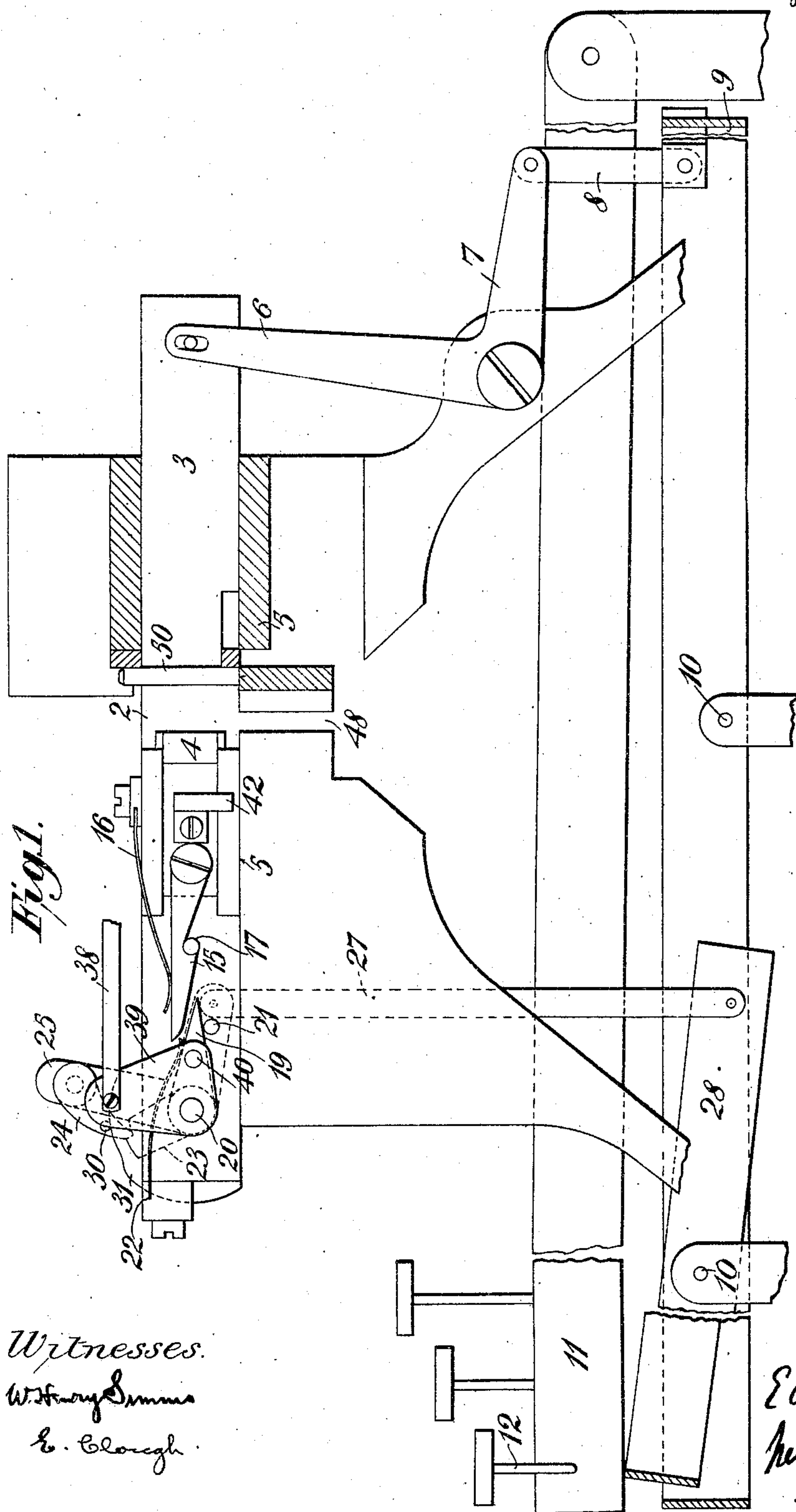


No. 785,649.

PATENTED MAR. 21, 1905.

E. A. ADCOCK.
TYPE DISTRIBUTING MACHINE.
APPLICATION FILED MAY 31, 1904.

5 SHEETS--SHEET 1.



Witnesses.
W. Henry Sumner
E. Clough.

Inventor:
E. A. Adcock
per W. Lloyd Wise
Attorney

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5 SHEETS—SHEET 2.

