F. ALEXANDER.

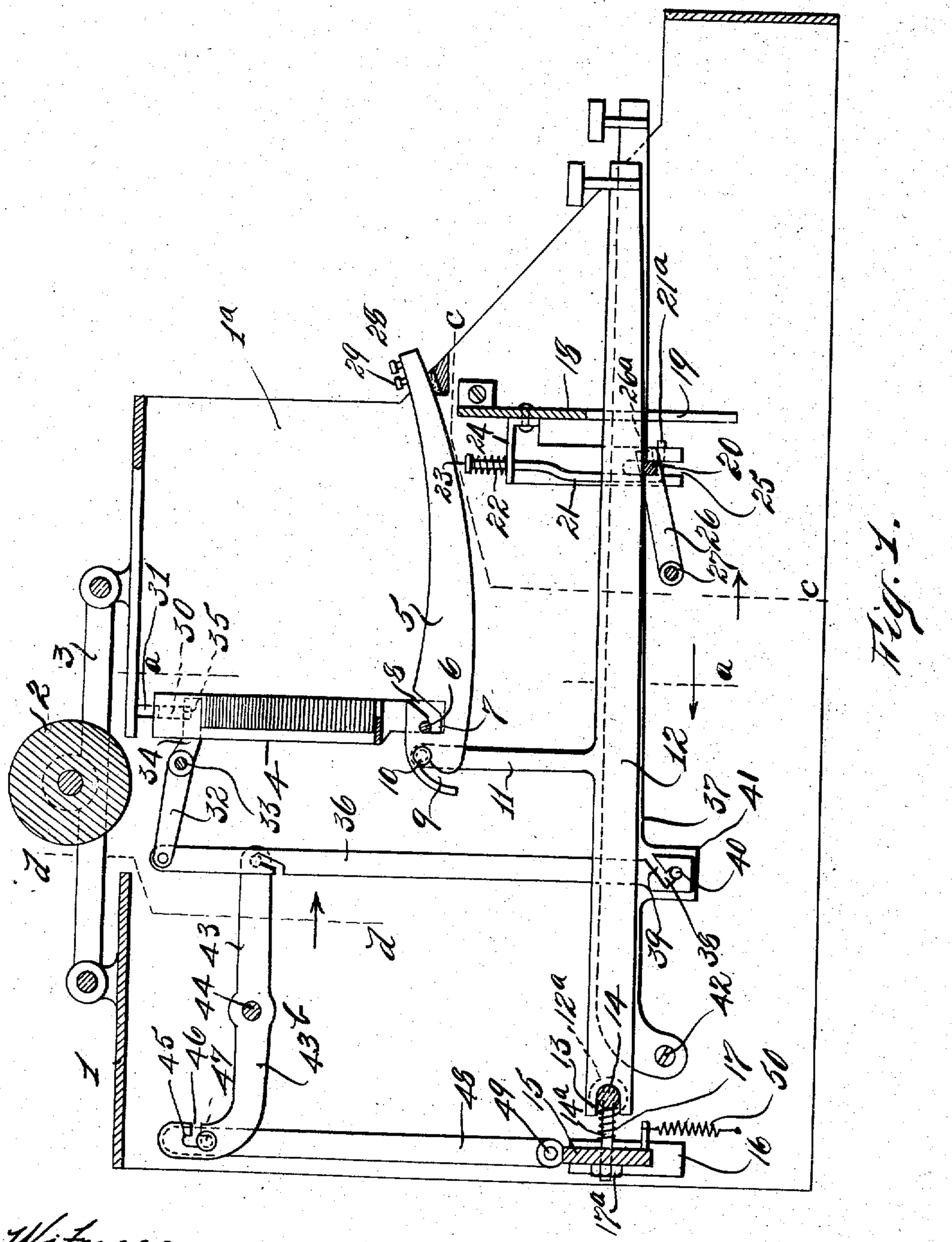
TYPE WRITING MACHINE.

APPLICATION FILED MAR. 29, 1909.

