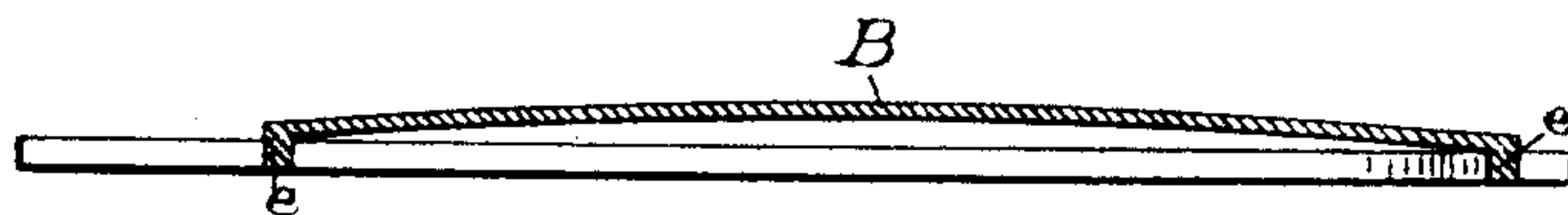
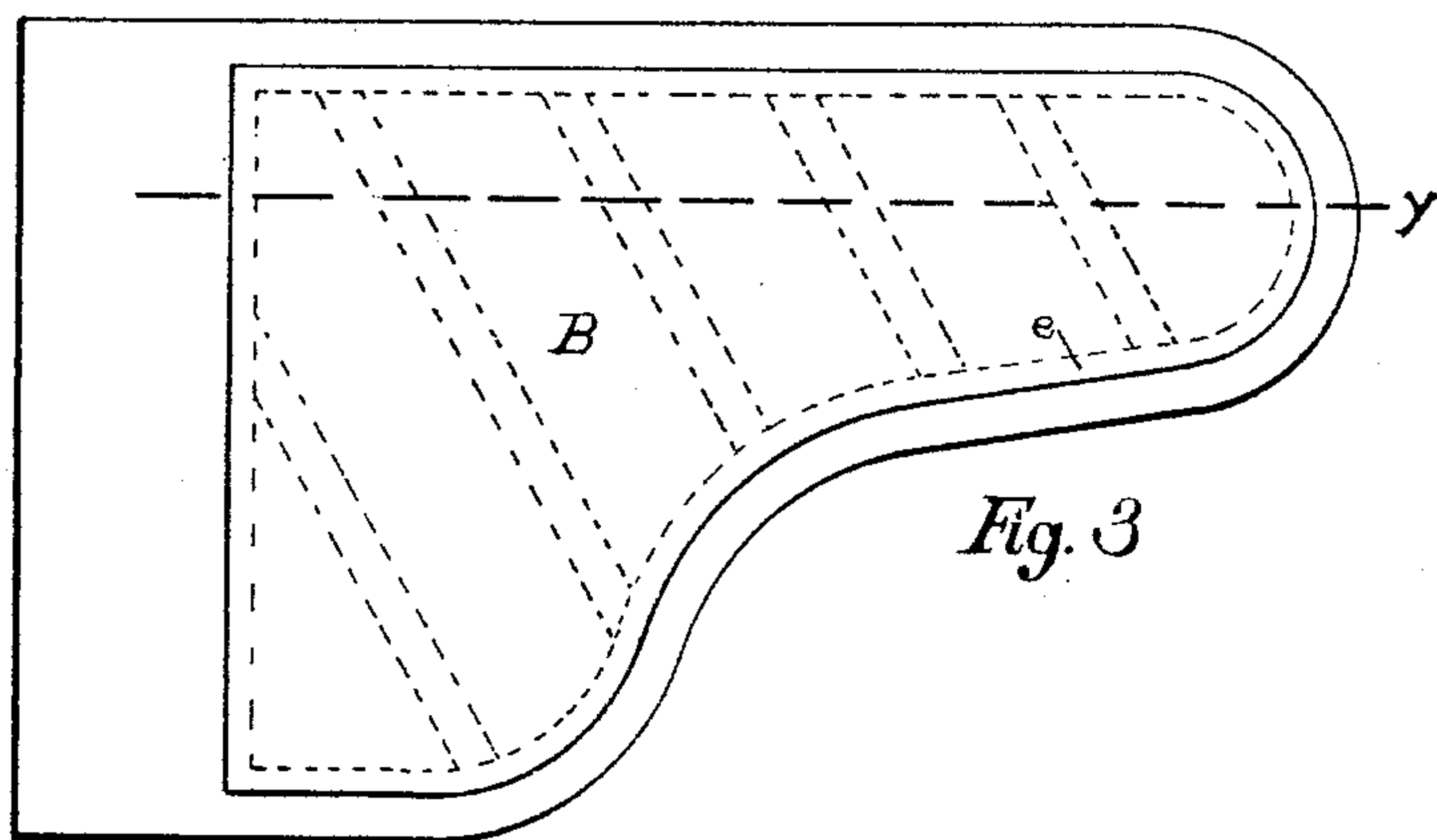
