(No Model.)

J. C. COWAN.

SHIFTING MECHANISM FOR TYPE WRITING MACHINES.

No. 477,199. Patented June 21, 1892.

Fig. 1.

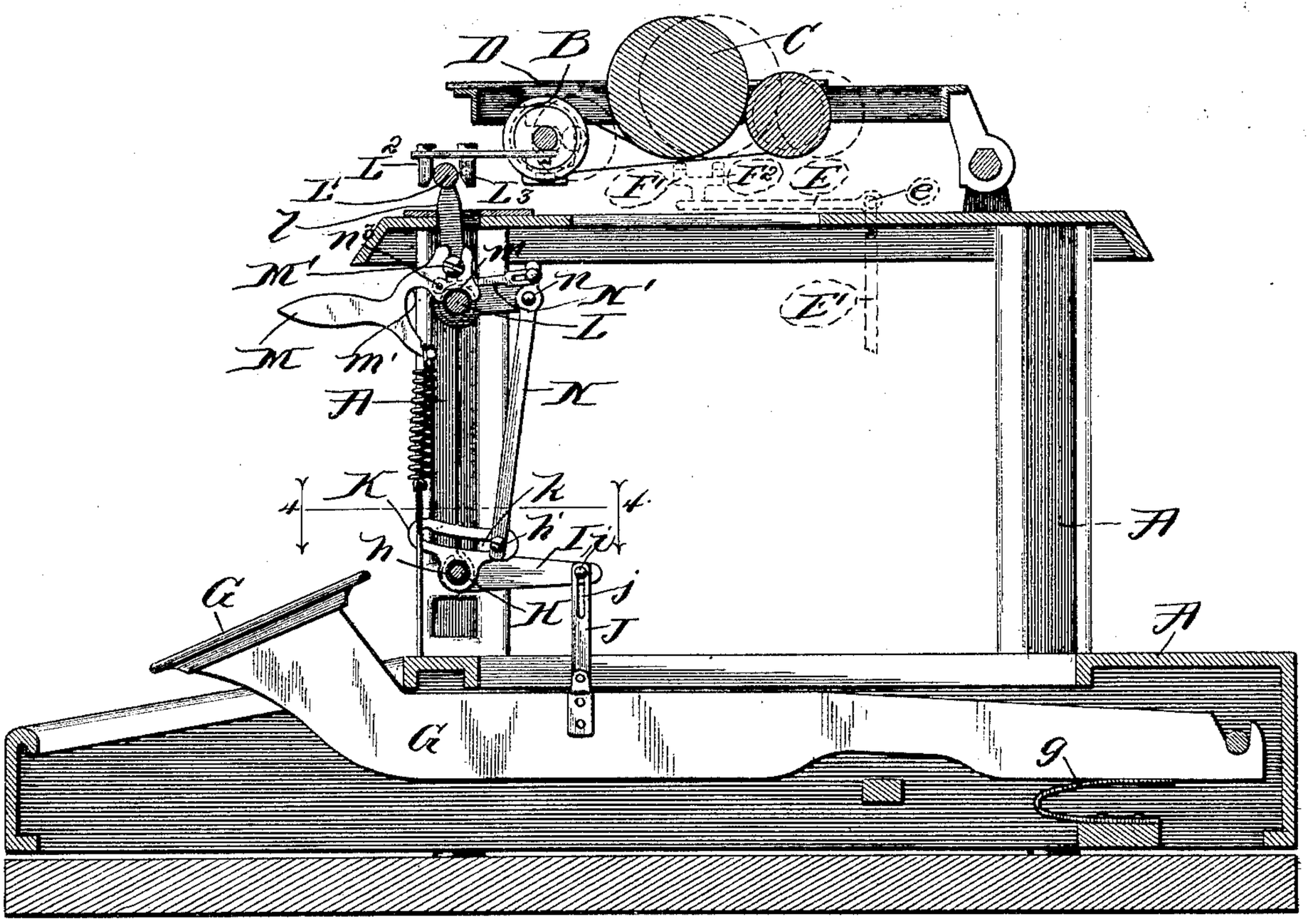

Fig. 2.

