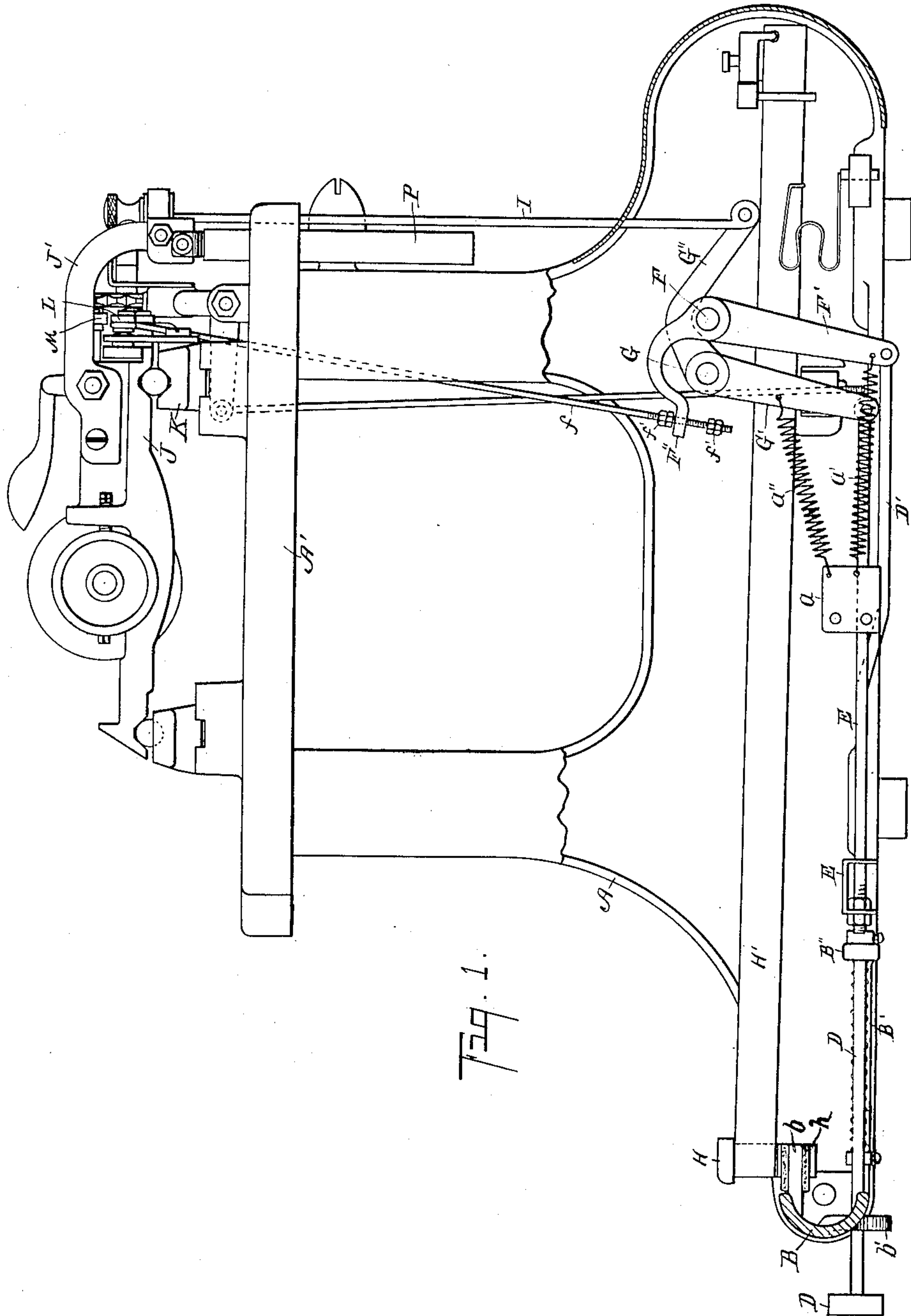


Fig. 1.

Witnesses:

*Eitel A. Sellen*

*Otto A. Earl*

Inventor,

*William R. Fox*

By *Fred L. Chappell*

Att'y.

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4 SHEETS—SHEET 2.

