

(Model.)

4 Sheets—Sheet 1.

L. H. HOEFER.
TYPE WRITING MACHINE.

No. 316,267.

Patented Apr. 21, 1885.

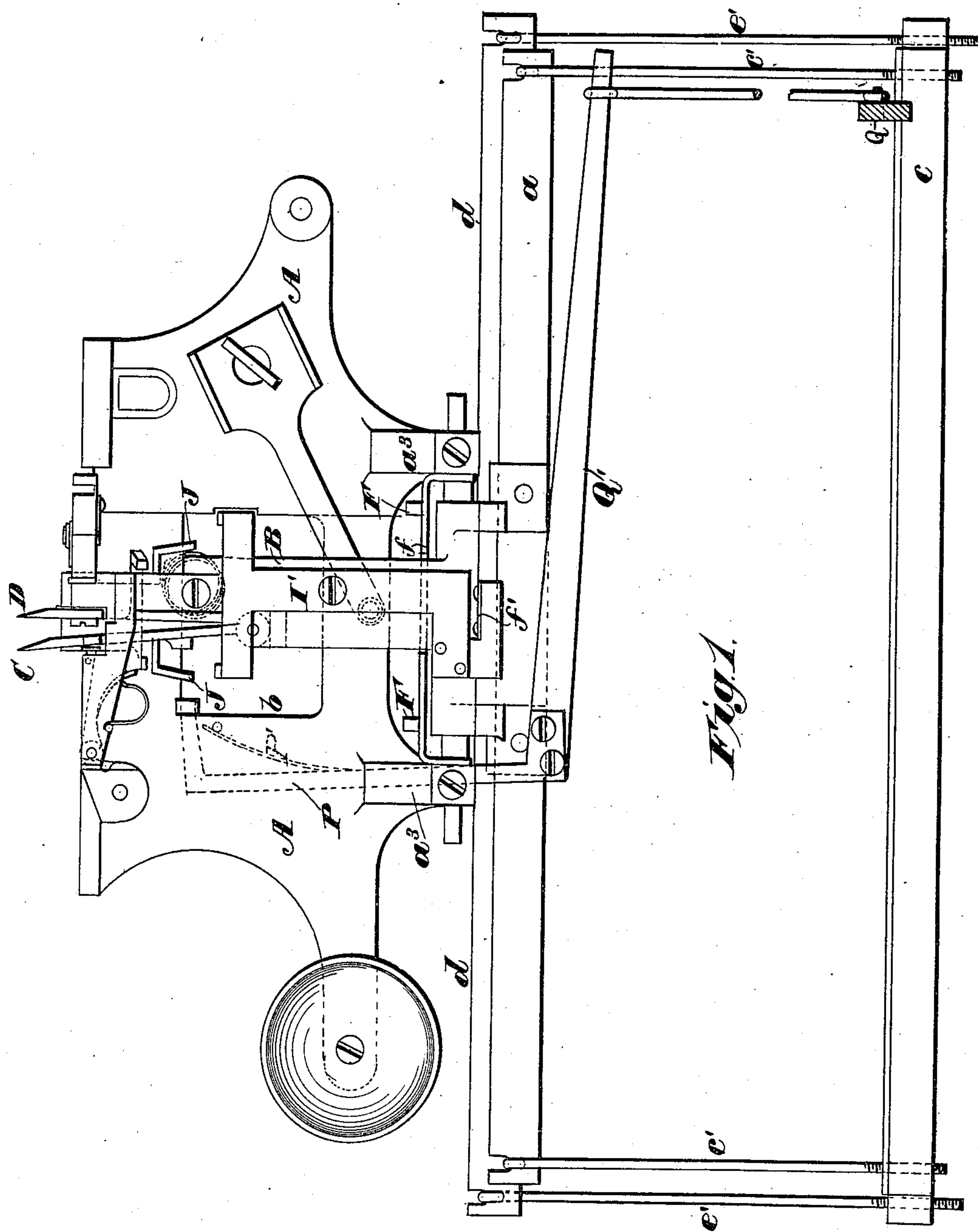


Fig. 1.

