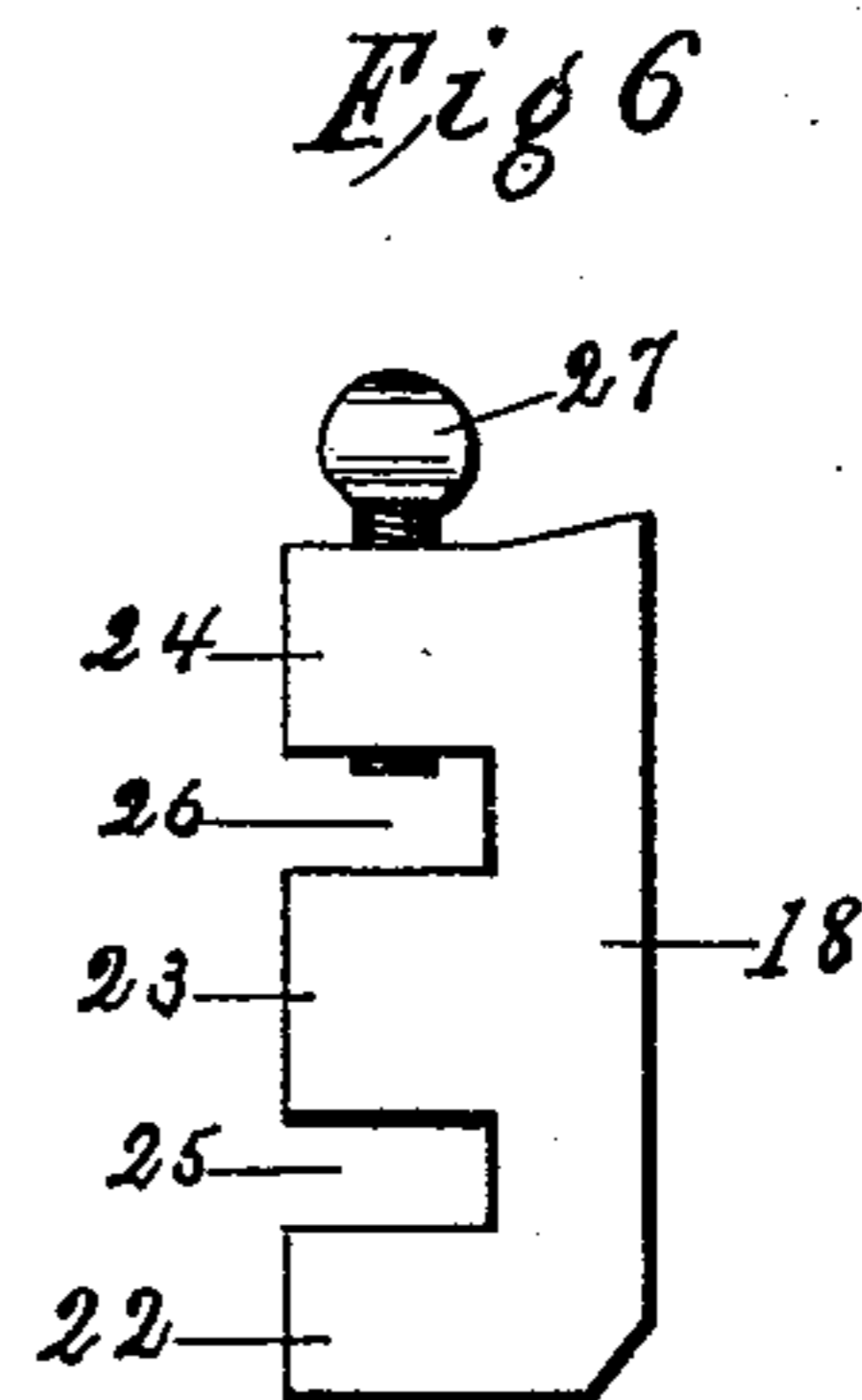
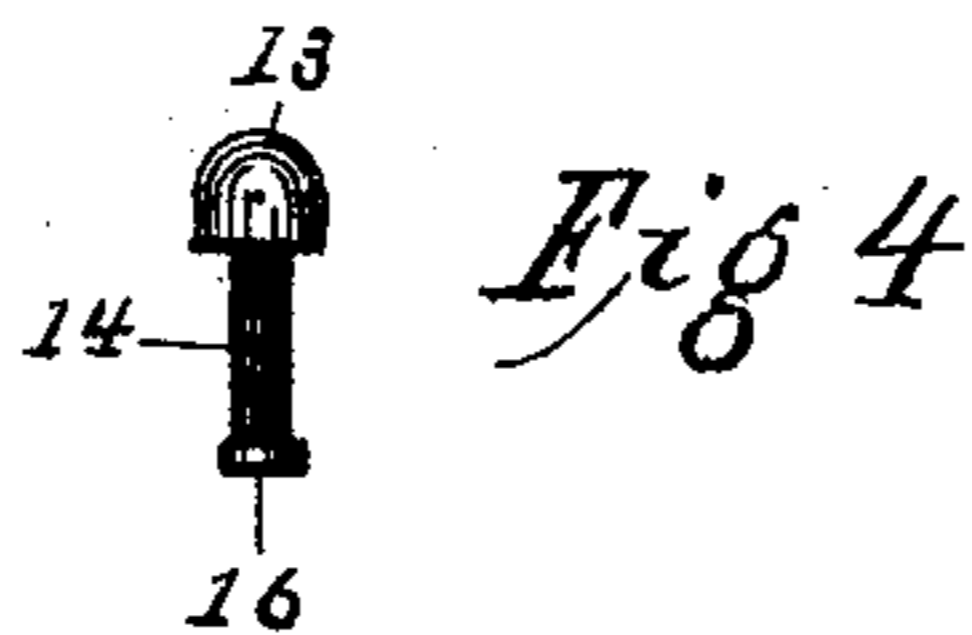
