

J. W. BAMBERGER.
TYPE WRITER.
APPLICATION FILED NOV. 26, 1909.

987,103.

Patented Mar. 21, 1911.
2 SHEETS-SHEET 1.

FIG. 1.

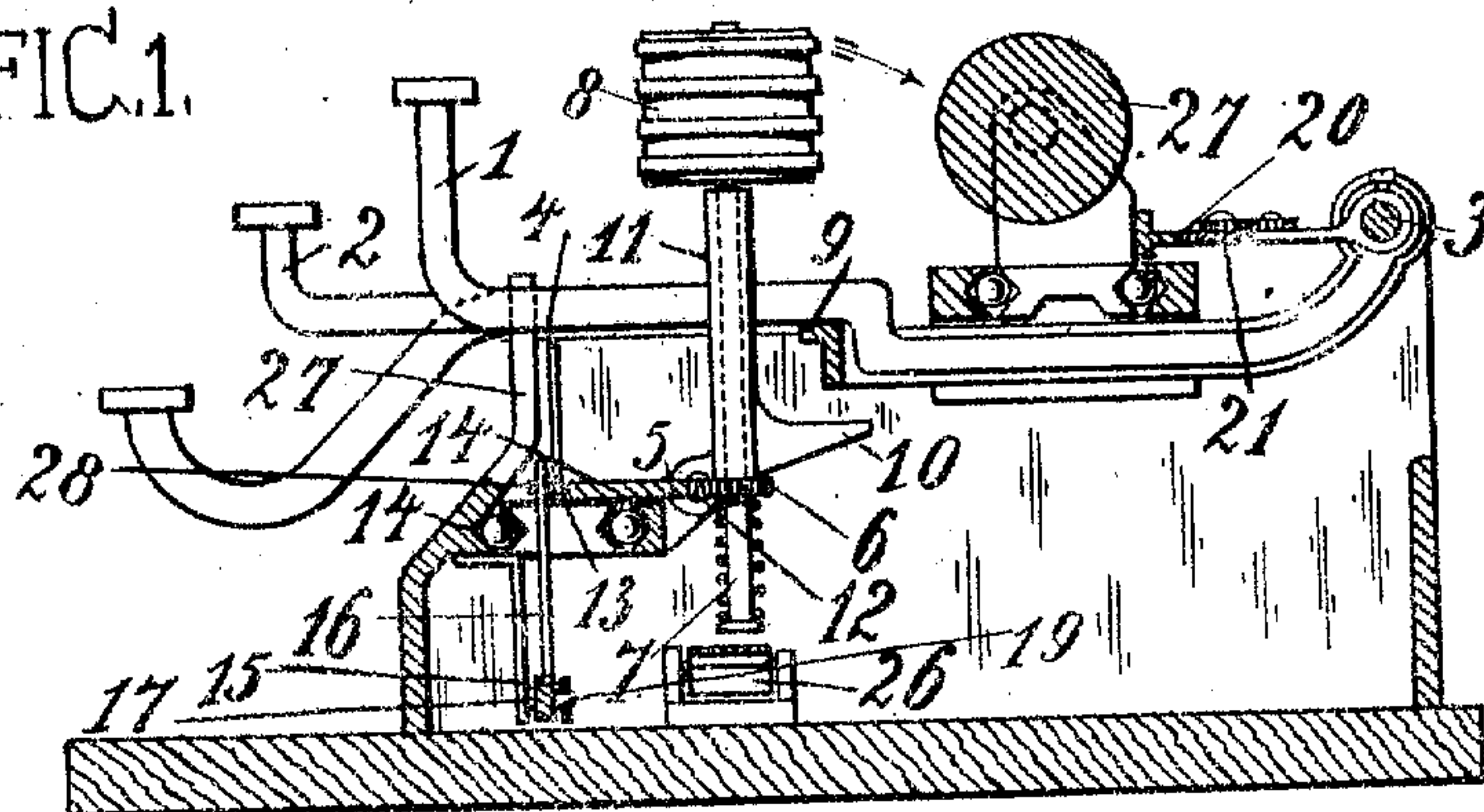
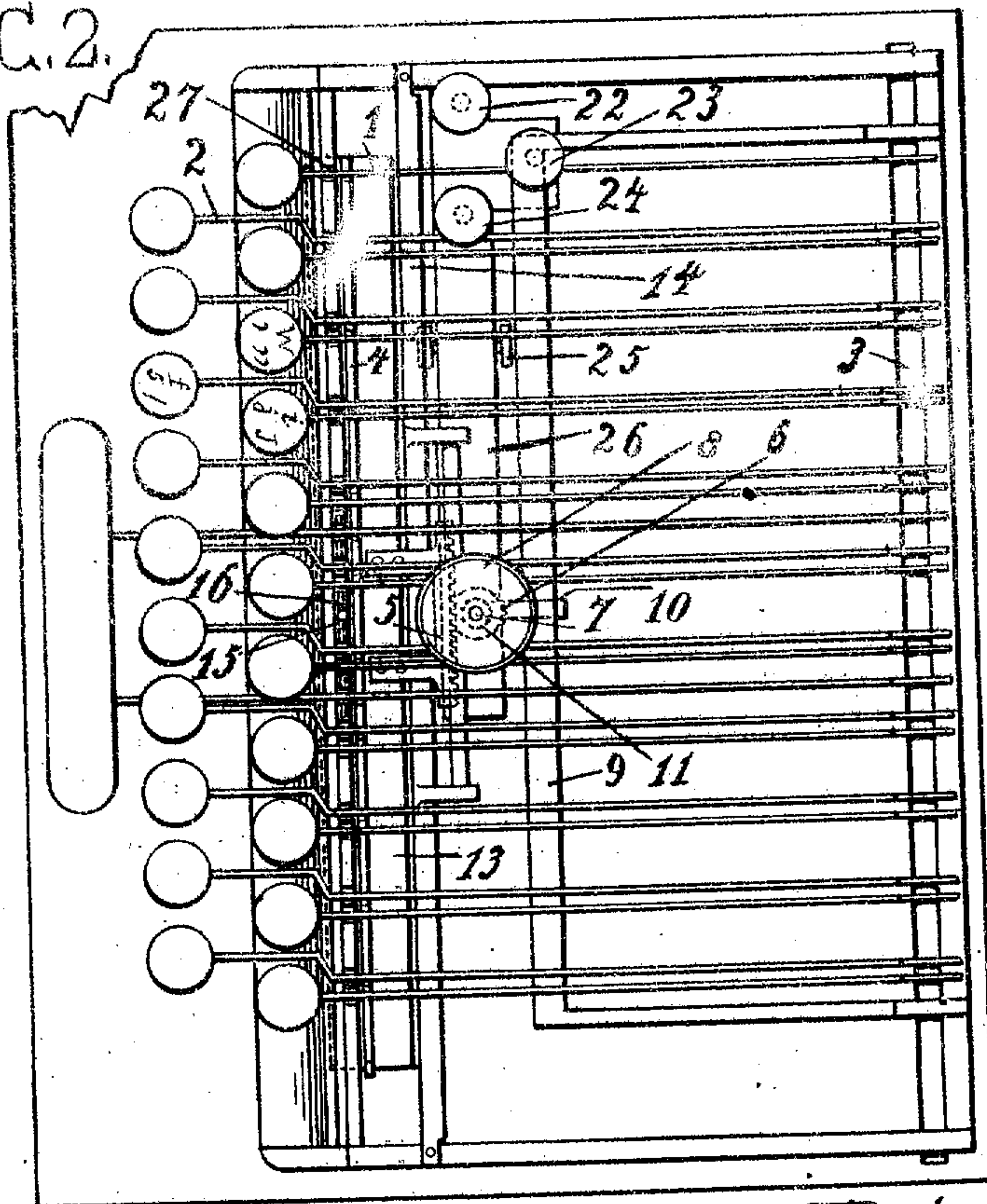


FIG. 2.



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987,103.