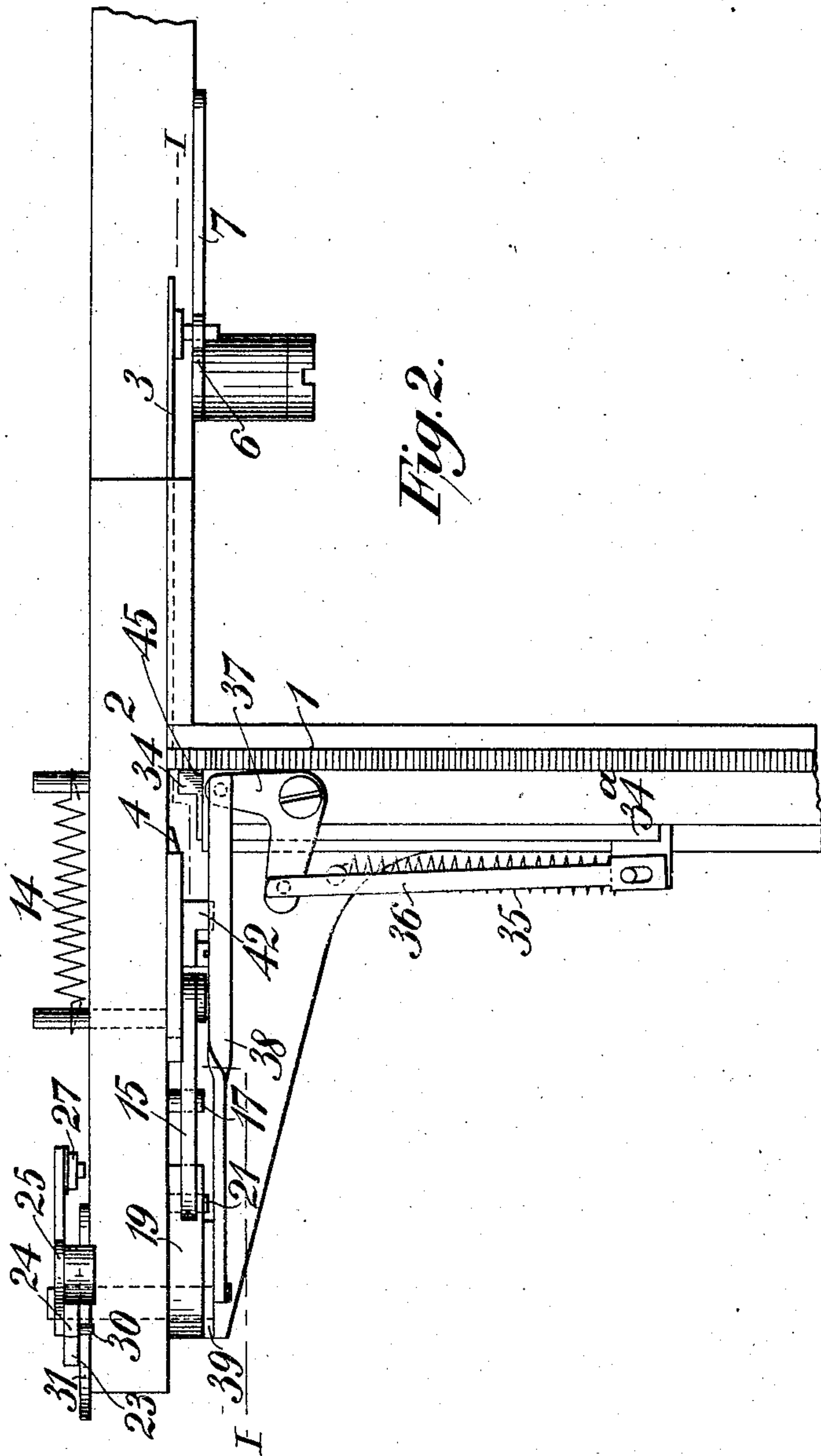


Fig. 2.

Witnesses.
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5 SHEETS—SHEET 3.

Fig. 4.

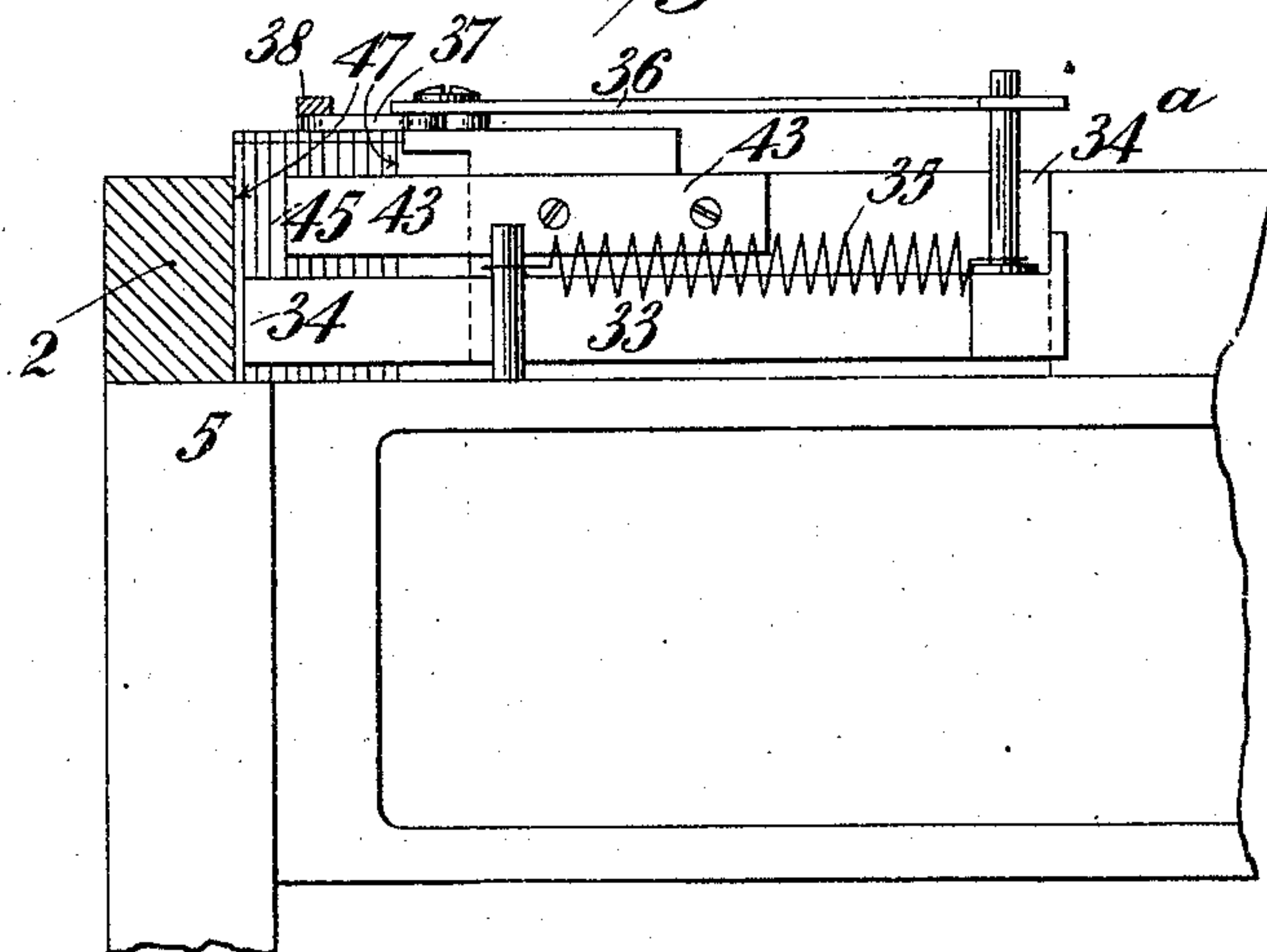
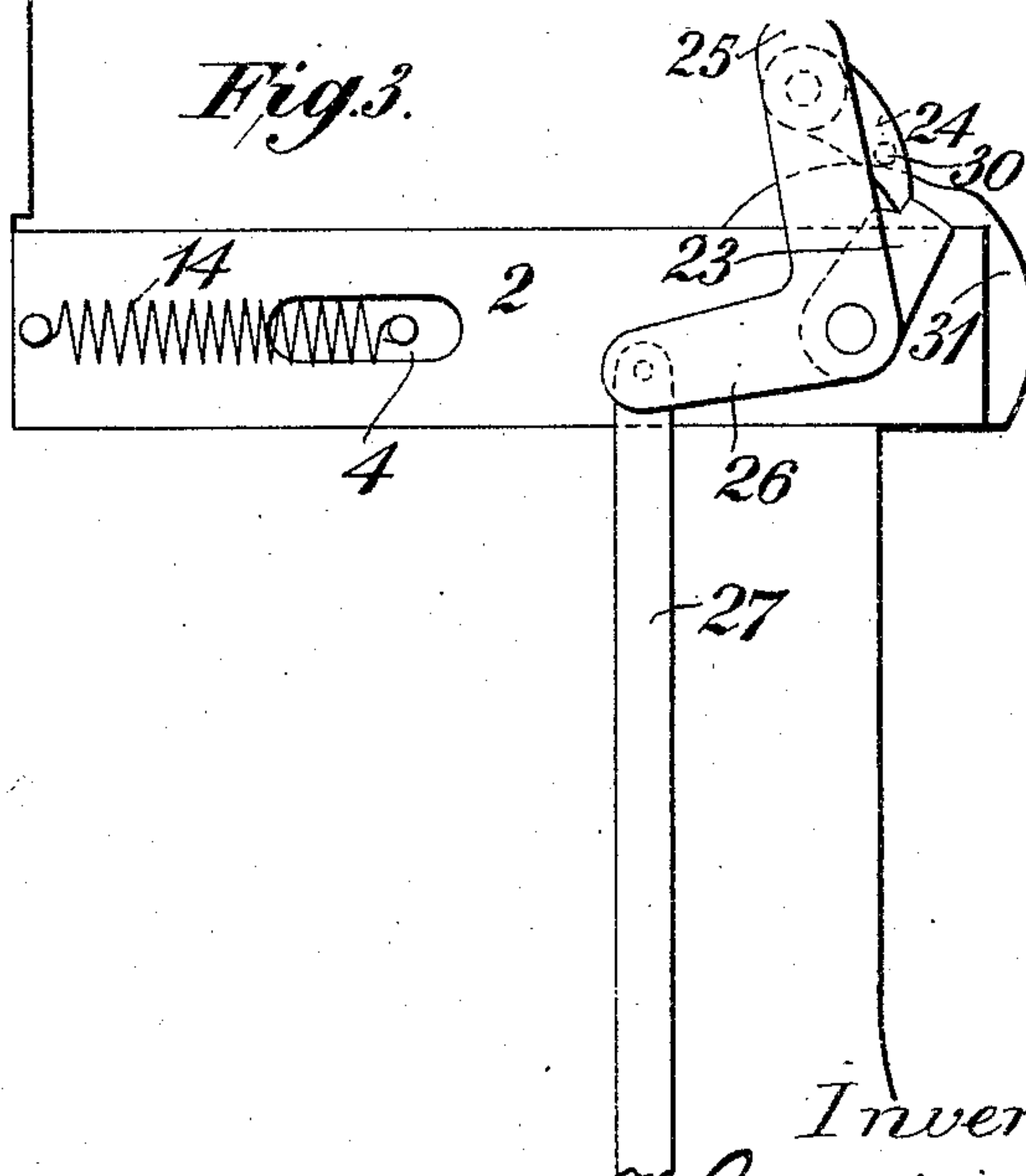


