

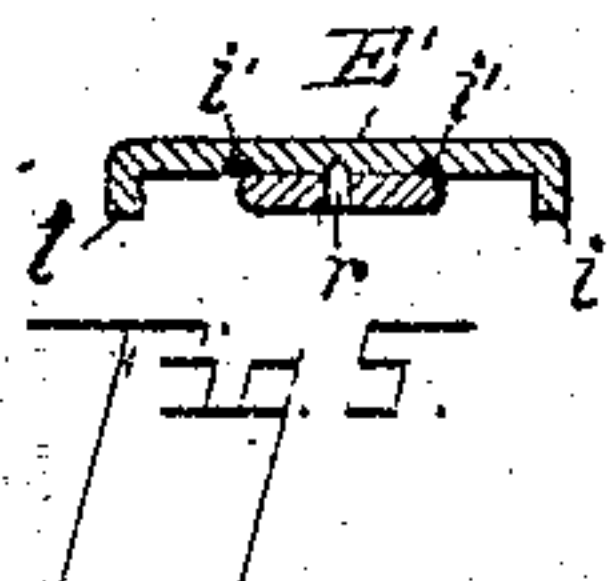
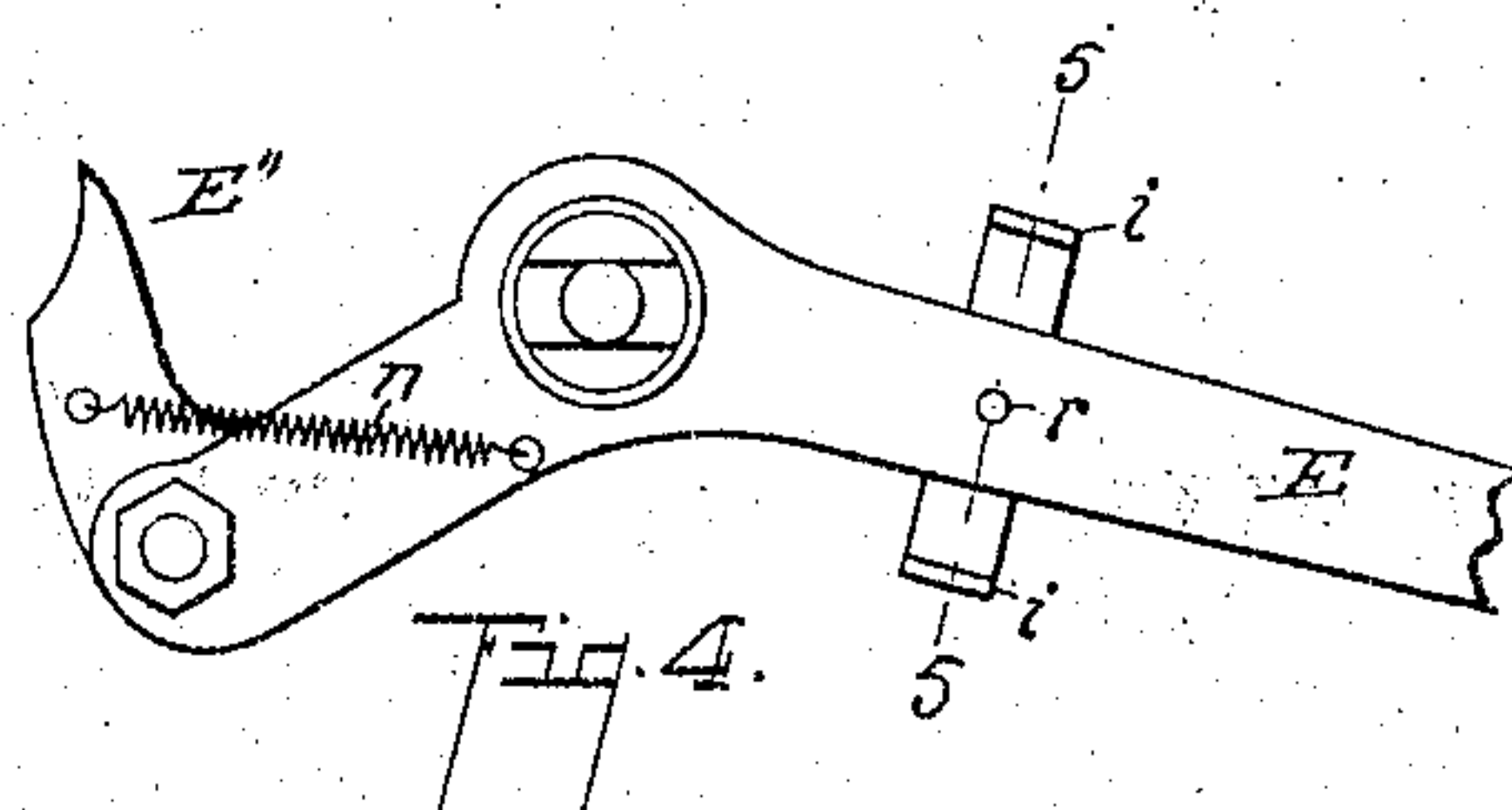
