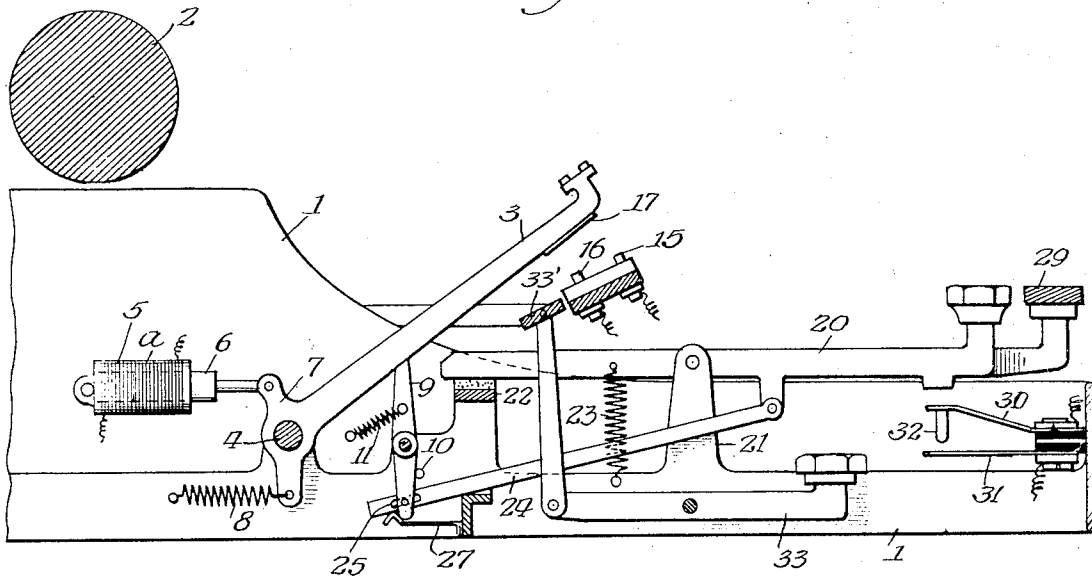
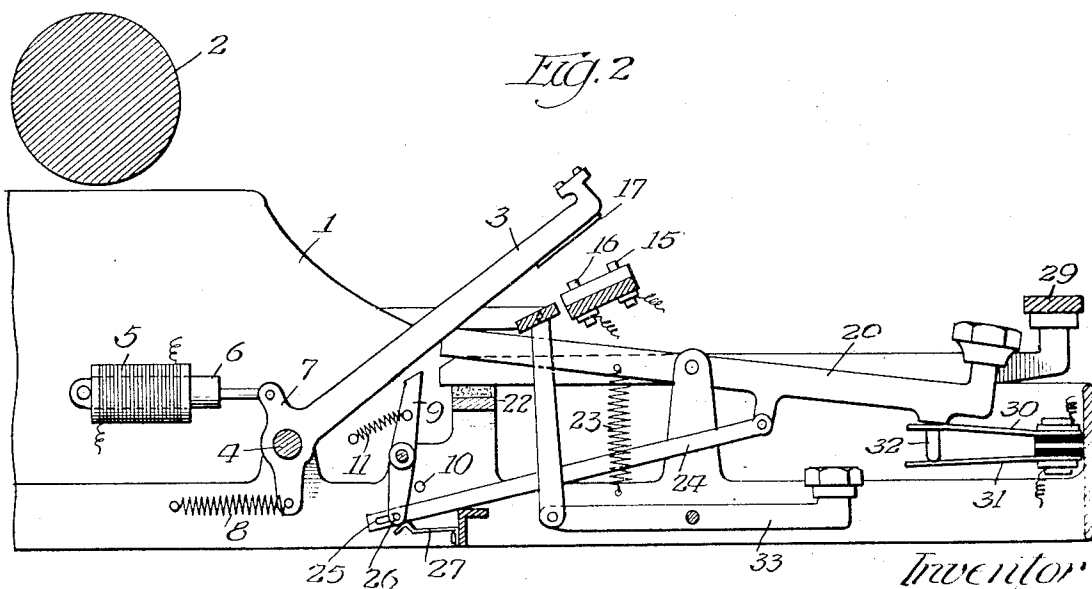


