

No. 781,163.

PATENTED JAN. 31, 1905.

J. T. SCHAAFF.  
TYPE WRITER ACTION.  
APPLICATION FILED APR. 25, 1904.

3 SHEETS—SHEET 1.

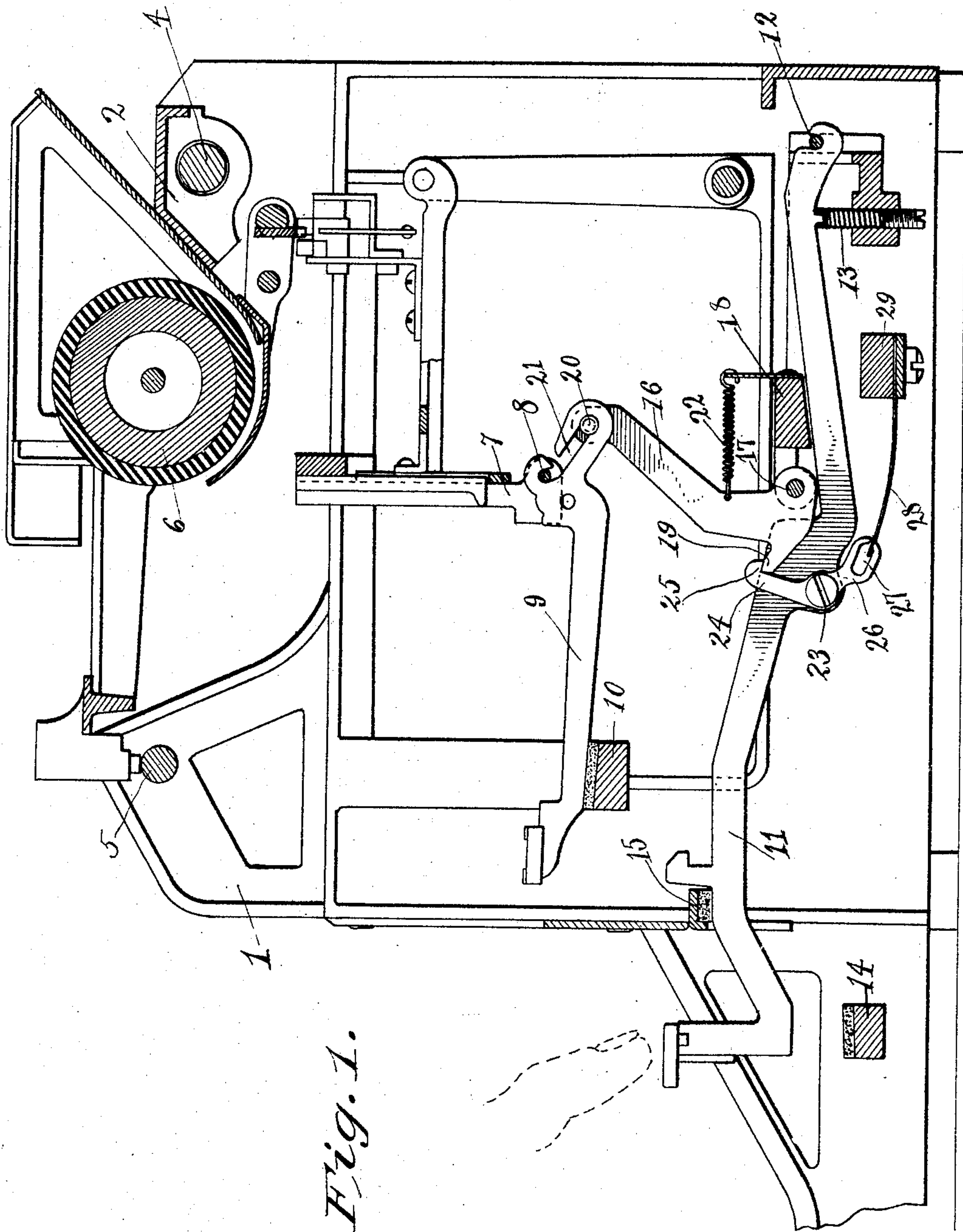


Fig. 1.