956,020.

Patented Apr. 26, 1910.

3 SHEETS—SHEET 1.



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3 SHEETS—SHEET 2.

Fig. 2.

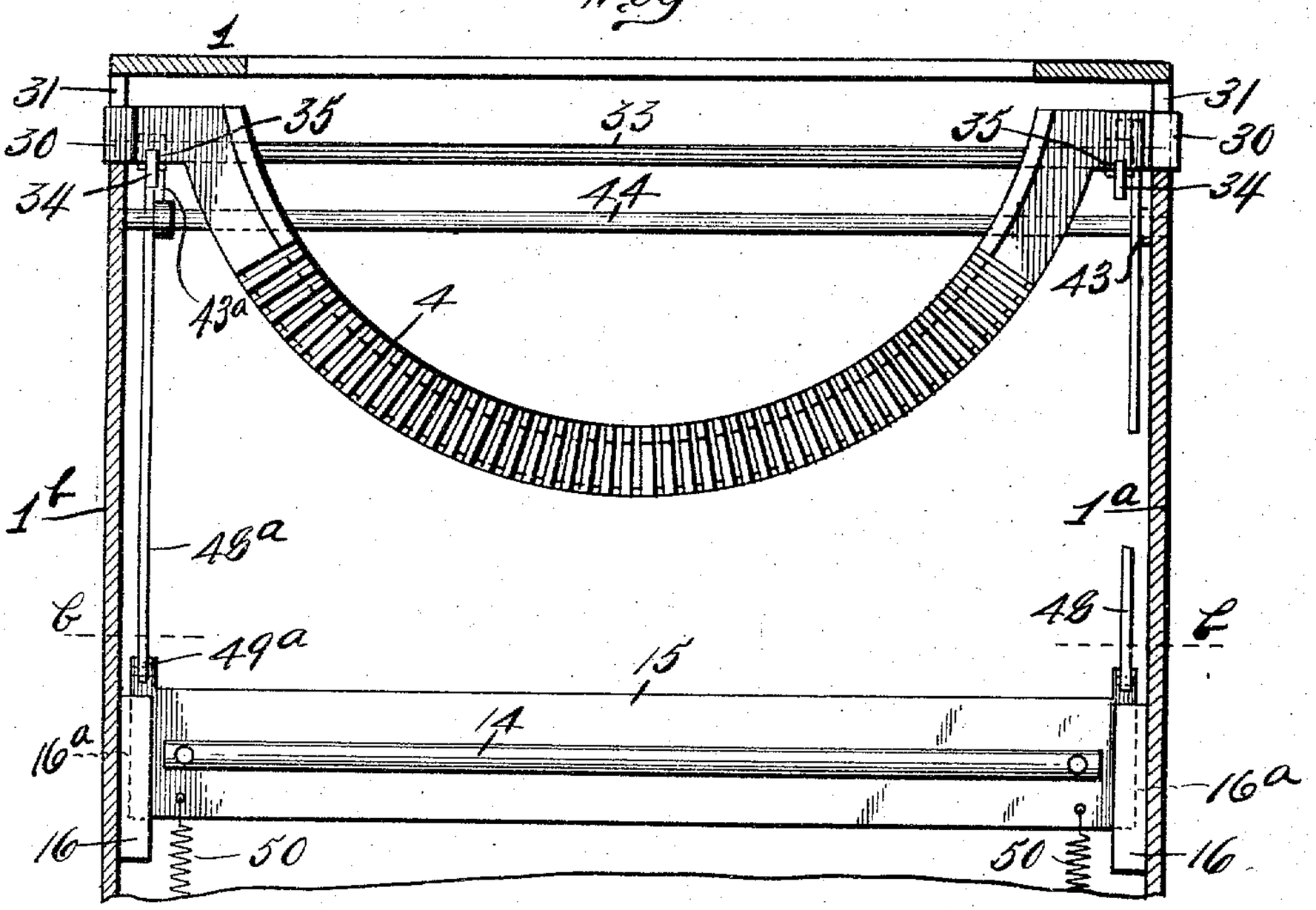
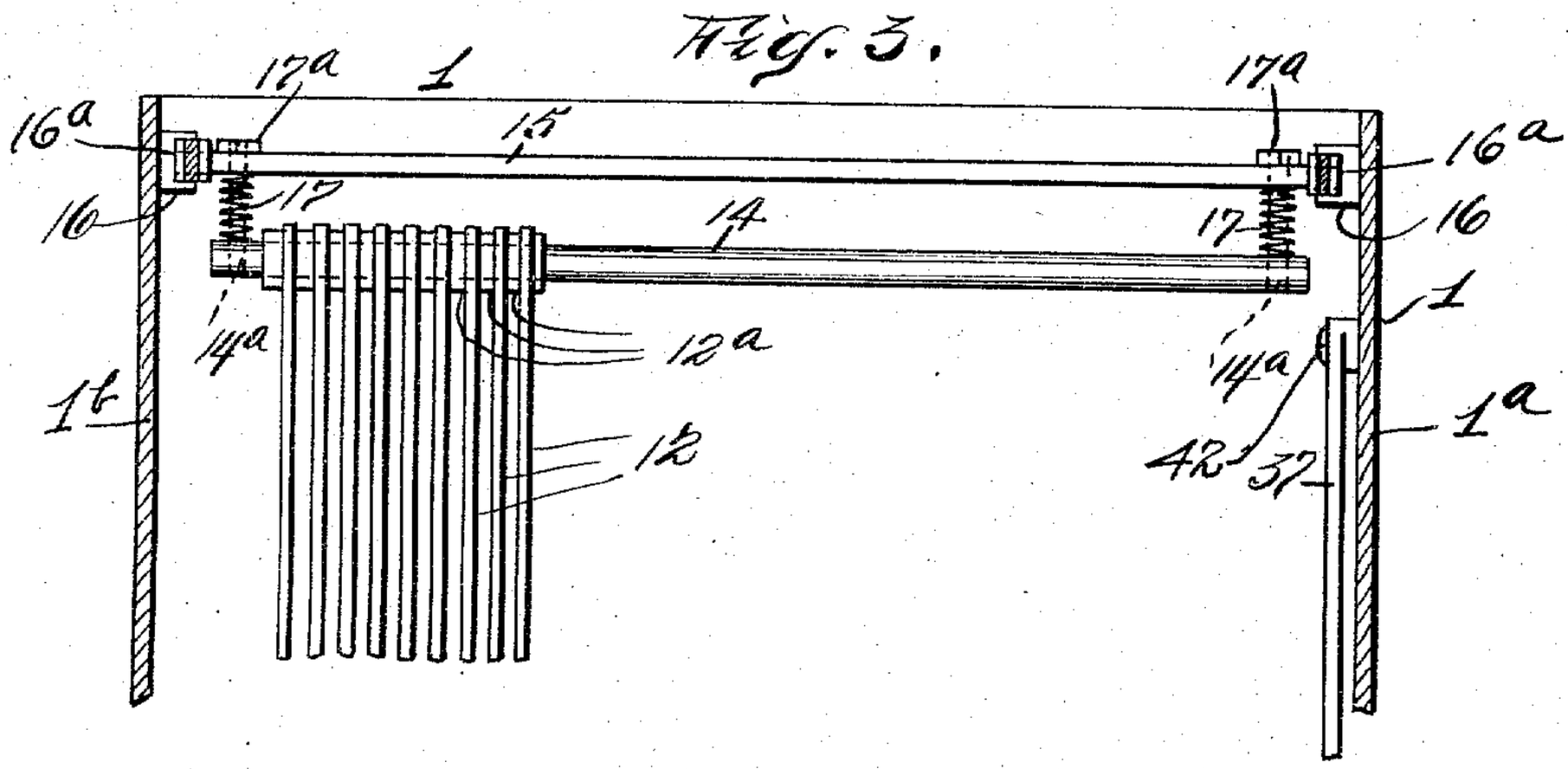


Fig. 3.



