No. 765,799. PATENTED JULY 26, 1904.

W. G. SPIEGEL.

TYPE WRITER ACTUATING MECHANISM.

APPLICATION FILED OCT. 27, 1903.

NO MODEL.

Fig. 1.

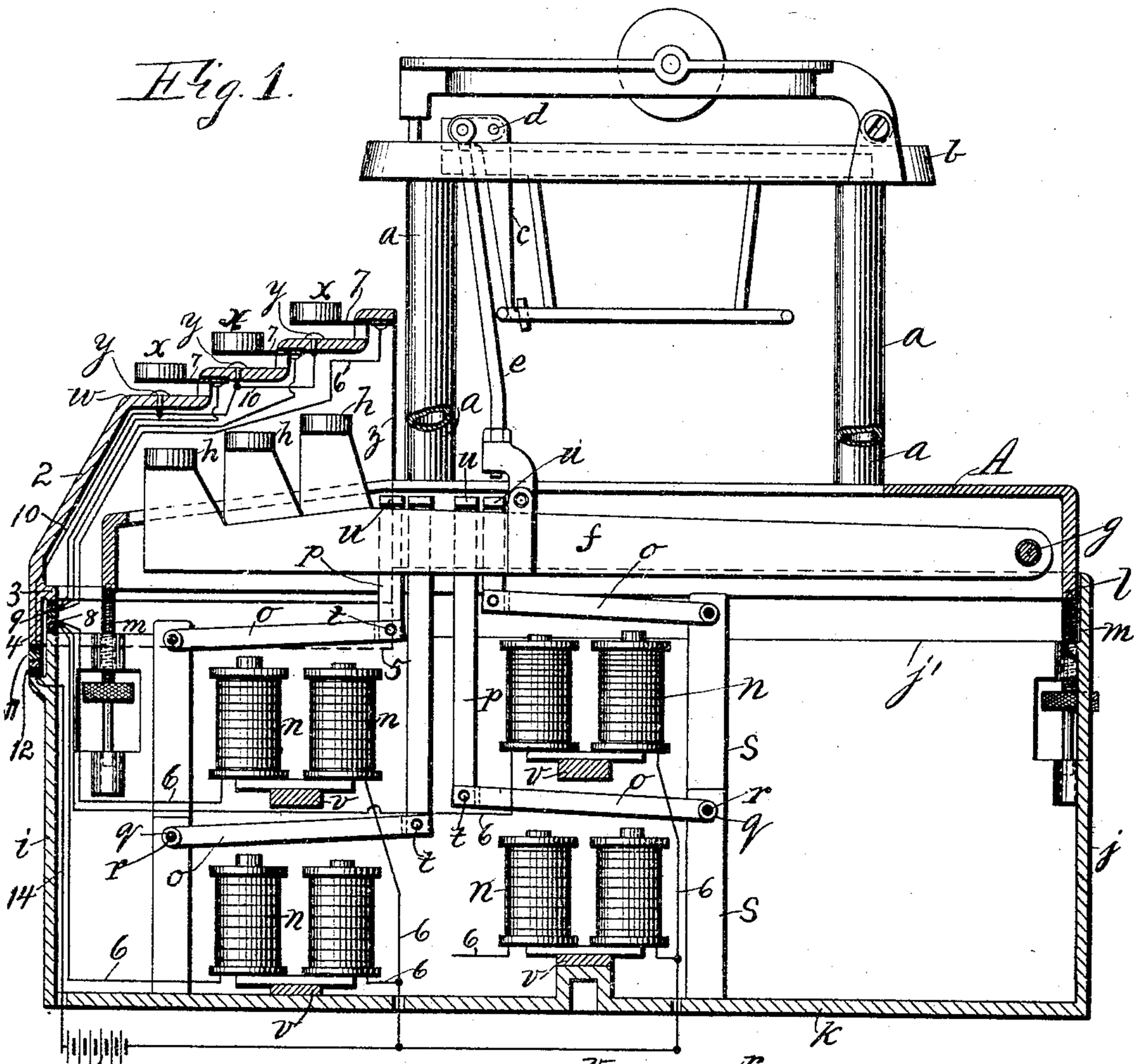


Fig. 2.

