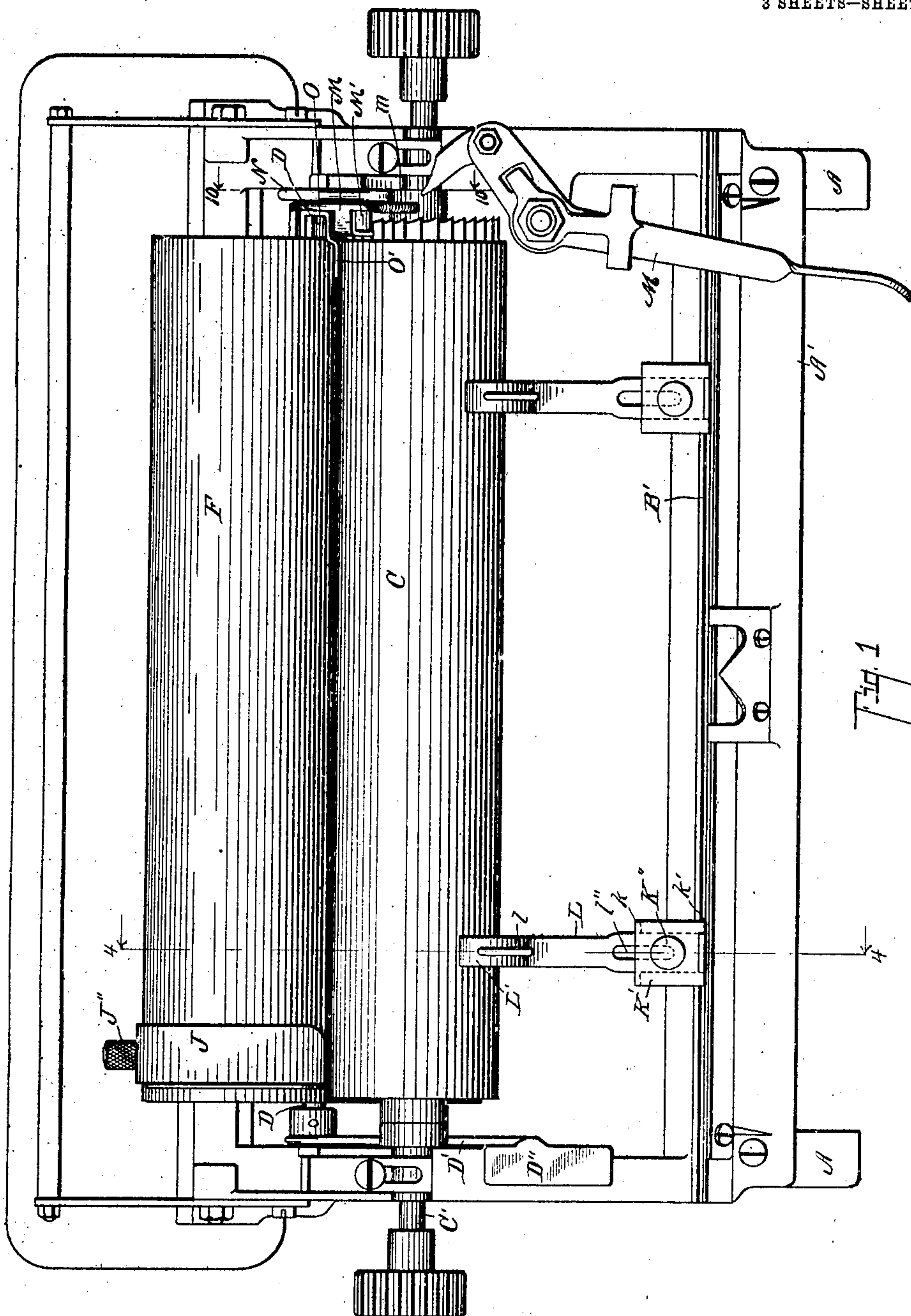


W. R. FOX.  
 PAPER FEED FOR FRONT STRIKE TYPE WRITING MACHINES.  
 APPLICATION FILED APR. 23, 1906.

912,660.

Patented Feb. 16, 1909.  
 3 SHEETS—SHEET 1.



Witnesses:

