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PATENTED JULY 4, 1905.

W. R. FOX & G. J. BARRETT.

PAPER FEEDING MECHANISM FOR TYPE WRITERS.

APPLICATION FILED DEC. 6, 1902.

3 SHEETS—SHEET 1.

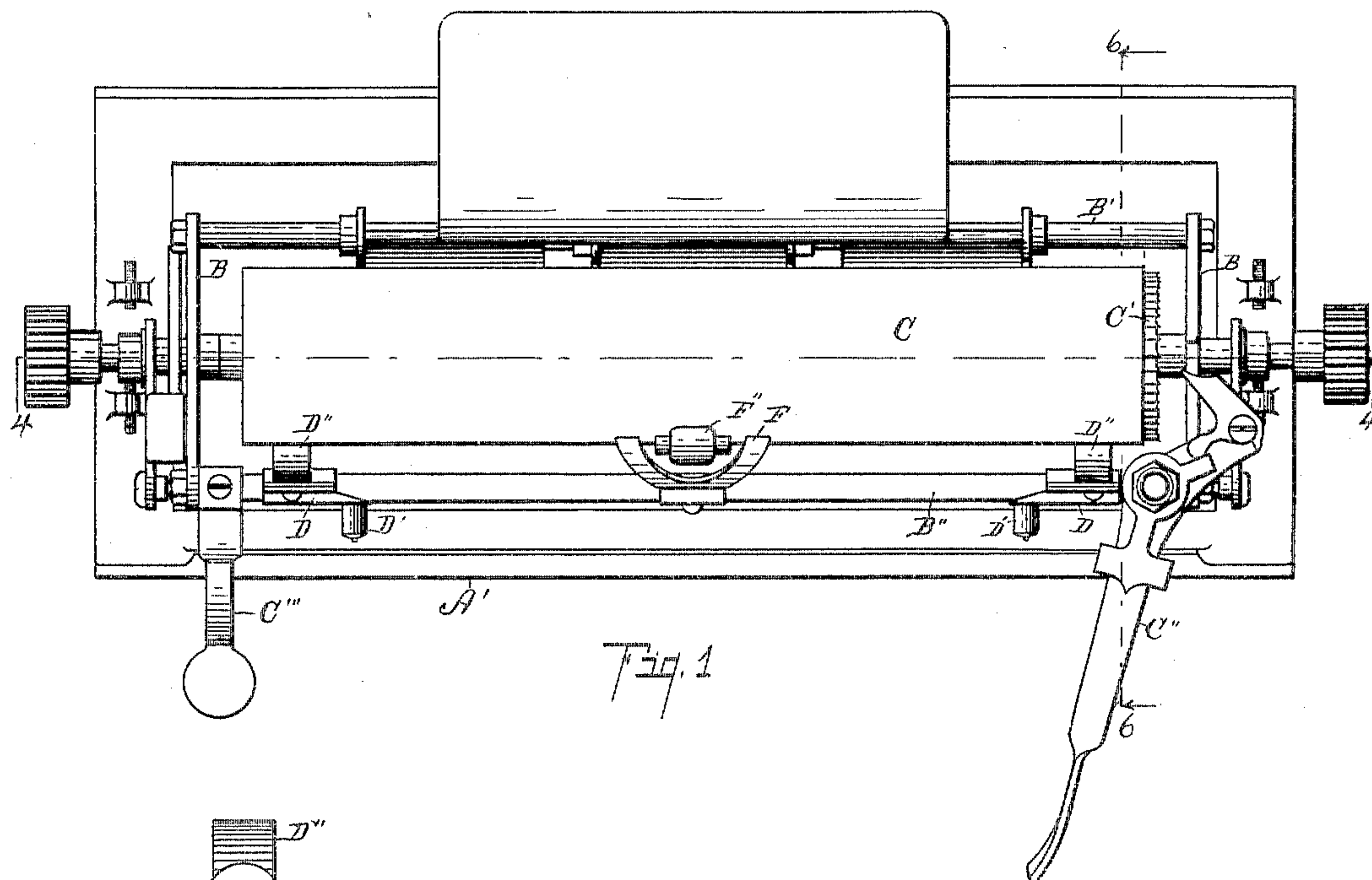


Fig. 1

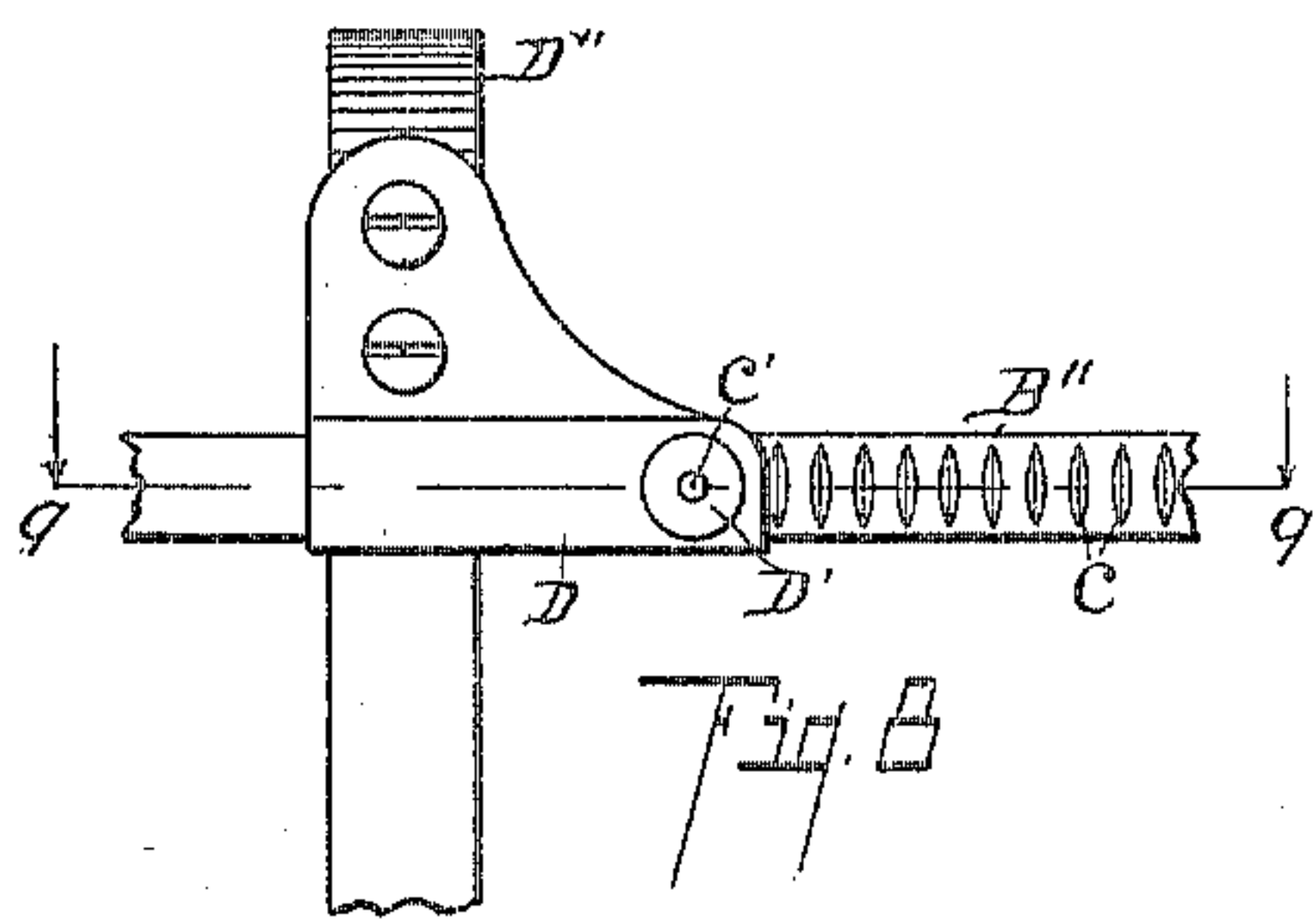


Fig. 2

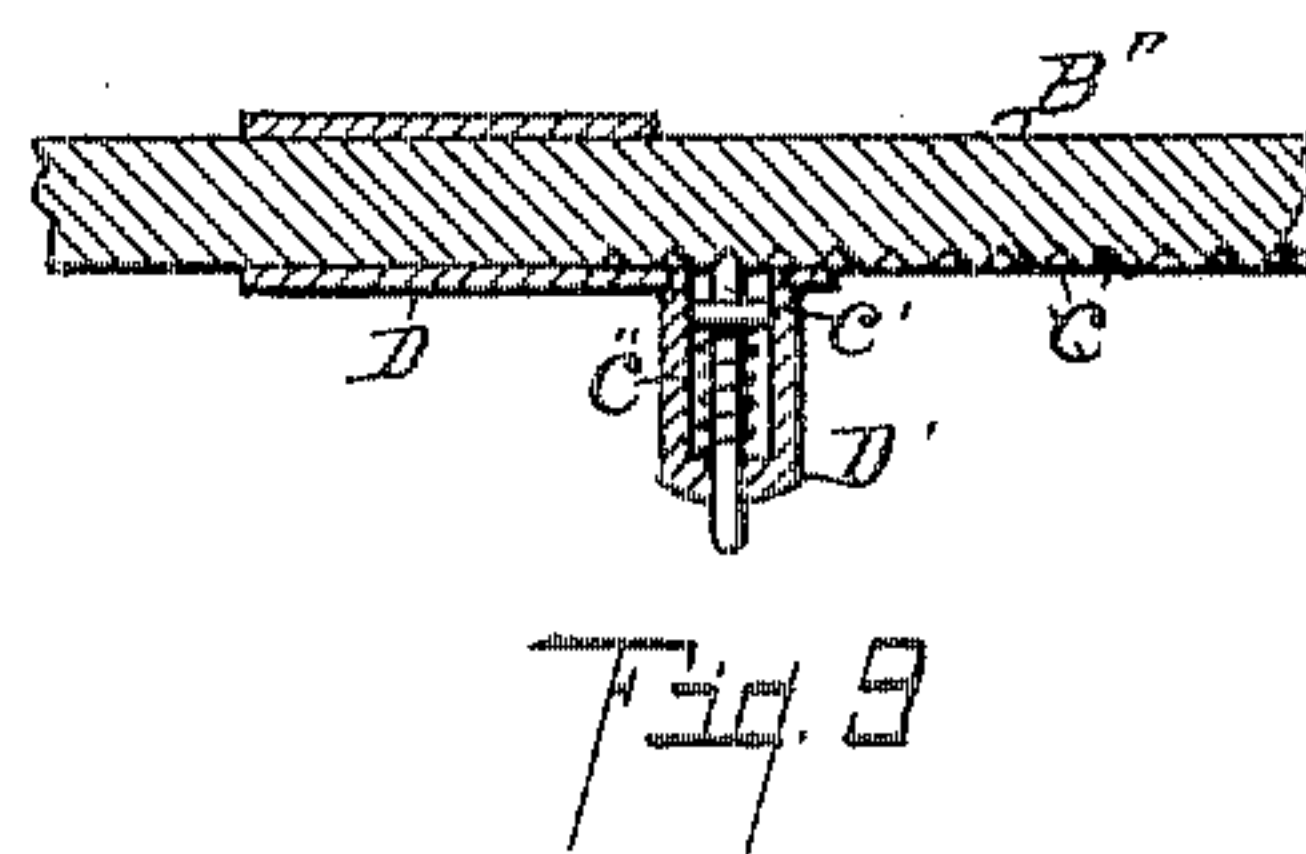


