

No. 628,454.

Patented July 11, 1899.

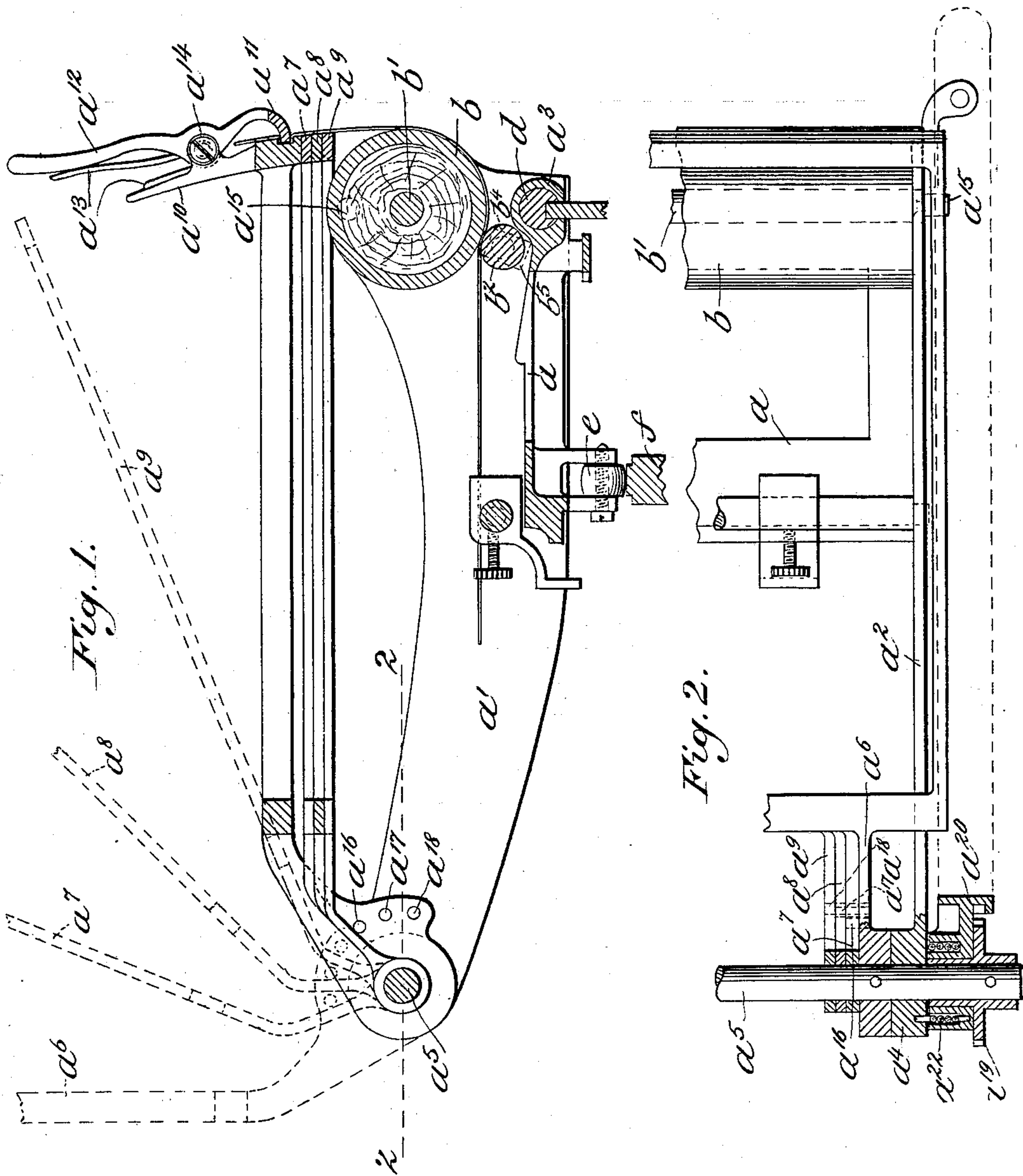
H. DURUZ.

PAPER FEEDING MECHANISM FOR TYPE WRITERS OR THE LIKE.

(Application filed Feb. 8, 1899.)

(No Model.)

