No. 881,275. PATENTED MAR. 10, 1908.

F. A. YOUNG.

TYPE WRITING MACHINE.

APPLICATION FILED JAN. 26, 1904.

FIG. 1.

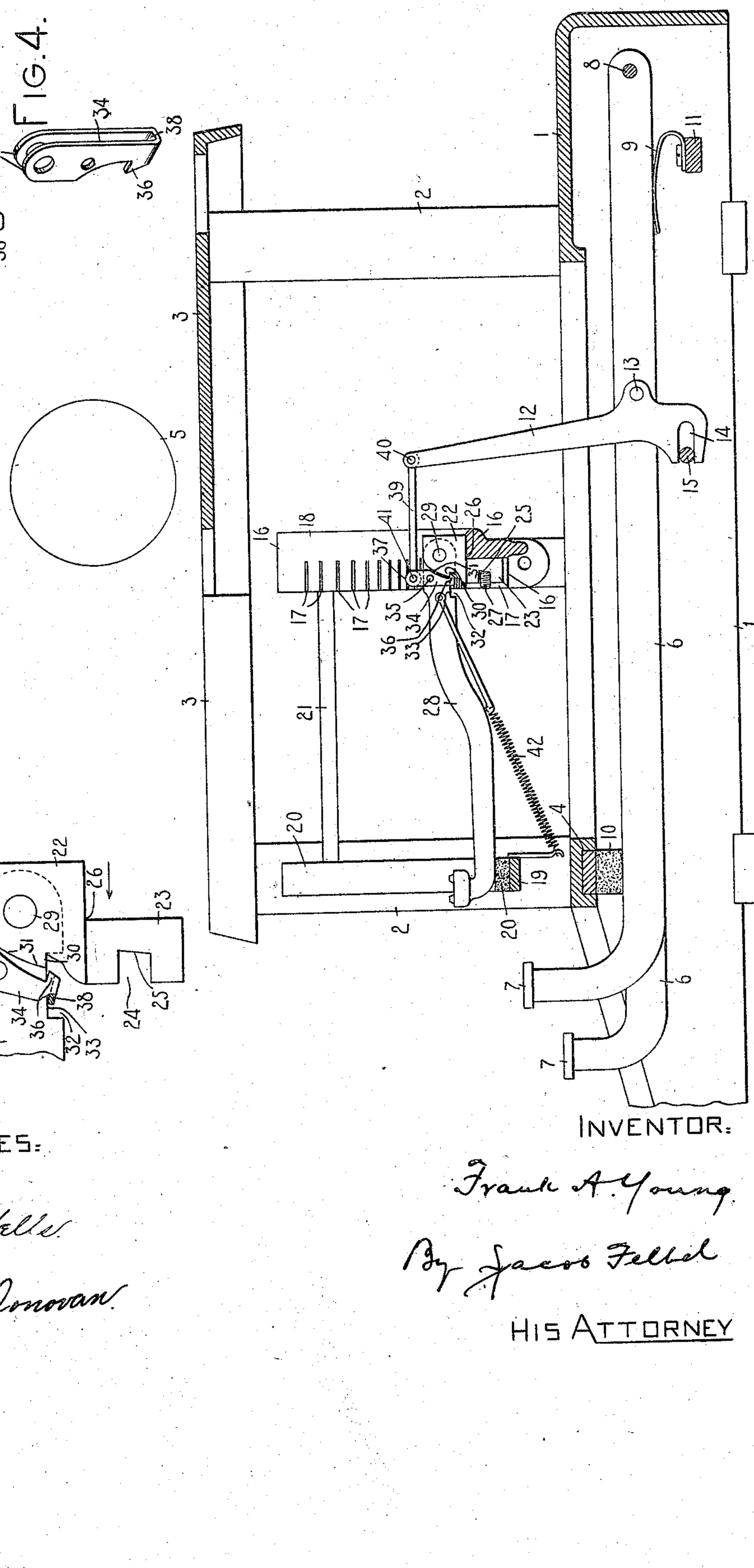

FIG. 2.

