

(No Model.)

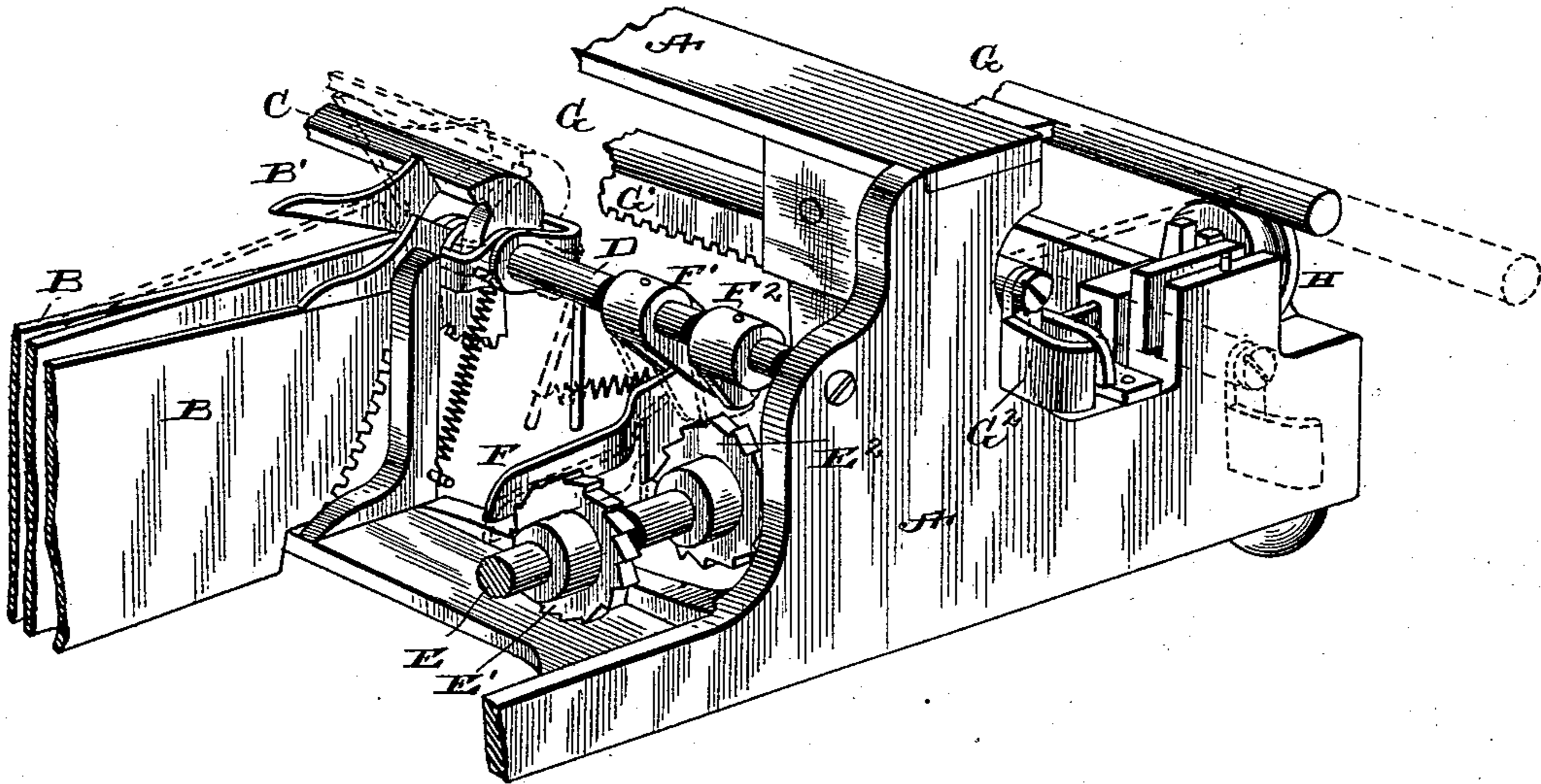
3 Sheets—Sheet 1.

G. C. BLICKENSDETFER.  
TYPE WRITING MACHINE.

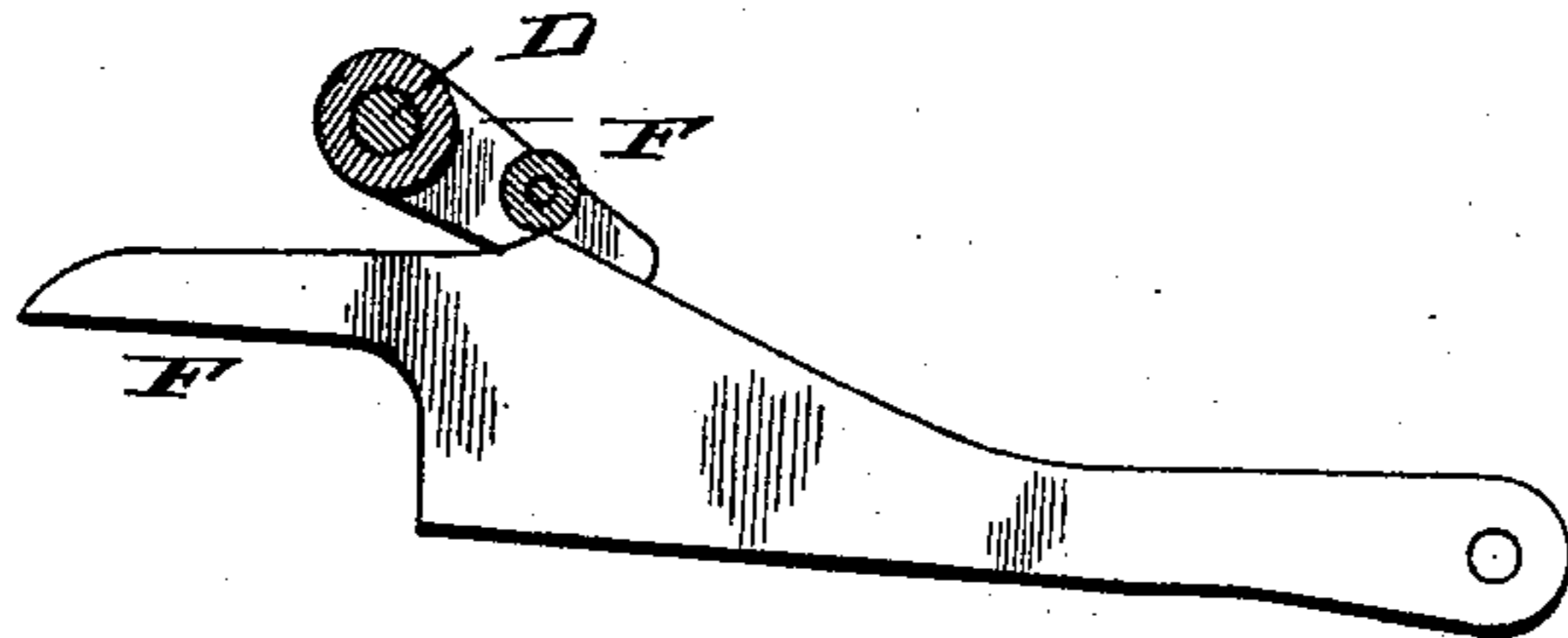
No. 472,693.