3 Sheets—Sheet 1.



Witnesses
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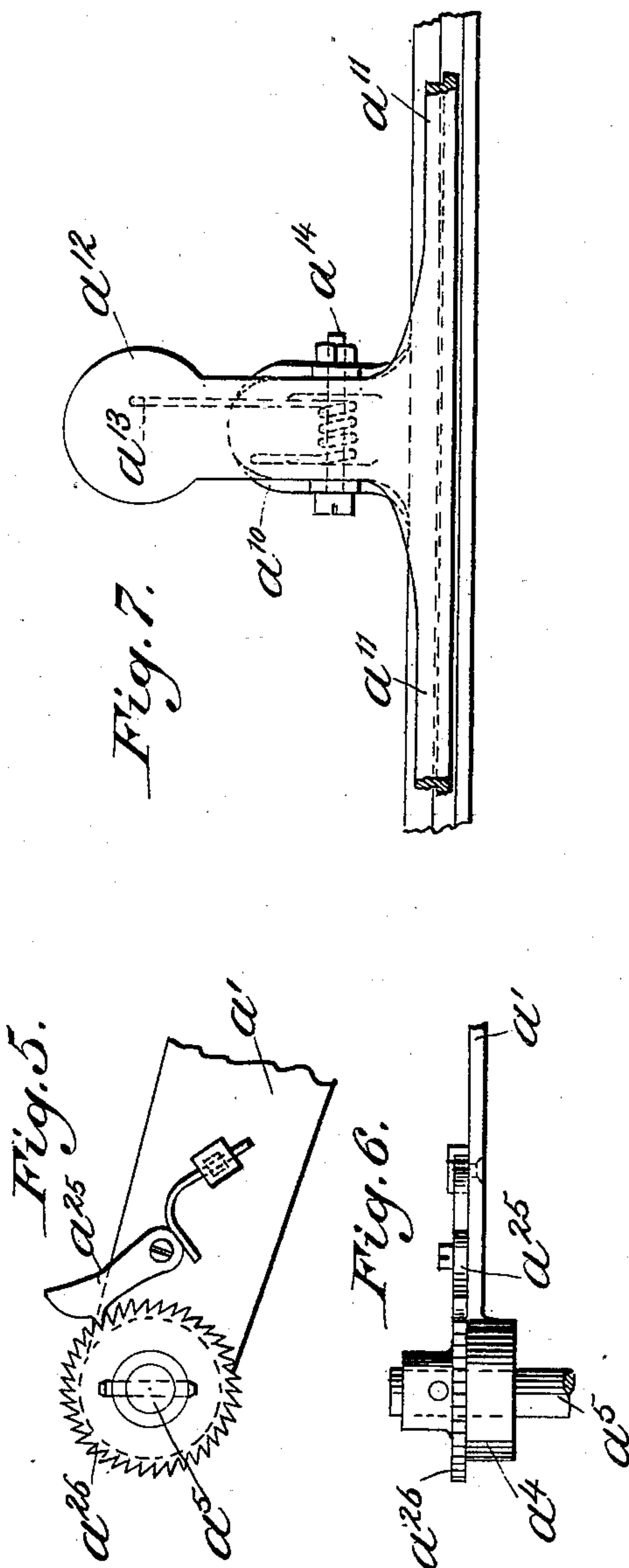