Fig. 3

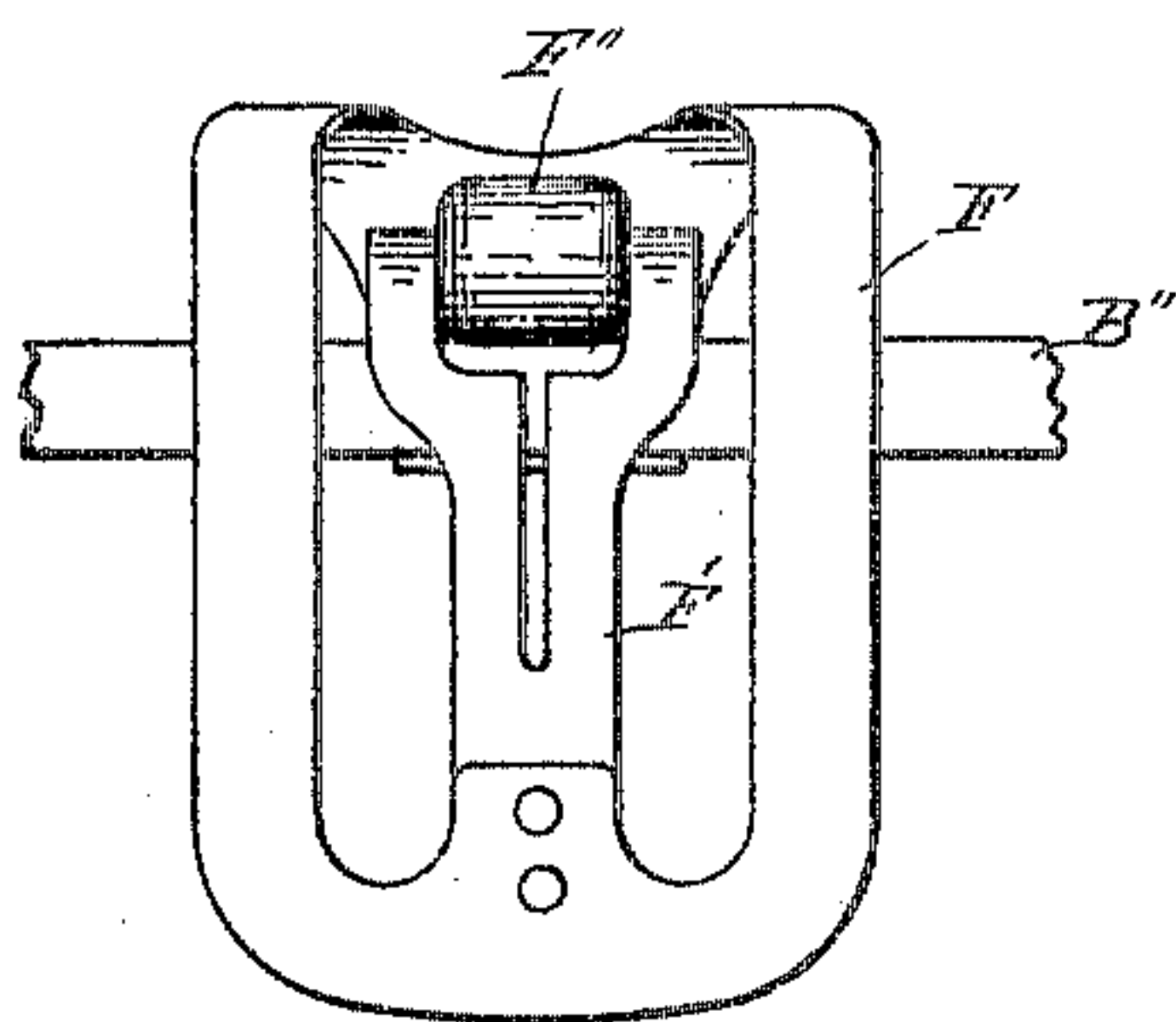


Fig. 4

Witnesses:

Ethel A. Teller

Otto A. Earl

Inventors

W. R. Fox & G. J. Barrett

By *Fred L. Chappell*
Att'y.