Patented Apr. 12, 1892.

*Fig. 1.*



*Fig. 1a*



Witnesses

John D. Davis  
Franklin Moore

Inventor

G. C. Blickensderfer  
By his Attorneys  
Hallock and Halleck

(No Model.)

3 Sheets—Sheet 2.

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Fig. 2.

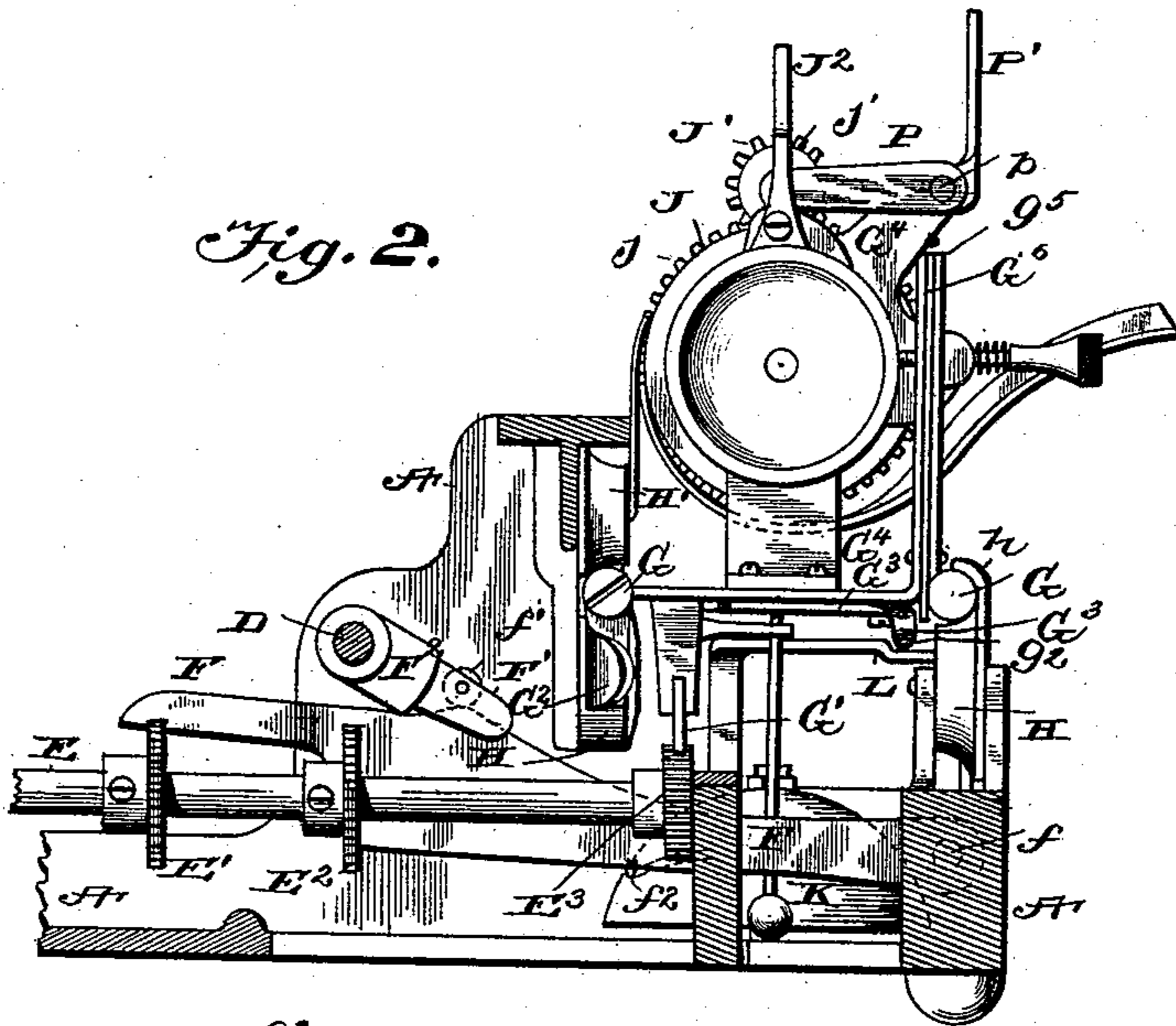


Fig. 3.

