

No. 865,893.

PATENTED SEPT. 10, 1907.

E. B. HESS.
WRITING MACHINE.
APPLICATION FILED JUNE 29, 1907.

2 SHEETS—SHEET 1.

Fig. 1.

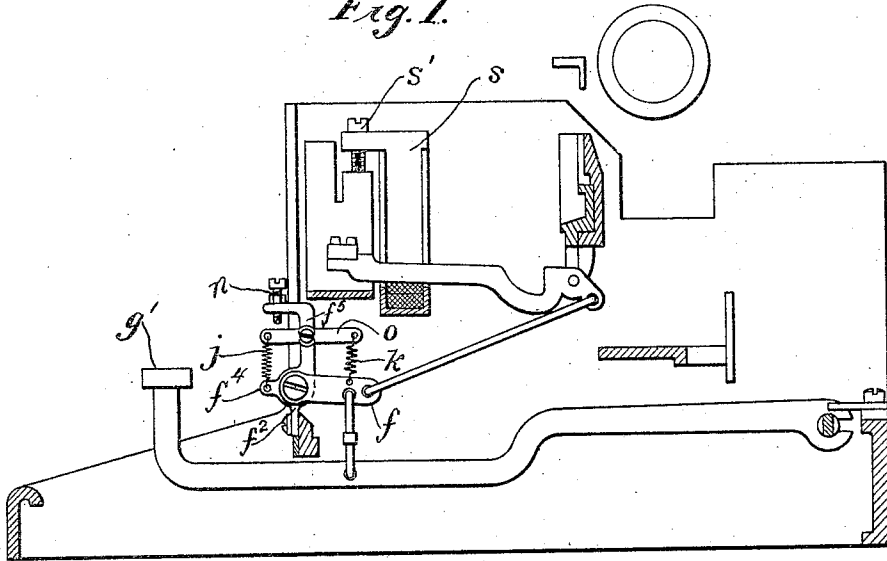
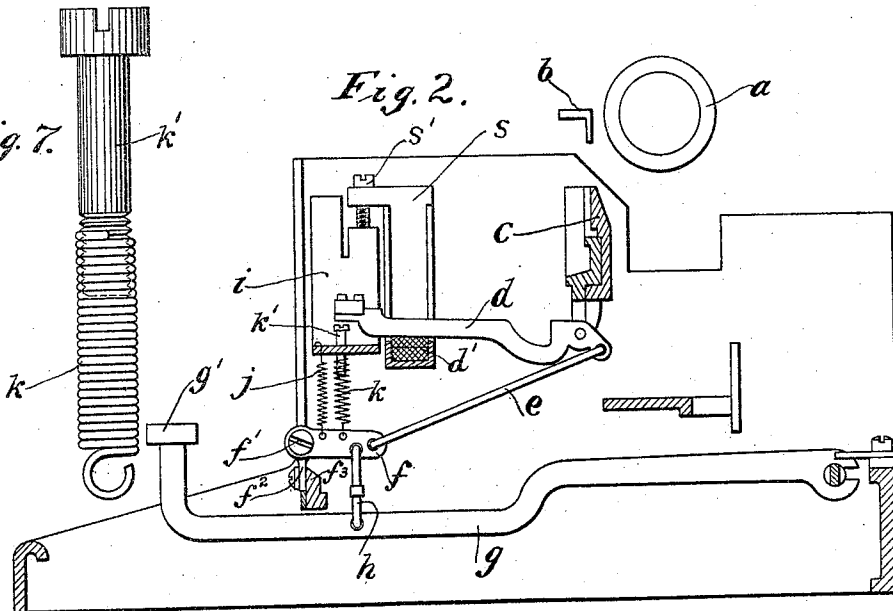


Fig. 2.



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WRITING MACHINE.

APPLICATION FILED JUNE 23, 1907.

2 SHEETS—SHEET 2.

Fig. 5.