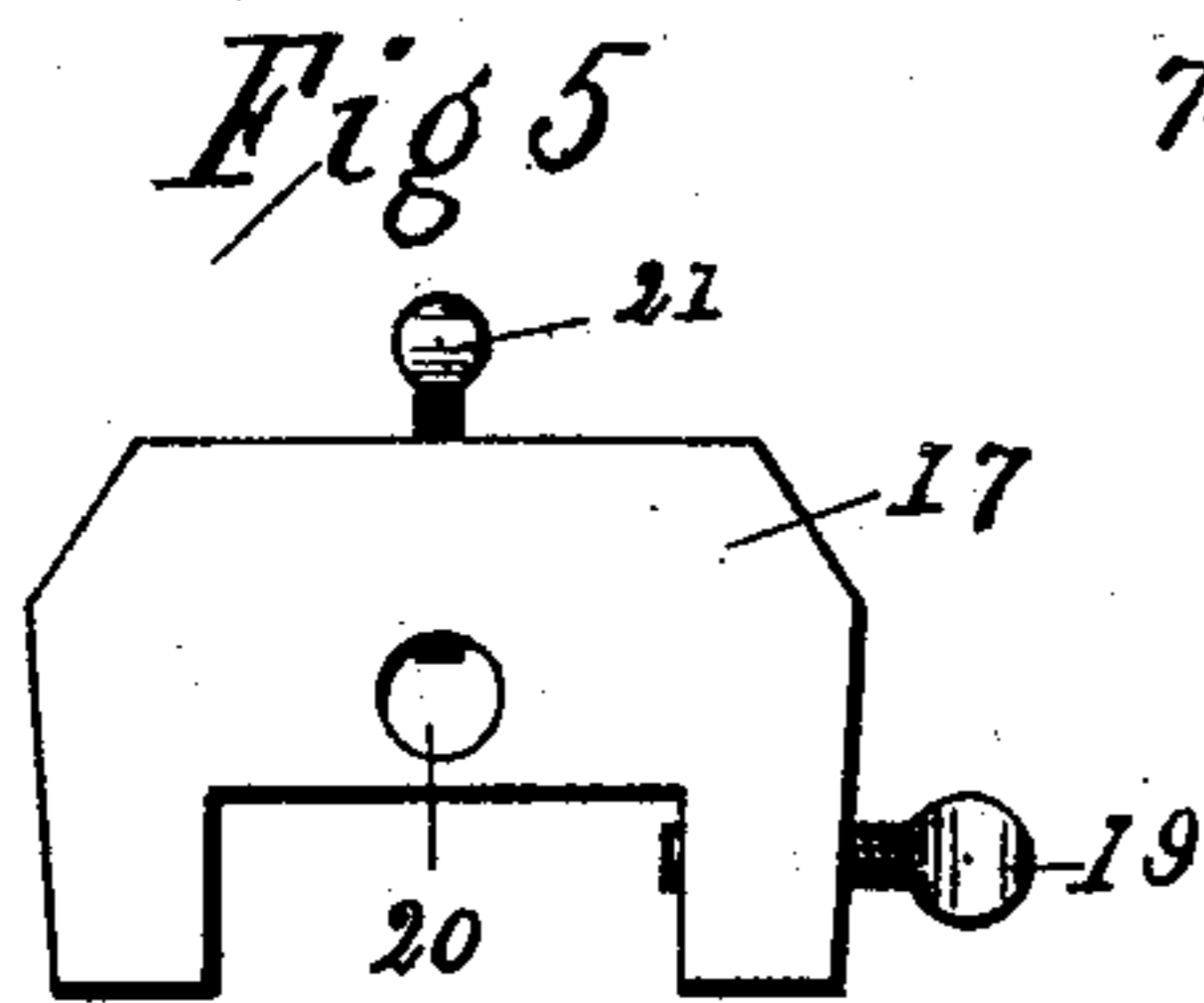