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3 SHEETS—SHEET 3.

Fig. 4.

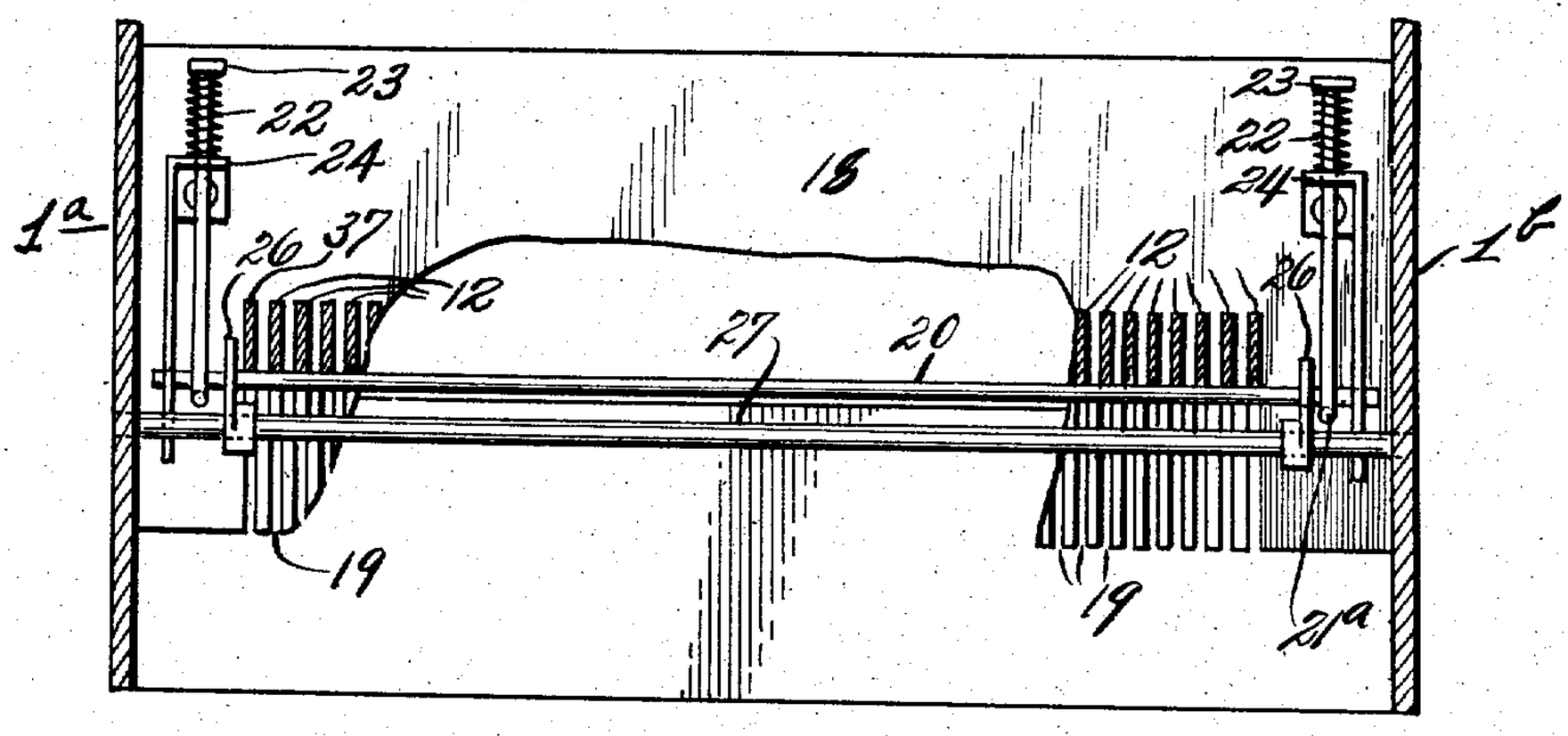
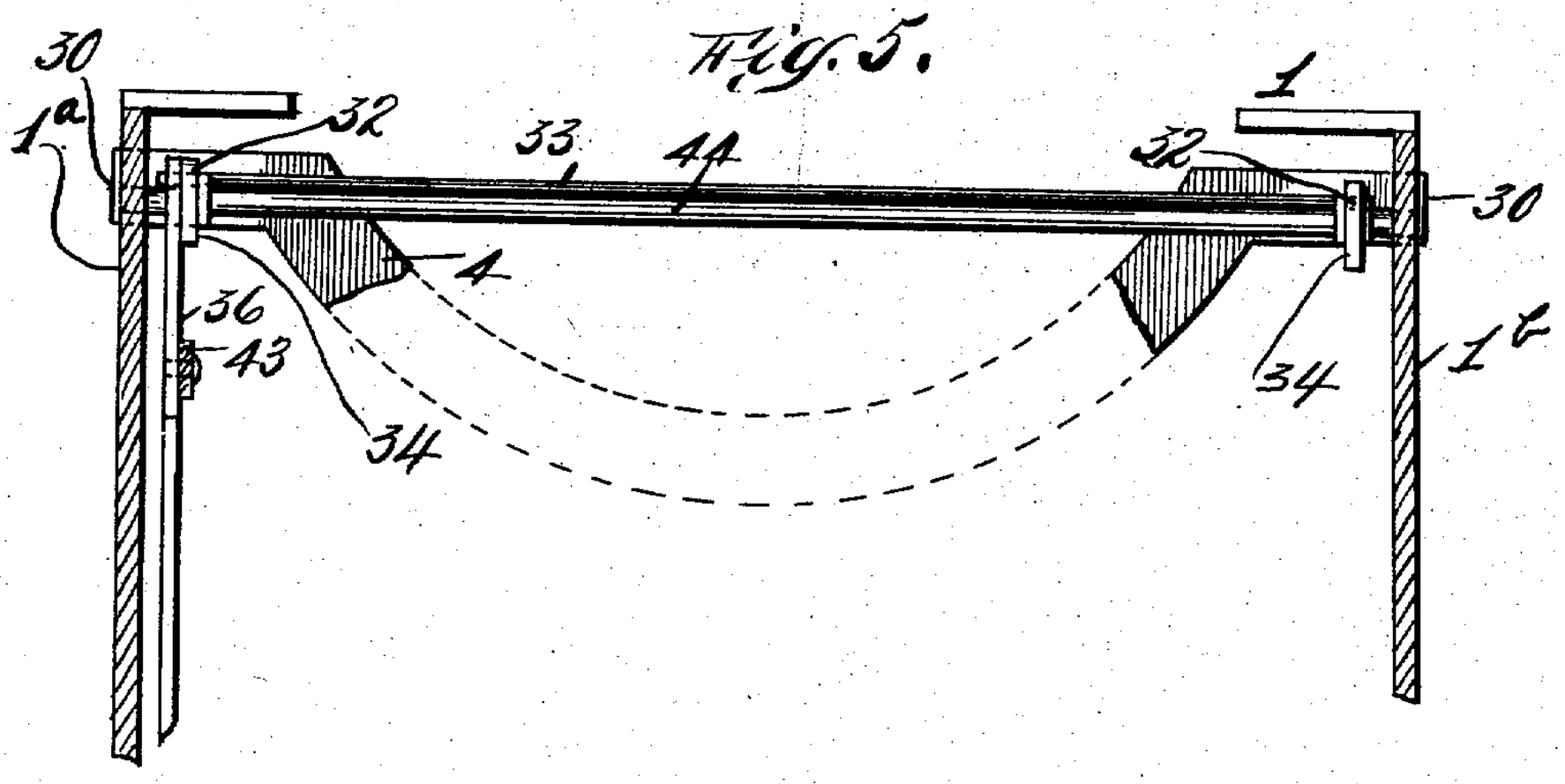


Fig. 5.