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3 SHEETS—SHEET 2.

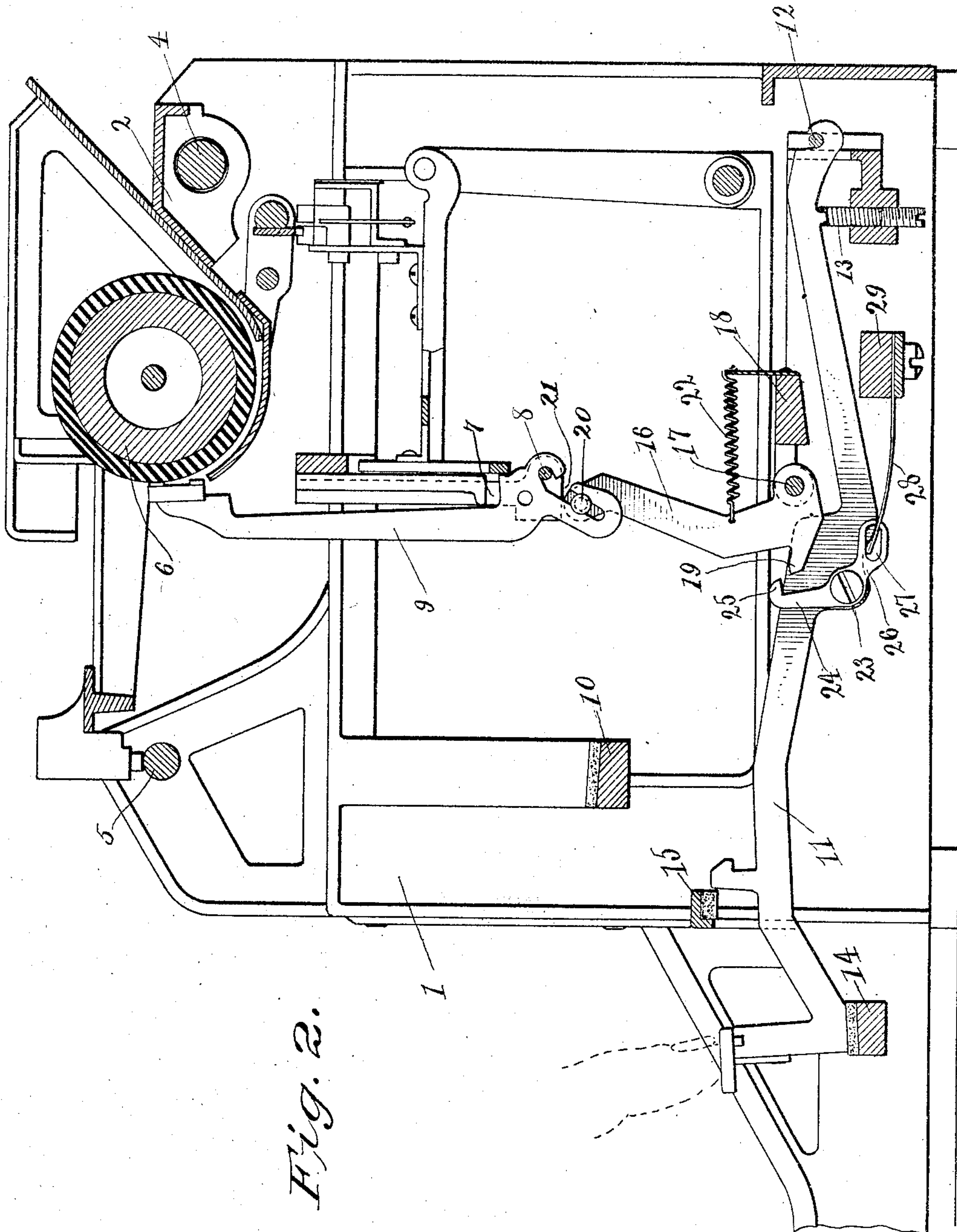


Fig. 2.