Fig. 3.



Witnesses.

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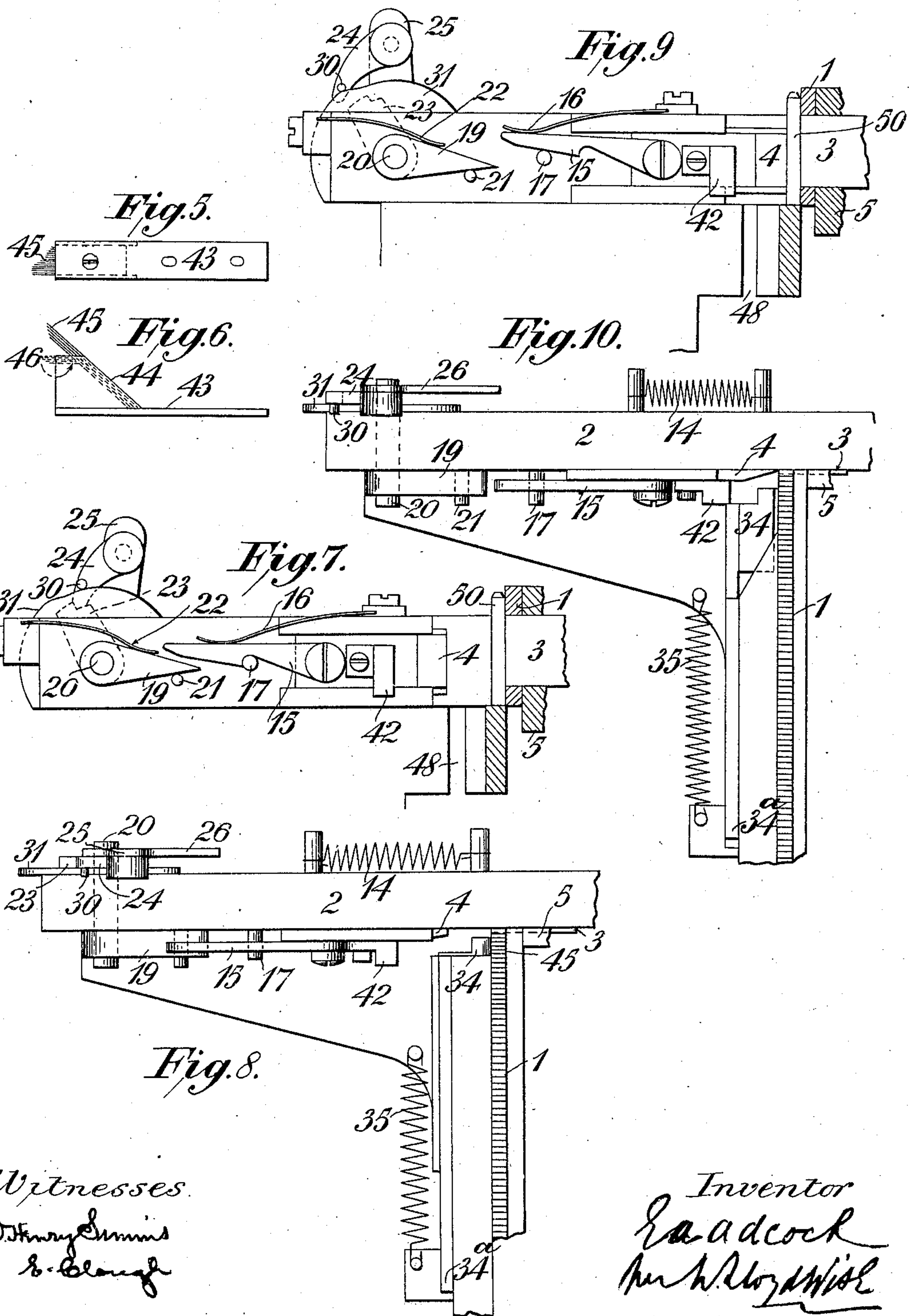
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5 SHEETS—SHEET 4.