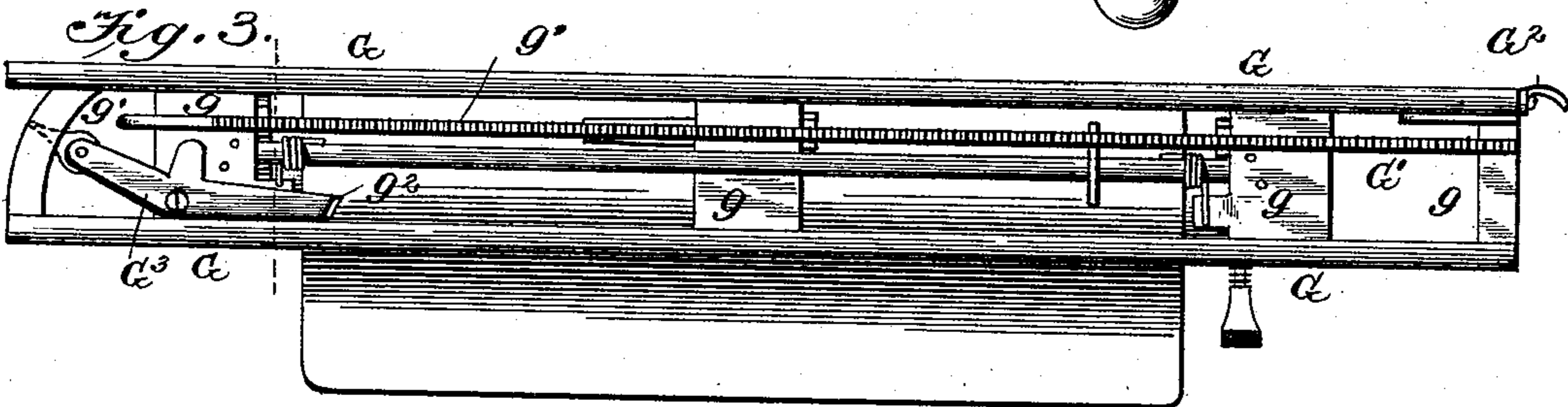
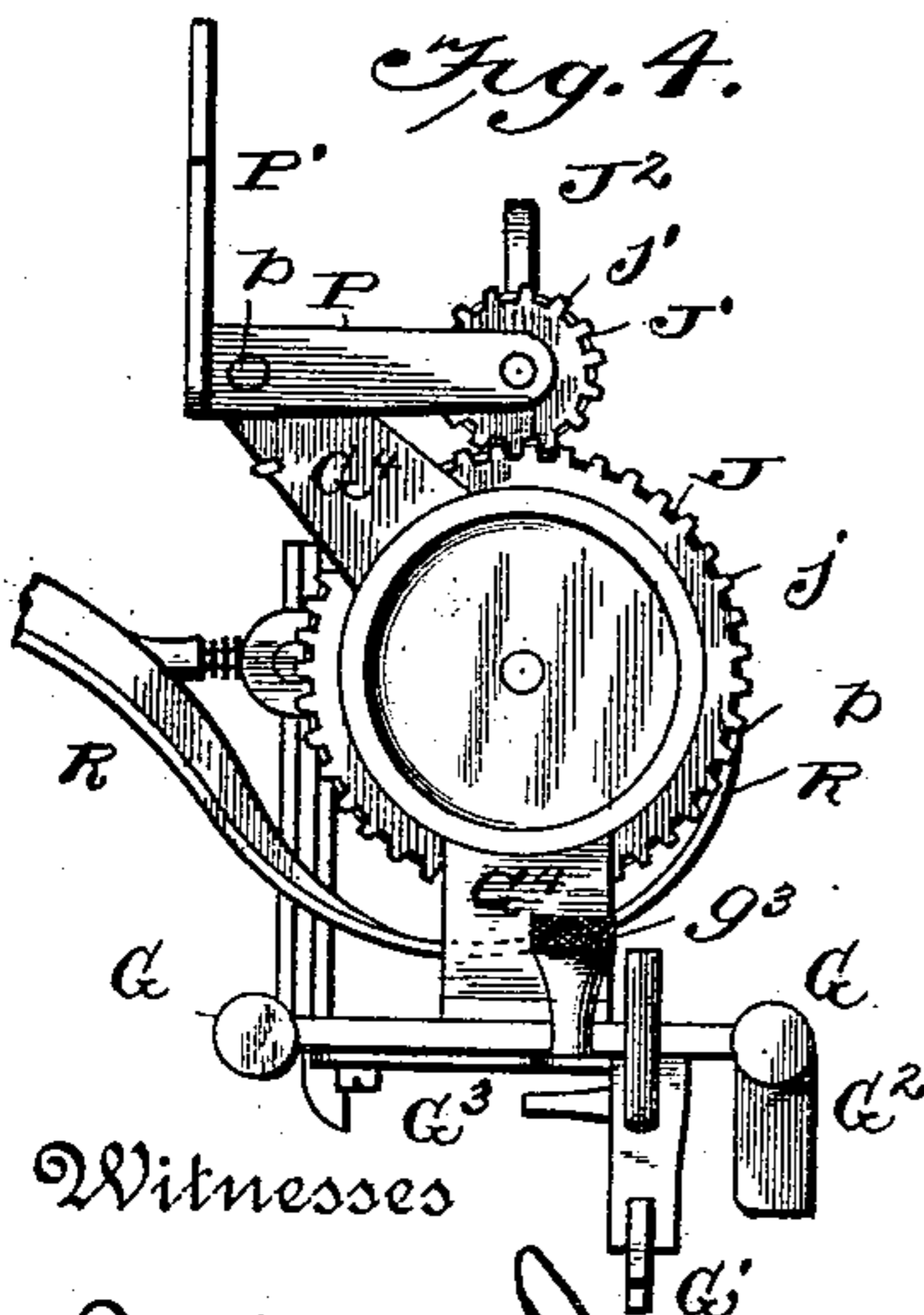


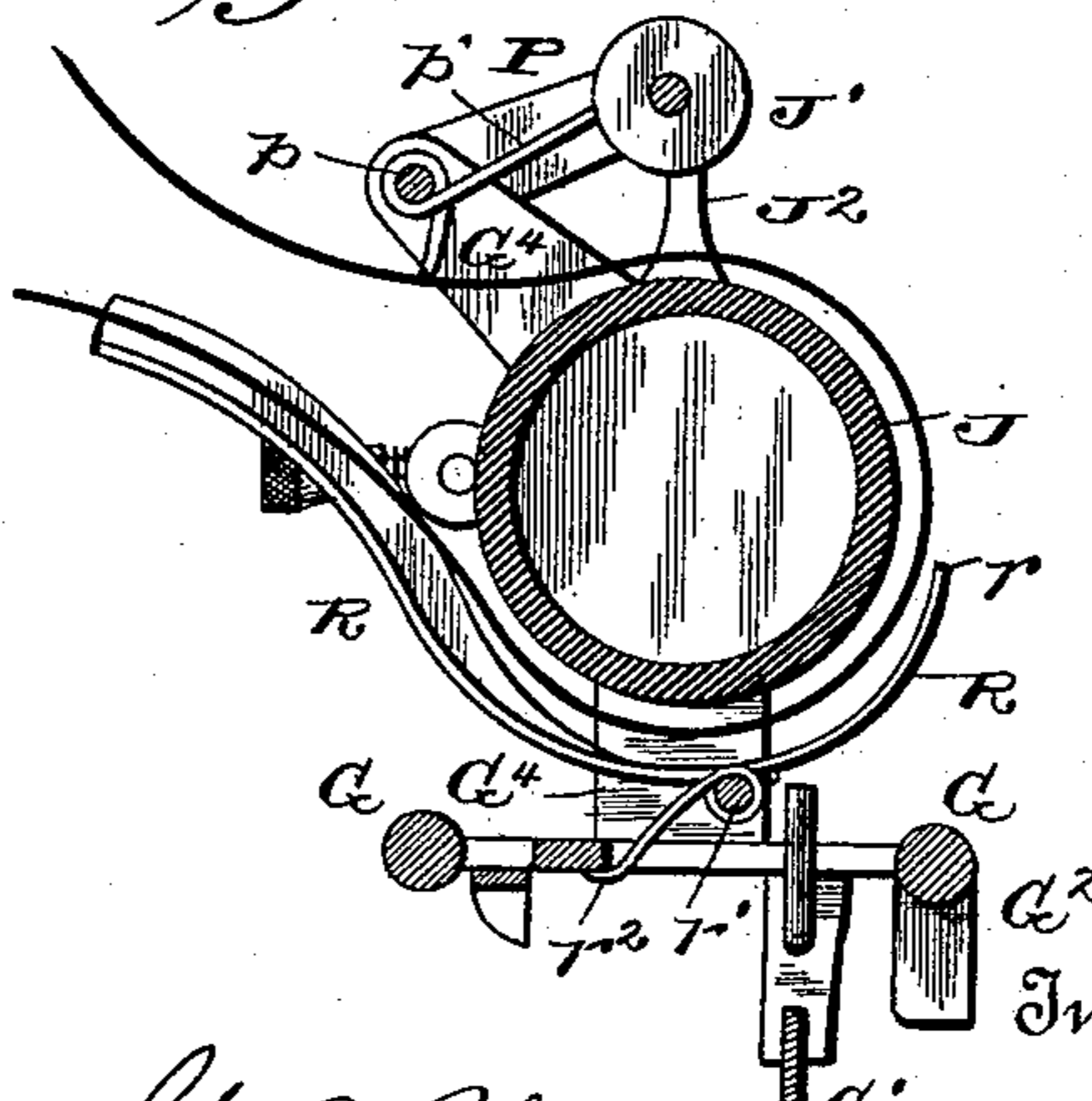
Fig. 4.



