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W. F. HELMOND & O. C. KAVLE.

SILENT KEY MECHANISM FOR TYPE WRITERS.

APPLICATION FILED NOV. 13, 1902

NO MODEL.

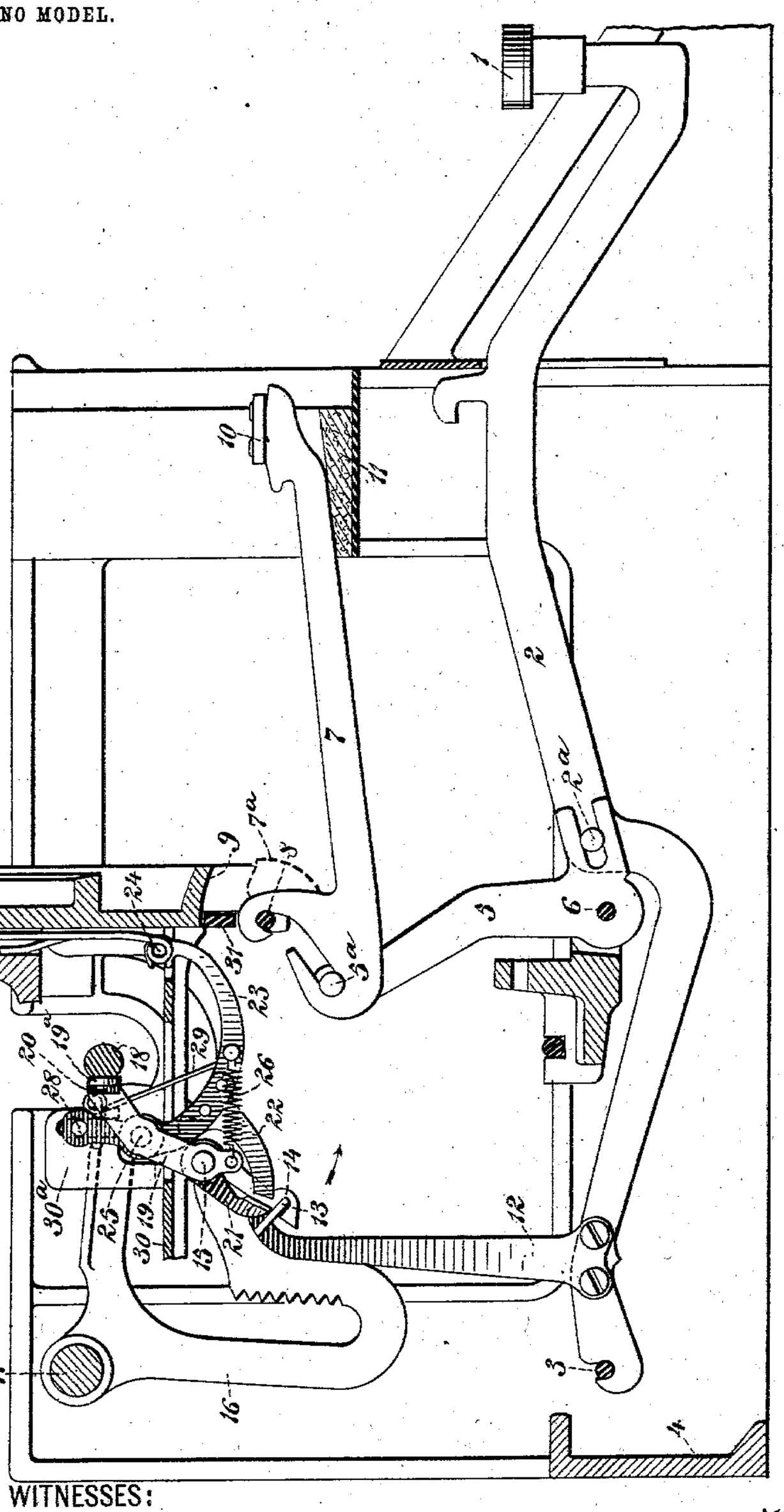

Fig. 1.

