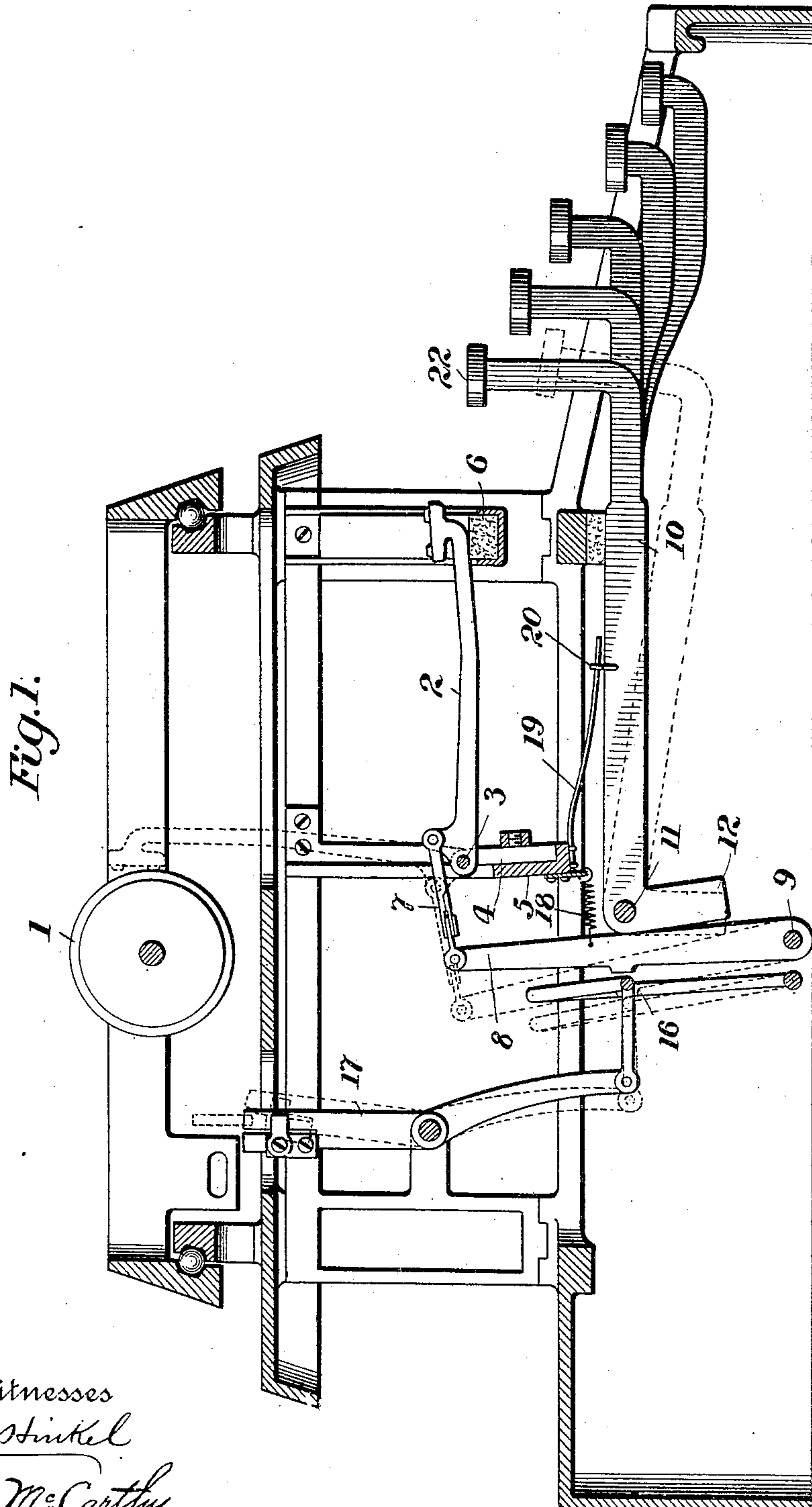


F. J. TANNER.  
TYPE WRITING MACHINE.  
APPLICATION FILED JUNE 25, 1907.

979,355.

Patented Dec. 20, 1910.

2 SHEETS—SHEET 1.



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Fig. 2.