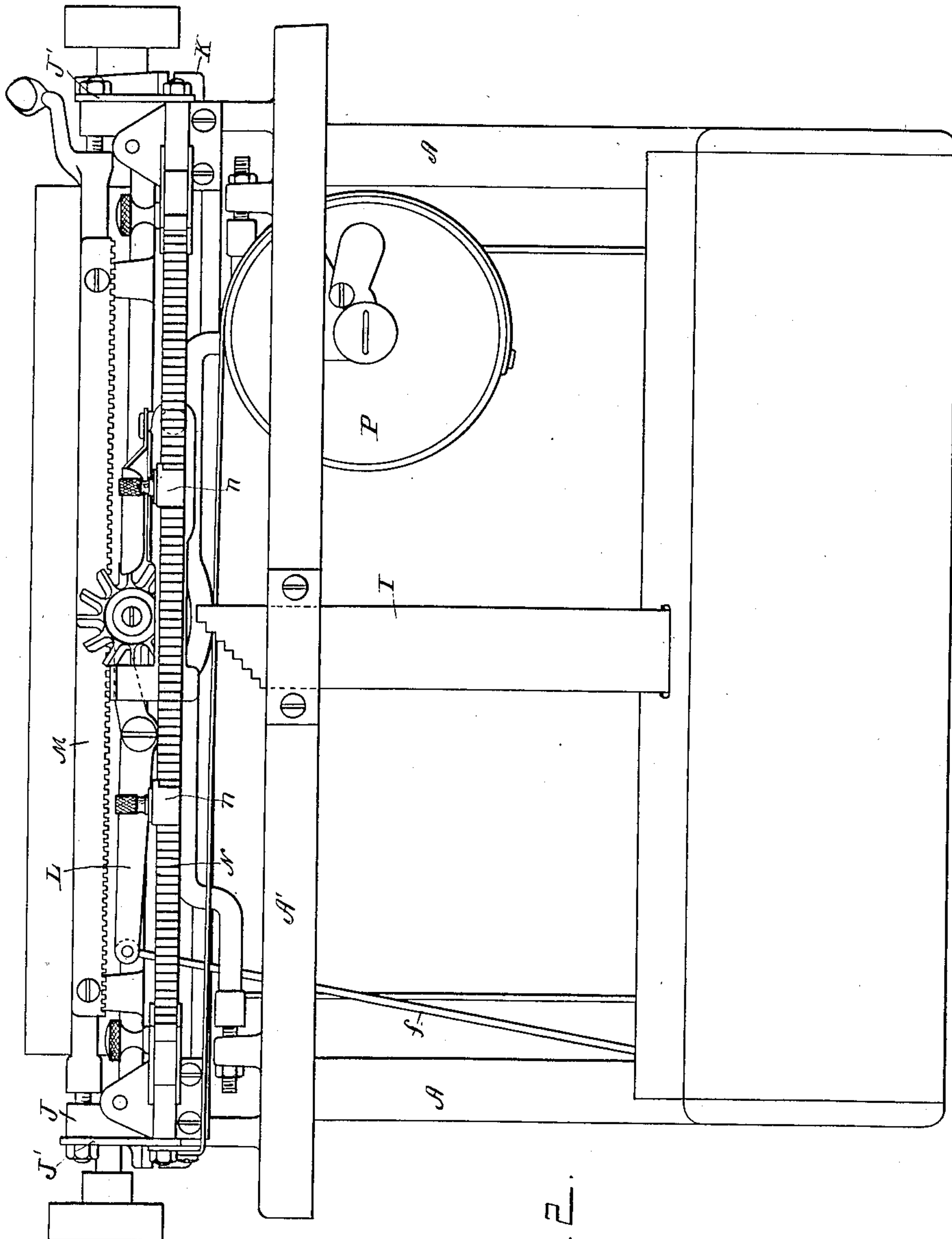


Fig. 2.

Witnesses:

*Ethel A. Sellen*

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By *Fred L. Chappell*  
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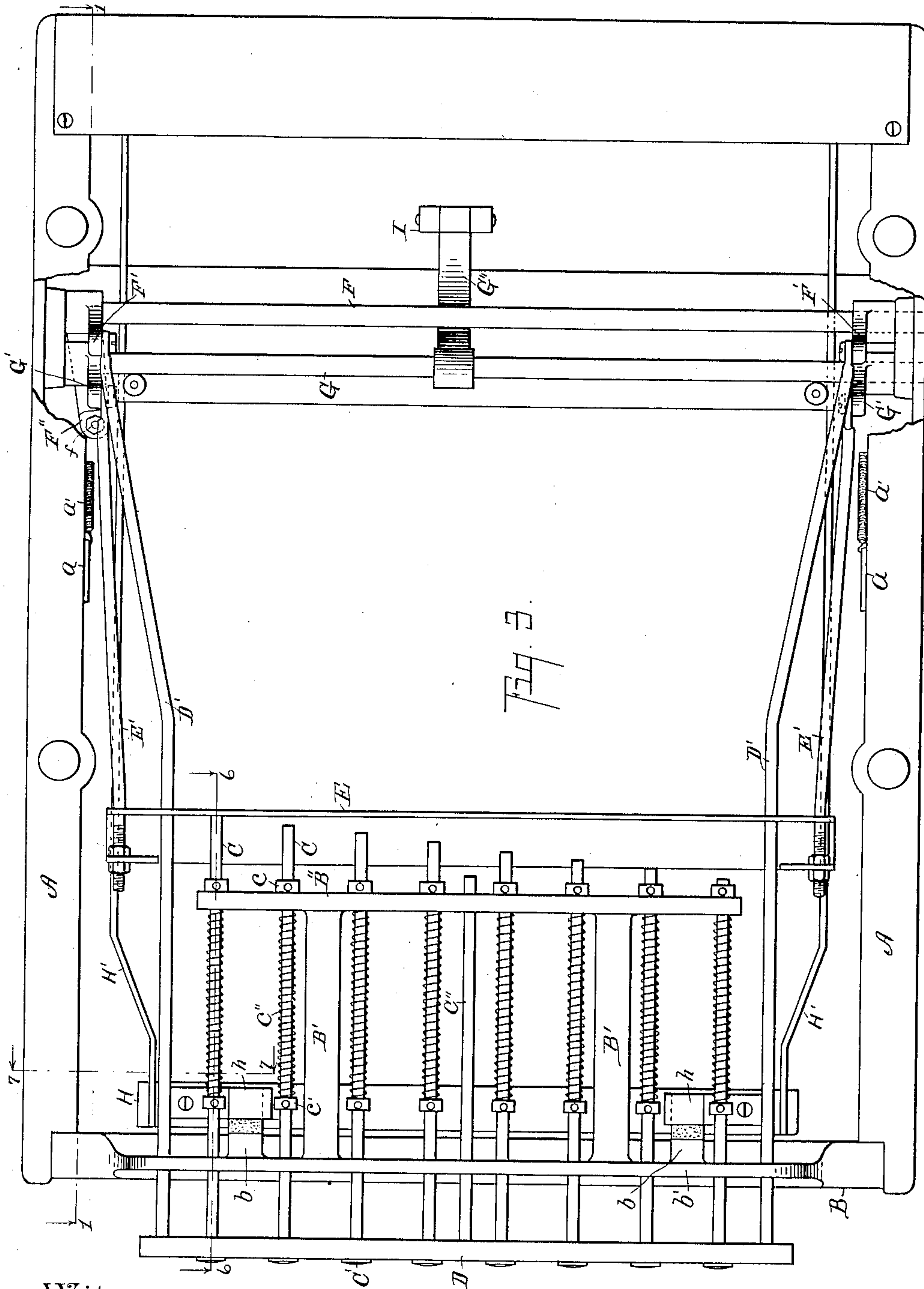
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4 SHEETS—SHEET 3.



Witnesses:

Ethel A. Teller  
Otis A. Earl

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William R. Fox  
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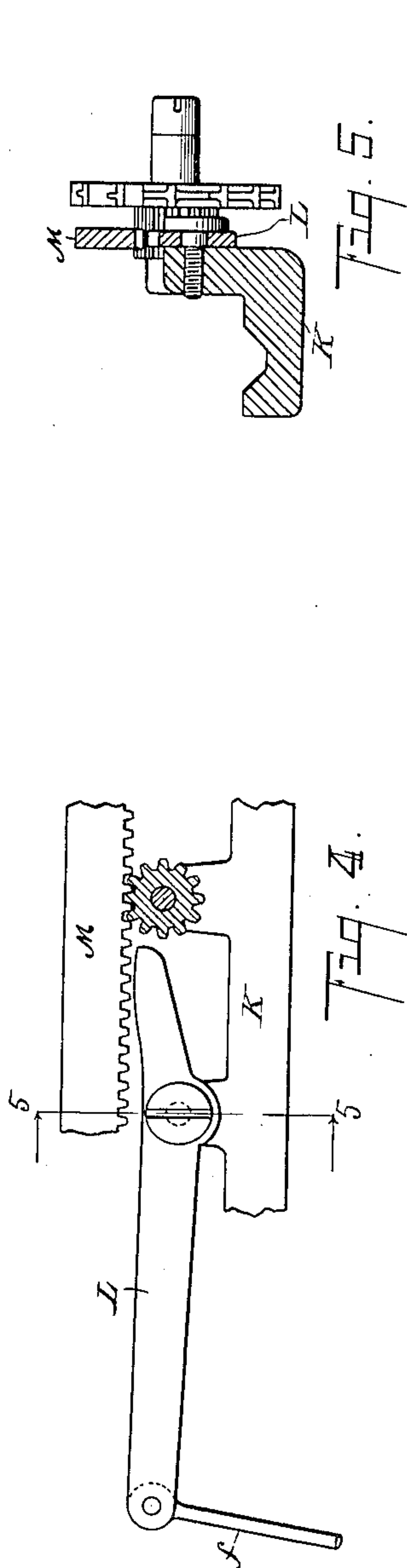


Fig. 4.