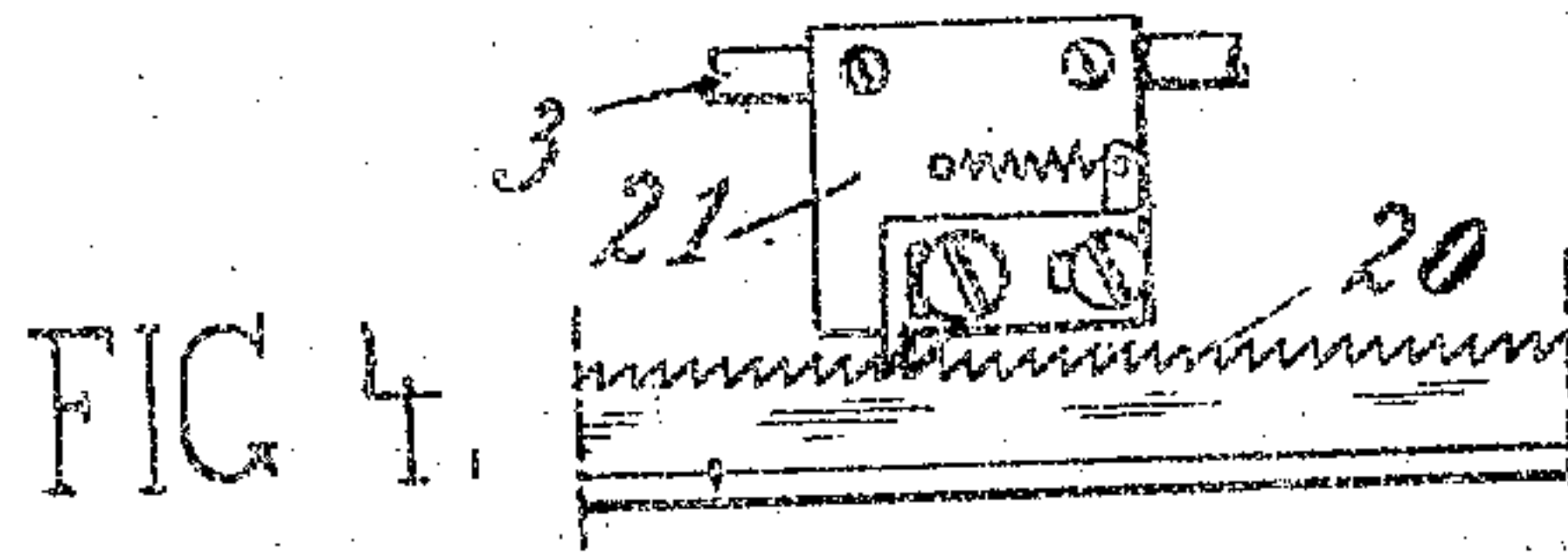
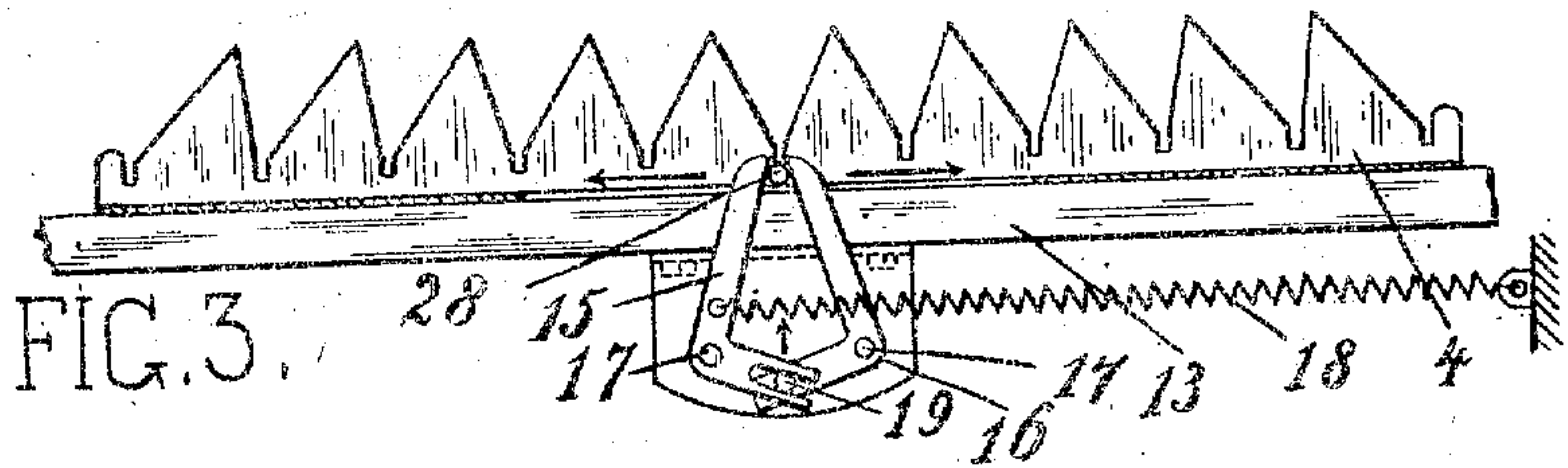