Witnesses

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Fig. 5.



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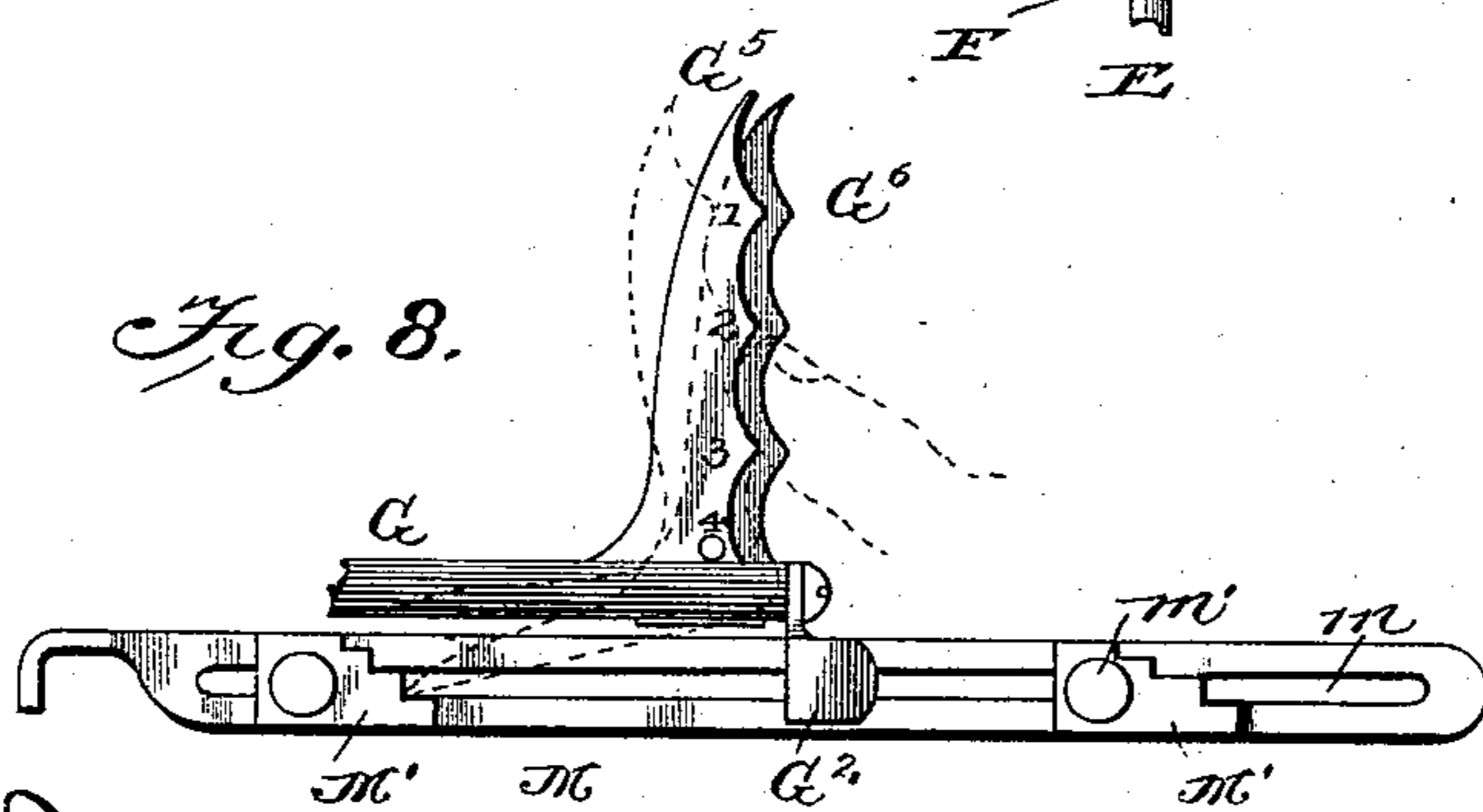
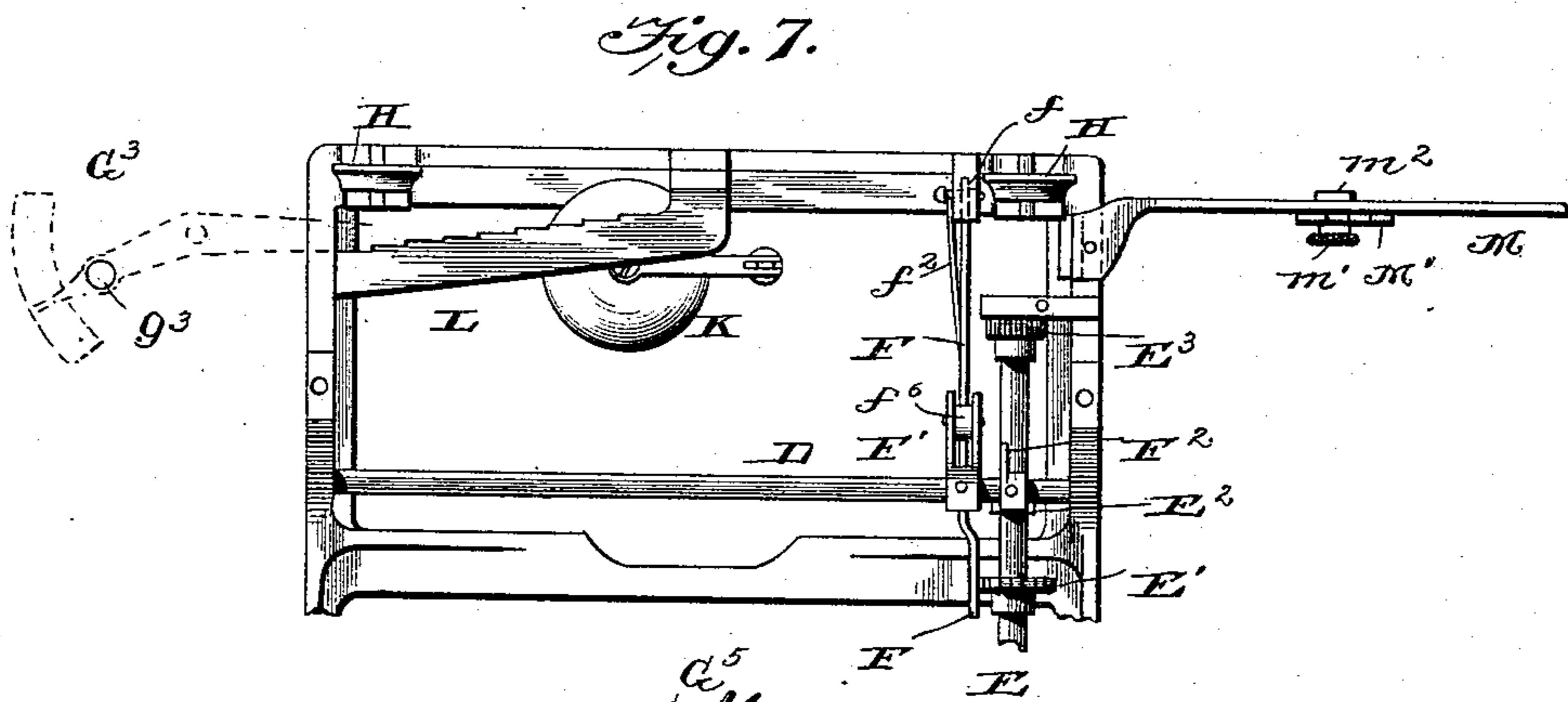
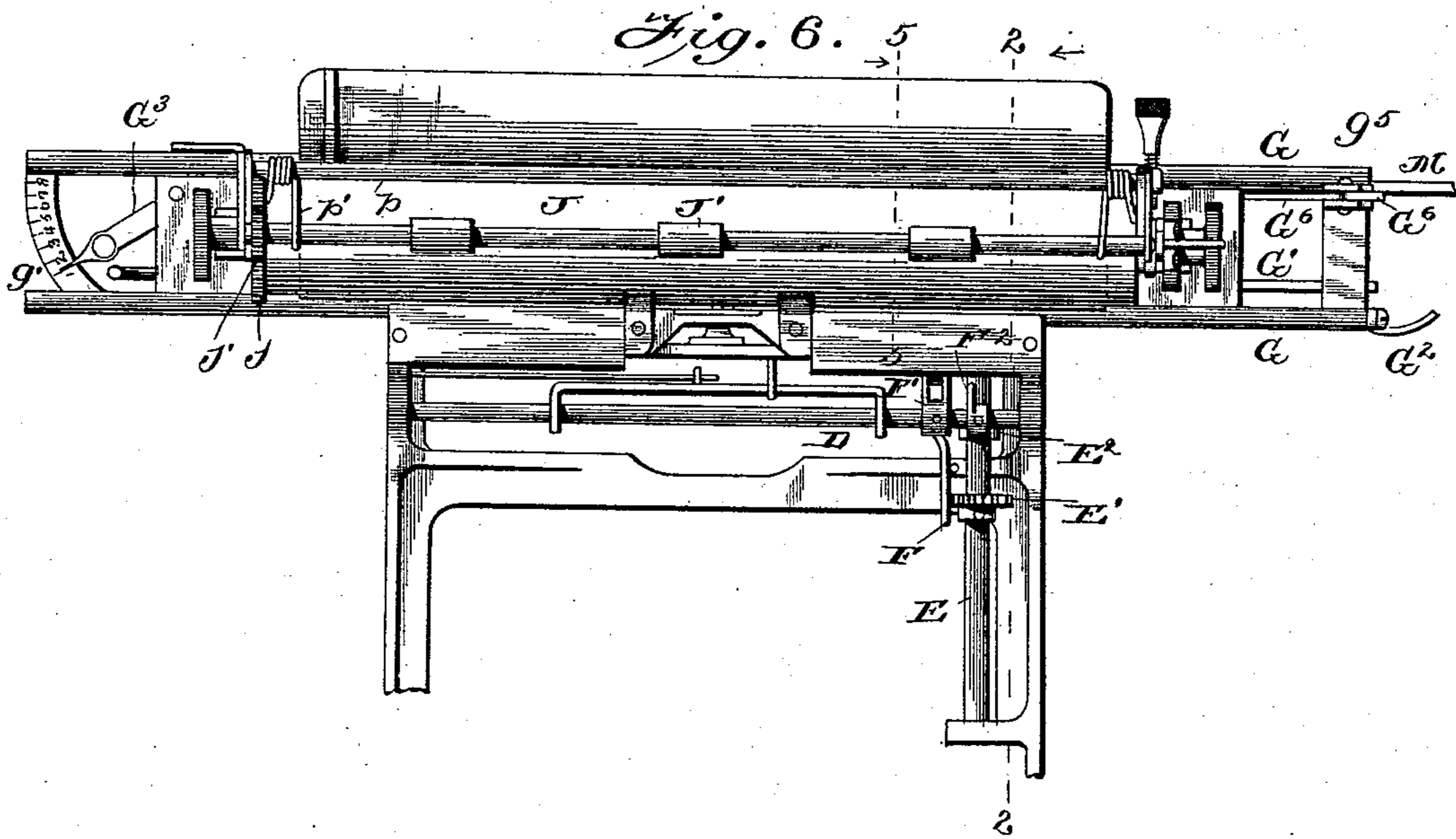
(No Model.)