Witnesses
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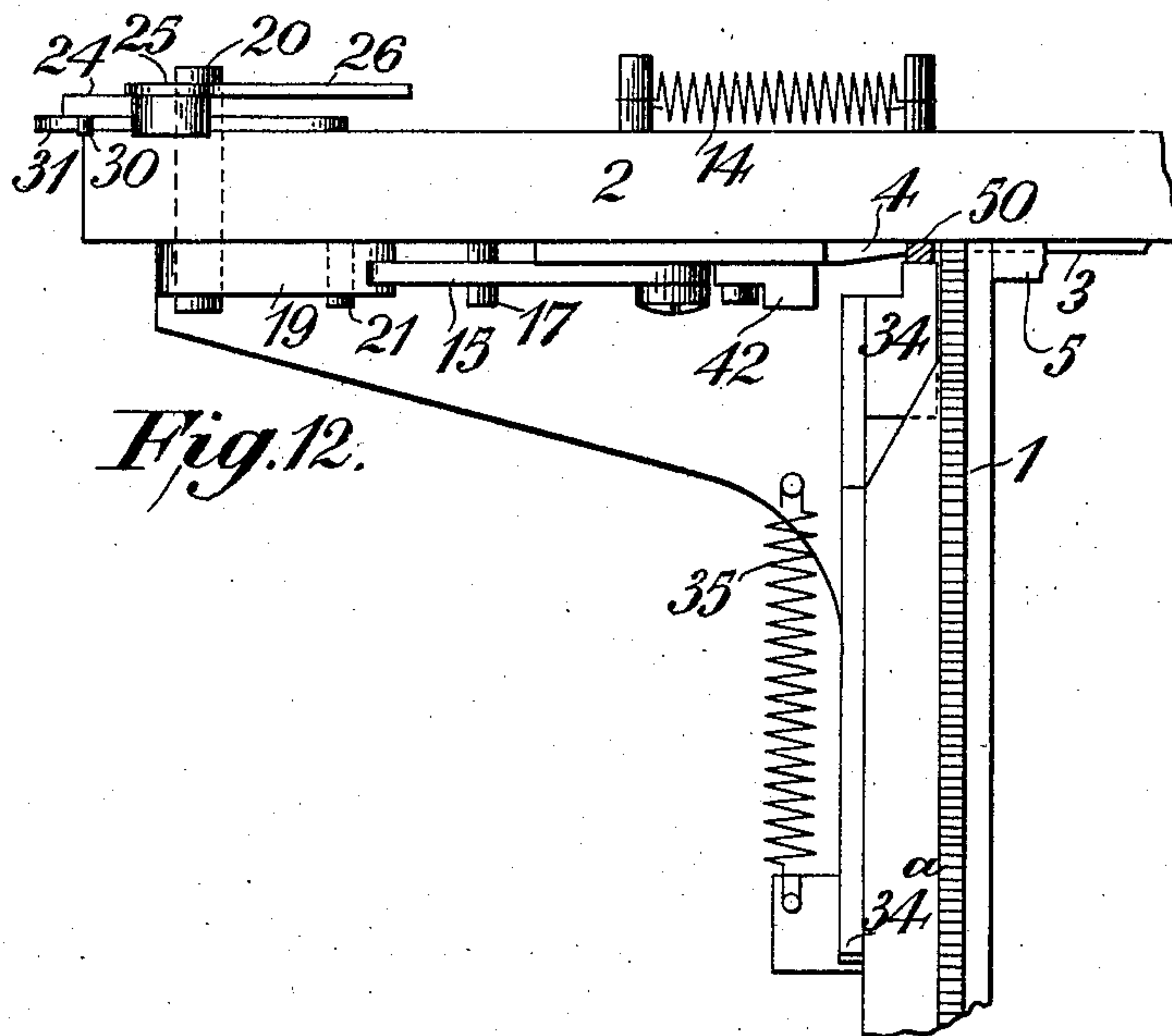
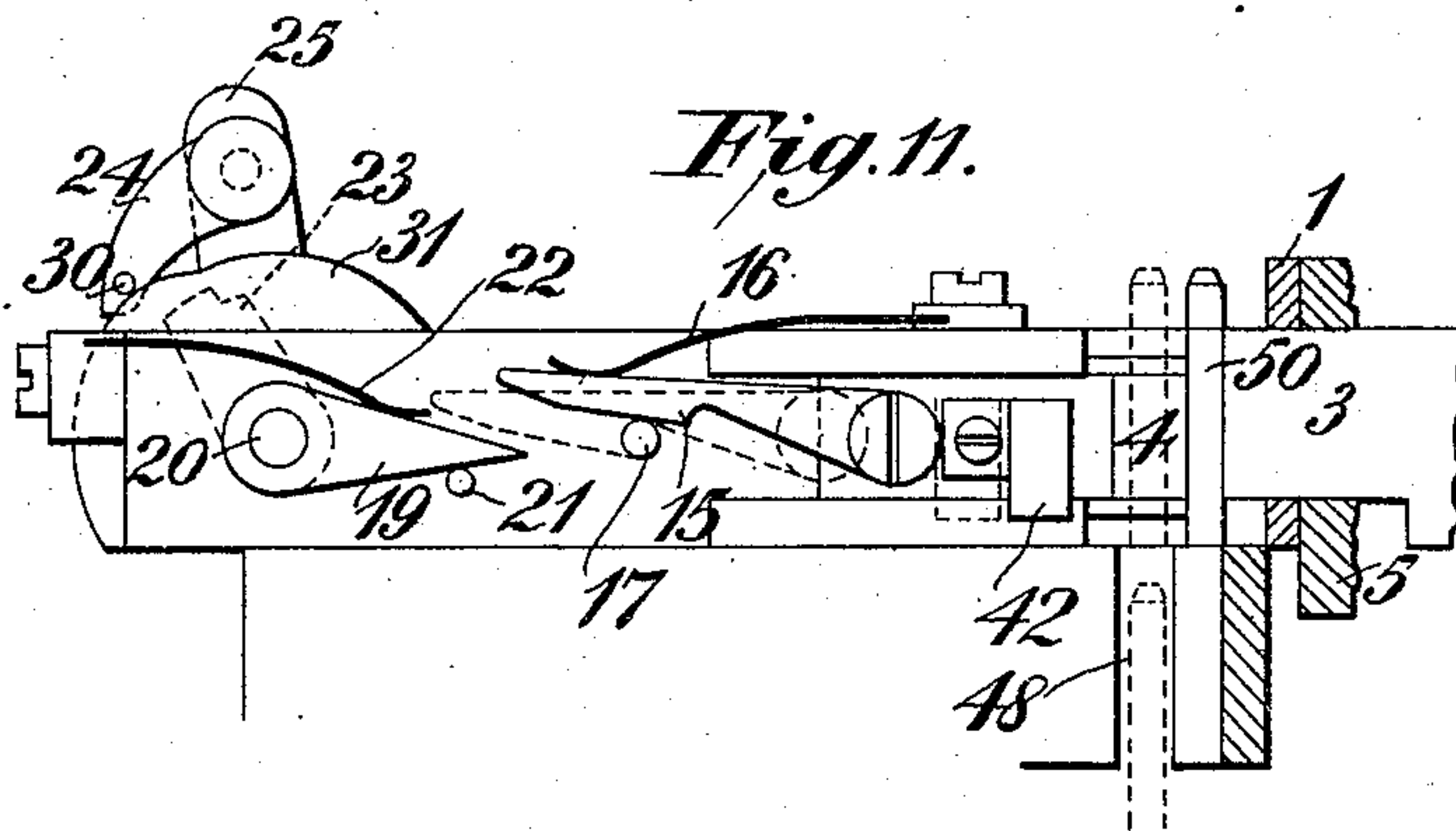
No. 785,649.