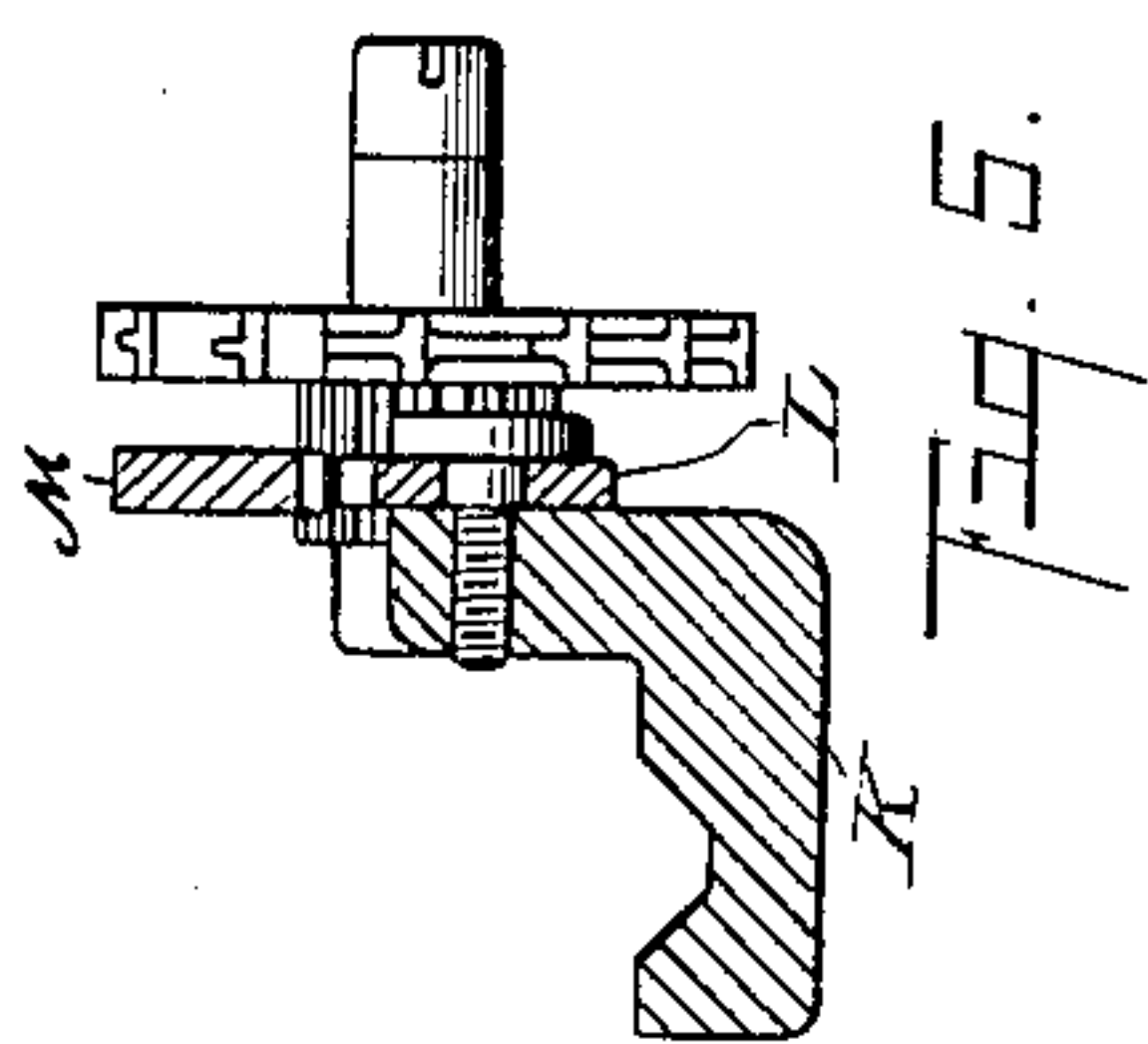


Fig. 5.

