J. ALEXANDER.

TYPE WRITER ACTION.

APPLICATION FILED JUNE 8, 1912.

1,048,266.

Patented Dec. 24, 1912.

2 SHEETS—SHEET 1.

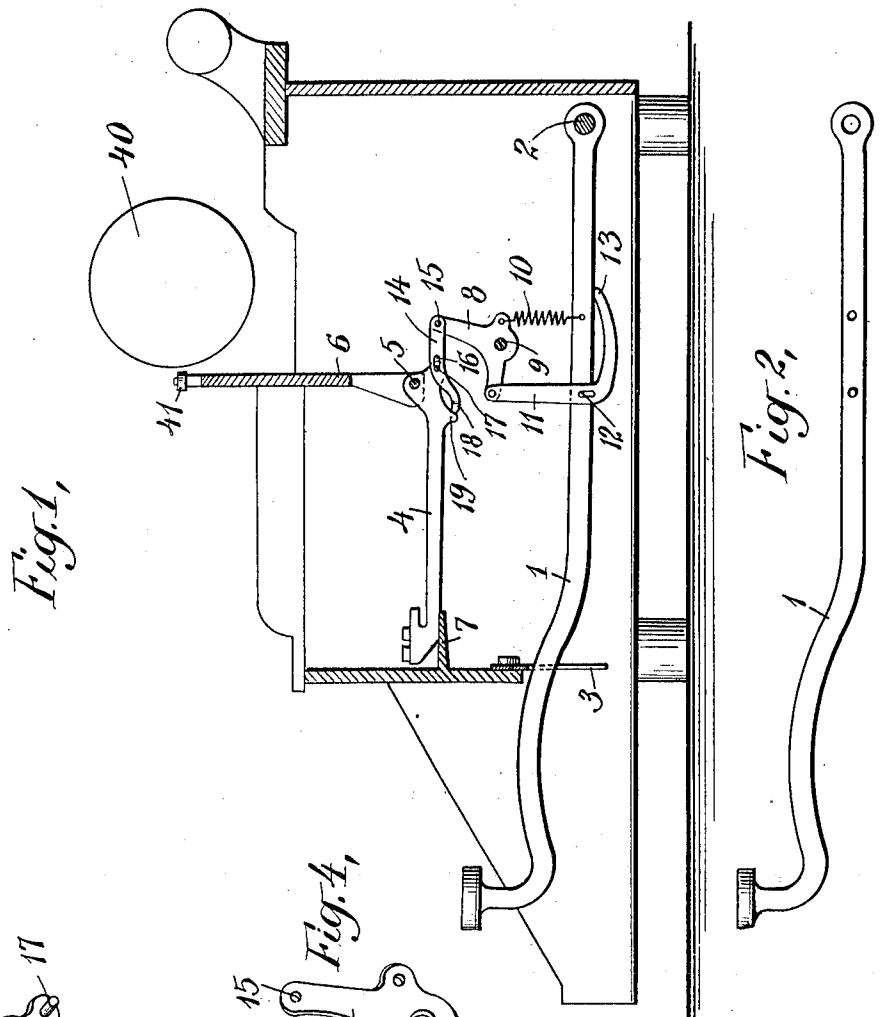

Fig. 1.

Fig. 2.

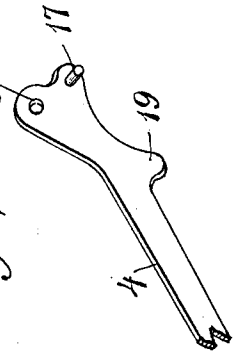

Fig. 3.

Fig. 4.

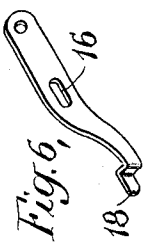

Fig. 6.

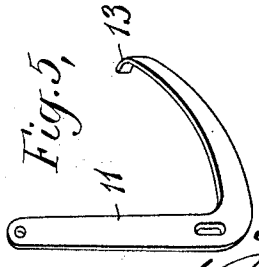

Fig. 5.

WITNESSES

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2 SHEETS—SHEET 2.