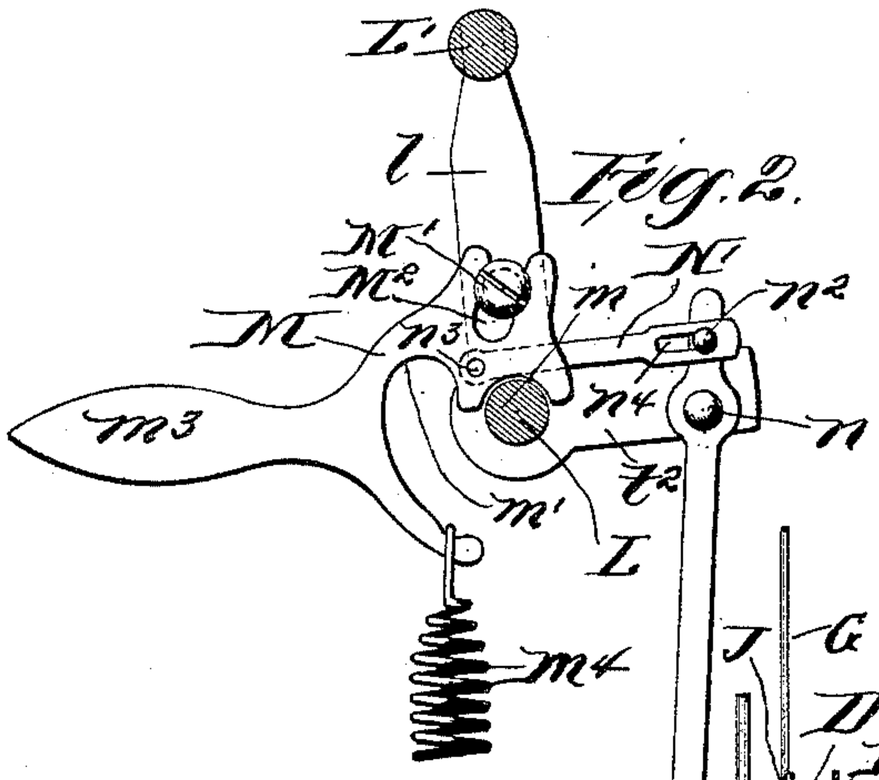

Fig. 3.

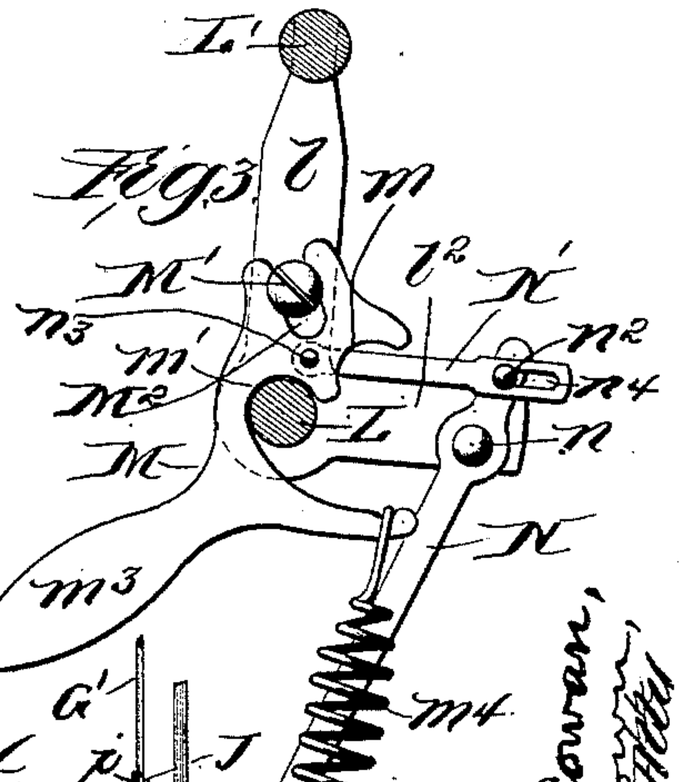

Fig. 4.

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UNITED STATES PATENT OFFICE.

JAMES CASSELLS COWAN, OF CHICAGO, ILLINOIS.

SHIFTING MECHANISM FOR TYPE-WRITING MACHINES.

SPECIFICATION forming part of Letters Patent No. 477,199, dated June 21, 1892.

Application filed January 14, 1892. Serial No. 418,008. (No model.)

To all whom it may concern:

Be it known that I, JAMES CASSELLS COWAN, a resident of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Shifting Mechanism for Type-Writing Machines, of which the following, when taken in connection with the drawings accompanying and forming a part hereof, is a full and complete description sufficient to enable those skilled in the art to understand, construct, and use the same.