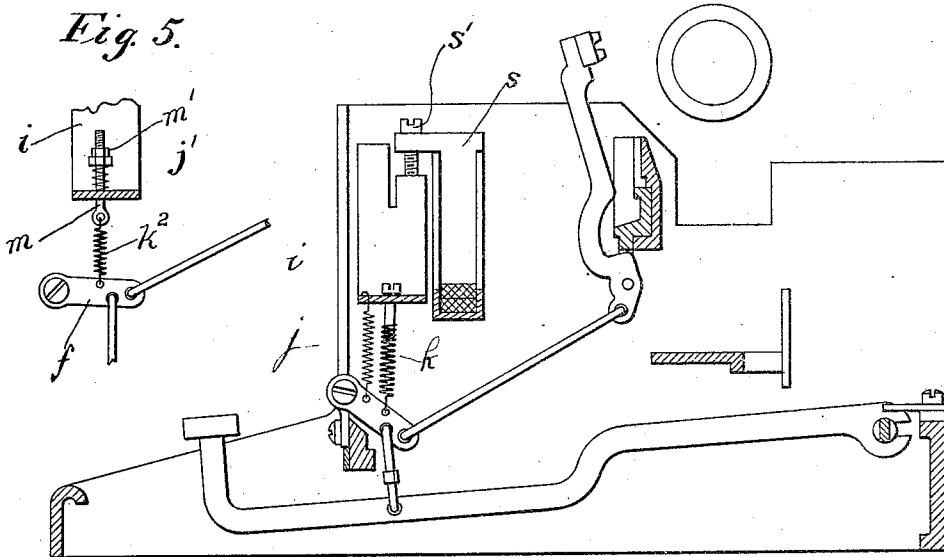


Fig. 3.

Fig. 6.

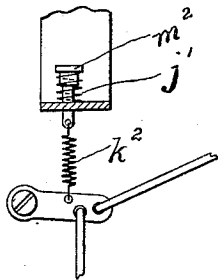
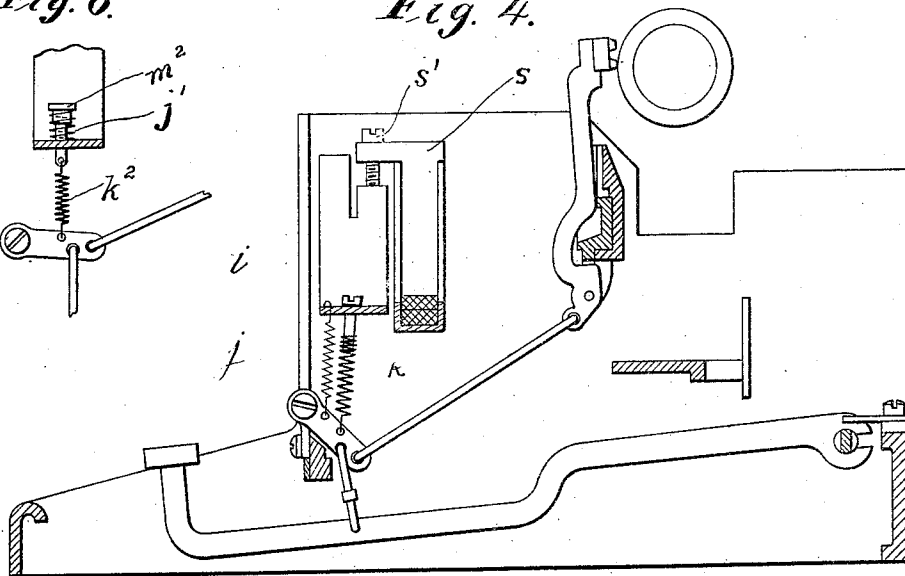


Fig. 4.



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UNITED STATES PATENT OFFICE.

EDWARD B. HESS, OF NEW YORK, N. Y., ASSIGNOR TO ROYAL TYPEWRITER COMPANY, OF HOBOKEN, NEW JERSEY, A CORPORATION OF NEW JERSEY.

WRITING-MACHINE.

No. 865,893.

Specification of Letters Patent.

Patented Sept. 10, 1907.

Application filed June 29, 1907. Serial No. 381,409.

To all whom it may concern:

Be it known that I, EDWARD B. HESS, a citizen of the United States of America, residing in the borough of Brooklyn, city and State of New York, have invented certain Improvements in Writing-Machines, of which the following is a specification.

The construction comprised in this invention affords a light and pleasant touch or resistance of the finger pieces; cushions them at the bottom of the stroke; effects speedy return of the type bars from the printing point; and relieves the type bar pivots from direct strains incident to the spring devices that are employed to return them and finger pieces to normal position.

To effect these objects, I apply to a link or member for operating each of the type bars, two springs of different strength so arranged that the heavier one comes into effective action as a spring during the latter part only of the excursion of the type bar to the printing point. Both springs may be in operation all the time in the sense that the heavier one may be used initially to put the lighter one under increased tension and subsequently it is subjected to material or effective tension when the type bar is adjacent the printing point; or the heavier spring may be entirely inactive during the major part of the excursion of the type bar to the printing point during which time the lighter spring is put under increased tension and finally the heavier spring is put under tension as the type bar becomes adjacent the printing point.