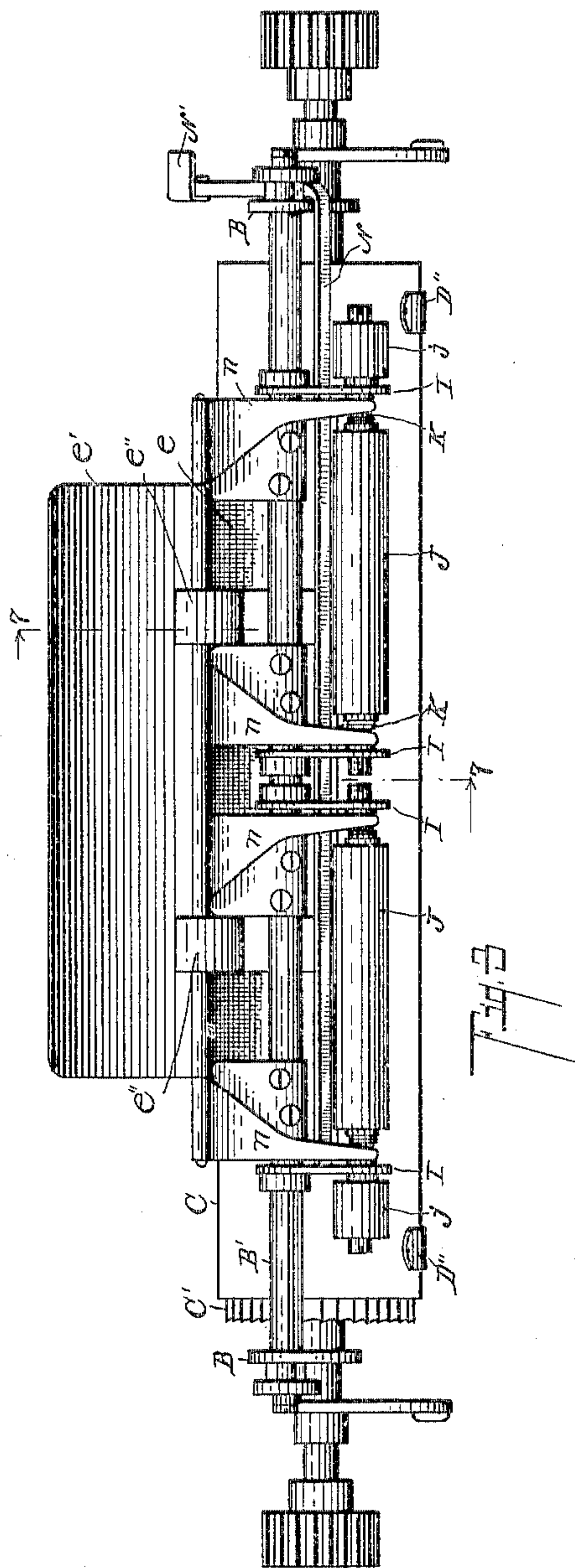
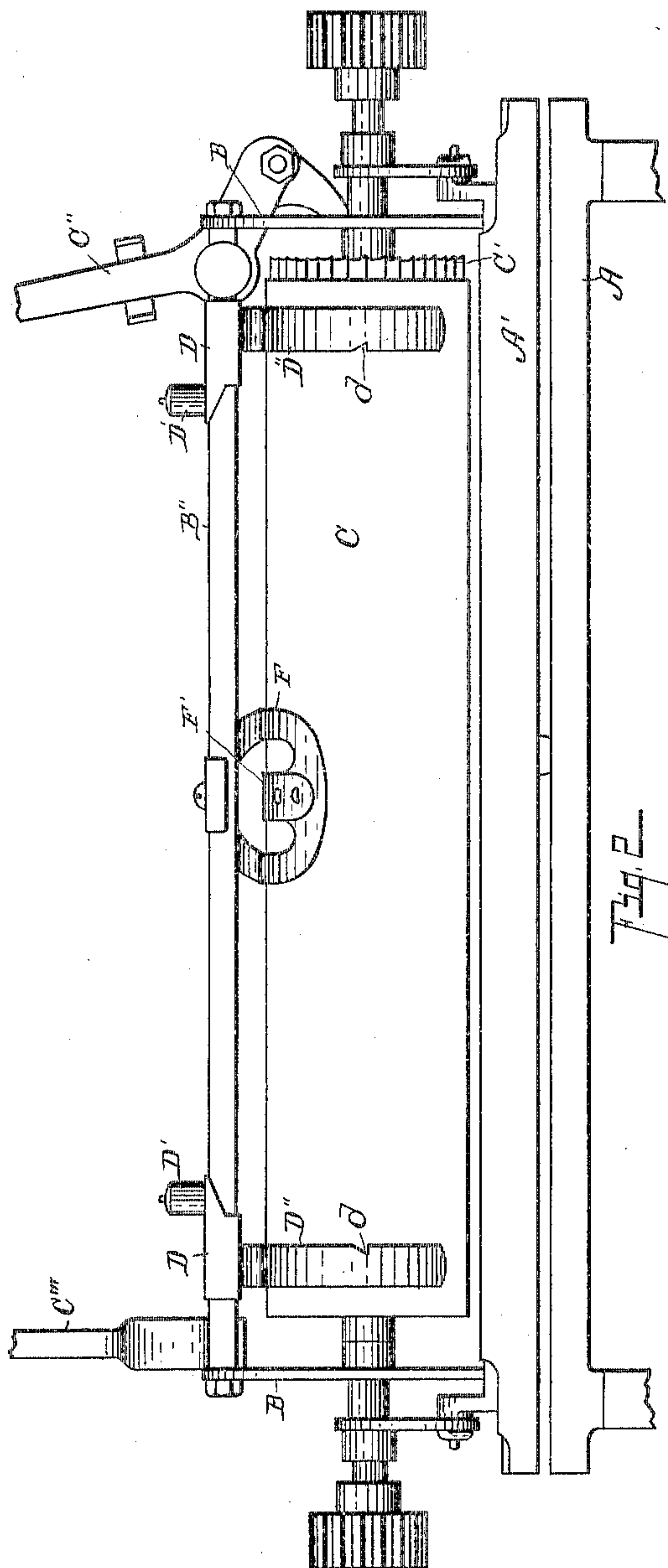
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3 SHEETS—SHEET 2.