FIG. 5.

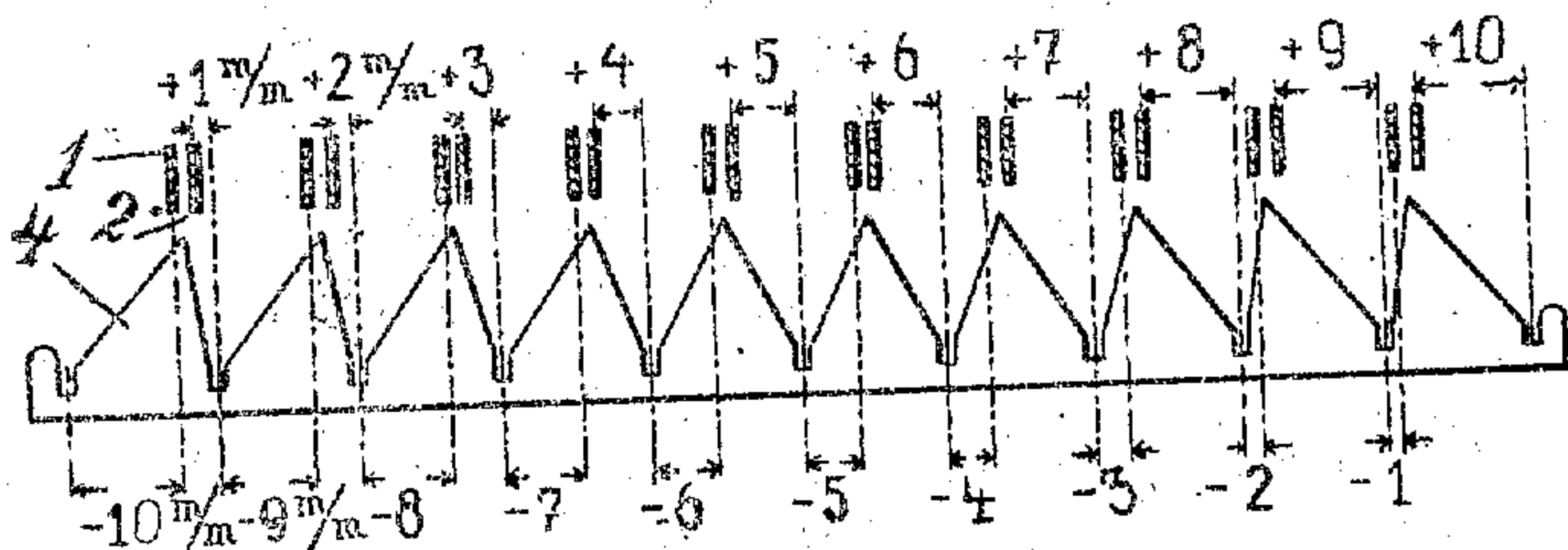


FIG. 6.

