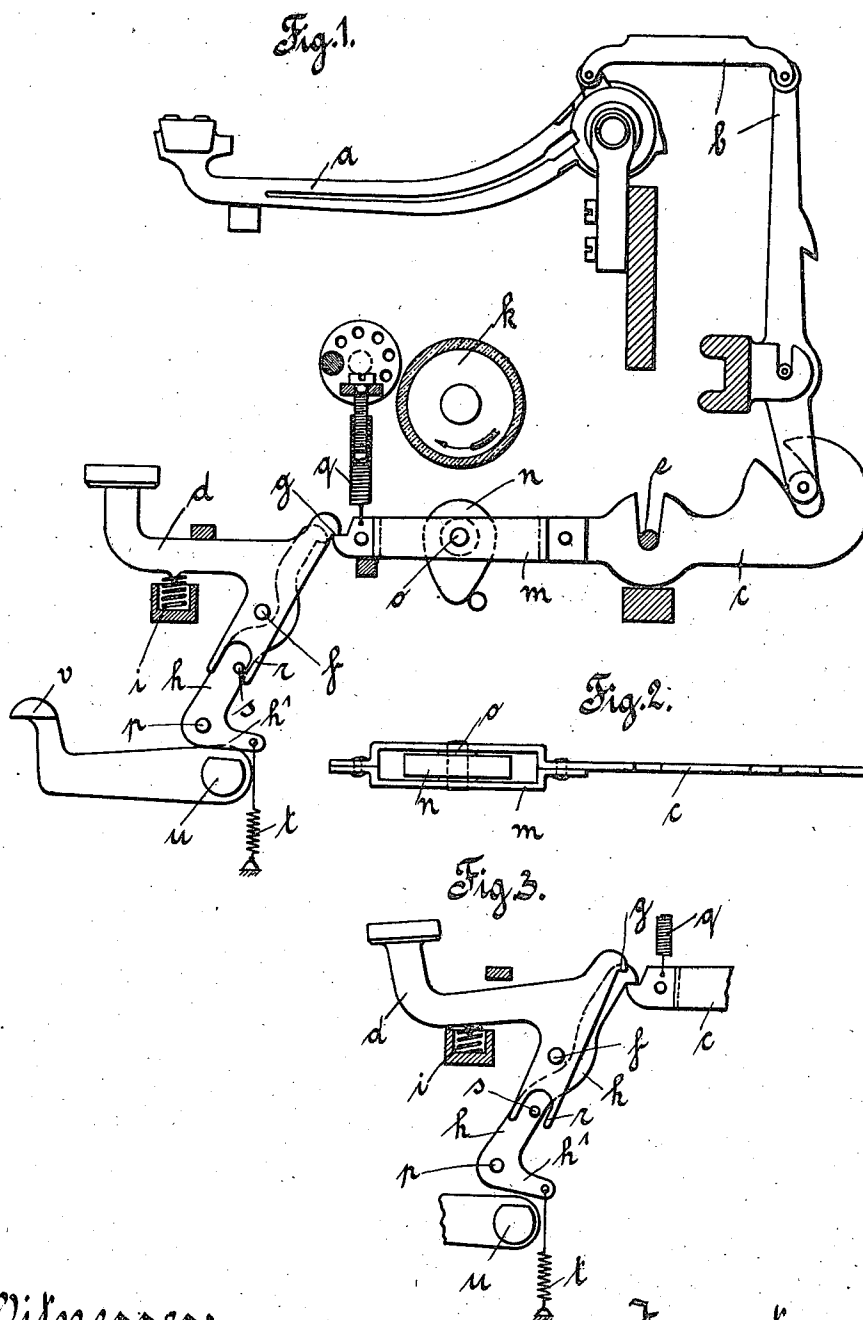


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KEYBOARD MACHINE.  
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1,153,582.

Patented Sept. 14, 1915.



Witnesses:  
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# UNITED STATES PATENT OFFICE.

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## KEYBOARD-MACHINE.

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Specification of Letters Patent.

Patented Sept. 14, 1915.

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*To all whom it may concern:*

Be it known that I, ADOLF STEINER, manager, a subject of the German Emperor, and residing at 61 Plan-Ufer, Berlin, State of Prussia, in the German Empire, have invented certain new and useful improvements in or Relating to Keyboard-Machines, of which the following is a specification.