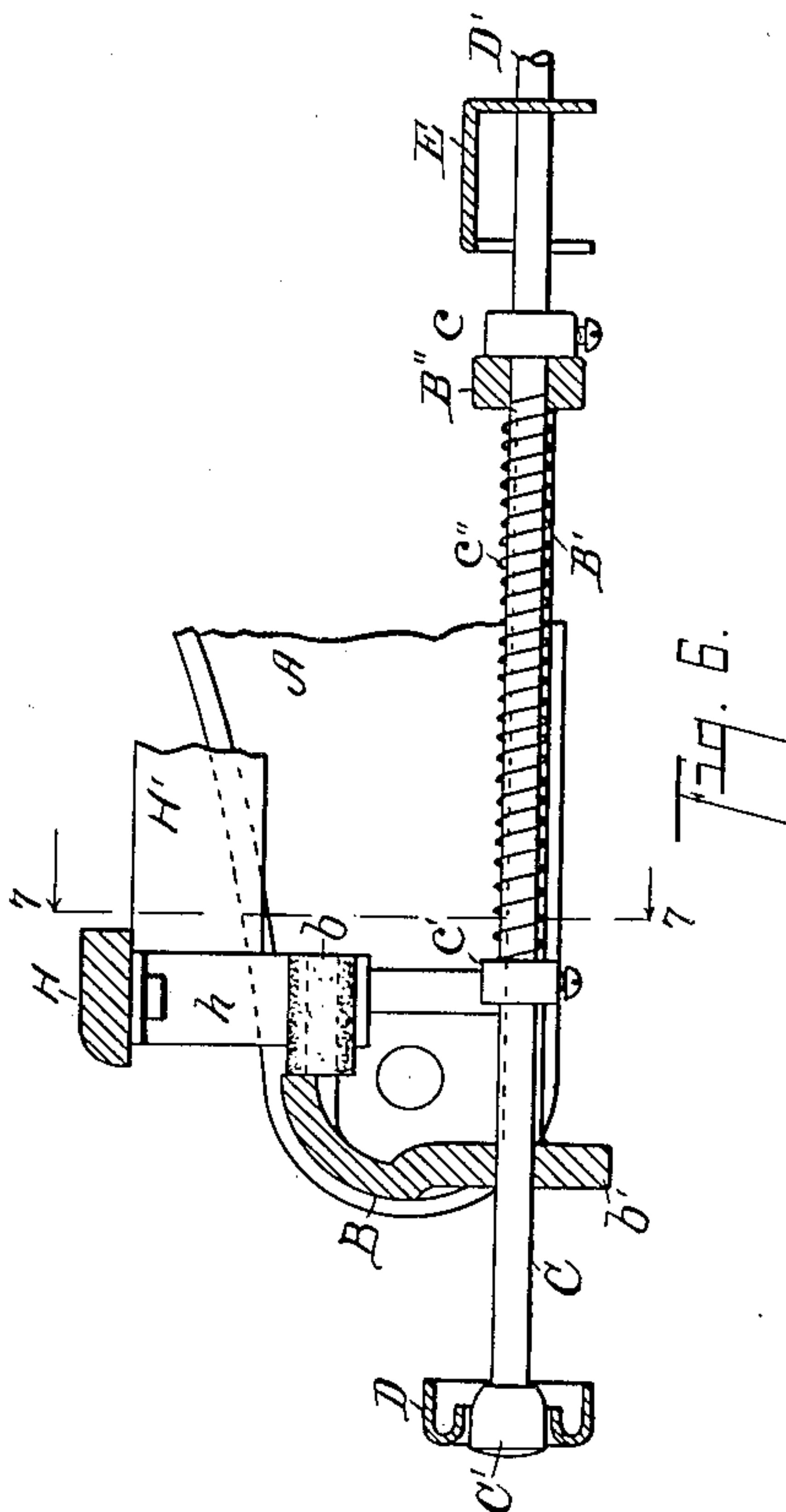


Fig. 6.

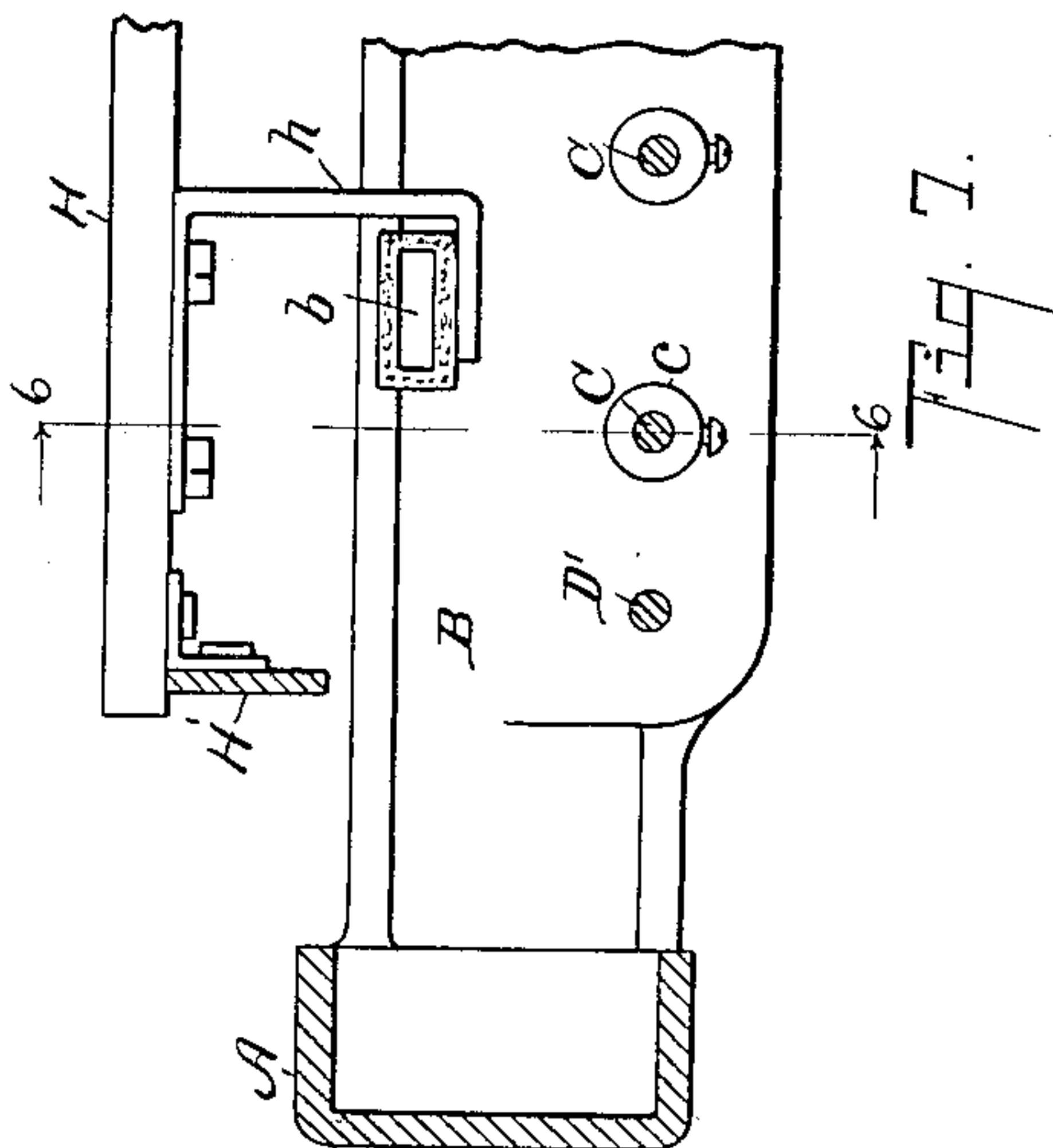


Fig. 7.