Witnesses,
Robert Emmett.

J. A. Rutherford

Inventor.

Lewis H. Hoefler.

By James L. Norris.

Atty.

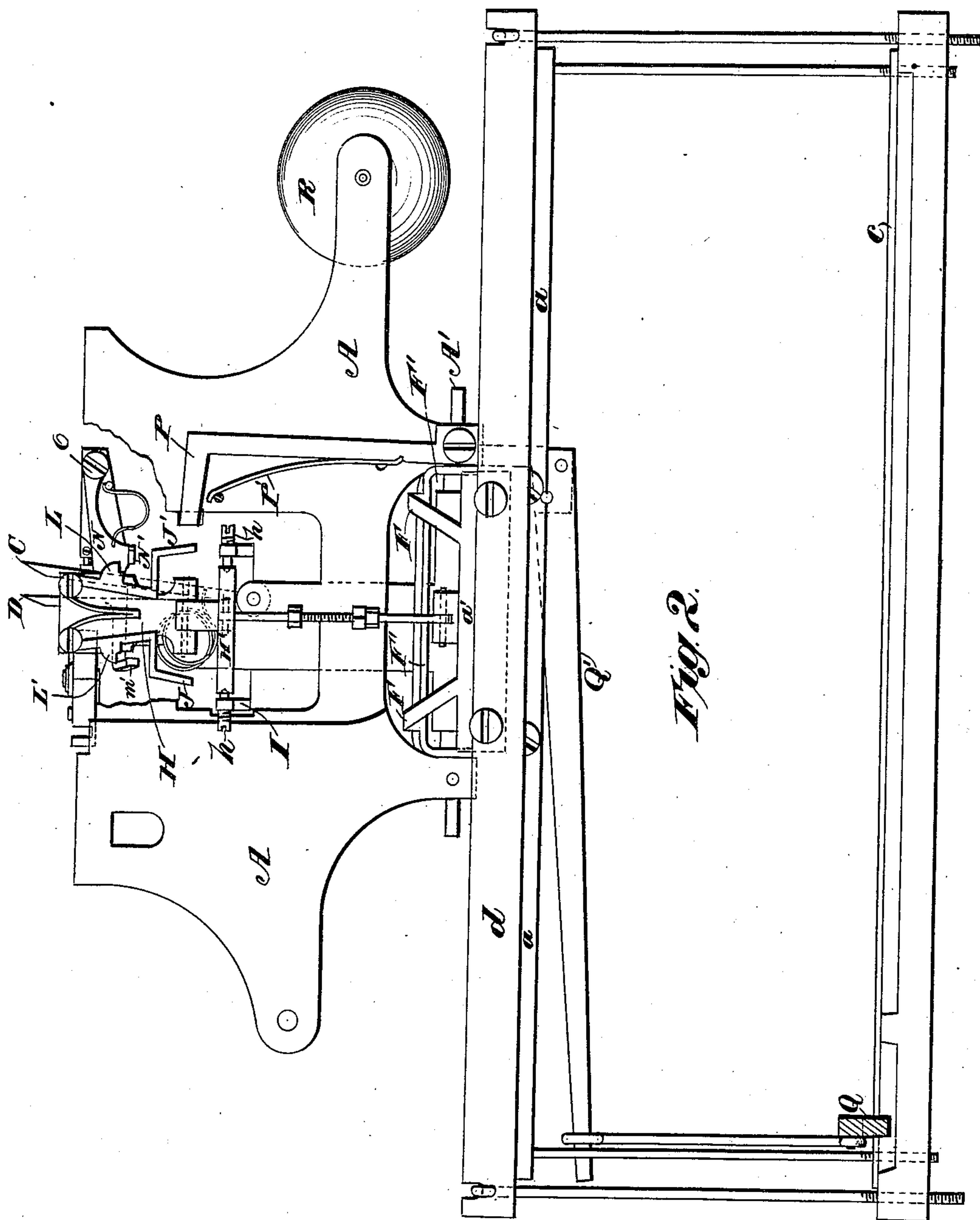
(Model.)