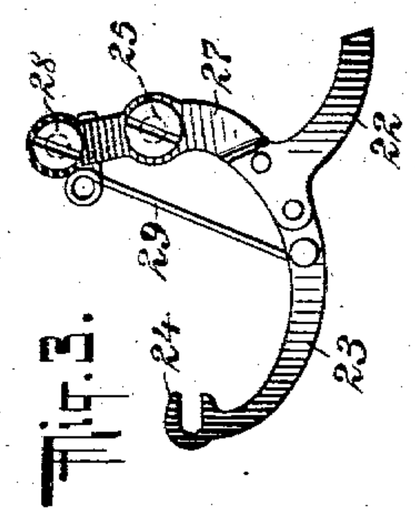

Fig. 3.

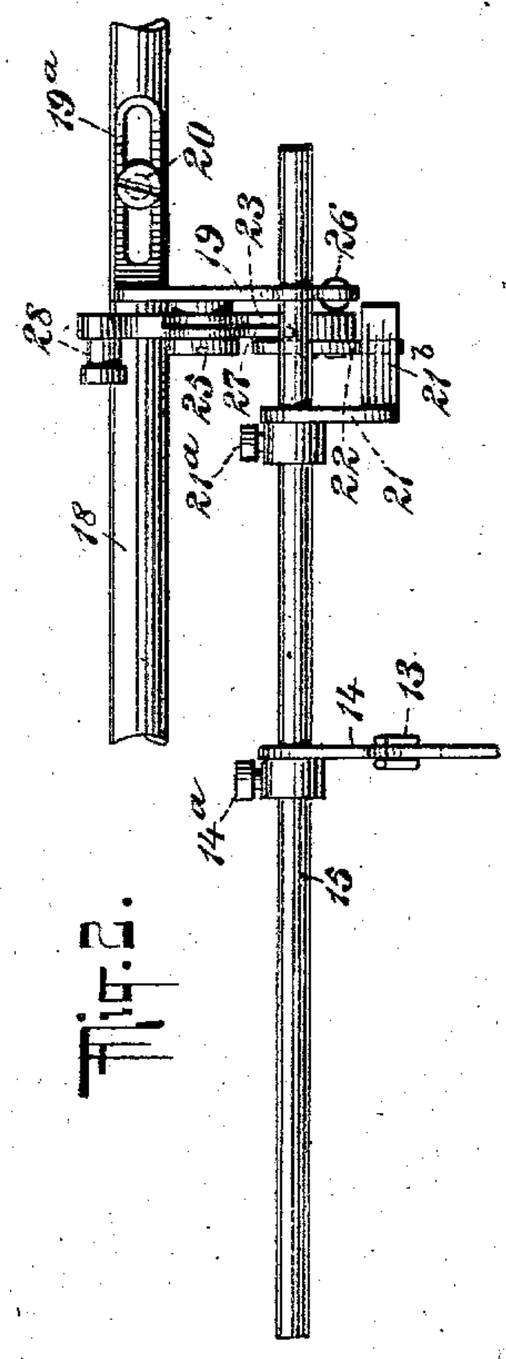

Fig. 2.

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No. 730,456. Patented June 9, 1903.

UNITED STATES PATENT OFFICE.

WILLIAM F. HELMOND AND OSCAR C. KAVLE, OF HARTFORD, CONNECTICUT, ASSIGNORS, BY MESNE ASSIGNMENTS, TO UNDERWOOD TYPE-WRITER COMPANY, OF NEW YORK, N. Y., A CORPORATION OF NEW JERSEY.

SILENT-KEY MECHANISM FOR TYPE-WRITERS.

SPECIFICATION forming part of Letters Patent No. 730,456, dated June 9, 1903.

Application filed November 13, 1902. Serial No. 131,150. (No model.)

To all whom it may concern:

Be it known that we, WILLIAM F. HELMOND and OSCAR C. KAVLE, citizens of the United States, and residents of Hartford, county of Hartford, and State of Connecticut, have invented certain new and useful Improvements in Silent-Key Mechanism for Type-Writers, of which the following is a specification.

Our invention relates to silent keys of type-writers and like machines—that is, to keys which print without feeding the carriage—as, for instance, keys for applying accent-marks and the like.

Our present invention has especial reference to machines in which the impression is effected through the medium of an ink-ribbon, which is movably mounted and is brought to the printing-point by the operation of any one of the type-keys. In many machines provision is made for lifting the carriage or a portion of it in order that the platen may come into operative relation with one or the other of two types carried by the type-levers.

