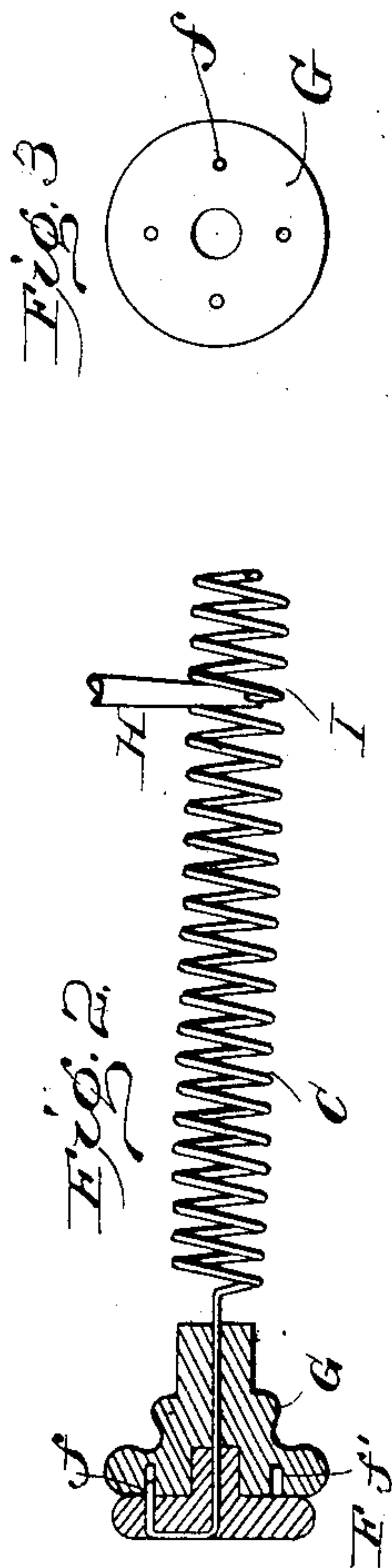
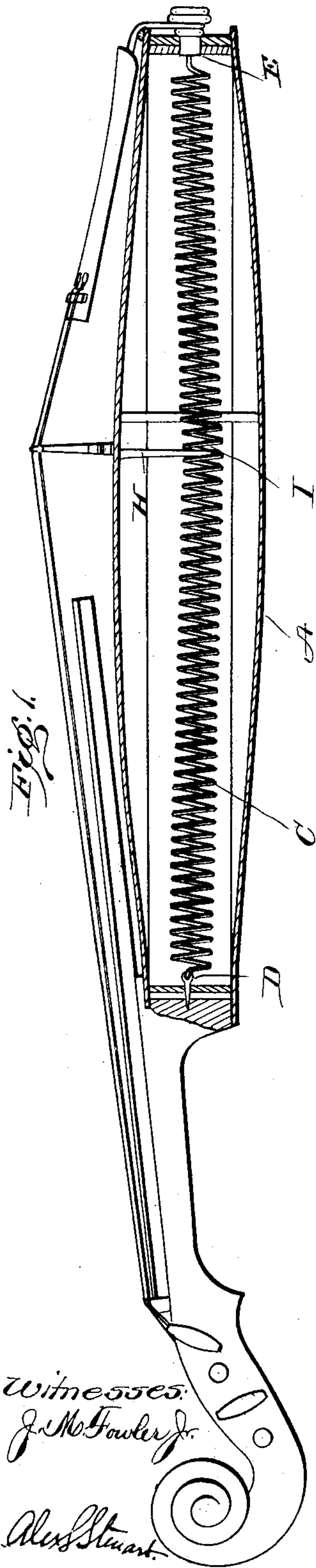


No. 685,920.

Patented Nov. 5, 1901.

A. HECK.  
MUSICAL INSTRUMENT.  
(Application filed Mar. 14, 1901.)

(No Model.)





# UNITED STATES PATENT OFFICE.

AUGUST HECK, OF WASHINGTON, DISTRICT OF COLUMBIA, ASSIGNOR TO  
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## MUSICAL INSTRUMENT.

SPECIFICATION forming part of Letters Patent No. 685,920, dated November 5, 1901.

Application filed March 14, 1901. Serial No. 51,143. (No model.)

*To all whom it may concern:*

Be it known that I, AUGUST HECK, a citizen of the United States, residing at Washington, District of Columbia, have invented  
5 certain new and useful Improvements in Musical Instruments; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming a part  
10 of this specification, and to the letters of reference marked thereon.

This invention relates to improvements in musical instruments, and particularly instruments employing strings under tension which  
15 are set into vibration to produce the tones desired and wherein a resonant body or sounding-board is usually employed to amplify, give volume, prolong, and modify the tones in the well-understood manner.