My invention is designed to form a part in the construction of type-writers wherein a paper-roller properly mounted in a longitudinally-movable carriage automatically moved in the working of the machine, upon which roller the paper to be printed upon is carried, is employed and wherein keys are connected by suitable mechanism to pivoted levers arranged in a circular form, such levers having upon each one thereof more than one type character the negative of the character to be printed by the machine, such keys and type-levers arranged and connected in such manner that upon the actuating of any one of the type-writer keys that one of the type-levers connected therewith will be actuated thereby and one of the type characters on the type-lever will be made to approach a point common to one of the type characters on all the other key-levers in the machine and the other or others, if more than two, will be made to approach a point or points common to the other type character, or others, if more than two type characters are placed on each key-lever, on all the other key-levers of the machine, there being as many common points toward which the type characters are directed as there are type characters on each type-lever, and a key or keys whereby the paper-roller can be shifted so that the axial line thereof shall be brought over that one of the common points to which the several series of type characters are directed which it is desired to print upon the paper contained upon the paper-roller.

The type-writer known in the art as the "Remington" type-writer may be cited as one of the simplest in construction of type-writers of this class, there being in such machine but two type characters on each key-lever, forming two series of type characters, two common points, toward one of which all the type-writer characters of one series are directed and toward the other of which all the type characters of the other series are directed, and two positions of the paper-roller, in the one of which positions the axial line of such paper-roller is over one of the common points named and in the other of which the axial line of such paper-roller is over the other of such common points. In this machine one series of type characters is known as the "cap" series and the other thereof as the "lower-case" series, and when the axial line of the paper-roller is over the point common to the cap-letter series of type characters a positive impression of all the type characters in such series can be imprinted upon the paper carried on the paper-roller by means of a colored ribbon interposed between the paper and the type character as such type character is driven against the paper-roller, and when the axial line of such paper-roller is over the other of such common points the type characters in the other series—that is, the lower-case series—can be imprinted on such paper in the same manner by the actuating of the keys of the machine.

In order to shift the roller so that the axial line thereof shall be changed as required, when desired, such paper-roller is mounted upon the carriage thereof so that it is movable laterally thereon by means of keys provided therefor and forming a part of the keyboard of the machine, and in order that for any desired time the type characters in one series may be imprinted upon the paper continuously mechanism is provided yieldingly holding the paper-roller so that the axial line thereof is over the point common to the series desired, whereby when, if at all, a type character of the other series is desired to be printed upon the paper by actuating the key provided therefor in the keyboard of the machine the roller is momentarily shifted, so that the axial line thereof is over the point common to the other series of type characters on the key-levers. As is well-known to those skilled in the use of this machine, the longitudinal movement of the paper-roller is automatically obtained in a step-by-step manner by the movement of the carriage on which

the paper-roller is mounted as the keys of the machine are depressed one after the other.

In the Remington type-writer as now and heretofore constructed a key is provided, located on the left-hand side of the keyboard of the machine as the operator is seated thereat, by which, if such key be depressed, when the paper-roller is yieldingly held so that the axial line thereof is over the point common to the type characters belonging to the lower-case series (and hence if a type-lever is directed against the roller a type character of the lower-case series is imprinted on the paper carried thereon) such paper-roller is moved laterally, so that the axial line thereof is moved over the point common to the type characters of the upper-case series, and such upper-case type character can be imprinted thereon by the depression of the proper key therefor, and a second key is provided, located on the right-hand side of the machine as the operator is seated thereat, by which, if such key be depressed, when the paper-roller is yieldingly held in position so that the axial line thereof is over the point common to the type characters belonging to the cap series the paper-roller will be moved so that the axial line thereof will be over the point common to the lower-case series of type characters, whereupon on the depression of any one of the keys of the keyboard provided therefor a lower-case type character corresponding therewith will be printed upon the paper-roller.

