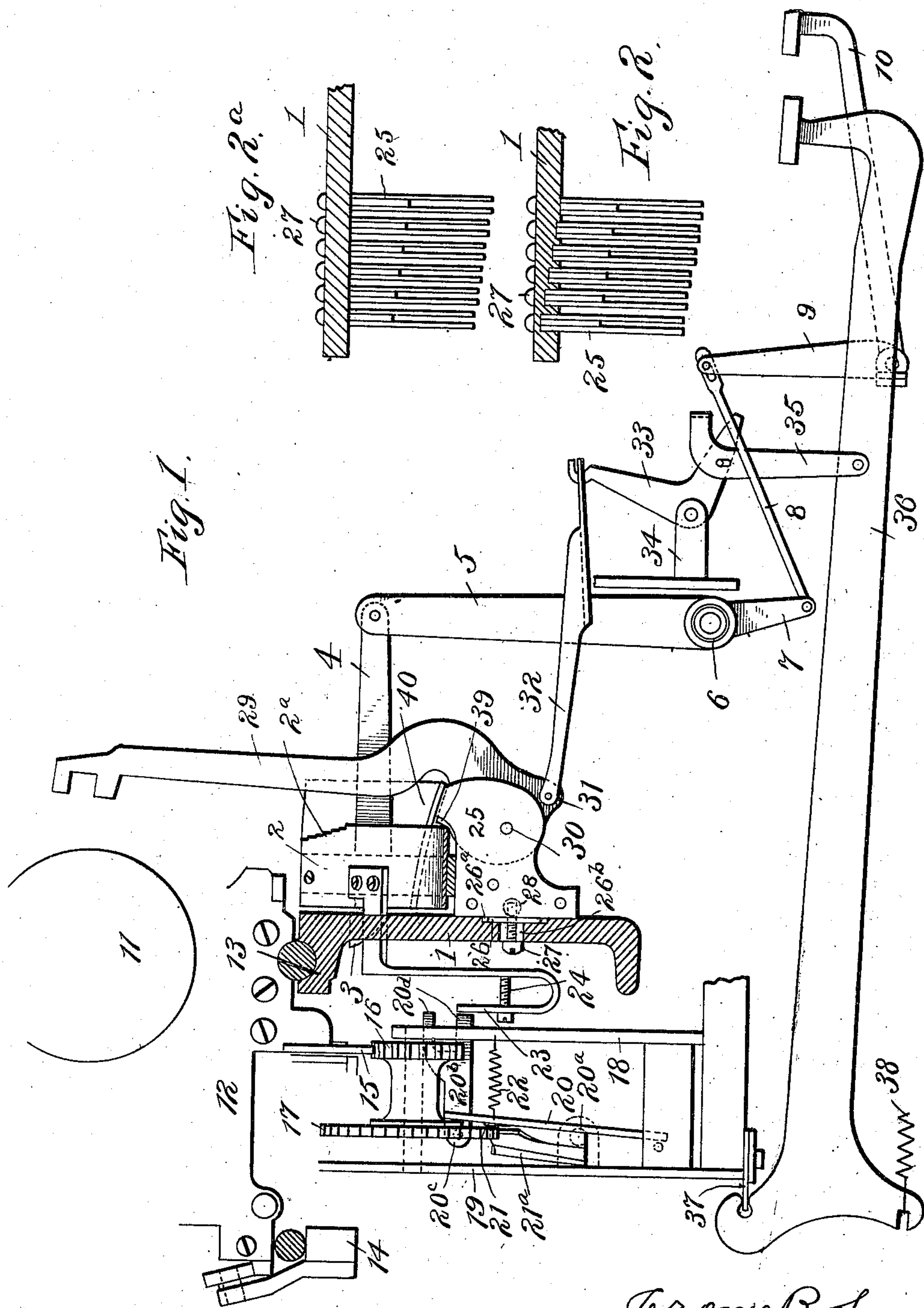


No. 847,702.

J. B. SECOR.
TYPE WRITING MACHINE.
APPLICATION FILED AUG. 10, 1904.

PATENTED MAR. 19, 1907.