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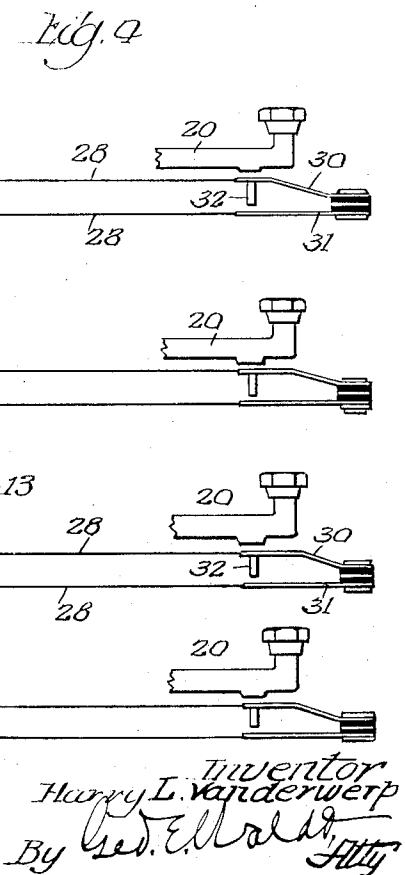
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Aug. 22, 1933.

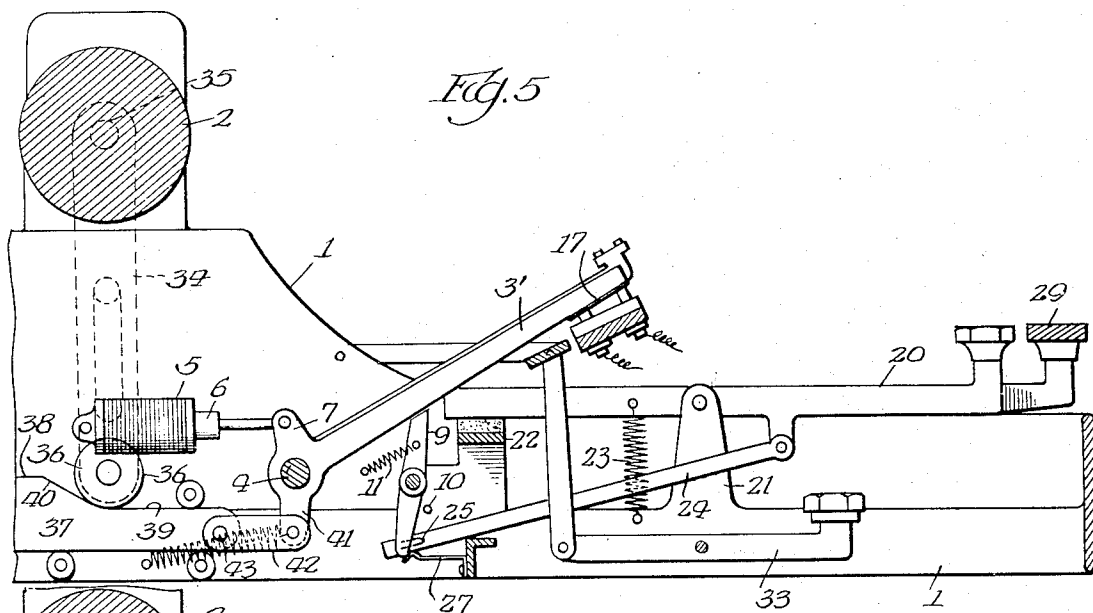
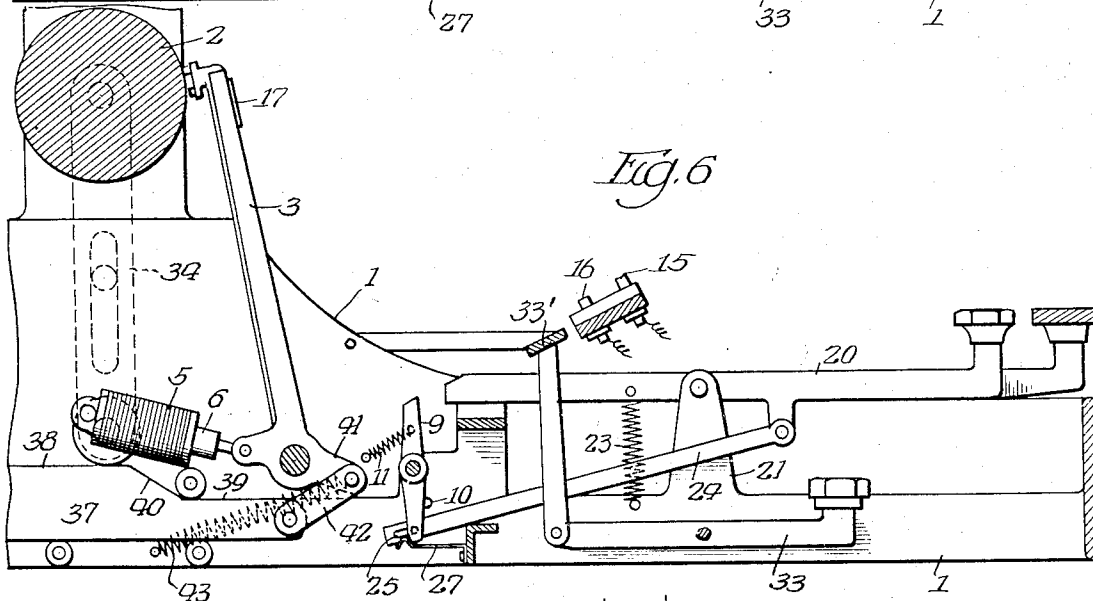
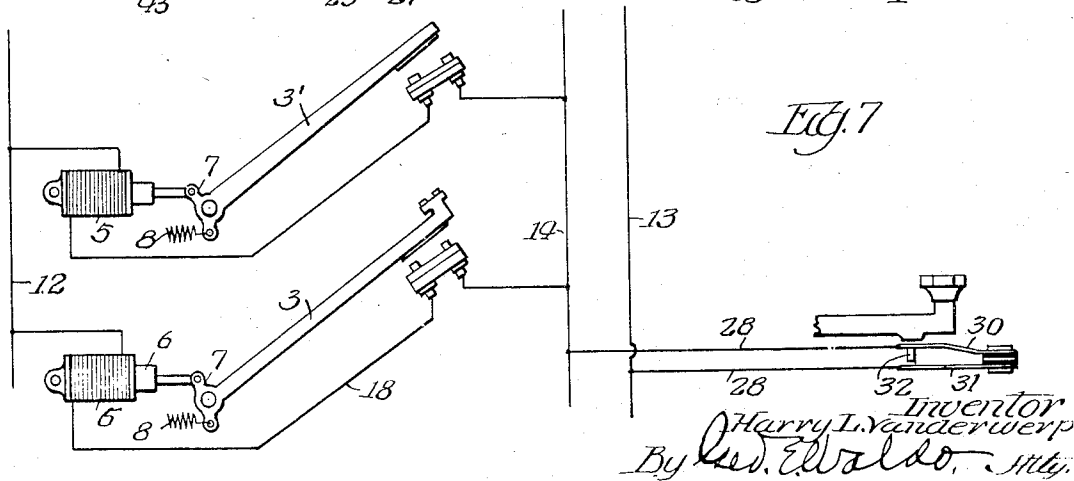
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IMPRINTING MACHINE

Filed Feb. 23, 1932

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UNITED STATES PATENT OFFICE

1,923,596

IMPRINTING MACHINE

Harry L. Vanderwerp, Highland Park, Ill.

