J. W. KOERNER.

TYPE WRITING MACHINE.

APPLICATION FILED SEPT. 1, 1909.

1,011,970.

Patented Dec. 19, 1911.

2 SHEETS—SHEET 1.

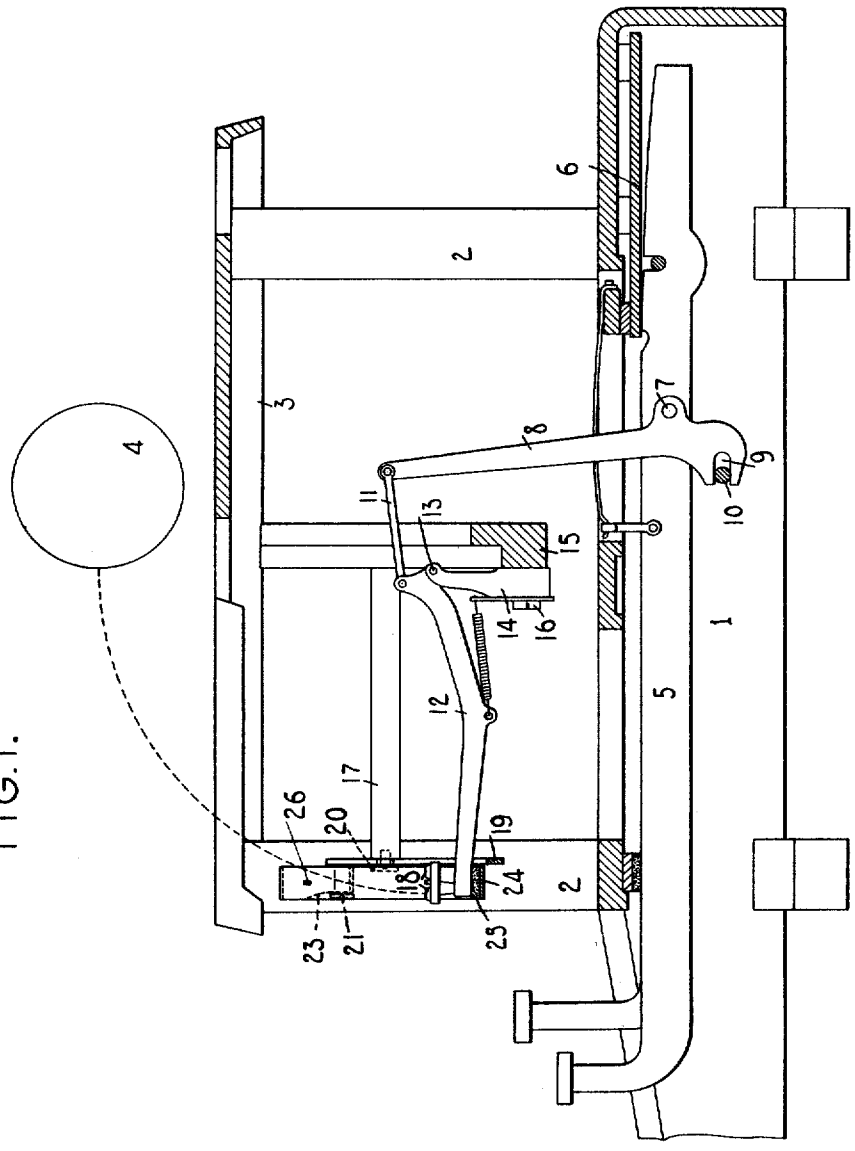

FIG. 1.

WITNESSES.

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2 SHEETS—SHEET 2.

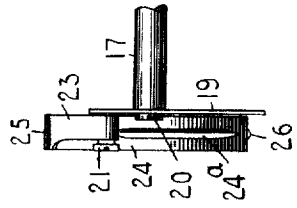

FIG. 5.

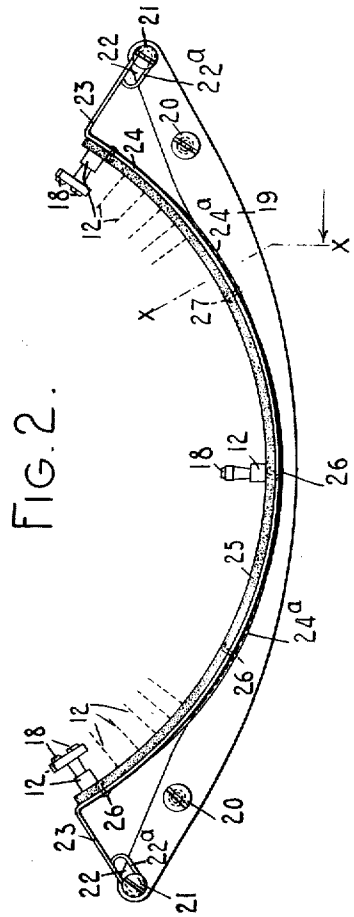

FIG. 2.