FIG. 3.

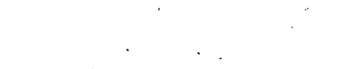

FIG. 4.

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TYPE-WRITING MACHINE.

No. 881,275. Specification of Letters Patent. Patented March 10, 1908.

Application filed January 26, 1904. Serial No. 190,668.

To all whom it may concern:

Be it known that I, FRANK A. YOUNG, 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 improvements in the type actions of typewriting machines, especially those visible writing machines which are known as front-strike machines, the general object of the invention being to prevent the type bars from rebounding when they return to their normal positions, and a further and special object being to provide anti-rebounding means for the type bars of machines containing type bar hangers which are separately detachable from a common hanger-support.

The invention consists of various features of construction, combinations, and arrangements of parts, all to be hereinafter fully described and particularly pointed out in the appended claims.

In the accompanying drawings, wherein like reference numerals designate like parts in different views, Figure 1 is a sectional elevation, showing portions of the frame and mechanism of a front-strike typewriting machine embodying my invention, the section being taken centrally and longitudinally of the machine; Fig. 2, a side elevation on an enlarged scale of a type bar hanger, a fragment of a type bar pivoted thereto, a locking device and a fragment of an actuating link; Fig. 3, an edge view of the locking device and cross section of the type bar, viewed in the direction indicated by the arrow in Fig. 2; and Fig. 4, a perspective of the locking device.

Although my invention is shown applied to a front strike machine containing a segmental type bar support to which separate and detachable type bar hangers are secured, it is to be understood that the invention is applicable to machines of other styles, and especially to type actions whose type bars are pivoted to a common support or rod instead of to separate hangers.

The frame of the machine represented by the drawings is composed of a base 1, the common corner posts 2, and two other similar posts, and the top plate 3 secured on these corner posts, the sides of the base being united by a cross bar 4. The position of the platen 5 is indicated by the circle which appears above the top plate 3.

The key levers 6, carrying at their front ends finger keys 7, bear at their rear ends against a fulcrum, such for example as the rod 8, which may be attached at its ends to the sides of the base 1. Each key lever is normally held by a restoring spring 9 in contact with a pad 10 affixed to the cross bar 4, these restoring springs being fastened to a fixed cross bar 11 and bearing against the lower edges of the key levers. A sub-lever 12 is secured to each key lever by a pivot 13, there being at the lower end of each sub-lever a slot 14 in which is a rod 15 which extends from side to side of the base, by which it is supported at its ends.

In front of the upper ends of the sub-levers 12 is a segmental type bar support 16, which is similar in form to the type bar segment of the machine known as the Monarch, the front and rear faces or edges of this segmental support being preferably parallel to a vertical plane tangent to the front of the platen, and in front of and behind said plane respectively. This segment may be movable vertically on fixed guides to shift the system of type bars for upper or lower case printing, or, if preferred, the platen may be shifted when it is desired to use upper or lower case characters. Mechanism for shifting the system of type bars and mechanism for shifting the platen being well known, it is unnecessary to here describe shifting mechanism for either purpose. The support or segment 16 has in its front portion a series of slots 17, which extend from its upper or concave face 18 to its lower or convex face, the concave face being a cylindrical surface whose axis passes through or near the printing point on the platen. The faces of each slot 17 are on opposite sides of a plane containing and radiating from the axis of the surface 18. A type bar rest, composed of a segmental support 19, and a pad 20 secured on the concave face thereof, is affixed to an arm 21 and another similar arm which are rigidly attached to the segment 16 near its ends.