4 Sheets—Sheet 2.

L. H. HOEFER.
TYPE WRITING MACHINE.

No. 316,267.

Patented Apr. 21, 1885.



Witnesses.
Robert Corbett.
J. A. Rutherford.

Inventor.
Lewis H. Hoefler.
By *James L. Norris.*
Atty.

(Model.)

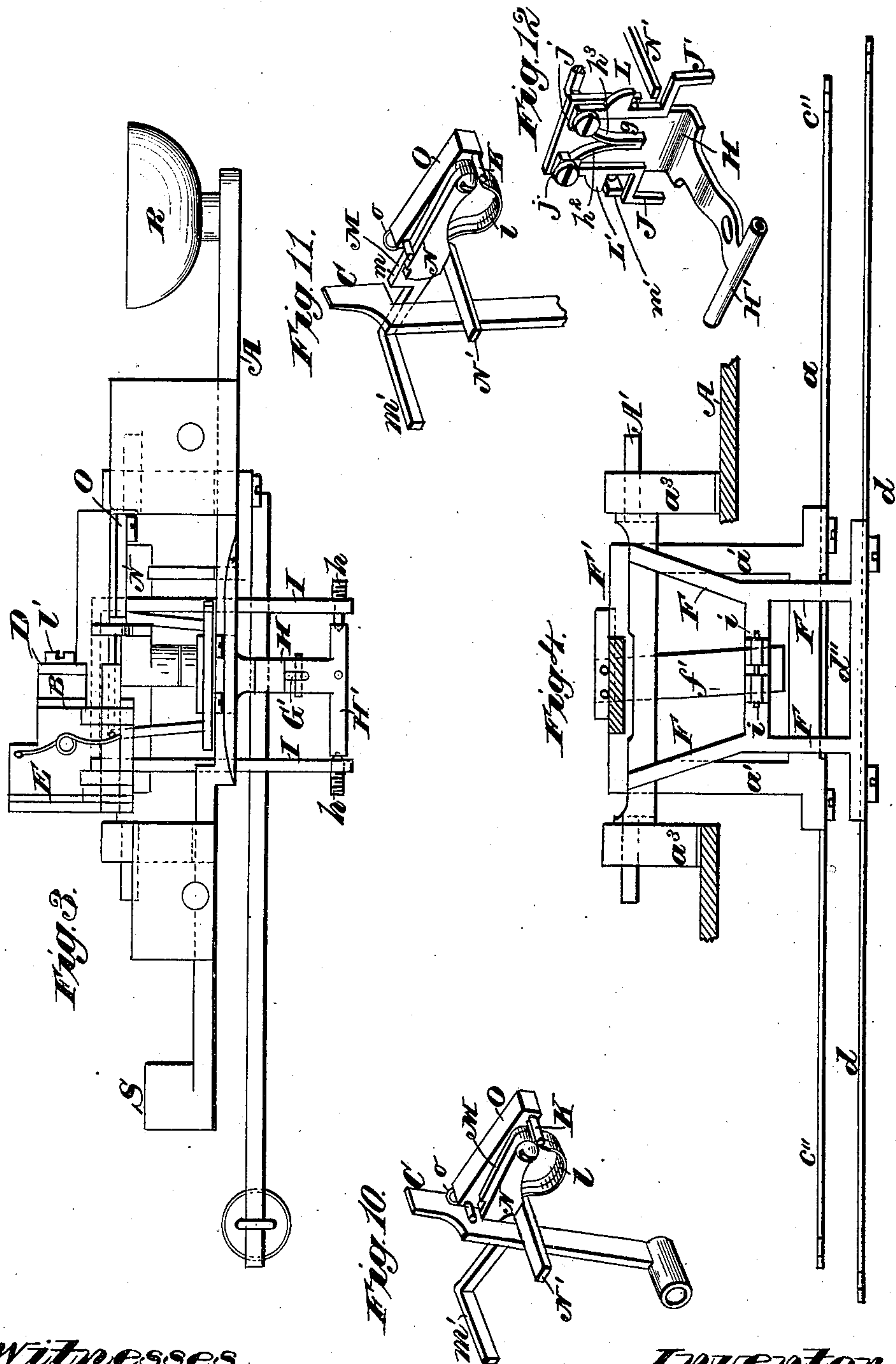
4 Sheets—Sheet 3

L. H. HOEFER.

TYPE WRITING MACHINE.