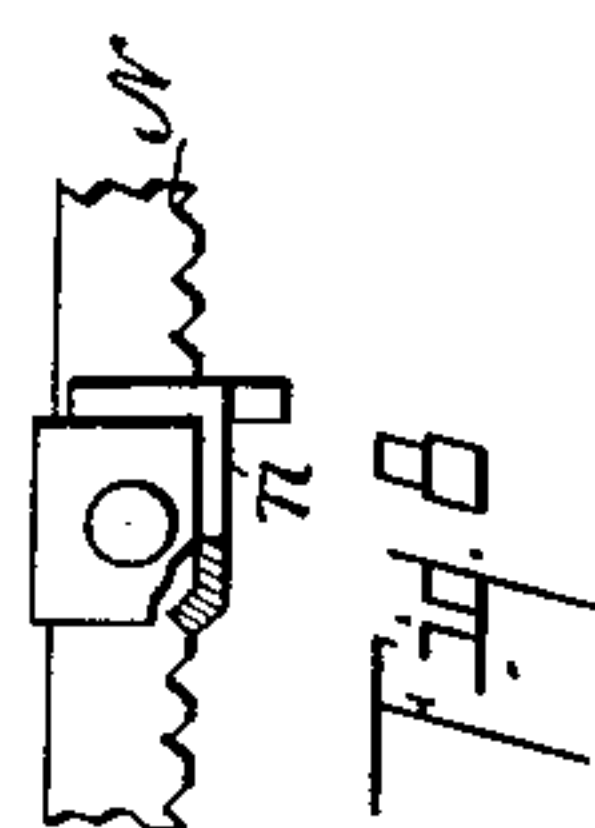


Fig. 8.

Witnesses:

Edw. A. Allen  
Otis A. Earl

Inventor,

William R. Fox  
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# UNITED STATES PATENT OFFICE.

WILLIAM R. FOX, OF GRAND RAPIDS, MICHIGAN.

## TABULATOR FOR TYPE-WRITERS.

No. 882,058.

Specification of Letters Patent.

Patented March 17, 1908.

Application filed May 6, 1904. Serial No. 206,684.

*To all whom it may concern:*

Be it known that I, WILLIAM R. FOX, a citizen of the United States, residing at the city of Grand Rapids, county of Kent, State of Michigan, have invented certain new and useful Improvements in Tabulators for Type-Writers, of which the following is a specification.

This invention relates to improvements in typewriters, and particularly to improvements in tabulating devices therefor.

The objects of this invention are: first: to provide a simple, efficient, and durable, tabulating device, which is simple to construct and easy to operate. Second: to provide such a tabulating device which does not interfere with, or make necessary, any material alterations in the typewriting machine, the machine being supplied with the tabulator, or the tabulator omitted, without marring the appearance of the machine.

Further objects pertaining to structural details will definitely appear from the detailed description to follow.

I accomplish the objects of my invention by the devices and means described in the following specification, and particularly pointed out and defined in the claims.

A structure embodying the features of my invention is clearly illustrated in the accompanying drawing forming a part of this specification, in which—

Figure 1 is a side elevation view of a typewriting machine with only such parts present as are necessary to illustrate my improved tabulating device, portions of the frame being broken away to show details of construction. Fig. 2 is a rear elevation view of the structure appearing in Fig. 1, only such parts being shown as are necessary to illustrate the arrangement and the mode of operation of the tabulating device. Fig. 3 is an inverted plan view of a typewriting machine showing the relation of the parts of my improved tabulator, only portions of the machine pertaining to the tabulating structure being illustrated. Fig. 4 is an enlarged detail view of the releasing lever for raising the rack out of engagement with the driving pinion when the tabulating device is operated. Fig. 5 is a detail sectional view taken on line 5—5 of Fig. 4. Fig. 6 is an enlarged detail sectional view of one of the release bar keys of the tabulator, and the front of the machine, showing the arrangement of the spacer bar and its stop in that connection, the same

being taken on a line corresponding to line 6—6 of Fig. 7. Fig. 7 is an enlarged detail sectional view on line 7—7 of Fig. 6. Fig. 8 is a detail view of one of the adjustable stops *n* which co-act with the tabulator stop bar I.

In the drawing, the sectional views are taken looking in the direction of the little arrows at the ends of the section lines, and similar letters of reference refer to similar parts throughout the several views.

Referring to the drawing, the frame A of the machine is of the usual Fox typewriter construction, and is provided with a top plate A' which has the usual carriage ways K and the reciprocating carriage J therein. The carriage is actuated by the spring drum P which is connected thereto by the usual means.

The keys of the typewriter are of the usual form for type bar machines, and are not here illustrated for the reason that this tabulating device is independent of the keys and supported below the same.

B is the front bar of the machine arranged in front of key bank, and is here made detachable. When the tabulator is present, it extends down as at *b'* and is perforated for the passage of the key stems of the tabulator, which are straight horizontal bars underneath the key levers. This front bar B of the machine is provided with inwardly projecting fingers *b*, suitably covered with felt, or other cushioning material, to serve as a stop for the spacer bar H. This spacer bar H is connected to the usual spacer lever H', supported in the machine as illustrated.

On the under side of the spacer bar H is a bracket *h* which extends downwardly and then laterally underneath the cushioning stop finger *b*, which limits the motion of the spacer bar in the upward direction so that the movements of bar are so controlled that they will not interfere with the tabulator mechanism beneath.

Through the lower portion of the front cross bar B are perforations for as many key stems as it is desired to have stops in the tabulator, and also a perforation at each side of the machine for the passage of the reciprocating rods D' D'. These rods D' D' are connected to the release mechanism for releasing the carriage to allow it to contact with the tabulator bar, which release mechanism consists of a cross bar D across the front of the machine, below and in front of the key bank, which is supported by the reciprocating rods



D' D'. These rods D' D' extend rearwardly through the front bar B of the machine, as above stated, and are there connected to arms F' at each side of the machine.

5 These arms F' are connected to a transverse rock shaft F. A perforated arm F'' extends forwardly from this rock shaft F, through which perforation extends a vertical, or substantially vertical, rod *f*. This rod *f* is a  
10 loose fit in the perforation of the arm F''.

Stops *f' f'* are located above and below the arm F' at such distance as to permit free movement of the arm F'' for a considerable distance, without actuating the rod *f*. Supported on the rear portion of the frame of the  
15 machine is a lever L to which the rod *f* connects, and this lever is arranged beneath the rack bar M so that, when the rock shaft F is actuated by the movement of the arms F' to the rear to the limit of their movement, the  
20 arm F' will strike the lower stop *f'*, pulling down the end of the lever L and raising the rack bar, thereby releasing the same. The upper surface of this lever is slightly curved  
25 so as not to engage the teeth of the rack bar, but to permit the same to pass readily over it. The arm F' of the rock shaft F is drawn normally to the front by a coiled spring *a'*.

It will be observed that when the bar D is  
30 pushed in to the limit of its movement, its effect will be to release the carriage and allow it to move under the action of its driving spring towards and against the stop bar of the tabulator. This bar D is not in any way  
35 connected to the keys of the tabulator.

Supported on the bars D' of the machine and free to reciprocate thereon, is a cross-bar E, to each side of which are secured forwardly extending rods E'. These rods E'  
40 connect to arms G' of a rock shaft G which is supported transversely in the rear portion of the machine.