Application February 23, 1932. Serial No. 594,565

9 Claims. (Cl. 197—13)

This invention relates to imprinting machines, particularly typewriters and other machines of the general type which are caused to function by the direct action of levers.

5 In the operation of typewriters and other key operated machines, it frequently happens that mistakes, caused by striking wrong keys, are realized by the operator as soon as and some-
10 times even before the error is made—that is before the wrong keys are actually struck—but which are recorded before the operator can ar-
rest the stroke of his or her hand, thus causing errors, the correction of which involves con-
siderable extra work and loss of time.

15 The primary object of the present invention is to prevent such errors and the consequent loss of time required for correcting the same, and to this end, my invention consists in what
20 may be designated a delayed action, whereby manipulation of one of a system or series of control members mounted in association, re-
spectively, with a corresponding series of mov-
25 ably supported members, will not cause said movably supported members to function, but will merely "set" the same for operation, manip-
ulation of the control member associated with
30 any other movably supported member, causing the motivating means of said "set" member to function. Thus, when an operator realizes or
discovers that an error has been made before the control means of another member is manipulat-
ed, opportunity is afforded for correcting the
error before the erroneous character is imprint-
35 ed, which, in the case of a typewriter, may be effected by merely back-spacing the carriage and, at the same time, restoring the "set" key to its initial or passive position.

The invention also comprises the various other
40 features, combinations of features and details of construction hereinafter described and claimed.

In the accompanying drawings, in which the invention is fully illustrated,

45 Figs. 1, 2 and 3 are diagrammatic views exemplifying the adaptation of electrical means for operating the type bars of a typewriter in accordance with my invention.

Fig. 4 is a diagram of the electrical connec-
50 tions.

Figs. 5 and 6 are diagrammatic views, sub-
stantially similar to Figs. 1 to 3, illustrating
the application of the invention to effect a de-
layed platen shift; and

55 Fig. 7 is a wiring diagram forming an extension of that shown in Fig. 4, illustrating a wir-

ing arrangement for effecting delayed platen shift.

Describing the invention with reference to the drawings, in which, for purposes of clear and definite illustration, I have shown my invention
60 and improvements as embodied in a typewriter, the type bars of which are adapted to be electrically operated, 1 designates the typewriter frame, 2 the platen, 3 a series of type bars pivoted at
65 4 on the frame 1 in operating relation to the platen 2, 5 designates electro-magnets, the armatures 6 of which are pivoted to lugs 7 on said type bars, the relation being such that when an
electro-magnet functions, it will turn the type
70 bar associated therewith pivotally to effect im- pact of a type on said type bar with the platen 2, and 8 are springs applied to the type bars for restoring them to their initial positions after operation.

In accordance with the present invention, the
75 type bars 3 are supported in initial or passive position by struts 9 pivoted on the frame of the typewriter, the position of said struts corre-
sponding to such initial or passive position of
80 said type bars, being defined by stops 10 secured in the frame of the typewriter, and springs 11 applied to said struts, arranged to maintain
the same yieldingly in contact with said stops. The initial position of the type bars 3 as de-
85 fined by the struts 9 is shown in Fig. 1 of the drawings.

The electromagnets 5 are connected in paral-
80 el in an electric circuit comprising conductors 12 and 13 connected with a source of electrical energy, as indicated, and are adapted to be
separately energized to cause them to function
to operate the type bars to which they are ap-
95 plied, respectively, by dual controls, comprising a control associated directly with the type bar to be operated—with which all of said type bars
are equipped—manipulation of which will "set"
said type bar for operation, and a second con-
100 trol—with which, also, all of said type bars are equipped—manipulation of which will cause the
electromagnet applied to the "set" type bar to
function to operate said "set" type bar, pro-
ducing impact of a type thereon with the
platen 2.