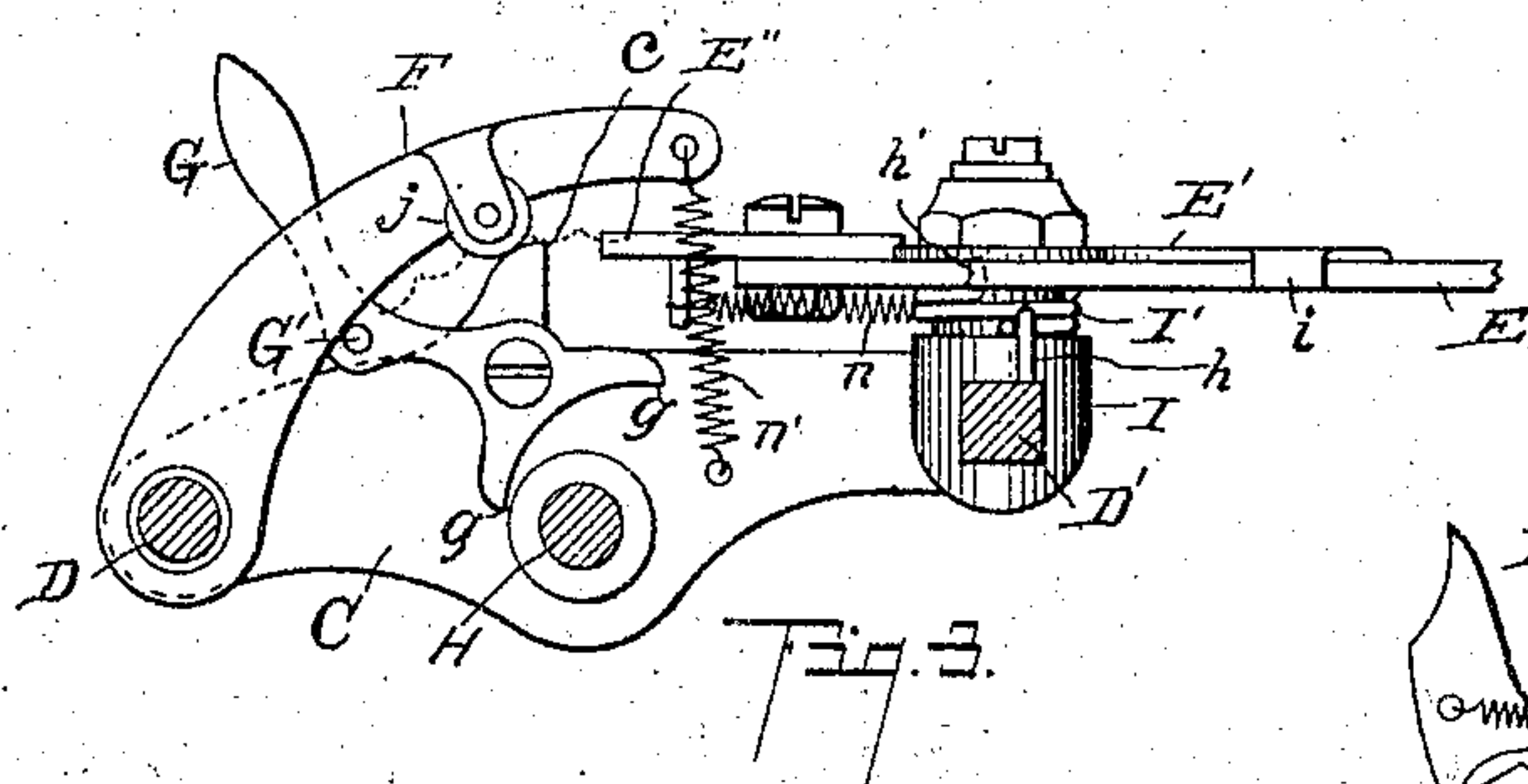