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3 SHEETS—SHEET 3.

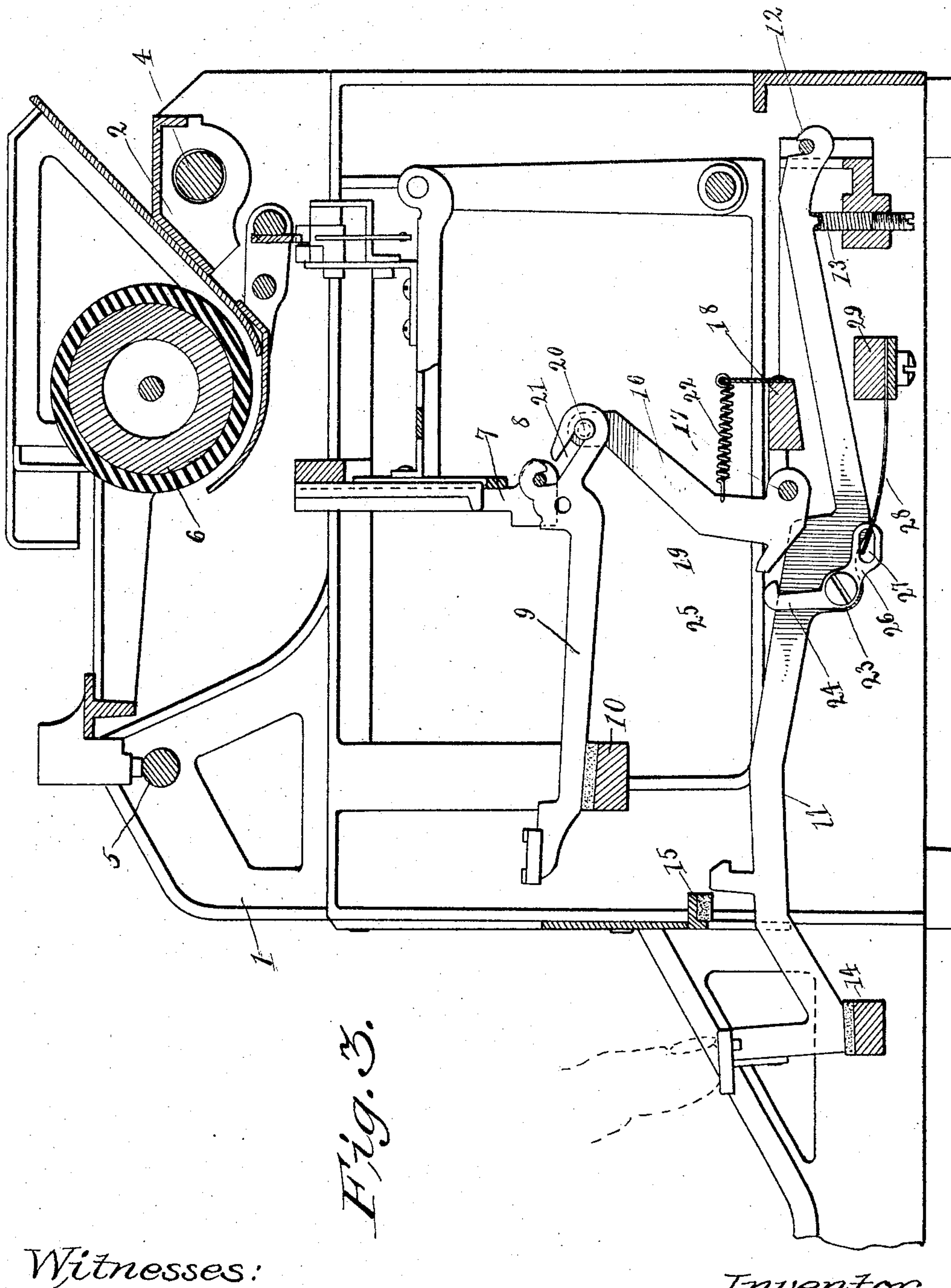


Fig. 3.

