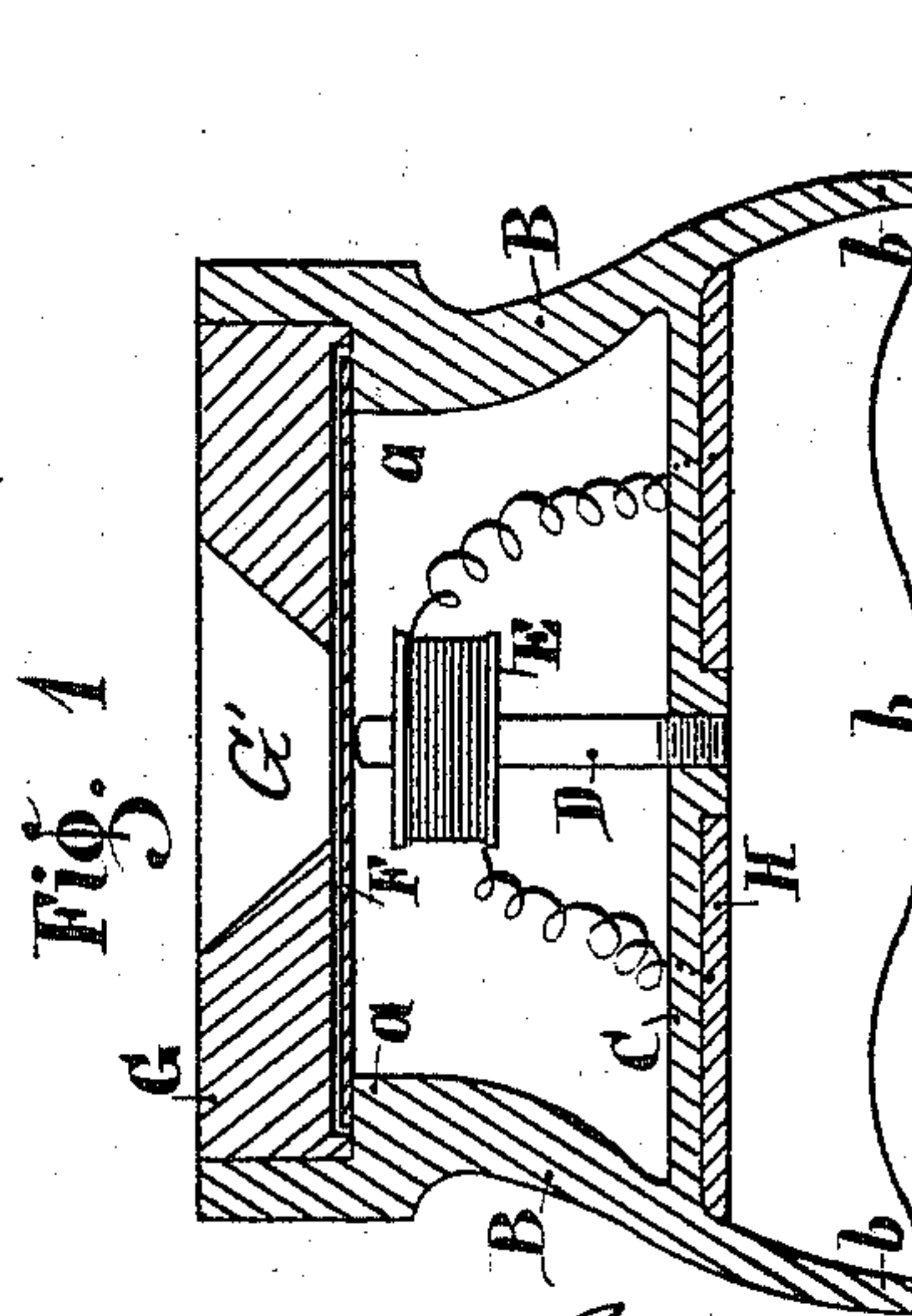