Witnesses:

Ertel A. Teller

Otis A. Earl

Inventors

W. R. Fox & G. J. Barrett

By *Frederic L. Clappell*

Att'y.

No. 793,780.

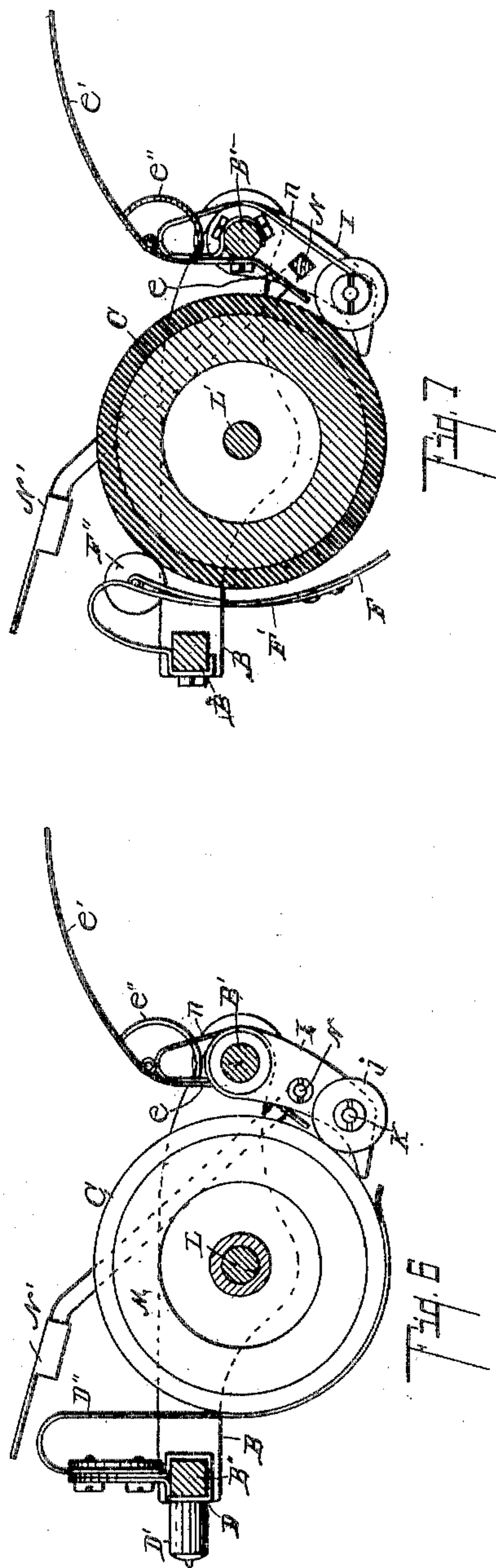
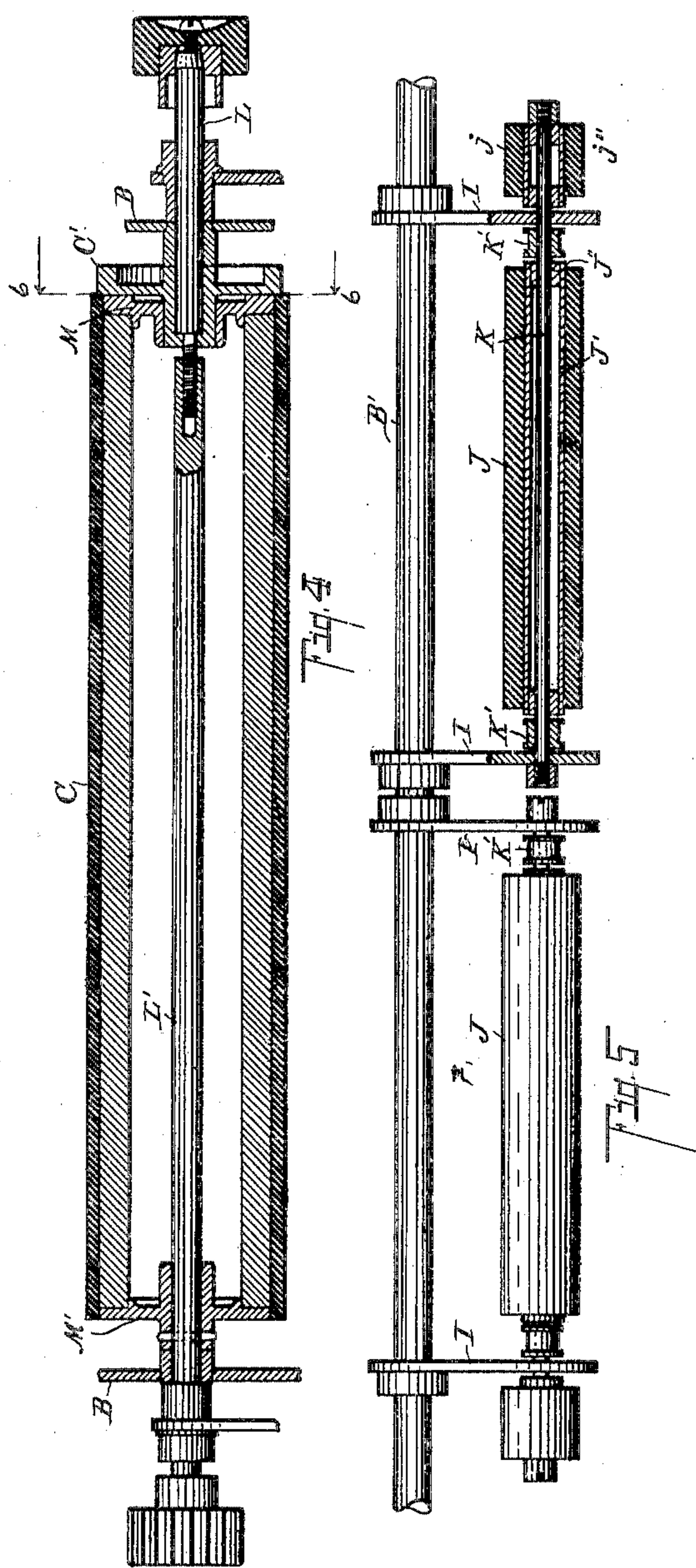
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3 SHEETS—SHEET 3.



