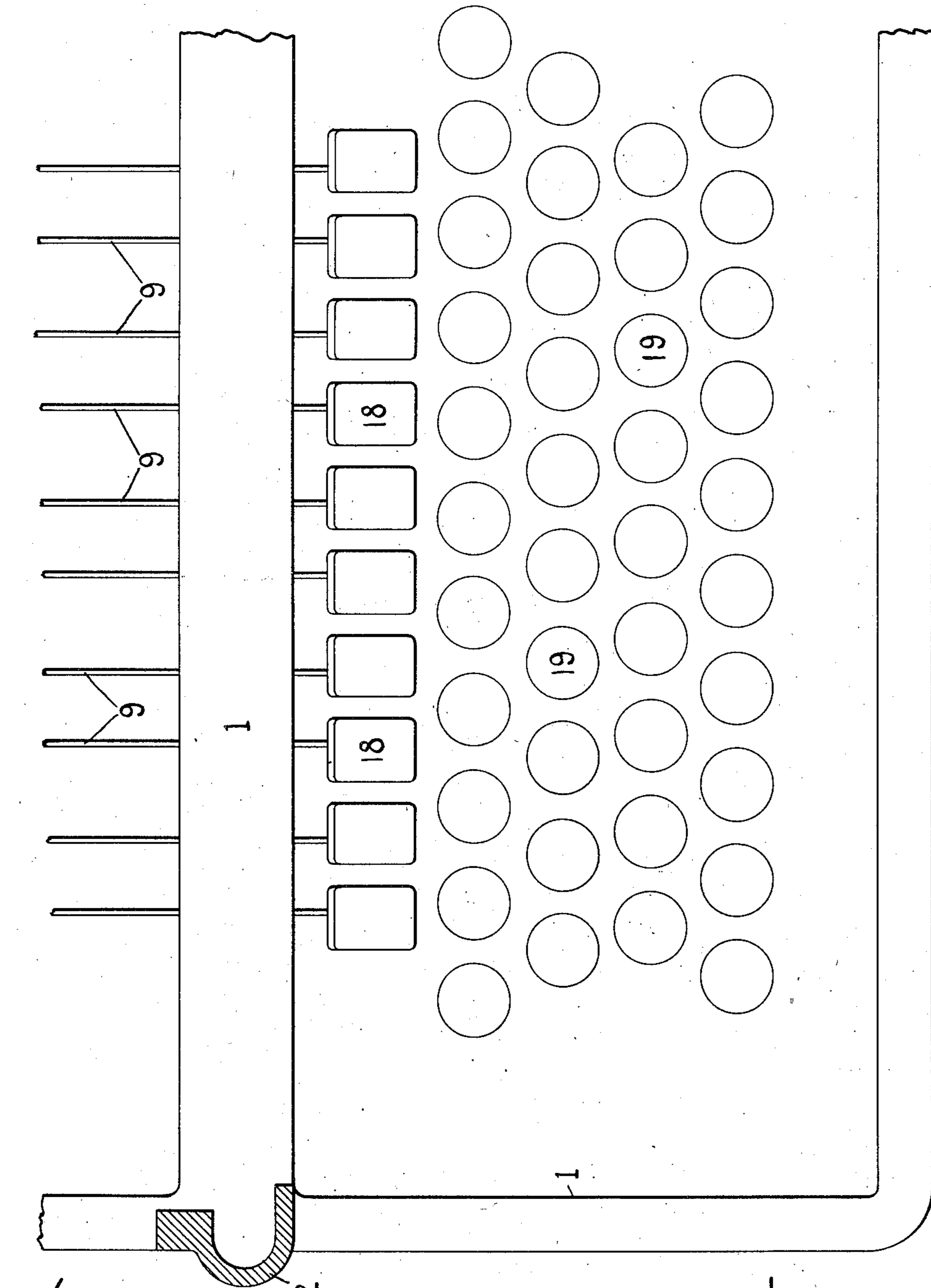


O. WOODWARD.
TYPE WRITING MACHINE.
APPLICATION FILED SEPT. 18, 1908.

985,093.

Patented Feb. 21, 1911.

2 SHEETS—SHEET 1.



WITNESSES:
E. M. Wells.
Wm. E. Smith

FIG. 1.