Clara A. Sabin  
 Lulu & Greenfield

Inventor,

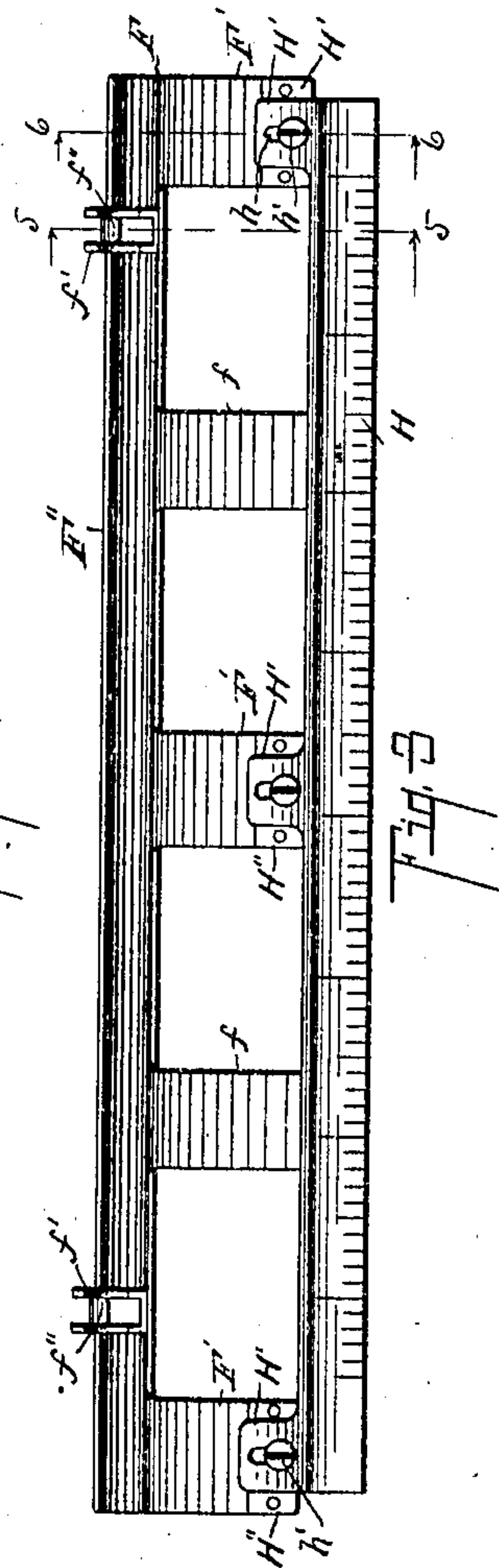
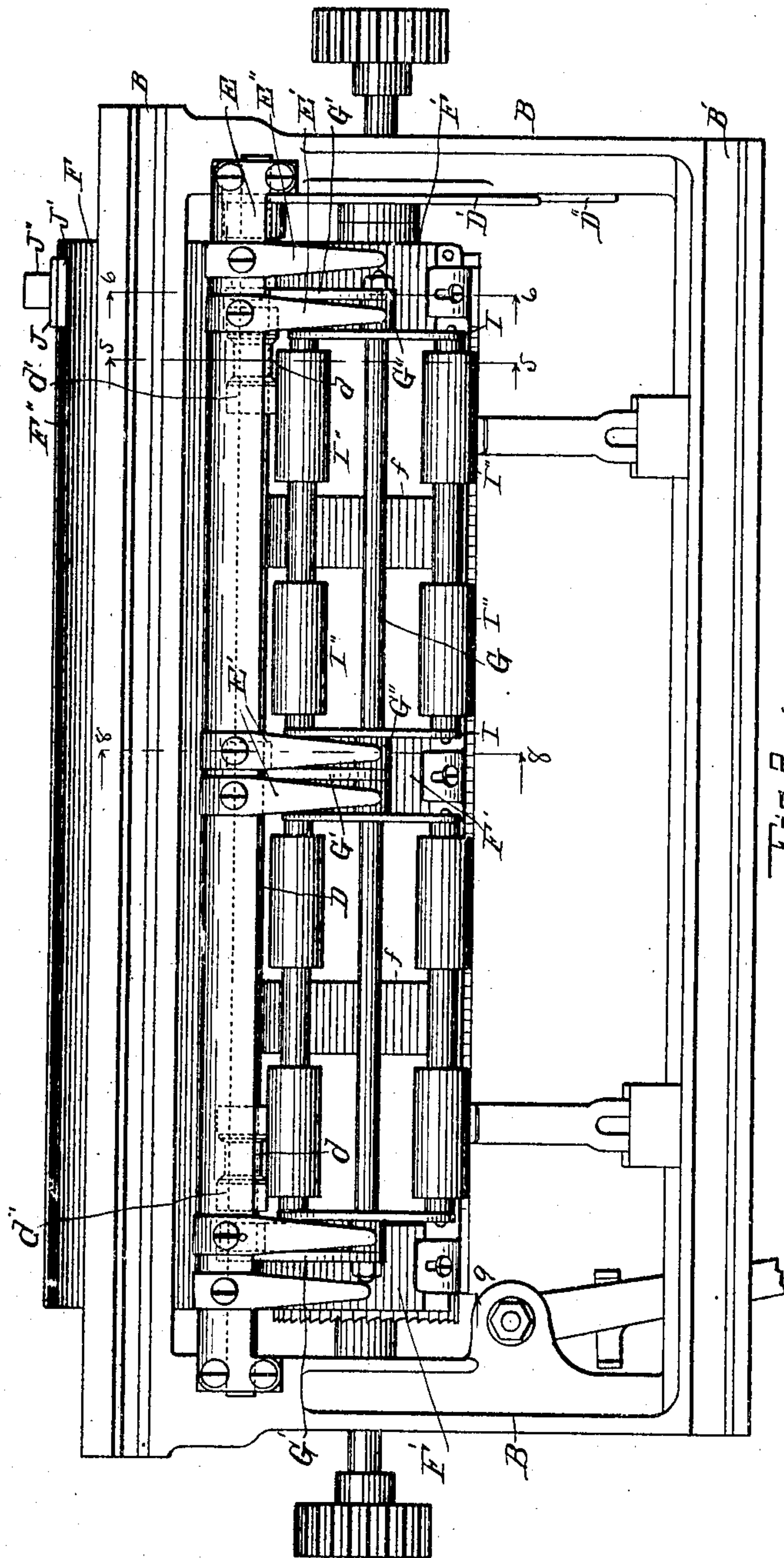