G. C. BLICKENSDETFER.  
TYPE WRITING MACHINE.

3 Sheets—Sheet 3.

No. 472,693.

Patented Apr. 12, 1892.



Witnesses

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Inventor

# UNITED STATES PATENT OFFICE.

GEORGE C. BLICKENS DERFER, OF STAMFORD, CONNECTICUT, ASSIGNOR TO  
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## TYPE-WRITING MACHINE.

SPECIFICATION forming part of Letters Patent No. 472,693, dated April 12, 1892.

Application filed October 29, 1891. Serial No. 410,230. (No model.)

*To all whom it may concern:*

Be it known that I, GEORGE C. BLICKENS-  
DERFER, a citizen of the United States, residing  
at Stamford, in the county of Fairfield and  
5 State of Connecticut, have invented certain  
new and useful Improvements in Type-Writ-  
ing Machines; and I do hereby declare the fol-  
lowing to be a full, clear, and exact descrip-  
tion of the invention, such as will enable oth-  
10 ers skilled in the art to which it appertains  
to make and use the same.

This invention relates to type-writing ma-  
chines; and it consists in certain improve-  
ments in the construction thereof, as will be  
15 hereinafter fully set forth, and pointed out in  
the claims.

In illustrating my invention in the accom-  
panying drawings I have only shown such  
parts of the whole machine as are necessary to  
20 properly illustrate the improvements in con-  
struction, which I shall describe and claim.

Figure 1 is a perspective showing improve-  
ments in the feed mechanism by which the  
paper-carriage is moved; Fig. 1<sup>a</sup>, a detail  
25 showing the pawl and cam. Fig. 2 is an ele-  
vation looking from the right of Fig. 6 with  
the frame of the machine in vertical section  
on the line 2 in said Fig. 6. Fig. 3 is a plan  
of the under side of the paper-carriage. Fig.  
30 4 is an elevation of left-hand end of the car-  
riage. Fig. 5 is a transverse section of the  
carriage, taken on the line 5 in Fig. 6, looking  
toward the right of that figure. Fig. 6 is a  
top plan view of the carriage, part of the  
35 frame-work, and part of the feeding mechan-  
ism. Fig. 7 is a like view to Fig. 6 with the  
carriage removed and an adjustable stop at-  
tachment in place. Fig. 8 is a side elevation  
of the adjustable stop attachment and a frag-  
40 ment of the paper-carriage.