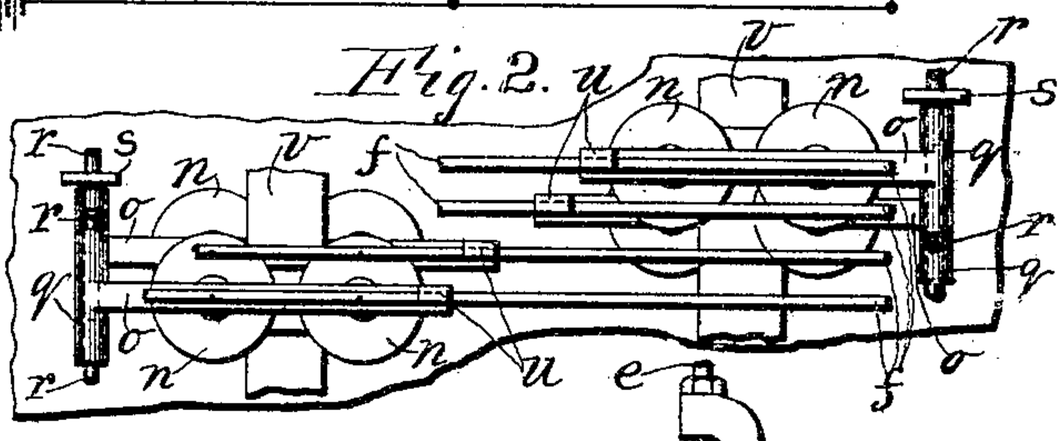


Fig. 4.

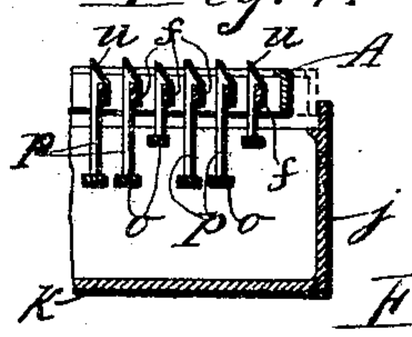


Fig. 5

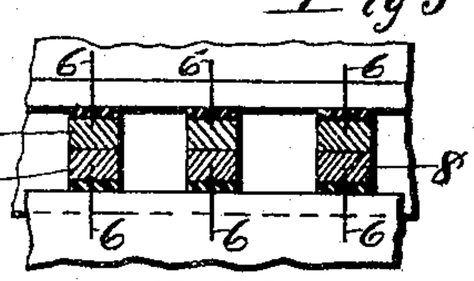
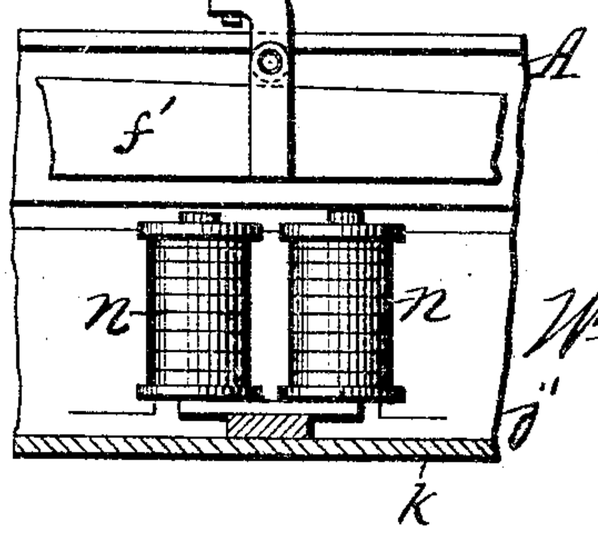


Fig. 3.



WITNESSES:

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No. 765,799. Patented July 26, 1904.

UNITED STATES PATENT OFFICE.

WILLIAM G. SPIEGEL, OF NEW YORK, N. Y., ASSIGNOR OF TWO-THIRDS TO SYDNEY H. CARNEY, OF NEW YORK, N. Y., AND WILLIAM WATT, OF ELIZABETH, NEW JERSEY.

TYPE-WRITER-ACTUATING MECHANISM.

SPECIFICATION forming part of Letters Patent No. 765,799, dated July 26, 1904.

Application filed October 27, 1903. Serial No. 178,686. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM G. SPIEGEL, a citizen of the United States of America, and a resident of New York city, county and State of New York, have invented certain new and useful Improvements in Type-Writer-Actuating Mechanism, of which the following is a specification.