3 SHEETS—SHEET 1.



Witnesses
S. J. Hoexter
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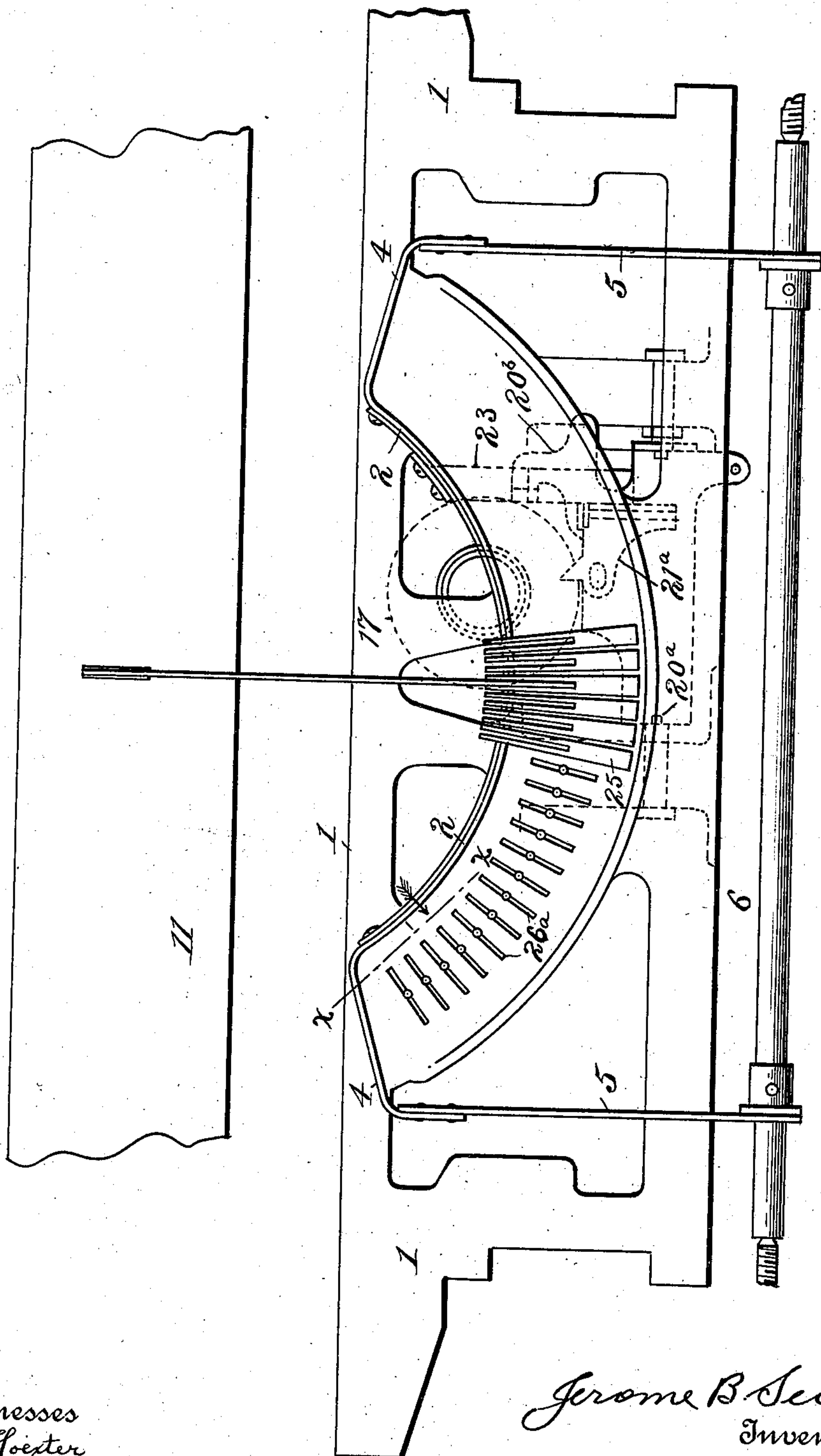
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Fig. 3.