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# UNITED STATES PATENT OFFICE.

JOHN T. SCHAAFF, OF WASHINGTON, DISTRICT OF COLUMBIA.

## TYPE-WRITER ACTION.

SPECIFICATION forming part of Letters Patent No. 781,163, dated January 31, 1905.

Application filed April 25, 1904. Serial No. 204,881.

*To all whom it may concern:*

Be it known that I, JOHN T. SCHAAFF, a citizen of the United States, residing at Washington, District of Columbia, have invented certain new and useful Improvements in Type-Writer Actions, of which the following is a description, reference being had to the accompanying drawings and to the figures of reference marked thereon.

My invention relates to key-actions for type-writing and other key-operated machines, particularly for type-writing machines of the front-stroke type—such, for instance, as the machine commonly known as the Underwood type-writer.

In type-writing machines it is desirable to so connect the key-lever with the type-bar that the latter after having been operated to cause the type carried by it to print the paper carried by the platen may return to initial position independently of the key-lever, so that after one key-lever has been operated a second key-lever may be operated without waiting for the key-lever first operated to return to position. Devices for this purpose usually comprise a detachable connection at some point between the key-lever and the type-bar arranged to be operated to disconnect the key-lever and type-bar after the type-bar has been given the movement necessary to effect the printing and before the key-lever has completed its movement. The detachable connection has heretofore been actuated by striking against a fixed stop as the key-lever nears the end of its movement and while the key-lever is still exerting its pulls upon the type-bar through the detachable connection. The detachable connection being thus held against the part on which it acts, considerable force is necessary to detach it, and in thus disconnecting the parts while under tension so much wear is caused that the device soon becomes inoperative.

It is the object of my invention to avoid all wear upon the parts and to effect the disconnection of the parts by a light spring operating independently of the movement of the key-lever and after the key-lever has completed its movement.

With this object in view my invention con-

sists in the construction hereinafter described, and particularly pointed out in the claims, it being understood that while the invention is here shown in connection with a type-writing machine of the Underwood type it is also applicable to type-writing machines of other types, as well as to other machines in which an actuated part is operated by means of a key-lever.

In the drawings, Figure 1 is a cross-sectional view of a type-writing machine embodying my invention, the parts of the key-action being shown in initial position. Fig. 2 is a similar view showing the parts of the key-action in the position which they assume at the instant the type-bar has completed its stroke. Fig. 3 is a similar view showing the parts of the key-action in the position which they assume after the type-bar has completed its stroke, the key being still in depressed position.

In the drawings, 1 is the frame of the machine.

2 is the paper-carriage, supported in rear on guide-rod 4 and in front on guide-rod 5. 6 is the platen.

7 is a bar extending across the machine, carrying the pivots 8 for the type-bars.

9 indicates one of the type-bars arranged to turn on pivots 8 from the position shown in Fig. 1 to the position shown in Fig. 2.

10 is a bar extending across the machine and suitably cushioned, on which the type-bars rest before and after operation.

11 indicates one of the key-levers pivoted at 12 at the rear of the machine. A spring 13 serves to keep the key normally in elevated position.

14 is a stop-bar, suitably cushioned, arranged below the key-levers to limit the downward movement of the keys, and 15 is a similar stop-bar arranged above the key-levers to limit their upward movement.