Although the type bars of type actions embodying this invention may be mounted by other means than separate hangers on substantially the segment 16, it is not regarded necessary to show other means by which the type bars might be mounted on this or a

similar segment. From the description of the type actions herein shown, and which include separate type bar hangers, the principle of the invention as well as the construction and operation of mechanism embodying it in its preferred form, will be readily understood. Each of these hangers is composed of a flat head 22 and a flat shank or stem 23 formed or secured together, the stem having in it a notch 24, the rear edge 25 of which slopes from top to bottom towards the front of the stem as appears by Fig. 2. The angle 26, formed by the bottom of the head and back of the stem, is a right angle. The stems of the hangers fit snugly in the slots 17 of the segment 16, and when the hangers are properly secured to the segment the backs of the stems and the lower edges of the heads are in contact respectively with the ends of the slots and the concave surface 18 of the segment, the heads extending nearly across the segment. Each hanger is fastened to the segment by a screw 27 which is screwed into a threaded hole in the front of the segment and against the rear edge 25 of the notch 24 so that the sides of the angle 26 are forced and held tightly against the segment. The heads of the hangers form sockets for the type bars, which fit closely between flat surfaces within the heads, each type bar 28 being pivoted to its hanger by a pivot 29 extending through both cheeks of the head and through the type bar, whose end is indicated by a dotted line in Fig. 2. On the front of each head is formed a catch 30, the front edges of the cheeks of the head being curved above the catch, as appears at 31, to form a guide for the locking device or latch.

In each of the type bars is a recess 32, whose edge 33 is even with the face of the catch 30 when the type bar is in its normal position. The locking device or latch 34 is pivoted by a pin 35 to the type bar. This latch, which extends on opposite sides of and across the type bar, has at its lower end a device 36 to engage the catch 30, and forms at its other end ears 37 which extend beyond the adjacent edge of the type bar. It preferably consists of a single strip of sheet metal bent parallel to itself, as appears by Figs. 3 and 4, the bent part 38, when the latch is secured to the type bar and engages the catch 30, being close to but not in contact with the edge 33 of the recess 32 in the type bar. The latch is movable on the axis of its pivot 35 from the position shown in Fig. 1 to that shown in Fig. 2, and when it is in the latter position the bent part 38 is in contact with the edge 33 of the recess 32. This latch is also a key actuated lever, operative on the type bar to swing it to its printing position, under the action on this lever of the key lever and other mechanism connected therewith, as will be hereinafter described.

An actuating link 39 is pivoted at its rear end by a pin 40 to the upper end of each of the sub-levers 12, and each of these links is pivoted by a pin 41 to and between the ears 37 of the latch or lever 34 of the type bar to be actuated by it. Coil springs, like the spring 42, are attached to the type bars and to hooks or pins fastened to the type bar rest, the functions of these springs being to aid in restoring the type bars to their normal positions.

The several parts of the type action described are shown in their normal positions in Fig. 1. When a key is depressed the key lever carries downward the sub-lever 12 mounted thereon, and as the sub-lever descends its upper end is moved backward in consequence of the action of the upper edge of the slot 14 on the rod 15, and the link 39 is drawn backward by the sub-lever. The latch 34 is disengaged from the catch 30 at the beginning of the backward movement of the link 39, the latch being turned on its pivot 35 to the position shown in Fig. 2, whereupon the bent part 38 of the latch makes contact with the type bar. The latch therefore constitutes a lost-motion connection between the actuating link 39 and the type bar, for during the movement of the latch on its pivot as described, no motion is imparted to the type bar by the actuating link. Upon the arrival of the latch at the position shown in Fig. 2, the link 39 becomes operative through the latch to actuate the type bar by swinging it on its pivot 29 to its printing position, the latch then acting as a lever and revolving meanwhile on the axis of the type bar pivot, but being prevented from rotating on its own pivot by the contact of the part 38 of the latch with the type bar.

The type action is restored to its normal position by springs 9 and 42 and by gravity. When the type bar reaches its normal position the forward action of the link 39 on the latch immediately forces the engaging device 36 of the latch under the catch 30 on the hanger, the latch, prior to its engagement with the catch 30, bearing against the curved edges 31 of the head of the hanger, if the return movement of the link 39 is quick enough to separate the part 38 of the latch from the edge 33 of the recess 32 of the type bar. The latch then positively prevents the type bar from rebounding for it so locks the type bar that the latter cannot turn on its pivot until the latch is withdrawn from the catch by another backward action of the link 39, which continues to press forward on the upper end of the latch, thus keeping the latch engaged with the catch.

