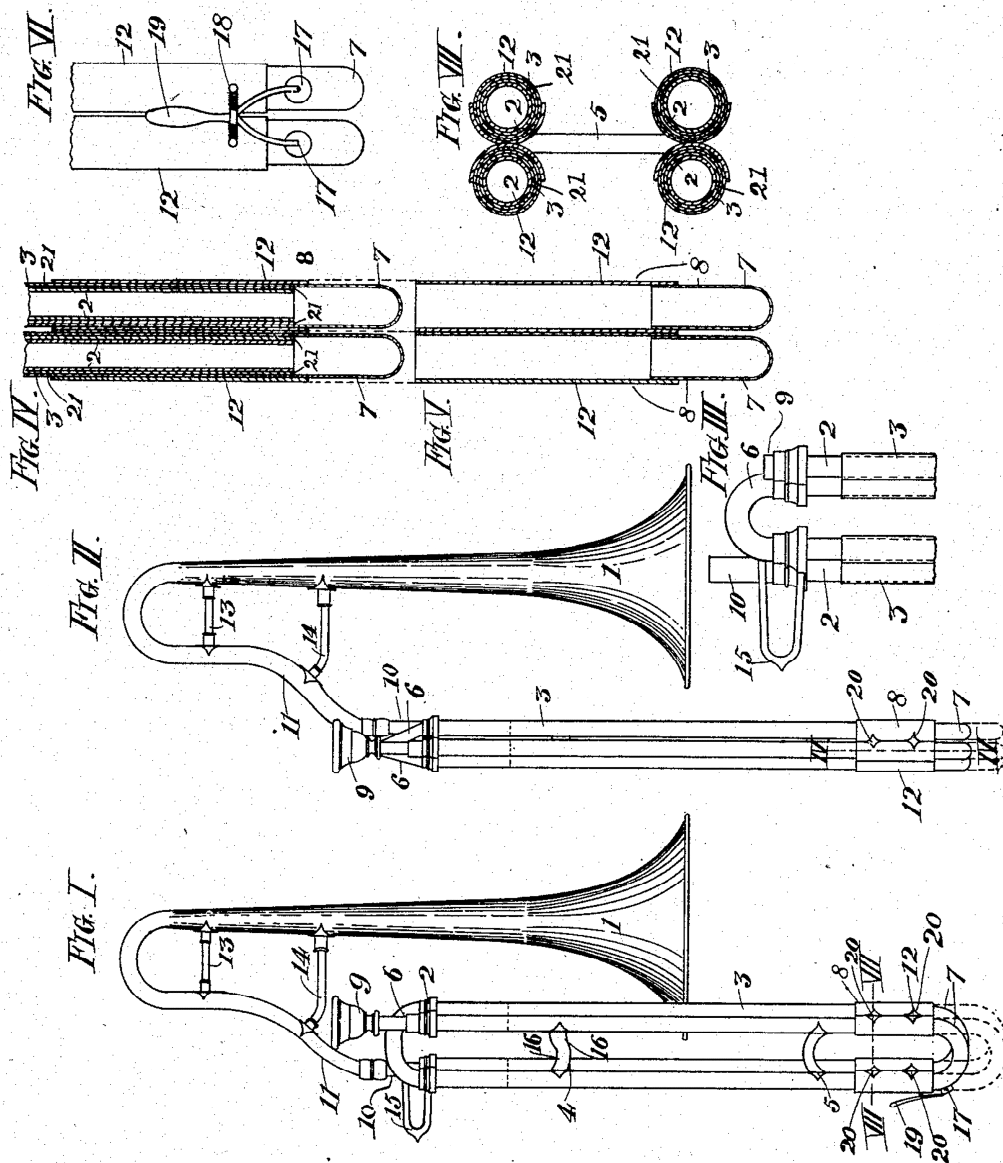


E. HARRISON.

TROMBONE.

(Application filed Jan. 17, 1898. Renewed Oct. 24, 1900.)

(No Model.)



Witnesses:  
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# UNITED STATES PATENT OFFICE.

EDGAR HARRISON, OF LOS ANGELES, CALIFORNIA, ASSIGNOR OF TWO-THIRDS  
TO EDWARD T. PIERCE AND JAMES T. FITZGERALD, OF SAME PLACE.

## TROMBONE.

SPECIFICATION forming part of Letters Patent No. 673,983, dated May 14, 1901.

Application filed January 17, 1898. Renewed October 24, 1900. Serial No. 34,180. (No model.)