16 represents one of a series of connecting-levers, corresponding in number with the type-bars and key-levers, pivoted at 17 in a bar 18, which extends across the machine. This connecting-lever is provided near its lower end with a forwardly-projecting lug or shoulder 19 and at its upper end is provided with a pin



20, which engages a slot 21 in the rear end of the type-bar 9. A spring 22 serves to hold the connecting-lever 16 normally in the position shown in Fig. 1 and to return it and the  
5 type-bar to position after operation.

On the key-lever 11 is provided a latch 23, having an upwardly-extending arm 24, having at its upper end a rearwardly-projecting lip 25, adapted to engage the lug or shoulder 19.  
10 The latch is also provided with a rearwardly-extending arm 26, slotted at 27 to receive the end of a spring 28, the other end of which is secured to a bar 29, which extends across the machine. The spring 28 is so formed that  
15 when the key is in the position shown in Fig. 1 it tends to move the latch into the position there shown—that is, into such position that its lip 25 will engage the lug or shoulder 19—and when the key is depressed it tends to  
20 move the latch into the position shown in Figs. 2 and 3—that is, into such position that its lip 25 is out of engagement with the lug or shoulder 19. The stop-bar 14 is so located that the key-lever strikes it and is stopped  
25 by it just before the type strikes the platen.

In the operation of the key-action above described, the several parts being in the position shown in Fig. 1, as the key is depressed the connecting-lever 16 by reason of the en-  
30 gagement of the lip 25 of the latch 23 with the lug or shoulder 19 will be rocked on its pivot 17 and through the engagement of the pin 20 with the slot 21 of the type-bar will cause the type-bar to be rocked on its pivot  
35 to bring the type against the paper carried by the platen 6. The key is necessarily depressed quickly, and through the mechanism described the type-bar is given an impetus by which it attains momentum sufficient to carry  
40 it through the final portion of the stroke necessary to bring its type against the paper carried by the platen after the key-lever has been stopped by the stop-bar. This action is usual in type-writing machines and is generally con-  
45 sidered to be essential to successful operation. By reason of the momentum thus given to the type-bars and its movement subsequent to the stopping of the key-lever with its latch 23 the lug or shoulder 19 of the connecting-  
50 lever 16 is momentarily carried downward out of contact with the lip 25 of the latch 23, thus having the latch momentarily free from engagement with the connecting-lever. The latch being thus free is rocked by the spring  
55 28 into the position in which it is shown in Fig. 2—that is, with its lip 25 out of the path of the shoulder 19—so that the type-bar, with its connecting-lever, may return to initial position independently of the key-lever. By so  
60 arranging the parts, as above described, that the disengagement of the latch and the connecting-lever may take place at a time when they are not in contact it is made possible to effect the rocking of the latch by the least pos-  
65 sible power, and the wear on the latch and

shoulder 19, which would result from disengaging them while under tension, is avoided, as the pressure at this point during the down-stroke of the key-lever is considerable. If the release took place while this pressure was still  
70 on, the wear would be so great as to practically render the device useless, as the bearing-surfaces of the latch and the shoulder are necessarily limited; but the work to be done by the spring 28 is in the present device no  
75 more than rocking the latch on its pivot. Consequently this spring may be made very light. As soon as the type-bar has brought its type against the platen it falls back by its own weight, aided by the action of the spring 22  
80 on the connecting-lever 16, in advance of the return of the key-lever to normal position. On the release of the key-lever it is returned to normal position by the spring 13, and the latch 23 is again engaged with the shoulder 19  
85 by the action of the spring 28.

It will of course be understood that I do not desire to be limited to the precise form and arrangement of parts here shown and de-  
90 scribed, it being obvious that the form and arrangement may be varied without departing from the spirit of the invention.

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

1. In a key-operated machine, the combination of a key-lever, an actuated part, means connecting the key-lever and actuated part comprising a latch and a connecting-lever, means for stopping the movement of the key-  
100 lever before the actuated part has completed its stroke, and means for operating the latch to disconnect the key-lever and actuated part after the stopping of the movement of the key-lever.

