

No. 706,749.

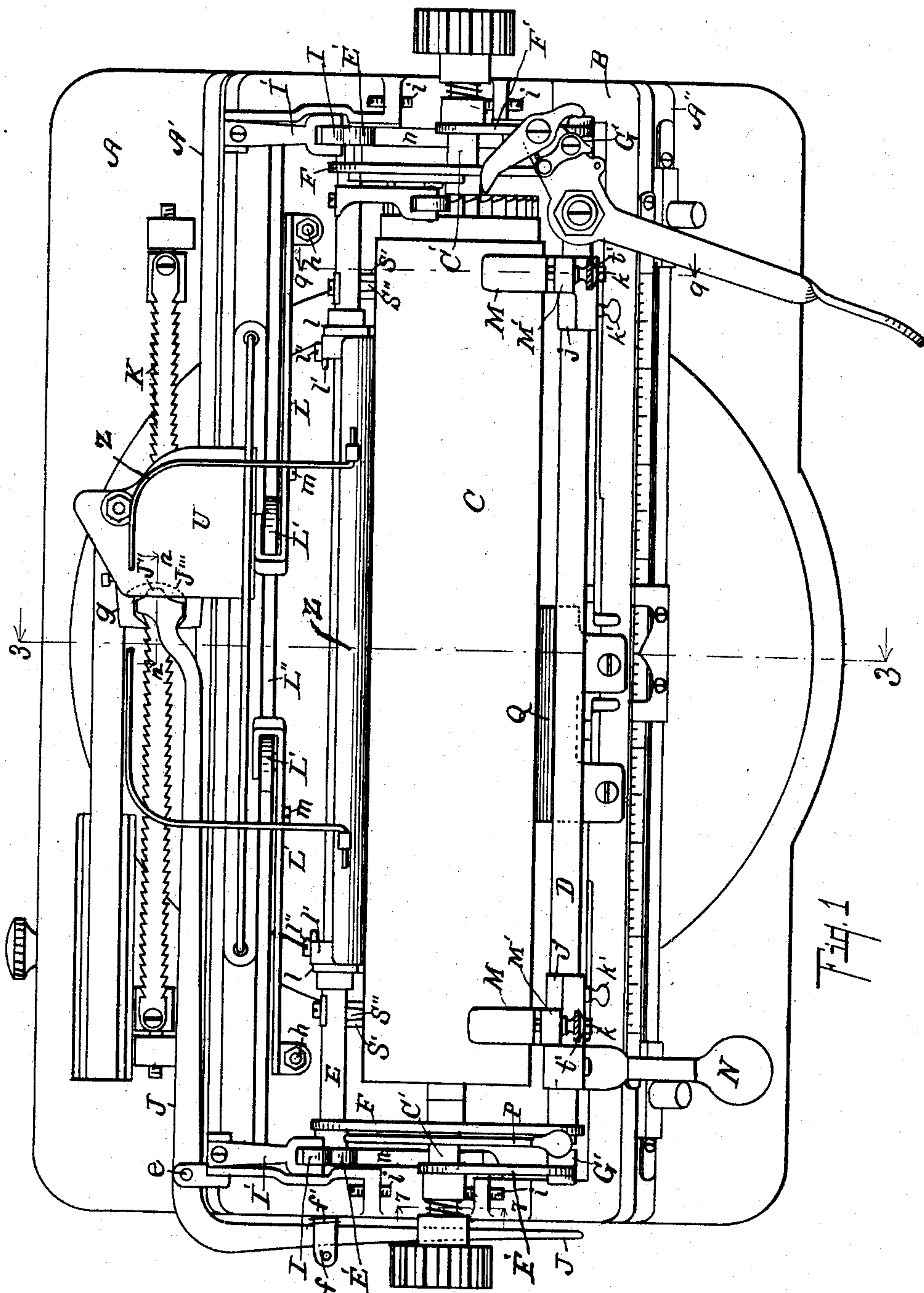
Patented Aug. 12, 1902.

W. R. FOX & G. J. BARRETT.
TYPE WRITING MACHINE.

(Application filed Nov. 4, 1899.)

(No Model.)

4 Sheets—Sheet 1.



Witnesses:

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Mary Tidner

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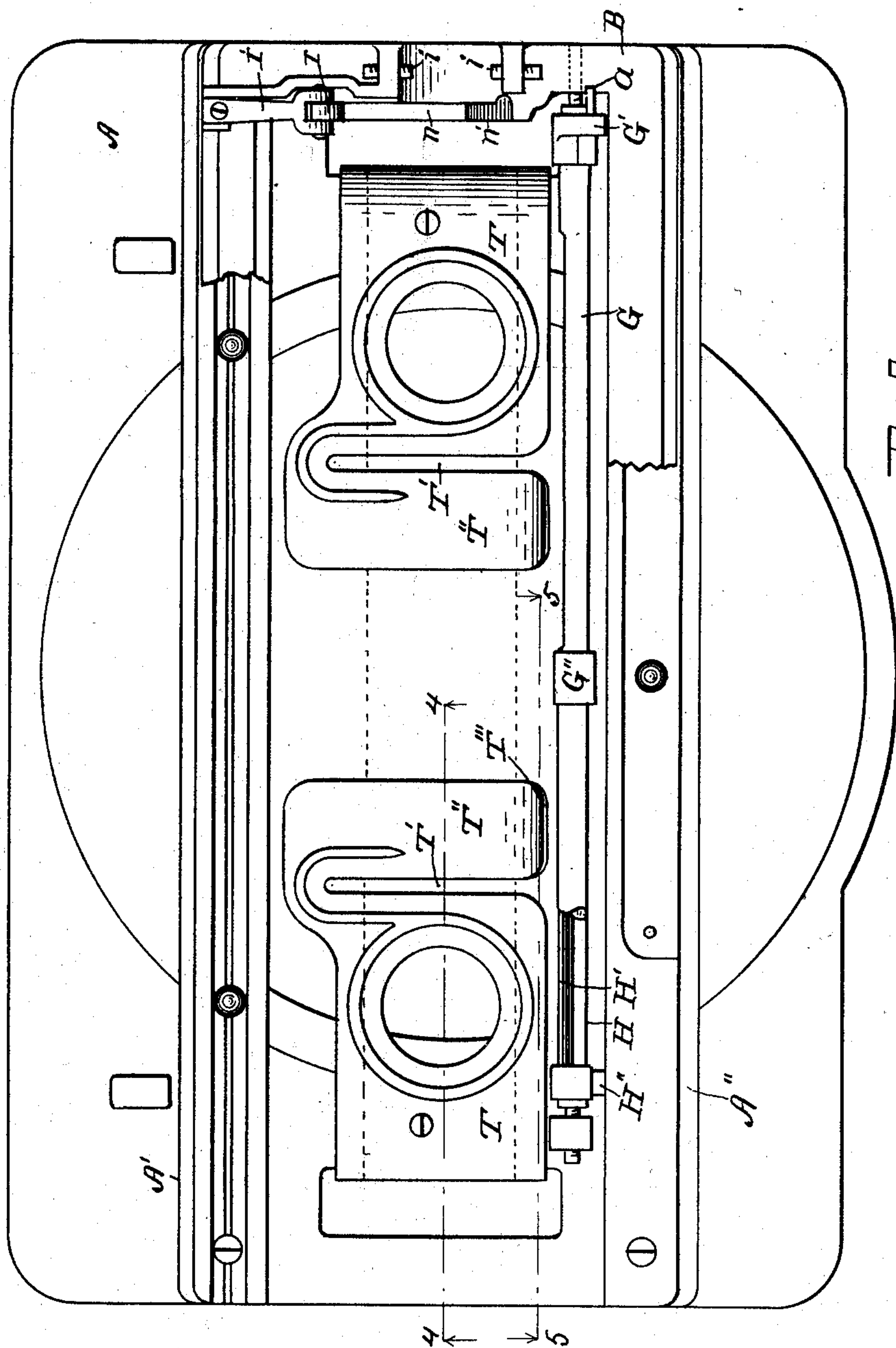
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4 Sheets—Sheet 2.