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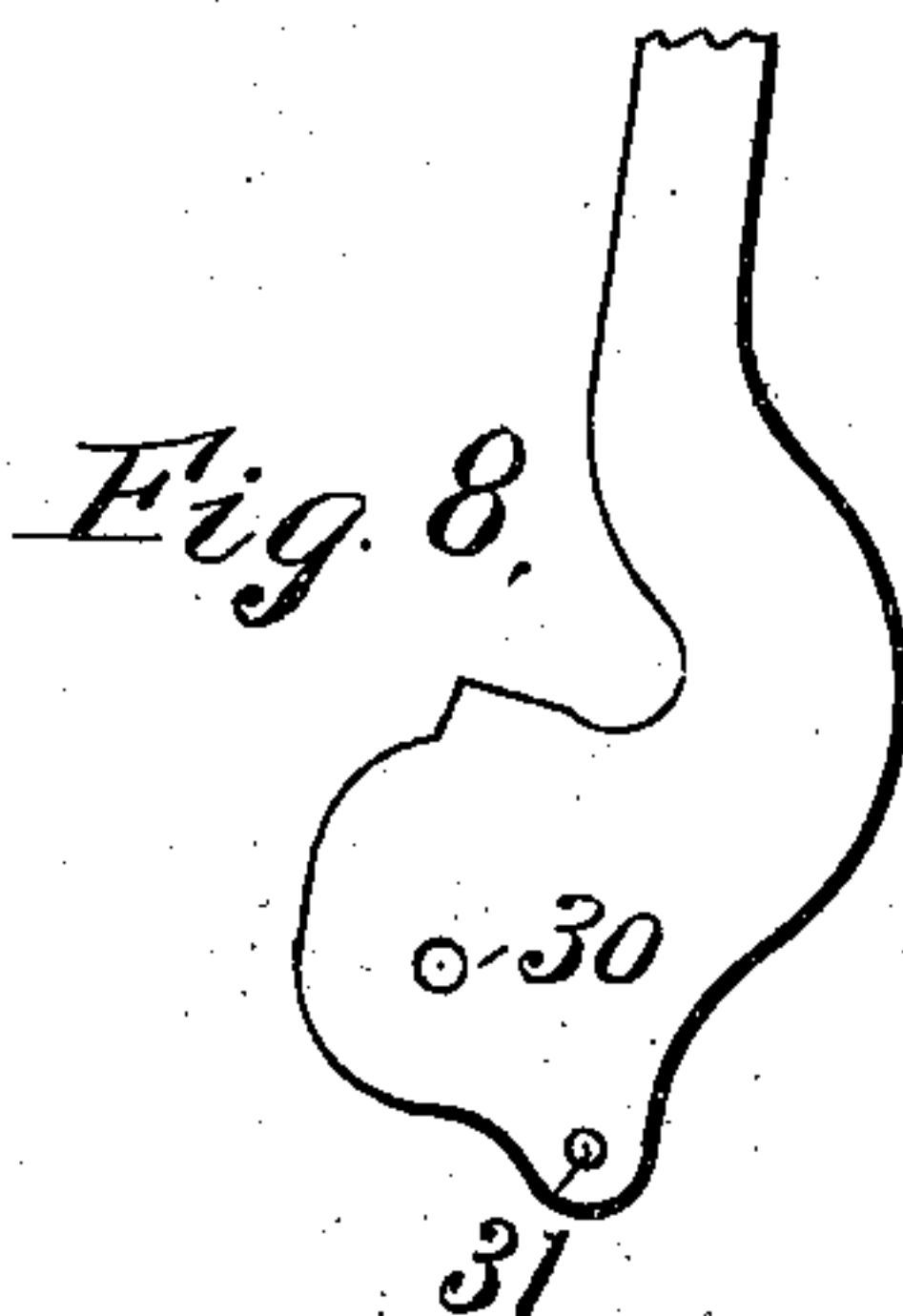