Witnesses:

Ethel A. Teller

Otto A. Carl

Inventors

J. R. Fox & George J. Barrett

By *Fred Chappell*

~~Att'y.~~

UNITED STATES PATENT OFFICE.

WILLIAM R. FOX AND GLENN J. BARRETT, OF GRAND RAPIDS,
MICHIGAN, ASSIGNORS TO FOX TYPEWRITER CO. LTD., OF
GRAND RAPIDS, MICHIGAN.

PAPER-FEEDING MECHANISM FOR TYPE-WRITERS.

SPECIFICATION forming part of Letters Patent No. 793,780, dated July 4, 1905.

Application filed December 6, 1902. Serial No. 134,110.

To all whom it may concern:

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

10 This invention relates to improvements in type-writing machines, and pertains more particularly to improvements in the paper-feeding mechanism.

The objects of this invention are, first, to provide improved means of retaining the paper in position; second, to provide an improved means of releasing the feed-rolls; third, to provide an improved adjustable platen.

20 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 the following specification.

25 The invention is clearly defined, and pointed out in the claims.

A structure embodying the features of this invention is fully illustrated in the accompanying drawings, forming a part of this specification, in which—

30 Figure 1 is a plan view of the carriage and adjacent parts of a type-writing machine. Fig. 2 is a front elevation view of the same when the platen is swung to the position for inspection. Fig. 3 is a rear elevation view of the carriage detached from the machine. Fig. 4 is a detail longitudinal sectional view through the platen, showing the structure whereby the platen is adjustable, the same being taken on line 4 4 of Fig. 1. Fig. 5 is a detail view, partially in section, of the feed-rolls and supporting-arms, one of the rolls being shown in longitudinal section. Fig. 6 is a detail transverse sectional view of the platen and adjacent parts, taken on a line corresponding to line 6 6 of Fig. 1. Fig. 7 is an enlarged detail sectional view taken on the irregular sectional line 7 7 of Fig. 3.

Fig. 8 is an enlarged detail view of the adjusting means for one of the paper clips or guides. Fig. 9 is a detail sectional view on line 9 9 of Fig. 8. Fig. 10 is an enlarged detail perspective view of the central guide-roller and its support.

In the drawings 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 main frame of the type-writer. A' is the carriage-frame, which is adapted to reciprocate thereon in any well-known way. The platen frame or cradle is made up of side pieces B B and a back rod B' and a front rod B'', coupled thereto, and rests upon the main frame A' of the carriage and is shifted back and forth by suitable connections, which are described in our concurrent patent application, filed December 11, 1901, Serial No. 85,433. The platen C is covered with the usual rubber casing and is made hollow, having journals extending out at each end through the end pieces B B of the platen-cradle. The platen is provided with the usual ratchet-head C' at the right-hand end, which is actuated and controlled by the line-spacer lever C'', and a finger-lever C''' is provided at the left-hand end for tipping the platen up for inspection. The central shaft of the platen is divided into two parts L L', one at each end, on which the twirlers are fixed. The left-hand end M' is made integral with the platen, and the part L' is rigidly secured thereto by a suitable pin. The right-hand end (see Fig. 4) is made screw-threaded and is adapted to screw into a threaded hole in the right-hand end of the part L', whereby the two parts can be rigidly screwed together. The right-hand end M of the platen is perforated, and a ratchet-wheel C, by which the line-spacing is accomplished, is provided with a journal which extends inwardly through the head M. The shaft L turns freely in a socket formed in a sleeve carried by the ratchet-wheel C', which sleeve is shouldered in its inner end. The sleeve at this end is

journalled in the end piece B of the platen-frame, which thus embraces and supports the shaft L.

When it is desired to adjust the platen-roll, both of the twirlers are grasped and turned in opposite directions, loosening the screw, or the right-hand twirler is turned backward, loosening the screw, as the case may be. The platen is then set in the desired position and the right-hand twirler is turned to screw the shaft L tight in position and clamp the parts in their adjusted position. This adjustment is desirable, because it enables the accurate adjustment of the platen and for the reason that by this simple means wear and tear on the different ratchet mechanisms is entirely avoided. Further, this enables the operator to write on ruled paper of different widths of spacing, also providing for the changing of the position of the platen in relation to the printing-point, so that the whole surface of the platen comes in contact with the type.