No. 316,267.

Patented Apr. 21, 1885.



Witnesses.

Robert Everett.

J. A. Rutherford.

Inventor.

Lewis H. Hoefler.

By

James L. Norris.

Atty.

(Model.)

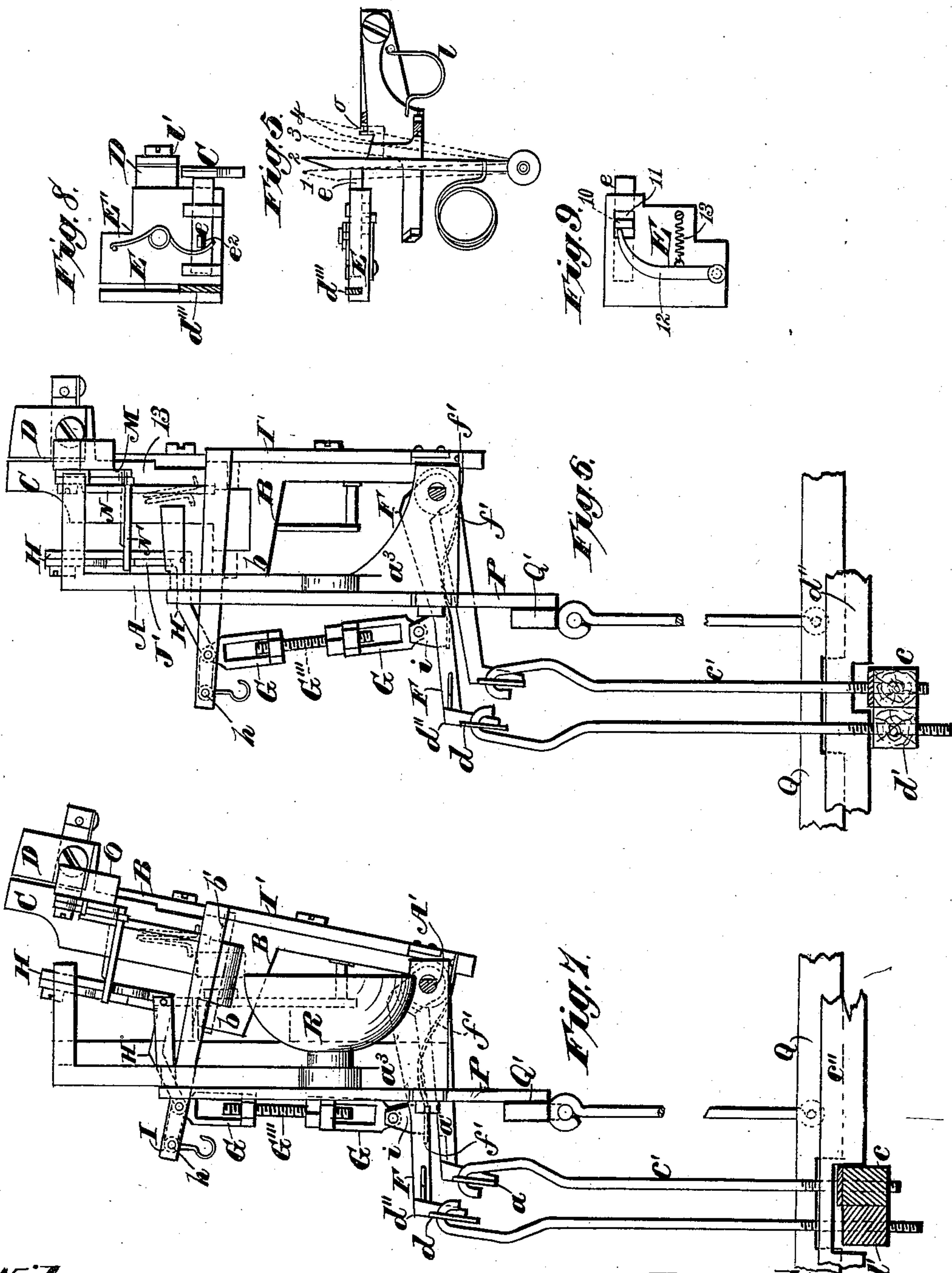
4 Sheets—Sheet 4

L. H. HOEFER.

TYPE WRITING MACHINE.