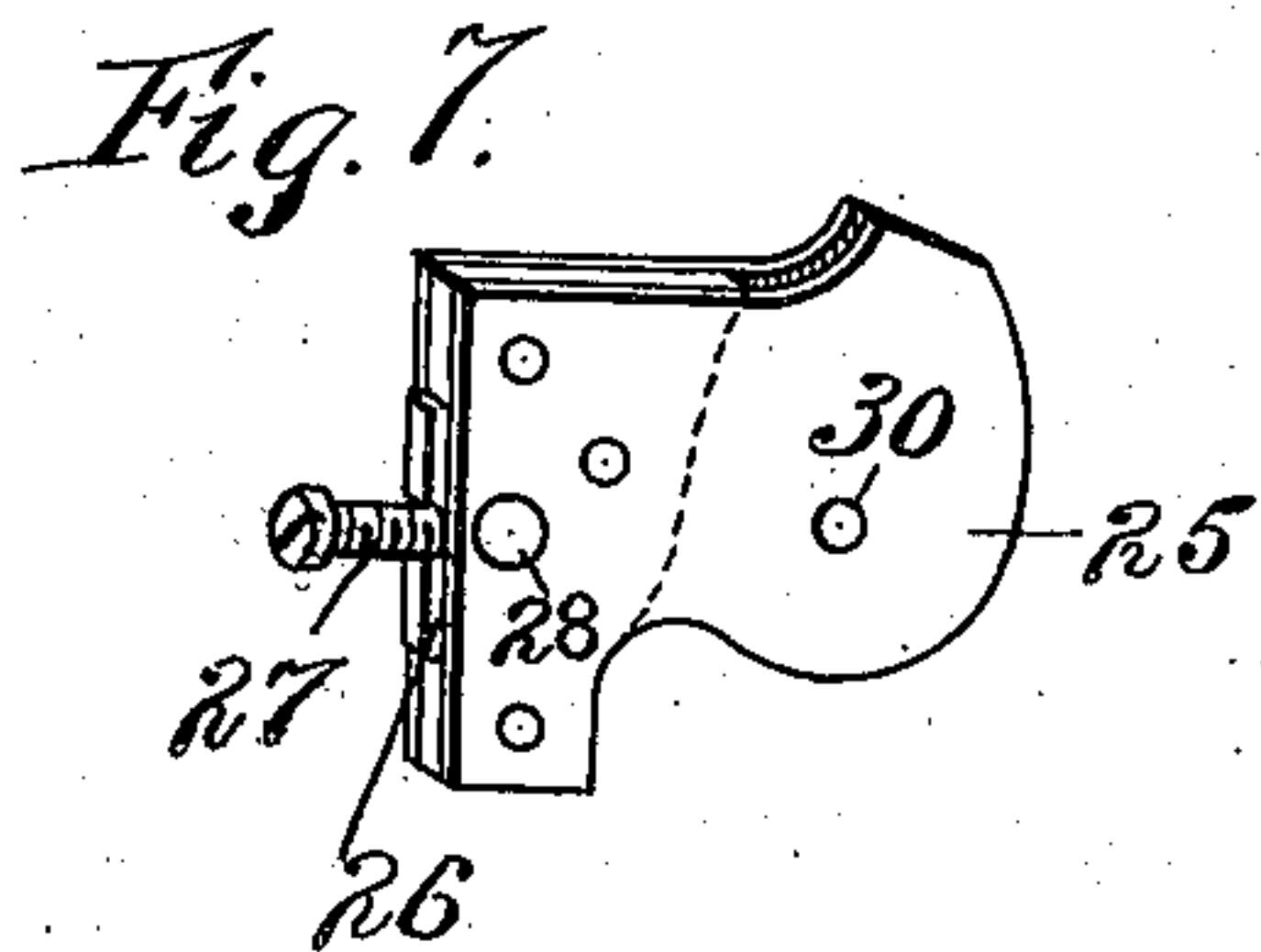
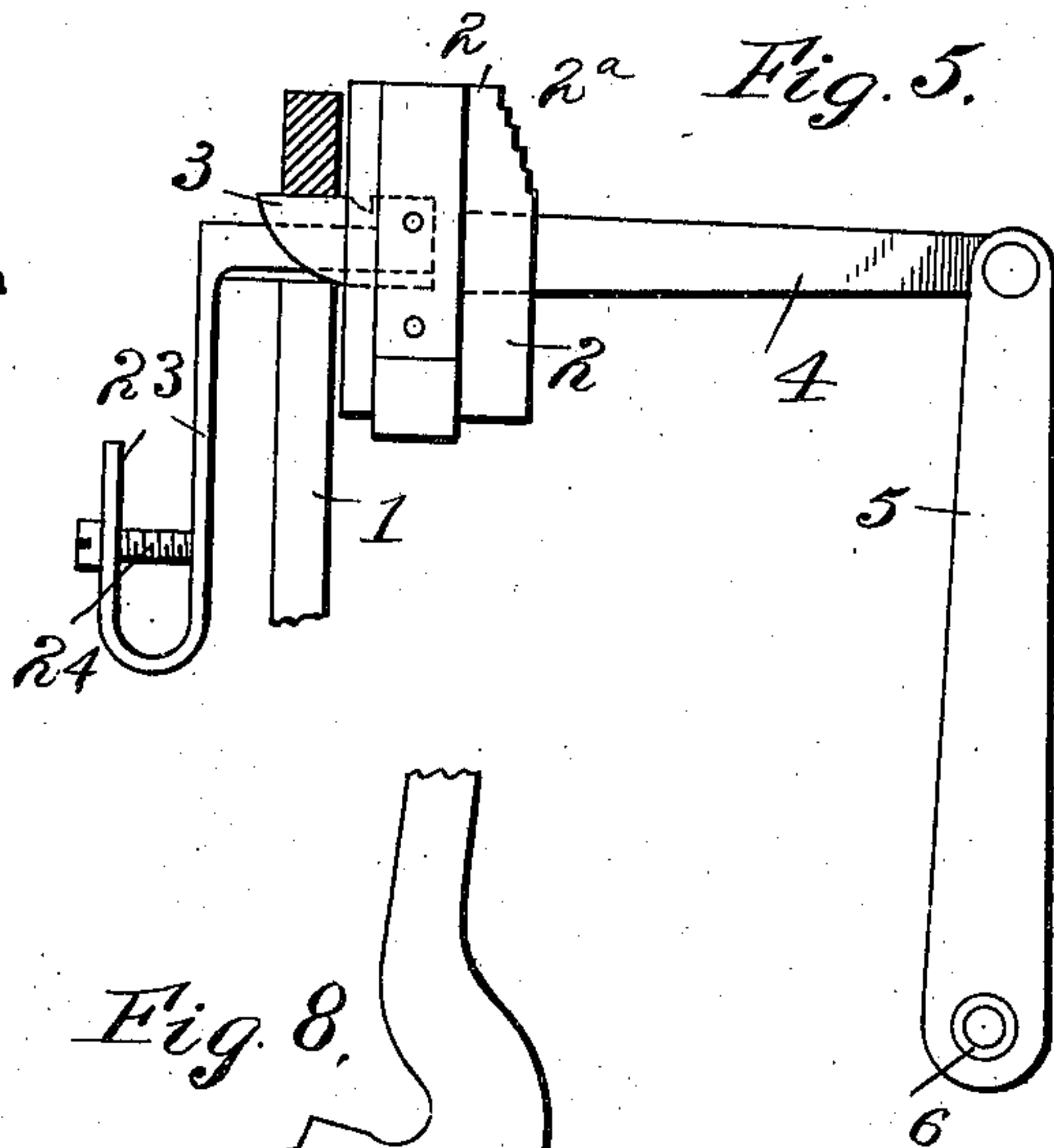