If the type bar is in or near its printing position, the part 38 of the latch may be forced into contact with the edge of the recess 32 in the type bar close to the rear end of that recess, so that if the return move-

ment of the link 39 is quick enough the type bar will be pushed towards its normal position by the link 39 acting on it through the latch. It will be seen, therefore, that the part 38 of the latch is operative on the edge of the type bar to limit the movement of the latch on its pivot in opposite directions.

Obviously catches for locking devices or latches like the latch 34 may be formed immediately on the segment of a machine having its type bars mounted thereon by other means than separate hangers, without materially changing the construction or operation of the novel features of the type-actions described. These type-actions, comprising the separate and detachable hangers, can be assembled and adjusted and removed from and replaced on the supporting segment without disturbing the relations between the movable locking devices and fixed catches, and they afford in addition to the special advantages of this invention, all the well known advantages which are derived from other type actions provided with such hangers.

It will be observed that the device or lever 34 affords the advantage of a lost-motion connection between the finger key and type bar and renders the action of the key very light at the beginning of the stroke. A similar lever may therefore be used for this purpose alone, and when it is, of course, it does not need to be provided with the engaging device 36, or other means to co-act with the fixed counterpart in locking the type bar, as described, to prevent it from rebounding.

Certain features of the invention may be used without the others and various changes may be made without departing from the spirit of my invention.

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

1. In a typewriting machine, the combination of a type bar, a key actuated sub-lever, a locking lever connected with the sub-lever and operative to swing the type bar to its printing position; and a fixed catch with which the locking lever engages, said catch being on a part of the machine which is immovable by the action of said locking lever on the type bar, and said locking lever being movable from the catch before said lever acts to impart motion to the type bar.

2. In a typewriting machine, the combination with a type bar, of a latch operative to engage a fixed catch, and key actuated mechanism pivotally secured to said latch.

3. In a typewriting machine, the combination with a type bar, of a type bar locking and actuating latch operative to engage a fixed catch, and key actuated mechanism pivotally secured to said latch.

4. In a typewriting machine, the combination with a type bar, of a catch operative to engage a fixed latch, and a key-actuated link pivotally secured to said latch.

5. In a typewriting machine, the combination with a type bar, of a type bar locking and actuating lever operative to swing the type bar from its normal position to its printing position with one end of the lever in contact with the type bar a fixed catch with which the locking lever engages, a sub-lever pivotally connected to the other end of said first mentioned lever, and means including a key for actuating said sub-lever.

6. In a typewriting machine, the combination with a type bar of a key-actuated locking lever pivoted on the type bar and operative to unlock the type bar and to then swing it to its printing position.

7. In a typewriting machine, the combination with a type bar, of a key-actuated locking lever pivoted thereon, a link connected to said lever, and key-actuated means to first move said lever from its locking position and to then cause said lever to swing the type bar to its printing position.

8. In a typewriting machine, the combination of a pivoted type bar, a latch fixedly pivoted on the type bar, a fixed catch for the latch, and actuating mechanism connected with the latch and operative through the latch to actuate the type bar.

9. In a typewriting machine, the combination of a pivoted type bar, a latch fixedly pivoted on the type bar, a fixed catch for the latch, and an actuating link connected with the latch and operative through the latch to actuate the type bar.

10. In a typewriting machine, the combination of a pivoted type bar, a latch pivoted on the type bar, a fixed catch for the latch, and an actuating link pivotally secured to the latch.

11. In a typewriting machine, the combination of a pivoted type bar, a latch pivoted on the type bar, parts of the latch being on opposite sides of the type bar and the pivot of the latch extending through those parts, a fixed catch for the latch, and an actuating link connected with the latch.

12. In a typewriting machine, the combination of a pivoted type bar, a latch pivoted on the type bar and extending on opposite sides thereof and having at one edge of the type bar a catch-engaging device and forming at the other edge of the type bar a pair of ears, a fixed catch to coact with the engaging device of the latch, and an actuating link pivoted to and between said ears.