No. 316,267.

Patented Apr. 21, 1885.



Witnesses.

Robert Everett,

J. A. Rutherford

Inventor:

Lewis H. Hoefler.

By

By James L. Norris.

Athys.

UNITED STATES PATENT OFFICE.

LEWIS H. HOEFER, OF DAYTON, OHIO.

TYPE-WRITING MACHINE.

SPECIFICATION forming part of Letters Patent No. 316,267, dated April 21, 1885.

Application filed October 4, 1883. (Model.)

To all whom it may concern:

Be it known that I, LEWIS H. HOEFER, a citizen of the United States, of Dayton, in the county of Montgomery and State of Ohio, have invented certain new and useful Improvements in Type-Writers, of which the following is a specification.

My invention relates to an improvement in type-writing machines.

10 The object of my invention is to provide an attachment to an ordinary spacing-frame which will allow of the use of a word-type, operated by a single finger-key, whereby a single word may be printed by one movement of the finger—such as the words “the,” “and”—also letters used as prefixes or suffixes—such as “tion,” “cion,” or other similar words, prefixes, and suffixes.

20 My object is, further, to so arrange the spacing-pawls, which work in combination with the rack-bar, that word-types may be used as suffixes or prefixes to other words without any space between the prefixes and suffixes and the adjacent letter of the word, and so as to allow the word-types to be used as single words operated by a single key, and at the same time to make a proper space between any of those words and the next following word.

30 The herein-described arrangement of the parts constituting my improvement adds greatly to the speed of writing by type-writer, which is the principal object of my invention, all of which will be more fully set forth in the description of the accompanying drawings.

35 Figure 1 represents a rear elevation of my improvement; Fig. 2, a front elevation with a part of the frame-work broken off; Fig. 3, a top plan view; Fig. 4, a plan view of part of the lever mechanism for operating the oscillating frame B; Fig. 5, an elevation of the spacing-pawls, showing them in their different working positions. Fig. 6 is a side elevation of the spacing mechanism in the position for making sets of letters. Fig. 7 is a similar elevation when the attachment is thrown back out of use between the periods of making words by the word-type. Fig. 8 is a plan view of the spacing-stops and frame. Fig. 9 shows a modified form of using the spring to control the side *e*. Fig. 10 is a detail view of the pawl and stops. Fig. 11 is another detail view representing the pawl in its normal

position. Fig. 12 is a detail view of the bell-crank lever and its trigger devices.

The drawings show my invention mounted upon the ordinary spacing-frame of the type-writer now in general use.

A A indicate this frame-work, on which the parts are mounted; *a*, the tilting beam or rail, which is rigidly secured to arms *a'*, which are in turn rigidly attached to the rocking shaft A', which shaft is journaled on the arms *a''*, which project rearwardly from the front of the frame A.

B indicates a standard rigidly secured to rock-shaft A', which is provided with an arm, *b*, as shown in Fig. 7, slotted at the top, so as to form a support for a pivot-shaft, *b'*, which is secured to the forks of standards B *b*.

C indicates a pawl which journals upon the pivot *b'*, and the upper end of which is beveled off to form a knife-edge, as shown in Fig. 2, to act as a pawl or catch for engaging with the teeth of the rack-bar, which is mounted upon the reciprocating carriage of the ordinary type-writer in the usual manner. D indicates a similar pawl rigidly mounted on the top of standard B, and forms the other pawl engaging with the rack-bar of the carriage. These pawls D and C are constructed and mounted upon the ordinary oscillating frame, which is represented by parts *a a' B b*, pawl D being rigidly secured to the standard B, and oscillating forward and back therewith upon centers A'. Pawl C is, however, provided with additional lateral movement, so as to allow of the spacing requisite for printing a word-type by one key-movement, as will be hereinafter explained.