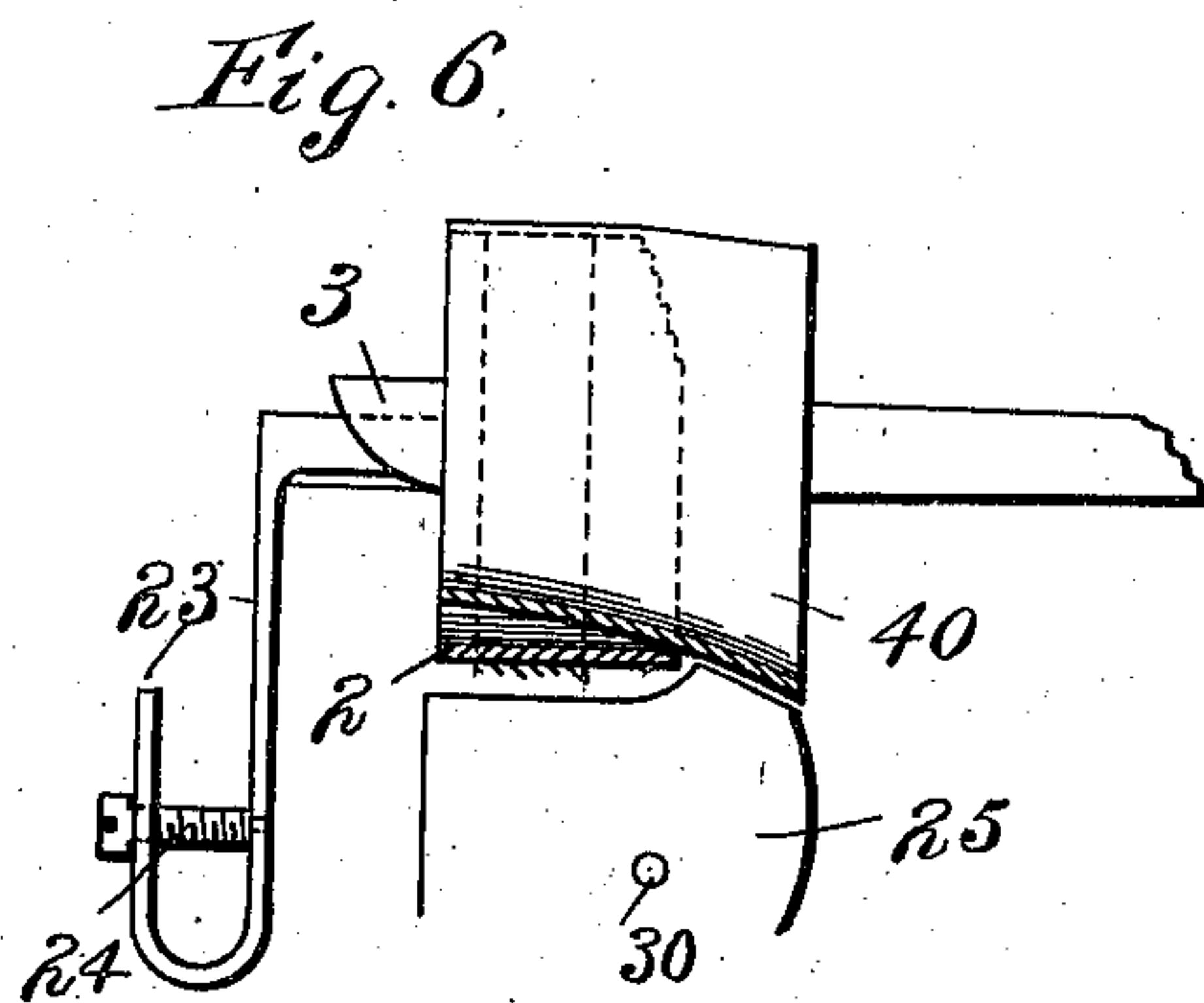
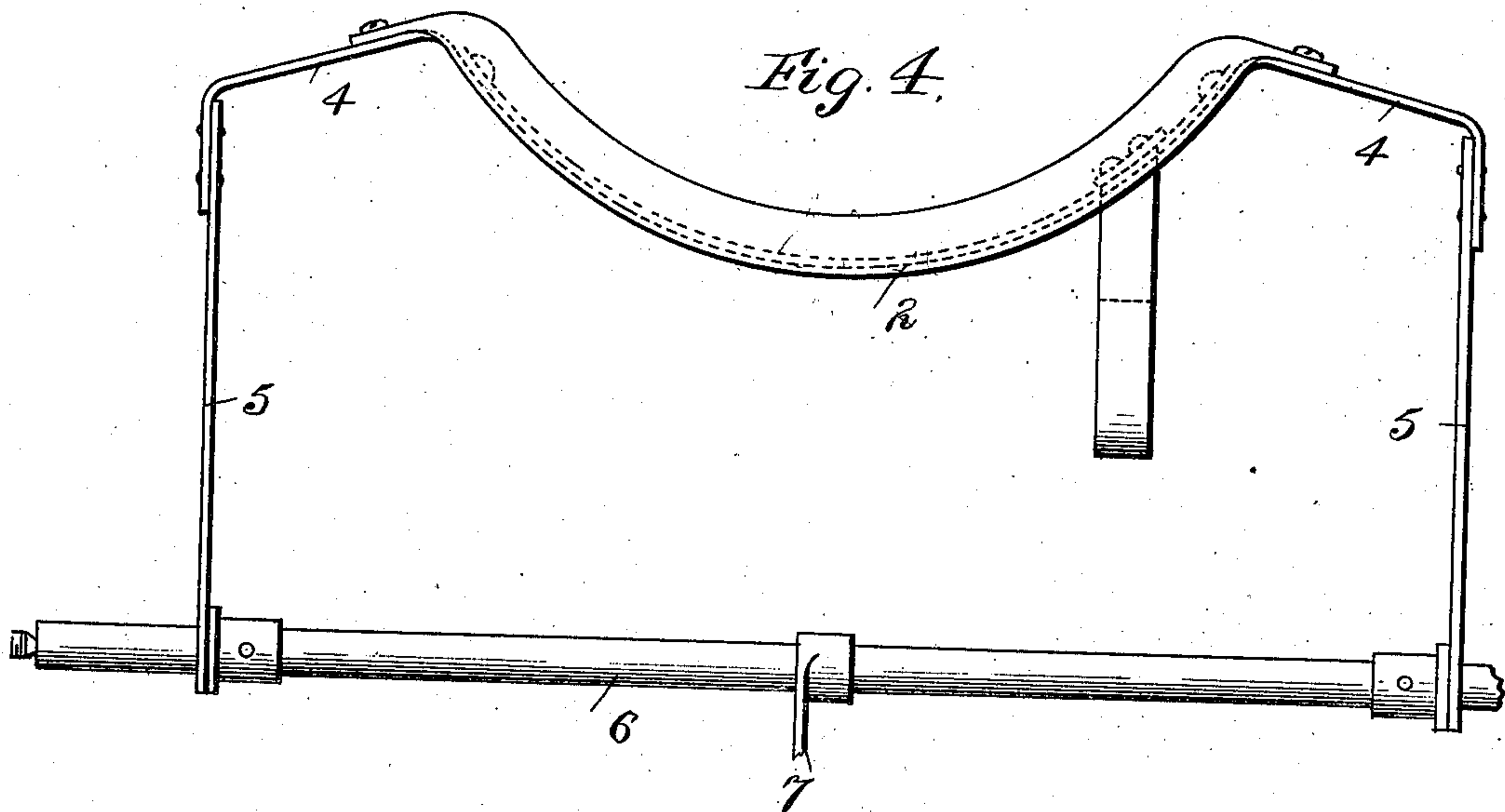
By his Attorneys Knight & Brown