2. In a type-writing machine, the combination of a key-lever, a type-bar, means connecting the key-lever and type-bar comprising a latch and a connecting-lever, means for stop-  
110 ping the movement of the key-lever before the type-bar has completed its stroke, and means for operating the latch to disconnect the key-lever and type-bar after the stopping of the movement of the key-lever.

3. In a key-operated machine, the combination of a key-lever, an actuated part, means connecting the key-lever and actuated part comprising a latch and a connecting-lever, means for stopping the movement of the key-  
115 lever before the actuated part has completed its stroke, and means for operating the latch to disconnect the key-lever and actuated part after the stopping of the movement of the key-lever, and means for restoring the actuated part and connecting-lever to initial posi-  
120 tion, independently of the key-lever.

4. In a type-writing machine, the combination of a key-lever, a type-bar, means connecting the key-lever and type-bar comprising a latch and a connecting-lever, means for stop-  
130



ping the movement of the key-lever before the type-bar has completed its stroke, and means for operating the latch to disconnect the key-lever and type-bar after the stopping of the movement of the key-lever, and means for returning the type-bar and connecting-lever to initial position independently of the key-lever.

5. In a key-operated machine, the combination of a key-lever, an actuated part, means connecting the key-lever and actuated part comprising a latch and a connecting-lever, means for stopping the movement of the key-lever before the actuated part has completed its stroke, and yielding means for operating the latch to disconnect the key-lever and actuated part upon the stopping of the movement of the key-lever.

6. In a type-writing machine, the combination of a key-lever, a type-bar, means connecting the key-lever and type-bar comprising a latch and a connecting-lever, means for stopping the movement of the key-lever before the type-bar has completed its stroke, and yielding means for operating the latch to disconnect the key-lever and type-bar upon the stopping of the movement of the key-lever.

7. In a key-operated machine, the combination of a key-lever, an actuated part, means 30 connecting the key-lever and actuated part comprising a latch and a connecting-lever, means for stopping the movement of the key-lever before the actuated part has completed its stroke, and yielding means for operating 35 the latch to disconnect the key-lever and actuated part upon the stopping of the movement of the key-lever, and means for restoring the actuated part and connecting-lever to initial position independently of the key-lever.

40 8. In a type-writing machine, the combination of a key-lever, a type-bar, means connecting the key-lever and type-bar comprising a latch and a connecting-lever, means for stopping the movement of the key-lever before  
45 the type-bar has completed its stroke, yielding means for operating the latch to disconnect the key-lever and type-bar upon the stopping of the movement of the key-lever, and means for restoring the actuated part and connecting-lever to initial position independently  
50 of the key-lever.

9. In a key-actuated machine, the combination of a key-lever, an actuated part, means connecting the key-lever and actuated part comprising a pivoted latch and a connecting-lever, means for stopping the movement of the key-lever before the actuated part has completed its stroke, and means for rocking the latch to disconnect the key-lever and actuated part after the stopping of the movement of the key-lever.

10. In a type-writing machine, the combination of a key-lever, a type-bar, means connecting the key-lever and type-bar comprising

ing a pivoted latch and a connecting-lever, 65  
means for stopping the movement of the key-  
lever before the type-bar has completed its  
stroke, and means for rocking the latch to  
disconnect the key-lever and type-bar after  
the stopping of the movement of the lever. 70

11. In a key-operated machine, the combination of a key-lever, an actuated part, means connecting the key-lever and actuated part comprising a pivoted latch and a connecting-lever, means for stopping the movement of the key-lever before the actuated part has completed its stroke, means for rocking the latch to disconnect the key-lever and actuated part after the stopping of the movement of the lever, and means for restoring the actuated part and connecting-lever to initial position independently of the movement of the key-lever.

12. In a type-writing machine, the combination of a key-lever, a type-bar, means connecting the key-lever and type-bar comprising a pivoted latch and a connecting-lever, means for stopping the movement of the key-lever before the type-bar has completed its stroke, means for rocking the latch to disconnect the key and type-bar after the stopping of the movement of the key-lever, and means for returning the type-bar and connecting-lever to initial position independently of the movement of the key-lever.