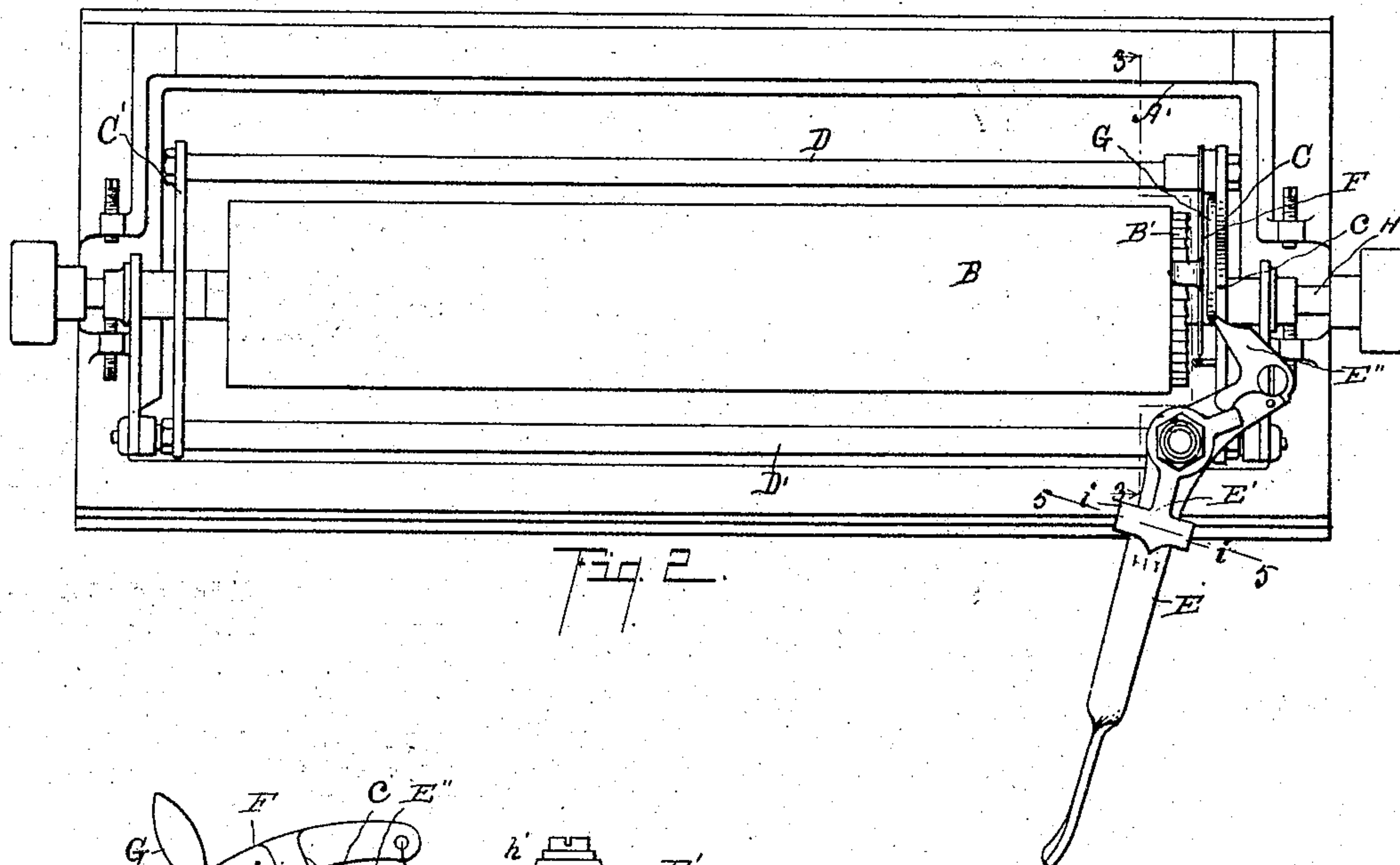
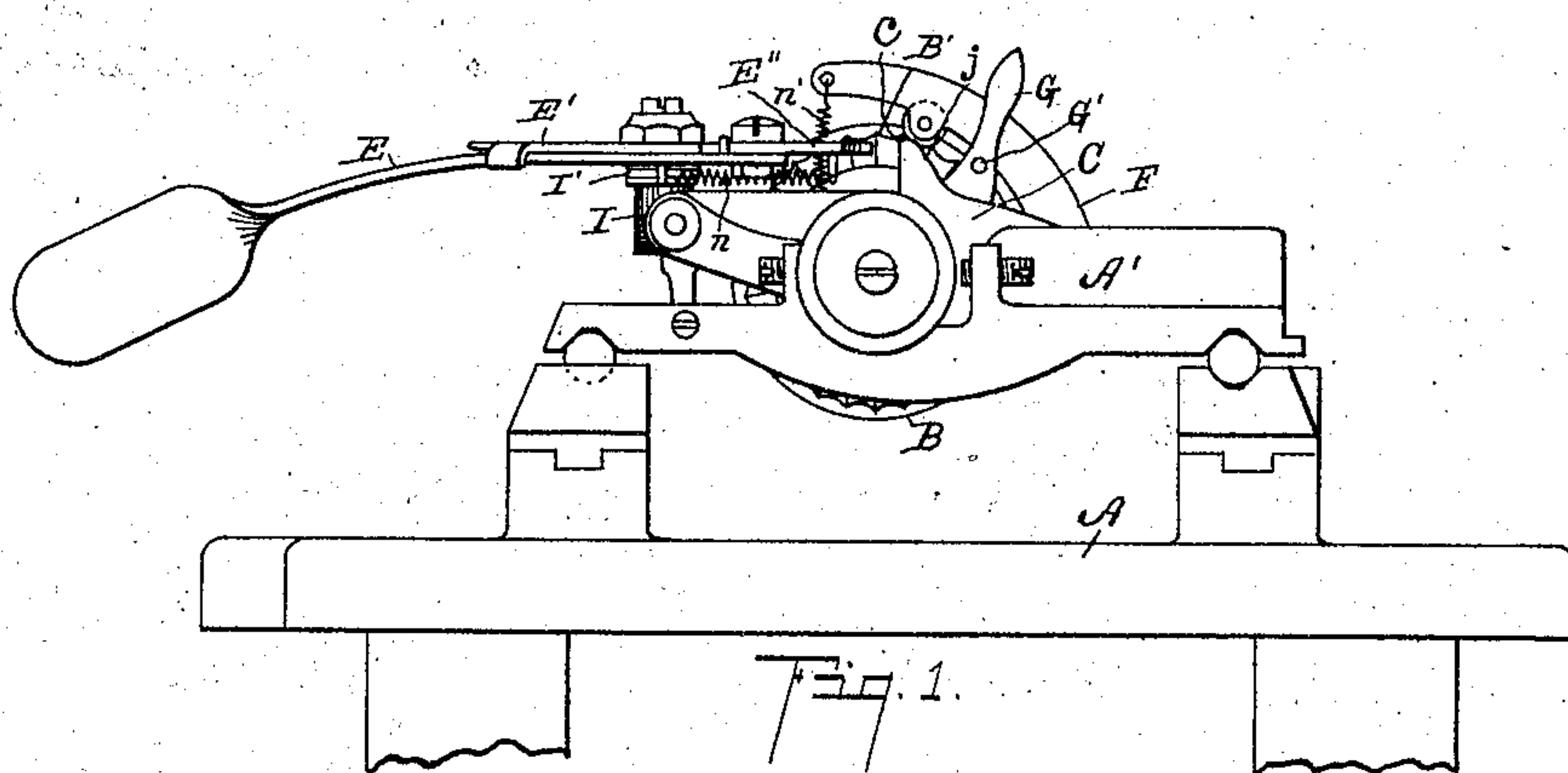
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PATENTED JAN. 31, 1905.