Like parts in the various figures are design-  
ated by the same letters of reference and  
will be referred to in proper place therein.

A marks the frame-work of the machine;  
45 B B', the key-lever mechanism; C, the bail  
moved by the key-levers; D, the rock-shaft  
that is moved by the bail; E, the carriage-  
feedingshaft; E', the ratchet-wheel that moves  
the shaft E; E<sup>2</sup>, the ratchet-wheel that checks  
50 or locks the shaft E against rotation; E<sup>3</sup>, the  
pinion on the shaft E that engages the rack

G' on the carriage, and G the frame-work of  
the carriage.

The operation of the feed-shaft E and its  
connection with the carriage is the same in 55  
this case as in the construction shown in Let-  
ters Patent No. 459,093, issued to me on Sep-  
tember 8, 1891, and my present invention in  
relation to the feed mechanism relates to the  
construction of the ratchets which move and 60  
lock the shaft E and the pawls which act upon  
said ratchets. As before stated, E' is the pro-  
pelling-ratchet and E<sup>2</sup> the locking-ratchet.  
These are of the ordinary form and have their  
teeth pointing in opposite directions. The 65  
ratchet E' is acted upon by the pawl F and  
the ratchet E<sup>2</sup> by the pawl F<sup>2</sup>. The pawl F is  
pivoted at f on the rear end of the frame-work  
A, Figs. 2 and 7, is held up out of action by  
a spring f<sup>2</sup>, and is brought into action by a 70  
cam F' on the rock-shaft D, which cam car-  
ries a friction-roller f'. On the rock-shaft D  
there is a pawl F<sup>2</sup>, which engages the teeth of  
the ratchet E<sup>2</sup> just as the cam F' has depressed  
the pawl F to its limit and moved the shaft E 75  
one degree. The ratchet E<sup>2</sup> having its teeth  
pointed in opposition to the ratchet E', the  
pawl F<sup>2</sup>, when it engages the ratchet E<sup>2</sup>, will  
lock the shaft E against further movement.  
The advantage of this construction over that 80  
shown in the patent above referred to is  
chiefly that the ratchets E' and E<sup>2</sup> can be so  
adjusted on the shaft with relation to each  
other and to the pawls that act upon them  
that there will be no lost motion, and in case 85  
of wear of parts causing any lost motion the  
difference can be readily taken up by a re-  
adjustment of the ratchets, and the object of  
this construction is to secure this advantage.

The bed-frame of the paper-carriage 90  
consists of two parallel bars G G, which are bound  
together by suitable cross-pieces g. In the  
frame-work of the machine are mounted lower  
sheaves H H and an upper sheave H', which  
95 form a way for the parallel bars G of the car-  
riage, and a hook-plate h holds the rear bar  
in place on the rear sheave H. The carriage  
being thus mounted so as to rest on sheaves  
its action is very free and easy.

All type-writers are provided with some 100  
mechanism to limit the traverse of the car-  
riage upon the frame of the machine. The

length of this traverse in both directions is regulated by adjustable collars, usually placed upon a bar attached to the frame of the machine and in the path of some part of the carriage, so that when moved the predetermined distance the movement of the carriage will be arrested. In the usual operation of the machines the attention of the operator is called to the fact that the carriage has almost reached the limit of the traverse from right to left by the ringing of a bell. This warns the operator that he has space to add a few more letters. If the warning is not heeded, the letters are piled upon each other. To overcome this objection a stop normally in the path of the carriage is arranged between the terminal or predetermined points of traverse to stop the movement of the carriage before the end of its traverse from right to left. The stop is made movable, so that when the carriage has been stopped its onward progress may be continued by moving one or both of the parts forming the stop out of contact with each other. This stop is designed to control the character-impressing or down movement of the key-levers, which are connected in such a way with the carriage that when said stop operates to stop the carriage the down or impressing movement of the key-levers is discontinued before the impression can be made, and the impression cannot be made until the stop has been moved out of the path of the carriage, which can then be moved without interfering with the impressing movement of the key-levers.

My preferred arrangement is to have the movable part of the stop upon the carriage and the fixed part of the stop upon the frame, or, as shown in the drawings, a part of the frame itself. The movable part  $G^2$  of the stop is in the rear end of one of the bars  $G$  and strikes against the frame  $A$ , as seen in Fig. 1, when the carriage is about at the limit of its forward traverse and prevents its further movement in a forward direction, and this in turn will hold the shaft  $E$  against forward movement and so prevent the pawl  $F$  from being moved downward, and hence locks the shaft  $D$  against being rocked, and as the shaft  $D$  carries the type-wheel shaft (not here shown) the contacting of the type with the paper is prevented. The action of the catch or stop  $G^2$  is so timed as to cause the above-described locking of the machine two or three letter-spaces before the extreme right of the paper is within the type-field, and I make the stop  $G^2$  movable out of the way by turning it on its pivot, so that the machine will be unlocked and the carriage free to move. When the locking occurs, the operator knows he has about reached the end of a line, and he then moves the stop  $G^2$  so that the carriage can go on, and he then properly completes the line by putting in the last letters or a hyphen, if necessary, and then reverses the carriage ready for a new line. The fact that the stop  $G^2$  not only stops the carriage before the end

of the line is reached, but locks the machine effectually, prevents the printing of two or more letters on top of each other and also enables the operator to always finish a line properly. When this stop attachment is used, an alarm-bell is not necessary; but I show one at  $K$ , Figs. 2 and 7, and provide means for sounding it, which form no part of my present invention.

In two applications for patents by me now pending in the Patent Office, Serial Nos. 398,672 and 399,117, I have shown means for stopping the paper-carriage so as to columnate matter, and in said application, Serial No. 399,117 I have also shown means for quickly changing the width of the left-hand margin. In the accompanying drawings I have shown alternative means for the same purposes.

The means here shown for varying the width of the left-hand margin on the printed page is not only adapted to quickly effect the change by the manipulation of a hand-lever, but to do so with accuracy and precision, so that the margin may be changed from one width to another and back again to the precise former width without loss of time. The said means here shown consist of a graduated stop-bar  $L$  on the frame of the machine and an adjustable catch-lever  $G^3$  on the carriage, which will contact with any of the various graduations of the stop-bar, according to the position in which it is placed, and I use a graduated scale  $g'$ , by which the said catch can be quickly and accurately adjusted. Each scale-mark on the scale  $g'$  represents a certain width of margin, and by noting the said scale-marks the operator can quickly set the lever  $G^3$  so as to make such a change in the width of margin as he desires and then change back to the former width with exactness. The catch-lever  $G^3$  has a handle  $g^3$  at its outer end and a point  $g^2$  on its inner and lower end, which is below the carriage, for engaging with the stop-bar  $L$ , Figs. 2 and 7. The advantage in having the variable catch-lever on the carriage and the stop-bar on the frame of the machine is to enable the operator to make the desired changes with the hand with which he may be moving the carriage back to position for a new line, and it also brings the adjusting-scale on the carriage into plain view.