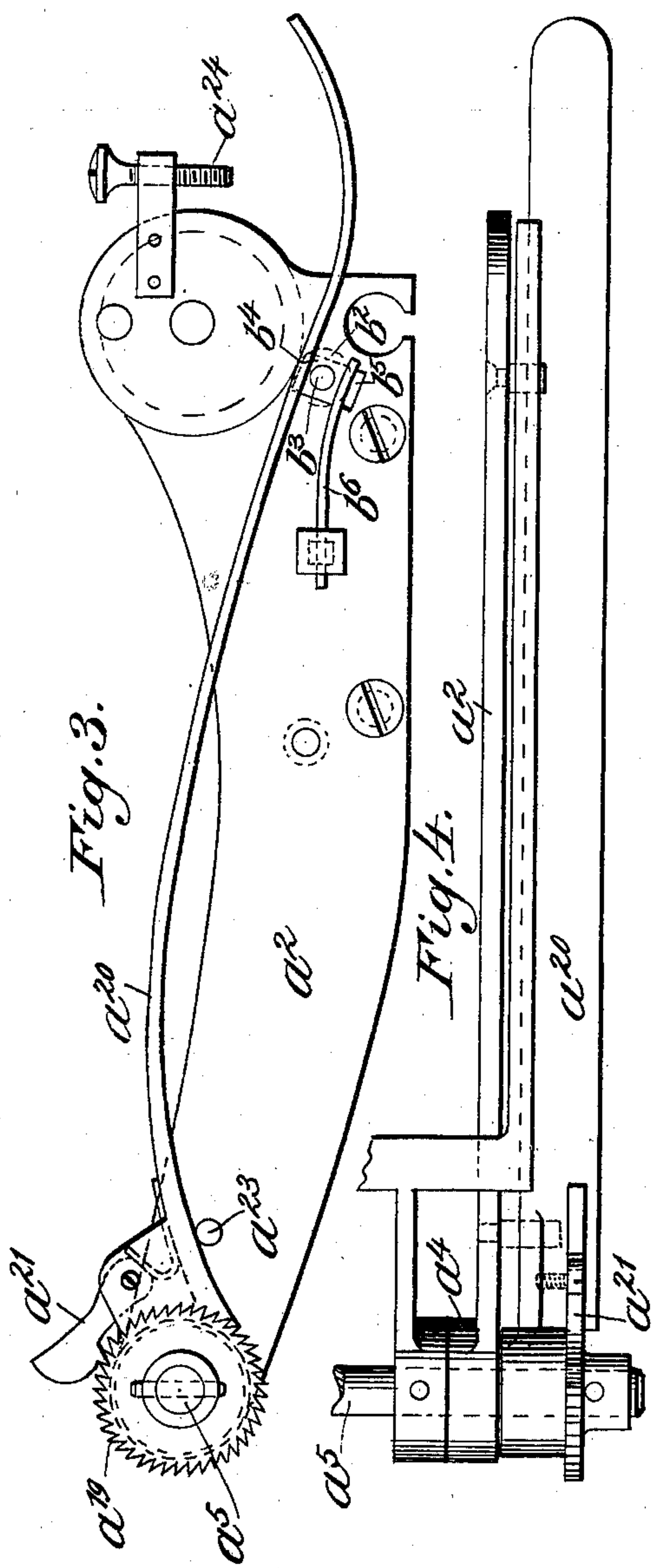
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3 Sheets—Sheet 2.