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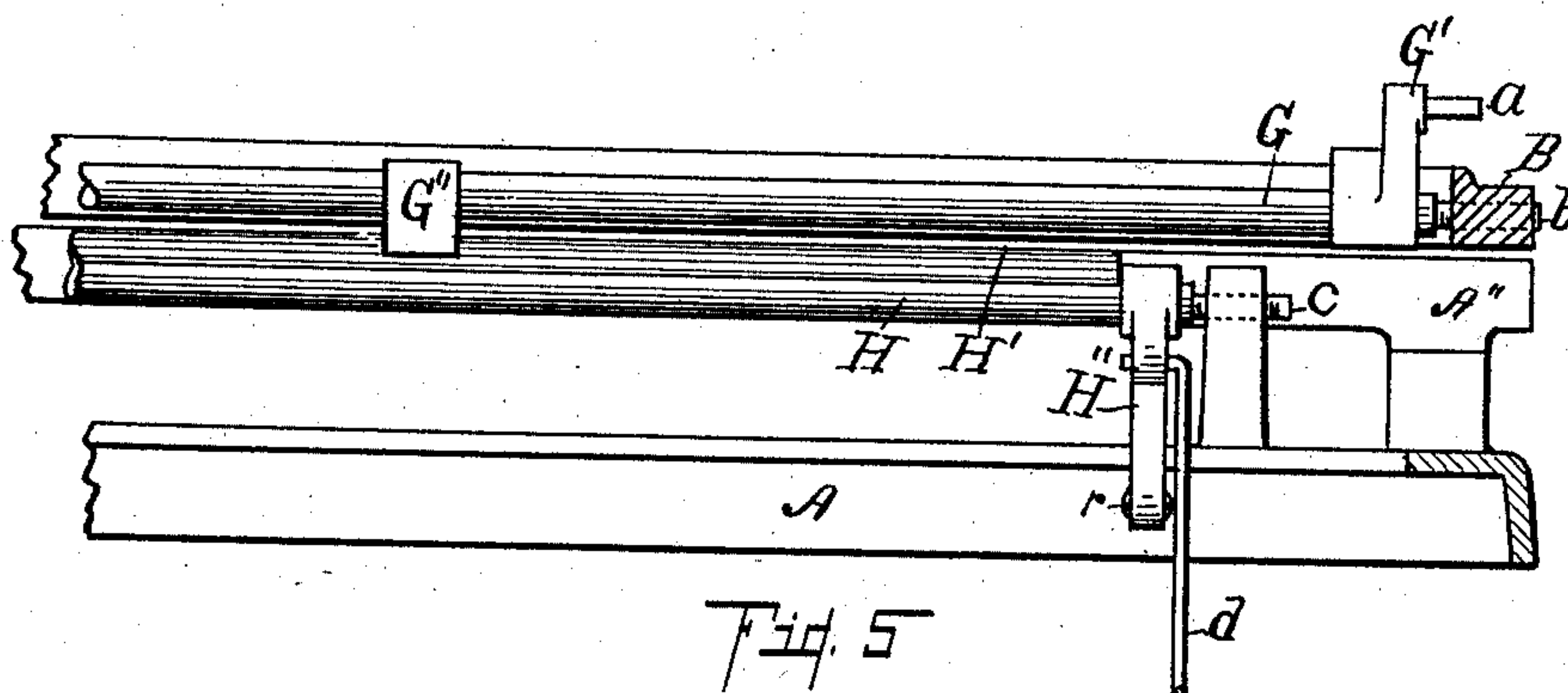
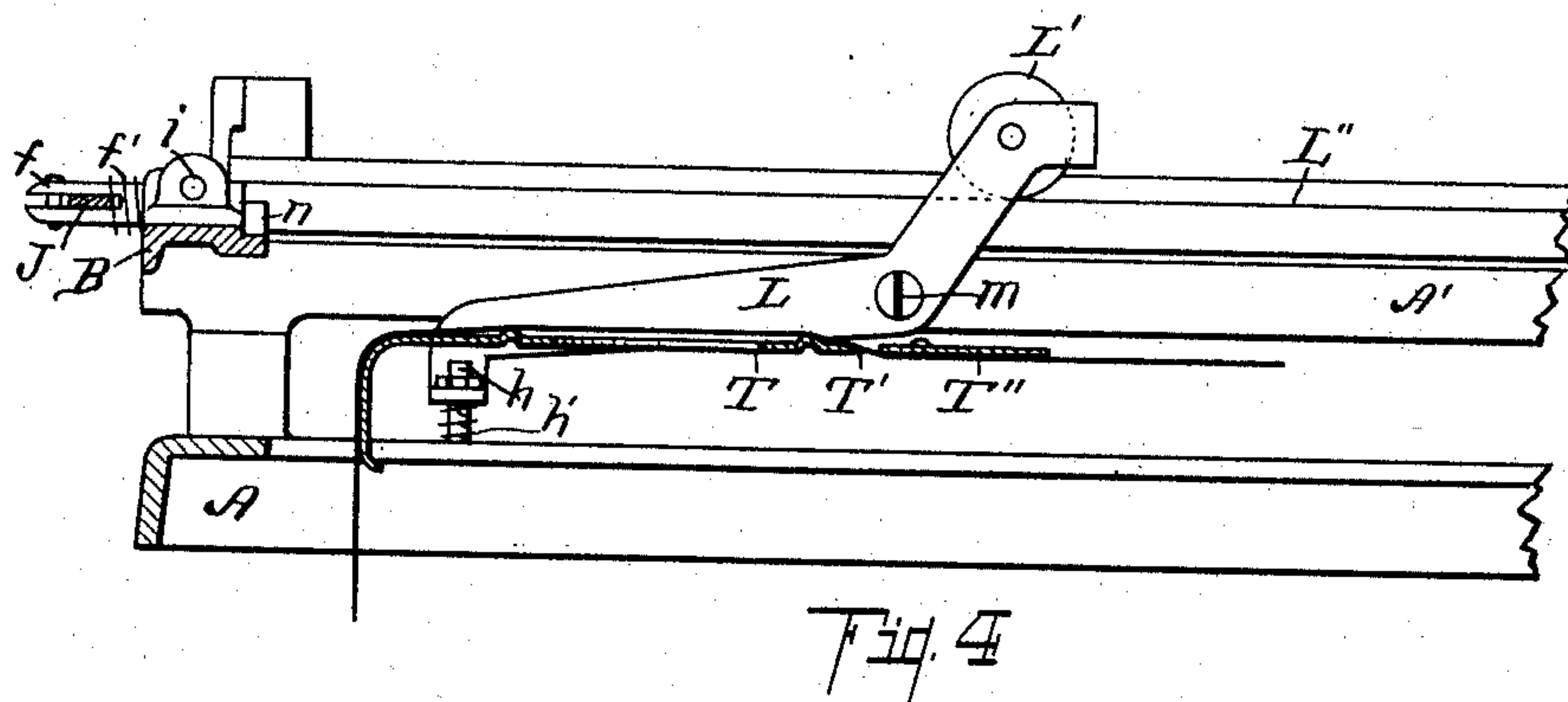
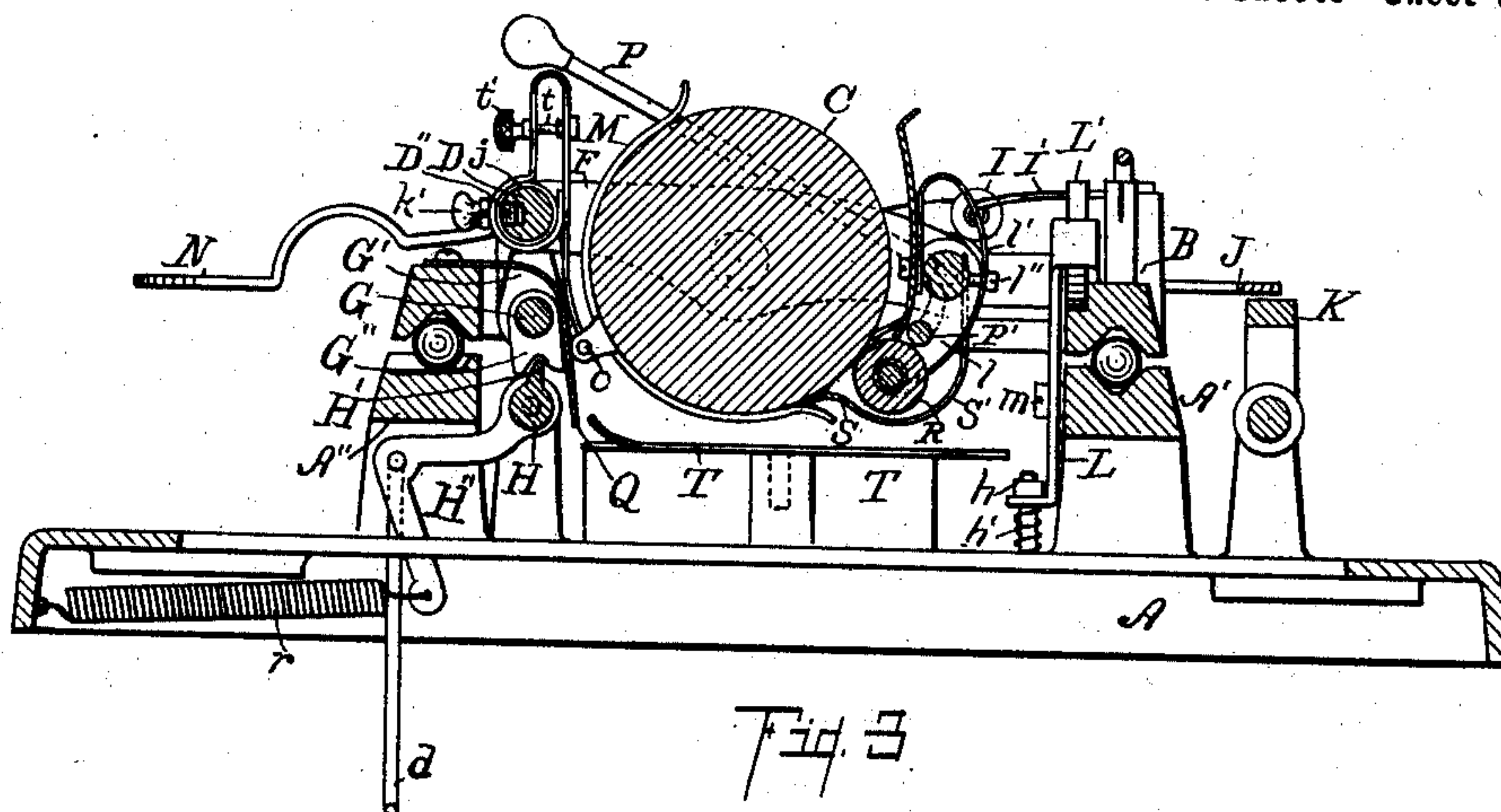
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4 Sheets—Sheet 3.