The feed-rolls J J j j are best illustrated in Figs. 3, 5, and 6, where the supporting means for the same and the means for applying the spring-pressure fully appear. These rollers are composed of short pieces of metal tubing J' j', covered with rubber rolls J j. In the end of each piece of tubing a bushing J'' is placed, through which a suitable journal-bearing is formed. Supporting-arms I I I I, having paper-guiding projections at their lower extremities, extend from the rear rod B' of the platen-frame downwardly and forwardly into the proper position for receiving the shafts K, on which these rollers operate, there being a shaft for each roller J j, two or more rollers being provided and a pair of arms I I for each shaft. At each end of each roller J we provide small flanged rollers K' K', against which the pressure-springs n n engage, the pressure-springs being rigidly secured by suitable rivets or otherwise to the rear rod B' of the platen-cradle, the same being suitably extended and curved to secure the desired elasticity.

Through the arms I I extends a rod N, square or irregular in cross-section, as clearly appears in Fig. 7, which is deflected forwardly and upwardly at the left-hand end of the platen, terminating in a finger-lever N'. Owing to the fact that this rod is irregular in cross-section, when pressure is applied to the finger-lever portion N' the arms I will be deflected rearwardly and all of the rollers will be released on account of the action of said lever tending to turn the said rod N. This would have the same action if the feed-rollers were all supported on a single shaft; but by supporting them on separate shafts in connection with this device much greater freedom of movement is secured and a much better contact with the paper is insured.

A paper-apron e is secured to the rear stay-rod B' and extends downwardly and forwardly toward the point of tangency of the feed-rolls

and platen. To the upper edge of this apron is suitably hinged the paper-table e'. Ears e'' e'' are struck out of the apron and bent rearwardly and upwardly to serve as stops for the paper-table.

On the front stay-rod B'' are supported sliding spring-clip fingers D'', the same being carried on suitable sleeves D, which are adjustable back and forth on the said rod, the front of the said rod being notched at e, and a pin e', held normally in contact by a coiled spring e'', carried in suitable sockets D' in the finger-pieces, retaining the said spring-fingers adjustably in position at any point desired. The spring-fingers D'' are notched at d d to indicate the exact location of the printing-line, as clearly appears in Fig. 2. This enables the proper adjustment of the paper within the roll, so that it can be readily set to begin or insert the printing at any point desired.

The center paper-guide is best illustrated in Figs. 1, 7, and 10. It consists of a frame F, attached to the front stay-rod B'', extending upwardly therefrom and then downwardly in convenient form, as clearly appears in Fig. 7, and serves to catch the paper as it comes from under the platen-scale. The center portion of this paper-guide frame is cut out, as shown in Fig. 10, and at the bottom we attach the spring F', bearing a roller F'' at its upper end, adapted to rest with slight spring-pressure against the platen C, the position of the contact being clearly illustrated in Fig. 7, and a view of the structure from the front clearly appears in Fig. 10. The roller F'' is for the purpose of holding the paper against the platen C, thereby causing sufficient friction to feed the paper along on the actuation of the platen after the paper has passed from under the feed-rolls J. The spring is sufficiently yielding, so that it is not necessary to adjust it away from the platen when carbon work is being done.

We have shown our improved paper-feeding device for type-writers in the form which seems to us to be the most practical, though we desire to remark that the structure is capable of considerable variation in detail without departing from our invention, many of which changes we have indicated by the language of our description. Other changes in form will no doubt readily suggest themselves to those skilled in the art to which our invention appertains.

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

1. In a paper-feeding device for a type-writer, the combination of a platen-cylinder mounted in a suitable frame or cradle; a plurality of feeding-rollers J of yielding material, adapted to revolve upon suitable bearing-shafts K; supports I for said bearings or pivots K, depending from said platen-cylinder

frame or cradle, said supports having a paper-guiding projection arranged toward the platen at their lower extremities; flanged rollers K' mounted upon said bearing-pivots; a plurality of springs *n* attached to said platen-cylinder cradle or frame, and adapted to bear upon said flanged rollers; the release-rod N of irregular cross-section, extending through openings in said feed-roller supports I at a point between said feed-rollers and the platen-cylinder frame or cradle and fitting the same, one end of said release-rod being bent forwardly over the platen-shaft and provided with a suitable finger-piece, substantially as described.

2. In a paper-feeding device for typewriters, the combination of a platen-cylinder mounted in a suitable frame or cradle; a plurality of feeding-rollers J of yielding material, adapted to revolve upon suitable bearing-shafts K; supports I for said bearings or pivots K, depending from said platen-cylinder frame or cradle; flanged rollers K' mounted upon said bearing-pivots; a plurality of springs *n* attached to said platen-cylinder cradle or frame, and adapted to bear upon said flanged rollers; the release-rod N, irregular in cross-section, extending through openings in said feed-roller supports I fitting the same, one end of said release-rod being bent forwardly over the platen-shaft and provided with a suitable finger-piece, substantially as described.

3. In a paper-feeding device for typewriters, the combination of a platen-cylinder mounted in a suitable frame or cradle; a plurality of feeding-rollers J of yielding material, adapted to revolve upon suitable bearing-shafts K; supports I for said bearings or pivots K, depending from said platen-cylinder frame or cradle; flanged rollers K' mounted upon said bearing-pivots; a plurality of springs *n* attached to said platen-cylinder cradle or frame, and adapted to bear upon said flanged rollers; the release-rod N, irregular in cross-section, extending through openings in said feed-roller supports I, fitting the same, one end of said release-rod being bent forwardly over the platen-shaft, substantially as described.