For purposes of convenient and distinctive
105 reference, the first series of controls will hereinafter be designated "setting" controls, and the second series "motivating" controls.

In accordance with my invention, see particu-
larly Fig. 4, the "setting" controls comprise elec-
110 trical contacts 15 and 16 mounted in direct

association with the type bar to be operated, and bridge pieces 17 secured to said type bars, respectively, in position to bridge the contacts 15 and 16 associated with different type bars, whereby any type bar may be set for operation by turning it pivotally to effect contact of the bridge piece 17 thereon with the contacts 15 and 16 associated therewith. As the type bars are made of metal, the bridge pieces 17 will be insulated therefrom.

The contacts 15 and 16 are located in shunt circuits 18 into which the electromagnets 5 also are connected. Said shunt circuits are controlled by the bridge pieces 17.

The setting controls for said type bars also comprise a series of key levers 20 pivoted to lugs 21 on the frame of the typewriter in association with different type bars, said levers being maintained normally in passive position—defined by contact of an end thereof, respectively, with a support 22—by springs 23 applied thereto as will be readily understood, the relation being such that manipulation of said levers to turn the same from their passive positions shown in Fig. 1 to the position shown in Fig. 2, will operate to raise the type bar associated with the lever so manipulated, out of contact with the strut 9 by which it is supported. Also pivoted to each type bar control lever 20 is a bar 24, the free end of which is operatively connected with the lower end of the corresponding strut 9, the connections of said bars 24 to the struts 9 being constructed and arranged to operatively engage said struts only as they approach the limits of their movement in opposite directions. As shown, the connection between said bars 24 and struts 9 consists of slots 25 formed in said bars and studs 26 secured in said struts which engage said slots, the relation being such that opposite ends of said slots will engage said pins as said levers are turned by or against the force of the springs 23.

As shown, also, the struts 9 are adapted to be secured yielding in positions corresponding to pivotal movement of the levers 20 against the force of the springs 23, by spring detents 27 supported on the machine frame and which are calibrated to hold said struts in position against the force of the springs 11 applied thereto, respectively, the relation being such that when said struts are so held by the detents 27, the type bars will be free to turn as the levers 20 are turned pivotally by the springs 23, to effect engagement of the bridge pieces 17 on the type bars with the contacts 15 and 16, thus setting said keys, respectively, for operation upon manipulation of the second or motivating control, as shown in Fig. 3.

As shown, also, the motivating controls by which the electromagnets are caused to function to operate the type bars, consists of shunt circuits 28 which are controlled by electric switches mounted on the frame of the typewriter, there being a separate switch mounted in association with each lever 20, and the spacing lever 29, the relation being such that turning movement of said levers against the force of the springs 23 will operate to close the switch respectively associated therewith, as will readily be understood.

The shunt circuits 18 and 28 comprise an electrical conductor 14 to which they are all electrically connected, as indicated, whereby any "set" type bar may be caused to function by manipulation of any control lever 20 or spacer

29 to close the motivating control associated therewith, respectively.

As shown, said switches comprise members 30 and 31, both of which are electrical conductors and the members 30 and, if desired, the members 31, also being made of spring material, the member 30 carrying a bridge piece 32 adapted to contact directly with the switch member 31.

Beginning with the parts of the typewriter in passive position, as shown in Fig. 1, the operation of my improved typewriter is as follows: First, the lever 20 associated with the type bar which is to be struck, is turned pivotally substantially to the position shown in Fig. 2, in which it will support its associated type bar 3 independently of the strut 9, and will simultaneously advance the bar 24 in a direction to turn the strut 9 pivotally into position to permit turning movement of the type bar to effect engagement of the bridge piece 17 thereon with the fixed contacts 15 and 16 and also to engage the lower end of said strut with the spring detent 27, by which it will be held until the control lever 20 is again restored to its initial position by its spring 23, thereby permitting contact of the bridge piece 17 with the contacts 15 and 16, setting the type bar for operation and also disengaging the strut 9 from the detent 27. Said type bar is now set for operation and the electromagnet 5 associated therewith will be energized and caused to function to turn said type bar pivotally to effect impact of a type thereon with the platen, by manipulation of a lever 20 associated with any other type bar or with the spacing lever 29, to close the motivating control, thus closing the shunt circuit in which the corresponding electromagnet is positioned, whereby a type carried by the "set" type bar will be impressed upon the platen.