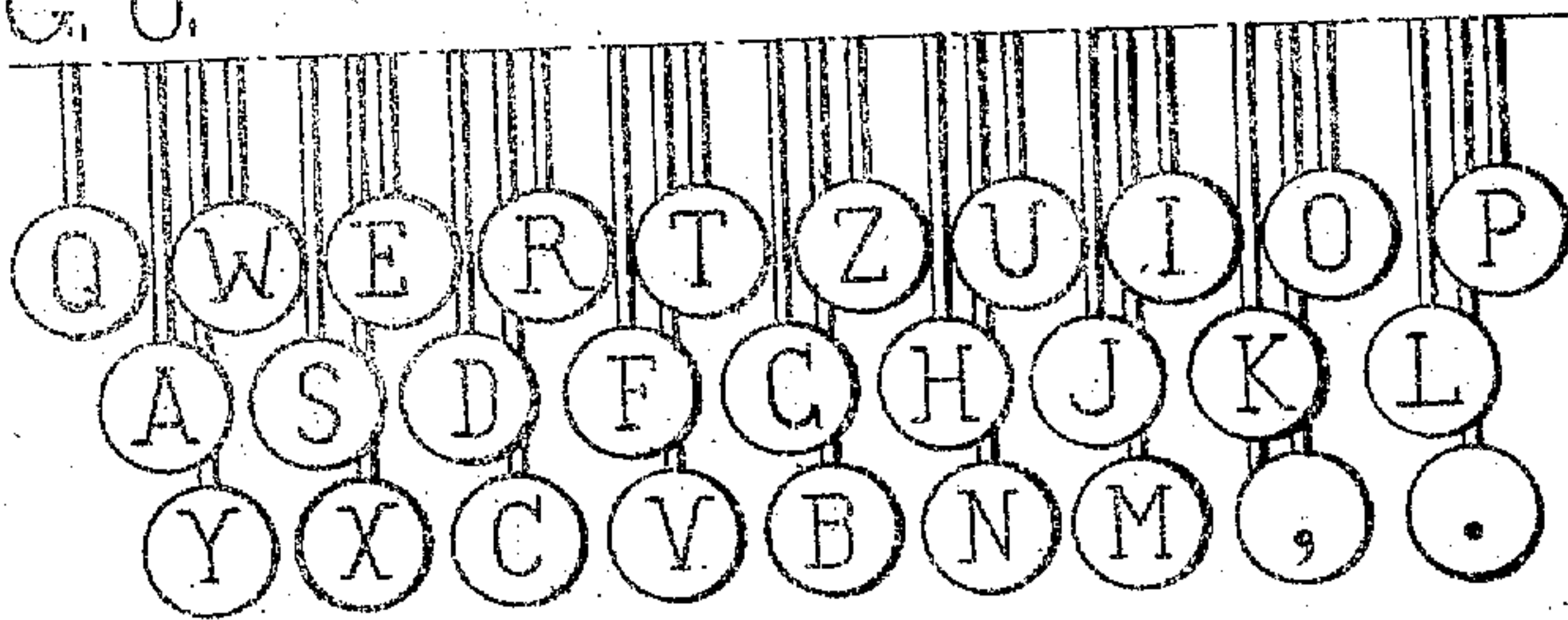
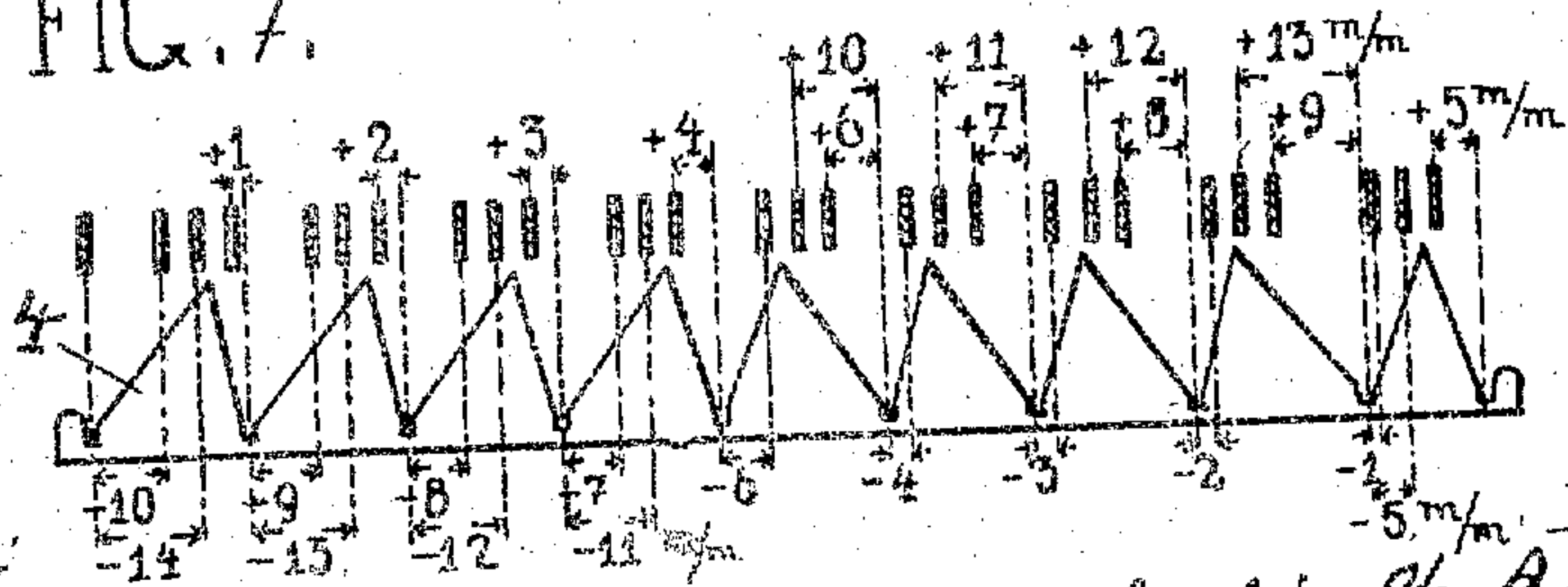