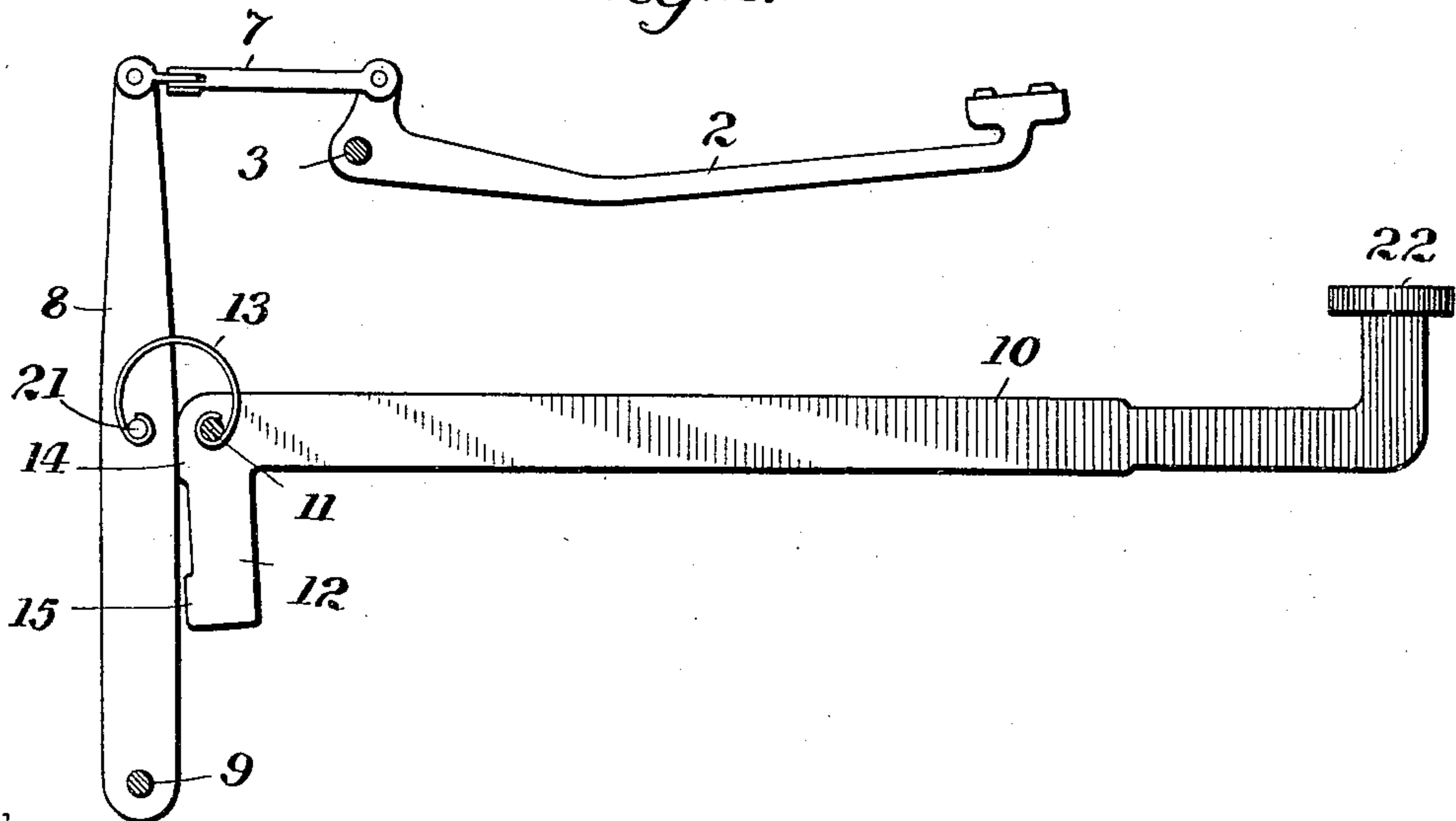


Fig. 3.