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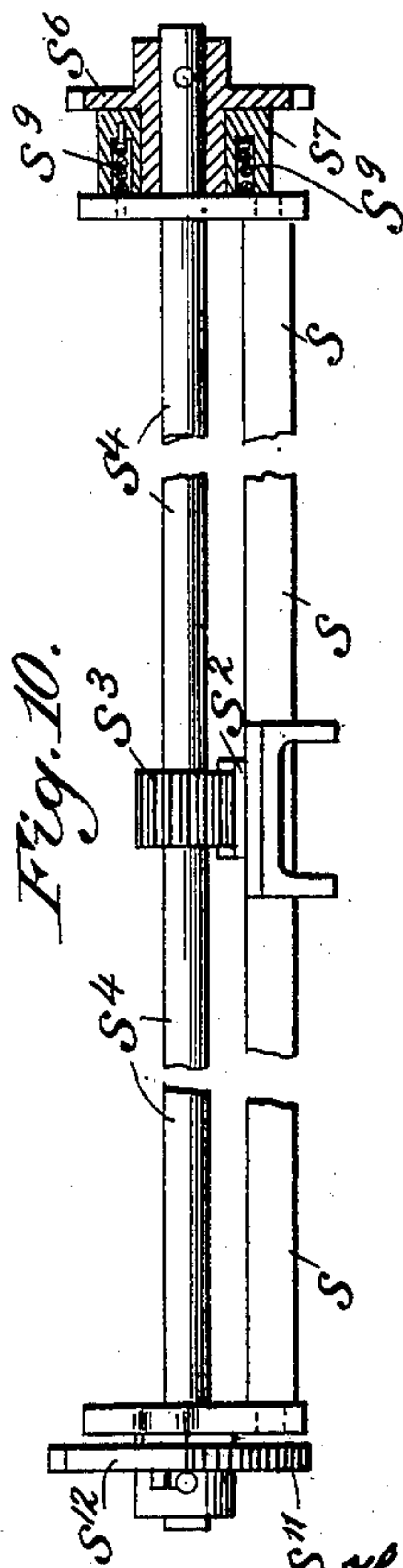
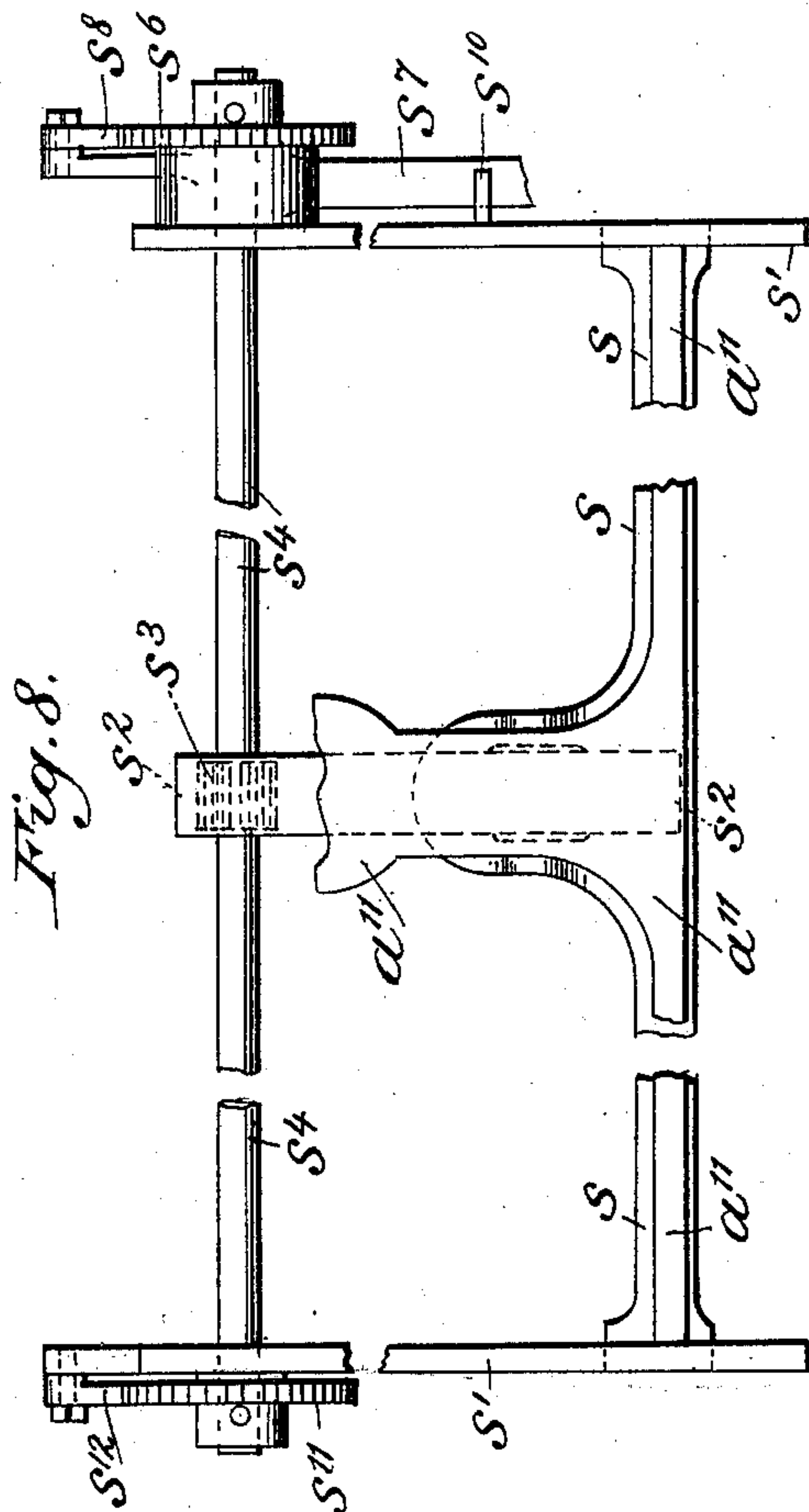