In the practical use by me of the Remington type-writer machine I have found it very desirable when the paper-roller was in position so that a type character of the lower-case series would be imprinted on the paper thereon to be able to shift such roller by some one of the fingers or by the thumb of the right hand as well as with some one of the fingers of the left hand by the key provided therefor on the left-hand side of the keyboard of the machine, and also when the paper-roller was in such position that the type characters of the cap series would be imprinted on the paper contained thereon that such roller should be shifted so that the axial line thereof should be over the point common to the type characters of the lower-case series with some one of the fingers or with the thumb of the left hand by depressing a key on the left-hand side of the keyboard of the machine as well as with some one of the fingers or the thumb of the right hand by the key already provided therefor on the right-hand side of the machine; and the object of my invention is to obtain a shifting device whereby when the paper-roller is yieldingly held so that the axial line thereof is over either one of the points common to the several series of type characters described the depression of either one of two keys, one thereof located on the right-hand side of the keyboard of the machine and the other thereof located on the left-hand side of the keyboard of the machine, shall move the paper-roller laterally on the carriage on which it is mounted, so that the axial line of such roller shall be over the other one of the common points named.

I have illustrated my invention by the drawings accompanying and forming a part hereof, in which—

Figure 1 is a sectional view of a Remington type-writer, taken in a vertical plane to one side of the type characters of the machine, so as to show the frame-work of the machine and the paper-roller carriage and paper-roller thereon belonging to the machine and showing my device in elevation. Fig. 2 is an enlarged elevation of my device in a position so that the paper-roller is yieldingly held over the point common to the lower-case series of type characters and so that by the depression of either one of the keys provided in and actuating my device such paper-roller will be moved so that the axial line thereof is over the point common to the cap series of type characters; Fig. 3, a front elevation of my device in position to yieldingly hold the paper-roller so that the axial line thereof is over the type characters of the cap series, so that the depression of either one of the keys provided therefor will move the paper-roller so that the axial line thereof is over the lower case series of type characters; Fig. 4, a sectional view of a portion of the frame of the type-writer on line 4 4 of Fig. 1, viewed in the direction indicated by the arrows.

The same letter of reference is used to indicate a given part where more than one view thereof is shown in the several figures of the drawings.

A is the frame of the type-writer.

B is the type-carriage.

C is the paper-roller, and D is the frame in which paper-roller C is journaled. Frame D is adapted to move on the carriage B so that the axial line of the roller C can be changed as, say, from the position in which the roller is illustrated by the full lines in Fig. 1 to the position in which such roller is indicated by the dotted lines in Fig. 1 and back again.

E is a type-lever (indicated by dotted lines in Fig. 1) pivoted at *e*.

E′ is the upper end of a connecting-link (indicated by dotted lines in Fig. 1) connecting the type-lever E to the key in the keyboard of the machine whereby it is operated.

F indicates by dotted lines in Fig. 1 a type character on type-lever E of the lower-case series, and F′ indicates a type character of such lever E of the upper-case series.

My invention does not relate to the type-lever E, the connecting-link E′, and the key by which the type-lever E through such connecting-link E′ is actuated or to the type characters F F′, and I do not, therefore, illustrate fully such elements of the type-writer.

G G′, Fig. 4, are key-levers, located, respectively, on the right and left hand sides of the keyboard of the machine, by the actuating of either one whereof the paper-roller is

shifted from either one of the positions in which it can be yieldingly held by my device to its other position.

g is a spring holding key-lever G in position as shown in Fig. 1. A like spring holds lever G′ in a like position.

H is a tube loosely journaled on rod *h*, such rod *h* being now and heretofore placed in and found as an element in the type-writer.

I I′ are levers (duplicates) rigidly secured to the tube H.

J J′ are links (duplicates) connecting the levers G G′, respectively, to levers I I′. Lever G, lever I, and link J being respectively, as stated, duplicates of levers G′ I′ and link J′, such levers G′ I′ and link J′ are shown only in Fig. 4 and will not be referred to hereinafter in the description of the device, it being understood that as levers I and I′ are severally rigidly secured to the tube H the depression of key G′ will at any time produce the same effect on tube H and lever G as the depression of the key G, the duplicate thereof.

j is a slot in link J, and *i* is a pin secured in lever I, forming an abutment extending through the slot *j*. Levers I I′ being both rigidly secured on tube II, both such levers move in unison. The downward movement of the lever I in unison with the downward movement of the lever I′ will not force the lever G downward, but instead thereof the pin *i* will extend downward in slot *j*, and when the lever G is depressed thereby through connecting-link J depressing lever I (thus turning the tube H, and hence depressing the lever I′) the pin *i′* in the groove in link J′ will in like manner move in the slot in such link J′.

K is a grooved lever rigidly attached to the tube H, and *k* is the groove in lever K. This groove extends to both sides of the axial line of the tube H, and hence when the lever H is turned on rod *h* one end of the groove *k* (and the end on the side of the tube H from which lever I extends) will be depressed and the other thereof will be elevated.