Motivating controls are also provided in association with the spacing lever 29, whereby a type on the set type bar will be imprinted on the platen by manipulation of said spacing lever.

If, however, a mistake is made and a wrong key is struck, and the operator realizes or discovers the mistake before the motivating control is manipulated, the mistake can be corrected by manipulation of the back-spacing lever 33 which is operatively connected with a movably supported cradle 33' which extends beneath all of the type bars in such position as to permit turning movement of said type bars to effect contact of the bridge pieces 17 thereon with the contacts 15 and 16, raising movement of said back space lever operating to restore the "set" type bar to its initial, passive position without closing a motivating control and thus without recording the error on the platen.

Having thus corrected the error, the operator can proceed with the work with practically no delay such as would have been necessitated had the error been recorded.

When a type bar bears different characters—as, for example, small and capital letters—imprinting of one or the other thereof may be effected by shifting the platen in accordance with usual present practice.

However, to avoid confusion, it is desirable and preferable that the platen shift be delayed in the same manner as the imprinting of the different characters, manipulation of a type bar lever and the platen shift lever in succession, operating to "set" both for operation, and the subsequent manipulation of another type bar control lever or the space bar causing the motivating means

of said "set" type bar and of the platen shift mechanism to function.

Means for effecting such delayed shifting of the platen are shown in Figs. 5, 6 and 7 of the drawings and will now be described.

As regards the means for causing delayed operation of the type bars, the means shown in Figs. 5, 6 and 7 are substantially identical with the means shown in Figs. 1 to 4, inclusive, and heretofore described, and will readily be understood from an examination of the drawings without a further description thereof in detail. Corresponding parts are designated by the same reference characters in all of the figures, excepting where such duplication might cause confusion.

In accordance with the present invention, the platen shift is effected by means as follows:— Mounted on the frame 1 of the typewriter in association with the type bars 3 is what may be designated a "dummy" bar 3', which is substantially similar to said type bars, excepting in the respect that it bears no letters or characters to be imprinted on the platen, and is supported in initial or passive position by a strut 9 in the same manner as the type bars 3, such initial position being defined by a stop 10 and spring 11, as in the case of the type bars.

Applied to said "dummy" bar 3' is a magnet 5, which, when energized, is adapted to turn said "dummy" bar pivotally in the same manner as the type bars 3 are turned when the magnets applied thereto, respectively, are energized.

As shown, the platen 2 is supported by bars 34 slidably mounted on the typewriter frame, formed in the upper ends of which are bearings to which the ends of the platen shaft are rotatably fitted, as shown at 35, and rotatably mounted at the lower ends of said platen supporting bars are rollers 36 which are adapted to rest upon the top edges of cam bars 37 slidably mounted on the frame of the typewriter in proper position below the platen 2. As shown, said cam bars 37 are provided on their top edges with tread sections 38 and 39, spaced vertically from each other a distance equal to the contemplated shift of the platen 2 in operation, the tread sections on said cam bars being connected by inclined sections 40.

The cam bars 37 are connected to lugs 41 on the "dummy" bars 3' by links 42, the relation being such that pivotal movement of said "dummy" bars 3' by the magnets 5 applied thereto—that is, corresponding to the impact stroke of the type bars 3—will impart endwise movement to the cam bars 37 in a direction to raise the platen, springs 43 applied to said bars 3' operating to move the same endwise to lower the platen when the magnet is dead.