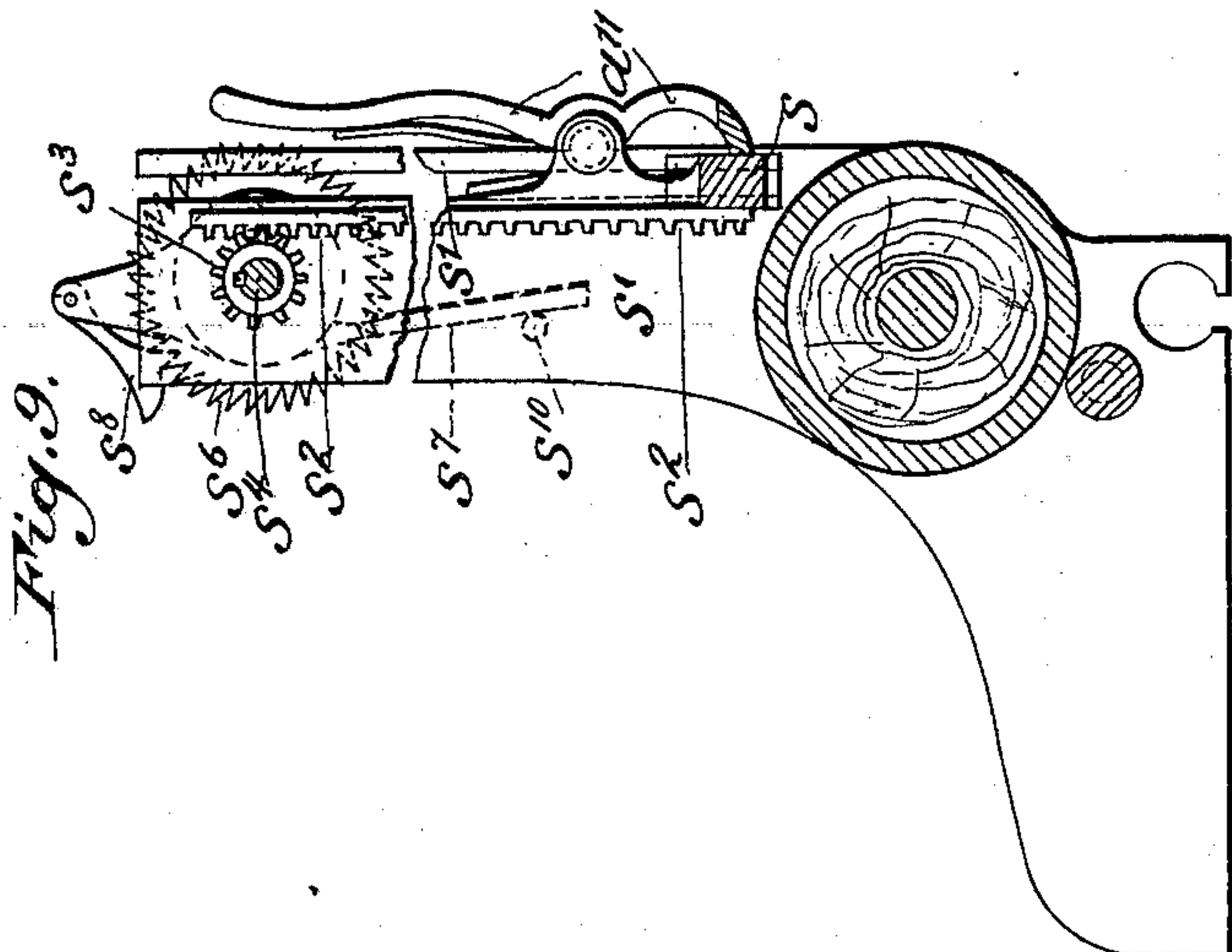
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PAPER FEEDING MECHANISM, FOR TYPE WRITERS OR THE LIKE.