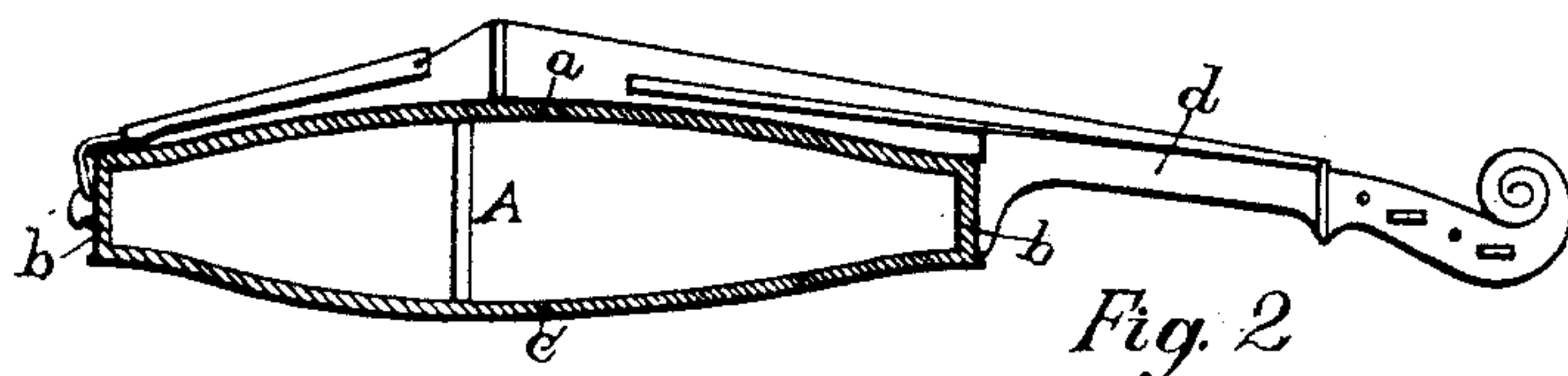
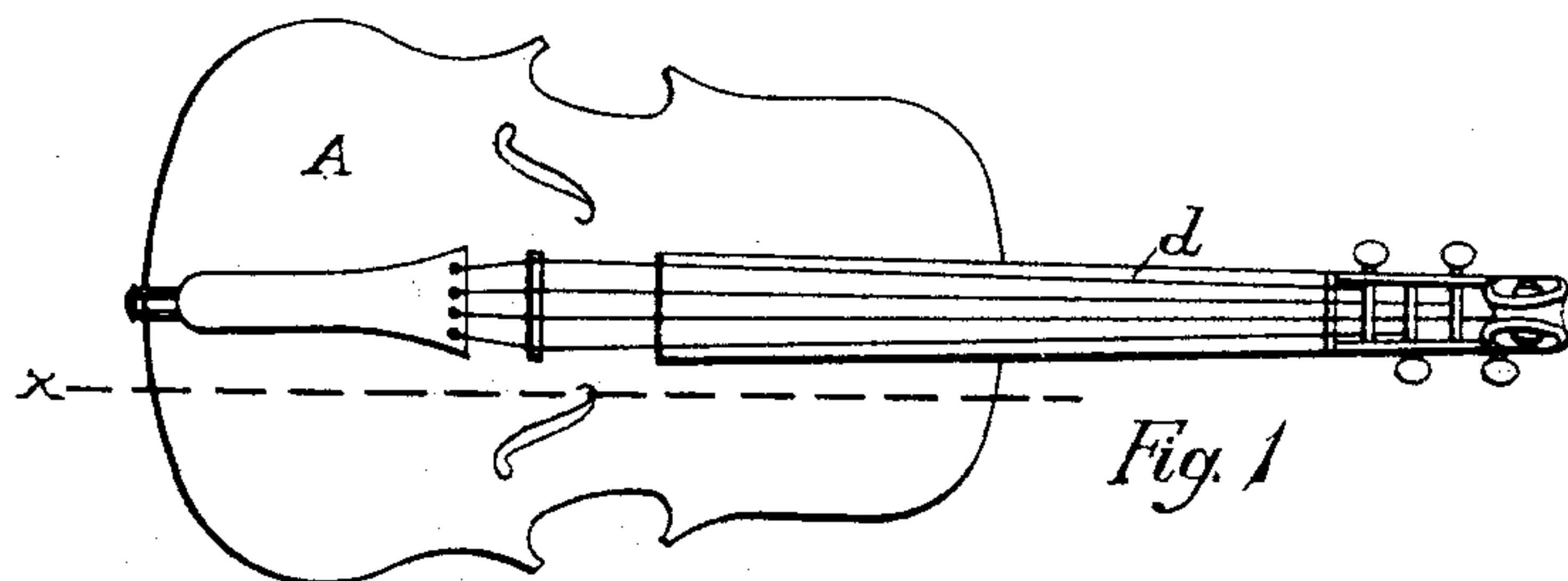