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E. A. ADCOCK.
TYPE DISTRIBUTING MACHINE.

APPLICATION FILED MAY 31, 1904.

5 SHEETS—SHEET 5.



Witnesses.
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UNITED STATES PATENT OFFICE.

EDWARD AUGUSTUS ADCOCK, OF READING, ENGLAND, ASSIGNOR TO
PULSOMETER ENGINEERING COMPANY, LIMITED, OF READING,
ENGLAND.

TYPE-DISTRIBUTING MACHINE.

SPECIFICATION forming part of Letters Patent No. 785,649, dated March 21, 1905.

Application filed May 31, 1904. Serial No. 210,556.

To all whom it may concern:

Be it known that I, EDWARD AUGUSTUS ADCOCK, a subject of the King of Great Britain and Ireland, residing at Reading, in the county of Berks, England, have invented Improvements in Type-Distributing Machines, of which the following is a specification.

This invention consists of improvements in type-distributing machines.

The improvements have reference to the means used for detaching the successive types from a line of types and discharging them one at a time into a type distributing or grouping device which is adapted to be set by the operation of one or other of a series of key-levers and serves to divide the ejected types into groups and to direct all the types corresponding to each group into a stationary separating device adapted automatically to sift or separate the types belonging to each group from one another, the objects of the improvements being to enable a much wider range of types to be dealt with in one machine than heretofore practicable and also to simplify the mechanism of the keyboard as compared with previous constructions of type-distributing machines.

In a type-distributing machine according to this invention the foremost type of a row of types fed endwise along a trough toward a fixed plate or abutment is by the operation of a key embraced on opposite edges by and between a pusher and a movable abutment or support and then by the pusher detached sideways from the line of type and moved laterally relatively to the row of type, so as to cause it to be brought over a discharge-hole in a supporting plate or surface, through which it is allowed to fall into a type distributing or grouping device below.

To prevent the detached type from falling forward or backward during its lateral displacement, it is arranged to move between two guides, one of which is or may be formed by the fixed plate or abutment against which the forward end of a line of type is pushed and the other of which is formed by a movable guide-block that is adapted to be first moved away from the fixed guide to allow the foremost type to be detached from the line of

type and then caused to move up to one side of the displaced type and maintain it vertical while the type is being transferred to a position above the discharge-hole through which it falls.

The opening in the side of the type-trough through which the foremost type is pushed is made sufficiently wide to allow the widest type dealt with to be pushed therethrough. To prevent any other than the foremost type for the time being from being pushed out, the pusher is made of a width not greater than the thinnest type to be dealt with, and to prevent any of the succeeding type from being drawn out by frictional contact with the foremost type when this is being ejected there is arranged at the side of the trough through which the foremost type is ejected a flexible or yielding device, preferably in the form of a brush or comb, the free end of which is arranged to bear sidewise against the type opposite to the lateral opening in the trough and has hairs, teeth, or blades of different lengths, so that while some of the hairs, teeth, or blades may be forced sidewise by the foremost type when it is being ejected the less projecting hairs, teeth, or blades will retain the type or types adjacent to the foremost one in position within the type-trough.

As will be obvious, type-detaching mechanism to operate in the manner described can be constructed in various forms.

One example of type-detaching mechanism according to this invention is illustrated in the accompanying drawings, whereof—

Figure 1 is a front view of the apparatus, partly in section, corresponding to the line I of Fig. 2, which is a plan. Fig. 3 is a rear view of the apparatus. Fig. 4 is a side view of the apparatus, partly in section, corresponding to the line IV of Fig. 2. Figs. 5 and 6 are respectively an elevation and a plan of the brush; and Figs. 7 and 8, Figs. 9 and 10, and Figs. 11 and 12 are respectively corresponding sectional elevations and plans, representing parts of the apparatus in successive stages of operation.