Rail *a* is operated by means of the beam or rail *c*, which is suspended upon the rail *a* by means of wire hook-rods *c'*, which are hung in notches of the rail *a*. Beam *c* and the rail *a* are operated or depressed by means of finger-key levers *c''*, which are depressed upon the transverse beam *e*, which rocks the frame B and moves it forward from the position shown in Fig. 7 to the position shown in Fig. 6, moving pawl C out of engagement with the rack-bar of the reciprocating paper-frame, and bringing pawl D into engagement therewith to arrest the movement of the paper-frame after the space is made. The parts *c' c''* are also of ordinary construction, except the de-

pressing-lever c'' , which is slotted or gained at its forward end, so as to clear bar d' .

E indicates a metallic plate rigidly secured to the top of standard B by a screw, l' .

5 e indicates a back stop for pawl C. It is held against pawl C so the latter will normally be in the plane with pawl D by means of a retractile spring, E' , the forward arm of which bears against a lug, e^2 , on the back stop. 10 In Fig. 9 is shown a modified form of using the spring to control the slide or back stop, e . The reference-numeral 10 in this figure represents a downwardly - projecting lug on slide e , working in slot 11 made in the plate E. 15 12 represents a pivoted arm, the point of which bears against the lug 10. 13 represents a retractile spring for drawing the arm 12 and slide e back into position.

When the rack-bar of the paper-carriage is released from contact with the pawl D, the paper-carriage is moved to the left from it by a spring or weight in the ordinary manner. When the teeth of the rack-bar are released from contact with pawl D by the backward movement of the 20 rocking frame B, one of the teeth will engage with the pawl C, which, being pivoted, moves under the strain of the carriage weight or spring one space to the left into the position shown by 1, Fig. 5, carrying stop e backward and 25 forcing the arm of the spring E' backward until the movement is arrested by the end of stop e striking against stop d^3 , when the pawl C will be one space to the left of its normal position, as shown by dotted lines in Fig. 5, 30 and the pawl C, being in contact with one of the teeth of the paper-carriage, it, with the stop e and d^3 , holds the carriage in position for the impression on the paper of a letter or a word-type. Thus the movement of the carriage 35 one space is produced by the movement of pawl C on its pivot one space to the left, and said pawl C is arrested in this latter position by the stops e and d^3 .

In order to make the longer spaces by a 45 single movement sufficient to make four letters, or three letters and a space, I provide the following instrumentalities for operating the pawls C D and actuating the oscillating frame B, upon which they are mounted:

50 F F indicate supplemental bent arms secured to a cross-bar, F' , which is journaled upon the rock-shaft or center A' . These arms project forward and support rail d , and are held a slight distance above arms a' by means 55 of a spring, f' , which is secured to standard I' , the forward end of which spring supports the arms F by pressing upward against a cross-bar, i , which is rigidly secured to the arms F to hold them normally above the lever- 60 arms $a' a'$.

G G' denote links, one of which is pivoted to the cross-bar i of lever-arms F, and the other, G' , pivoted to a bell-crank lever, H.

65 G'' indicates a right-and-left-hand screw-rod engaging with threads of links G G', so as to adjust the length of the compound link formed by the parts G G'.

I indicates supporting-arms, which are rigidly secured to part I' , which is in turn rigidly attached or secured to standard B, so as to 70 rock or oscillate upon the pivots A' .

Bell-crank lever H is provided with a cross-shaft, H' , which is pivoted upon center screws, h , which are tapped through arms I.

Upon the bell-crank lever H are pivoted 75 two spring-triggers, J J', $j j'$ indicating the pivots, and $h^2 h^3$ retractile springs for holding these triggers J J' in a vertical position.