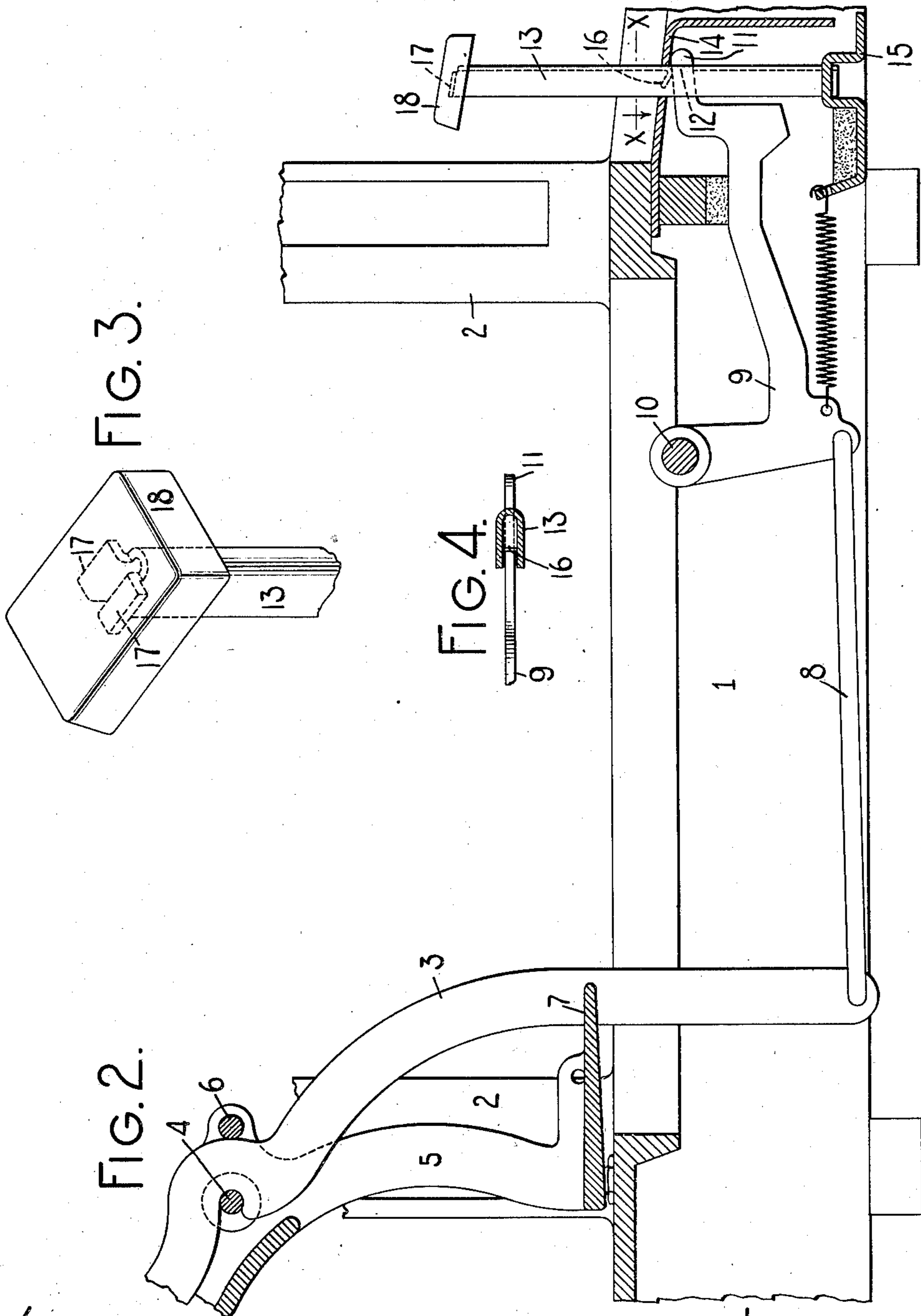
INVENTOR:
Oscar Woodward
By *Jacob Felber*
HIS ATTORNEY

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Oscar Woodward

By Jacob Felbel

HIS ATTORNEY

UNITED STATES PATENT OFFICE.

OSCAR WOODWARD, OF MONTCLAIR, NEW JERSEY, ASSIGNOR TO UNION TYPEWRITER COMPANY, OF JERSEY CITY, NEW JERSEY, A CORPORATION OF NEW JERSEY.

TYPE-WRITING MACHINE.

985,093.

Specification of Letters Patent.

Patented Feb. 21, 1911.

Application filed September 18, 1908. Serial No. 453,575.

To all whom it may concern:

Be it known that I, OSCAR WOODWARD, citizen of the United States, and resident of Montclair, in the county of Essex and State of New Jersey, have invented certain new and useful Improvements in Type-Writing Machines, of which the following is a specification.

My invention relates to typewriting machines and more particularly to keyboards and to the construction and arrangement of parts comprising the same.

One of the objects of my invention is to provide a regular arrangement of keys in a bank when the key levers are irregularly arranged.

A further object of my invention is to provide a simple and efficient key stem and key head construction and to provide simple means whereby connection may be made between the key stems and the key lever.

To the above and other ends which will hereinafter appear, my invention consists in the features of construction, arrangements of parts and combinations of devices to be hereinafter described and particularly pointed out in the appended claims.

