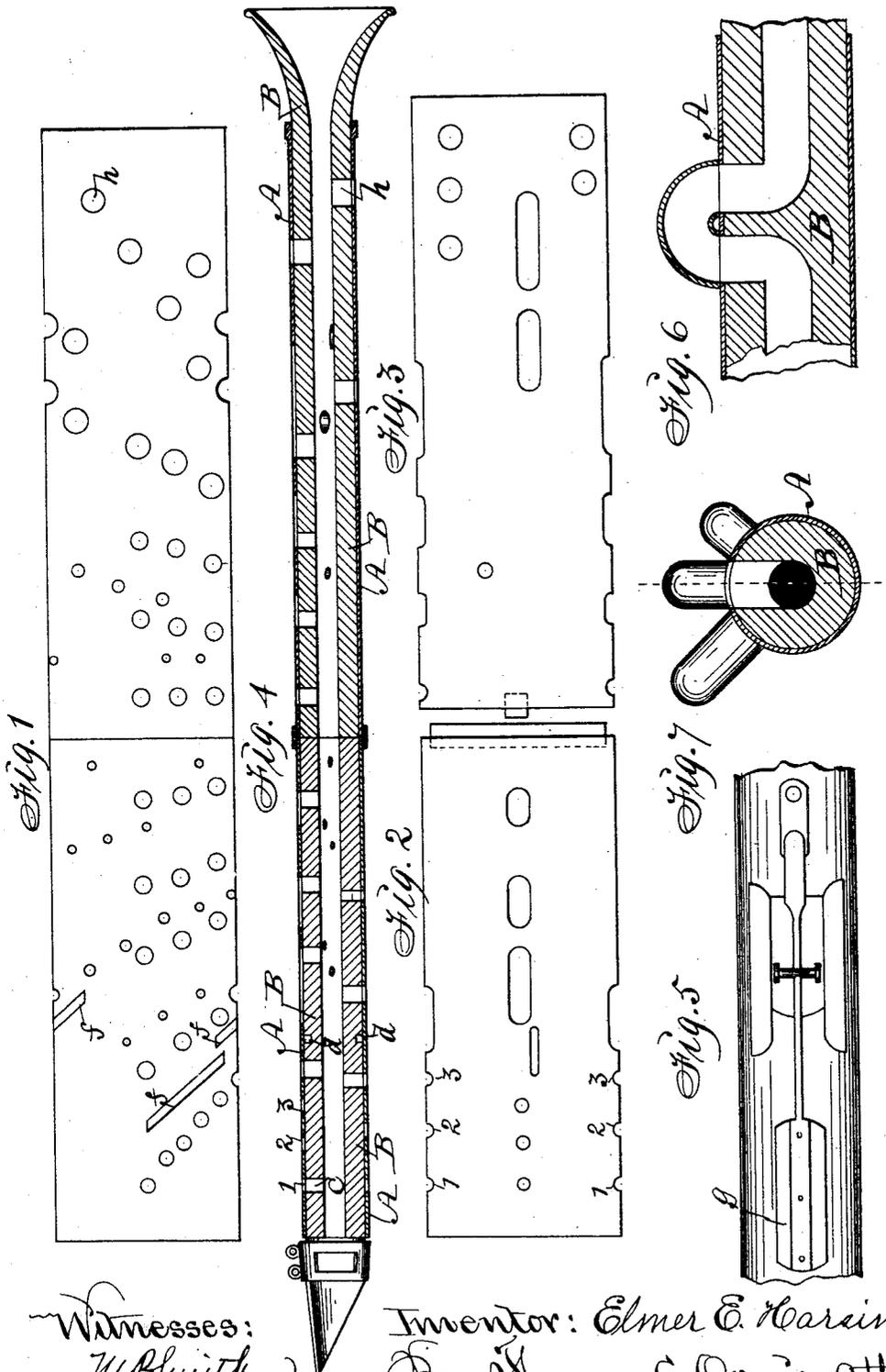


(No Model.)

E. E. HARSIN.
TRANSFORMABLE CLARINET.

No. 464,926.

Patented Dec. 8, 1891.



Witnesses:
W. B. Smith.
R. H. Orwig.

Inventor: Elmer E. Harsin,
By Thomas G. Orwig, atty.

UNITED STATES PATENT OFFICE.

ELMER E. HARSIN, OF OTTUMWA, ASSIGNOR OF ONE-HALF TO JOHN B. LLOYD, OF KIRKVILLE, IOWA.

TRANSFORMABLE CLARINET.

SPECIFICATION forming part of Letters Patent No. 464,926, dated December 8, 1891.

Application filed April 1, 1891. Serial No. 387,309. (No model.)