An arm G'' is secured to this rock shaft G about midway of the width of the machine,  
45 to which arm the tabulator bar I is pivoted, extending backwardly through a suitable guide I' at the rear of the machine. The upper end of this bar is provided with graduated notches about one-eighth of an inch  
50 deep and about one-eighth of an inch apart, or the distance of one of the letter spaces of the typewriter, whatever that may be, the succeeding notches being at a regular variation of height.

Underneath the machine is a transverse bar B'' secured by brackets or arms B' B' to the front bar B of the machine, the bar B'' being parallel therewith. Through these bars extend the key stems C of the tabulator.  
60 Coiled springs *c''* acting against the collars *c'*, serve to return these keys normally to the front of the machine, so that they may be actuated by pressing the key buttons C'. The key buttons C' project through apertures in  
65 the release bar D. Collars *c* are secured by

suitable set screws or pins to the rear ends of the key stems C to allow the keys to move normally to the correct position in front. These tabulator key stems C are graduated in length, that to the right of the machine being  
70 the longest, the next being one-eighth of an inch shorter, the next one-eighth of an inch shorter than the preceding one, and so on, that on the extreme left of the machine being the shortest. It will therefore be seen that,  
75 on pushing any particular key in, the bar E will be pushed forward a distance corresponding to the length of the key stem, when the key is pressed close up against the front bar B. As the key buttons *e'* are of less diameter than the apertures in the bar D they  
80 extend completely through the bar D, when it is pushed back, the thumb or finger of the operator, whichever may be used, will actuate the bar D so that, as the tabulator key  
85 completes its stroke, the carriage will be released to carry it towards the left, where it will be stopped by the tabulator stop in the rear.

Stops *n* are provided on the stop supporting bar N at the rear of the carriage so that the machine can be set or adjusted to tabulate at any fixed point desired on the page, and, by providing a series of these stops *n*,  
90 different sets of tabulations can be accomplished on the machine.

As the tabulator key stems C are of different lengths, when they are pushed in, it will be noted that the bar E will be pushed different distances corresponding to the length of  
100 the key stems, and the tabulator stop bar I will be raised a corresponding amount, so that each of the keys controls the stop bar and raises it a distance proportionate to the length of the key stem, securing a corresponding  
105 point for beginning a number, thereby making the device effective for any tabulating that may be desired where figures of different denominations are to be correctly printed in columns. The stop at the left  
110 sets the tabulator for units, the next stop to the right thereof setting the same for tens, and the next stop for hundreds, etc.

I have shown my improved tabulator in the form preferred by me, and I believe the  
115 connections to be arranged in the most compact and satisfactory manner. I am aware, however, that the structure can be greatly modified in its details of construction without departing from my invention, and I desire to claim the same specifically as well as  
120 broadly.

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

1. In a tabulator for typewriters, the combination with the escapement mechanism of the typewriter of suitable adjustable stops at the rear of the carriage; a vertically movable tabulator bar with graduated notches at  
125 130



its upper end for engaging the stops of the said carriage; a rock shaft in the lower rear part of the machine with an arm connected to said tabulator bar; a transverse actuating bar suitably supported underneath the type key levers of the machine, with connections to downwardly depending arms on the rock shaft, a spring to throw said rock shaft arms normally toward the front of the machine; a series of horizontal tabulator keys C of graduated lengths supported in suitable transverse guide bars towards the front of the machine, with individual springs for throwing each of the same normally forward, arranged to act upon the transverse actuating bar whereby the keys will actuate the tabulator bar and elevate the same to bring the graduated notches corresponding to each of said keys into operative position; a release lever L arranged under the rack bar and adapted to act upon the same, the said lever being curved to permit the rack bar of the machine to pass freely over it; a rock shaft in the lower part of the machine with a perforated, substantially horizontal arm; a connecting rod *f* from the said lever L to the said rock shaft arm, extending through a perforation therein and provided with stops arranged to permit the free movement of the arms on the said connecting rod *f* to cause the actuation of the lever toward the end of the stroke of the arm; a transverse release bar D below and in front of the type key bank of the machine, perforated for the free passage of the horizontal tabulator key stems C; connecting rods from each end of the release bar D with downwardly depending arms on the said rock shaft of the release mechanism, all co-acting substantially as described and for the purpose specified.

2. In a tabulator for typewriters, the combination with escapement mechanism of the typewriter of a suitable stop at the rear of the carriage; a vertically movable tabulator bar with graduated notches at its upper end for engaging the stop of the said carriage; a rock shaft in the lower rear part of the machine with an arm connected to the said tabulator bar; a transverse actuating bar suitably supported underneath the type key levers of the machine, with connections to downwardly depending arms on the rock shaft; a spring to throw said rock shaft arms normally toward the front of the machine; a series of horizontal tabulator keys C of graduated lengths supported in suitable transverse guide bars towards the front of the machine, with individual springs for throwing each of the same normally forward, arranged to act upon the transverse actuating bar, whereby the keys will actuate the tabulator bar and elevate the same to bring the graduated notches corresponding to each of said keys into operative position; a release lever L arranged under the rack bar

and adapted to act upon the same, the said lever being curved to permit the rack bar of the machine to pass freely over it; a rock shaft in the lower part of the machine, with a perforated substantially horizontal arm; a connecting rod *f* from the said lever L to the said rock shaft arm, extending through a perforation therein and provided with stops arranged to permit the free movement of the arms on the said connecting rod *f* to cause the actuation of the lever toward the end of the stroke of the arm; a transverse release bar D below and in front of the type key bank of the machine, perforated for the free passage of the horizontal tabulator key stems C; and connecting rods from each end of the release bar D with downwardly depending arms on the said rock shaft of the release mechanism, all co-acting substantially as described and for the purpose specified.

3. In a tabulator for typewriters, the combination with the escapement mechanism of the typewriter, of a suitable stop at the rear of the carriage; a vertically movable tabulator bar with graduated notches at its upper end for engaging the stop of the said carriage; a rock shaft in the lower rear part of the machine with an arm connected to said tabulator bar; a transverse actuating bar suitably supported underneath the type key levers of the machine, with connections to downwardly depending arms on the rock shaft; a spring to throw said rock shaft arms normally toward the front of the machine; a series of horizontal tabulator keys C of graduated lengths, supported in suitable transverse guide bars towards the front of the machine, with individual springs for throwing each of the same normally forward, arranged to act upon the transverse actuating bar, whereby the keys will actuate the tabulator bar and elevate the same to bring the graduated notches corresponding to each of said keys into operative position; a release lever L arranged under the rack bar and adapted to act upon the same, the said lever being curved to permit the rack bar of the machine to pass freely over it; a transverse release bar D below and in front of the type key bank of the machine, perforated for the free passage of the horizontal tabulator keys C; connections from the said release bar to the said release lever L, whereby, on the actuation of the tabulator keys, the release bar will also be actuated by the finger of the operator contacting therewith to release the carriage when the graduated tabulator bar is raised in position, as specified.