L L′ are rods now and heretofore found in type-writers, *l* being the lever connecting them. The rod L is adapted to rock or turn in its journals or bearings, and thereby the rod L′ is swayed laterally, thus moving the type-writer roller C and frame D thereof through means of the guides L^2 L^2 now and heretofore found in type-writers.

l^2 is a lever rigidly attached to rod L. Lever l^2 is ordinarily integral with lever *l*, such levers forming the arms of a bell-crank lever.

M is a lever forming a part of my device, having thereon semicircular edges forming the bearings *m m′*, adapted to fit over the shaft L, and also having groove m^2 therein, allowing the lever M to be moved and shifted so that either one of the semicircular journals or bearings *m m′* may be in contact with such rod L.

M′ is a screw holding lever loosely in position.

m^3 is the handle of the lever M, and m^4 is the ordinary tension-spring now and heretofore in use on many Remington type-writers. By the depression of the arm l^2 the swaying movement of the rod L′ to the right is accomplished when the paper-roller frame D, rods L′ L′, and the arms forming bell-crank *l* l^2 are in the position illustrated by full lines in Figs. 1 and 2, and by the raising of arm l^2 of such bell-crank *l* l^2 the swaying of rod L′ to the right is obtained when the paper-roller is in the position indicated by the dotted lines in Fig. 1 and the several rods L L′ and bell-crank *l* l^2 are in the position illustrated in Fig. 3 of the drawings. In order to secure the depression of the arm l^2, such arm is connected with the lever K by link N, pivoted at *n* to arm l^2 and having thereon abutment *n′*, extending through the groove *k* of lever K.

n^2 is an abutment on the link N, and N′ is a second link pivoted at n^3 to lever M and having therein groove n^4, through which the abutment n^2 on the link N extends. By the link N′ it will be observed on inspection of Fig. 2 of the drawings when the lever M is in position so that the bearing *m* thereon is on rod L the link N is in position so that the abutment *n′* thereon is at that end of the groove *k* which is depressed by the depression of the lever I or lever I′, and by inspection of Fig. 3 it will be observed that when the lever M is in the positon illustrated therein so that the bearing *m′* of such lever is on rod L by means of the link N′ the link N is turned on its pivot *n* so that the abutment *n′* is at that end of the groove *k* in lever K which is elevated when the lever I is depressed, and hence when the several parts M, N, and N′ are in the position illustrated in Fig. 3 the depression of the key G or key G′ will elevate arm l^2 of the bell-cranks *l* l^2, and hence the rod L will be swayed to the left. Spring m^4 yieldingly holds the several parts in the position illustrated in the drawings. Slot n^4 is provided, so that as the link N is raised or depressed, according to its position, as described, the lever M shall not be actuated thereby, the movement of the lever M in the rocking of the rod L being controlled by the screw M′ in slot m^2.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a paper-roller-shifting device for type-writers, the combination of a lever having two bearing-surfaces, a rod on which either of such surfaces may bear, a spring, one end whereof is attached to the lever and the other end to the type-writer, whereby the lever and the rod on which it bears are yieldingly held in a given position, a link pivoted to a lever extending out from the rod, a second link pivoted at one end thereof to the lever bearing on the rod and at the other end having a slot, through which an abutment on the first-named link extends, and an abutment on the longer end of the first-named link, a tube adapted to rock on a rod, a lever rigidly secured to such

tube, extending on both sides of the axial line thereof, a slot in such lever through which the abutment on the longer end of the first-named link extends, and a lever rigidly secured to the tube with a link connecting such lever with a key-lever, substantially as described.

2. In a paper-roller-shifting device for type-writers, the combination of a lever having two bearing-surfaces, a rod on which either of such surfaces may bear, a spring, one end whereof is attached to the lever and the other end to the type-writer, whereby the lever and the rod on which it bears are yieldingly held in a given position, a link pivoted to a lever extending out from the rod, a second link pivoted at one end thereof to the lever bearing on the rod and at the other end having a slot, through which an abutment on the first-named link extends, and an abutment on the longer end of the first-named link, a tube adapted to rock on a rod, a lever rigidly secured to such tube and extending on both sides of the axial line thereof, a slot in such lever through which the abutment on the longer end of the first-named link extends, and a lever rigidly secured to the tube with a link having a slot at one end thereof, through which an abutment on the last-named lever extends, thereby connecting such last-named lever with a key-lever, substantially as described.

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