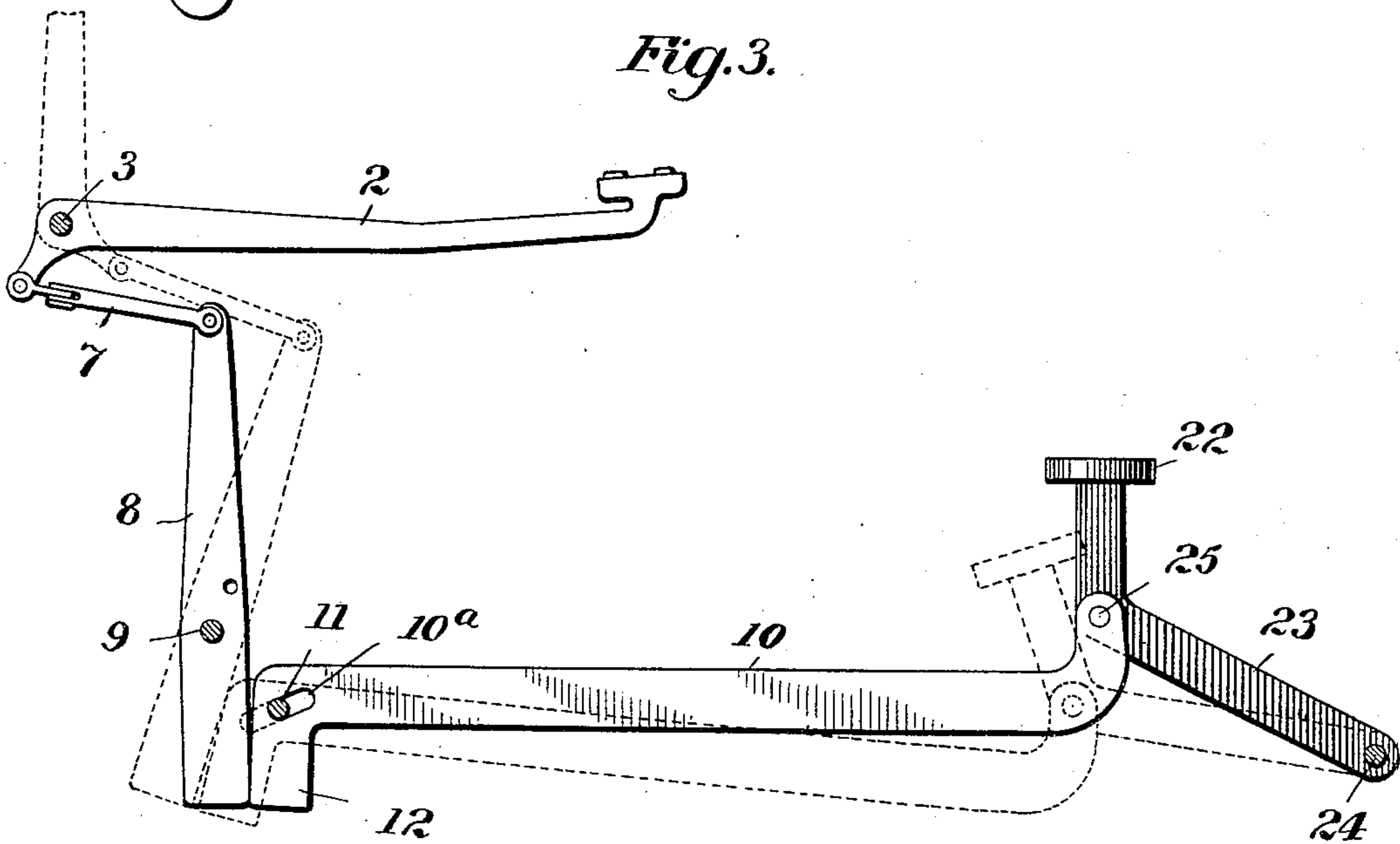
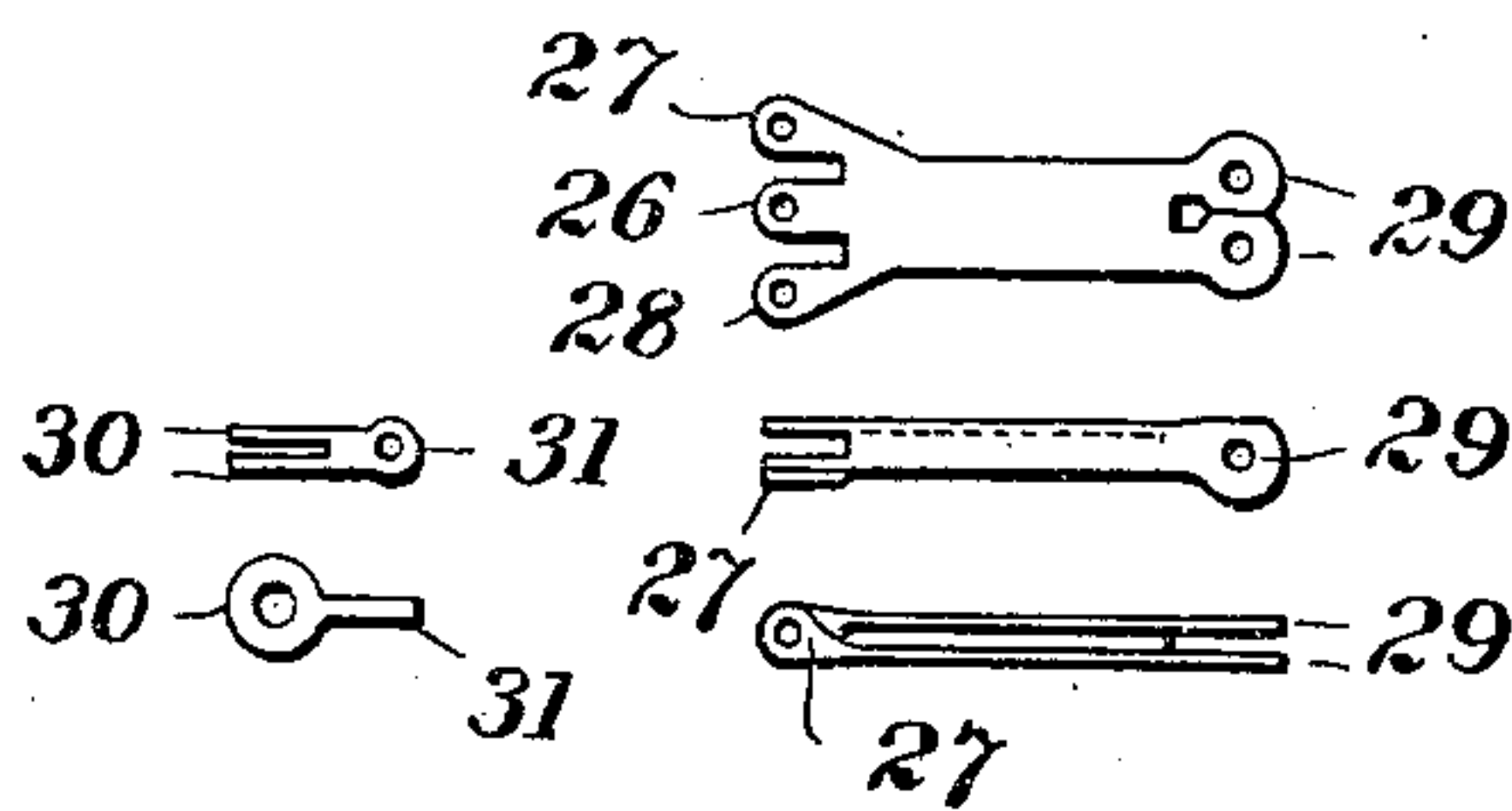