20 The invention has for its objects to provide a means whereby the tone may be amplified or given greater volume, prolonged, or modified without interference to a more marked degree than can be attained with the use of  
25 a sounding-board alone or, so far as I am aware, with any combination of sounding-board and strings heretofore suggested for this purpose.

30 The invention is capable of general application to any type of "stringed" instrument, and it is immaterial whether a sounding-board be employed or whether the sounding-board be a simple resonant board or be in the form of an instrument-body—as, for instance, in  
35 violins, mandolins, and instruments of like character.

40 The invention consists, primarily, in a stringed musical instrument having a spiral of material capable of responding in sympathetic vibrations to the vibrations of the strings of the instrument, such spiral being preferably stretched and held in proper relation to the strings, sounding-board, or body of the instrument to give the maximum resonant effect.

45 The invention further consists in certain novel details of construction and combinations and arrangements of parts, all as will be now described, and pointed out particularly in the appended claims.

Referring to the accompanying drawings,

Figure 1 is a longitudinal section through a violin, showing the application of the present invention thereto. Fig. 2 is a detail elevation, on an enlarged scale, showing the spiral, 55 post, and manner of adjusting the tension of the spiral. Fig. 3 is an elevation of the button at the tail of the violin. Fig. 4 is a longitudinal section through a mandolin, showing the application of the invention thereto. 60

Like letters of reference in the several figures indicate the same parts.

For illustrative purposes two of the most universally-used instruments—namely, a violin and a mandolin—have been adopted, in- 65 asmuch as from the application of the invention to these types of instrument its application to any other type will be readily understood by those skilled in the art of instrument making or repair. 70

The violin A and the mandolin B are of the usual or any preferred construction, and therefore no specific description of them is necessary.

The letter C indicates a resonant device 75 made elastic axially by transverse deflection or bending, preferably by being bent into the form of a spiral. It is preferably tempered metal, such as steel or piano wire, and is preferably located below the top sounding- 80 board or within the resonant body. One end of this device, which may conveniently be termed a "resonator," is attached at the upper end of the body of the instrument, as at D, and the opposite end at the lower or 85 tail end of the instrument, as at E, one of the ends, preferably the lower end, usually having a means for adjusting the tension of the resonator. The preferred adjustment consists of a rotary button F, if desired, socketed in the usual tail-button G and adapted for attachment to one end of the resonator, whereby by turning one of its ends it may be 90 twisted to a greater or less degree and its tension and resonant effect correspondingly varied. To hold the button F in adjusted position, it may be provided with a projec- 95 tion or lock  $f$ , formed, if desired, by the end of the wire forming the resonator and adapted to seat in a recess  $f'$  in the button G 100 or other support. To make the adjustment, the button F is drawn out, turned to give



the resonator the desired tension, and then pushed or allowed to move back to its seat, with the pin *f* in the proper recess.

In some instances, and particularly in violins, &c., it is preferable in order to secure the best results that a post be interposed between some resonant portion, such as the top of the instrument-body, and the resonator. This post is indicated by the letter H in Figs. 1 and 2, and it preferably deflects the resonator somewhat. It should make such contact with the resonator as to be affected by vibrations longitudinally or otherwise of the resonator, for which purpose it may be conveniently made slightly tapering and be passed down between adjacent coils or bends of the resonator, as shown at I.

A resonator such as described it is found responds to all tones within the range of the instrument, and by its application to cheap or low-grade instruments or instruments having little inherent resonance it is found that the resonance is increased to such degree that the musical effects compare favorably with even the highest-grade instruments.

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

1. In a stringed musical instrument, the combination with the strings supported under tension and a resonant board in proximity to said strings, of a resonator supported under tension within the body of the instru-

ment and formed of wire of resonant material made longitudinally elastic by transverse bends. 35

2. In a stringed musical instrument the combination with the strings supported under tension and a resonant board in proximity to said strings, of a resonator supported under tension on the opposite side of said board and formed by a resonant spiral of metallic wire, as and for the purpose specified. 40

3. In a stringed musical instrument, the combination with the strings and body for supporting the same embodying a resonant portion, of a resonator formed by a spiral of resonant material held under tension and a post having a portion extending between adjacent coils of the spiral and contacting with the resonant portion of the body; substantially as described. 50

4. In a stringed musical instrument, the combination with a longitudinally-elastic resonator adapted to be tensioned by torsion, of a non-rotary retainer for one end of said resonator a rotary retainer for the opposite end of the resonator and a lock to hold the rotary retainer in its position of angular adjustment to maintain the tension of the resonator; substantially as described. 60

AUGUST HECK.

Witnesses:

JULIUS SCHULZ,  
A. F. PRICE.