In the example illustrated there extends across the forward end of the type-trough 1 a fixed bar or support 2, against the front side

of which are mounted to slide horizontally two suitably-guided plates 3 and 4, that are arranged on edge and in line with each other and are located at opposite sides of the type-trough 1 and above a horizontal table or support 5. One—namely, 3—of the plates serves as a pusher and is made sufficiently thin to eject the thinnest type to be dealt with. This plate, which is hereinafter called the “pusher,” is connected by a pin-and-slot connection to one arm, 6, Fig. 1, of a bell-crank lever, the other arm, 7, of which is connected by a link 8 to a lever 9, pivoted at 10 and adapted to be operated by a key-lever 11 at each depression of a key 12. The other plate, 4, serves as a laterally-movable support or abutment and is connected to a spring 14, that tends to force that end of it which is nearest to the type-trough and which is preferably tapered, as shown, toward that trough and against one side of the foremost type therein. To the outer side of the plate 4 (which is hereinafter called the “sliding abutment”) there is pivoted a hook-like catch 15, adapted when the sliding abutment is pushed back sufficiently far to fall by gravity, aided, it may be, by a spring 16, into engagement with a pin 17, that is fixed to the front of the fixed bar or support 2 and retains the sliding abutment 4 in the position into which it has been pushed back. In proximity to the free end of the catch 15 is a cam or tappet 19, that is fixed on one end of a rock-shaft 20 and is adapted when raised to lift the catch 15 out of engagement with its retaining-pin 17. Downward movement of the tappet is limited by a pin or stop 21, against which the tappet is normally pressed by a spring 22. The rock-shaft 20 extends horizontally through the fixed bar or support 2 and has fixed to its other end a notched arm or disk 23, with which engages a pawl 24, carried by one arm, 25, of a bell-crank lever, the other arm, 26, of which is jointed to a rod 27, that is connected to a bar or frame 28, arranged transversely below the key-levers of the machine, so that on the depression of any one of the key-levers the rod 27 and attached parts will be operated in a direction to lift the tappet 19. The pawl 24 is provided with a lateral pin 30, arranged to work over a fixed cam 31 and disengage the pawl at the required time from the notched arm or disk 23.

At that side of the type-trough through which the foremost type is ejected is arranged a horizontal slide 33, the end of which next to the fixed bar or support 2 is notched, so as to form a projection 34, adapted to serve as a movable guide for the purpose hereinbefore explained. The slide 33 is pressed toward the fixed bar or support 2 and against a stop 34^a by a spring 35 and is connected, through a pin-and-slot connection, to one end of a link 36, the other end of which is connected to one arm of a bell-crank lever 37, that is pivoted

to the type-trough casting, and the other arm of which is connected by another link, 38, to a plate 39, that is mounted on one end of the rock-shaft 20 and is connected to that shaft, preferably as shown, through a pin 40, fixed to the tappet 19. To the front side of the sliding abutment 4 is attached a stop or projection 42, that is adapted to be engaged with the end 34 of the slide 33 when the abutment is moved toward the trough 1 and then to hold the slide 33 in an outer position until the foremost type has been partly ejected from the type-trough. Arranged above the slide and fixed in an endwise-adjustable manner to one side of the type-trough casting is a brush-holder 43, Figs 2 and 4 to 6, which has a surface 44, Fig. 6, inclined to the side of the trough and to which the hairs or bristles 45 of the brush are fixed and which has also a surface 46, which is parallel to the side of the trough and over and against which the forward end portions of the hairs or bristles are bent into the position indicated by dotted lines in Fig. 6 when the brush-holder is fixed in place, so that the forward end portions of the hairs or bristles, which are made of different lengths, will then extend across the type-discharge opening 47 in the trough and bear laterally against one side of those types that are opposite to the opening and hold them in place.

In the horizontal table or support 5 and at the delivery side of the trough is a vertical discharge-hole 48, through which the types can drop into a type distributing or grouping device below.

The operation of the apparatus is as follows: Normally, Figs. 7 and 8, the pusher 3 is in its rearmost position, and the sliding abutment 4 is held back with its catch 15 in engagement with the retaining-pin 17. When a key 12 of the distributing-machine is depressed, the pawl 24 will be operated in a direction to rotate the rock-shaft 20 and cause the tappet 19 to lift the catch 15 out of engagement with the retaining-pin 17 and permit the sliding abutment 4 to be moved by its spring 14 into contact with the foremost type 50 in the type-trough 1, (see Figs. 9 and 10,) and the slide 33, with movable guide 34, will at the same time be moved away from the fixed bar or support 2 and will in the position into which it has been moved back be held by the engagement of the lateral projection 42 on the sliding abutment 4 with its notched end 34. The continued motion of the pawl 24 causes the pin 30 thereon to slide on the adjacent cam 31, which forces the pawl 24 out of engagement with the notched arm or disk 23, so that the tappet 19 is permitted to be rapidly returned by its spring 22 into contact with its pin or stop 21, leaving the notched end 34 of the slide 33 resting against the lateral projection 42 and the plain portion of the catch 15 resting on the retaining-pin 17. The pusher 3 is now by the further movement of

the key-lever brought into action to force the foremost type 50 out of the trough 1 against the action of the spring-pressed sliding abutment 4, which, together with the lateral stop 42 thereon, is pushed back. When the type 50 is partly removed from the trough, Figs. 11 and 12, the lateral projection 42 will be removed from the slide 33, which will then be moved toward the fixed bar or support 2 by its spring 35 and bring the guide 34 thereon into position to prevent the displaced type 50 while being moved laterally from falling, the type 50 being then kept vertical by a support at each of its four sides. When the pusher 3 has reached the end of its forward stroke, the catch 15 under the action of its spring 16 drops over the retaining-pin 17, (see dotted lines in Figs. 11,) which then holds the sliding abutment 4 in its back position, so that when the pusher commences to make its return stroke the displaced type 50 will be released and (see dotted lines in Fig. 11) allowed to fall through the discharge-hole 48. On the return of the pusher 3 to its rearmost position the row of types will be moved forward by a weighted follower 51 in a well-known way, so that the foremost type in the trough will be pressed against the fixed bar or support 2 ready to be ejected the next time a key 12 is depressed. The brush 45 is adjusted so that the thinnest type will have free egress from the trough, and when a thicker type is pushed out only the bristles in its path will be moved aside, the remainder pressing upon the second type, which will thus be retained in the trough 1.

The type distributing or grouping device and type-separating device may be of any known or suitable kind. They may, for example, be such as described in the specification of Letters Patent No. 701,881.