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UNITED STATES PATENT OFFICE.

FREDERICK ALEXANDER, OF NEW YORK, N. Y., ASSIGNOR OF ONE-HALF TO WILLIAM F. LASKOWSKI, JR., OF WEST HOBOKEN, NEW JERSEY.

TYPE-WRITING MACHINE.

956,020. Specification of Letters Patent. **Patented Apr. 26, 1910.**

Application filed March 29, 1909. Serial No. 486,421.

To all whom it may concern:

Be it known that I, FREDERICK ALEXANDER, a citizen of the United States, residing at Brooklyn, Kings county, city and State of New York, have invented certain new and useful Improvements in Type-Writing Machines, of which the following is a clear, full, and exact description.

This invention relates to an improved arrangement of type-bars and key-levers for typewriting machines wherein the type-bar support and key-lever support are simultaneously raised to allow the upper case type to contact the platen.

The advantage of raising the type-bars and key-levers instead of the carriage, as is done in the standard machines, is considerable, as it obviates the chances of the platen getting out of alinement when raised, due to lost motion in the carriage carrying and raising parts.

My invention comprises the novel features of improvement and combination and association of parts which I will now proceed to describe and finally claim, reference being had to the accompanying drawings, forming part hereof, wherein—

Figure 1 is a cross-sectional view of a typewriting machine frame, having applied thereto my improved type-bar and key-lever mounting; Fig. 2 is a vertical sectional front view, taken on a line *a—a* in Fig. 1; Fig. 3 is a fragmentary sectional plan view, taken on a line *b—b* in Fig. 2; Fig. 4 is a vertical sectional rear view, taken on a line *c—c* in Fig. 1; and Fig. 5 is a vertical sectional rear view, taken on a line *d—d* in Fig. 1.

Referring to the drawings, a frame is indicated by 1, the said frame being provided with a platen 2, supported by a frame 3. The side members 1^a and 1^b of the frame 1 slidably support a type-bar supporting segment 4, which is designed to pivotally support type-bars, one bar 5 only being shown. The type-bars are pivotally and removably supported by a rod 6, which is fixed in the segment in the usual manner. The type-bars are provided with openings 7 having in communication therewith a slot 8. The rod 6 normally rests in the top of opening 7, as shown in Fig. 1. The type-bars are placed upon the rod 6 independently of each other by passing the rod 6 through the passage 8 into the opening 7, which will be readily understood. The bars may be withdrawn from the segment by an operation opposite to the one above described.

The rear end of each bar 5 is provided with a curved slot 9, in the end of which a pin 10, carried by an arm 11, is adapted to rest. The arm 11 is made integral with the key-levers 12, one only being shown. The rear end of the levers 12 are provided with a recess 13 adapted to engage (in this instance) a horizontally movable rod 14, the said rod being provided with guide-pins 14^a which are movably mounted in a vertically movable bar 15. The rod 14 is kept in an extended position by springs 17 (see Fig. 3), nuts 17^a being carried by the pins 14^a to limit the extended position of the rod 14. To keep the key-bars apart, washers 12^a may be used.

To slidably support the bar 15, I have employed recessed plates 16 (Figs. 2 and 3). The recesses 16^a in the plates are adapted to receive the remote ends of the bar 15. Adjacent the front of the frame 1, I place a guide or comb-plate 18 having slots 19 adapted for the passage therethrough of the key-levers 12 (see Fig. 4).