(No Model.)

A. SPRINGER.  
SOUND BOARD FOR MUSICAL INSTRUMENTS.

No. 444,770.

Patented Jan. 13, 1891.



Attest

Henry Appleton

*Wm. G. Hosmer*

Fig. 4

Inventor

Alfred Springer

by *R. M. Hosmer*  
Attorney

# UNITED STATES PATENT OFFICE.

ALFRED SPRINGER, OF CINCINNATI, OHIO.

## SOUND-BOARD FOR MUSICAL INSTRUMENTS.

SPECIFICATION forming part of Letters Patent No. 444,770, dated January 13, 1891.

Application filed April 26, 1890. Serial No. 349,669. (No model.)

*To all whom it may concern:*

Be it known that I, ALFRED SPRINGER, a citizen of the United States, residing at Cincinnati, in the county of Hamilton and State of Ohio, have invented new and useful Improvements in Sound-Boards of Musical Instruments, of which the following is a specification.

My invention relates to metallic sound-boards of musical instruments of the class in which a sound-board is employed to re-enforce the initial tone produced by a vibrating string or other sound-producing body—such, for example, as instruments of the violin class. So far as attempts have been made to produce such structures of metal the analogy of wood instruments has been followed in fitting together separate pieces and uniting them by rivets or solder. The general failure to produce satisfactory sound-boards of metal has been attributed to the imperfect tone-producing quality of the metals employed, a defect which I have remedied by the employment of aluminum, as set forth in another application pending herewith; but it is also true that the resonant quality and power of such sound-boards, as, indeed, of all sound-boards, depends also upon the perfection of the union established between the several parts that constitute the sound board or boards and its or their supports or the sound-body.

My invention consists in a sound-board or sound-body formed complete as a homogeneous structure without contact-joints held together by solder or other extraneous means.

My invention is illustrated in the accompanying drawings, in which—

Figure 1 is a face view of a violin constructed according to my improvements; Fig. 2, a longitudinal section of the same on the line *x* of Fig. 1; Fig. 3, a plan view of a piano sound-board constructed according to my improvement, and Fig. 4 a longitudinal section of the same on the line *y* of Fig. 3.

In the case of the violin A (shown in Figs. 1 and 2) the top or face *a*, side *b*, and bottom *c* are formed of sheet metal of suitable thickness hammered or pressed to the proper contour and suitably fitted, and the contact-

edges then united together by the process of electric welding, by which the contact-surfaces are fused together, thus bringing the whole structure into homogeneity. The neck *d* and other fixed parts may also be formed of metal and united in a similar manner. In the case of the piano sound-board or sound-body B it is united to its marginal support *e* (preferably a continuous bar of metal formed to the outer contour of the sound-board) in a similar manner, or, when two sound boards or bodies are employed, making a box-structure corresponding with the violin-body, both are united to the marginal support, as in the case of the violin. The advantages of such a homogeneous structure are obvious, inasmuch as the resonant capacity of the sound-board largely depends upon the accurate fitting of the board upon its supports, whereby the strains due to the string-tension are uniformly distributed and the vibrations equalized and properly transmitted. A riveted structure necessarily leaves spaces between the rivets without security, while a soldered or brazed joint, even if perfectly secure, necessitates a filling in the joining angles with extraneous metal, whereby the clean-cut integrity of the contact-edges is impaired. My improvement is applicable, moreover, where the ordinary processes of soldering are not—viz., to steel and aluminum, and especially to the latter metal, which is best adapted of all metals to the construction of sound-boards, owing to its singularly perfect vibrating capacity in the production of true musical tones free from the higher upper partials. As the process of electro-welding involves heating only at the line of contact, due to the electrical resistance, which instantly ceases when the edges unite by fusion, the temper of the elastic metal is perfectly preserved, whereas in soldering, and particularly in brazing, the temper is impaired or destroyed.

I claim as my invention and desire to secure by Letters Patent—

1. A metallic sound-board for musical instruments, embodying a vibrating board or boards united integrally with the marginal or other supports by fusion in place, substantially as set forth.



2. A sounding board or body for re-enforcing the tone of a string or other initial tone-producing element, consisting of sheet-metal plates welded to the marginal or other supports into a homogeneous structure without extraneous fastening, substantially as set forth.

3. In a musical stringed instrument, a metallic sounding box or body structurally ho-

mogeneous and without contact-joints, substantially as set forth.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

ALFRED SPRINGER.

Witnesses:

L. M. HOSEA,  
ELLA HOSEA.