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3 SHEETS—SHEET 3.



Witnesses
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UNITED STATES PATENT OFFICE.

JEROME B. SECOR, OF DERBY, CONNECTICUT, ASSIGNOR TO THE WILLIAMS TYPEWRITER COMPANY, OF DERBY, CONNECTICUT, A CORPORATION OF IOWA.

TYPE-WRITING MACHINE.

No. 847,702.

Specification of Letters Patent.

Patented March 19, 1907.

Application filed August 10, 1904. Serial No. 220,244.

To all whom it may concern:

Be it known that I, JEROME B. SECOR, a citizen of the United States, and a resident of Derby, in the county of New Haven and State of Connecticut, have invented a new and useful Improvement in Type-Writing Machines, of which the following is a specification.

This invention relates, first, to an improved manner of mounting and securing the hangers in which the type-bars are fulcrumed approximately in a vertical arc concentric with the printing-point, and, secondly, to a device for actuating the carriage-release by impact of the heel of a type-bar at the end of each printing stroke, consisting in part of a universal bar curved concentrically with the arc on which the type-bar brackets are mounted, having a back-and-forward movement and carrying a tappet to vibrate the escapement-dogs.

The invention further relates to details in construction of devices for carrying the invention into effect, as pointed out in the claims.

My invention is illustrated in the accompanying drawings, in which—

Figure 1 is a transverse vertical section of the parts of a type-writing machine to which my improvements relate, showing a type-bar approaching printing position. Figs. 2 and 2^a are detail sections on the line *xx*, Fig. 3, looking in direction of the arrow, illustrating the mode of mounting the end type-brackets in steps in the bridge or making several of the type-bar brackets successively shorter toward each end of the arc, so as to bring the fulcrums of the end type-bars successively nearer the bridge on which their brackets are mounted. Fig. 3 is a front view omitting the key-levers and their accessories and showing one type-bar in printing position, six of the type-bar brackets, and a number of the radial slots or grooves in the bridge for the reception of type-bar brackets. Fig. 4 is a front view of the curved oscillating universal bar and the rock-shaft on which it is mounted. Fig. 5 is a side view of the same, showing a portion of the bridge or frame of the machine, partly in section. Fig. 6 is a vertical section of the curved universal bar and a dust-guard attached thereto. Fig. 7 is a perspective view of a type-bar ful-

crumed bracket or hanger detached. Fig. 8 is a detail elevation of the heel portion of a type-bar.