To all whom it may concern:

Be it known that I, ELMER E. HARSIN, a citizen of the United States of America, and a resident of Ottumwa, in the county of Wapello and State of Iowa, have invented a Transformable Clarinet, of which the following is a specification.

Clarinets as usually constructed can only be used in one key. If a "clarinetist" were required to play three pieces, written, respectively, for the clarinet in the key of A \sharp , B \flat , and C \sharp , he would need three instruments of common form arranged for the three different keys mentioned.

The object of my invention is to provide a clarinet that may be adjusted to the keys of A \sharp , B \flat , and C \sharp ; and my invention consists in the construction, combination, and arrangement of tubes and keys, and means for lengthening the air-passage, as hereinafter described, pointed out in the claims, and illustrated in the accompanying drawings, in which—

Figure 1 is a plan view of the interior perforated tube. Figs. 2 and 3 are plan views of the mating parts of the exterior tube. Fig. 4 is a longitudinal sectional view showing the tubes combined. Fig. 5 is an enlarged detail view showing an elongated valve-cover in position, as required, to operate when the tubes are adjusted by longitudinal movement relative to each other in the several transformations contemplated. Fig. 6 is a longitudinal section, and Fig. 7, a transverse section, showing the interior and exterior tubes combined, and curved tubes of different lengths fixed to the exterior tube to lengthen and shorten the air-passage by the rotary motion of one of the tubes and without lengthening and shortening the complete instrument in making transformations.

A represents the exterior tube of a clarinet that is provided with three full sets of valve-openings, which are adjusted, respectively, to the keys of A \sharp , B \flat , and C \sharp . There are three series of valve-openings for each key.

B is the interior tube, and has a bell-shaped end, as shown in Fig. 4, and is provided with three full sets of valve-openings, which coincide with those in the exterior tube A. The front end portion of the tube A has a perforation *c*, and the interior tube B has a series of openings 1 2 3, that can be successively brought into coinciding position with the perforation *c* by the rotary and also longitudinal movement of the exterior tube A by means of a stud *d*, fixed thereto, to traverse a spiral groove *f* in the interior tube B. The tube A is thus adapted to be placed in three positions and is provided with three full sets of valve-openings.

When the instrument is extended its full length, it will be adjusted to the key of C \sharp , and the valves in the tube B, corresponding to said key, will register with the openings in the tube A, and the other two sets of openings in the tube B will be closed by the solid portion of the tube A. The exterior tube A has elongated openings, and elongated valves on keys pivoted thereto to cover said openings, so that whenever any one of the openings in the interior tube B is brought into position with the elongated openings in the exterior tube it can be opened and closed by means of the elongated cover and key, as required, to sound different notes.

g (shown in Fig. 5) is an elongated cover, such as are required to cover different openings in the interior tube as they are placed in coinciding positions with an opening in the exterior tube.

h is an opening at the rear end portion of the tube A, that is brought into a coinciding position with a corresponding opening in the tube B for the clarinet only.

I claim as my invention—

1. A transformable clarinet adapted to be adjusted to the keys of A \sharp , B \flat , and C \sharp , comprising an exterior perforated tube and valves and keys attached thereto to open and close the perforations therein, and a concentric interior tube having numbers of perforations that can be adjusted relative to the perforations in the exterior tube by the movement of one tube relative to the other tube, means for imparting motion to one of the concentric tubes, a mouth-piece at one end and a bell at the other end.

2. The combination of the tube A, having a plurality of valve-openings adapted for the key of A \sharp , B \flat , and C \sharp , and keys adapted to open and close said valve-openings pivoted

thereto; with the tube B, having a plurality of
 corresponding valve-openings that can all be
 brought into coinciding position with the
 valve-openings in the tube A by moving one
 5 tube relative to the other, for the purposes
 stated.

3. In a clarinet, the combination of a tube
 having valve-openings and a stud on its in-
 terior, and a concentric tube within having a
 10 spiral groove, into which the said stud pro-
 jects, and a plurality of valve-openings adapt-
 ed to be brought into coinciding positions
 with the valve-openings in the exterior tube,
 for the purposes stated.

4. In a clarinet, a tube having valve-open- 15
 ings, a concentric interior tube having a plu-
 rality of valve-openings revolubly connected
 with the exterior tube, and means for length-
 ening and shortening the spaces of the air- 20
 passage between the mouth-piece at one end
 of the instrument and the valve-openings in
 the exterior tube, for the purpose of trans-
 forming the instrument and adapting it to be
 used in the manner set forth.

ELMER E. HARSIN.

Witnesses:

GEO. M. DAVIDSON,
 JNO. P. LLOYD.