My invention relates to auxiliary electric apparatus for operating type-writing machines, so as to mainly relieve the fingers of the operator of the labor of working the keys, the apparatus being particularly designed for ready application to and removal from machines in use, so as to enable the employment of it or not at the will of the operator, as hereinafter described, reference being made to the accompanying drawings, in which—

Figure 1 is a vertical sectional elevation of a type-writing machine of common form and my improved auxiliary electric-power apparatus applied thereto suitably for operating the key-levers, whether consisting of magnetic or non-magnetic material, the section being in the plane of one of the key-levers. Fig. 2 is a detail in plan view showing a plan for the disposition of the electromagnets used for operating the key-levers in relation thereto whereby the magnets of suitable size may be disposed in the limited space occupied by the key-levers. Fig. 3 is a detail in vertical section, showing the application of the electromagnets so as to utilize the key-levers as the armatures of the magnets when the said levers consist of magnetic material. Fig. 4 is a detail in vertical transverse section of the machine on a reduced scale, showing the manner of adjusting the power attachment to the type-writing machine when the construction is of the character represented in Figs. 1 and 2. Fig. 5 is a detail in transverse section, showing the circuit connections between the electromagnets and the push-buttons which the operator manipulates instead of the keys of the type-writing machine when using the attachment.

In this example of my invention I have chosen a type-writing machine of common use, in which A represents the bed-piece; *a*, the posts; *b*, the top frame; *c*, the type-levers pivoted on said frame at *d*; *e*, connecting-rods; *f*, key-levers to which said rods *e* are connected; *g*, pivots of the key-levers, and *h* the keys for operating the machine in the usual manner.

In the application of my invention to such a machine or any of like character I provide a hollow base, whereof *i* represents the front side; *j*, the back; *j'*, the lateral sides, and *k* the bottom, adapted to receive the lower edge of base A within its top, as shown at *l*, with adjusting-screws *m* on which to seat said base A and by which to adjust it subsequently. In this base under the key-levers *f* I provide an electromagnet *n* for each lever to operate it either directly when the lever is of metallic substance subject to the pull of the magnets, as indicated in Fig. 3, or through intermediate means, as an armature *o* and a hook-headed bar *p*, as in Fig. 1, or any other equivalent contrivance where the key-levers may be non-responsive to the pull of the magnets or where it may be desired to adapt the connection alike for levers of either character. The armatures have a tubular T-head *q* and are strung on wire pivots *r*, extending from side to side of the base-chamber and supported in suitable ports *s*, and the hook-bars *p* are pivoted at *t* to the free ends of the armatures and extend above their respective key-levers and engage them by a hook-head *u* thereabove.

To dispose the magnets in the laterally-limited space occupied by the key-levers and enable a magnet of suitable size to be appropriated to each key-lever, I have in this instance arranged them in two series of two tiers each, as shown in Figs. 1 and 2, thus overlapping them and reducing the ranks within the space afforded. The magnets are mounted on the bars *v*, traversing the chamber in the supporting-base and secured in any suitable way thereon.

In the application of the type-writing machine to the apparatus of my invention the said machine is presented over the said appa-

atus so that the hook-heads will enter between the key-levers, and after the heads reach above the key-levers the machine is shifted laterally, as indicated in Fig. 4, so that the heads overhang the key-levers suitably for engaging and operating the levers. It will be noted, however, that when the hook-heads are not thus connected over the key-levers the armatures will drop onto the pole-pieces of the magnets too low for such lateral adjustment with the type-writing machine in the working position, as represented in Fig. 1. The adjusting-screws *m*, which receive and support the base A of the type-writing machine, are therefore constructed in such long range that being first screwed down to a predetermined limit the key-levers will drop sufficiently to allow the hook-heads to be shifted over them even with the armatures resting on the pole-pieces, and when thus engaged the type-writing machine may be restored to the proper position by the screws, and the screws are thus at the same time available for adjusting the armatures relatively to the pole-pieces of the magnets.

In Fig. 3 the key-levers *f'* may be supposed to consist of a metal bar, which may serve as the armature of the electromagnet, thus enabling the armature appliances of Fig. 1 to be dispensed with in apparatus for machines having such key-levers. To operate these magnets and through them operate the key-levers with the advantage of only exercising the slight manual power required to close push-button contacts, I provide on a suitable keyboard *w* a bank of push-button contacts *x* and *y*, located directly over the keys *h*, with the buttons correspondingly marked relatively to the keys, so that closing any one will complete the electric circuit through the magnet connected with the corresponding key-lever, and thus actuate the type-lever same as if the key *h* were manually operated, the said keyboard being adapted for ready application and removal, according as it is desired to use the electric power or not.