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By Chappell & East  
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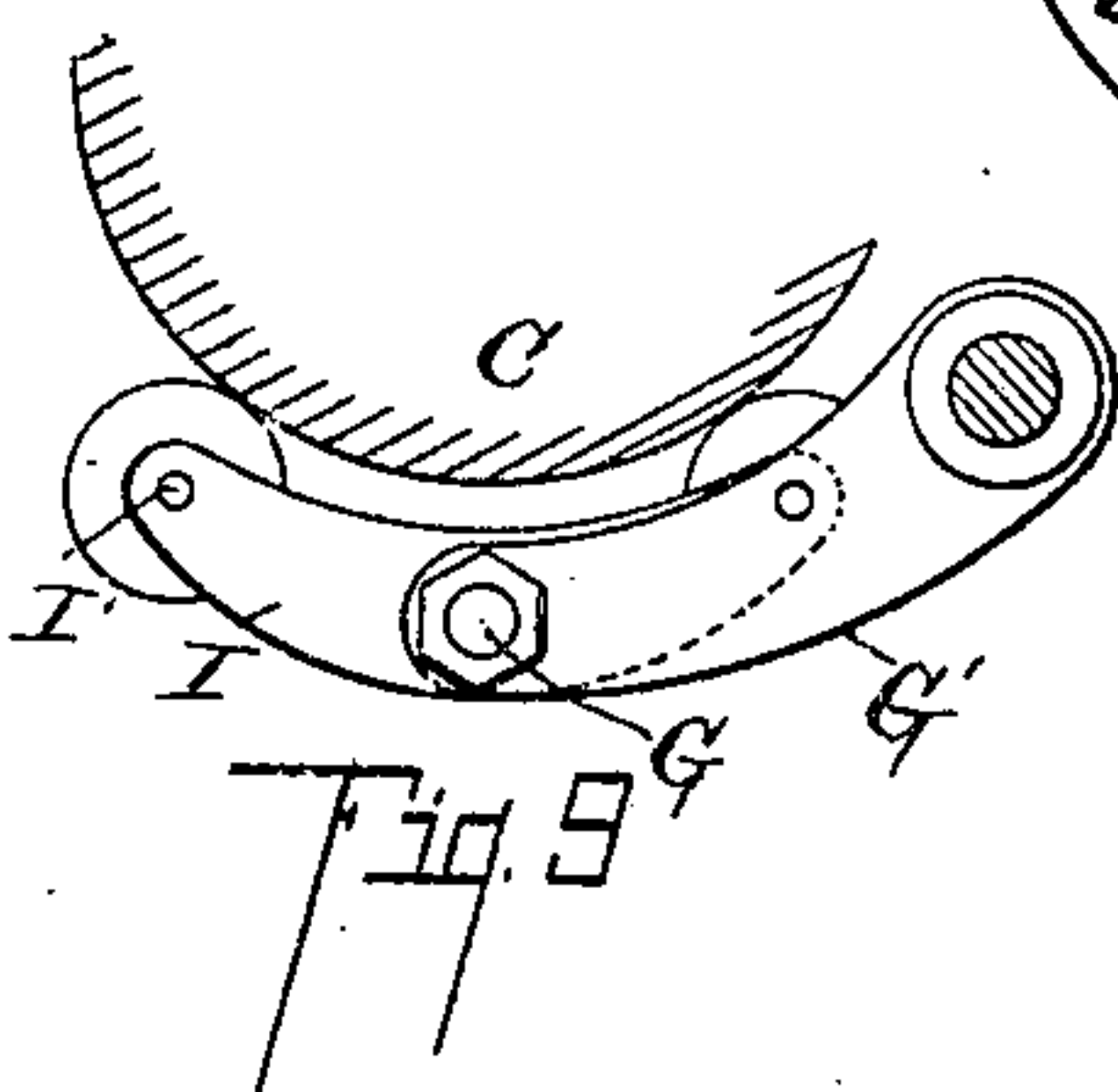
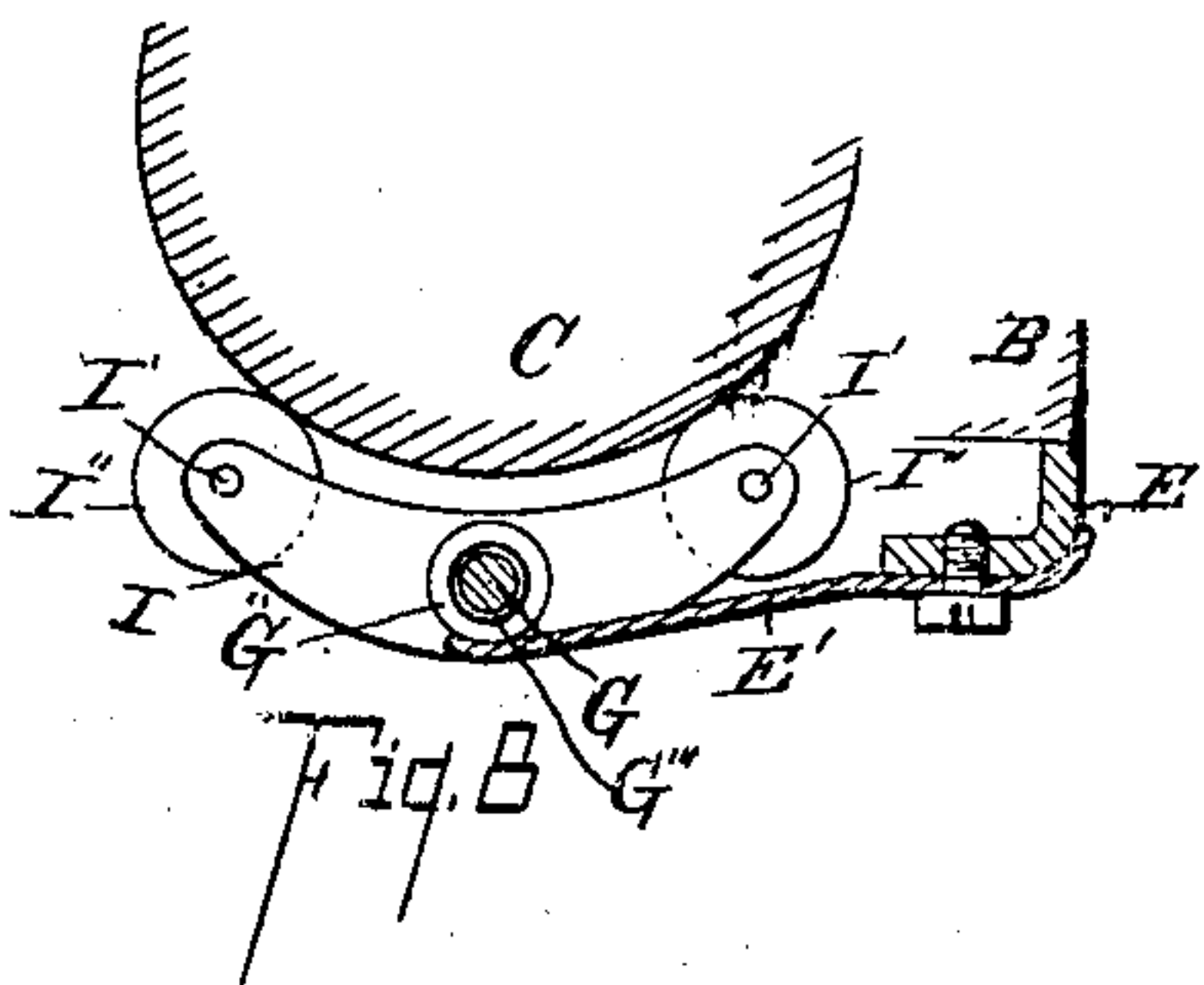
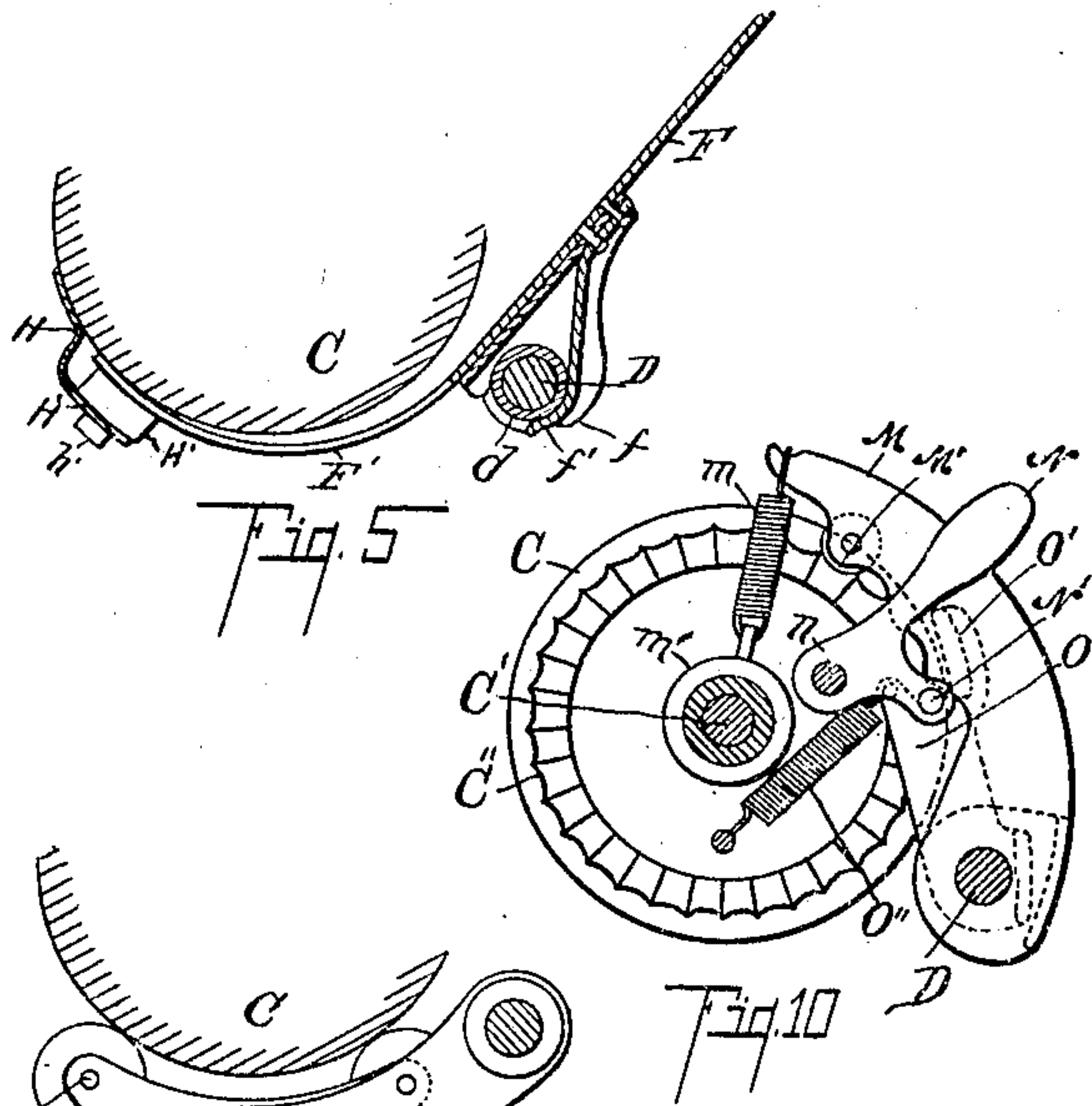