What I claim is—

1. In a type-distributing machine, a type-trough having a type-exit opening at one side thereof, means for forcing a line of types along in said trough, a fixed abutment arranged to limit the movement of said types by said means, a pusher and a movable abutment on opposite sides of said trough, and means for causing said pusher and movable abutment to support on opposite sides the foremost type of said line, said pusher to move said foremost type while so supported through said opening, and said foremost type to be liberated by said pusher and movable abutment after being so moved.

2. In a type-distributing machine, a type-trough having a type-exit opening at one side thereof, means for forcing a line of types along in said trough, a fixed abutment arranged to limit the movement of said types by said means, a pusher and a movable abutment on opposite sides of said trough, means for causing said pusher to push the foremost type of said line through said opening, means for

pressing said movable abutment against said foremost type during its movement by said pusher, means for holding back said movable abutment when said pusher has completed its forward movement, and means for then drawing back said pusher and so liberating said type.

3. In a type-distributing machine, a type-trough having a type-exit opening at one side thereof, means for forcing a line of types along in said trough, a fixed abutment arranged to limit the movement of said types by said means, a pusher and a movable abutment on opposite sides of said trough, means for normally forcing said movable abutment toward said trough, retaining means for normally holding said movable abutment out of contact with the foremost type of said line, and key mechanism adapted to be caused by the depression of a key both to liberate said movable abutment so as to allow it to be moved into contact with said foremost type and also to move said pusher so as to push said foremost type through said opening and thereby said movable abutment into a position for engagement by said retaining means.

4. In a type-distributing machine, a type-trough having a type-exit opening at one side thereof, means for forcing a line of types along in said trough, a fixed abutment arranged to limit the movement of said types by said means, a pusher and a movable abutment on opposite sides of said trough, means for normally forcing said movable abutment toward the foremost type of said line, a catch adapted normally to hold said movable abutment away from said foremost type, a tappet adapted to move said catch so as to disengage said movable abutment, and key mechanism adapted to be caused by the depression of a key both to operate said tappet so as to move said catch as aforesaid and also to move said pusher so as to push said foremost type through said opening and thereby said movable abutment into a position for engagement by said retaining means.

5. In a type-distributing machine, a type-trough having a type-exit opening at one side thereof, means for forcing a line of types along in said trough, a fixed abutment arranged to limit the movement of said types by said means, a support leading from said opening to a point of discharge, means for moving the foremost type of said line through said opening and to said point of discharge, a fixed guide forming a continuation of said fixed abutment and adapted to guide the front face of said foremost type while it is being moved over said support to said point of discharge, and a movable guide adapted to guide the rear face of said foremost type while it is being so moved to said point of discharge.

6. In a type-distributing machine, a type-trough having a type-exit opening at one side thereof, means for forcing a line of types along

in said trough, a fixed abutment arranged to limit the movement of said types by said means, a support leading from said opening to a point of discharge, a device for moving the
 5 foremost type of said line through said opening and to said point of discharge, a fixed guide forming a continuation of said fixed abutment and adapted to guide the front face of said foremost type while it is being moved
 10 over said support to said point of discharge, a movable guide adapted to guide the rear face of said foremost type while it is being so moved to said point of discharge, and means for moving said movable guide away from
 15 said fixed guide and for then causing said device to move said foremost type through said opening and to said point of discharge.

7. In a type-distributing machine, a type-trough having a type-exit opening at one side
 20 thereof, means for forcing a line of types along in said trough, a fixed abutment arranged to limit the movement of said types by said means, a support leading from said opening to a point of discharge, a device for moving the
 25 foremost type of said line through said opening and to said point of discharge, a fixed guide forming a continuation of said fixed abutment and adapted to guide the front face of said foremost type while it is being moved
 30 over said support to said point of discharge, a movable guide adapted to guide the rear face of said foremost type while it is being so moved to said point of discharge, and means for moving said movable guide away from
 35 said fixed guide, for then causing said device to move said foremost type through said opening and to said point of discharge, and for moving said movable guide near to said foremost type before said foremost type has been
 40 completely ejected from said line of types.

8. In a type-distributing machine, a type-trough having a type-exit opening at one side
 thereof, means for forcing a line of types along in said trough, a fixed abutment ar-
 45 ranged to limit the movement of said types by said means, a pusher and a movable abutment on opposite sides of said trough, a support leading from said opening to a point of discharge, a fixed guide forming a continuation
 50 of said fixed abutment and adapted to guide the front face of said foremost type while it is being moved over said support to said point of discharge, a movable guide adapted to guide the rear face of said foremost type while it
 55 is being so moved to said point of discharge, means for moving said movable guide away from said fixed guide, for then moving said movable abutment up to said foremost type, and for then causing said pusher to move said
 60 foremost type through said opening and to said point of discharge, and means for causing said movable guide to move near to the rear face of said foremost type before said foremost type has been completely ejected
 65 from said line of types.

9. In a type-distributing machine, a type-trough having a type-exit opening at one side
 thereof, means for forcing a line of types along in said trough, a fixed abutment ar-
 ranged to limit the movement of said types by
 70 said means, a pusher and a movable abutment on opposite sides of said trough, a support leading from said opening to a point of discharge, a fixed guide forming a continuation
 75 of said fixed abutment and adapted to guide the front face of said foremost type while it is being moved over said support to said point of discharge, a movable guide adapted to guide the rear face of said foremost type while it
 80 is being so moved to said point of discharge, means for forcing said movable guide toward said fixed guide, means for moving said movable guide away from said fixed guide, for then
 moving said movable abutment up to said fore-
 85 most type, and for causing said pusher to move said foremost type through said opening and to said point of discharge, means for holding back said movable guide after said movable
 abutment has been moved as aforesaid up to
 90 said foremost type and until said foremost type has substantially as set forth been moved sufficiently through said opening, and means for then liberating said movable guide to allow
 said movable guide to be forced near to said
 95 foremost type so as to guide it in its further movement.

10. In a type-distributing machine, a type-trough having a type-exit opening at one side
 thereof, means for forcing a line of types
 100 along in said trough, a fixed abutment arranged to limit the movement of said types by said means, a pusher and a movable abutment on opposite sides of said trough, a support leading from said opening to a point of discharge, a fixed guide forming a continuation
 105 of said fixed abutment and adapted to guide the front face of said foremost type while it is being moved over said support to said point of discharge, a movable guide adapted to guide the rear face of said foremost type while it is
 110 being so moved to said point of discharge, means for forcing said movable guide toward said fixed guide, and means for moving said movable guide away from said fixed guide, for then moving said movable abutment up to said
 115 foremost type, and for causing said pusher to move said foremost type through said opening and to said point of discharge, said movable abutment and said movable guide being adapted when said movable abutment has
 120 moved up to said foremost type to engage with each other so as to prevent further movement of said movable guide toward said fixed guide until said foremost type has substan-
 125 tially as set forth been moved sufficiently through said opening and then to become disengaged so as to allow said movable guide to be moved up to said foremost type.