*To all whom it may concern:*

Be it known that I, EDGAR HARRISON, a citizen of the United States, residing at Los Angeles, in the county of Los Angeles and State of California, have invented certain new and useful Improvements in Trombones, of which the following is a description, reference being had to the accompanying drawings, which form a part of this specification.

My invention relates to improvements on that form of trombone in which four fixed inner tubes and four sliding outer tubes are employed for increasing the range or scale of the instrument.

Figure I is a perspective view of the instrument as a whole. Fig. II is a side elevation of the same. Fig. III is an enlarged detail view showing the upper ends of the tubes, the inner tubes telescoping into the outer tubes or main slides. Fig. IV is a longitudinal section taken on line IV IV, Fig. II, showing the tuning-slides in position on the lower ends of the outer tubes or main slides. Fig. V is a longitudinal section of the tuning-slides detached from the outer tubes or main slides. Fig. VI is a detail view of the tuning-slides, showing drainage-valves. Fig. VII is a transverse section taken on line VII VII, Fig. I.

Referring to the drawings, 1 represents the bell of the instrument, 2 the fixed inner tubes, and 3 the outer tubes or main slides, which telescope over the inner tubes 2. The tubing of which the inner tubes and outer tubes or main slides are made up consists of four parallel double tubes. The outer tubes or main slides are connected by suitable braces 4 near their upper and lower ends, respectively. Two of the inner tubes are connected between the other two inner tubes with a return-bend 6 at their upper ends, and the outer tubes or main slides 3 are connected at their lower ends with two parallel return-bends 7. The return-bends 7 also form a part of the movable tuning-slides 8, said tuning-slides 8 telescoping over the lower ends of the outer tubes or main slides 3. To the upper end of one of the tubes 2, located on one side of the return-bend 6, the mouthpiece 9 is removably connected, another one of said tubes 2 having an extension 10, located on the other side of the

return-bend 6, which connects with the upwardly-extending curved member 11 of the bell 1, the inner tubes 2 and outer tubes or main slides 3 thus having a removable connection with the bell portion of the instrument. The return-bends 7 of the tuning-slides are of the same diameter as the outer tubes or main slides 3, the upper ends of said return-bends being secured permanently to sleeves or collars 12, which telescope over the lower ends of the outer tubes or main slides and which may be readily adjusted on the outer tubes or main slides for the purpose of changing the pitch of the instrument, the outer tubes or main slides thus being lengthened or shortened at the will of the operator to give the required tone to the instrument.

13 14 represent braces extending from the bell proper to the curved member 11.

15 represents a loop or handle connected with the tubing 2 between the return-bend 6 and the extension 10, the operator in playing the instrument passing his thumb and fingers over the brace 14 and into the handle 15 in order to steady and support the instrument. The brace 4, connecting the outer tubes or main slides 3, is provided with depressions 16, into which the fingers fit when operating the outer tubes or main slides in performing on the instrument. The tuning-slide 8 is provided with drainage-openings near its lower end in the return-bends 7, said openings being controlled by valves 17, held normally closed by a spring 18, said valves being connected with a key 19, journaled to the sleeves 12 on the drainage side of the tuning-slide, by which they may be opened when it is desired to drain the instrument. The tuning-slides consist of two members formed in U shape, which are connected to each other at 20, it being necessary that the tuning-slides should be moved as a whole in order not to destroy the proper operation or tone of the instrument.

21 represents ferrules located near the lower ends of the tubes 2 in order to prevent the escape of air between the tubes 2 and the main slides.

Having now fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

A trombone comprising four inner tubes, four sliding outer tubes telescoped onto the inner tubes, the tuning-slide, consisting of four sleeves telescoped onto the lower ends  
5 of the outer tubes, and two return-bends of the same diameter as the outer tubes, each having drainage-openings and secured to the sleeves, so as to move therewith, the four fer-  
10 rules located near the lower ends of the inner tubes to prevent the escape of air between the inner tubes and the outer tubes, the spring-  
valves journaled to the sleeves, having an operating-key and controlling the drainage-  
15 openings, the diagonally-arranged return-bend connecting the upper ends of the front

and rear inner tubes, the mouthpiece connected to the right-hand inner tube, the bell having a curvilinear tube whereby it is connected with the left-hand inner tube, the upper brace having finger depressions, the lower  
20 brace, the braces for the bell and curved member, and the handle connected with the inner tubes; substantially as described.

The foregoing specification signed at Los Angeles, California, this 7th day of January, 25  
1898.

EDGAR HARRISON.

In presence of—

JAS. E. KNIGHT,  
J. W. KEMP.