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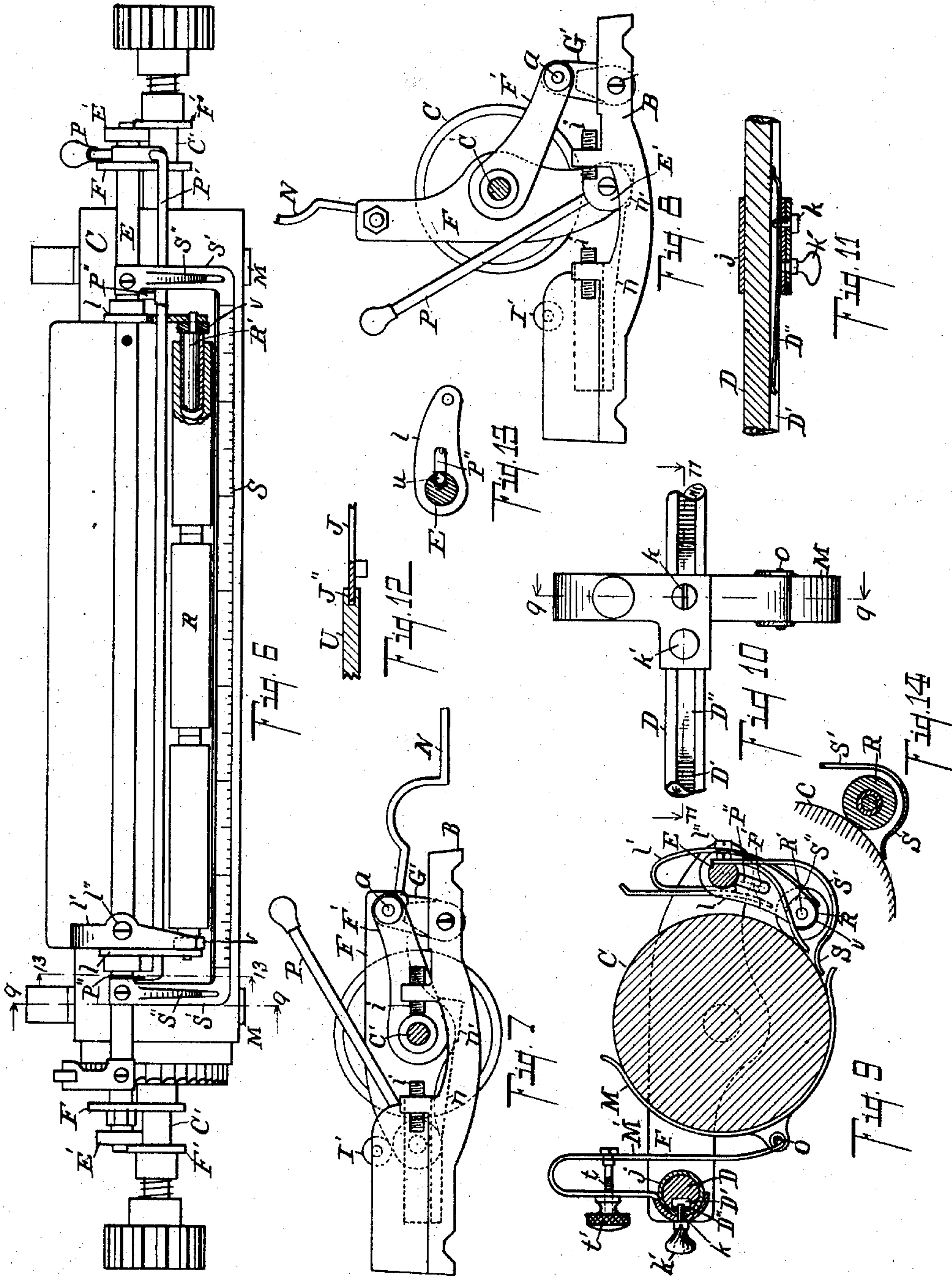
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(No Model.)