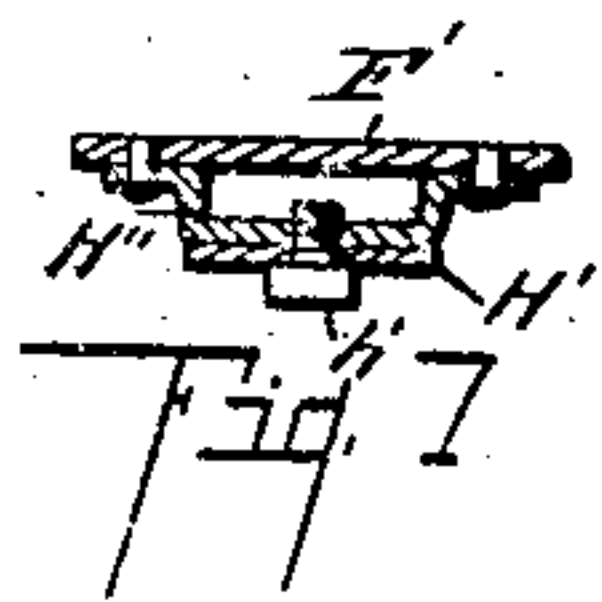
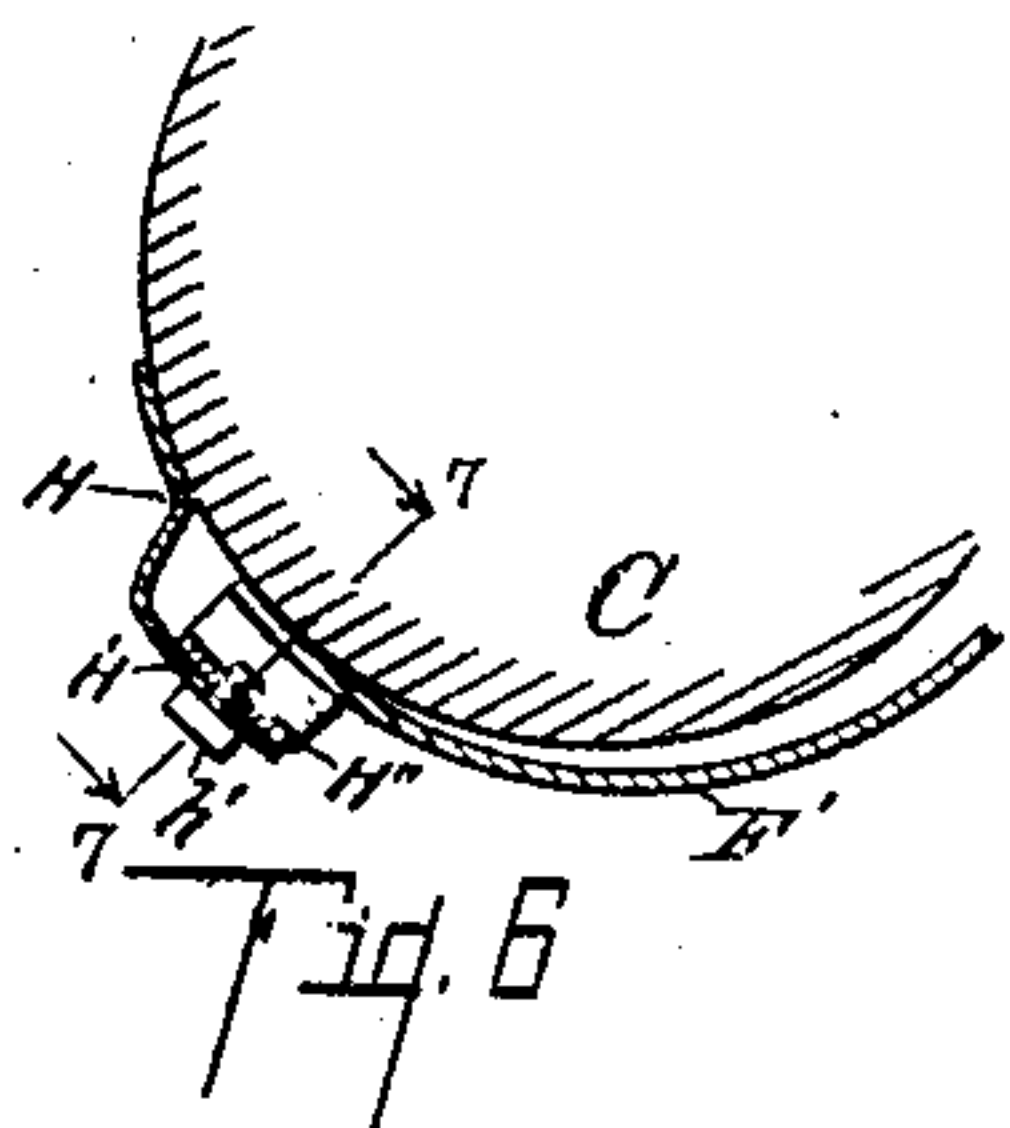
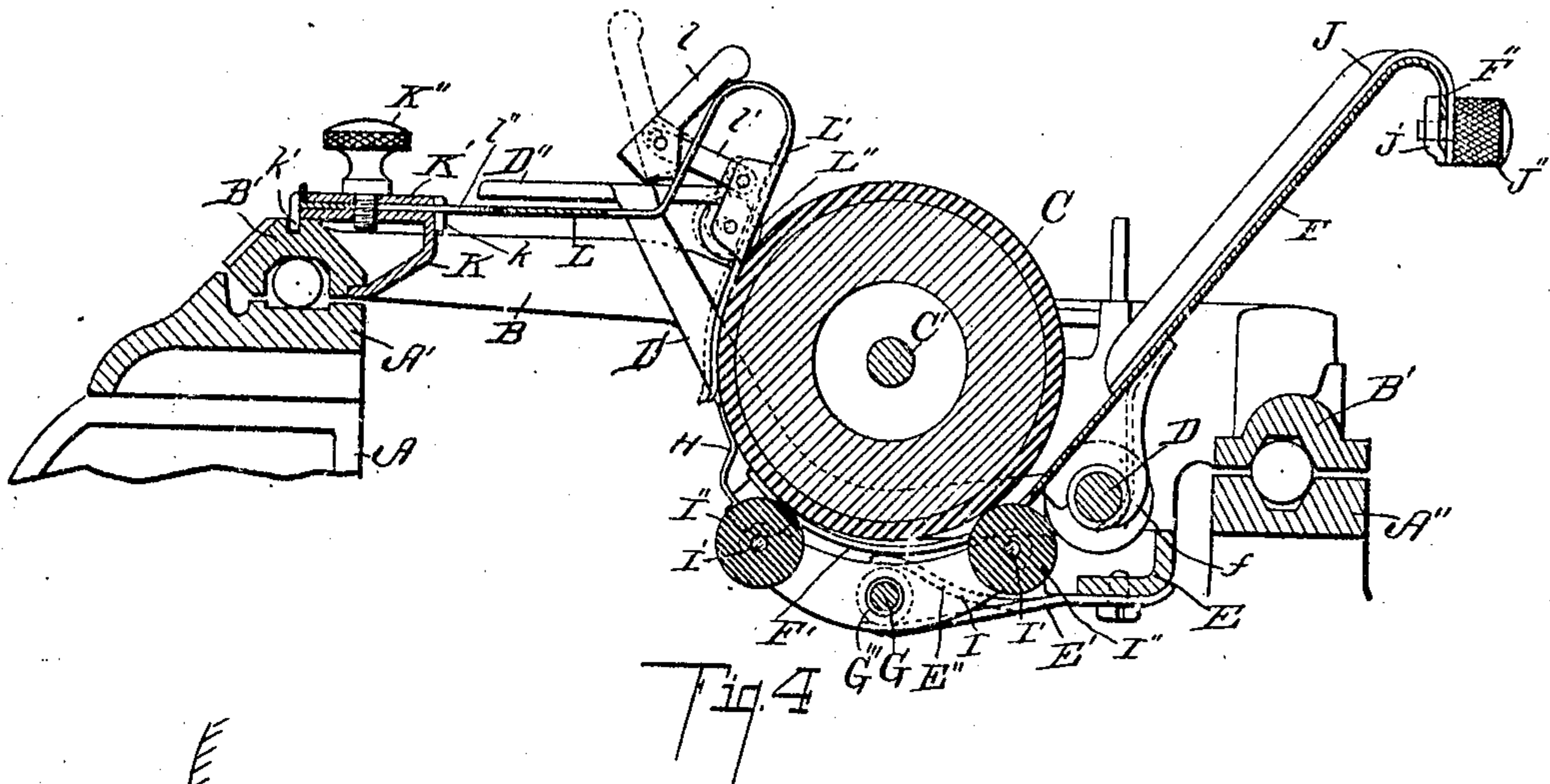