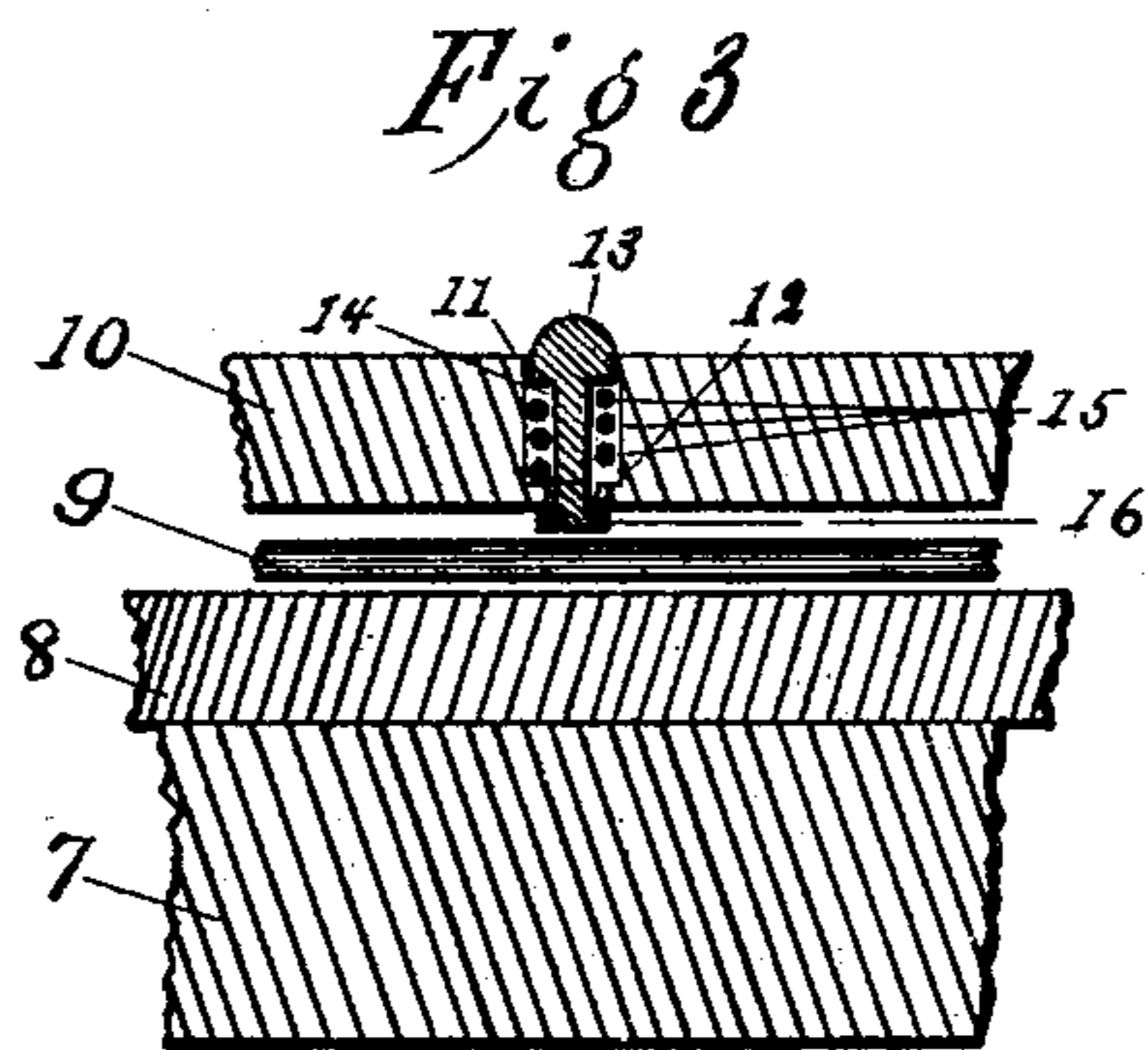
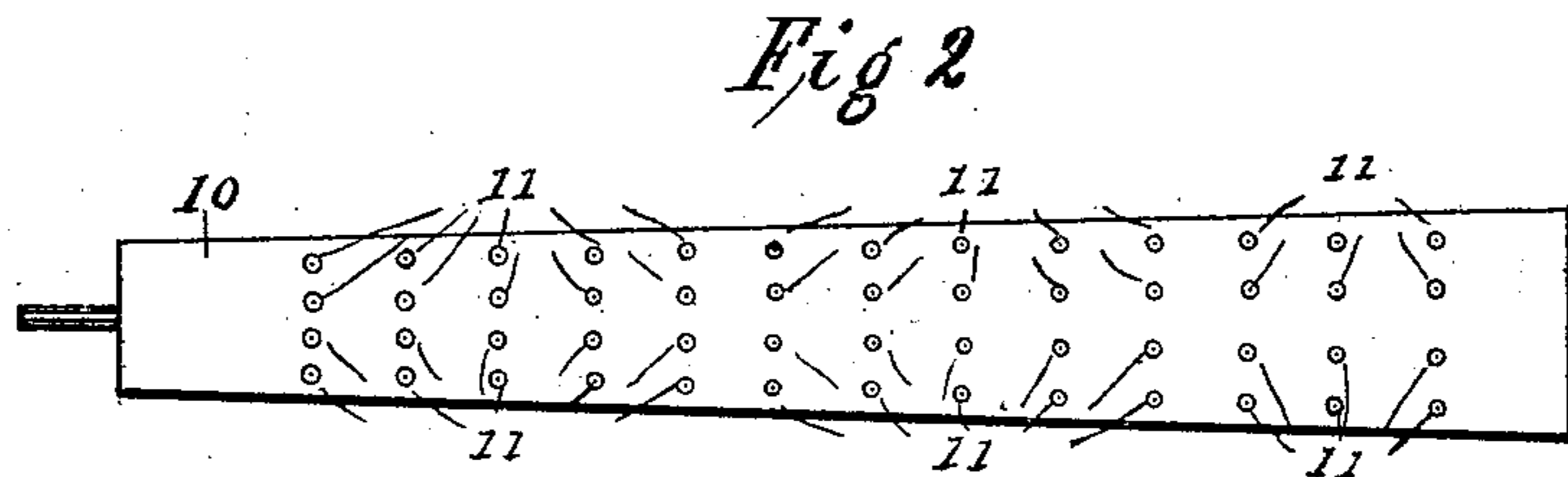