4 Sheets—Sheet 4.



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UNITED STATES PATENT OFFICE.

WILLIAM R. FOX AND GLENN J. BARRETT, OF GRAND RAPIDS, MICHIGAN.

TYPE-WRITING MACHINE.

SPECIFICATION forming part of Letters Patent No. 706,749, dated August 12, 1902.

Application filed November 4, 1899. Serial No. 735,774. (No model.)

To all whom it may concern:

Be it known that we, WILLIAM R. FOX and GLENN J. BARRETT, citizens of the United States, residing at the city of Grand Rapids, in the county of Kent and State of Michigan, have invented certain new and useful Improvements in Type-Writing Machines, of which the following is a specification.

This invention relates to improvements in type-writing machines.

The objects of this invention are, first, to provide an improved mechanism for controlling the feed-roll; second, to provide certain improvements in the paper-guide; third, to provide an improved means of supporting the paper-guide; fourth, to provide an improved construction of ribbon-guide, which serves also as an auxiliary guide for the paper; fifth, to provide an improved means of supporting and shifting the platen; sixth, to provide an improved means of retaining the platen in its positions upon the carriage; seventh, to provide improvements in the means of retaining the carriage closely and securely upon its track or ways; eighth, to provide improved means for controlling the escapement of the carriage-feed; ninth, to provide improvements in the platen-scales for type-writers and means of supporting the same.

Further objects will definitely appear in the detailed description to follow.

We accomplish the objects of our invention by the devices and means described in this specification. The invention is clearly defined and pointed out in the claims.