FIG. 7.



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UNITED STATES PATENT OFFICE.

JUSTIN W. BAMBERGER, OF BERLIN, GERMANY.

TYPE-WRITER.

987,103.

Specification of Letters Patent.

Patented Mar. 21, 1911.

Application filed November 26, 1909. Serial No. 529,968.

To all whom it may concern:

Be it known that I, JUSTIN WILLIAM BAMBERGER, a citizen of Germany, residing at Berlin, Germany, Berlin-Wilmersdorf, Hohenzollerndamm 12, have invented certain new and useful Improvements in Type-Writers; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

The present invention relates to a type-wheel key-board type-writer with visible writing which is simple in design and therefore inexpensive, but yet of solid construction.

Reference being had to the accompanying drawings, Figure 1 is a sectional view of the typewriter according to the present invention. Fig. 2 a plan view; Fig. 3 shows the toothed slide with the arresting device; Fig. 4 the paper-carriage escapement; Fig. 5 the toothed slide with the key levers in section; Fig. 7 is another form of construction of the toothed slide for the universal keyboard shown in plan view in Fig. 6.

As may be seen by reference to Figs. 1 and 2 the key levers 1 and 2 are pivoted on a common axis or shaft 3 at the rear of the typewriter frame. The single key-levers are kept equidistant by and can move vertically in the slits of a piece 27 at the front of the machine.

The adjustment of the type-wheel is attained through the medium of a toothed slide 4 (Figs. 1 and 5) having teeth with differently slanting sides, arranged on a base-piece 13, having angular longitudinal grooves on each side, as shown in Fig. 1 and being slidably adjustable on balls between the two guide surfaces 14 of the frame of the typewriter, said guide-surfaces forming longitudinal grooves angular in cross-section, also as shown in Fig. 1. When a type-lever is pressed down it glides along the slanting side of a tooth, thus causing the slide to move laterally a distance corresponding to the angle of slant, as shown in Fig. 5. With the help of, for instance, 20 key-levers, said toothed slide can be moved to 10 different positions on the left side (in Fig. 5, +1, +2 etc.) and to 10 different positions on the right (as indicated by -1, -2 etc.) These movements of the slide 4 are now transferred through the medium of a rack 5 and pinion 6 to the type-wheel 8, said