1 represents the bridge or carriage-track portion of the machine-frame, on which the type-brackets are mounted.

2 represents the universal bar curved concentrically with the printing-point and the arc on which the type-bars are fulcrumed and having short rigid arms 3 projecting backward through slots in the bridge to guide the universal bar in a backward-and-forward reciprocating movement. Horizontal arms 4, mounted rigidly on the ends of the universal bar 2, are attached at their front ends to the upper ends of vertical arms 5, keyed to the ends of a rock-shaft 6, on which is also keyed a rigid arm 7, projecting downward and connected by a rod 8 with the upper end of the vertical arm 9 of the space-key lever 10 or rock-shaft operated thereby. The automatic release movement in printing is effected by contact of the type-bar heel with the universal bar 2, as will presently be described.

11 indicates the platen, and 12 a portion of the carriage running on ways 13 14.

15 indicates the carriage-feed rack, and 16 17 its controlling-pinion and release-gear mounted in bearings on the standards 18 19.

20 indicates a plate rocking on horizontal pivots 20^a and carrying a pair of escapement-dogs 21 21^a, operating in customary manner to engage alternately with the gear-wheel 17 to permit step-by-step motion of the carriage when said dogs are tripped by movement of the universal bar. A tension-spring 22 restores the rocking plate 20 to normal after each stroke of the universal bar, retracting the space-dog 21, and permitting engagement of the trip-dog 21^a.

20^b represents an arm pivoted at 20^c to the plate 20 and formed with two projecting lugs 20^d, working through guide-openings in the standard 18, one of which lugs receives contact of a tappet 23, carried by the universal bar 2. The said tappet is elastic and of the reflexed form shown and is strained by a set-screw 24, threaded in one of its members and bearing against the other, so as to enable accurate adjustment of its end relatively to the lug 20^d, with which it contacts, to trip the escapement-dogs. The pivot connection at

20° between the arm 20^b and the rocking plate 20 permits the slight angular motion between the said arm 20^b and plate 20 consequent on the rocking of the latter on the pivot 20^a, while the forward end of arm 20^b is guided in its back-and-forth motion by the openings in the standard 18.

My improved type-bar bracket 25 is constituted of three plates, the center one projecting so as to form a rigid tongue 26 on the attaching-face, Figs. 1 and 7, fitting in grooves or slots 26^a in the face of the bridge 1, arranged radially on an arc concentric with the printing-point, as represented in Fig. 3, where are shown for the purpose of illustration one type-bar 29 in printing position, six of the type-bar brackets 25, and additional radial slots 26^a in the bridge for the reception of the bracket-tongues 26. The radial slots or grooves 26^a are made of somewhat greater length than the tongues 26, which fit therein, so as to permit the adjustment of the type in accurate alinement. When the brackets are so set, they are firmly secured by clamp-screws 27 passing through the bridge from the rear and threaded in nuts 28 in the respective brackets. For convenience of manufacture I make this nut in the form of a block or pin held in apertures formed therefor in the cheeks or side plates of the bracket, the center plate being bored in line with the threaded aperture of the nut to receive the screw 27 and in register with short radial slots 26^b in the bridge communicating with the radial tongue-grooves 26^a, as shown in Fig. 1.

The fulcrum-pivot by which the respective type-bars are mounted in their brackets is shown at 30, and at 31 the pivot attachment for the connecting-rod 32, through which the type-bar is operated by means of a bell-crank lever 33, fulcrumed in a bracket 34, and a vertical rod 35, pivoted thereto and to the type-key lever 36. The key-levers 36 are fulcrumed at the rear ends in customary manner on a transverse bar 37 and are sustained in normal position by tension-springs 38. To operate the universal bar 2 and trip the escapement-dogs at each printing-stroke, the heels of the type-bars are formed with shoulders 39, which engage with the universal bar 2 at each printing stroke, as illustrated in Fig. 1.

40 represents the improved dust-guard, consisting of a curved plate attached to and carried by the universal bar 2 and projecting forward over the type-bar pivots, as shown best in Fig. 6.

In order to afford to the type-bars more freedom from collision and prevent interference of the type when at rest on the pillow, six (more or less) of the type-bar brackets at each end of the range are seated on graduated steps, as illustrated in Fig. 2, so that the type-bar fulcrums toward each end of the series

will approach step by step nearer horizontally to the bridge or carriage-track. Another and equivalent way of accomplishing this object is to cut away or shorten the type-bar brackets, as illustrated in Fig. 2^a, instead of cutting away the bridge. In order to accommodate this approximation of the end type-bars to the vertical plane of the carriage-track, the front edge of the universal bar 2 is formed at each end with a corresponding series of steps 2^a, as shown in Figs. 1 and 5, to receive the impact of the shoulders 39 on the heels of the respective type-bars.