L L' indicate catches formed on the triggers J J' for operating the spacing stops or catches 80 M N. These catches M N are pivoted upon arm O, by means of a pivot, O' , which arm projects outwardly from the standard B. Catch M is notched at m , so as to act as a stop for pawl C in its normal position, and holds pawl 85 C in a plane parallel with pawl D, catch M being held in its normal positions by retractile spring K. m' indicates an arm projecting forward from the pivoted catch M and passing under catch L' of trigger J.

Catch-lever N is likewise pivoted to arm O, 90 and held in its normal position by retractile springs l . It is also provided with the outwardly-projecting lever-arm N' , which is held under the catch L of trigger J', and operated 95 by it.

o indicates an adjusting-screw for regulating the backward movement of the pawl C, against which it rests when the stops M N are thrown downward out of action. The stops 100 M and N are depressed and thrown out of position as stops for the pawl C by means of the catches L L' upon the triggers J J', which catches are brought down upon the arms $m' N'$ by means of bell-crank lever H, links G G' 105 G'', tilting-arms F, and rail d . The rail d is operated by a lever-key, d^2 , which depresses rail d' , suspended upon rail d . The key-lever d^2 is slotted out, so as not to come in contact with the rail c , but rest normally on the rail 110 d' , so that as lever d'' is depressed by a finger-key of any known form of construction, rail d' is depressed, and with it rail d , which is rigidly secured to the arms F F, which move 115 upon the center A' , conveying motion through link G to bell-crank lever H, bringing the catches of triggers J J' down upon the arms $m' N'$ and depressing the catches M N, drawing them downward, so that pawl C moves 120 laterally over the catches M N, and rests against the stop o upon arm O. The pawl will then occupy the position shown by 4, Fig. 5.

The depression of the rail-arms F brings it down upon the arms a' during the first part of its motion, thereby rocking the standard 125 B upon its centers A' , and brings pawls C D forward into the vertical plane, as shown in Fig. 6.

In order to allow the paper-carriage to move over the distance corresponding to three let- 130 ters and a space, or four letters, as the case may be, I provide the following instrumentalities to throw out of use the catch N, which, when held in normal position, allows pawl C

to occupy the position as shown at 3, Fig. 5. The catch N in its normal position serves as a stop for the pawl C, which occupies the position 3, as shown in Fig. 5. This is accomplished by moving the trigger J' with its catch L inwardly, so as to pass arm N'.

P indicates an arm pivoted upon the frame A, as shown in Fig. 2; P', a spring for holding it in its normal position, as there shown.

When it is desired to throw the trigger J' and catch L inward, so as not to depress arm N' of stop N, I provide an independent key-lever, Q, which operates lever-arm Q', rigidly secured to the pivoted arm P. When the key-lever of the rod Q' is depressed, arm P is forced inward and strikes the trigger J', carrying it inward sufficiently to allow the catch L to pass downward inside of the arm N', so that the catch N is not depressed but acts as a stop for the pawl-lever C and limits its movement to the point 3, as shown in Fig. 5. The various positions which the pawl C occupies are represented by 1, 2, 3, 4, 1 showing the catch advanced to the left of the plane of the pawl D for making a single space, 2 showing it in its normal position in plane with pawl D, 3 showing it in position for making a word-type of three letters or two letters and a space, and 4 showing pawl C in its extreme lateral position, with the stops M N depressed for making the longer spaces.

Thus it will be seen that the stop M in its normal position acts as a stop to limit the lateral movement of pawl C and hold it in plane with pawl D. Stop N serves as a stop to limit the movement of the pawl C for three spaces, and stop o serves as an extreme limit for the movement of pawl C the longer set of spaces.

The word-types, prefixes, or suffixes are arranged upon an arm the same as a single letter, but in impressing either three or four letters the longer spaces are required. Hence, to provide these longer spaces—say the three letters and a space or four letters—bell-crank lever H, with the catches L L' in their normal position, is operated by the depression of rail d, when the stops M and N will be drawn down out of position, so that the pawl C will move to the extreme limit against stop o, as shown in Fig. 10; but when a space—say of three letters—is to be made, key-lever Q is depressed in conjunction with the rail d, which action depresses the stop M only, leaving the stop N in its normal position, because the catch L is by the action of arm P thrown inward so as to pass the arm N'.