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

LINE SPACING MECHANISM FOR TYPE WRITING MACHINES.

APPLICATION FILED DEC. 6, 1902.



Witnesses:

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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.

LINE-SPACING MECHANISM FOR TYPE-WRITING MACHINES.

SPECIFICATION forming part of Letters Patent No. 781,197, dated January 31, 1905.

Application filed December 6, 1902. Serial No. 134,111.

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 Line-Spacing Mechanism for Type-Writing Machines, of which the following is a specification.

10 This invention relates to improvements in the line-spacing mechanism for type-writer machines.

The object of this invention is to provide a simple efficient means for effecting the line-spacing which shall be readily and easily adjustable for throwing the platen one, two, or three spaces and which shall be effective and accurate to just whatever position it is placed.

20 The objects of the invention pertaining to the details of the structure will readily appear from the specification to follow.

We accomplish the objects of our invention by the devices and means described in this specification.

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

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

30 Figure 1 is an end elevation view of the upper part of a type-writing machine and a type-writer carriage with our improved spacing mechanism in position. Fig. 2 is a plan view of the carriage, platen, and spacer mechanism. Fig. 3 is a detail sectional view on the irregular line 3-3 of Fig. 2, showing the details of the arrangement of the different parts. Fig. 4 is an inverted plan view of the lever and spacer-pawl. Fig. 5 is a detail sectional view on a line corresponding to line 5-5 of Figs. 2 and 4, showing the means of adjusting the throw of the spacer-pawl.

45 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.

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 a type-writing machine. A' is the carriage riding thereon, all adjacent parts being omitted, as they do not pertain to this invention.

The usual platen B is mounted on the spindle H, which is carried by the cradle, which is made up of the side plates C C' and the front and rear rods D D'.

E is the line-spacer lever in the form of a bell-crank with a spoon-handle at one extremity and is pivoted to a projection I of the platen frame or cradle and adapted to swing in the line of travel of the carriage. The advantage of having lever pivoted in the position is that the line-spacing can be accomplished at the same movement as the running of the carriage, no double movement being required, and if it is desired to space without moving the carriage a lighter pressure will accomplish it. The line-spacer pawl E' is pivotally mounted upon the lever E opposite to the end bearing the spoon-shaped handle. The line-spacer gage E' for determining whether the spacing will be one, two, or more spaces each time the lever is thrown back is provided. This gage is also somewhat in the form of a bell-crank and swings upon the same pivotal point as the lever E. At the forward end of this gage is a pointer, which indicates whether the spacing will be one, two, or more spaces, according to the graduation upon the line-spacer lever. At the same extremity of this gage at right angles to a line drawn through the pointer and the said pivotal point are bent downwardly two ears i, as shown in Fig. 5. In the center of the lever E and at a point alining with the ears i is inserted a hardened point or pin r, which fits into notches or grooves i' in the under side of the gage E', as shown. These notches or grooves are of the desired number and distance apart. The gage is so formed that when bolted to the lever E at its

pivotal point the end having the pointer will bear against the lever E with a slight spring tension. By reference again to Fig. 2, a projection will be noted upon the pawl E',
 5 opposite to the pointed end thereof, which projection normally rests against that portion of the gage E' at the end opposite to the pointer and ears referred to. This pawl E' is held in its normal position by means of the
 10 spring n. (Clearly shown in Fig. 4.)

The operation of the line-spacing device is as follows: When a single spacing is desired between the printing-lines, the left ear i of the spacing-gage (see Fig. 5) is forced until
 15 the pin r engages the left notch or groove i' in the under side of said gage. When in this position, the opposite end of the gage against which the projection on the end of the pawl E' normally rests holds the pawl
 20 out of engagement with all but the last one of the teeth of the ratchet-head B' which it would be possible for it to engage. When the carriage is returned to the right for the beginning of a new line by means of the line-
 25 spacer lever E, the force necessary to do this swings it upon its pivot, and the gage when set as above described allows the pawl E' to miss all but the last tooth in the ratchet-wheel B' in its throw, and the spacing between the
 30 lines will be single. Upon the right end of the platen cradle-frame is an upward projection c, (see Fig. 3,) which acts as a stop for the throw of the pawl E'. When double spacing is desired, the pin r is made to engage
 35 the central notch or groove in the gage, as shown in Fig. 5, which allows the pawl to enter the ratchet-teeth one tooth ahead of its setting, as previously described, or allows it to engage two teeth in its throw. When a
 40 triple spacing is desired, the pin r is made to engage the right-hand notch or groove i', and the pawl E' is thereby allowed to engage three teeth.