Having thus described my invention, the following is what I claim as new therein and desire to secure by Letters Patent:

1. In combination with the frame of a type-writing machine, a set of type-bars mounted on fulcrums arranged approximately in a vertical arc, with the central type-bar fulcrums in a vertical plane and with those near each end of the series approaching nearer the vertical plane of the carriage-track, a universal bar curved approximately on a vertical arc concentric with that of the type-bar fulcrums, mounted to slide back and forth in the machine-frame, having a front working face inclined backward at each end and adapted to receive impact from the several type-bars in their printing stroke and a suitable carriage-feed escapement device tripped by the sliding movement thereby imparted to the universal bar, substantially as described.

2. In a front-strike type-writing machine, the combination of a fixed frame-bridge, a set of type-bars on fulcrums in a vertical arc in hangers mounted on the front of said bridge, a universal bar curved on an arc substantially concentric with that of the type-bar fulcrums, mounted in front of said bridge and slidable back and forth relatively thereto, and actuated by impact of projections on heels of the type-bars, rigid guide-arms projecting backward from the universal bar through apertures in the bridge, a tappet-bar rigidly fixed to the universal bar and projecting backward therefrom through an aperture in the bridge and a suitable carriage-feed escapement actuated by said tappet-bar, substantially as described.

3. In a front-strike type-writing machine, the combination of a transverse bridge fixed in the machine-frame, a set of type-bars mounted on fulcrums in a vertical arc on hangers secured to the said bridge, a universal bar curved in a vertical arc substantially concentric with that of the type-bar fulcrums, mounted in front of the bridge, movable back and forth relatively thereto and actuated by impact of projections on the heels of the type-bars, rigid arms projecting forward from the universal bar, a release-key lever and connections therefrom to said forwardly-projecting arms, a tappet-bar projecting backward

through apertures in the bridge and suitable carriage escapement mechanism actuated by said tappet, substantially as described.

4. In a type-writing machine the combination of a set of type-bars mounted on bearings arranged approximately in a vertical arc and with several of the fulcrums toward each end of the series approaching successively nearer to the vertical plane of the carriage-track, the type-bar heels having shoulders to actuate a universal bar in the printing stroke, a universal bar mounted to slide back and forth and actuated by the several type-bars in their printing stroke, said universal bar being formed with steps or notches toward its ends to correspond with the graduated position of the type-bar fulcrums, and an escapement mechanism actuated by the horizontal motion of the universal bar, substantially as described.

5. In combination with a type-writing-machine frame having a suitable bridge; a set of type-bars mounted on fulcrums arranged approximately in a vertical arc, a universal bar curved vertically in an arc substantially parallel with that of the type-bar fulcrums, a tappet-arm projecting rearward through an opening in the bridge, a horizontal slide guided at its forward end in position to receive the impact of the universal-bar tappet, a vertical plate pivoted by its lower part in the frame and pivoted by its upper end to the rear end of the horizontal slide to support the same while permitting its back-and-forth movement, and a spring restoring the slide to its normal front position after it has been pressed backward by the universal-bar tappet, substantially as described.

6. In combination with a type-writing-machine frame having a suitable bridge; a set of type-bars mounted on fulcrums in an approximately vertical plane, a universal bar mounted to move in an approximately horizontal direction and actuated by impact of the several type-bars, a tappet-arm mounted on said universal bar extending rearward through an opening in the bridge and having an elastic rear end of U shape, a horizontal slide guided in position to receive the impact

of the U-shaped end of the tappet-arm, a spring tending to move and hold the said slide in its normal forward position and a set-screw in the elastic U-shaped end of tappet-arm serving to regulate the prominence of its operating end which engages the horizontal slide, substantially as described.

7. The combination of a series of type-bars mounted on fulcrums arranged in a vertical arc, a universal bar curved in an arc approximately parallel with the type-bar fulcrums actuated by the impact of the type-bars and having guide-arms and a tappet-arm projecting from its rear face and a machine-frame bridge having guide-openings in which the guiding-arms and tappet-arm of the universal bar slide in the reciprocating-movement of said bar, substantially as described.

8. The combination of a series of type-bars mounted on brackets arranged approximately in a vertical arc a universal bar curved concentrically with the arc in which the type-bar brackets are mounted, actuated by contact of the several type-bars in their printing movement and carrying a tappet to actuate the carriage release mechanism and a dust-guard consisting of a curved plate carried by the universal bar, inclined downward toward the front and extending over oblique shoulders on the type-bar brackets, substantially as shown and described.

9. A type-bar bracket comprising a pair of apertured cheek-plates and a central plate clamped between said cheek-plates, provided with lugs projecting from its opposite sides into apertures in the cheek-plates and protruding beyond the front edge of the cheek-plates so as to form a projecting tongue, and having a threaded aperture in its protruding edge to receive a clamp-screw; in combination with a clamp-screw and a bridge grooved and slotted to receive such projecting tongue and clamp-screw substantially as and for the purposes set forth.

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