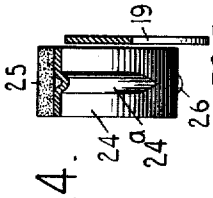

FIG. 4.

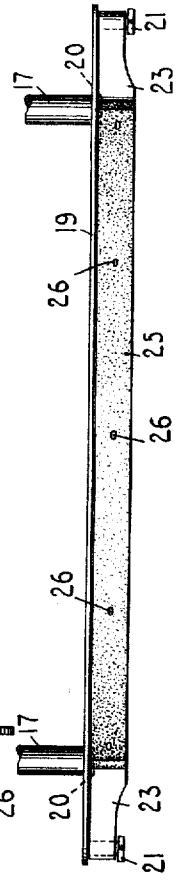

FIG. 3.

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UNITED STATES PATENT OFFICE.

JOHN W. KOERNER, OF SYRACUSE, NEW YORK, ASSIGNOR TO THE MONARCH TYPE-WRITER COMPANY, OF SYRACUSE, NEW YORK, A CORPORATION OF NEW YORK.

TYPE-WRITING MACHINE.

1,011,970. Specification of Letters Patent. Patented Dec. 19, 1911.

Application filed September 1, 1909. Serial No. 515,642.

To all whom it may concern:

Be it known that I, JOHN W. KOERNER, citizen of the United States, and resident of Syracuse, in the county of Onondaga and State of New York, have invented certain new and useful Improvements in Type-Writing Machines, of which the following is a specification.

My invention relates to typewriting machines and more particularly to type rests for such machines.

One of the important objects of my invention is to provide a simple and efficient type rest adapted by its construction so to react on the type bars when they strike against the type rest, as to prevent rebound of the type bars from the rest, or to reduce the rebound to such an extent that there will be no conflict near the type rest between adjacent bars when they are rapidly operated in succession.

Another important object is to obviate or reduce the common tendency of some type bars to jump from the rest when others are operated.

To the above and other ends which will hereinafter appear, my invention consists in the features of construction, arrangements of parts and combinations of devices to be hereinafter described and particularly pointed out in the appended claims.

In the accompanying drawings wherein like reference characters indicate corresponding parts in the various views, Figure 1 is a fragmentary vertical front to rear sectional view of a Monarch machine embodying my invention, a sufficient number of parts only of the machine being shown to illustrate my invention. Fig. 2 is a detail front elevation showing the type rest and some of the series of type bars which are supported thereby; some of the bars being diagrammatically illustrated. Fig. 3 is a detail fragmentary plan view of the type rest, the type bars being omitted. Fig. 4 is an enlarged detail fragmentary transverse sectional view taken through the type rest at one of the ribs thereon. Fig. 5 is a detail side elevation of the type rest and one of its supporting rods.

It has been customary heretofore to employ in the construction of type rests lead or other non-resilient material which will deaden the blow and thus reduce the rebound. It has also been proposed to effect a relative displacement between the parts of the type rest in such a manner that the displaced part cannot spring back to its normal position after the blow is struck; and thus to deaden the blow and reduce the rebound. My invention is quite different from either class of structures referred to above for I employ a resilient instead of a non-resilient support or type rest and yet the shock of the blows of the type bars on the rest will be largely absorbed and there will be little or no rebound from the rest, the reaction of the rest being so controlled that the force of the reaction will be imparted gently to the striking bar or bars.

The frame of the machine comprises a base 1, corner posts 2 and a top plate 3. The top plate is surmounted by a carriage (not shown) which travels from side to side of the machine and carries a cylindrical platen 4 diagrammatically shown in Fig. 1. Key levers 5 are fulcrumed against a fulcrum plate 6 carried by the base of the machine, and each key lever has pivoted thereto at 7 a sub-lever 8. The lower end of each sub-lever is slotted at 9 to receive a fulcrum bar 10 which extends transversely beneath the key levers and is secured at its ends to the frame of the machine. The upper end of each sub-lever 8 is connected to a link 11 pivoted at its forward end to a type bar 12. The type bars are each pivoted at 13 to a type bar hanger 14 secured to a type bar segment 15 by a screw 16. The series of segmentally arranged type bars are each adapted to move upwardly and rearwardly and to strike against the front face of the platen 4. Extending forwardly from the type bar segment are supporting rods 17.