(Application filed Feb. 8, 1899.)

(No Model.)

3 Sheets—Sheet 3.



Witnesses

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UNITED STATES PATENT OFFICE.

HENRI DURUZ, OF LAUSANNE, SWITZERLAND.

PAPER-FEEDING MECHANISM FOR TYPE-WRITERS OR THE LIKE.

SPECIFICATION forming part of Letters Patent No. 628,454, dated July 11, 1899.

Application filed February 8, 1899. Serial No. 704,948. (No model.)

To all whom it may concern:

Be it known that I, HENRI DURUZ, a citizen of Switzerland, residing at Lausanne, Switzerland, have invented certain new and useful
5 Improvements in Paper-Feeding Mechanisms for Type-Writers or the Like; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which
10 it appertains to make and use the same.

My invention relates to improvements in paper-feeding mechanisms for type-writing and other similar machines.

In the type-writing machines as hitherto
15 employed the feed of the paper into the carriage at right angles to the path of the latter has been effected by feed-rollers bearing against each other and between which the paper sheet is clamped, the paper being fed
20 forward by friction. Such an arrangement is open to objection, for the reason that it is very difficult to make the pressure of the contacting feed-rollers even throughout their entire length. Moreover, in the course of use
25 the surface of one or the other of the rollers will become worn or injured to such an extent that the contacting takes place only at a few points, in consequence of which the surfaces of the rollers are apt to slip more or
30 less on the paper, resulting in an oblique or diagonal feed. To overcome this objection, the paper or platen roller—that is, the roller against which the type are pressed—has been provided with a paper-clamp in some forms
35 of type-writing machines. This arrangement, while it effects a positive advance or feed of the paper on turning the platen or paper-roller, is open to the objection that the paper is wound upon the roller, so that the said
40 roller is made thicker in diameter at each rotation of the same, whereby the space between the lines is increased as the work proceeds. A further objection in this arrangement lies in the fact that the work or manuscript is
45 concealed as the paper is wound on the roller.

It is the object of the present invention to remedy these objections, and for this purpose a device embodying the said invention involves the provision of a clamp in which the
50 paper is to be held, said clamp being guided parallel to the axis of the platen or paper-roller and away from the said paper-roller,

whereby there is effected, first, a uniform and always parallel feed of the paper over the platen on proceeding from line to line, and,
55 secondly, the paper as it is written or printed upon is spread out before the operator in such a way that the work is always visible.

In the accompanying drawings I have represented what I consider the preferable embodiment of my invention.

In the drawings, Figure 1 represents a transverse section through the paper-carriage and adjacent parts; Fig. 2, a sectional plan, the section being taken through the left-hand
65 end of the carriage on the line 2 2, Fig. 1; Fig. 3, an end elevation looking toward the left cheek or bracket of the carriage; Fig. 4, a plan view of the same; Fig. 5, an elevation of the rear portion of the right-hand cheek
70 of the carriage; Fig. 6, a plan view of the same, and Fig. 7 a front elevation of the paper-clamp. Fig. 8 is a front elevation of a modified form of paper-feed embodying my invention; Fig. 9, a vertical cross-section, and Fig.
75 10 a plan view of the same.

As shown in the drawings, the paper-carriage consists of a supporting-frame *a* and the cheek-pieces *a'* *a''*, whose forward ends are provided with bearings to receive the
80 journals *b'* of the platen or paper roll *b*. The forward end of the frame *a* is provided with a sleeve *a'''*, which embraces the carriage-rod *d*, mounted upon the machine-frame, the two parts thus serving as a guide for the carriage.
85 The frame *a* is, moreover, provided at an intermediate portion of its length with a roll or caster *e*, which travels upon a guide-rail *f*, also mounted on the main machine-frame.

The rear ends of the cheek-pieces *a'* *a''* are
90 provided with eyes *a⁴*, which receive the axle *a⁵*, on which are mounted a series of frames or arms *a⁶* *a⁷* *a⁸* *a⁹*. These arms, it will be noted from an inspection of Fig. 1, occupy different altitudes when in their positions of
95 rest, the frame or arm *a⁶* being uppermost, while the last frame *a⁹* occupies the lowermost position. The uppermost frame *a⁶* is provided with an upward extension *a¹⁰*, to which the clamp *a¹¹* is pivoted, so that its forward
100 end is yieldingly pressed against the forward end of the said arm *a⁶*, the handle *a¹²* being formed on the clamp-jaw *a¹¹* to allow the same to be released when desired. The

yieldingly-pressed jaw a^{11} of the paper-clamp so formed may be held in its operative position by any suitable or desired means, in the present case by a spring a^{13} , which is wound around a pivot a^{14} of the clamp, its upward-extending ends $a^{13}a^{13}$ bearing against the extension a^{10} and handle a^{12} . This U-shaped spring serves to effectually and yieldingly clamp the paper between the forward end of the arm or frame a^6 and the jaw a^{11} . The forward end of the lowermost frame a^9 in its normal position rests upon the studs a^{15} of the cheeks $a' a^2$. The frames $a^7 a^8 a^9$ are mounted loosely upon the axle a^5 , while the frame a^6 is keyed to the said axle.