The object of this invention is to provide a simple silent-key mechanism for machines of this class by which the requisite movement will be imparted to the ribbon by the movement of the silent key whether the platen be in the upper-case or in the lower-case position.

The invention will be fully described hereinafter and the features of novelty pointed out in the appended claims.

Reference is to be had to the accompanying drawings, in which—

Figure 1 is a sectional elevation of a portion of a type-writing machine embodying our invention. Fig. 2 is a rear view of a portion of the mechanism, and Fig. 3 is a detail side view of the ribbon-guide and the parts connected therewith directly.

We desire it to be understood that the construction illustrated is only an example and that various modifications may be made without departing from the nature of our invention.

As illustrated, the key 1 is secured to a key-lever 2, fulcrumed at 3 upon the frame 4 and having a loose connection at 2^a with a link or elbow lever 5, fulcrumed at 6. This link is also loosely connected at 5^a with a type-lever 7, fulcrumed at 8 on the segment 9 and carrying double type 10. Normally the type-lever rests on a cushion 11.

Rigidly secured to the key-lever 2 adjacent to its pivot end is an arm 12, the upper end of which has a fork 13 arranged to straddle an operating-crank 14, which is rigidly secured upon a rock-shaft 15. This rock-shaft is mounted in the frame 16, which is pivoted at 17 and supports the front rail 18, forming a track for the carriage, this being a well-known construction. Any suitable shift mechanism is employed for swinging the frame 16, and with it the platen portion of the carriage, up or down. The length of the crank 14 is such that whether the frame 16 be up or down such crank will remain in operative relation to the fork 13, which simply slides along the crank as the latter is raised or lowered with the frame 16. The crank 14 is adjustably secured upon the shaft 15, as by means of a set-screw 14^a, which not only permits the crank to be turned upon the shaft, but to be adjusted lengthwise thereof to bring the crank into registry with the arm 12, according to the location of the silent key, which may vary. Of course if the machine comprises several silent keys, a corresponding number of cranks 14 will be secured upon the shaft 15. The rock-shaft is supported by arms 19, which are secured adjustably to the rail 18, as by means of a set-screw 20 engaging a slotted portion 19^a. Upon the rock-shaft is also rigidly secured, as by means of a set-screw 21^a, a crank-arm 21, having a lateral extension 21^b. This extension is adapted for engagement with an arm 22, secured rigidly to the curved carrier 23, the free end of which is formed into a hook 24, connected with the ribbon-guide 24^a. This carrier is pivotally connected at 25 with the stationary arm 19 and is drawn toward the extension 21^b by a spring 26. Upon the pivot 25 is also loosely mounted an arm 27, carrying a collar 28, loosely at its free end. A spring 29 connects the carrier 23 with the arm 27

and has a tendency to bring these parts into the position shown in Fig. 3, the lower end of the arm 27 being adapted to abut against an inclined shoulder of the carrier 23 and to fit between the said carrier and the arm 22, as shown in Fig. 2.

The collar 28 engages a vertical guideway in a bracket 30ª, which is projected from a frame or bar 30, which moves from front to rear on the frame of the machine, being connected with the universal bar 31, which receives a movement from front to rear in the usual manner—that is, all keys that are not silent keys are provided with projections or heels 7ª, as indicated in dotted lines in Fig. 1, these heels being adapted to engage the universal bar and to move it rearward. The frame 30 is connected with the escapement mechanism in the well-known or in any approved manner, so that each rearward movement of the universal bar causes the carriage to be fed. At the same time, through the medium of the bracket 30ª and of the arm 27, the carrier 23 is swung on its pivot 25, so as to impart the usual upward movement to the ribbon-guide 24ª. Should the frame 16 and the track 18 be raised from the position shown in Fig. 1, the engagement of the bracket 30ª with the collar 28 will remain substantially the same, owing to the vertical guideway provided for said collar in said bracket. The ribbon-guide will thus be moved upward by the operation of the universal bar, whether the platen be in the upper or in the lower position. When the silent key is operated, no movement is imparted to the universal bar 31, for the reason that the type-lever 7 of the silent key is made without the heel 7ª. The escapement mechanism of the carriage is therefore not operated. The arm 12, however, by means of its fork 13 imparts a rocking movement to the crank-arm 14 in the direction indicated by the arrow, and this movement is by means of the shaft 15 communicated to the arm 21, the extension of which, 21ᵇ, then abuts against the arm 22 and swings the carrier 23 upward on its fulcrum 25, thus also raising the ribbon-guide 24ª. The arm 27 of course remains stationary during this movement, and the spring 29 allows the carrier 23 to move independently of the arm 27 in this particular case, but restores the parts to their original position as soon as the silent key is released. It will be readily seen that the operation of the silent key upon the ribbon-guide is substantially the same, whether the rail 18, and with it the platen, be in the upper or the lower position. The leverage of the arm 12 upon the crank-arm 14 is slightly changed by shifting the arm 16 up or down, but not sufficiently to materially affect the operation.