4. In a paper-feeding device for typewriters, the combination of a platen-cylinder mounted in a suitable frame or cradle; a plurality of feeding-rollers of yielding material adapted to revolve upon suitable shafts or pivots; supports for said bearing shafts or pivots, depending from said platen-cylinder frame or cradle, said supports having a guiding projection toward the platen at their lower extremities; flanged rollers mounted upon said bearing-pivots; and a plurality of springs attached to said platen-cylinder frame or cradle and adapted to bear upon said flanged rollers; a release-rod of irregular cross-section, extending through openings in said feed-roller

supports, fitting the same, one end of said release-rod being bent forward over the platen-shaft, substantially as described.

5. In a paper-feeding device for typewriters, the combination of a platen-cylinder mounted in a suitable frame or cradle; a plurality of feeding-rollers of yielding material adapted to revolve upon suitable shafts or pivots; supports for said bearing shafts or pivots, depending from said platen-cylinder frame or cradle; flanged rollers mounted upon said bearing shafts or pivots; and a plurality of springs attached to said platen-cylinder frame or cradle and adapted to bear upon said flanged rollers; a release-rod of irregular cross-section, extending through openings in said feed-roller supports, fitting the same, one end of said release-rod being bent forward over the platen-shaft, substantially as described.

6. In a paper-feeding device for typewriters, the combination of a platen-cylinder mounted in a suitable frame or cradle; a plurality of feeding-rollers of yielding material adapted to revolve upon suitable shafts or pivots; supports for said bearing shafts or pivots, depending from said platen-cylinder frame or cradle; flanged rollers mounted upon said bearing-pivots; and a plurality of springs attached to said platen-cylinder frame or cradle and adapted to bear upon said flanged rollers; a release-rod of irregular cross-section, extending through openings in said feed-roller supports, one end of said release-rod being bent forward over the platen-shaft, substantially as described.

7. In a paper-feeding device for typewriters, the combination of a platen-cylinder mounted in a suitable frame or cradle; a plurality of feeding-rollers of yielding material adapted to revolve upon suitable shafts or pivots; supports for said bearing shafts or pivots, depending from said platen-cylinder frame or cradle; rollers mounted upon said bearing-pivots; and a plurality of springs attached to said platen-cylinder frame or cradle and adapted to bear upon said rollers; a release-rod of irregular cross-section, extending through openings in said feed-roller supports, one end of said release-rod being bent forward over the platen-shaft, substantially as described.

8. In a paper-feeding device for typewriters, the combination of a platen-cylinder mounted in a suitable frame or cradle; a plurality of feeding-rollers of yielding material adapted to revolve upon suitable shafts or pivots; supports for said bearing shafts or pivots, depending from said platen-cylinder frame or cradle; rollers mounted upon said bearing-pivots; and a plurality of springs attached to said platen-cylinder frame or cradle and adapted to bear upon said rollers; a release-rod of irregular cross-section extend-

ing through openings in said feed-roller supports, one end of said release-rod being bent forward, substantially as described.

9. In a paper - feeding device for type-writers, the combination of a platen-cylinder mounted in a suitable frame or cradle; a plurality of feeding-rollers of yielding material, adapted to revolve upon suitable shafts or pivots; supports for said bearing shafts or pivots, depending from said platen - cylinder frame or cradle; a plurality of springs attached to said platen - cylinder frame or cradle; a release-rod of irregular cross-section extending through openings in said feed-roller supports, one end of said release-rod being bent forward, substantially as specified.

10. In a paper - feeding device for a type-writing machine, the combination of a main platen-roll; feed-rolls on a suitable shaft carried by pivoted arms; a release-rod of irregular cross-section extending through said arms, and deflected upwardly and forwardly in a lever for the release of said feed-rolls, coacting for the purpose specified.

11. In a type-writing machine, the combination of a paper table or leaf hinged to a paper-apron, normally extending backwardly, and a stop for limiting the swing of said paper table or leaf, substantially as described.

12. In a type-writing machine, a paper-apron attached to the rear of the platen frame or cradle, having its lower extremity bent forward and downward toward the point of contact of the feed-rolls and platen, and a paper-table secured to the top of said apron, substantially as described.

13. In a type-writing machine, a paper-apron attached to the rear of the platen cradle or frame, and having its lower extremity bent

forward toward the point of contact of the feed-rolls and platen; a paper-table hinged to the upper edge thereof, with suitable stops for holding it in position.

14. In a type-writing machine, the combination of a platen; a frame or cradle therefor; a central paper - guide attached to said frame or cradle, the main portion F of which is formed of sheet metal and extended upwardly from said cradle and folded downwardly in proximity to the platen - cylinder extended transversely to the said platen and with its central portion cut out; a forked spring F' secured to the lower inner portion of said guide and extended upwardly within said cut-out portion; and a roller F'' secured between the divided parts of said spring, adapted to bear upon the said platen centrally of said frame F, coacting as specified.

15. In a type-writing machine, the combination of a platen; a frame or cradle therefor; a central paper - guide attached to said frame or cradle, the main portion F of which is formed of sheet metal extended transversely to the said platen and with its central portion cut out; a forked spring F' secured to the inner portion of said guide and extended within the cut-out portion; and a roller F'' secured between the divided parts of said spring adapted to bear upon the said platen centrally of said frame F, coacting as specified.

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:

EDWARD G. MATTER,
GEO. K. McMULLEN.