The portions of a type-writer embodying our invention are clearly illustrated in the accompanying drawings, forming a part of this specification, in which—

Figure 1 is a plan view of the upper portion of a type-writer embodying the features of our invention. Fig. 2 is a detail sectional plan view of the same portions with the platen and a portion of the carriage broken away. Fig. 3 is a detail transverse sectional view of the portion appearing in Fig. 1, taken on a line corresponding to line 3 3 thereof. Fig. 4 is an enlarged detail view of the ribbon-guide and carriage-support, taken on a line corresponding to line 4 4 of Fig. 2. Fig. 5 is an enlarged detail view taken on a line corre-

sponding to line 5 5 of Fig. 2. Fig. 6 is a detail view of the platen, adjacent parts, and the platen-scale, a portion of the feed-roll being broken away. Fig. 7 is a detail sectional end elevation of the carriage and platen with the platen in position for work, taken on a line corresponding to line 7 7 of Fig. 1. Fig. 8 is a detail sectional view on the same line as Fig. 7 with the platen swung forward for inspection. Fig. 9 is an enlarged detail sectional elevation of the platen and adjacent parts, taken on a line corresponding to lines 9 9 of Figs. 1, 6, and 10. Fig. 10 is an enlarged detail view of the paper-guide and portion of the rod carrying the same. Fig. 11 is an enlarged detail sectional view taken on line 11 11 of Fig. 10, showing the means of supporting the paper-guide upon its rod. Fig. 12 is a detail sectional view of the means of controlling the escapement for the carriage, taken on line 12 12 of Fig. 1, taken on a line corresponding to line 13 13 of Fig. 6. Fig. 13 is an enlarged detail view of the pivotal or fulcrum connection of the lever for controlling the feed-roll. Fig. 14 is an enlarged detail sectional elevation through the feed-roll and platen-scale, taken on a line corresponding to line 3 3 of Fig. 1.

In the drawings all of 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 drawings, A is the top plate of the main frame of a type-writing machine. Supported on this top plate, preferably by suitable legs or brackets, are the tracks or ways A' A'' over which the carriage B reciprocates when the machine is in use. These ways are preferably provided with suitable ball-races, on which rest the transverse longitudinal sides of the carriage, which are also preferably provided with ball-races corresponding to those in the ways below. To retain the carriage in close contact with the balls in the ball-race or with the way beneath, we provide levers L L, pivoted to the back rail A' by the pivots m. Rollers L' are carried by the upper ends of the levers and rest in a groove or rabbet L'' on the back rail of the carriage. Springs h' are provided on pins h to hold the levers

yieldingly in position. This prevents loose joints between the carriage and its ways and secures an even movement of the parts over each other, and consequently greatly assists in preserving the alinement. The platen C is supported on this carriage so that it can be shifted back and forth while the carriage is in motion to permit the use of the shift-key. The platen is also so constructed and supported that it can be tipped or rolled up for the inspection of the writing thereon by the user. To these ends the platen C is provided with a spindle C', extending out at each end and provided with suitable knobs or knurls for rotating the same. The platen C is supported in suitable journal-bearings in a frame independent of the type-writer carriage. The frame consists of end pieces F and side pieces or rods D E, the rod D being toward the front of the machine in use and the rod E to the back. On the ends of the rod E are provided antifriction-rollers E', which travel on ways *n* transverse to the direction of the carriage B and serve also as a support for the back side of the platen-frame. The front ends of the side pieces F when the machine is in position for writing rest upon suitable shoulders on the rock-shaft arms G'.

A rock-shaft G is located in front of the platen-roll and is supported in suitable bearings on the carriage B. This rock-shaft is provided with upwardly-projecting arms G', carrying pivots *a*. Extending from the pivot *a* at each end of this rock-shaft are links F', which preferably connect by suitable journal-bearings to the spindle C', though it must be clear that independent pivots might be provided on the end piece F in this connection.

At the center of the rock-shaft G is a downwardly-projecting arm G'', containing a notch extending in the direction of the shaft. Supported on the top plate A is a rock-shaft H, having an upwardly-projecting longitudinal fin H', which engages the notch in the bracket G''. An arm H'' is connected at the end of the rock-shaft H, and to this arm is connected a spring *r*, which holds the rock-shaft H, with its fin H', normally in the rearward position. The spring *r* is located beneath this top plate A. A rod or connection D extends to or is in connection with a shift-key at the keyboard for shifting the platen back and forth transversely to the direction of the carriage. To insure that the platen will remain in either shifted position, we provide springs I', having antifriction-rollers I to rest upon the antifriction-rolls E' to force them forward or back and tend to prevent their stopping in the center, thus insuring a full throw of the platen either forward or back and preserving the alinement of capitals and lower-case letters in printing, the springs I' of course being secured to the carriage. The ways for the rollers E' are horizontal at the points where the shift back and forth for printing different letters occurs. It then extends slightly down-

wardly toward the front, and a portion *n n'* is depressed to form a shoulder for retaining the antifriction-rollers E' when moved to this position. A lever or handle N is preferably provided, secured to the front rod D for tipping the platen up, and this permits the rolls E' to travel over the ways *n* until they drop into the depressions at *n'*, which retains the platen securely in position at this point. The object of shifting the platen in this way is to enable the easy inspection of the writing and access to the work for any purpose. The shifting of the platen in printing is made adjustable and is regulated by the screws *i i*, extending through brackets on the ends of the carriage, the same being so located as to contact with the spindle C' of the platen and so adjust the same.

On the front rod D of the platen-frame we support the main paper-guide. This paper-guide is made up of a portion M, struck up from sheet metal and curved substantially to correspond with the curvature of the platen. This is pivoted to a spring M' by a suitable pivot O at the center, which permits the paper-guide proper to adjust itself evenly upon the roll and put an even pressure upon the paper for half the circumference of the roll, or thereabout. The spring M' extends upwardly and is curved into a loop above the rod D, then extends downwardly at its forward end, and is conformed to a sleeve *j* on the rod D. A screw or bolt *l* extends through the loop portion of spring M', and a thumb-nut *t'* is on the outer end of the same, by which adjustment is secured to control the tension of the spring as desired. On the front side of the rod D is formed a key-seat D'. Within this key-seat extends a curved spring D'', which curves outwardly toward the center against the sleeve *j* and the ends of which rest in the bottom of the key-seat. The spring M, the sleeve *j*, and the spring D'' are all united by the screw *k* therethrough. The thumb-screw *k'* extends through the spring M and the sleeve *j* to put pressure upon the spring D'', if necessary, and also to serve as a handle to move the paper-guide back and forth on the rod D. A pair of the paper-guides is used on rolls of the ordinary length, though it is obvious that their number could be increased for long rolls, and it is also obvious that on short rolls a single guide will be sufficient.