The lever E is held normally in the initial
 45 position by the coiled spring I' about the supporting-standard of the lever. One end of the spring is turned outwardly to engage a notch in the lever, and the other engages a projecting pin h.

The ratchet-head B' is as shown in Figs. 1 and 3, coöperating with which is a detent-wheel j. This detent-wheel is for the purpose of preserving an equal distance between the printing-lines and to prevent the cylinder
 55 from turning while the type-bars are being operated. The detent-wheel j is carried by the pivoted arm F, which is held under spring tension by the spring n'. When it is desired to move the platen freely, the wheel j may be
 60 lifted out of engagement by shifting the lever G, which is pivoted to the platen-cradle and carries a projecting pin G', which raises the lever and lifts the wheel j out of engagement. The ends g g of the lever G limit the move-

ment of the same by coming in contact with
 65 the platen-shaft, as shown in Fig. 3. In the face of the said ratchet-wheel are teeth, co-operating with which is the line mechanism hereinbefore described.

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

1. In a type-writing machine, a line-spacing device comprising the combination of a print-
 75 ing-cylinder with a ratchet-head; a frame or cradle for said printing-cylinder; a line-spacer lever E pivotally connected to the printing-cylinder frame, and adapted to swing in the line of the travel of the carriage; a spring I' for returning said line-spacer lever to normal
 80 position; a pawl E' having a projection at one end and a point at the other, which point is adapted to coöperate with the teeth in said ratchet-head, said pawl E' being pivotally mounted at one end of said line-spacer lever
 85 E; a spring n for returning said pawl to normal position; a gage E' in the form of a bell-crank pivoted at the pivotal point of said spacing-lever, one extremity of which gage is adapted to act as a stop for the projection
 90 of said pawl E', and the other end having downwardly-projecting ears for limiting the throw of said gage, and a detent for said gage consisting of the pin r, projecting from said
 95 spacing-lever E, and slots in the under side of said gage adapted to be engaged by said pin r for holding said gage in its adjusted position, substantially as described.

2. In a type-writing machine, a line-spacing
 100 device comprising the combination of a printing-cylinder with a ratchet-head; a frame or cradle for said printing-cylinder; a line-spacer lever pivotally mounted upon said printing-cylinder frame, and adapted to swing in the
 105 line of travel of said carriage; a spring for returning said line-spacing lever to normal position; a pawl having a projection at one end and a point at the other adapted to co-operate with the teeth in said ratchet-head, said pawl being pivotally mounted upon one
 110 end of said line-spacer lever; a spring for returning said pawl to normal position; a gage in the form of a bell-crank pivoted at the pivotal point of said spacing-lever, one extremity of which gage is adapted to act as a stop for
 115 the projection on said pawl, and the other end having two downwardly-projecting ears for limiting the throw of said gage; and a detent for said gage consisting of a pin projecting from the upper side of said spacer-lever and
 120 slots in the under side of said gage adapted to be engaged by said pin for holding said gage in its adjusted position, substantially as described.

3. In a type-writing machine, a line-spacing
 125 device comprising the combination of a printing-cylinder with a ratchet-head; a frame or cradle for said printing-cylinder; a line-spacer

lever pivotally mounted upon said printing-cylinder frame; a spring for returning said line-spacing lever to normal position; a pawl having a projection at one end and a point at the other adapted to cooperate with the teeth in said ratchet-head, said pawl being pivotally mounted upon one end of said line-spacing lever; a spring for returning said pawl to normal position; a gage in the form of a bell-crank pivoted at the pivotal point of said spacing-lever, one extremity of which gage is adapted to act as a stop for the projection on said pawl, and the other end having two downwardly-projecting ears for limiting the throw of said gage; and a detent for said gage consisting of a pin projecting from the upper side of said spacer-lever and slots in the under side of said gage adapted to be engaged by said pin for holding said gage in its adjusted position, substantially as described.