pinion being arranged on the shaft 7 of the type-wheel. Thus whenever a type-lever is pressed down, the type-wheel is rotated through a certain angle, corresponding to the position on the type-wheel of the appertaining letter or character. When the type-lever has reached the bottom of the space between the teeth of the slide 4 it enters a small vertical slit (Fig. 5) and at the same time the bar 9 common to all key-levers is pressed so far down that it abuts against the projection 10 of the type-wheel bearing 11. Said bearing 11 is pivoted at 12 in the axis of engagement of rack 5 and pinion 6, so that the bar 9 will cause it to swing over against the paper cylinder 27.

By referring to Figs. 1 and 2 of the drawing, it will be noted that the longitudinally slidable shaft 7 of the type-wheel 8 extends between two keys of the keyboard and that it is pivoted at a point below the lowermost keys of the said key-board. This construction makes a very convenient arrangement and one in which the said drum and the parts on which it is mounted will not in any way interfere with the keyboard.

An essential feature of this typewriter is also the device by which the toothed slide and the type-wheel are returned to their initial positions after release of the type-lever in such a manner that said toothed slide is arrested almost instantaneously in the middle position. This is attained by means of the knee-levers 15 and 16 arranged below the toothed slide (Figs. 1 and 3) pivoted at 17 and so connected that when one lever is pushed toward one side by a pin 28 of the toothed slide, the other lever will swing toward the opposite side. One of these knee-levers is connected with a spring 18 in such a manner that both levers always have the tendency to assume the normal position shown in Fig. 3. The connection of the levers 15 and 16 can be made in different ways, for instance, as shown in Fig. 3, the one lever 16 is provided with a pin 19 sliding in a slit of the other lever 15. If now the toothed slide moves to one side, for instance, toward the left, the pin 28 will push the upper part of the knee-lever 15 also to the left, the lever 16 at the same time swinging to the opposite side. As soon as the key-lever leaves the slit at the bottom of the space between two teeth, the toothed slide is drawn by the action of the spring 18 into its middle position, and there the knee-lever

18 coming from the opposite side will hit against the pin 28 and arrest the toothed slide practically instantaneously.

The paper carriage, as in all type-writers, is provided with a toothed bar 20 (Figs. 1 and 4), engaging with an escapement device 21, consisting essentially of two swinging detents. This escapement 21 is in the present form of construction mounted directly on the axis 3 of the bar 9 (Fig. 1), so that every time the bar 9 is pressed down the paper carriage will be shifted forward. This axis 3 can also, as already mentioned, serve as an axis or bearing for the key-levers 1 and 2. If the machine is provided with from 20 to 22 keys, the type-wheel will advantageously be provided, as shown in Fig. 1 with four separate rings of types, and it must therefore be adjustable to four different heights.

The uppermost ring of types may conveniently contain the most usual small letters, the second ring the most usual capitals, the third ring the more rarely used small letters and capitals and the numerals, and the fourth ring the signs of punctuation etc. For adjusting the type-wheel to the necessary four different heights the three shift keys 22, 23, 24 (Fig. 2) are provided, which can be pressed down varying distances and thus adjust the type-wheel axis to different heights through the medium of the lever 26 pivoted at 25. This system of shift keys will be especially practical and convenient in use if said keys 22, 23, 24 are arranged in positions corresponding to the relative positions of the characters on the type-keys, for instance, in the form of a triangle, as shown in Fig. 2. By thus making the shift-keys correspond in number and in arrangement to the characters on the type-keys, the work of selecting the proper shift-key to print the proper character is greatly facilitated.