Key-board machines are known in which a mechanical source of power is released by the pressing down of a key, and then performs the desired work, for example, in the case of type-writing machines causes the types to be struck. The machines of the kind as constructed hitherto have the disadvantage that the mechanical device remains in action as long as the key is depressed. If for example the person who is using the type-writing machine does not release the key at the right time, the mechanical device comes into action again. It is thus impossible when writing to make use of all the fingers alternately and at the same time to let a finger or fingers rest on the keys in order to give a support to the hand. The invention obviates this difficulty in this manner, viz., that in addition to the locking of the mechanical device by the key itself there is a second locking device, which comes into action when the key is pressed down and after the working stroke is completed locks the released mechanical device but is put out of action again by the released key. As it may happen that the same key has to be frequently struck time after time, for example when words are underlined in working the type-writing machine, in the present case in order that the uninterrupted working of the mechanical device may be insured by the simple holding down of the particular key a device is provided for putting the above-mentioned additional locking device out of action.

In the drawing one form of the invention is shown as applied to a type-writing machine. The device can of course be quite suitably arranged on any keyboard machine with mechanical action.

Figure 1 is a diagrammatic illustration of the device in its position of rest. Fig. 2 a partial plan of Fig. 1. Fig. 3 is a part of Fig. 1, in the position in which the key is pressed down and the additional locking device put in action.

In the drawing, *a* is the type lever, *b* the

levers connecting the type lever with its operating lever *c* and *d* is the key-lever. The operating lever *c* is pivotable around the shaft *e*, while the key-lever oscillates around the shaft *f*. In the position of rest the key-lever *d* is locked by means of the projection *g* which is arranged thereon. A spring *i* presses the key lever into its locking position. If the operating lever *c* is released by the pressing down of the key-lever, the type is struck in the known manner, the spring *g* rotating the lever *c* around its pivot *e*, and thereby causing the type-lever *a* to come against the paper. The eccentric or cam *n*, which turns around the pivot *o* and is mounted in a yoke or bracket *m*, connected with the lever *c* now lies against the continually rotating roller *k*, is driven by this roller *k* so that in consequence of the form of the disk *n* the lever *c* is returned to its non-effective position. Now according to the invention a locking pawl *h* is provided for each key lever, the projection of which is located slightly below the projection *g* on the key-lever *d*. The pawl *h* is mounted on a pivot *p* below the axis of rotation of the corresponding key lever, which in the case of key-board machines with a number of rows of keys situated one under the other may be the pivot of the next lower row of keys. Each key-lever has an extension *r* which is provided with a slot, which embraces a tappet *s* that is arranged on the pawl *h*. The pawl *h* itself has a second arm *h'* to which the spring *t* is connected, which spring has a tendency to move the pawl *h* toward the lever *c*.

The action of the device is as follows:— In the position of rest the operating lever *c* stands in engagement with the projection *g* on the key-lever *d*. The slot in the extension *r* of the key lever and the tappet *s* are so arranged that in the locking position of the key lever *d* the pawl *h* stands at such a distance from the lever *c* that it cannot come into engagement therewith (Fig. 1). For this it is of course necessary that the spring *t* should be weaker than the spring *i*. When the key lever *d* is pressed down the extension *r* releases the tappet or the pin *s* and the pawl *h* can oscillate toward the operating lever *c* under the action of the spring *t* (Fig. 3). The operating action of the lever *c* in the example of construction shown is effected, by suitable for-

mation of the cam or eccentric *n*, so that the backward movement of the lever *c* into its position of rest is effected with a lost motion sufficient to enable the projection of the lever *c* to engage with the pawl *h* (which is now in the working position) so that the lever *c* is thereby locked. Thus notwithstanding that the key-lever *d* is held down, only a single working of the mechanical operating device can take place. If now the key-lever *d* be released, it draws the pawl *h* away from the lever *c*, through the engaging of the extension *r* with the tappet or pin *s*, while at the same time its projection *g* moves into the locking position. In consequence of the different position of the pivot of the lever *d* and of the pawl *h* and the play between the two pawl projections, this can be easily effected without the fear of any jamming occurring or of the projection *g* taking hold too late.