13. In a typewriting machine, type bar locking mechanism comprising the combination with a catch of a latch consisting of a single strip of sheet metal bent parallel to itself and pivoted to its support, the pivot extending through the support and into portions of the latch on opposite sides of the support.

14. In a typewriting machine, type bar locking-mechanism comprising a latch con-

sisting of a single strip of sheet metal bent parallel to itself, said latch extending on both sides of the type bar and being pivoted thereto.

15. In a typewriting machine, the combination of a pivoted type bar, a latch consisting of a single strip of sheet metal bent parallel to itself, said latch extending on opposite sides of the type bar and being pivoted thereto, and having at one edge of the type bar a catch-engaging device and forming at the other edge of the type bar a pair of ears, a fixed catch to co-act with the engaging device of the latch, and an actuating link pivoted to and between said ears.

16. In a typewriting machine, the combination of a pivoted type bar, a latch pivoted on the type bar, means to arrest the movement of the latch on the axis of its pivot, a fixed catch for the latch, and actuating mechanism connected with the latch and operative through the latch to actuate the type bar.

17. In a typewriting machine, the combination of a pivoted type bar, a latch pivoted on the type bar and including means operative on one edge of the type bar to limit the movement of the latch on its axis, a fixed catch for the latch, and actuating mechanism connected with the latch and operative thereon to actuate the type bar.

18. In a typewriting machine, the combination of a pivoted type bar, a latch pivoted on the type bar and including means operative on one edge of the type bar to limit the movement of the latch on its pivot in opposite directions, a fixed catch for the latch, and actuating mechanism connected with the latch.

19. In a typewriting machine, the combination of a pivoted type bar, a latch pivoted on the type bar and including means operative on one edge of the type bar to limit the movement of the latch on its axis, a fixed catch for the latch, and an actuating link pivoted to the latch and operative thereon to actuate the type bar.

20. In a typewriting machine, the combination of a pivoted type bar, a latch pivoted on the type bar and extending on both sides thereof, a part of the latch being operative on one edge of the type bar to limit the movement of the latch on its pivot, a fixed catch for the latch, and actuating mechanism connected with the latch.

21. In a typewriting machine, the combination of a pivoted type bar, a latch consisting of a single strip of sheet metal bent parallel to itself, said latch extending on both sides of the type bar and being pivoted thereto, and the bent part of the latch being operative on one edge of the type bar to limit the movement of the latch on its axis, a fixed catch for the latch, and actuating mechanism connected with the latch.

22. In a typewriting machine, the combination of a pivoted type bar, a latch consisting of a single strip of sheet metal bent parallel to itself, said latch extending on both sides of the type bar and being pivoted thereto, and the bent part of the latch being operative on one edge of the type bar to limit the movement of the latch on its axis, and said latch having next to said bent part a catch-engaging device and forming at the other edge of the type bar a pair of ears, a fixed catch to coact with the engaging-device of the latch, and an actuating link pivoted to and between said ears.

23. In a typewriting machine, the combination of a detachable hanger, a type bar pivoted to said hanger, means to lock the type bar to the hanger, and mechanism operative to unlock and actuate the type bar.

24. In a typewriting machine, the combination of a detachable hanger, a type bar pivoted to said hanger, means to lock the type bar to the hanger, and an actuating link operative to unlock and actuate the type bar.

25. In a typewriting machine, the combination of a detachable hanger, a type bar pivoted to said hanger, a catch on said hanger, a locking device to engage said catch, and an actuating link operative to withdraw said locking device from the catch and actuate the type bar.

26. In a typewriting machine, the combination of a detachable hanger, a type bar pivoted to said hanger, a latch mounted on the type bar, a catch on the hanger for said latch, and means to actuate the latch and type bar.

27. In a typewriting machine, the combination of a detachable hanger, a type bar pivoted to said hanger, a latch mounted on the type bar, a catch on the hanger for said latch, and actuating mechanism connected with the latch and operative through the latch to actuate the type bar.