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3 SHEETS—SHEET 3.



Witnesses:

Clara A. Sabin  
Lulu G. Greenfield

Inventor,

William R. Fox  
By Chappell & East  
Att'ys



# UNITED STATES PATENT OFFICE.

WILLIAM R. FOX, OF GRAND RAPIDS, MICHIGAN.

## PAPER-FEED FOR FRONT-STRIKE TYPE-WRITING MACHINES.

No. 912,860.

Specification of Letters Patent.

Patented Feb. 16, 1909.

Application filed April 23, 1906. Serial No. 313,297.

*To all whom it may concern:*

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

This invention relates to improvements in paper feeds for front strike typewriting machines.

The objects of this invention are, first, to provide an improved construction and arrangement for supporting the feed rolls in relation to the typewriter platen. Second, to provide an improved arrangement and construction of paper table. Third, to provide an improved construction and arrangement of front paper finger for use in front strike typewriting machine. Fourth, to provide improved means of adjusting the fingers of a paper holder or guide. Fifth, to provide an improved means of support for the paper scale for use in connection with the front strike typewriting machines. Sixth, to provide an improved ratchet and brake mechanism for the platen of a typewriter.

Further objects, and objects relating to details of construction will definitely appear in the detailed description to follow.

I accomplish the objects of my invention by the devices and means described and illustrated in the following specification.

The invention is clearly defined and pointed out 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 plan view of the upper part of a typewriting machine, embodying my improved feed mechanism; Fig. 2 is an inverted plan view of the parts appearing in Fig. 1, showing the arrangement and method of supporting the feed rolls on the under side; Fig. 3 is a detail inverted plan view of the scale support, showing its formation and method of adjustment; Fig. 4 is a transverse detail sectional view taken on line 4—4 of Fig. 1, showing generally the relation of the various parts; Fig. 5 is a similar detail sectional view taken on the line 5—5 of Figs. 2 and 3, showing the exact arrangement and relation of the paper table and the scale support at that point; Fig. 6 is a transverse de-

tail sectional view taken on line 6—6 of Fig. 2, showing the details of construction at that point, of the connection between the paper table guide and the scale; Fig. 7 is a detail sectional view taken on line 7—7 of Fig. 6, showing details of connection between the paper table guides and scale; Fig. 8 is a detail sectional view taken on line 8—8 of Fig. 2, showing the arrangement of the spring for holding the paper feed rolls in position. Fig. 9 is a detail sectional view taken on line 9—9 of Fig. 2, showing the details of construction at that point; Fig. 10 is a detail sectional end elevation on line 10—10 of Figs. 1 and 2, showing the ratchet and platen-brake mechanism.

In the drawing all 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 lettered parts of the drawing, the main frame of the machine A is of the usual Fox construction and provided with a top plate A' which supports the carriage and its paper feeding mechanism.

B is the carriage which is provided with a front bar B', to which are adjustably secured the front paper fingers of the machine. These paper fingers are adjustably arranged on the carriage by means of set screw K'.

The front paper guides consist of suitable guide blocks K, which are fitted to suitable ways on the front bar B' of the carriage, an upper portion K' having projections which engage to clamp on the top of the front bar B', the two parts being clamped together by set screws K'' therethrough.

The paper fingers are made of spring metal. A portion L extends to the front of the machine, and is clamped in position on the block K by the set screw K'', the same containing slots l'', which embrace the said set screws, the parts K K' of the guide blocks clamping the said sheet metal portions so that they can be adjusted to and from the platen. This part is curved upwardly thence toward the rear of the machine thence downwardly at the rear in U-shape at L', and extends downwardly into contact with the front portion of the platen C. The platen C is supported on the usual spindle C' used in front strike machines. The fingers are adjustable in the clamps so that the platen can be readily removed from the carriage.



Rollers  $L''$  are provided in the paper fingers, as seen in Fig. 4. Levers  $l$  with irregular heads are connected by links  $l'$  to the front portion of the  $U$  part  $L'$  of the fingers, and act upon the rear portion of the loop so that when the said levers are thrown toward the front of the machine, the paper fingers are out of engagement with the platen, as indicated by the dotted lines of Fig. 4. As many of these paper fingers are used as are required, two being ordinarily sufficient.