Supported by the rod E to the rear of the platen-frame is the paper-roll R on its shaft R'. This paper-roll is made up of short sections on suitable sleeves. It is supported in position by the arms *l* at each end thereof. These arms *l* contain longitudinal slots. A lever P extends downward from the upper left-hand portion of the platen-roll and is pivotally connected to the shaft E and then extends parallel with the same through the slots in the arms *l* for the purpose of controlling said arms, and the opposite end is pivotally engaged in the rod E, near the hub of the right-

hand arm *l*. A small ball *u* is formed on the end of the arm *P''* for that purpose, as clearly appears in Fig. 13. A second arm *P''*, with similar pivotal connection, is provided toward the opposite end of rod *E*. Springs *l'* are secured by suitable screws or other means to the inside of the rod *E* toward each end and extend upwardly into a loop and downwardly outside of the rod *E* and rest against anti-friction-rolls *v* at each end of shaft *R*. Screws *l''* extend through the back portion of the springs into the rod *E* to adjust the tension on the paper-roll. The paper-shield *Z* for guiding the paper into the machine is also secured to this rod *E*, and a small bail *z* is provided above to guide the paper above and away from the operating mechanism. To the rod *E* is also secured the platen-scale *S*, the same being formed with downwardly-curved supporting-arms *S'*, which are made of springs to hold the platen-scale *S* yieldingly in contact with the platen-roll. Fingers *S''* are struck out of the arms *S'* to serve as additional supports and guides for the paper, as clearly appears in Figs. 6 and 9, the structure of the paper-scale being identical at both ends. The arms *S'* are arranged beyond the ends of the feed-roll *R*, and thus permit the feed-roll to be manipulated without disturbing the scale in any way. The scale also serves as a shield, covering the feed-roll and preventing the same from coming in contact with the ribbon.

We provide an escapement with an oscillating rack-bar *K* and pawls for engaging the same similar in construction to that appearing in our United States Letters Patent No. 614,943, issued November 29, 1898, for type-writing machines. We here provide an improved means of controlling the same, so that the carriage can be released and moved freely back and forth, as desired. To accomplish this, we provide a lever *J*, pivoted at *e* on the back of the carriage, with ears formed downwardly to extend between the pawls, so that it can act upon the outer pawl or inner pawl to lift either off from the rack. We provide a guide *f*, forked in form, on the end of the carriage to guide the lever and put a spring *f'* between it and the carriage to force it outwardly, so that the actuating end of the lever is held normally out of engagement with the pawl *g*. The working end of the lever we guide by means of the fin *J''*, extending into a slot or groove *J'''* in the plate *U*, to which the escapement-pawls are attached. This provides a very simple and efficient means by a lever in convenient reach in front of the machine for releasing the escapement in moving the carriage.

To the top plate *A* of the machine we secure the ribbon-guides *T*, which are formed of thin metal and properly corrugated for strength. We form a slot or notch *T'* from the front side into the same, so that the ribbon may be easily inserted without throwing it through any opening in the guide. The central portions *T''* serve as guides for the

ribbon, and the fronts thereof at *T'''* are curved upwardly, as is clearly indicated in Figs. 2 and 3, and serve to guide paper coming in contact with the same up and out of the machine. This guide is supplemented by a downwardly-depending sheet-metal guide *Q*, secured to the front rail of the carriage. It is obvious the guides *T* would serve a very useful purpose were they not supplemented by this guide *Q*. These guides are of particular value where it is desired to address or write upon cards, as postal cards or narrow stiff paper. The springs *M* of the main paper-guide are the only ones in action under ordinary circumstances. These springs are, however, some distance apart, and therefore narrow strips of stiff paper, such as cards, are not positively guided. The guide *T*, with the part *Q*, is to supplement the main guide in such cases.

Having thus described the various parts in detail of our improved type-writing machine, we desire to state that the structures are capable of great variation in detail and form without departing from our invention. Where we have described the parts as constructed of sheet metal, we desire to state that that is only the preferred construction and that the various parts might be formed of cast metal, of forgings, or otherwise. We have also shown the carriage provided with ball-bearings, which is of course a very desirable feature; but we are aware that other bearings might be provided that would be quite effective in use. We have in certain instances described certain forms of springs; but in many of these positions other forms could be used with equal success. At the ends of the platen-frame we have shown rollers for relieving the friction. It is obvious that while these are very effective for the purpose in the cheaper construction of machines they might be dispensed with. It is also obvious that many of the features which we have here described are adapted for use in type-writers of other constructions, and we do not wish to be understood to limit ourselves to a type-writer of this particular construction when we point out such features in the claims. Many of the features which we shall claim we consider to possess great merit in exactly the form shown, and therefore purpose to claim the same specifically in the form shown, as well as broadly. From these remarks it will be clear that there are many equivalent constructions which we embrace and contemplate in our invention.

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

1. In a type-writing machine, the combination of the main frame *A* with suitable ways *A'*, *A''* thereon; a non-shiftable carriage traveling on said ways; a platen-cylinder *C*; a suitable frame therefor having end pieces *F*, front bar *D* and back bar *E*; a rock-shaft *H* with upwardly-projecting fin *H'* thereon, sup-

ported on the frame A; spring connections to hold the same yieldingly in position; a shift-key connection for actuating the same; a rock-shaft G supported on the said carriage with an arm G'' containing a notch to engage the fin H' of the rock-shaft H on said main frame; upwardly-projecting arms G' on the rock-shaft G having inwardly-projecting shoulders at the top to receive the front ends of the end pieces F of the platen-frame; antifriction-rollers E' to the rear of the platen-frame, adapted to rest on suitable ways *n* with notches *n'* on said carriage; links F' connecting pivots *a* on the arms G' of the rock-shaft with the spindle of the platen; a lever N for raising the platen-frame and its platen for the inspection of the writing, all coacting substantially as described for the purpose specified.