11. In a type-distributing machine, a type-trough having a type-exit opening at one side 130

thereof, means for forcing a line of types along in said trough, a fixed abutment arranged to limit the movement of said types by said means, a pusher and a movable abutment on opposite sides of said trough, a support leading from said opening to a point of discharge, a fixed guide forming a continuation of said fixed abutment and adapted to guide the front face of said foremost type while it is being moved over said support to said point of discharge, a movable guide adapted to guide the rear face of said foremost type while it is being so moved to said point of discharge, a shaft, a ratchet device and a cam both fixed to said shaft, a pawl-lever mounted to be turned to and fro about said shaft, a pawl mounted on said pawl-lever and adapted to engage said ratchet device, a disengaging device adapted to disengage said pawl from said ratchet device, a catch adapted normally to retain said movable abutment away from said foremost type and to liberate said movable abutment on being operated by said cam, means for connecting together said shaft and said movable guide so that rotation of the former will move the latter away from said fixed guide, means for automatically moving said movable abutment and said movable guide toward said type-trough and said fixed guide respectively, and key mechanism adapted to be caused by the depression of a key to move said pawl-lever so as by turning said shaft by means of said ratchet device first to liberate said catch and so allow said movable abutment to move up to said foremost type, then to hold said movable guide back from said fixed guide, and finally to liberate said movable guide by the disengagement of said pawl by said disengaging device and so allow said movable abutment to move up to said foremost type after owing to the action of said key mechanism said pusher has substantially as set forth moved said foremost type sufficiently through said opening.

12. In a type-distributing machine, a type-trough having a type-exit opening at one side thereof, means for forcing a line of types along in said trough, a fixed abutment arranged to limit the movement of said types by said means, a pusher and a movable abutment on opposite sides of said trough, a support leading from said opening to a point of discharge, a fixed guide forming a continuation of said fixed abutment and adapted to guide the front face of said foremost type while it is being moved over said support to said point of discharge, a movable guide adapted to guide the rear face of said foremost type while it is being so moved to said point of discharge, means for forcing said movable abutment and said movable guide toward said type-trough and said fixed guide respectively, a catch adapted normally to retain said movable abutment away from said foremost type, a shaft, a cam and a ratchet device both fixed to said shaft,

a pawl-lever mounted to be turned to and fro about said shaft, means for connecting said shaft with said movable guide so that rotation of the former will move the latter away from said fixed guide, key mechanism adapted to be caused by the depression of a key first to turn said pawl-lever and thereby to disengage said catch and allow said movable abutment to move up to said foremost type, and then to move said pusher so as to eject said foremost type through said opening, and also adapted after the liberation of said movable abutment as aforesaid to hold back said movable guide, and means for disengaging said pawl from said ratchet device when said foremost type has substantially as set forth been sufficiently moved through said opening, said movable abutment being adapted to prevent said movable guide from moving up to said foremost type until said foremost type has been sufficiently moved as aforesaid and then to allow said movable guide to move up to said foremost type.

13. In a type-distributing machine, a type-trough having a type-exit opening at one side thereof, means for forcing a line of type along in said trough, a fixed abutment arranged to limit the movement of the type by said means, a pusher and a movable abutment on opposite sides of said trough, means for causing said pusher and movable abutment to support on opposite sides the foremost type of said line of type, said pusher to move said foremost type while so supported through said opening, and an elastic device which is arranged normally to bear against types located in said trough and opposite to said opening but is adapted when said foremost type is being moved through said opening by said pusher to allow the exit of said foremost type through said opening and at the same time to retain in said trough the type or types adjacent to said foremost type and opposite to said opening.

14. In a type-distributing machine, a type-trough having a type-exit opening at one side thereof, means for forcing a line of type along in said trough, a fixed abutment arranged to limit the movement of the type by said means, a pusher and a movable abutment on opposite sides of said trough, means for causing said pusher and movable abutment to support on opposite sides the foremost type of said line of type, said pusher to move said foremost type while so supported through said opening, and a flexible elastic device which is arranged normally to bear against types located in said trough and opposite to said opening but is adapted when said foremost type is being moved through said opening by said pusher to be bent thereby and so allow the exit of said foremost type through said opening and at the same time to retain in said trough the type or types adjacent to said foremost type and opposite to said opening.

15. In a type-distributing machine, a type-

trough having a type-exit opening at one side thereof, means for forcing a line of type along said trough, a fixed abutment arranged to limit the movement of the type by said means,
5 a pusher and a movable abutment on opposite sides of said trough, means for causing said pusher and movable abutment to support on opposite sides the foremost type of said line of type, said pusher to move said foremost
10 type while so supported through said opening, and a device comprising holding means and flexible projections which extend therefrom and are adapted to bear elastically and separately against said foremost type and the ad-
15 jacent type located in said trough and opposite to said opening and of which one or more is or are adapted when said foremost type is being moved through said opening by said pusher to be bent thereby and so allow the
20 exit of said foremost type through said opening and of which others or another are or is adapted when said foremost type is being moved through said opening by said pusher to retain said adjacent type in said trough.
25 16. In a type-distributing machine, a type-trough having a type-exit opening at one side thereof, means for forcing a line of type along said trough, a fixed abutment arranged to

limit the movement of the type by said means, a pusher and a movable abutment on oppo- 30 site sides of said trough, means for causing said pusher and movable abutment to support on opposite sides the foremost type of said line of type, said pusher to move said fore- 35 most type while so supported through said opening, and a device comprising holding means and flexible projections of which one or more extends or extend therefrom and is or are adapted to bear elastically against said foremost type but to be bent thereby and so 40 allow the exit of said foremost type through said opening and of which others or another extend or extends therefrom and are or is adapted to bear elastically against the type adjacent to said foremost type but not against 45 said foremost type and to retain said adjacent type in said trough when said foremost type is being moved through said opening by said pusher.

Signed at London, England, this 7th day of 50 May, 1904.

EDWARD AUGUSTUS ADCOCK.

Witnesses:

H. D. JAMESON,
A. NUTTING.