The parts thus far described are of the usual construction embodied in the Monarch machine, it being understood that in this machine the type bar segment 15 is given a vertical shifting movement to change the case position of the type bars so as to cause either the upper or lower case types 18 to strike the platen at the printing point. The forward ends of the supporting rods 17 have a vertically disposed plate-like bracket or support 19 secured thereto by screws 20. The plate 19 extends outwardly at its ends beyond the rods 17 and forwardly extending shouldered headed screws or pins 21 are secured to and project from the support 19. The barrel or shank of each of these screws

or pins 21 is received in a slot 22 formed by a looped portion 22^a of a type bar rest or support made preferably from a flat strip of resilient metal. These looped portions 22^a which form the slots 22 are formed by bending the ends of arms 23 which project from the curved portion 24 of the support. The part 24 is curved to conform, when the parts are in the normal positions shown in Fig. 2, substantially to the segmental arrangement of the series of type bars 12 and is formed with two longitudinally extending ribs 24^a for purposes which will hereinafter appear.

The upwardly opening curved portion 24 of the supporting member or spring is sheathed or faced with a pad 25 which is fixed thereto by any suitable means, the means shown in the present instance being a series of rivets or tacks 26, the points of which are received through openings in the portion 24 of the resilient support and pass through the pad 25, the tacks being turned at their ends as at 27 to connect the pad to its support. The pad may be of any suitable pliant material such as felt, leather or the like. The member 22^a—23—24 is preferably formed of a single piece throughout its length and is resilient throughout its length although it is immaterial whether or not it be formed of one piece so long as all of the parts are united to form virtually one member. Before the supporting member 22^a—23—24 is placed in position on its fixed supporting pins 21 the member is bent to the form which is shown in Fig. 2 and which may be called its natural form. The pins 21 are then threaded into place in the fixed support to maintain the resilient support in position as shown in Fig. 2 and the inherent resiliency of the latter support will tend to restore it to the shape and position shown in this figure if its shape and position are changed by the impact of a type bar against it. The resilient support is normally maintained in the elevated position shown in Fig. 2, the lower or outer ends of the slots 22 then being in contact with the pins 21. A blow imparted by a type bar to the pad will tend to flex the resilient support between the ribs 24^a and at or near the arms 23 of the support, and will cause a slight angular movement of either or both of the arms on the pins 21. The action of the rest depends somewhat on the character of the return stroke of the type bar and the point where the impact of the type bar is received against the support. If, for instance, the left-hand type bar shown in Fig. 2 strikes the pad with sufficient force, it will flex the resilient supporting member between the ribs 24^a and at the same time give a bodily movement to the left-hand arm 23 to cause it to move bodily with reference to the left-hand fixed pin or screw 21 and will impart a slight angular motion to the other arm 23. If, on the other hand, the right-hand end bar shown in Fig. 2 strikes the type rest, the blow will tend to produce a corresponding flexing of the curved portion or support between the ribs, and a bodily movement of the right-hand arm 23 and a slight angular motion of the other arm. If a center type bar should strike the pad there would be a tendency to flex the support next to both of the arms 23 and between the ribs and to impart to both of the arms 23 angular movements on their supporting means. The action of the type rest will therefore differ under varying circumstances; but in any case there is a tendency of the resilient support to yield to the force acting on the rest. Moreover, it will be understood that when a type bar striking the rest tends to change the curvature of the resilient support, the type bars, or some of the type bars, at rest on the pad will either resist the tendency of the striking bar to change the curvature of the support, or else will follow the yielding part and will resist its quick restoration or sudden reaction to the normal position, so that the shock of the bar is absorbed, the reaction of the resilient support being thus rendered too gentle or sluggish to effect a rebound of the bar. I prefer to form the rest with ribs 24^a to prevent the strip 24 from springing where it is stiffened by them. Two ribs are shown in the present instance, one on each side of the center of the strip 24. These ribs extend longitudinally of the strip and each preferably tapers from the center of the rib to the ends thereof. When the strip 24 is thus stiffened, a blow from a type bar imparts to it, or to a portion or portions of it, a slight endwise movement, and both this movement and the reacting movement of the strip are naturally arrested by the friction between the rest and some or all of the inactive type bars, the reaction being such that apparently neither does the actuated type bar rebound, nor does any of the other bars jump from the rest. I preferably make the rest from a stock which has just the proper resiliency and is of such weight that the force required to move the rest mounted as it is, instantly from its normal position, substantially equals the force of the blow of a type bar as it strikes the rest, so that the type rest itself will move when it receives a blow from a type bar instead of causing the type bar to rebound therefrom. The type bar is therefore suddenly arrested, the type rest absorbing all of the energy of the bar and moving slightly from it and not causing a rebound of the bar.