Employment of two springs one of which acting directly upon the type bar is placed under tension during the latter part only of the excursion of the type bar to the printing point is disclosed in patent of Gabrielson, No. 750,274, January 26, 1904, and also in my Patent No. 856,870 granted June 11, 1907. Such springs so applied, however, exert strains directly upon the pivot of the bar and in front strike machines, to which this invention particularly relates, it is important to relieve the type bar pivots, so far as is feasible, of unnecessary strains that produce wear. For this reason I apply the two springs that have been described directly to a link or actuating member that is operatively connected to the type bar. The details of arrangement and advantages incident thereto are further set forth below.

In the accompanying drawings which show a front strike machine, Figure 1 is a longitudinal vertical section showing one form of the invention: Fig. 2, a like view showing another form of the invention with the parts in normal position: Fig. 3, a view similar to Fig. 2 with the finger piece partly depressed and the type bar adjacent the printing point: Fig. 4, a like view

showing the type bar at the printing point: Fig. 5, a detail view showing a modification: Fig. 6, a detail view showing another modification: and Fig. 7 an enlarged detail view of one of the springs and a screw bolt with the threads of which the convolutions of the springs are adjustably engaged, this being the form of device indicated in Figs. 2, 3 and 4.

Referring to Figs. 2, 3 and 4 *a* is the platen; *b* the type bar guide; *c* the segment in which the type bars *d* are pivoted. There has been shown in each figure but one type bar and its associated parts. The type bar extends normally toward the front of the machine and lies upon a back stop or rest *d'*. A link *e* connected at its rear end to the heel of the type bar has its front end hinged to the rear end of a shorter and preferably flat link *f* whose front end is pivoted at *f'* in a fixed piece or post *f''* mounted upon a segmental plate *f'''* extending transversely of the machine. A key lever *g* pivoted at its rear end extends forwardly in a horizontal direction and is equipped with a finger piece *g'* as usual. A vertically disposed link *h* connects the key lever with the short front link *f*. Above the link *f* and arranged transversely of the machine is a segmental plate *i*. Two coiled springs are interposed between this plate and the short front link *f*. One is a relatively light spring *j* having one end attached to the link and the other to the segmental plate and normally under tension sufficient to hold the parts in normal position with the type bar against its stop *d'*. The other spring *k* has one end attached to the link *f* and its upper end to a headed threaded bolt *k'* working through an aperture in the segmental plate. The convolutions of the spring embrace the threads of the bolt so that by rotation of the bolt an adjustment may be effected. When the finger piece is depressed, link *f* is drawn downwardly and the type bar pulled to the printing point by like link *e*. This arrangement of type bar operating links is one that has been patented by me. The spring *j*, being constantly under tension, is extended as link *f* moves downward and spring *k* is inactive until the head of the bolt *k'* comes in contact with the upper face of the segmental plate *i*. Then on continued depression of the finger piece that spring also is extended or placed under tension.

Fig. 3 indicates the stage of depression at which the heavy spring *k* comes into action. It will be observed that the type bar has moved through the major part of its excursion and is adjacent the printing point. Continued depression of the key, during which as shown in Fig. 4 spring *k* is extended or placed under tension, throws the type bar into printing relation with the platen. The relatively gradual increase of depression

of the finger piece affords satisfactory touch while the reaction of the heavy spring affords a speedy retreat of the bar from the printing point. The reaction strains of the springs are exerted directly upon link f and experience has shown that there is less torsional strain upon the type bar bearings than there is when one of the springs acts directly upon the type bar. This is probably so because of the hinge and partly swiveling connections of link e with the type bar and with link f .

A further distinct advantage present not only in the key lever form of machine illustrated but also in the push pin machines such as have been heretofore patented to me and in which are employed the links e, f , is that the extension of the springs is in a substantially vertical direction and in line with the direction of depression of the finger piece. Furthermore, the springs are located at the front in a conveniently acceptable position for assembling and for adjusting.

In the modification shown in Fig. 5 the heavy spring k^2 is attached to the link f at its lower end and at its upper end to a vertical disposed eye bolt m working in an aperture in segmental plate i and having coiled around it a lighter spring j' which bears at its lower end upon the plate i and its upper end against an adjusting nut m' working on the threaded end of the eye bolt. In this form of the invention the heavy spring k^2 is to the extent of pressing the lighter spring j' placed under tension throughout the initial movement of the bar but it becomes effective primarily as a spring when the lighter spring j' has been collapsed between the adjusting nut and segmental plate. In Fig. 6 the same arrangement is shown except that the eye bolt is provided with a fixed head m^2 between which and the segmental plate is placed the coiled light spring j' . The heavier spring k^2 comes effectively into action as a spring when the shoulder head m^2 of the bolt comes in contact with the segmental plate.