28. In a typewriting machine, the combination of a detachable hanger, a type bar pivoted to said hanger, a latch mounted on the type bar, a catch on the hanger for said latch, and an actuating link connected with the latch and operative through the latch to actuate the type bar.

29. In a typewriting machine, the combination of a detachable hanger, a type bar pivoted to said hanger, a latch pivoted on the type bar, a catch on the hanger for said latch, and an actuating link pivoted to the latch.

30. In a typewriting machine, the combination of a detachable hanger, a type bar pivoted to said hanger, a latch pivoted on

the type bar and extending on opposite sides thereof and having at one edge of the type bar a catch-engaging device and at the other edge of the type bar a pair of ears, a catch on the hanger for said latch, and an actuating link pivoted to and between said ears.

31. In a typewriting machine, the combination of a detachable hanger, a type bar pivoted to said hanger, a latch consisting of a single strip of sheet metal bent parallel to itself, said latch extending on opposite sides of the type bar and having at one edge of the type bar a catch-engaging device and at the other edge of the type bar a pair of ears, a catch on the hanger for said latch, and an actuating link pivoted to and between said ears.

32. In a typewriting machine, the combination of a detachable hanger, a type bar pivoted to said hanger, a latch pivoted on the type bar, means to arrest the movement of the latch on the axis of its pivot, a catch on the hanger for said latch, and an actuating device connected with the latch.

33. In a typewriting machine, the combination of a detachable hanger, a type bar pivoted to said hanger, a latch pivoted on the type bar and including means operative on one edge of the type bar to limit the movement of the latch on its axis, a catch on the hanger for said latch, and an actuating device connected with the latch.

34. In a typewriting machine, the combination of a detachable hanger, a type bar pivoted to said hanger, a latch consisting of a single strip of sheet metal bent parallel to itself, said latch extending on both sides of the type bar and being pivoted thereto, and the bent part of the latch being operative on one edge of the type bar to limit the movement of the latch on its axis, a catch on the hanger for said latch, and an actuating device connected with the latch.

35. In a typewriting machine, the combination of a detachable hanger, a type bar pivoted to said hanger, a latch consisting of a single strip of sheet metal bent parallel to itself, said latch extending on both sides of the type bar and being pivoted thereto, and the bent part of the latch being operative on one edge of the type bar to limit the movement of the latch on its axis, and said latch having next to said bent part a catch-engaging device and forming at the other edge of the type bar a pair of ears, a catch on the hanger for said latch, and an actuating link pivoted to and between said ears.

36. In a typewriting machine, a type-action including a type bar actuating link; a lever pivoted to said link and operative at one end directly on the type bar and forming a lost-motion connection between the link and type bar.

37. In a typewriting machine, a type-action including a lever mounted on the type bar and forming a lost-motion connection between the finger-key and type bar.

38. In a typewriting machine, a type action including a lever pivoted on the type bar and operative at one end immediately on the type bar and forming a lost-motion connection between the finger-key and type bar.

39. In a typewriting machine, a type action including a lever pivoted on the type bar and movable at one end into and out of engagement with the type bar at that end of the lever.

40. In a typewriting machine, the combination of a type bar, a key-actuated link, and a lever permanently secured to the link and forming a lost-motion connection between the link and type bar.

41. In a typewriting machine, the combination of a type bar, a key-actuated link, and a lever permanently secured at one end to the link and operative at its other end on the type bar and forming a lost-motion connection between the link and type bar.

42. In a typewriting machine, the combination of a type bar, a key-actuated link, and a lever pivoted on the type bar and forming a lost-motion connection between the link and type bar.

43. In a typewriting machine, the combination of a type bar, a key actuated link, a fixed catch, and a locking lever permanently secured to the link and operative on the type bar and having lost motion between said catch and the type bar.

Signed at Syracuse, in the county of Onondaga, and State of New York, this 23rd day of January A. D. 1904.

FRANK A. YOUNG.

Witnesses:
GILES B. EVERSON,
SILAS W. CRANDALL.