Now in order to put the second locking device *h* out of action, that is to insure uninterrupted working of the particular mechanical operating device when a key is struck, I provide the following arrangement: Below the arms *h*<sup>1</sup> of the pawl *h* is mounted a shaft *u* which is flattened on the one side and can be moved in any suitable manner for example by means of a key *v*. If the shaft *u* is in the position as shown, the pawl *h* can work in the manner indicated. On the other hand if it be rotated by pressing down the key *v* so that its full or circular side is turned toward the arms *h*<sup>1</sup> the latter are locked in their non-effective position, so that pawl *h* cannot come into engagement with the lever *c*.

I claim:—

1. In a key-board machine the combination of keys, operating devices controlled thereby, locking means controlled by said keys for locking said devices in the position of rest and further locking means for said devices coming into action when a key is struck.

2. In a key-board machine, the combination of keys, operating devices controlled thereby, a locking means controlled by said keys for locking said devices in the position of rest, a second locking device for each key, and means connected with the keys for holding the respective second locking device out of action as long as its locking means is in its locking position.

3. In a key-board machine the combination of keys, operating devices controlled thereby, two different locking means for the said devices capable of locking after the completion of a working stroke the one being controlled by the keys and being in action when the keys are released and out of action when the keys are depressed and the other being controlled by the keys so as to be in action when the keys are depressed

and out of action when the keys are in the locking position.

4. In a key-board machine the combination of key levers, operating devices controlled thereby, a projection on each of said key levers locking the respective device in its position of rest when the key lever is released but being out of action when the key lever is operated, and pawls, each being connected with and controlled by one of the key levers so as to be in action and lock the respective device when the projections are disengaged and vice versa.

5. In a key-board machine the combination of pivotally mounted key levers, operating devices controlled thereby, a projection on each of said key levers locking the respective device in its position of rest when the key lever is released but being out of action when the key lever is operated, and pawls, each being connected with one of the key levers provided with locking parts, pivotally mounted and controlled by the respective key lever so as to be in action and lock the respective device when the projections are disengaged and vice versa, the pivot of each pawl being farther from its locking part than the pivot of the respective key lever from its projection.

6. In a key-board machine the combination of key levers, operating devices controlled thereby, a projection on each of said key levers locking the respective device in its position of rest when the key lever is released but being out of action when the key lever is operated, and pawls, each being connected with one of the key levers and provided with locking parts and controlled by the respective key lever so as to be in action and lock the respective device when the projections are disengaged, and vice versa the locking part of each pawl being seated slightly below the projection of the respective key lever.

7. In a key-board machine the combination of pivotally mounted key levers, operating devices controlled thereby, a projection on each of said key levers locking the respective device in its position of rest when the key lever is released but being out of action when the key lever is operated, and pawls, each being connected with one of the key levers and provided with locking parts and pivotally mounted and controlled by the respective key lever so as to be in action and lock the respective device when the projections are disengaged and vice versa, the pivot of each pawl being farther from its locking part than the pivot of the respective key lever from its projection.

8. In a key-board machine, the combination of keys, operating devices controlled thereby, two different locking means for the said devices capable of locking after the completion of a working stroke the one be-

ing controlled by the keys and being in action when the keys are released and out of action when the keys are depressed and the other being controlled by the keys so as to be in action when the keys are in the locking position and means for putting the last mentioned locking means wholly out of action.

9. In a key-board machine the combination of keys, operating devices controlled thereby, two locking devices for each of said devices capable of locking it after the completion of a working stroke the one being controlled by the key and being in action when the key is released and out of action when the key is depressed and the other being controlled by the key so as to be in action when the key is depressed and out of action when the key is in the locking position, and means for putting all last mentioned locking devices at the same time out of action.

10. In a key-board machine the combination of keys, operating devices controlled thereby, two locking devices for each of the said devices capable of locking it after the completion of a working stroke the one being controlled by the key and being in ac-

tion when the key is released and out of action when the key is depressed and the other being controlled by the key so as to be in action when the key is depressed and out of action when the key is in the locking position, and a stop engageable and disengageable with the last mentioned locking devices for putting them out of action.

11. In a key-board machine the combination of keys, operating devices controlled thereby, two locking devices for each of said devices capable of locking it after the completion of a working stroke, one being controlled by the key and being in action when the key is depressed, and the other being controlled by the key, so as to be in action when the key is depressed and out of action when the key is in the locking position, and a shaft flattened on one side and movable so as to engage or disengage with all last mentioned locking devices for putting them at the same time out of action.

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

ADOLF STEINER.

Witnesses:

WOLDEMAR HAUPT,  
HENRY HASPER.