In the said pending applications, serially numbered 398,672 and 399,117, I show columnating devices having a series of keys, which act either directly upon a stop or upon intermediate mechanism between the keys and stops. In the device shown in this application the keys are dispensed with, that result being accomplished by having the movable part of the stop mechanism operated directly by the hand or finger of the operator and the extent of the movement of said movable part regulated by the hand or finger coming in contact with a fixed part of the machine. The throw of the movable part relative to the stop is varied to meet these different conditions. It is obvious that the forms, the location, and the ar-

rangement of the parts could be varied considerably without departing from the features above enumerated. A type of construction embodying those features is herein shown, and consists of a stop-bar M, attached to the frame A and having a variable graduated stop-block M' thereon, (one or more of said blocks, as desired,) as seen in Figs. 6, 7 and 8, and a variable catch-lever G<sup>6</sup> on the carriage, which will engage any of the graduations of the stop-block M', according to the position it is put into when the carriage is being moved. The stop block or blocks M' on the bar M are so placed as to bring the column or columns at the desired place on the paper. This adjustment is effected by a set-screw m' and nut m<sup>2</sup> on the block and a slot m in the bar. (See Figs. 7 and 8.) The notches or graduations on the blocks M' may be as many in number as desired, and they represent the units, tens, hundreds, and so on, of the amounts to be printed. The movable catch-lever G<sup>6</sup> on the carriage is here shown as a right-angled or elbow lever, which is fulcrumed upon the carriage, and is moved into the path of the stationary stop by the hand. Any suitable means may be provided for regulating the distance that the lever may move; but I prefer a limiting-bar having recesses or serrations, such as shown in the drawings and marked G<sup>5</sup>. This bar extends up along the vertical end of the lever G<sup>6</sup> and a little to the rear of it, (see Fig. 8,) and has curved recesses or serrations in it fitting the finger of the operator, which serrations are numbered. By pressing with the finger on the edge of the lever G<sup>6</sup> opposite one of the serrations in the horn G<sup>5</sup> the lever will be moved back until the finger rests against the horn, and the nearer the finger is to the pivot of the lever the farther will the horizontal end of the lever be depressed, and the farther it is depressed the sooner will the point of it come in contact with the block M' on the bar M and the carriage be stopped, and vice versa. Therefore if we understand the top notch of the block M' to represent units, the second tens, the third hundreds, and the fourth thousands, and the operator in pushing the carriage forward will put his finger so as to press on the lever G<sup>6</sup> opposite the top serration l, on the horn G<sup>5</sup>, the lower point of the lever will be depressed, so as to contact with the upper notch of the block M', and the carriage will be stopped so as to print a unit-figure, and if the operator places his finger opposite the lower serration the horn G<sup>5</sup> will be so far depressed that its point will strike against the lower extreme end of the block M' and the carriage will be stopped, so that a number having four digits can be printed and have its units, tens, hundreds, and thousands in line with like numerals above it. This construction of the means for columnating matter is advantageous, in that it is cheaper to make and simpler to operate than a series of key-actuated catches.

In the construction here shown, Figs. 2, 4,

5, and 6, I also provide improved means for adjusting the paper on the platen and holding the same in place and moving it line by line into place, as follows:

J marks the platen, which may be of any desired construction, is journaled in brackets G<sup>4</sup> on the carriage, and is rotated step by step by a lever J<sup>2</sup>, as in my former construction above referred to.

J' is the pressure-roll, which is journaled in a frame P, pivoted to the brackets G<sup>4</sup> at p, is held against the platen by a spring p', and is raised up against the spring, when desired, by a lever-extension P' of the frame P. On one end of the platen and of the roller I place cog-gears j j', which mesh together, so that the roller J' is given a positive movement from the platen. The teeth of the gears are made long, so that when manifolding with several sheets of paper and carbons between the roller and platen the gears will not be disengaged. By thus gearing the roller and platen together and so giving a positive movement to the roller there will be no slipping of one sheet of paper upon the other when manifolding, and hence no smearing of the sheets from the carbons.

On the under side of the platen I place a curved shield R or guide for the paper, which not only guides and shields the paper, but holds it up against the platen at the point r below the printing-point. The shield R is pivoted at r', (see Fig. 5,) and is so held by the spring r' as to press the edge r of the shield gently against the platen.

In putting in the paper or when for any reason it is wished to move or adjust it the operator will with the fingers of his hand reach under the rear part of the shield and with the thumb of the same hand press upon the front side of the lever-extension P' of the frame P, and by exerting a pressure will throw the roller J' up from the platen and the shield edge r away from the platen simultaneously, as shown in Fig. 5, and the paper will be entirely free to be moved as desired.

I do not herein claim an attachment for type-writing machines consisting of a series of stops arranged side by side and at a letter-space distance apart for the purpose of determining the stopping-point of the carriage and enabling such point to be varied at each successive line; nor the combination of a carriage, a stop mechanism for arresting the carriage at different points as it moves to the left, and a key mechanism for manipulating said stop mechanism; nor the combination of a paper-carriage and a columnating attachment consisting of a variable stop mechanism controlled by keys which stop said carriage while moving toward the left at varying predetermined type-space distance from the predetermined uniform units-point, according to the key that is manipulated; nor the combination of a carriage, a stop mechanism for arresting the carriage at varying desired distances from a uniform terminal-point while moving to-

ward that point, and a key mechanism for positioning said stop during the traverse of the carriage, as these subjects-matter are embraced in application Serial No. 410,893, filed November 4, 1891; nor do I herein claim the combination of a frame having a series of stops preferably adjustable in the path of the paper-carriage, and said carriage having a key-controlled stop mechanism normally out of the way of said stops when the carriage is moved, as that construction forms the subject-matter of a separate application, Serial No. 410,231, filed by me October 29, 1891; nor do I claim herein the combination, with a paper-carriage, of an attachment for regulating the point of commencement of the lines, consisting of a graded series of catches on the carriage and a variable stop on the frame-work, as that broad subject-matter is embraced in application Serial No. 399,117, filed by me July 11, 1891; nor do I claim in this application the combination of a stop and a catch variably engaging and manually adjustable relative to said stop and automatically reverting to a uniform normal position, nor when said catch is variable longitudinally, nor when said catch is normally out of the path of the stop, nor when said catch is under the control of the operator's hand, as such constructions form part of the subjects-matter of application, Serial No. 422,867, filed by me February 26, 1892.