Another feature of my invention is a mechanism which is adapted to return each key-lever to its normal position after the depression thereof, the said mechanism comprising a bar 20 which passes under all of the key-levers 12 (see Fig. 4), the said rod having, in contact therewith at each end thereof, a spring opposed pin 21 having an extension 21^a which passes under the said bar 20, as shown. A spring 22 acts to pull the pin 21 and bar 20 upwardly after a key has been depressed, the spring 22 acting against a head 23 on the pin 21. To support the pin 21, I provide brackets 24 (see Fig. 4), which are attached to the guide plate 18, the said brackets being provided at their lower ends with slots 25, into which the ends of the rod 20 enter. The slot 25 acts to cause the rod 20 to move in a vertical direction. To transmit movement from one end of the rod 20 to the other, I provide a rotatable shaft 27, which carries arms 26, provided in the outer end with a slot 26^a, which is adapted to receive the rod 20. Should an end-key be depressed, the rod 20 will move downwardly equally at each end thereof, due to the motion transmitting device, which consists of the said shaft 27 and arms 26.

By the foregoing description it will be readily understood that I employ but two springs to restore all the type-bars to their normal position after the depression thereof. The key-levers 12 are each provided with a lower-case or small letter 28 and an upper-case or capital letter 29.

To provide a means which will adapt the segment 4 for vertical movement, I provide each end of the said segment with extensions 30 (see Fig. 2) which are adapted to enter elongated slots 31, (see Fig. 1) in the side members of the frame 1. To operate the segment 4, I provide a rotatable shaft 33, to which are secured arms 34, which extend forwardly and enter notches 35 in the extensions 30 of the segment 4, (see Fig. 2). The said shaft also carries a lever or operating arm 32, (see Fig. 1) the lever 32 being connected to the upper end of a link 36, the lower end of which releasably engages a shift lever 37. The link 36 is provided with an opening 38, having in communication therewith a slot 39. A pin 40, carried by the lip 41 on the lever 37, normally rests in the opening 38, as shown. The lever 37 is pivoted to the side member 1^a of the frame 1, as at 42 (see Figs. 1 and 3). The link 36 is normally adapted for disengagement from the lever 37, as the said link can be removed from the pin 40 by raising the lever 37 sufficiently to permit the link 36 to be drawn out of engagement with said pin. To raise the bar 15, as well as the inner ends of the key-levers 12 simultaneously with the raising of the segment 4, I provide levers 43 and 43^a, one on each side of the frame 1, the said levers being carried by a rotatable shaft 44. The lever 43 has an extension 43^b (see Fig. 1), which is provided with a slot 45, having in communication therewith a passage 46, the lower end of the slot removably supporting a pin 47 carried by the link 48, the lower end of which is pivotally connected to the bar 15, as at 49. The lever 43^a on the side 1^b of the frame is a duplicate of the extension 43^b of the lever 43, and it is also connected to a link 48^a (see Fig. 2) at the top thereof in a manner described for the extension 43^b. The lower end of the link 48^a is connected to the bar 15 as at 49^a. The bar 15 is returned after each operation thereof by springs 50 (see Fig. 2). It is quite apparent that when the shift lever 37 is depressed, the segment 4, type-bars 5, carried thereby, bar 15 and key-levers 12 carried thereby, are raised, whereby the upper-case letter 29 will contact the platen when the key-lever is depressed. The springs 22 on the pins 21 will correspondingly raise the rod 20, so that the said bar will always be in contact with the key-levers. Should I desire to remove any of the key-levers, I have but to pull the rod 14 backwardly to clear the ends of the levers and then push the end of the lever that I wish to take out downwardly, clear of the bar 14, and allow the said bar to go back into the remaining key-levers. After having done this I manipulate the lever to cause the pin 10 thereon to pass out through the curved slot 9 in the corresponding type-bar. If I desire it, I can take out the corresponding type-bar in a manner hereinbefore described. By means of my improved key-lever and type-bar mounting, I can take out any of them without removing the rest.

Having now described my invention, what I claim and desire to secure by Letters Patent is:—

1. In a typewriting machine, a frame, a platen carried by said frame, a plurality of type-bars, a plurality of type carried by said type-bars, a pivotal support for said type-bars adapted for vertical movement, said support being normally positioned to permit one of the type on said bars to contact with the platen, key levers adapted to operate said bars, a pivotal support for said key levers adapted for vertical movement, a lever adapted to raise the pivotal support for said type-bars, an auxiliary lever adapted to raise the pivotal support for said key levers, and a link connecting said type-bar raising and auxiliary levers with the operating key lever for the type-bar support.