13. In a key-actuated machine, the combination of a key-lever, an actuated part, means connecting the key-lever and actuated part comprising a pivoted latch and a connecting-lever, means for stopping the movement of the key-lever before the actuated part has completed its stroke, means for rocking the latch to disconnect the key-lever and actuated part, after the stopping of the movement of the key-lever, and means acting upon the connecting-lever for restoring the actuated part and connecting-lever to initial position independently of the movement of the key-lever.

14. In a type-writing machine, the combination of a key-lever, a type-bar, means connecting the key-lever and type-bar comprising a pivotal latch and a connecting-lever, means for stopping the movement of the key-lever before the type-bar has completed its stroke, and means for rocking the latch to disconnect the key-lever and type-bar after the stopping of the movement of the key-lever, and means acting upon the connecting-lever for restoring the type-bar and connecting-lever to initial position independently of the movement of the key-lever.

15. In a key-operated machine, the combination of a key-lever, an actuated part, means connecting the key-lever and actuated part comprising a pivoted latch and a connecting-lever, means for stopping the movement of the key-lever before the actuated part has completed its stroke, and yielding means for rock-



ing the latch to disconnect the key-lever and actuated part upon the stopping of the movement of the key-lever.

16. In a type-writing machine, the combination of a key-lever, a type-bar, means connecting the key-lever and type-bar comprising a pivoted latch and a connecting-lever, means for stopping the movement of the key-lever before the type-bar has completed its stroke, and yielding means for rocking the latch to disconnect the key-lever and type-bar upon the stopping of the movement of the key-lever.

17. In a key-operated machine, the combination of a key-lever, an actuated part, means connecting the key-lever and actuated part comprising a latch and a connecting-lever pivoted in the frame of the machine and having a pin-and-slot connection with the actuated part, means for stopping the movement of the key-lever before the actuated part has completed its stroke, and means for operating the latch to disconnect the key-lever and actuated part after the stopping of the movement of the key-lever.

18. In a type-writing machine, the combination of a key-lever, a type-bar, means connecting the key-lever and type-bar comprising a latch and a connecting-lever pivoted in the frame of the machine and having a pin-and-slot connection with the type-bar, means for stopping the movement of the key-lever before the type-bar has completed its stroke, and means for operating the latch to disconnect the key-lever and type-bar after the stopping of the movement of the key-lever.

19. In a key-operated machine, the combination of a key-lever, an actuated part, means connecting the key-lever and actuated part comprising a latch and a connecting-lever pivoted in the frame of the machine, and having a pin-and-slot connection with the actuated part, means for stopping the movement of the key-lever before the actuated part has completed its stroke, and yielding means for operating the latch to disconnect the key-lever and actuated part upon the stopping of the movement of the key-lever.

20. In a type-writing machine, the combination of a key-lever, a type-bar, means connecting the key-lever and type-bar comprising a latch and a connecting-lever pivoted in the frame of the machine, and having a pin-and-slot connection with the type-bar, means for stopping the movement of the key-lever before the type-bar has completed its stroke, and yielding means for operating the latch to disconnect the key-lever and type-bar upon the stopping of the movement of the key-lever.

21. In a key-operated machine, the combination of a key-lever, an actuated part, means connecting the key-lever and actuated part comprising a latch pivotally mounted on the key-lever and a connecting-lever pivoted in the frame of the machine, having a pin-and-

slot connection with the actuated part, and arranged to be engaged by the latch, means for stopping the movement of the key-lever before the key-lever has completed its stroke, and means for rocking the latch to disconnect it from the connecting-lever after the stopping of the movement of the key-lever.