The contrivance herein represented for such application consists of the vertical end pieces *z* and front piece 2 of the keyboard provided with a flange 3, adapted to rest on the upper edge of the front part of the inclosing base for the magnets, so that the buttons *x* register with the keys *h* below, with a marginal extension 4 of said parts extending below the seat whereon said flange 3 rests, as shown in full lines at the front and indicated by the dotted line 5 along the left side to stay the said board in position.

In order that the push-button keyboard may be thus detachably applied without interference with the circuit-wires and so as to avoid any trouble in making and unmaking connections, the feed-wires 6, through the magnets to the button-springs 7, are each connected with an insulated conducting-piece 8, suitably fixed on the upper edge of front side *i* of the inclosing base, and on the under side of flange 3 of the keyboard is a corresponding insulated conducting-piece 9, from which the parts 6' of said wires lead to the said button-springs, respectively, and the return-wires 10 of the push-buttons are connected to a conducting-bar 11 on the lower edge of front 2 of the keyboard, under which is a conducting-bar 12, resting on front *i* of the inclosing base, from which a return-wire 14 leads to the battery 15, so that merely placing the keyboard *w* in position connects the circuits and lifting it off disconnects them and allows the keyboard to be removed without interference by wires.

What I claim as my invention is—

1. In electric type-writing-machine-operating apparatus, the combination of a hollow base adapted for reception and seating of the type-writing machine in operative position in or over the upper portion of the chamber of said base, electromagnetic means in said chamber below the type-writing machine when seated on said base, and in suitable relation to each key-lever respectively for operating it, a detachably-applied keyboard with suitable push-button contacts located over the type-writing-machine keys and registering with them respectively, and a source of magnet-energizing force in circuit with the said magnetic means and the push-button contacts respectively.

2. In electric type-writing-machine-operating apparatus the combination of a hollow base adapted for reception and seating of the type-writing machine in operative position in or over the upper portion of the chamber of said base, electromagnetic means in said chamber below the type-writing machine when seated on said base and in suitable relation to each key-lever respectively for operating it, a detachably-applied keyboard with suitable push-button contacts located over the type-writing-machine keys and registering with them respectively, and a source of magnet-energizing force in circuit with the said magnetic means and the push-button contacts respectively, the said circuits having closing and opening contact-pieces in the supporting-base and the keyboard respectively, whereby they are closed and opened according as the keyboard is applied or removed.

3. In electric type-writing-machine-operating apparatus, the combination of a hollow base adapted for reception and seating of the type-writing machine in or over the upper part of the chamber of said base, electromagnets in said chamber below the type-writing machine when seated on said base, an armature-lever and a hook-headed bar connecting each magnet and type-writing-machine key-lever respectively, said hook-bars arranged vertically between the key-levers with the hooks overreaching the upper edges of the key-levers respectively, a detachably-applied

keyboard with suitable push-button contacts located over the type-writing-machine keys and registering with them respectively, and a source of magnet-energizing force in circuit with the magnets and push-button contacts respectively.

4. In electric type-writing-machine-operating apparatus, the combination of a hollow base adapted for reception and seating of the type-writing machine in or over the upper part of the chamber of said base, electromagnets in said chamber below the type-writing machine when seated on said base, an armature-lever and a hook-headed bar connecting each magnet and type-writing-machine key-lever respectively, said hook-bars arranged vertically between the key-levers, means to enable lateral shift of the type-writing machine on the base, for overlapping the upper edges of the key-levers by the hooks, a detachably-applied keyboard with suitable push-button contacts located over the type-writing-machine keys and registering with them respectively, and a source of magnet-energizing force in circuit with the magnets and push-button contacts respectively.

5. In electric type-writing-machine-operating apparatus, the combination of a hollow base adapted for reception and seating of the type-writing machine in or over the upper part of the chamber of said base, electromagnets in said chamber below the type-writing machine when seated on said base, an armature-lever and a hook-headed bar connecting each magnet and type-writing key-lever respectively, said hook-bars arranged vertically between the key-levers with means to depress the type-writing machine and place the key-levers lower than the hook-heads, means to enable lateral shift of the type-writing machine on the base for overlapping the upper edges of the levers by the hooks, and means to reset the type-writing machine in the working position, a detachably-applied keyboard with suitable push-button contacts located over the type-writing-machine keys and registering with them respectively, and a source of magnet-energizing force in circuit with the magnets and push-button contacts respectively.

Signed at New York this 23d day of October, 1903.

WILLIAM G. SPIEGEL.

Witnesses:

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J. M. HOWARD.