4. In a tabulator for typewriters, the combination with the escapement mechanism of the typewriter, of a suitable stop at the rear of the carriage; a vertically movable tabulator bar with graduated notches at its upper end for engaging the stop of the said carriage; a rock shaft in the lower rear part of the ma-



chine with an arm connected to said tabulator bar; a transverse actuating bar suitably supported underneath the type key levers of the machine, with connections to downwardly depending arms on the rock shaft; a spring to throw said rock shaft arms normally toward the front of the machine; a series of horizontal tabulator keys C of graduated lengths supported in suitable transverse guide bars towards the front of the machine, with individual springs for throwing each of the same normally forward, arranged to act upon the transverse actuating bar, whereby the keys will actuate the tabulator bar and elevate the same to bring the graduated notches corresponding to each of said keys into operative position; a transverse release bar perforated for the free passage of the horizontal tabulator keys; and connections from said release bar to the rack bar of the machine to raise the same and permit the carriage to move into contact with the graduated tabulator bar, as specified.

5. In a tabulator for typewriters, the combination with the escapement mechanism of the typewriter, of a suitable stop at the rear of the carriage; a tabulator bar with graduated notches for engaging said stop; a transverse actuating bar suitably supported underneath the key levers of the machine; connections therefrom to the said tabulator bar; a series of horizontal tabulator keys of graduated lengths, positioned to act upon the transverse actuating bar to operate the same and raise the tabulator bar different amounts corresponding to the lengths of the tabulator keys; a release lever L arranged under the rack bar and adapted to act upon the same, the said lever being curved to permit the rack bar of the machine to pass freely over it; a rock shaft in the lower part of the machine, with a perforated, substantially horizontal, arm; a connecting rod *f* from the said lever L to the said rock shaft arm, extending through a perforation therein and provided with stops arranged to permit the free movement of the arm on the said connecting rod *f* to cause the actuation of the lever toward the end of the stroke of the arm; a transverse release bar D below and in front of the type key bank of the machine, perforated for the free passage of the horizontal tabulator keys C; connecting rods from each end of the release bar D with downwardly depending arms on the said rock shaft of the release mechanism, all coacting substantially as described and for the purpose specified.

6. In a tabulator for typewriters, the combination with the escapement mechanism of the typewriter, of a suitable stop at the rear of the carriage; a graduated tabulator stop; a series of horizontal tabulator keys of graduated lengths, arranged to actuate the tabulator stop to bring the corresponding

graduations into position; a release lever L arranged under the rack bar and adapted to act upon the same, the said lever being curved to permit the rack bar of the machine to pass freely over it; a rock shaft in the lower part of the machine with a perforated, substantially horizontal, arm; a connecting rod *f* from the said lever L to the said rock shaft arm, extending through a perforation therein and provided with stops arranged to permit the free movement of the arm on the said connecting rod *f* to cause the actuation of the lever toward the end of the stroke of the arm; a transverse release bar D below and in front of the type key bank of the machine, perforated for the free passage of the horizontal tabulator keys C; and connecting rods from each end of the release bar D with downwardly depending arms on the said rock shaft of the said release mechanism, all coacting substantially as described and for the purpose specified.

7. In a tabulator for typewriters, the combination with the escapement mechanism of the typewriter, of a suitable stop at the rear of the carriage; a graduated tabulator stop; a series of horizontal tabulator keys of graduated lengths, arranged to actuate the tabulator stop to bring the corresponding graduations into position; a release lever arranged to act upon the rack bar of the escapement mechanism of the machine; a transverse release bar perforated for the passage of the tabulator keys and supported to reciprocate in the direction of the said keys, whereby the release bar and the keys may be operated independently; and connections from the release bar to the release lever, whereby, when one of the tabulator keys is depressed, the tabulator bar will be raised in position and the carriage then released, all co-acting for the purpose specified.

8. In a tabulator for typewriters, the combination with the escapement mechanism of the typewriter, of a suitable stop at the rear of the carriage; a tabulator bar with graduated notches for engaging said stop; a transverse actuating bar suitably supported underneath the key levers of the machine; connections therefrom to the said tabulator bar; a series of horizontal tabulator keys of graduated lengths, positioned to act upon the transverse actuating bar to operate the same and raise the tabulator bar different amounts corresponding to the lengths of the tabulator keys; a release lever arranged to act upon the rack bar of the escapement mechanism of the machine; a transverse release bar perforated for the passage of the tabulator keys and supported to reciprocate in the direction of the said keys, whereby the release bar and the keys may be operated independently; connections from the release bar to the release lever, whereby when one of the tabulator keys is



depressed the tabulator bar will be raised in position and the carriage then released, all co-acting for the purpose specified.

9. In a tabulator for typewriters, the combination with the escapement mechanism of the typewriter, of a suitable stop at the rear of the carriage; a tabulator bar with graduated notches for engaging said stop; a series of horizontal tabulator keys of graduated lengths with actuated connections to the tabulator bar to raise the same to bring the corresponding notch into operative position; a transverse release bar perforated for the free passage of the tabulator keys, supported to reciprocate in the direction of said keys, whereby the release bar and the keys may be operated independently, and the finger acting upon the tabulator keys will contact with and actuate the release bar; and connections from the release bar to the feed rack of the carriage, whereby the carriage will be released by the finger of the operator in pushing in the tabulator keys, all co-acting for the purpose specified.

10. In a tabulator for typewriters, the combination with a suitable graduated stop and a series of keys corresponding to the stops to control the same, of a release lever L arranged under the rack and adapted to act upon the same, the said lever being curved to permit the rack bar of the machine to pass freely over it; a rock shaft in the lower part of the machine with a perforated substantially horizontal arm; a connecting rod *f* from the said lever L to the said rock shaft arm extending through a perforation therein and provided with stops arranged to permit the free movement of the arm on the said connecting rod *f* to cause the actuation of the lever toward the end of the stroke of the arm; a transverse release bar D below and in front of the type key bank of the machine, perforated for the free passage of the horizontal tabulator keys C; and connecting rods from each end of the release bar D with downwardly depending arms on the said rock shaft of the release mechanism, all co-acting substantially as described and for the purpose specified.

11. In a tabulator for typewriters, the combination with the escapement mechanism of the typewriter, of a suitable stop at the rear of the carriage; a tabulator with graduated notches for engaging said stop; a series of horizontal tabulator keys of graduated lengths with actuated connections to the tabulator bar to raise the same to bring the corresponding notch into operative position; a transverse release bar perforated for the free passage of the tabulator keys, supported to reciprocate in the direction of said keys and extend therefrom; and a suitable release means connected to the said release bar, as specified.

