

No. 876,959.

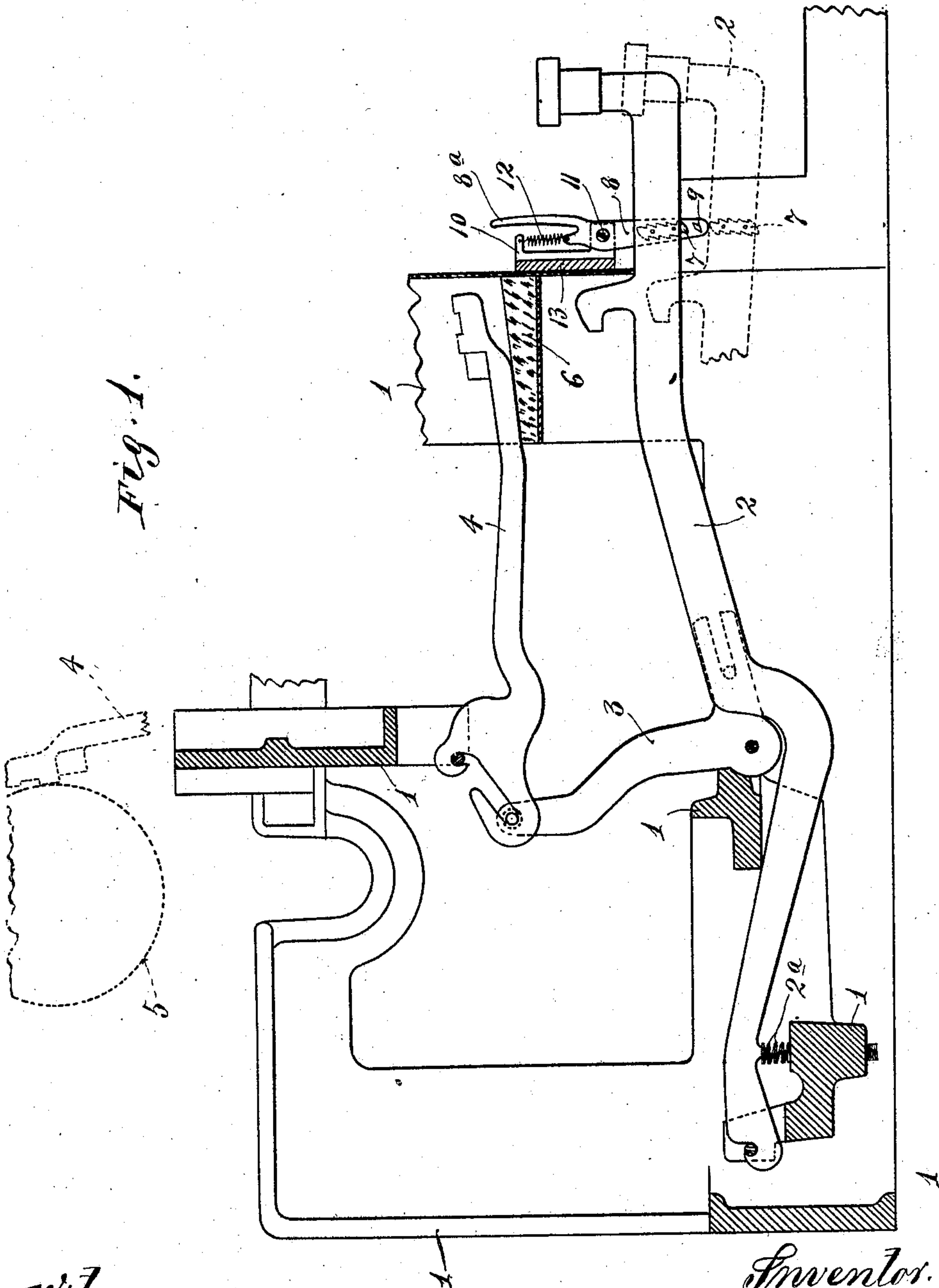
PATENTED JAN. 21, 1908.