In the accompanying drawings wherein like reference characters indicate corresponding parts in the various views, Figure 1 is an enlarged detail fragmentary diagrammatic plan view showing the keyboard and a portion of the associated parts of a typewriting machine. Fig. 2 is an enlarged detail fragmentary vertical sectional view of a portion of the machine. Fig. 3 is an enlarged detail fragmentary perspective view showing a key head and a portion of the key stem. Fig. 4 is an enlarged detail transverse sectional view taken on the line $x-x$ of Fig. 2 and looking in the direction of the arrow at said line.

I have shown my invention embodied in a typewriting machine and tabulating mechanism of a character disclosed in my Patent 927,626, dated July 13, 1909, although it should be understood that the invention may be embodied in other styles of typewriting machines and in other styles of tabulating mechanism.

The frame of the machine comprises a base 1 and a corner post 2. Tabulator stop levers 3 are pivoted at 4 in a tabulator frame 5 secured to the main frame of the machine in any suitable manner. A pin 6

extends between the sides of the tabulator frame 5 and prevents an accidental displacement of the tabulator stop levers 3 from the pivot 4. The upper ends of the tabulator stop levers carry denominational stops (not shown) as in the construction disclosed in my patent hereinbefore referred to. The lower end portions of the stop levers are received in slots in a flange 7 which projects forwardly from the tabulator frame. The lower ends of the stop levers are connected to links 8 which in turn are connected at their forward ends to angular levers 9 pivoted on a pivot rod 10 secured to the frame of the machine. The forwardly projecting arms of the angular levers are provided with fingers 11 which extend through openings 12 in key stems 13 which move in guide openings in an angular plate 14 and in a plate 15, both of said plates being secured to the frame of the machine. Each of the key stems is substantially U-shaped in cross section as will be seen upon reference to Fig. 4 and the metal which is punched out at the bend to form the opening 12 for the passage of the finger 11 is turned up as indicated at 16 so as to form a bearing for the finger 11 of the associated angular lever 9. The upper end of each side of each key stem is bent outwardly to form laterally extending projections or lips 17 which are embedded or anchored in a composition key head 18 so as to firmly connect the key head to the stem. As will be seen, each key stem comprises two longitudinal side portions united by a front portion which provides a longitudinal space or groove between the side portions. This construction is produced by bending or folding the sheet metal plate centrally for its entire length. The side portions are brought into parallelism and the front portion acts as a support for the side portions throughout the entire length of the side portions, thus producing an extremely stiff and rigid key stem.

From an inspection of Fig. 1 it will be observed that the bank of tabulator keys 18 are regularly spaced apart and are arranged above and in the rear of the printing keys 19. It will also be observed that the levers 9 for transmitting motion to the denominational stop levers and stops are irregularly spaced. In order to provide for the regular spacing of the denominational keys, notwithstanding the irregularity in the

spacing of the levers 19, I off-set the key heads 18 on the key stems, the off-setting preferably extending in opposite directions from each successive pair of key stems as indicated in Fig. 1. It is sometimes found necessary or desirable to effect an irregular spacing of the key levers 9 in order to avoid conflict between different working parts of a machine and when the levers are thus irregularly spaced my invention enables me to provide, nevertheless, regularly spaced key heads therefor.

Various changes may be made without departing from the spirit and scope of my invention.

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

1. In a tabulating mechanism for typewriting machines, the combination of a bank of regularly spaced key heads, and irregularly spaced tabulator stop actuating devices operatively connected to said key heads, the key heads for each successive pair of said actuating devices being off-set in opposite directions on the parts that carry them, to provide for a regular spacing of the heads.

2. In a tabulating mechanism for typewriting machines, the combination of a sheet metal key stem bent throughout its length into substantially U-shape in cross-section and having laterally extending projections, and a composition head in which said projections are anchored.

3. In a tabulating mechanism for typewriting machines, the combination of a sheet metal key stem bent throughout its length

into substantially U-shape in cross-section and having laterally extending projections, and a composition head in which said projections are anchored, the head being off-set on the key stem.

4. A key for typewriting machines comprising a sheet metal key stem folded throughout its length into substantially U-shape in cross section and having an opening in the bent edge thereof for the reception of a part to be actuated by the key and also having laterally extending projections, and a composition key head in which said projections are anchored.

5. In a tabulating mechanism for typewriting machines, the combination of a series of irregularly spaced stop actuating levers, key stems operatively connected therewith, each key stem being bent up from sheet metal throughout its length into substantially U-shape in cross-section and each having laterally extending projections, and regularly spaced composition key heads in which the laterally extending projections on the key stems are anchored, said key heads being off-set on their stems to provide a regular spacing of the key heads notwithstanding the irregularity in the spacing of the actuating levers.

Signed at the borough of Manhattan, city of New York, in the county of New York and State of New York this 17th day of September, A. D. 1908.

OSCAR WOODWARD.

Witnesses:

E. M. WELLS,
CHARLES E. SMITH.