Fig. 4.



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# UNITED STATES PATENT OFFICE.

FRANK J. TANNER, OF SCRANTON, PENNSYLVANIA, ASSIGNOR TO INTERNATIONAL TEXT BOOK COMPANY, OF SCRANTON, PENNSYLVANIA, A CORPORATION OF PENNSYLVANIA.

## TYPE-WRITING MACHINE.

979,355.

Specification of Letters Patent.

Patented Dec. 20, 1910.

Application filed June 25, 1907. Serial No. 380,659.

*To all whom it may concern:*

Be it known that I, FRANK J. TANNER, a citizen of the United States, and resident of Scranton, Lackawanna county, State of Pennsylvania, have invented certain new and useful Improvements in Type-Writing Machines, of which the following is a specification.

The present invention relates to improvements in typewriting machines and particularly to the "type action" or means for moving the type bars against the platen, and will be described in connection with the accompanying drawing, in which,

Figure 1 is a vertical sectional view through a typewriting machine having a type action embodying the present invention applied thereto, parts of the machine not directly involving the invention being shown more or less conventionally; Fig. 2 is a view of a single type bar and its actuating devices, showing a different form of connection between the key operated lever and sub-lever; Fig. 3 is a similar view of a slightly different construction, and Fig. 4 illustrates in detail the construction of link preferably employed for connecting the sub-levers, and type bars.

In the drawings the invention is shown as embodied in a "front strike" machine, or a machine of that class in which the type bars are mounted to swing rearwardly against the platen conventionally illustrated at 1.