The paper table  $F$  is supported to the rear of the platen on the rock shaft  $D$  which is parallel therewith. Brackets  $f$  are on the back of the paper table  $F$  which embrace the rock-shaft  $D$  arranged in the carriage, parallel therewith, which rock-shaft is provided with suitable bushings or sleeves  $d$ . The table is retained detachably in position by the spring fingers  $f'$ , curved at their lower end, and embracing either the rock-shaft  $D$  or the bushing  $d$  thereon. The brackets  $f$  and bushings  $d$  are between set collars  $d'$  on said rock-shaft and prevents endwise movement of the paper table. The collars can be adjusted endwise and in that way secure adjustment of the paper table and scale. The paper table is extended at  $F'$  beneath the platen is conformed thereto and forms the main paper support. The same is open at proper intervals to permit the feed rolls  $I''$  to come into contact with the under side of the platen, the intermediate portions of the table being marked  $f$ , the broader parts  $F'$  serving for the attachment of the scale. The curved portion  $F'$  of the paper table is held yieldingly upward against the under side of the platen by spring fingers  $E''$  carried by bar  $E$  below and to the rear of the platen. (See Fig. 4.) The scale  $H$  is supported at the front edge of this paper table. The scale is deflected outwardly at  $H'$  and connected by suitable screws  $h'$  through enlarged holes to brackets  $H''$  riveted to the front portion  $F'$  of the said paper table. The paper scale is a single space below the printing line. This scale because it is conformed and supported in this way, does not interfere with the type or ribbon vibrator on the front strike typewriting machine. When it is necessary to release the scale from the paper table,  $F$  is pulled forward. The spring fingers  $E''$  always holds the scale lightly against the paper when the table is released.

The feed rolls  $I''$  are carried on shafts  $I'$   $I'$  which shafts are supported on opposite ends of the arms  $I$ . The arms  $I$  are provided with central hub like projections  $G''$  which embrace transverse rods  $G$ , the apertures being considerably larger than the rods. The rods  $G$  are connected by suitable arms  $G'$  to the rock-shaft  $D$ . Springs  $E'$  rest against the hub like projections  $G''$  at each end of each pair of rollers, urging the same upward. The said springs  $E'$  are connected

by suitable screws or rivets to the downwardly projecting bar  $E$  of the typewriter carriage. By this arrangement even pressure is secured on the opposite pairs of rolls, and no undue clamping of paper at any point is occasioned, and the rolls act evenly and deliver the paper freely therethrough. The rod  $G$  and its connections serve to generally locate the parts without confining the same and allows the feed rolls to contact freely with the platen and also to afford the means of relieving the pressure on the feed rolls through the lever secured on rockshaft  $D$ . The lever  $D'$  projects up at the end toward the front of the platen, terminating in a broad flat finger piece  $D''$ . When the feed rolls  $I''$   $I''$  are relieved by lever  $D'$ , the paper table is still held yieldingly in contact so that the paper can be readily adjusted beneath the scale, although the scale is still tightly in contact with the platen. On the paper table  $F$  are supported the guides  $J$ , which are clamped in position by the set screw  $J''$  and the clip piece  $J'$  embracing the downwardly curved rear edge  $F''$  of said paper table.

At the end of the platen roll is the lever for actuating the same and the ratchet means for retaining it, as well as the brake mechanism. The detent means consists of an arm  $M$  which is pivoted to the rod  $D$  and bears a roll  $M'$  which fits into curved notches around the periphery of the head of the platen. This arm  $M$  is urged into contact with the platen-head by the spring  $m$ , the inner end of which is secured to the bushing  $m'$ . An arm  $O$  is also pivoted on the rod  $D$  and is provided with a brake-shoe  $O'$  for contacting with the face of the platen, the same being urged inwardly by the spring  $O''$  the lower end of which is connected to the carriage frame opposite the head of the platen. A lever  $N$  is pivoted at  $n$  on end of the carriage frame opposite the head of the platen and is provided with a pin  $N'$  which engages suitable notches on the underside of the arm  $M$  and strikes into a notch on the end of the arm  $O$  so that by adjustment of the lever  $N$  the brake can be raised and the detent roller  $M'$  brought into engagement, or both the detent roll and the brake can be brought into engagement, or the brake be elevated and the detent roll be brought into action. In the position illustrated in the drawing, the brake is elevated and the detent roll  $M'$  engages the platen. By pulling the lever  $N$  one notch toward the front of the machine, both the brake and the detent pawl will be elevated and by swinging the lever one notch further forward, the detent roll  $M'$  will be elevated and the brake will be applied.

I have described my improved paper feed mechanism in the form preferred by me but desire to state that it is capable of many variations in detail without departing from



my invention. I, however, desire to claim the same specifically as well as broadly.

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

1. In a front-strike typewriting machine, the combination of a carriage; a platen supported thereon, the front bar B of the carriage being provided with suitable guide-ways and guide-blocks clamping the said guide-ways; slotted spring fingers clamped by the blocks of the said guide-ways, extending toward the rear of the machine thence upwardly and rearwardly and thence re-curved on themselves, conforming to the front side of the platen; rollers carried by the said fingers, to rest against the platen; levers carried by the said spring fingers on the front side of the said U-shaped loops, connected by suitable links to the front portion of the spring fingers, said levers being provided with irregular heads for compressing the spring to relieve the pressure on the fingers, as specified.

2. In a front strike typewriting machine, the combination of a carriage; a platen supported thereon, the front bar B of the carriage being provided with suitable guide-ways and guide-blocks clamping the said guide-ways; slotted spring fingers clamped by the blocks of the said guide-ways, extending toward the rear of the machine upwardly and recurved on themselves, conforming to the front side of the platen; levers carried by the said spring fingers on the front side of the U-shaped loops, connected by suitable links to the front portion of the spring fingers, said levers being provided with heads for compressing the spring to relieve the pressure on the fingers, as specified.