2. In a typewriting machine, a frame, a platen carried thereby, a segment, a plurality of type-bars pivotally supported by said segment, a key lever for each of said bars, means connecting said key levers and said type-bars, and a pivotal support for said key levers, consisting of a vertically movable rod, said key levers being provided with a slot adapted to engage said rod, said rod being also adapted for separation and horizontal withdrawal from said key levers.

3. In a typewriting machine, a frame, a platen carried thereby, a plurality of independently operable type-bars, a key lever for each of said type-bars, means connecting said bars and said levers, and a pivotal support for said key levers, comprising a spring pressed rod adapted to releasably engage said key levers.

4. In a typewriting machine, a frame, a platen carried by said frame, a plurality of type-bars, a plurality of type carried by each of said type-bars, a pivotal support for said type-bars adapted for vertical movement, said support being normally positioned to permit one of the type on said type-bars to contact with the platen, key levers adapted to operate said type-bars, a vertically movable bar carried by said frame adjacent the rear ends of said key levers, a pivotal support for said key levers carried by said bar, a lever adapted to raise the said bar, a lever adapted to raise the pivotal support for said type-bars, a link connecting

said levers, and a shift lever adapted to operate said link.

5. In a typewriting machine, a frame, a platen carried by said frame, a plurality of type-bars, a plurality of type carried by each of said type-bars, a pivotal support for said type-bars adapted for vertical movement, said support being normally positioned to permit one of the type on said type-bars to contact with the platen, key levers adapted to operate said type-bars, a vertically movable bar carried by said frame adjacent the rear ends of said key levers, said levers being provided with a jaw, a spring pressed rod carried by said vertically movable bar adapted to enter the jaws in said key levers, a lever adapted to raise the said bar, a lever adapted to raise the said pivotal support for said type-bars, a link connecting said levers, and a shift lever adapted to operate said link.

6. In a typewriting machine, a frame, a platen carried by said frame, a plurality of type-bars, each provided with a plurality of type, a pivotal support for said type-bars adapted for vertical movement, said support being normally positioned to permit one of the type on said type-bars to contact with the platen, key levers adapted to operate said type-bars, a vertically movable pivotal support, independent of the type-bar support, adapted to engage the rear end of said key levers, and means adapted to raise said key lever support and said type-bar support simultaneously.

7. In a typewriting machine, a frame, a platen carried by said frame, a plurality of type-bars, a plurality of type carried by each of said type-bars, a pivotal support for said type-bars adapted for vertical movement, said support being normally positioned to permit one of the type on said type-bars to contact with the platen, key levers adapted to operate said bars, a vertically movable bar carried by said frame adjacent the rear ends of said key levers, a pivotal support for said key levers carried by said bar, a lever adapted to raise the said bar, a link connecting said bar and the operating lever therefor, a lever adapted to raise the pivotal support for said type-bar, a link connecting said levers, and a shift lever adapted to operate said link.

8. In a typewriting machine, a frame, a platen carried by said frame, a plurality of type-bars, a plurality of type carried by each of said type-bars, a pivotal support for said type-bars adapted for vertical movement, said support being normally positioned to permit one of the type on said type-bars to contact with the platen, key levers adapted to operate said type-bars, a vertically movable bar carried by said frame adjacent the rear ends of said key levers, said levers being provided with a jaw, a spring pressed rod carried by said vertically movable bar adapted to enter the jaws in said key levers, a lever adapted to raise the said bar, a link connecting said bar and the operating lever therefor, a lever adapted to raise the pivotal support for said type-bar, a link connecting said levers, and a shift lever adapted to operate said link.

Signed at New York city, N. Y., this 26 day of March 1909.

FREDERICK ALEXANDER.

Witnesses:
ESTELLE HAMBURGER,
EDWARD A. JARVIS.