Fig. 1 shows an arrangement similar to that of Figs. 5 and 6 in respect to the heavy spring being in action to some extent throughout the entire excursion of the type bar. The general arrangement, however, is quite different. The fixed part or post f^2 has a rearward extension f^4 and an upward extension f^5 turned to overhang the part f^4 . In the upper overturned part f^5 is an adjustable stop screw n serving to act as a limiting stop for a horizontally disposed lever o pivoted near or at its middle on the part f^5 . The light spring j has its ends connected with projection f^4 and one end of the lever o while the heavier spring k has its ends connected to link f and to the other end of the lever o . Normally, the spring k acts primarily as a link and the reaction of spring j , which is always under tension maintains all the parts in normal position. When, however, the finger piece g' is depressed, a strain is exerted through spring k which acts primarily as a link, and spring j is further extended until the lever o strikes adjusting stop n . Then on further depression of the finger piece spring k only is extended. The plate i can, as shown, be carried by adjusting screws s' swiveling in end pieces of the plate and working in threaded sockets in forward extensions at the ends of the type bar rest segment s .

This application is directed to the general arrangement of springs, other subject matter disclosed being

part of the prior published art or claimed by me in other applications pending.

I claim:

1. In a writing machine, a type bar actuating connection connected with the type bar and actuated on depression of the corresponding finger piece, having applied to it intermediate the type bar and finger piece two reaction springs one of which is normally under stress and acts to hold the parts in normal position and the other of which is placed under effective strain during the latter part only of the excursion of the type bar to the printing point.
2. In a writing machine, a type bar actuating connection connected with the type bar and actuated on depression of the corresponding finger piece, having applied to it intermediate the type bar and finger piece two reaction springs one of which is a relatively light spring normally under tension and acting to hold the parts in normal position and the other a relatively heavier spring placed effectively under tension during the latter part only of the excursion of the type bar to the printing point.
3. In a front strike writing machine, the combination with the platen, type bar segment and type bars pivoted therein and normally lying towards the front of the machine of an operating link extending forward from the type bar, a shorter link pivoted at its front end to a fixed part of the machine and hinged at its rear end to the first named link, a finger piece, operative connections between the finger piece and said short front link in rear of its fixed pivot and two reaction springs of different strength acting upon said front link the lighter one of said springs being normally under tension and acting to hold the parts in normal position and the heavier one being placed effectively under tension toward the latter part only of the excursion of the type bar to the printing point.
4. In a front strike writing machine, the combination with the platen, type bar segment and type bars pivoted therein and normally lying towards the front of the machine of an operating link extending forward from the type bar, a shorter link pivoted at its front end to a fixed part of the machine and hinged at its rear end to the first named link, a finger piece, operative connections between the finger piece and said short front link in rear of its fixed pivot and two vertically disposed reaction springs of different strength, the lighter one being connected to said front link and to a fixed part of the machine located above the link and the heavier one being connected at its lower end to said link and at the upper end having sliding connection with a fixed part of the frame and coming into effective spring operation during the latter part only of the excursion of the type bar to the printing point.
5. In a writing machine, a type bar actuating connection connected with the type bar and actuated on depression of the corresponding finger piece, having applied to it intermediate the type bar and finger piece two reaction springs one of which is normally under stress and acts to hold the parts in normal position and the other of which is placed under effective strain during the latter part only of the excursion of the type bar to the printing point, and means for individually adjusting the latter spring.
6. In a writing machine, type bar actuating connections connected with the type bars and actuated on depression of the corresponding finger pieces, each having applied to it intermediate the type bar and finger piece two reaction springs one of which is normally under stress and acts to hold the parts in normal position and the other of which is placed under effective strain during the latter part only of the excursion of the type bar to the printing point and means for simultaneously adjusting all the normally tensioned springs.
7. In a writing machine, type bar actuating connections connected with the type bars and actuated on depression of the corresponding finger pieces, each having applied to it intermediate the type bar and finger piece two reaction springs one of which is normally under stress and acts to hold the parts in normal position and the other of which is placed under effective strain during the latter part only of the excursion of the type bar to the printing point, means for simultaneously adjusting all the former springs and means for individually adjusting all the latter springs.

8. In a front strike writing machine, the combination
with the platen, type bar segment and type bars pivoted
therein and normally lying toward the front of the ma-
chine of an operating link extending forward from the type
5 bar, a shorter link pivoted at its front end to a fixed part
of the machine and hinged at its rear end to the first
named link, a key lever under said links, a connection be-
tween the key lever and said front link and two reaction
springs applied to the said front link and so arranged that
10 the strain exerted by the key lever is transferred directly

to the points of support of the springs, one of said springs
being constantly under tension and the other placed under
effective tension during the latter part only of the move-
ment of the type bar.

In testimony whereof, I have hereunto subscribed my 15
name.

EDWARD B. HESS.

Witnesses:

JOHN M. LEE,

L. F. BROWNING.