H. HANSON.

TWO WAY FULL STROKE DEVICE FOR KEY LEVERS.

APPLICATION FILED AUG. 12, 1907.

2 SHEETS—SHEET 1.



Witnesses.
A. H. Opsahl.
L. L. Simpson

Inventor.
Hans Hanson
By his Attorneys.
Williamson & Merckus

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2 SHEETS—SHEET 2.

Fig. 2.

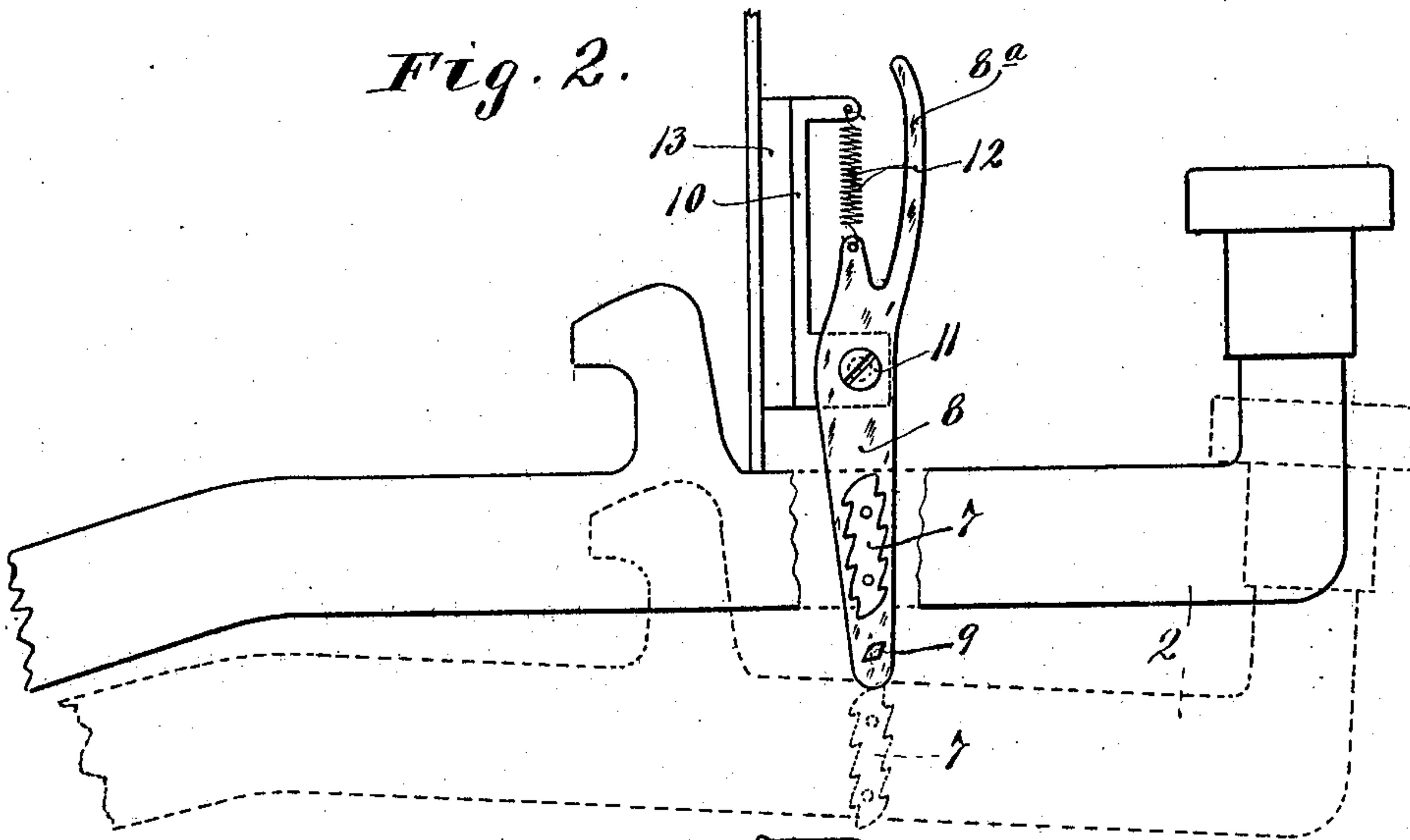


Fig. 3

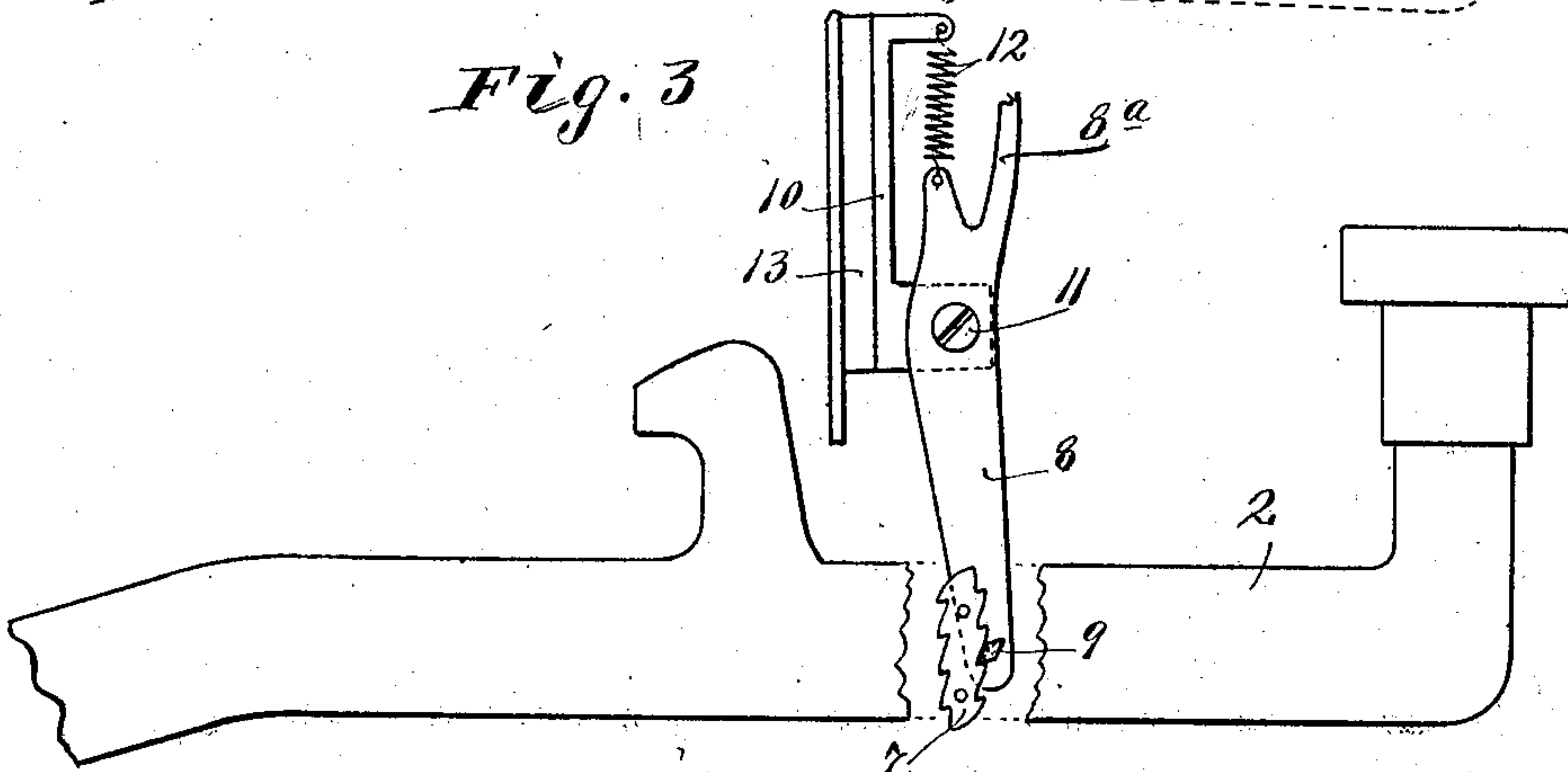
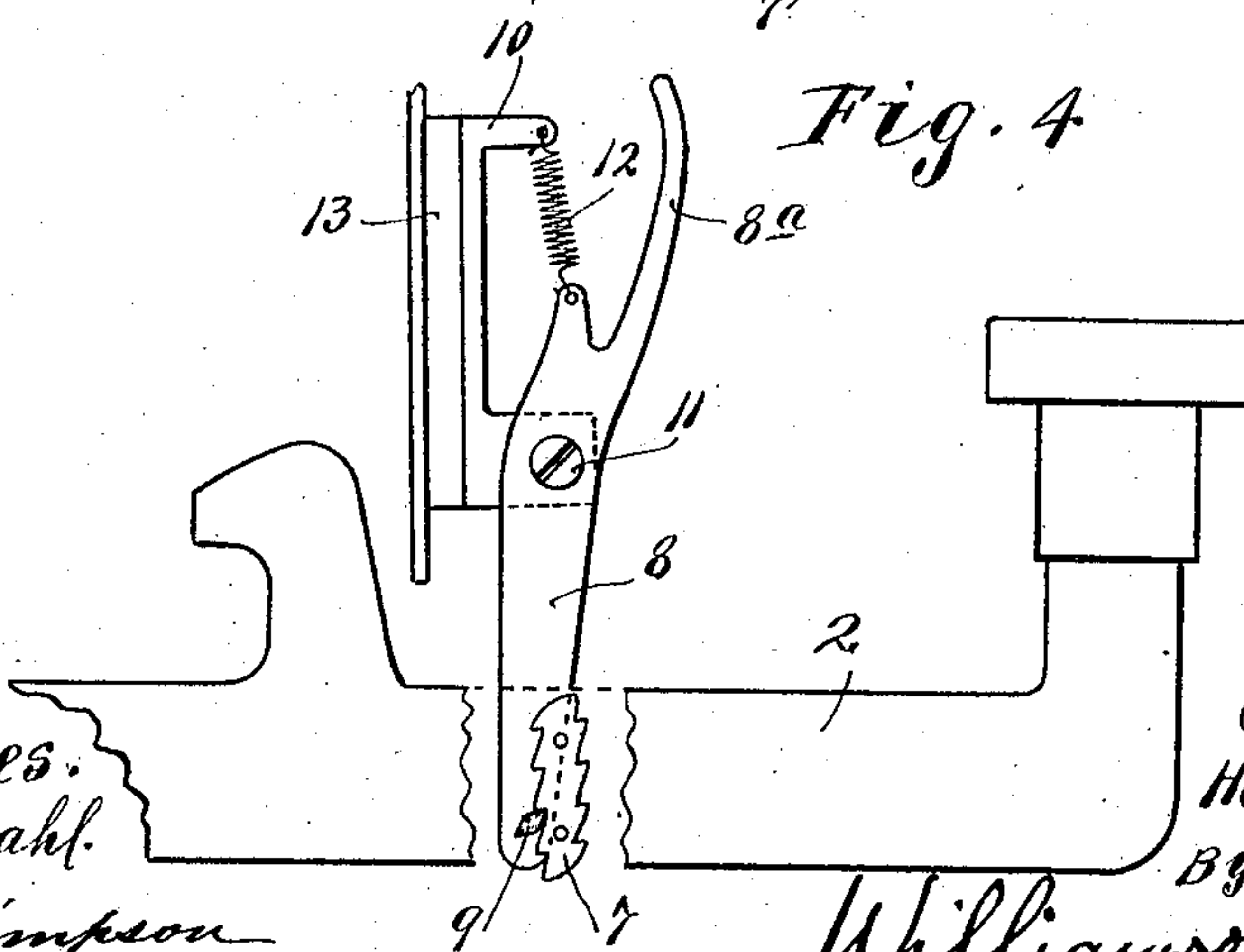


Fig. 4



Witnesses.