The "dummy" bars 3' and the operating mechanism therefor are in duplicate at opposite sides of the machine, the control levers 20 therefor being rigidly connected so as to work together.

The "dummy" bars 3' are provided with setting controls like those with which the type bars 3 are equipped, but are not equipped with motivating controls. Thus, by first manipulating the control lever 20 applied to any type bar to set the same and then manipulating the platen shift control lever after said type bar lever has been released, both said type bar lever and said platen shift lever may be set for operation.

Excepting that the "dummy" bars 3' have no motivating controls, they are electrically con-

nected in the same manner as the type bars 3, as clearly indicated in the wiring diagram shown in Fig. 7 of the drawings.

With the construction described, it is obvious that after a typewriter bar 3 and the "dummy" bars 3' have been "set" in the manner described, subsequent manipulation of the control lever 20 of another type bar or of the spacing lever 29 to close the motivating control associated therewith, will close the shunt circuits in which the "set" type bar and dummy bars are located, thereby causing the magnets applied thereto, respectively, to function, simultaneously raising the platen and causing the type bar to execute an impact stroke and to imprint the character on said type bar corresponding to the shifted position of the platen 2.

While I have herein shown and described what I now consider to be preferable means for use in the practice of my invention, other means for the purpose will readily suggest themselves to others skilled in the art and I do not, therefore, desire to limit myself to the mechanism herein shown and described but desire to extend the protection of the patent to any structure coming within the scope of the appended claims.

I claim:

1. In mechanism of the type specified, the combination of a plurality of movably supported devices, separate operating means therefor, respectively, and means controlling said operating means, the relation being such that manipulation of the control means associated with one of said devices will "set" said device for operation, and subsequent manipulation of the control means associated with another device, will cause the operating means of said "set" device to function.

2. In mechanism of the type specified, the combination of a plurality of movably supported devices, separate electrical operating means therefor, respectively, and means controlling said operating means, the relation being such that manipulation of the control means associated with one of said devices will "set" said device for operation, and subsequent manipulation of the control means associated with another device, will cause the operating means of said "set" device to function.

3. The combination specified in claim 1, in which the movably supported devices are arranged in a series.

4. In mechanism of the type specified, the combination of a plurality of type bars, separate operating means therefor, respectively, and means controlling said operating means, the relation being such that manipulation of the control means associated with one of said type bars will "set" said type bar for operation, and subsequent manipulation of the control means associated with another of said type bars or spacer will cause the operating means of said "set" type bar to function.

5. In a typewriter, the combination of a plurality of type bars, separate operating means therefor, respectively, and means controlling said operating means, comprising a series of control levers respectively associated with different type bars, means rendered operative by manipulation of said control levers for setting the type bars with which they are associated, respectively, for operation, and means rendered operative by manipulation of the control lever of another type bar or spacer for causing the oper-

ating means of said "set" type bar to function.

6. In a typewriter, the combination of a plurality of type bars, separate electrical operating means therefor, respectively, and means for controlling said operating means, comprising a series of key levers respectively associated with different type bars, means rendered operative by manipulation of said key levers for "setting" the type bars with which they are associated, respectively, for operation, and means rendered operative by manipulation of a key lever associated with another type bar or spacer for causing the electrical actuating means associated with said "set" type bar to function.

7. The combination specified in claim 5, which also comprises means for back-spacing the carriage of the typewriter and simultaneously restoring a "set" type bar to its initial position.

8. The combination specified in claim 5, which also comprises a spacing lever and means mounted in association therewith and rendered operative by manipulation thereof for causing the operating means of a "set" type bar to function.

9. The combination specified in claim 5, which also comprises platen shifting means, comprising a "dummy" bar corresponding to a type bar but bearing no characters to be imprinted and which is equipped with setting controls only, whereby a type bar and said "dummy" bar may be set in succession, and manipulation of the control lever of another type bar or spacer to close the motivating control thereof will cause the operating means of said "set" type bar and "dummy" bar to function.

HARRY L. VANDERWERP.

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