2. In a type-writing machine, the combination of the main frame A with suitable ways A', A'' thereon; a non-shiftable carriage traveling on said ways; a platen-cylinder C; a suitable frame therefor having end pieces F, front bar D and back bar E; a rock-shaft H with upwardly-projecting fin H' thereon, supported on the frame A; spring connections to hold the same yieldingly in position; a shift-key connection for actuating the same; a rock-shaft G supported on the said carriage with an arm G'' containing a notch to engage the fin H' of the rock-shaft H on said main frame; upwardly-projecting arms G' on the rock-shaft G having inwardly-projecting shoulders at the top to receive the front ends of the end pieces F of the platen-frame; antifriction-rollers E' to the rear of the platen-frame, adapted to rest on suitable ways *n* with notches *n'* on said carriage; links F' connecting pivots *a* on the arms G' of the rock-shaft with the spindle of the platen; all coacting for the purpose specified.

3. In a type-writing machine, the combination of the main frame A with suitable ways A', A'' thereon; a non-shiftable carriage traveling on said ways; a platen-cylinder C; a suitable frame therefor having end pieces F, front bar D and back bar E; a rock-shaft H with upwardly-projecting fin H' thereon, supported on the frame A; spring connections to hold the same yieldingly in position; a shift-key connection for actuating the same; a rock-shaft G supported on the said carriage with an arm G'' containing a notch to engage the fin H' of the rock-shaft H on said main frame; upwardly-projecting arms G' on the rock-shaft G having shoulders to receive the front ends of the end pieces F of the platen-frame; antifriction-rollers E' to the rear of the platen-frame, adapted to rest on suitable ways *n* with notches *n'* on said carriage; links F' connecting pivots *a* on the arms G' of the rock-shaft with the platen and platen-frame, all coacting for the purpose specified.

4. In a type-writing machine, the combination of the main frame with suitable ways thereon; a non-shiftable carriage traveling

on said ways; a platen-cylinder; a suitable frame; a rock-shaft with upwardly-projecting fin thereon supported on the frame; a shift-key connection for actuating the same; a rock-shaft supported on the said carriage with an arm containing a notch to engage the fin of the rock-shaft on said main frame; antifriction-rollers E' to the rear of the platen-frame, adapted to rest on suitable ways with notches, on said carriage; links from the last aforesaid rock-shaft to the platen and platen-frame, all coacting for the purpose specified.

5. In a type-writing machine the combination of a non-shiftable carriage; a platen-frame consisting of end pieces F and side pieces or rods D, E, adapted to rest upon ways on the said carriage; antifriction-rollers E' to the rear of the said platen-frame; a rock-shaft G supported on the carriage; means of actuating the rock-shaft supported on the main frame; arms G' extending upwardly from said rock-shaft with suitable shoulders for the front of the ends F of the platen-frame to rest upon; links F' connecting pivots *a* on the arms G' and the spindle of the platen together, for the purpose of shifting the platen and frame back and forth, all coacting for the purpose specified.

6. In a type-writing machine, the combination of a main frame; a non-shiftable carriage thereon; a platen supported in a suitable frame adapted to rest on said carriage in suitable ways; a rock-shaft on said carriage; suitable connections from the main frame to actuate said rock-shaft; and link connections from said rock-shaft to the platen and its frame to shift the platen back and forth and permit its being swung up from the carriage for convenient inspection of the writing, as specified.

7. In a type-writing machine, the combination of a main frame; a non-shiftable carriage thereon; a platen supported in a suitable frame adapted to rest on said carriage; a rock-shaft on said carriage; means of actuating said rock-shaft; link connection from the said rock-shaft to the platen and its frame, to shift the platen back and forth and permit its being swung up from the carriage for the convenient inspection of the writing, as specified.

8. In a type-writing machine, the combination of the main frame; a non-shiftable carriage thereon; a platen in a suitable frame adapted to rest on suitable ways on said carriage; antifriction-rollers on said platen-frame; means of shifting said platen back and forth on said carriage; and rollers I yieldingly supported above said antifriction-rollers and adapted to press against the same to force the platen-frame back and forth to the limits of its movements when the same is shifted, for the purpose specified.

9. In a type-writing machine, the combination of the main frame; a non-shiftable carriage thereon; a platen in a suitable frame adapted to rest on suitable ways on said carriage; antifriction-rollers on said platen-

frame; means of shifting said platen back and forth on said carriage; springs I'; and rollers I at the ends thereof, supported above said antifriction-rollers and adapted to press against the same to force the platen-frame back and forth to the limit of its movements when the same is shifted for the purpose specified.

10. In a type-writing machine, the combination of a platen-roll; a suitable frame therefor; a feed-roll; arms *l* from the platen-frame carrying said feed-roll and containing suitable longitudinal slots; curved springs *l'* secured to the platen-frame and adapted to press the said roll against the platen; means of adjusting the pressure on said springs; and a lever *P* pivotally supported on the platen-frame with a portion *P'* thereof extending through the slots in said arms *l* and connected by suitable pivots to the frame, coacting for the purpose specified.

11. In a type-writing machine, the combination of a platen-roll; a suitable frame therefor; a feed-roll; arms from the platen-frame carrying said feed-roll and containing suitable longitudinal slots; curved springs secured to the platen-frame and adapted to press upon antifriction-rolls at the end of said rolls; adjusting-screws *l''* for adjusting the pressure on said springs; and a lever *P* pivotally supported on the platen-frame with a portion *P'* thereof extending through the slots in said arms and connected at its opposite end to the back bar of said frame, coacting for the purpose specified.

12. In a type-writing machine, the combination of a platen-roll; a suitable frame for supporting the same; a feed-roll supported by suitable pivoted arms and adapted to rest against said platen-roll; a lever pivoted to said frame extending transversely to said platen-roll at its outer end and bent parallel to said roll at its opposite end and inserted through suitable perforations in the said pivoted arms which support the said feed-roll the same being swung bodily to control the said feed-roll for the purpose specified.

13. In a type-writing machine the combination of a platen-roll; a suitable frame for supporting the same; a feed-roll supported by suitable pivoted arms and adapted to rest against said platen-roll; a lever pivoted to said frame extending transversely to said platen-roll at its outer end and bent parallel to said roll at its opposite end and engaging said pivoted arms which support the said feed-roll; arms on said levers with balls on their ends engaging apertures in the rear bar of the said frame to control the said feed-roll for the purpose specified.