It will be seen that the heads of the screws or pins 21 overlap the looped ends 22^a of the resilient support 22^a—23—24 so as to pre-

vent the resilient support from being removed from the pins, but affording a free play and bodily movement of the resilient support on the pins in the direction of the lengths of the arms 23, the slots 22 extending in the direction of the lengths of said arms.

From the foregoing description it will be understood that the resilient support 22ª—23—24 is in fact a bowed leaf spring loosely supported at its ends by the pin and slot connections 21—22 between the fixed support 19 and the resilient support; that the type rest is resiliently supported as well as movable on its support at each end and may be termed a floating type rest; that the type rest is held in the normal position by its own inherent resiliency; and that the arms 23 constitute terminal bends in the spring sheet metal supporting strip.

While I have referred herein to the pins 21 and support 19 as being " fixed " it should be understood that this expression means relatively fixed or so fixed that these parts will not be disturbed by the movement imparted to the type rest by the impact of the type bars. The parts 19 and 21 when employed in the Monarch machine are, as hereinbefore explained, connected to and moved with the type bar segment in the case shifting movements of the latter.

The various features of the construction pointed out above all contribute to the production of an efficient type rest, to prevent the rebound of the type bars—thus the provision of a floating type rest, of a resilient type rest which will move or yield in the general direction of the movement of the bar as it is restored to normal position, the construction by which the type bars at rest in the basket are made effective to prevent the too sudden reaction of the resilient rest, and the regulation of the weight of the movable type rest itself with respect to the force of the blow which it receives from each individual type bar, all contribute to the efficiency of the type rest, but it should be understood that any one or more of these features may be used without the others and that my invention is not restricted to the embodiment of all of these features in the same structure and that various changes may be made without departing from my invention.

While I have found in practice that the type rest provided with the ribs 24ª is especially efficient and is particularly adapted to prevent inactive side bars from dancing when other bars strike the rest, nevertheless a rest without these ribs but otherwise constructed as shown and described constitutes a highly efficient anti-rebound type rest. When I refer herein to a leaf spring I employ such a term merely to distinguish the spring from a coiled or convolute spring.

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

1. In a typewriting machine, a type rest comprising a leaf spring loosely supported at its ends, and a pad supported by said leaf spring.

2. In a typewriting machine, the combination of a series of segmentally arranged upwardly and rearwardly striking type bars, and an upright segmental type rest which supports said type bars, the type rest being mounted on its support for bodily movement at each end from its normal position and being connected only at its ends to the support.

3. In a typewriting machine, a type rest comprising a piece of resilient sheet metal mounted for movement on its support at each end, from its normal position, and held in the normal position by its own inherent resiliency, and a facing of pliant material.

4. In a typewriting machine, a segmental type rest supported near its ends only and resilient throughout at least a portion of its length and capable of flexure between the ends thereof and mounted for bodily movement at each end from its normal position.

5. In a typewriting machine, the combination of a relatively fixed support, and a resilient type bar support loosely mounted for bodily movement on said fixed support, the resiliency of said type bar support maintaining it in the normal position on said fixed support.

6. In a typewriting machine, a type rest comprising a spring supporting-strip bent to conform to the curvature of the type bars which it supports and having terminal bends, each of which extends at an angle to the body portion of said strip, each of said terminal bends being loosely supported for bodily movement, and a pad supported by said spring supporting strip.

7. In a typewriting machine, a type rest comprising a vertically disposed spring supporting strip bent to conform to the curvature of the type bars which it supports and having terminal bends each of which extends at an angle to the body portion of said strip, each of said terminal bends being loosely supported for bodily movement, and a pad supported by said spring supporting strip, the inherent spring of the supporting strip being effective to restore the rest to its elevated or normal position.

8. In a typewriting machine, a type rest comprising a loosely supported bowed leaf spring adapted to exert a pressure which tends to elevate the type rest to its normal position after a blow is imparted thereto by a type bar.