Each arm of the frames a^6 is provided at its rear portion near the hub with three studs $a^{16} a^{17} a^{18}$. The uppermost of these studs are only long enough to engage the rear portions of the arms of the frame a^7 , whereby they may raise the latter after the frame a^6 has been raised a predetermined angle or elevation. The studs a^{17} are longer than the studs a^{16} and are adapted to reach below the rear portions of the arms of the frame a^8 , but not long enough to reach under the arms of the frame a^9 . The studs a^{18} , finally, are of sufficient length to extend below the rear portion of the arms of the frame a^9 , so that when the axle or shaft a^5 is turned it serves, first, to raise the frame a^6 , and then, through the medium of the latter, the arms $a^7 a^8 a^9$ in succession, so that the same will be spread out fan shape, as indicated in dotted lines in Fig. 1.

The sheet of paper to be written or printed upon is pushed beneath the platen-roller d from the rear of the machine and is then drawn forward and inserted beneath the clamp-jaw a^{11} , which has been previously raised. On releasing the clamp-jaw a^{11} the paper will be held in operative position, and it is thenceforth compelled to follow the motion of the clamp-jaw a^{11} and to lie upon the ends of the arms $a^6 a^7 a^8 a^9$ as they are gradually spread out into the shape of a fan. It thereby assumes an approximately cylindrical form, so that the feed or elevation of the paper corresponds to the angular motion of the frame a^6 .

The step-by-step rotation of the shaft or axle a^5 for the line-spacing after the completion of a line of manuscript is carried out by the following mechanism: The ratchet-wheel a^{19} is keyed or otherwise fixed to the left-hand end of the said axle a^5 . A pawl-lever a^{20} is mounted so that its end loosely encircles the hub of the ratchet-wheel a^{19} , and the said pawl-lever carries a dog or pawl a^{21} , adapted to engage the teeth of the ratchet-wheel a^{19} in the usual manner. The lever a^{20} is constantly urged against a fixed stud a^{23} on the cheek-pieces a^2 by means of a spiral spring a^{22} , one of whose ends is secured to the cheek-piece a^2 and the other to the lever a^{20} . (See Fig. 2.)

In order to feed the paper a distance of one line, the lever a^{20} is raised until its forward

free end strikes against the adjustable stop-pin a^{24} . This stop-pin in the present case is shown to consist of a screw-stud which is adapted to be screwed to a greater or less extent into or out of a bracket fixed on the cheek-piece, whereby the line-spacing may be adjusted to any desired width.

In order to prevent the frames $a^6 a^7 a^8 a^9$ from dropping back to their original positions (indicated in full lines in Fig. 1) by virtue of their own weight, the right-hand end of the axle a^5 is provided with a second ratchet-wheel a^{26} , Fig. 5, adapted to be engaged by a pawl or dog a^{25} , pivoted or mounted on the cheek a' in any desired or suitable manner, whereby the return rotation of the ratchet-wheel a^{26} and of the axle a^5 is prevented.

In order to return the frames $a^6 a^7 a^8 a^9$ to their original positions, (indicated in full lines in Fig. 1,) the pawl a^{25} is first thrown back, whereupon the handle a^{12} is grasped with one hand and the pawl a^{21} is also thrown out of engagement with the ratchet-wheel a^{19} by the other hand, whereupon the frame a^6 is slowly let down until the frame a^9 rests against the pins or studs a^{15} .

The axle a^5 is arranged at such a distance behind the platen-roller b that the necessary feed of the paper may be accomplished when the frame has moved through an angle of about ninety degrees or less. When the frames $a^6 a^7 a^8 a^9$ occupy the position indicated in dotted lines in Fig. 1, the resultant of the forces of gravitation acting upon these frames will always lie between the axle a^5 and the platen-roller b , so that there is no danger of the frames falling to the rear of the axle a^5 .