3. In a front strike typewriting machine, the combination of a carriage the front bar of which is provided with a grooved way on its upper surface and a grooved way on the under front side thereof; a suitable platen thereon; paper fingers extending forwardly from the front bar of the carriage, being recurved to properly contact and support the paper; a clamp for holding the said paper fingers adjustably in position, consisting of the base portion K fitting in a suitable way on the under front side of the front bar, and a top plate K' with projections fitting downwardly into the way on the upper side of the front bar, and a set screw K'' extending downwardly to clamp the said parts together and embrace the forwardly projecting portion of the paper fingers, adjustably there-between, and permit the sliding of the clamp on the said ways of the front bar, co-acting as specified.

4. In a paper feed mechanism for a front-strike typewriting machine, the combination of a carriage; a platen thereon; a paper

table to the rear of said platen, extending downwardly and forwardly and conformed to the underside of the platen; a paper scale adjustably secured to the front edge of the said paper table, the front edge of said scale being conformed to the platen and the rear portion being curved outwardly from the platen roll and secured by suitable means consisting of screws in enlarged slots to permit adjustment in all directions to the said table; opposite pairs of feed-rolls supported on suitable frames, loosely pivoted on the central shafts G; arms G' pivotally connected to the central shaft G; and springs E' carried by the carriage and arranged to apply pressure to the central part of the said frames for applying pressure evenly to the feed rolls, co-acting for the purpose specified.

5. In a paper feed mechanism for front strike typewriting machines, the combination of the carriage; a platen thereon; a paper table to the rear of said platen extending downwardly and forwardly and conformed to the under side of the platen; opposite pairs of feed rolls arranged beneath said platen; a rigid frame carrying the said feed rolls towards each end; a shaft G centrally arranged between the said feed rolls and parallel therewith on which said frame is loosely journaled, the diameter of the bearing being considerably more than that of the shaft; arms G' connected to the said central shaft; suitable means for controlling said arms; and springs E' carried by the said carriage and arranged to apply pressure to the central part of the said rigid frame for applying pressure evenly to the feed rolls, for the purpose specified.

6. In a paper feed mechanism for front strike typewriting machines, the combination of the carriage; a platen thereon; opposite pairs of feed rolls arranged beneath said platen; a rigid frame carrying the said feed rolls towards each end; a shaft G centrally arranged between the said feed rolls and parallel therewith, on which said frame is loosely journaled, the diameter of the bearing being considerably more than that of the shaft; arms G' connected to the said central shaft; suitable means for controlling said arms; and springs E' carried by the said carriage and arranged to apply pressure to the central part of the said rigid frame for applying pressure evenly to the feed rolls, for the purpose specified.

7. In a paper feed mechanism for front strike typewriting machines, the combination of the carriage; a platen thereon; opposite pairs of feed rolls; a rigid frame carrying said pairs of rolls arranged beneath the said platen; supporting and controlling arms for said frame having a loose pivotal connection towards the center thereof, the pivoted bearing being of greater diameter than the



pivot; and springs secured to the said carriage and arranged to bear upon the central portion of said rigid frame, whereby pressure is evenly delivered to the said feed rolls.

5 8. In a paper feed mechanism for a front-strike typewriting machine, the combination of the carriage; a platen thereon; a paper table to the rear of said platen, extending downwardly and forwardly and conformed  
10 to the underside of the platen; a paper scale secured to the front edge of the said paper table; the front edge of said scale being conformed to the platen and the rear portion being curved outwardly from the platen roll  
15 and secured by suitable means to the said table, co-acting for the purpose specified.

9. In a paper feed mechanism for a front strike typewriting machine, the combination of the carriage; a platen thereon; a paper  
20 table to the rear of said platen extending downwardly and forwardly beneath said platen and conformed to the under side thereof; a paper scale secured to the front edge of the paper table by set screws through  
25 enlarged slots therein; the front edge of said scale being conformed to the platen and the rear portion being secured to the under front portion of said paper table, co-acting for the purpose specified.

30 10. In a front strike typewriting machine, the combination with a carriage and platen of a removable paper table F at the rear of said platen and extending below and beneath the same; slotted brackets *f* at the  
35 rear of said paper table with spring fingers *f'* for embracing the rod D of the carriage, co-acting as specified.

40 11. In a typewriting machine, the combination of the carriage supported by suitable means to reciprocate laterally across the machine, the platen C on a suitable spindle; a bearing bushing embracing the spindle; a shaft parallel with the said platen; a

ratchet with curved notches on the end of said platen; an arm with a detent roller to  
45 rest in the notches of said ratchet; a spring connecting the said arm to the bushing on the platen spindle; a second arm carrying a suitable brake shoe to rest against the  
50 platen, having a notch in its end; a spring connected to the said brake arm and to the carriage frame drawing the said brake arm normally toward the platen; a lever with a  
55 projecting pin arranged to engage both the detent arm and the brake arm at different points, whereby the adjustment of said lever regulates the brake on the detent, so that both can be thrown out or both can be  
60 thrown in, or they may be brought into independent use by the manipulation of the said lever, co-acting for the purpose specified.

12. In a typewriting machine, the combination of the carriage supported by suitable means to reciprocate laterally across the machine; the platen C on a suitable spindle; 65 a shaft D parallel therewith; a detent arm M with detent roller M' pivoted on said shaft; a bushing *m'* on the platen spindle; a spring *m* connecting the said bushing to the said detent arm; an arm O with a brake O' 70 pivoted parallel with the detent arm, and notched at its outer end; a spring connecting the said brake arm to the frame; an operating lever N with a pin to engage both the  
75 said detent arms and the brake arms, whereby the manipulation of said levers effects the control of said brake arms and detent arm simultaneously and separately, co-acting for the purpose specified.

In witness whereof, I have hereunto set 80 my hand and seal in the presence of two witnesses.

WILLIAM R. FOX. [L. s.]

Witnesses:

KATHARINE KUNZI,

CAROLINE D. WATERMAN.