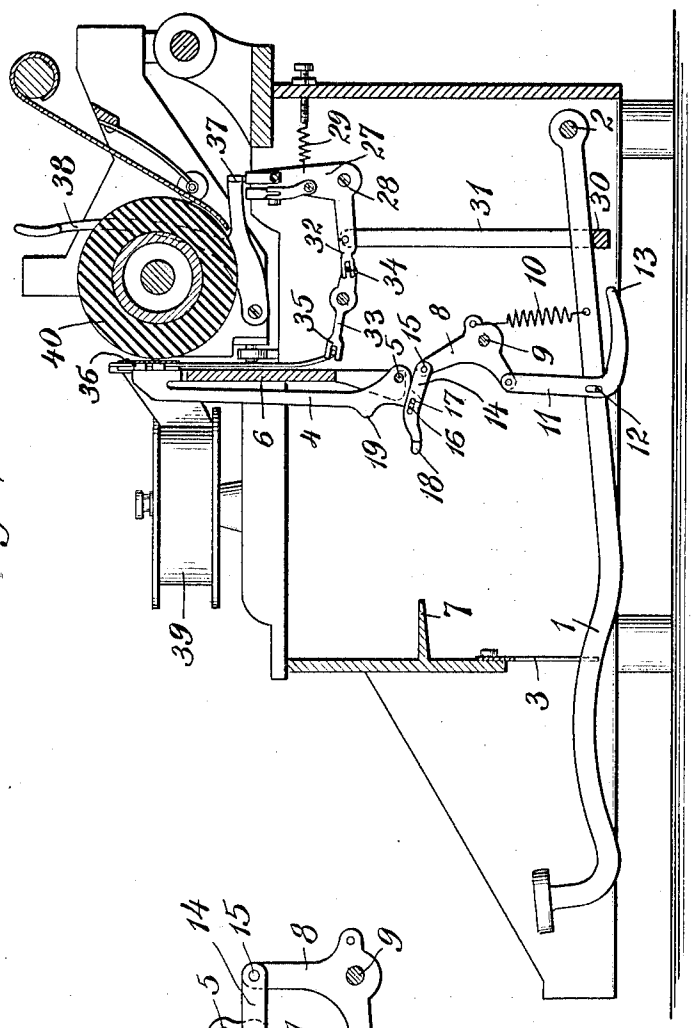

Fig. 7.

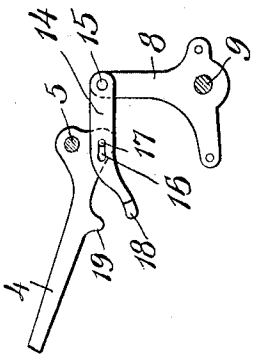

Fig. 8.

WITNESSES

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JESSE ALEXANDER, OF NEW YORK, N. Y., ASSIGNOR OF ONE-HALF TO EDWARD J. GALLAGHER, OF PITTSTON, PENNSYLVANIA.

TYPE-WRITER ACTION.

1,048,266. Specification of Letters Patent. **Patented Dec. 24, 1912.**

Application filed June 8, 1912. Serial No. 702,391.

To all whom it may concern:

Be it known that I, JESSE ALEXANDER, a citizen of the United States of America, and residing at New York, in the county of Kings and State of New York, have invented new and useful Improvements in Type-Writer Actions, of which the following is a specification.

My invention relates particularly to actions for front stroke or visible writing machines.

The object is to provide an action which is simple in construction and will afford an easy touch and at the same time permit of rapid operation and a powerful printing stroke and which is also durable.

The invention contemplates the use of pivoted type bars, pivoted key levers, pivoted intermediate or sub-levers and special forms of connections between the sub-levers and the type bars and between the sub-levers and the key levers. In its preferred form each sub-lever has a horizontal arm projecting forwardly from its pivot and connected to its key lever by a link. This link has a sliding engagement with the key lever at one point and a lost motion or pin and slot connection with the key lever at another point more remote from the pivot of the key lever. The sub-lever also has a vertical arm connected to the corresponding type bar by means of a link which has a lost motion or pin and slot connection with the type bar below and in rear of its pivot and a sliding engagement with the type bar at a point below the pin and slot connection and in front of the pivot of the type bar. The rear of the sub-lever is connected to the key lever by a spring which tends to hold all the elements in one unit of the action in their proper positions of rest.

Figure 1, is a longitudinal section and side elevation illustrating one unit of the key and type bar action in the normal position of rest. Fig. 2, is a side view of one of the key levers. Fig. 3, is a perspective view of one of the type bars. Fig. 4, is a perspective view of one of the intermediate or sub-levers. Fig. 5, is a perspective view of one of the links connecting a sub-lever to a key lever. Fig. 6, is a perspective view of one of the links connecting a sub-lever to its type bar. Fig. 7, is a longitudinal sectional view and side elevation showing one unit of the type bar action in the printing position and illustrating other parts of a machine claimed in an accompanying application. Fig. 8, is a fragmentary side view showing the relative position of a sub-lever and a link connecting it to its type bar in a position intermediate the positions of Figs. 1 and 7.

The key levers such as 1 are arranged in banks as is customary in typewriting machines. All the key levers for instance, being pivoted on a bar 2 and separated by a slotted plate or comb 3. The type bars such as 4 are all arranged in a segment of a cylinder and for instance pivoted at 5 in a type bar segment 6 and normally supported by a bracket 7.