What we claim as new, and desire to secure by Letters Patent, is—

1. In a type-writing machine, the combination with a ribbon-guide and a movable carrier therefor, of a rock-shaft having means for imparting movement to said carrier, a crank-arm upon said rock-shaft, a movable frame, adapted to support the carriage and also supporting the said carrier and rock-shaft, and a key fulcrumed on the main frame of the machine and provided with an operating-arm having a sliding engagement with the said crank-arm so that the said crank-arm may be raised or lowered together with the movable carrying-frame, without bringing said crank-arm out of operative engagement with the arm on the key.

2. In a type-writing machine, the combination with the main frame and the key fulcrumed thereon, said key being provided with an operating-arm, of a carriage-supporting frame movably mounted upon the main frame, a carrier movably mounted on said carriage-supporting frame, a ribbon-guide connected with the carrier, and an operating element connected with said carrier and having a sliding engagement with the operating-arm of the key so as to remain in operative relation to the key, whether the carriage-supporting frame be in the raised or the lowered position.

3. In a type-writing machine, the combination with the main frame, a key fulcrumed thereon and provided with an operating-arm, a carriage-supporting frame movably mounted on the main frame, a carrier pivoted on said carriage-supporting frame, a ribbon-guide connected with said carrier, a rock-shaft mounted on the carriage-supporting frame at a distance from the pivot of the carrier and provided with a member arranged to operate said carrier, and another member mounted on said rock-shaft and arranged to engage the operating-arm of the key, whether the carriage-supporting frame be in its upper or in its lower position.

4. In a type-writing machine, the combination with a main frame, an auxiliary frame movably mounted thereon and adapted to support the carriage, a carrier fulcrumed on said auxiliary frame, a ribbon-guide connected with the carrier, a rock-shaft journaled in the auxiliary frame and extending parallel with the pivot of the carrier, said rock-shaft having a member adapted for operative engagement with the carrier, a crank-arm adjustable lengthwise upon said rock-shaft, and a key fulcrumed upon the main frame and provided with an arm arranged to engage said crank-arm irrespective of the position of the auxiliary frame.

5. In a type-writing machine, the combination with the main frame, an auxiliary frame adapted to support the carriage, a universal bar adapted to be operated by sundry of the keys, and an escapement-operating member connected with said universal bar, of a carrier fulcrumed upon said auxiliary frame, a ribbon-guide connected with the carrier, an arm having a yielding connection with the carrier and engaging the member which operates the escapement so that the carrier will be operated by a movement of said escape-

ment-operating member, while also allowing for a movement of the carrier independently of said member, and key-operated means for actuating the said carrier independently of the escapement-operating member.

6. The combination in a type-writing machine of a main frame, a movable auxiliary frame adapted to support the carriage, a universal bar adapted to be actuated by sundry of the keys, an escapement-operating member connected with said universal bar, a bracket which is rigid with said member and which is provided with a vertical guideway, an arm fulcrumed on the auxiliary frame having a sliding engagement with said guideway, a carrier fulcrumed on said auxiliary frame at the same point as the said arm, a spring which has a tendency to throw the carrier away from said arm, a ribbon-guide connected with the carrier, another spring which connects the carrier to the said auxiliary frame, a rock-shaft mounted on the auxiliary frame and extending parallel with the axis of the carrier, said rock-shaft being provided with a crank-arm arranged for operative engagement with the carrier and with another crank-arm, and an operating-arm projected from one of the keys and arranged for sliding engagement with the said second-named crank-arm.

In testimony whereof we have signed our names to this specification in the presence of two subscribing witnesses.

WILLIAM F. HELMOND.
OSCAR C. KAVLE.

Witnesses:
EDWARD J. MANNING,
E. A. EDGAR.