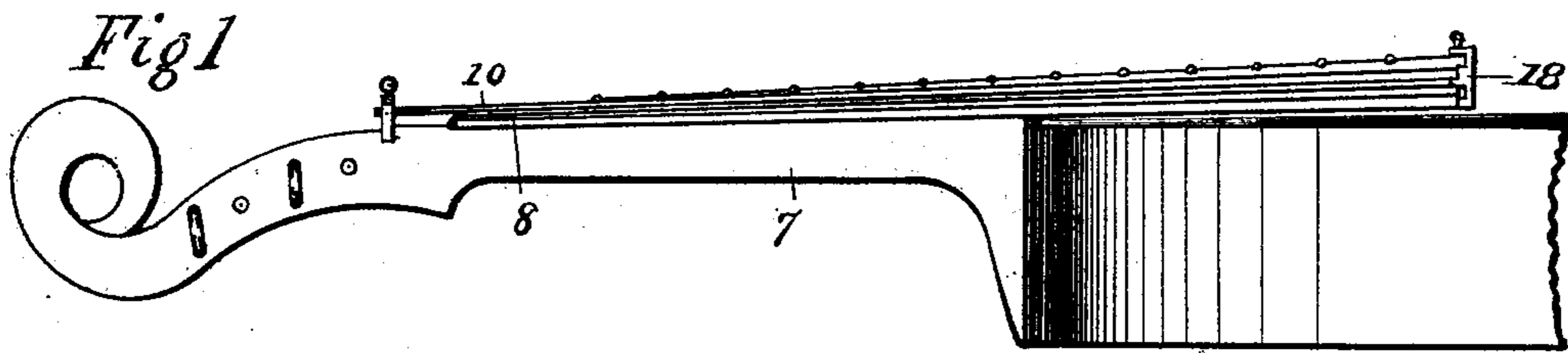