What I claim as new is—

1. In a type-writing machine, the combination, with the paper-carriage thereof, of a feed-shaft gearing onto said carriage, a rock-shaft moved by the key-levers, two ratchets on the feed-shaft, having oppositely-directed teeth, and two pawls moved by said rock-shaft, one of which acts upon one of said ratchets to move the feed-shaft forward and the other acts upon the other of said ratchets to stop the said movement of the feed-shaft as said rock-shaft is moved by any of the key-levers.

2. In a type-writing machine, the combination, with the paper-carriage thereof, of a feed-shaft for moving said carriage, which is geared thereto positively, a rock-shaft that is moved positively by each key-lever when depressed, mechanism for moving said rock-shaft, and a lock on said carriage, which when engaged to lock the carriage effectuates the locking of the key-levers, as set forth.

3. In a type-writing machine, the combination of a frame, a carriage having a predetermined traverse on said frame, and a movable stop normally in the path of traverse and to temporarily stop the carriage before the end of its movement, whereby the operator is enabled to properly complete a line.

4. In a type-writing machine, the combination, with the frame of the machine, the paper-carriage having a predetermined movement, and the key-levers, of a stop operated by said carriage to lock the key-levers against down movement before the full movement of the carriage is completed.

5. In a type-writing machine, the combination, with the frame of the machine, the paper-carriage having a predetermined movement, key-levers, and intermediate mechanism between said key-levers and carriage for moving said carriage on the downstroke of the key-levers, of a stop operated by said carriage to lock the key-levers against down movement before the full movement of the carriage is completed.

6. In a type-writing machine, the combination of the frame of the machine, the paper-carriage having a predetermined movement to the left, the key-levers, and a stop for controlling the down movements of said key-levers by means of said carriage, said stop being normally in the path of movement of and stopping said carriage before the end of said predetermined movement and manually controlled to move it out of the way of the carriage.

7. In a type-writing machine, the combination of the frame of the machine, a paper-carriage in said frame, having a predetermined movement, and a stop, one part upon the carriage and the other upon the frame and one normally in the path of the other and one of the parts movable out of the way of the other to allow the carriage to be moved forward and complete its traverse.

8. In a type-writing machine, the combination of the frame of the machine and a paper-carriage moving upon said frame a predetermined distance and having a stop normally in position to engage with said frame when the carriage has been moved to a certain point and manually movable to allow said carriage to proceed after said engagement to its predetermined distance.

9. In a type-writing machine, the combination of the frame of a machine, a paper-carriage moving upon said frame a predetermined distance, and a swinging stop hanging from the paper-carriage in position to engage with said frame before the carriage has moved said distance and arranged to be moved out of the way of the frame to allow the carriage to proceed.

10. In a type-writing machine and for the purpose of regulating the width of the margin on the left of the sheet to be printed, the combination, with the paper-carriage, of a series of graduated stops on the frame of the machine below the carriage, a variable catch-lever on said carriage for engaging said stops, and means for indicating the position of said lever.

11. In a type-writing machine, the combination, with the paper-carriage thereof, of means for limiting its movement toward the right and thereby regulating the width of the left-hand margin on the paper to be printed, consisting of a series of fixed graduated stops on the frame of the machine below the carriage and a variable catch-lever on the carriage at the left end thereof in position to be operated by the left hand of the operator.

12. In a type-writing machine having a movable carriage, a stop mechanism composed of a stationary part and a movable part, which is operated by the hand and the movement of which is limited by the hand coming in contact with a fixed part of the machine.

13. In a type-writing machine having a movable carriage, a stop mechanism consisting of two parts, one upon the frame of the machine and the other upon the carriage, one part being manually movable on the part to which it is secured to put it in line for contact with the fixed part of the stop and its limit of movement being regulated by the operator's hand contacting with the part to which it is secured.

14. In a type-writing machine having a movable carriage, a stop mechanism consisting of two parts, one upon the frame and the other upon the carriage, one part being manually moved through a slot in the part to which it is attached to put said movable part in line for contact with the fixed part of the stop and its limit of movement being regulated by the operator's hand contacting with the slotted part through which the movable part of the stop works.

15. In a type-writing machine having a movable carriage, a stop mechanism composed of two parts, a stationary part on the frame of the machine and a movable part on the carriage, said movable part being manually operated to put it in line with the stationary part and its movement being limited by the hand contacting with a recessed part of the carriage.

16. In a type-writing machine, the combination of a movable carriage having a fixed recessed bar and a stop mechanism having a stationary part upon the machine and a manually-operated movable part upon the carriage, the movement of said movable part being regulated by the hand contacting with the recessed bar.

17. In a type-writing machine, the combination of a movable carriage having a fixed vertical bar and a stop mechanism having a stationary part upon the machine and an elbow-lever stop upon the carriage, one end of said lever being in line with the vertical bar, which limits the movement thereof.

18. In a type-writing machine, a columnating attachment consisting of a stop and a catch-lever on the part of the machine opposite to the stop having a variable throw relative to said stop.

19. In a type-writing machine, a columnating attachment consisting of a stop connected with the frame of the machine and a catch-lever having a variable throw relative to the stop and carried on the carriage.

20. In a type-writing machine, a columnating attachment consisting of a stop connected with the frame of the machine and standing in a vertical position and a vertical catch-lever having a variable throw relative to the stop and carried on the carriage.

21. In a type-writing machine, the combination, with the paper-carriage thereof, of means for stopping the carriage at various predetermined points in its traverse toward the left for the purpose of vertically aligning matter to be printed, consisting of adjustably-fixed stops connected with the frame of the machine below the carriage and a catch-lever having a variable throw and carried on the carriage in position to be manipulated by the hand of the operator while moving the carriage to the left.

22. In a type-writing machine and for the purpose of stopping the carriage thereof at various predetermined points while moving to the left, so as to vertically align matter to be printed, the combination, with said carriage, of adjustably-fixed stops connected with the frame of the machine below the carriage, a variable catch-lever on the carriage in position to engage said stops as manipulated, and a fixed limiting-bar by the side of said lever to limit the degree of movement of said lever.

23. In a type-writing machine, the combination, with the carriage thereof, of a variable-catch mechanism on the carriage for engaging a fixed stop on the frame and stopping the carriage at any predetermined point when the same is moving to the right, so as to regulate the point of beginning of the lines of printing, and a second variable-catch mechanism on the carriage for engaging a fixed stop on the frame and stopping the carriage at any predetermined point when moving to the left, so as to regulate the vertical alignment of numerals.

24. In a type-writing machine, the combination, with the platen, of a spring-actuated presser-roll acting against the top of said platen and a spring-actuated tilting concave shield surrounding the lower part of said platen and pressing with its lower edge upon the said platen below the type-field, and means, substantially as set forth, whereby the said tilting parts may be simultaneously moved away from the platen by pressure exerted by the thumb and finger of the operator, as set forth.

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

GEORGE C. BLICKENSDECKER.

Witnesses:

M. F. HALLECK,

FRANKLIN MOORE.