The number of auxiliary frames $a^7 a^8 a^9$ is governed by the desired length of paper to be printed on, these frames being for the purpose of spreading out the paper in an approximately cylindrical surface. It is desirable that the front edges of these frames, which are to form the support of the paper, be so near each other that their surfaces will not deviate considerably from that of a cylinder.

Below the platen-roller b there is arranged a second roller b^2 , whose journals are mounted in movable brasses or journal-bearings b^4 , which are guided in the slots b^5 in the cheek-pieces $a' a^2$. Springs b^6 press the brasses b^4 , and with them the roller b^2 , toward the platen-roller b , so that the paper is yieldingly clamped between the platen-roller b and the roller b^2 . By coöperation of this latter device and the clamp a^{11} the paper is stretched sufficiently to cause the same to lie snugly against the platen-roller b at the point of the same against which the type are forced or struck.

In the modification illustrated in Figs. 8, 9, and 10 the paper-clamp a^{11} is pivoted to a carriage s , which is guided in the parallel and vertical guide-slots s' . The carriage is provided at its rear side with a rack s^2 , which is engaged by a pinion s^3 . The pinion s^3 is keyed or otherwise fixed to the shaft s^4 , which shaft is provided at one end with a ratchet-

wheel s^6 . Upon the hub of this ratchet-wheel is loosely mounted a pawl-lever s^7 , which carries a pawl or dog s^8 , adapted to engage the teeth of the ratchet-wheel s^6 . A helical spring s^9 tends to press the lever s^7 constantly against the stop-pins s^{10} . In order to secure the carriage in any position to which it has been moved, the free end of the axle s^4 is provided with a ratchet-wheel s^{11} , keyed thereto and adapted to be engaged by the pawl s^{12} . The operation of this modified device is obvious from the foregoing. Whenever the line has been completed, the lever s^7 is drawn away from the stud s^{10} . By this means the pawl s^8 is caused to feed forward the ratchet-wheel s^6 , which through the medium of the pinion s^3 , engaging the rack s^2 , causes the carriage to be raised sufficiently to place another portion of the paper in the position to be printed upon, the amount of line-spacing thus produced being governed by the adjustable stop-pin, as in the form of device shown in Fig. 1.

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

1. In a type-writing machine, the combination with a positive holding device arranged to hold continuously one part of the paper, of means for maintaining a yielding pressure upon a part of the paper in the rear of the positive holding device, and means for moving the positive holding device in the direction the paper is to be fed.

2. In a type-writing machine, the combination with yielding means for continuously maintaining a pressure on one part of the paper, of a clamp device arranged in advance of the said yielding means and arranged to hold another part of the paper positively and continuously, and intermittently - acting means for moving the clamp device away from the yielding means.

3. In a type-writing machine, the combina-

tion, with a yielding paper-holding device, of a plurality of paper-stretching frames, means for separating said frames, and a positive paper-holding device carried by one of said paper-stretching frames, substantially as described.

4. In a type-writing machine, the combination, with an impression-cylinder and means for yieldingly pressing the paper against said cylinder, of a plurality of angularly-movable paper-stretching frames, means for lifting the frames one by one away from each other, and a positive paper-holding device carried by one of said paper-stretching frames.

5. In a type-writing machine, the combination, with a yielding paper-holding device, of a positively-holding paper-clamping frame pivotally mounted and provided with projecting pins, means for moving said frame about its pivotal point, and intermediate paper-stretching frames engaged and moved by the projecting pins on the paper-clamping frame.

6. In a type-writing machine, the combination, with a carriage, an impression-cylinder mounted thereon, and means for yieldingly holding the paper to said impression-cylinder, of a shaft mounted in the carriage, a paper-holding frame fixed to said shaft, a positively-holding paper-clamp carried by said frame, a pawl-and-ratchet mechanism for rotating said shaft, means for holding the shaft in any position to which it is rotated, a plurality of paper-stretching frames intermediate the paper-holding frame and the impression-cylinder, and means carried by the paper-holding frame for separating the paper-stretching frames one by one.

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

HENRI DURUZ.

Witnesses:

ROD. DEVENOGE,
ADOLF. FEDERER.