I have shown the upright B I as made of separate pieces and rigidly secured together. It is obvious that those parts, together with arm O, arms I, and plate E, could all be cast in one piece.

It will also be seen that either one of the stops M or N could be used alone and operated by a single trigger-catch to form a single long space. The object of using the two combined is to vary the length of the long spaces.

I do not desire to limit myself to the pecu-

liar means of operating these stops, as various modifications may be made in the connecting mechanism between the treadle d and the stops M and N, so as to bring them into operation by the rocking movement of the main standard B I.

I have not shown the paper-carriage and drum on which the paper is rolled, as my attachment may be used upon type-writers now in general use.

R indicates a bell of ordinary construction; S, the drum on which the spring for pulling the paper-carriage is mounted.

The stops M and N and the pivoted pawl C or its equivalent could be used with the caligraph type of machine instead of the Remington type, changing the arrangement and location of the parts to correspond with the operative mechanism of the caligraph.

I do not wish to limit the application of my invention to the Remington type of machine alone, as the same may be readily adapted to be used in connection with the caligraph type.

What I claim is—

1. In a type-writer, the combination of stationary pawl D, pivoted movable pawl C, plate E, for forming a letter-space by the lateral movement of pawl C, the sliding stop e, secured to plate E and bearing against the side of the movable pawl, and provided with lug e², the stop d''', to check the movement of said stop, spring E', connected to plate E, lug e² of stop e, and movable stop M, all mounted on the rocking standard B for operation, substantially as described.

2. In a type-writer, the combination of the rocking standard B, the pawl D, rigidly secured thereto, the pawl C, connected to said standard and having a lateral movement, rail c, connected with said standard to rock the same, the pivoted arms F, the rail d, connecting said arms together at their forward ends, and a rail, d', suspended from rail d, substantially as described.

3. The combination, in a type-writer, of the rocking standard B, the pawl D, rigidly mounted thereon, the movable pawl C, connected with the rocking standard and capable of having a lateral movement imparted to it, the rail c, connected with the arm a' of the rocking standard, the pivoted arms F, the rail d, connecting the arms F at their forward ends, the rail d', suspended upon the rail d, and the pivoted bell-crank lever H, connected with the arms F, said bell-crank lever H carrying the triggers J J' for operating the stops M N, substantially as described.

4. The combination, with the rail d and arms F, of the bell-crank H, connected thereto by means of a link, and carrying one or more trigger-catches, J J', adapted to operate stops N or M, substantially as described.

5. In a type-writer, the stationary pawl D and pivoted pawl C, in combination with the pivoted stop N, provided with an arm, N', and a movable trigger adapted to bear against the stop to move the same and to be moved

out of engagement therewith so as not to move the same, substantially as described.

6. In a type-writer, the stationary pawl D and pivoted pawl C, in combination with the
5 movable stop M, a trigger to engage with a part of said stop, all mounted upon the rocking standard B, and a lever to operate said trigger to move the stop from said pivoted pawl, substantially as described.

10 7. In combination with the stationary pawl D and the pivoted pawl C, the stops M and N, springs $h^2 h^3$, arms M' N', and triggers J J', mounted on bell-crank lever H, for throwing
15 them out of position to allow of the longer lateral movement of the pivoted pawl C, substantially as described.

8. In a type-writing machine having stationary pawl D and a pivoted pawl, C, the
20 pivoted stop N, trigger J', and pivoted lever-arm P, with pivoted link-connection adapted

to be operated so as to throw trigger J' with its catch out of contact with the arm of stop N, whereby the latter is held in its normal position to act as a stop for the pivoted pawl C, substantially as described. 25

9. In a type-writer, the combination of the stationary pawl D, the pivoted pawl C, an oscillating frame upon which the pivoted pawl is mounted, movable stops M N, triggers to
30 engage with some part of said stops, a lever to operate said triggers to move said stops, and a lever to move one of said triggers from engagement with its stop, substantially as described.

In testimony whereof I have hereunto set
35 my hand.

LEWIS H. HOEFER.

Witnesses:

JNO. E. JONES,
EDWARD BOYD.