As already mentioned, Fig. 7 represents another form of construction of the toothed slide, for use with the normal three-row key-board (Fig. 6) with which most typewriters are at present fitted. Here three type-levers are united to a group, being equidistant from one another, and also the several groups are arranged at equal distances from one another, so that when the single type-levers are symmetrically elongated, the symmetrical normal key-board shown in Fig. 6 will ensue. It will be obvious that the slanting sides of the teeth must be so arranged that the single levers when pressed down will shift the slide the corresponding distances, as shown in Fig. 7.

Both in the arrangement shown in Fig. 5 and in Fig. 7 it will be observed that the key levers are arranged over the serrated slide 4 in groups, and in such a way that

each group is arranged partly over one and partly over the adjoining recess, and so that the sum of the horizontal distances to the apex of the recess from two keys of adjoining groups and arranged over such recess, is equal to the sum of the horizontal distances from the corresponding keys of any other two adjoining groups to the apex of the recess over which they are located.

What I claim as my invention and desire to secure by Letters Patent, is:

1. In a type-wheel typewriter, a pivoted bearing having a projection, and a type-wheel journaled in said bearing, in combination with a key lever and connections between said key lever and the type-wheel for rotating said type-wheel, and a bar arranged in the path of the key and at some distance away from the projection on the pivoted bearing and adapted to engage the projection and rock the bearing at the end of its downward movement.

2. In a type-wheel typewriter, a pivoted bearing having a projection and a type-wheel journaled in said bearing and provided with a pinion, in combination with a series of key levers and a slide having differently inclined edges arranged below the key levers, a rack connected with said slide and engaging the pinion, a transverse bar arranged below the key-levers and some distance above the projection on the pivoted bearing, whereby the depression of the key lever first rotates the type-wheel through a corresponding angle and then causes the said type-wheel to be rocked.

3. In a type-wheel typewriter, a series of key-levers and a type-wheel, a shaft supporting said type-wheel and extending upwardly between two of the key-levers, and connections between the key-levers and the type-wheel for rotating the same, in combination with a bearing supporting said shaft pivoted at a point below the keys of the key-levers and provided with a projection, a bar arranged in the path of the keys and normally some distance above the projection on the pivoted bearing.

4. In a type-wheel typewriter, a series of key levers, a type-wheel, a shaft supporting said wheel, a rack and pinion driving connection between the key levers and the shaft, a tubular bearing for said shaft pivoted in line transversely with the plane of the pinion and provided with a projection, and a bar arranged in the path of the keys and normally some distance above the projection on the bearing.

5. In a type-wheel typewriter, a series of key levers, a type-wheel, a shaft supporting said wheel, a driving connection between the key levers and the shaft, a bearing for the shaft pivoted substantially in a plane including the driving connection and perpendicular to the shaft, the bearing provided

with a projection adjacent its pivotal point, and a universal bar arranged when actuated by the key levers to impinge upon the projection.

5 6. In a type-wheel typewriter, a type-wheel provided with means for rotating the same in opposite directions, in combination with a slide connected to said means and provided with inclined edges forming angular recesses between each pair of said edges, and key-levers arranged in groups, each group being arranged partly over one and partly over the adjoining recess, the sum of the horizontal distances to the apex of the recess from two keys of adjoining groups arranged over said recess being equal to the sum of the horizontal distances from the corresponding keys of any other two adjoining groups to the apex of the recess over which they are located.

7. In a type-wheel typewriter, a slide for rotating the type-wheel and provided with a stop-pin, in combination with means for displacing the slide longitudinally, a lever yieldingly held against the stop pin at one

side, and a second lever connected to the first lever and movable away from or toward the normal position of said pin as the first lever moves toward or away from the same.

8. In a type-wheel typewriter, a slide for rotating the type-wheel in opposite directions and provided with a stop pin, in combination with means for displacing the slide longitudinally in either direction, an elbow lever pivoted to a fixed part of the typewriter, one arm of the same bearing yieldingly against the stop-pin and a second elbow lever also pivoted to the fixed part of the typewriter and also bearing yieldingly against the stop pin, the other arms of said levers being connected by a pin and slot connection.

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

JUSTIN W. BAMBERGER.

Witnesses:

HENRY HASPER,
WOLDEMAR HAUPT.