14. In a type-writing machine, the combination of a platen-roll; a suitable frame therefor; a paper-guide consisting of the curved spring-band *M* adapted to embrace the roll; and a spring *M'* one end of which is attached to the frame and the opposite end pivoted at

O to the center of the spring-band *M* said pivot being parallel to the platen-roll as specified.

15. In a type-writing machine the combination of a platen-roll; a paper-guide consisting of a spring conformed to said roll, a yielding support for said spring pivoted to the middle portion thereof said pivot being parallel to the platen-roll, for the purpose specified.

16. In a type-writing machine, the combination of the platen-roll; the spring-band paper-guide *M*; spring-loop *M'* pivotally connected to said band *M* at one end by a pivot parallel to the platen-roll, and secured to the platen-frame at the opposite end and the screw-threaded bolt *t* extending through said loop; and a thumb-nut *t'* on said bolt for adjusting the tension on said spring for the purpose specified.

17. In a type-writing machine the combination of a platen-roll; a paper-guide conformed thereto; a curved-spring support pivoted to the middle portion thereof by a pivot parallel to the platen-roll; and means of adjusting said spring to vary its tension.

18. In a type-writing machine, the combination of a platen-roll; a paper-guide conformed thereto; a curved-spring support centrally connected thereto; and means of adjusting said spring to vary its tension.

19. In a type-writing machine, the combination of a platen; a paper-guide on said platen; a rod *D* to one side of said platen having a key-seat *D'*; a spring *D''* within the said key-seat curved to contact at its ends therewith; a sleeve *j* on said rod; a screw *k* to secure the said paper-guide sleeve and spring together; and a knob *k'* for adjusting the same, coacting as specified.

20. In a type-writing machine, the combination of a platen; a paper-guide on said platen; a rod *D* to one side of said platen having a key-seat *D'*; a spring *D''* within the said key-seat; a sleeve *j* on said rod; a screw *k* to secure the said paper-guide sleeve and spring together, coacting as specified.

21. In a type-writing machine, the combination of a platen; a paper-guide therefor; a rod to one side of said platen having a longitudinal groove therein; means of securing said paper-guide to said rod by embracing the same; a spring secured to said paper-guide and resting in said groove to retain the same by friction so it can be adjusted along said rod for the purpose specified.

22. In a type-writing machine, the combination of the platen; a paper-guide therefor; a rod to one side of said platen, having a longitudinal groove therein; means of securing said paper-guide to said rod by embracing the same; a spring carried by said paper-guide and resting in said groove to retain the guide by friction so it can be adjusted along said rod, for the purpose specified.

23. In a type-writing machine, the combination of the main frame of the machine; a carriage therefor; a platen on said carriage;

a combined ribbon-guide and paper-guide consisting of plates T suitably slotted at T' for the ribbon with the edges toward the front side of the machine curved upwardly at T'' to serve as a guide for the paper; and a guide Q secured to the carriage and extending down and in front of the band-ribbon guide and paper-guide as specified.

24. In a type-writing machine, the combination of the main frame of the machine; a carriage therefor; a platen on said carriage; a combined ribbon-guide and paper-guide consisting of plates T suitably slotted at T' for the ribbon with the edges toward the front side of the machine curved upwardly at T'' to serve as a guide for the paper; as specified.

25. In a type-writing machine, the combination of the main frame; a carriage; a platen on said carriage; a ribbon-guide supported by the frame having a curved portion to serve as a paper-guide; a guide carried by said carriage in proximity thereto, for the purpose specified.

26. In a type-writing machine, the combination of the main frame; a carriage; a platen on said carriage; a ribbon-guide supported by the frame having a curved portion to serve as a paper-guide for the purpose specified.

27. In a type-writing machine, the combination of the main frame of the machine; a carriage resting on suitable tracks or ways thereon; levers L pivoted to the main frame; antifriction-rollers L' on the upper ends of said levers to rest upon the carriage; and springs to put tension on said levers to hold the carriage into close engagement with the tracks or ways, as specified.

28. In a type-writing machine, the combination of the main frame; a carriage resting on suitable tracks or ways thereon; antifriction-rollers resting on said carriage; and spring connections to put pressure on said rolls to hold the carriage close to its track for the purpose specified.

29. In a type-writing machine, the combination of the main frame; a carriage traveling in suitable ways thereon; a double-toothed oscillating rack pivoted to oscillate on said main frame; escapement-dogs carried by said carriage to engage said rack; a lever J pivoted to said carriage and extending between the dogs of said rack having a guide for said

lever between said dogs; a guide f for the opposite end of said lever with suitable spring to hold it normally out of engagement with the pawls whereby the lever will throw either pawl out of engagement with said rack and permit the adjustment of the carriage, as specified.

30. In a type-writing machine, the combination of the main frame; a carriage thereon; a toothed rack on said main frame; escapement-dogs to engage the same carried by said carriage; an angle-lever extending from one front corner of said carriage to the back and thence to the escapement-pawls; suitable guides for said lever; and a spring holding it normally out of engagement with the pawls, for the purpose specified.

31. In a type-writing machine, the combination of the platen; a frame for carrying the same; a platen-scale S to rest against the same supported by spring-arms S' secured to the platen-frame; fingers S'' struck up from said arms to serve as additional guides; and a paper-roll between the said arms with means of releasing the same, as specified.

32. In a type-writing machine, the combination of the platen; a paper-roll adapted to rest against said platen; a platen-scale to rest against the said platen, and curved outwardly to embrace and protect said paper-roll; spring-arms beyond the ends of the paper-roll for retaining the platen-scale in position; and means for controlling the said paper-roll and platen-scale independent of each other.

33. In a type-writing machine, the combination of the platen; a paper-roll adapted to rest against said platen; means for releasing the same independent of the platen-scale; and a platen-scale to rest against the said platen curved outwardly to embrace and protect the paper-roll and retain the paper when the roll is released.

In witness whereof we have hereunto set our hands and seals in the presence of two witnesses.

WILLIAM R. FOX. [L. S.]
GLENN J. BARRETT. [L. S.]

Witnesses:

WM. C. HOERTZ,
G. K. McMULLEN.