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L. L. Simpson

Inventor

Hans Hanson

By his Attorneys

Williamson & Merchant

UNITED STATES PATENT OFFICE.

HANS HANSON, OF HARTFORD, CONNECTICUT.

TWO-WAY FULL-STROKE DEVICE FOR KEY-LEVERS.

No. 876,959.

Specification of Letters Patent.

Patented Jan. 21, 1908.

Application filed August 12, 1907. Serial No. 388,177.

To all whom it may concern:

Be it known that I, HANS HANSON, a citizen of the United States, residing at Hartford, in the county of Hartford and State of Connecticut, have invented certain new and useful Improvements in Two-Way Full-Stroke Devices for Key-Levers; 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 it appertains to make and use the same.

My invention has for its object to provide a two-way full stroke device for key levers.

One-way full stroke devices are old and well-known in this art. In some classes of key-actuated machines, however, it is highly desirable to make sure that the key will move to the opposite extremes of its two motions before its direction can be reversed. The importance of this can be readily understood, if it be assumed that there be secondary devices which must be operated either directly from the key levers or by other parts called into action by the manipulation of the key levers, and which secondary devices must complete their work before the direction of the key's motion can be reversed. Such conditions arise in some forms of computing machines or combined typewriters and computing machines, for which usage my present invention was especially designed.

To the ends above noted, my invention consists of the novel devices and combinations of devices hereinafter described and defined in the claims.

The invention is illustrated in the accompanying drawings as applied to the key mechanism of the well known Underwood typewriter.

In said drawings, like notations refer to like parts throughout the several views.

Figure 1 is a view in sectional elevation illustrating the key action of an Underwood typewriter, with my two-way full stroke device embodied therein. Fig. 2 is a detail of some of the parts shown in Fig. 1, but on a larger scale. Fig. 3 is a view similar to Fig. 2, but with the parts shown in a different position; and Fig. 4 is another view similar to Figs. 2 and 3, but with the parts in still a different position.

The numeral 1 represents the framework of an ordinary Underwood typewriter; the numeral 2 the spring held key lever; the numeral 4 the type bar; the numeral 3 the pivoted bell crank lever connecting the parts

2 and 4 with the pivotal and sliding joints peculiar to this machine. The platen roller 5 is shown in diagram by dotted lines in Fig. 1 of the drawings. The numeral 6 represents the cushioned stop on which the type bar 4 rests when in its idle or normal position, as shown in Fig. 1.

Having regard now to my improvement, I provide as an element thereof, a two-way or double-faced ratchet 7 secured to one of the profile faces of each key lever 2. For cooperation with the ratchet 7, I provide a pivoted pawl lever 8 having at its lower end a rhomb shaped pawl 9 fixed thereto, the opposite points of which are adapted to engage with the opposite faces of the double ratchet 7 in the opposite directions of the key lever's travel. As shown, there is fixed to the framework of the typewriter, pawl hangers 10 with upper and lower forwardly projecting lugs, to the lower of which lugs the pawl levers 8 are pivoted by screws 11, or any other suitable way, and to the upper of which lugs the heads of the pawl levers 8 are connected by springs 12. The pivots 11, the points of attachment of the spring 12, and the pawl piece 9 are substantially in line with each other, when the pawl lever is in its normal position, or as shown in Fig. 1 of the drawings. The spring 12 therefore tends always to bring the pawl lever 8 into the position shown in Fig. 1. The pawl lever 8 hangs directly alongside of the profile face of the key lever 2, and in such position that its pawl 9 will be in the path of the head of the ratchet 7. The length of the ratchet 7 is such, relative to the stroke of the lever 2, that the pawl will clear the ratchet, in each direction of the key's movement, at the extreme limits thereof only. When the parts are in their normal or idle position, shown in Fig. 2, the ratchet 7 on the key lever stands directly below and in the path of the pawl 9, and the opposite ends or heads of the ratchet 7 are reversely rounded or made of the proper shape to have a reverse camming action on the pawl 9, so as to rock the pawl lever 8 and shift the pawl 9 from one face to the other of the double ratchet 7, at the initial part of the key lever's stroke in each of its two opposite directions of movement, as may be readily understood from an inspection of Figs. 2, 3 and 4.