9. In a typewriting machine, a type rest comprising a bowed supporting spring adapted to exert a pressure which tends to

restore the spring to its original contour after a blow is imparted thereto by a type bar, and means for loosely supporting the spring at the ends thereof.

10. In a typewriting machine, a type bar rest comprising a bowed supporting spring, a fixed support, pin and slot connections between the ends of said spring and said fixed support, and a pad supported by said spring.

11. In a typewriting machine, a type bar rest comprising a bowed spring curved to correspond substantially to the curvature of the series of type bars which it is to support, said spring having arms that extend from the curved portion thereof, a pad supported by said spring, a fixed support, and pin and slot connections between said fixed support and said arms, the slots extending lengthwise of said arms.

12. In a typewriting machine, a type bar rest comprising a vertically disposed bowed leaf spring curved to open upwardly, the curvature of the spring conforming substantially to the curvature of the series of type bars which the spring is to support, integral spring arms formed on said spring and extending from the ends of the curved portion thereof, the free ends of the arms being formed with elongated loops, a fixed support carrying pins that are received within said loops, and a pad supported by said spring.

13. In a typewriting machine, a type rest comprising a thin flat strip of resilient material having an arc-shaped portion conforming to the system of type bars, a support for said strip, and yielding connections between the strip and support, the said yielding connections being the sole support for said strip.

14. In a typewriting machine, a type rest comprising a thin flat strip of resilient material having an arc-shaped portion and arms extending therefrom, a support for said strip, and yielding connections between said arms and support, the said yielding connections being the sole support for said strip.

15. In a typewriting machine, a type rest comprising a thin flat strip of resilient material having an arc-shaped portion conforming to the system of type bars, a support for said strip, and yielding connections between the strip and support, said connections including pins on whose axes parts of the strip are movable angularly, the said yielding connections being the sole support for said strip.

16. In a typewriting machine, a type rest comprising a thin flat strip of resilient material having an arc-shaped portion conforming to the system of type bars, a support for said strip, and yielding connections between the strip and support, said connections including pins and devices extending from the ends of the arc to said pins, and the ends of the arc being movable angularly on the axes of the pins, the said yielding connections being the sole support for said strip.

17. In a typewriting machine, a type rest comprising a thin flat strip of resilient material having an arc-shaped portion conforming to the system of type bars, a support for said strip, and yielding connections between the strip and support, said connections including pins toward and from which portions of the strip are movable and on whose axes said portions of the strip are movable angularly, the said yielding connections being the sole support for said strip.

18. In a typewriting machine, a type rest comprising a thin strip of resilient material having a ribbed arc-shaped portion conforming to the system of type bars, a support for said strip, and yielding connections between the strip and support.

19. In a typewriting machine, a type rest comprising a thin strip of resilient material having an arc-shaped portion conforming to the system of type bars, a support for said strip, and yielding connections between the strip and support, said arc-shaped portion having ribs formed thereon, these ribs being between the middle and ends of the arc and extending lengthwise of the arc.

20. In a typewriting machine, a type rest comprising a thin strip of resilient material having an arc-shaped portion conforming to the system of type bars, a support for said strip, and yielding connections between the strip and support, said arc-shaped portion being stiffer between the middle and ends of the arc than it is at the middle and ends of the arc.

21. In a typewriting machine, a type rest comprising a thin strip of resilient material having an arc-shaped portion conforming to the system of type bars, a support for said strip, and yielding connections between the strip and support, said arc-shaped portion being stiffer between the middle and ends of the arc than it is at the middle and ends of the arc, and said connections including pins on whose axes parts of the stop are movable angularly.

22. In a typewriting machine, a type rest comprising a thin strip of resilient material having an arc-shaped portion conforming to the system of type bars, a support for said strip, and yielding connections between the strip and support, said arc-shaped portion being stiffer between the middle and ends of the arc than it is at the middle and ends of the arc, and said connections including pins and devices extending from the ends of the arc to said pins and the ends of the arc being movable angularly on the axes of the pins.

23. In a typewriting machine, a type rest comprising a thin strip of resilient material having an arc-shaped portion conforming to the system of type bars, a support for said strip, and yielding connections between the strip and support, said arc-shaped portion being stiffer between the middle and ends of the arc than it is at the middle and ends of the arc, and said connections including pins toward and from which portions of the strip are movable and on whose axes said portions of the strip are movable angularly.

Signed at Syracuse, in the county of Onondaga and State of New York this 30th day of August A. D. 1909.

JOHN W. KOERNER.

Witnesses:
H. H. STEELE,
GILES B. EVERSON.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."