12. In a tabulator for typewriters, the combination with the escapement mechanism of the typewriter, of a suitable stop at the rear of the carriage; a vertically movable tabulator bar with graduated notches at its upper end for engaging the stop of the said carriage; a rock shaft in the lower rear part of the machine with an arm connected to said tabulator bar; a transverse actuating bar suitably supported underneath the type key levers of the machine, with connections to downwardly depending arms on the rock shaft; a spring to throw said rock shaft arms normally toward the front of the machine; a series of horizontal tabulator keys C of graduated lengths supported in suitable transverse guide bars towards the front of the machine, with individual springs for throwing each of the same normally forward, arranged to act upon the transverse actuating bar whereby the keys will actuate the tabulator bar and elevate the same to bring the graduated notches corresponding to each of said keys into operative position; a transverse release bar perforated for the free passage of the tabulator keys, supported to reciprocate in the direction of the said keys and extend therefrom; and a suitable release means connected to the said release bar, as specified.

13. In a tabulator for typewriters, the combination with the escapement mechanism of the typewriter, of suitable adjustable stops at the rear of the carriage; a vertically movable tabulator bar with graduated notches at its upper end for engaging the stops of said carriage; a rock shaft in the lower rear part of the machine with an arm connected to said tabulator bar; a transverse actuating bar suitably supported underneath the type key levers of the machine, with connections to downwardly depending arms on the rock shaft; a spring to throw said rock shaft arms normally toward the front of the machine; a series of horizontal tabulator key stems C of graduated lengths supported in suitable transverse guide bars towards the front of the machine, with individual springs for throwing each of the same normally forward, arranged to act upon the transverse actuating bar whereby the keys will actuate the tabulator bar and elevate the same to bring the graduated notches corresponding to each of said keys into operative position; a release bar in juxtaposition to said keys, connected to a suitable release mechanism for releasing the carriage to permit its movement into contact with the tabulator stops, whereby the finger of the operator can engage both the tabulator keys and the release bar, for the purpose specified.

14. In a tabulator for typewriters, the combination with the escapement mechanism of the typewriter, of suitable stops at the rear of the carriage; a vertically movable



tabulator bar with graduated notches at its upper end for engaging the stops of the said carriage; a rock shaft in the lower rear part of the machine with an arm connected to said 5 tabulator bar; a transverse actuating bar suitably supported underneath the type key levers of the machine, with connections to downwardly depending arms on the rock shaft; a spring to throw said rock shaft arms 10 normally toward the front of the machine; a series of horizontal tabulator key stems C of graduated lengths supported in suitable transverse guide bars towards the front of the machine, with individual springs for 15 throwing each of the same normally forward, arranged to act upon the transverse actuating bar whereby the keys will actuate the tabulator bar and elevate the same to bring the graduated notches corresponding to each 20 of said keys into operative position; a release bar in juxtaposition to said keys, connected to a suitable release mechanism for releasing the carriage to permit its movement into contact with the tabulator stops, whereby the 25 finger of the operator can engage both the tabulator keys and the release bar, for the purpose specified.

15. In a tabulator for typewriters, the combination with a graduated stop mechanism of a series of keys for actuating the same; 30 a release lever L arranged under the rack bar and adapted to act upon the same, the said lever being curved to permit the rack bar of the machine to pass freely over it; a transverse release bar D below and in front of the 35 type key bank of the machine, perforated for the free passage of the horizontal tabulator key stems C; connections from the said release bar to the said release lever L, whereby, on 40 the actuation of the tabulator keys, the release bar will also be actuated by the finger of the operator contacting therewith to release the carriage when the graduated tabulator bar is raised in position, as specified.

45 16. In a tabulator for typewriters, the combination with the escapement mechanism of the typewriter, of a suitable stop at the rear of the carriage; a tabulator bar with 50 graduated notches for engaging said stop; a transverse actuating bar suitably supported underneath the type key levers of the machine; connections therefrom to the said tabulator bar; a series of horizontal tabulator key stems of graduated lengths, positioned 55 to act upon the transverse actuating bar to operate the same and raise the tabulator bar different amounts corresponding to the lengths of the tabulator key stems; a release bar in juxtaposition to said keys, connected 60 to a suitable release mechanism for releasing the carriage to permit its movement into contact with the tabulator stops, whereby the finger of the operator can engage both

the tabulator keys and the release bar, for the purpose specified. 65

17. In a tabulator for typewriters, the combination with the escapement mechanism of the typewriter, of a suitable stop at the rear of the carriage; a graduated tabulator stop; a series of horizontal tabulator 70 keys of graduated lengths, arranged to actuate the tabulator stop to bring the corresponding notches into position; a release bar in juxtaposition to said keys, connected to a suitable release mechanism for releasing the 75 carriage, to permit its movement into contact with the tabulator stops, whereby the finger of the operator can engage both the tabulator keys and the release bar, for the purpose specified. 80

18. In a tabulator for typewriters, the combination with the escapement mechanism of the typewriter, of a suitable stop at the rear of the carriage; a tabulator bar with graduated notches for engaging said 85 stop; a series of horizontal tabulator keys of graduated lengths with actuated connections to the tabulator bar to raise the same to bring the corresponding notch into operative position; a release bar in juxtapo- 90 sition to said keys, connected to a suitable release mechanism for releasing the carriage to permit its movement into contact with the tabulator stops, whereby the finger of the operator can engage both the tabulator keys 95 and the release bar, for the purpose specified.

19. In a tabulator for typewriters, the combination with a suitable graduated stop and a series of keys corresponding to the stops to control the same, of a release lever L 100 arranged under the rack and adapted to act upon the same, the said lever being curved to permit the rack bar of the machine to pass freely over it; a rock shaft in the lower part of the machine with a perforated, substan- 105 tially horizontal, arm; a connecting rod f from the said lever L to the said rock shaft arm, extending through a perforation therein, and provided with stops arranged to permit the free movement of the arm on the said 110 connecting rod f to cause the actuation of the lever toward the end of the stroke of the arm; a release bar in juxtaposition to said keys, connected to a suitable release mechanism 115 for releasing the carriage to permit its movement into contact with the tabulator stops, whereby the finger of the operator can engage both the tabulator keys and the release bar, for the purpose specified.

In witness whereof, I have hereunto set 120 my hand and seal in the presence of two witnesses.

WILLIAM R. FOX. [L. s.]

Witnesses:

KATHARINE KUNZI,  
ETTA McOMBER.