(No Model.)

E. GRUENBERG.
VIOLIN.

No. 416,726.

Patented Dec. 10, 1889.



Witnesses:
Chas L. Hibbard
G. D. Elger

Inventor:
Emil Gruenberg
per Wm K White
Attorney.

UNITED STATES PATENT OFFICE.

EMIL GRUENBERG, OF DAVENPORT, IOWA.

VIOLIN.

SPECIFICATION forming part of Letters Patent No. 416,726, dated December 10, 1889.

Application filed March 16, 1889. Serial No. 303,626. (No model.)

To all whom it may concern:

Be it known that I, EMIL GRUENBERG, a citizen of the United States, residing at Davenport, in the county of Scott and State of Iowa, have invented a new and useful Improvement in Violin and other Stringed Instruments, of which the following is a specification.

My invention relates to improvements in violin and other stringed musical instruments in which the musical tones or sounds obtained from the vibration of the strings are varied, thus becoming different tones by shortening or lengthening the vibratory portions of the strings; and the objects of my improvements are, first, to cause the strings to be pressed against the finger-board at various places thereon accurately, thus avoiding false tones or sounds in the same notes; second, to interpose between the finger of the operator and the string a substance to come in contact with such string in pressing it against the finger-board, thus avoiding injury to the operator's fingers, and, third, to provide means for moving the key-plate horizontally forward or backward over the finger-board for the purpose of adjusting the keys to any desired point over the strings. I attain these objects by the mechanism illustrated in the accompanying drawings, in which—

Figure 1 is the side view of a section of a violin, showing the finger-board complete. Fig. 2 is the top view of the key-plate. Fig. 3 is an enlarged longitudinal vertical section of the plate, key, string, finger-board, and neck of a violin. Fig. 4 is an enlarged view of a key with the spring detached. Fig. 5 is an enlarged end view of the neck-support for holding the key-plate, and Fig. 6 is an enlarged end view of the finger-board support for holding the rear end of the key-plate.

Similar letters and figures refer to similar parts throughout the several views.

7 is the neck of a violin. 8 is its finger-board; 9, one of the strings; and 10 is the key-plate. The key-plate 10 is constructed substantially of the same size and in the same general form as the finger-boards for violins, guitars, and other similar musical stringed instruments, and is provided with vertical perforations 11, which are in line with the

strings of the instrument. The lower part of these perforations is provided with an inner rim 12. A key having a button-top 13 and shank 14 is inserted in perforation 11, said shank passing within the interior of a coiled spring 15, placed within the perforation and supported upon the inner rim 12. The shank passes through the aperture in inner rim 12, and its bottom is secured to a base 16, which I prefer to be flat on its bottom surface, and it may be in the form of a wheel or square. I prefer to construct it of bone, vulcanized rubber, or celluloid; but other substances may be used which are sufficiently hard to bear upon the string and force such string against the finger-board. The key-plate 10 is suspended horizontally over the finger-board by means of the neck-support 17 and the finger-board support 18. The neck-support 17 is constructed so as to be clamped on the neck of the instrument and secured thereto by a set-screw 19, and has a perforation 20 through its upper part, to receive the front end of the key-plate 10, which is secured therein by a set-screw 21. The finger-board support 18 is provided with tines 22, 23, and 24, leaving the spaces 25 and 26 between such tines. The rear end of the finger-board support passes in the space 25 between tines 22 and 23, fitting closely, holding the finger-board support in a vertical position, and the rear end of the key-plate is passed into the space 26 between tines 23 and 24, and secured therein by the vertical set-screw 27. The neck-support and finger-board support are so arranged that the key-plate may be moved forward and backward over the finger-board to adjust the keys at a desired point to produce the required tones from the instrument when pressed against the finger-board. The perforation 20 of the neck-support and space 26 of the finger-board support permit the key-plate to be moved horizontally forward or backward a sufficient distance to adjust the keys over the strings, and by means of set-screw 21 such key-plate is held in position after such adjustment. The key-plate occupies a horizontal position over the finger-board, so that each of its keys will register with the string beneath it, and when pressed down by the finger of the operator will press the string firmly against the finger-board, and such keys

are arranged in the key-plate so each will hold the string against the finger-board at the precise place required to produce the required note or tone from such string. The
5 coiled spring 15 raises the key automatically when the operator's finger is removed, so that it will not be in contact with the string.

From the description given the mode of operation of my device may be readily understood without further statement.
10

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

In a stringed musical instrument of the class described and a key-plate provided with keys, the combination of the neck-support 17 15 and the finger-board support 18, for the purpose set forth, and substantially as described.

EMIL GRUENBERG.

Witnesses:

H. B. HARFORD,
H. CARPENTER.