The type bars 2 are each pivotally supported at 3 in a suitable segment 4 carried by the frame 5 of the machine and the outer ends of said bars are normally supported by a cushion 6 in the ordinary manner. Each type bar is connected by a link 7 with the upper end of a sub-lever 8 which is pivotally supported at its lower end upon a rod 9 extending across the base of the machine and supporting all of the sub-levers. As shown the sub-levers are substantially upright and the upper portion of each sub-lever is deflected laterally as may be required to bring it directly back or in line with the type bar connected thereto. Key operated levers 10 are fulcrumed upon a rod 11 arranged in front of the series of sub-levers and each of said key operated levers is provided at its inner end with a depending arm 12 arranged to bear on a vertical edge of the co-acting sub-lever 8. Suitable spring means are provided for returning the

parts to normal position shown in full lines in the drawings.

In the embodiment of the invention illustrated in Fig. 1, a coiled spring 18 connects each of the sub-levers with the frame or support for the segment 4 and a leaf spring 19 connected with said frame passes through a loop 20 on the key-operated lever 10. The form and arrangement of the spring may, however, be varied and as shown in the embodiment of the invention illustrated in Fig. 2, a single bow spring 13 having its ends connected to the pivot rod 11 and a stud 21 may be used. Instead of making the extended bearing surface at the inner end of the key operated lever 10 extend continuously throughout the length of the member 12 of said lever, the arm or member may have the form shown in Fig. 2 in which its rear edge is provided with two separated contact portions 14, 15, adapted to successively bear upon the forward vertical edge of the sub-lever as the key lever is depressed. A universal bar 16 is arranged in rear of the series of sub-levers and suitably connected with the devices controlling the feed of the typewriter carriage, conventionally illustrated at 17 in a well known manner.

As shown in Figs. 1 and 2, the keys 22, are carried by arms integral with the key operated levers 10. However, this construction may be varied and as shown in Fig. 3 the keys may be carried by stems 23 independently pivoted as at 24 to the frame of the machine and pivotally connected at 25 with the forward end of the lever 10. In this construction the key operated lever is provided with a slot 10<sup>a</sup> through which the fulcrum of pivot rod 11 extends, and the arm 12 at the inner end of said lever extends substantially at right angles to the body thereof instead of being inclined forward slightly as shown in Figs. 1 and 2.

The link 7 employed for connecting the sub-levers and type bars is preferably constructed as shown in detail in Fig. 4. That is, said link comprises two members each formed from a single blank of sheet metal. The blank forming the main body of the link and which is connected with the type bar has at one end a central ear 26 and side ears 27, 28, while at its opposite end it is bifurcated and provided with two similar ears 29. The blank is so folded that the ears 29 are brought into parallelism and the



apertures therein aline on opposite sides of the slot formed at that end of the link. The ears 27, 28, are bent so as to contact with each other and bring the apertures therein into alinement with each other and also into alinement with the aperture in the central ear 26. By this construction it will be seen that the slots formed at the opposite ends of said section of link extend in planes at right angles to each other and one of the walls of the slot formed by the ears 26, 27 and 28 is reinforced or made of greater thickness than the other. The other member of the link is provided at one end with separated ears 30 between which the upper end of the sub-lever extends and the opposite end of said member is formed into an apertured link 31, the aperture in which extends at right angles to the slot separating the ears 30, and is adapted to aline with the apertures at the inner end of the member of the link first described. The link members are suitably connected by a rivet or other fastening means.

Having described the invention, what is claimed as new and desired to be secured by Letters Patent is:

1. In a typewriter, the combination of a pivotally mounted type bar, a sub-lever con-

nected with the type-bar, a key operated lever adapted to engage the sub-lever at successive points as it is operated, and a spring connecting the sub-lever and key operated lever.

2. In a typewriter, the combination of a platen, a pivotally mounted type-bar, a sub-lever operating about a fixed pivotal point and connected to the type bar, a lever arranged to actuate the sub-lever, and a key mounted independently of and connected with the last said lever.

3. In a typewriter, the combination of a platen, a pivotally mounted type bar, a sub-lever connected to the type-bar, a key operated lever having at its inner end an elongated bearing surface adapted to engage a vertical edge of the sub-lever at successive points as it is actuated, and a key mounted upon a stem pivotally supported independently of said levers and having a pivotal connection with the aforesaid key operated lever.

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

FRANK J. TANNER.

Witnesses:

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