Considering the shape of the teeth or opposite faces of the double ratchet 7, it follows that, on the downward motion of the

key lever 2, the pawl will be riding as shown in Fig. 3 and will readily slip over the teeth as long as the key lever continues to move downward; but, if the finger be removed from the key lever 2, so that it becomes subject to its retracting spring 2^a, then the pawl 9 will engage with one of the teeth of the forward face of the ratchet and prevent the return of the key, simply holding it there until further downward movement is imparted thereto, and to the full extreme of its downward stroke. Considering the shape of the teeth on the ratchet 7, it also follows that on the up-stroke of the key lever 2, the pawl 9 will ratchet freely over the teeth as long as the lever continues to move upward; but, if the upward movement of the key 2 be stopped at any point by the operator attempting to reverse the motion, then the pawl 9 will engage under one of the teeth on the rear face of the ratchet 7 and thereby prevent any downward motion of the key, and so act until the key is moved to the full upward limit of its upward stroke.

It will, therefore, be seen that the simple combination of parts above described constitutes a reliable two-way full stroke device for the key levers 2. The key lever must move to its limit in each direction of its pivotal motion before it can be reversed.

It should be further noted that the cooperating elements constituting the two-way full stroke device, are of such structure and so mounted as to add but very little, if anything, to the required strength of the key touch. The pawl levers 8 are so pivoted and their centering springs 12 are so light and so related as to make the pivotal motion, effected by the camming action from the heads of the ratchet 7 on the pawl 9, very easy or light.

As it may be desirable to release the key lever 2 from the ratchet 7, without any extreme motion of the key lever, the pawl levers 8 are provided with upwardly extended releasing fingers 8^a by which the pawl levers can be conveniently rocked by the operator so as to release the key lever from the pawl 9, whenever so desired.

The pawl lever hangers 10 may, of course, be secured to the framework of the typewriter in any suitable way; but as shown, the said hangers 10 are made fast to a cross bar or plate 13 which is secured to the front uprights of the typewriter frame 1. In practice, the releasing fingers 8^a project upward

through suitable slots in a suitable shield which is applied to partially cover and protect the pawl levers 8 from being tampered with; but, for the purposes of this case, it has not been deemed necessary to illustrate this shield.

By actual usage on a commercial machine I have demonstrated the efficiency of the two-way full stroke device herein disclosed and claimed, as applied to the numeral keys of a combined typewriter and computing machine, wherein the computing mechanism was controlled from the numeral keys of the typewriter, and more or less of the parts of the computer were indirectly actuated by the numeral key levers, and, for reliability in the accuracy required of such machines, it was desirable to have the full stroke of the key levers in each direction of their pivotal movement.

While I deem the particular combination of elements herein illustrated as a highly desirable one, for securing by the simplest means, a satisfactory two-way full stroke device, it must be understood that the construction can be varied to a considerable extent without departing from the spirit of the invention.

What I claim is:—

1. The combination with a key lever, of a two-way ratchet and a pivoted pawl cooperating with each other to require the full stroke of the key in each of the two directions of its pivotal movement, one of which parts is manually movable independent of the key lever, for releasing one from the other, whenever so desired, substantially as described.

2. The combination with a suitable frame and a key lever, of a two-way ratchet fixed to said lever, a spring-held pivoted pawl lever supported from said frame engageable with the opposite faces of said ratchet in the opposite direction of the key's movement and shiftable from one face to the other of said ratchet only at the opposite extremes of said key lever's motion, and which pawl lever is provided with a releasing finger for disengaging said parts, whenever so desired, substantially as described.

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

HANS HANSON.

Witnesses:

W. S. ANDREWS,
H. A. ALLEN.