The sub-levers such as 8 are provided with suitable pivots such as 9. Each sub-lever is connected to its key lever by a spring 10. Each sub-lever has a forwardly projecting arm connected to its key lever by a link 11. This link is of L-shape with a pin and slot or lost motion connection 12 and a second point of connection 13 intermediate the connection 12 and the pivot 2 of the key lever. The parts are so arranged that when a key lever is depressed the link is first drawn down by the pressure of the key lever on the link at the point 13. As the link moves downward the play in the connection 12 is taken up and at the end of the down stroke of the key lever the tension on the link 11 is applied at the point 12.

The vertical arm of each sub-lever is connected to the type bar by a link 14 which is pivoted to the sub-lever at 15 and has a slot 16 for the pin 17 below and in rear of the type bar pivot when the type bar is in its normal position of rest. The front end 18 of the link 14 is in the plane of the shoulder 19 of the type bar in front of and below the pin 17.

In the first part of the movement the sub-lever 8 forces the link 14 forwardly and the end 18 engaging the shoulder 19 of the type bar tends to lift the type bar, the slot 16 and pin 17 affording a variable fulcrum for the link 14. As the front end of the type bar rises the lost motion in the slot 16 is taken up and the shoulder 19 leaves the end 18 as the parts reach the position shown in Fig. 8. The pressure from the sub-lever is then applied through the pin 17 which is somewhat nearer the pivot 5 of the type bar than the shoulder 19.

The escapement rocker 27 is pivoted at 28 and normally under tension of the spring 29.

The universal bar 30 lies beneath the key levers and is connected by a link 31 to a horizontal arm 32 of the escapement rocker. A lever 33 is connected to the arm 32 of the escapement rocker at 34 and at 35 is connected to the ribbon vibrating guide 36. A toothed rack 37 pivotally carried by the carriage construction is provided with a finger-piece 38 so that it may be retracted from the escapement rocker pawls. The ribbon 39 is lifted in front of the printing position of the type at each stroke of the key lever so that the type can print on the paper in front of the platen 40. The type bars are guided at the printing point by an alining device consisting preferably of a pair of rollers such as 41.

When a key lever is depressed the movement is transmitted first through the connection at the point 13 and as the key lever moves downward the connection 12 is brought into operation with a longer leverage. Motion is transmitted through the link 11 to the sub-lever 8 which starts the type bar upward by engagement between the parts 18 and 19. As the type bar moves upward the operative connection is transferred to the slot 16 and pin 17 as previously described. This construction enables me to get an easy and light starting touch but provides for a heavy printing blow when the stroke is followed through.

What I claim is:—

1. In a key and type bar action, a pivoted type bar, a sub-lever having a vertical arm in the rear thereof, a link connected to said vertical arm and having a lost motion connection with the type bar below and in rear of its pivot and said link also having a sliding connection with said type bar below and in front of its pivot when the parts are in their normal positions of rest.

2. In a key and type bar action, a pivoted type bar, a sub-lever having a vertical arm in the rear thereof, a link connected to said vertical arm and having a lost motion connection with the type bar below and in rear of its pivot and said link also having a sliding connection with said type bar below and in front of its pivot when the parts are in their normal positions of rest, said sliding connection being below said lost motion connection.

3. In a key and type bar action, a pivoted key lever, a pivoted type bar, a pivoted sub-lever connected to the type bar and a link connecting said sub-lever to said key lever and having a sliding connection with said key lever at the beginning of the stroke and a pin and slot connection operative at the end of the stroke, the sliding connection being between the pin and slot connection and the pivot of the key lever.

4. In a key and type bar action, a pivoted type bar, a pivoted key lever, a pivoted sub-lever and links connecting said sub-lever respectively to said type bar and said key lever, each of said links having a sliding engagement at one end and a pin and slot connection at an intermediate point.

5. In a key and type bar action, a pivoted type bar, a pivoted key lever, a pivoted sub-lever having a vertical arm and a horizontal arm, a link connecting said vertical arm with said type bar at two points and a link connecting said horizontal arm to said key lever at two points when the action is in its normal position of rest.

6. In a key and type bar action, a pivoted type bar, a pivoted key lever, a pivoted sub-lever having a vertical arm and a horizontal arm, a link connecting said vertical arm with said type bar at two points, a link connecting said horizontal arm to said key lever at two points when the action is in its normal position of rest and a spring connecting said sub-lever with said key lever.

7. In a key and type bar action, a pivoted type bar, a pivoted sub-lever having a vertical arm in rear of the type bar and a link connected to said arm of said sub-lever and connected with said type bar by a pin and slot connection below and in rear of the type bar pivot and said link also having a temporary sliding engagement with said type bar below and in front of the type bar pivot.

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Witnesses:
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E. J. GALLAGHER.