4. In a type-writing machine, a line-spacing device comprising the combination of a printing-cylinder with a ratchet-head; a frame or cradle for said printing-cylinder; a lever pivotally mounted upon said printing-cylinder frame; a pawl having a projection at one end and a point at the other adapted to cooperate with the teeth in said ratchet-head, said pawl being pivotally mounted upon one end of said spacing-lever; a spring for returning said pawl to normal position; a gage in the form of a bell-crank pivoted at the pivotal point of said spacing-lever, one extremity of which gage is adapted to act as a stop for the projection on said pawl, and the other end having two downwardly-projecting ears for limiting the throw of said gage; and a detent for said gage consisting of a pin projecting from the upper side of said spacer-lever and slots in the under side of said gage adapted to be engaged by said pin for holding said gage in its adjusted position substantially as described.

5. In a type-writing machine, a line-spacing device comprising the combination of a printing-cylinder with a ratchet-head; a frame or cradle for said printing-cylinder; a lever pivotally mounted upon said printing-cylinder frame; a pawl having a projection at one end and a point at the other adapted to cooperate with the teeth in said ratchet-head, said pawl being pivotally mounted upon one end of said spacing-lever; a gage in the form of a bell-crank pivoted at the pivotal point of said spacing-lever, one extremity of which gage is adapted to act as a stop for the projection on said pawl, and the other end having two downwardly-projecting ears for limiting the throw of said gage; and a detent for said gage consisting of a pin projecting from the upper side of said spacer-lever and slots in the under side of said gage adapted to be engaged by said pin for holding said gage in its adjusted position, substantially as described.

6. In a type-writing machine, a line-spacing

device comprising the combination of a printing-cylinder with a ratchet-head; a frame or cradle for said printing-cylinder; a lever pivotally mounted upon said printing-cylinder frame; a pawl having a projection at one end and a point at the other adapted to cooperate with the teeth in said ratchet-head, said pawl being pivotally mounted upon one end of said spacing-lever; a gage in the form of a bell-crank pivoted on said spacing-lever, one extremity of which gage is adapted to act as a stop for the projection on said pawl, and the other end having two downwardly-projecting ears for limiting the throw of said gage; and a detent for said gage consisting of a pin projecting from the upper side of said spacer-lever and slots in the under side of said gage adapted to be engaged by said pin for holding said gage in its adjusted position, substantially as described.

7. In a type-writing machine, a line-spacing device comprising the combination of a printing-cylinder with a ratchet-head; a frame or cradle for said printing-cylinder; a lever pivotally mounted upon said printing-cylinder frame; a pawl having a projection at one end and a point at the other adapted to cooperate with the teeth in said ratchet-head, said pawl being pivotally mounted upon one end of said spacing-lever; a gage in the form of a bell-crank pivoted on said spacing-lever, one extremity of which gage is adapted to act as a stop for the projection on said pawl, and the other end having two ears for limiting the throw of said gage; and a detent for said gage consisting of a pin projecting from the upper side of said spacer-lever and slots in the under side of said gage adapted to be engaged by said pin for holding said gage in its adjusted position, substantially as described.

8. In a type-writing machine, a line-spacing device comprising the combination of a printing-cylinder with a ratchet-head; a frame or cradle for said printing-cylinder; a lever pivotally mounted upon said printing-cylinder frame; a pawl having a projection at one end and a point at the other adapted to cooperate with the teeth in said ratchet-head; said pawl being pivotally mounted upon one end of said spacing-lever; a gage in the form of a bell-crank pivoted on said spacing-lever, one extremity of which gage is adapted to act as a stop for the projection on said pawl, and the other end having two ears for limiting the throw of said gage; and a detent for said gage holding said gage in its adjusted position, substantially as described.

9. In the line-spacing mechanism for type-writing machines, the combination of a platen ratchet-wheel with teeth on its face; a lever operating in a plane parallel to the axis of the platen; a pawl pivoted to said lever in position to act on the said ratchet-teeth when moved toward the face of the wheel; a stop

on the platen-supporting frame in proximity
to said ratchet-wheel, whereby the end of the
pawl will extend between said stop and the
ratchet and the pawl and ratchet be securely
5 locked in position by contact with the said
stop.

In witness whereof we have hereunto set our

hands and seals in the presence of two wit-
nesses.

WILLIAM R. FOX. [L. S.]

GLENN J. BARRETT. [L. S.]

Witnesses:

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