22. In a type-writing machine, the combination of a key-lever, a type-bar, means connecting the key-lever and type-bar comprising a latch pivotally mounted on the key-lever and a connecting-lever pivoted in the frame of the machine, having a pin-and-slot connection with the type-bar, and arranged to be engaged by the latch, means for stopping the movement of the key-lever before the type-bar has completed its stroke, and means for rocking the latch to disconnect it from the connecting-lever after the stopping of the movement of the key-lever.

23. In a key-operated machine, the combination of a key-lever, an actuated part, means connecting the key-lever and actuated part comprising a latch pivotally mounted on the key-lever and a connecting-lever pivoted in the frame of the machine having a pin-and-slot connection with the actuated part, and arranged to be engaged by the latch, means for stopping the movement of the key-lever before the actuated part has completed its stroke, and yielding means for rocking the latch to disconnect it from the connecting-lever upon the stopping of the movement of the key-lever.

24. In a type-writing machine, the combination of a key-lever, a type-bar, means connecting the key-lever and type-bar comprising a latch pivotally mounted on the key-lever and a connecting-lever pivoted in the frame of the machine having a pin-and-slot connection with the type-bar, and arranged to be engaged by the latch, means for stopping the movement of the key-lever before the type-bar has completed its stroke, and yielding means for rocking the latch to disconnect it from the connecting-lever upon the stopping of the movement of the key-lever.

25. In a key-operated machine, the combination of a key-lever, an actuated part, means connecting the key-lever and actuated part comprising a connecting-lever and a latch, the latter being pivoted on the key-lever, and means independent of the lever, connected with the latch, arranged to throw the latch into engagement with the connecting-lever when the key-lever is in normal position and to throw the latch out of engagement with the connecting-lever when the key-lever is depressed.

26. In a key-operated machine, the combination of a key-lever, a type-bar, means connecting the key-lever and type-bar comprising a connecting-lever and a latch, the latter being pivoted on the key-lever, and means independent of the lever, connected with the latch, arranged to throw the latch into engage-



ment with the connecting-lever when the key-lever is in normal position and to throw the latch out of engagement with the connecting-lever when the key-lever is depressed.

5 27. In a key-operated machine, the combination of a key-lever, an actuated part, means connecting the key-lever and actuated part comprising a connecting-lever and a latch, the latter being pivoted on the key-lever and a  
10 spring independent of the lever, connected with the latch, arranged to throw the latch into engagement with the connecting-lever when the key-lever is in normal position and to throw the latch out of engagement with the  
15 connecting-lever when the key-lever is depressed.

28. In a key-operated machine, the combination of a key-lever, a type-bar, means connecting the key-lever and type-bar, comprising a connecting-lever and a latch, the latter  
20 being pivoted on the key-lever, and a spring independent of the lever, connected with the latch, arranged to throw the latch into engagement with the connecting-lever when the  
25 key-lever is in normal position and to throw the latch out of engagement with the connecting-lever when the key-lever is depressed.

29. In a key-operated machine, the combination of a key-lever, an actuated part, means

connecting the key-lever and actuated part 30 comprising a connecting-lever and a latch, the latter being pivoted on the key-lever and having a slot in its lower end, and a spring independent of the lever engaging the slot of the latch to throw the latch into engagement with 35 the connecting-lever when the key-lever is in normal position and to throw the latch out of engagement with the connecting-lever when the key-lever is depressed.

30. In a key-operated machine, the combination of a key-lever, a type-bar, means connecting the key-lever and type-bar comprising a connecting-lever and a latch, the latter being pivoted on the key-lever and having a  
45 slot in its lower end, and a spring independent of the lever, engaging the slot of the latch to throw the latch into engagement with the connecting-lever when the key-lever is in normal position and to throw the latch out of engagement with the connecting-lever when the 50 key-lever is depressed.

In testimony whereof I affix my signature in presence of two witnesses.

JNO. T. SCHAAFF.

Witnesses:

LAURA V. BRERETON,  
A. P. GREELEY.