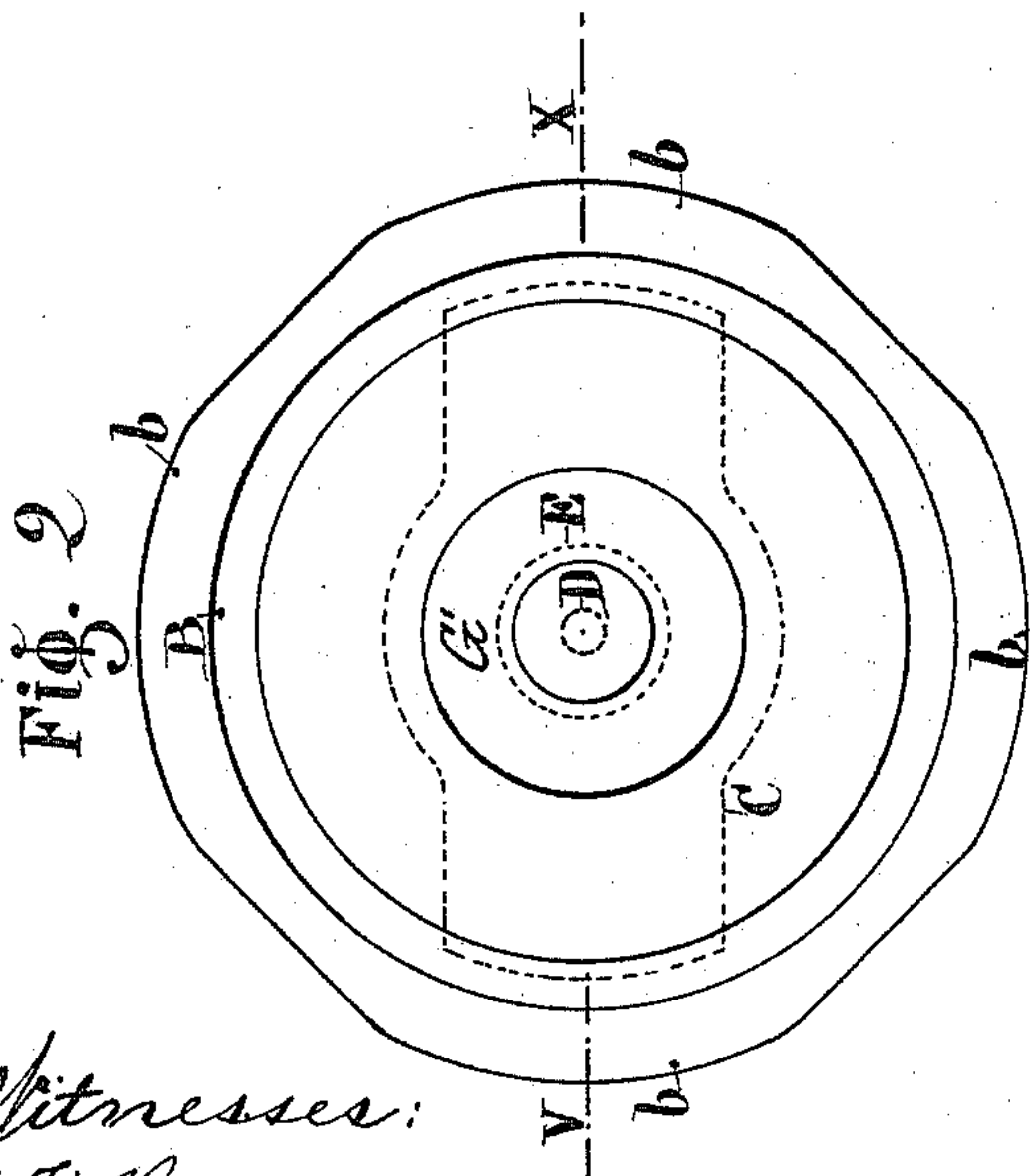
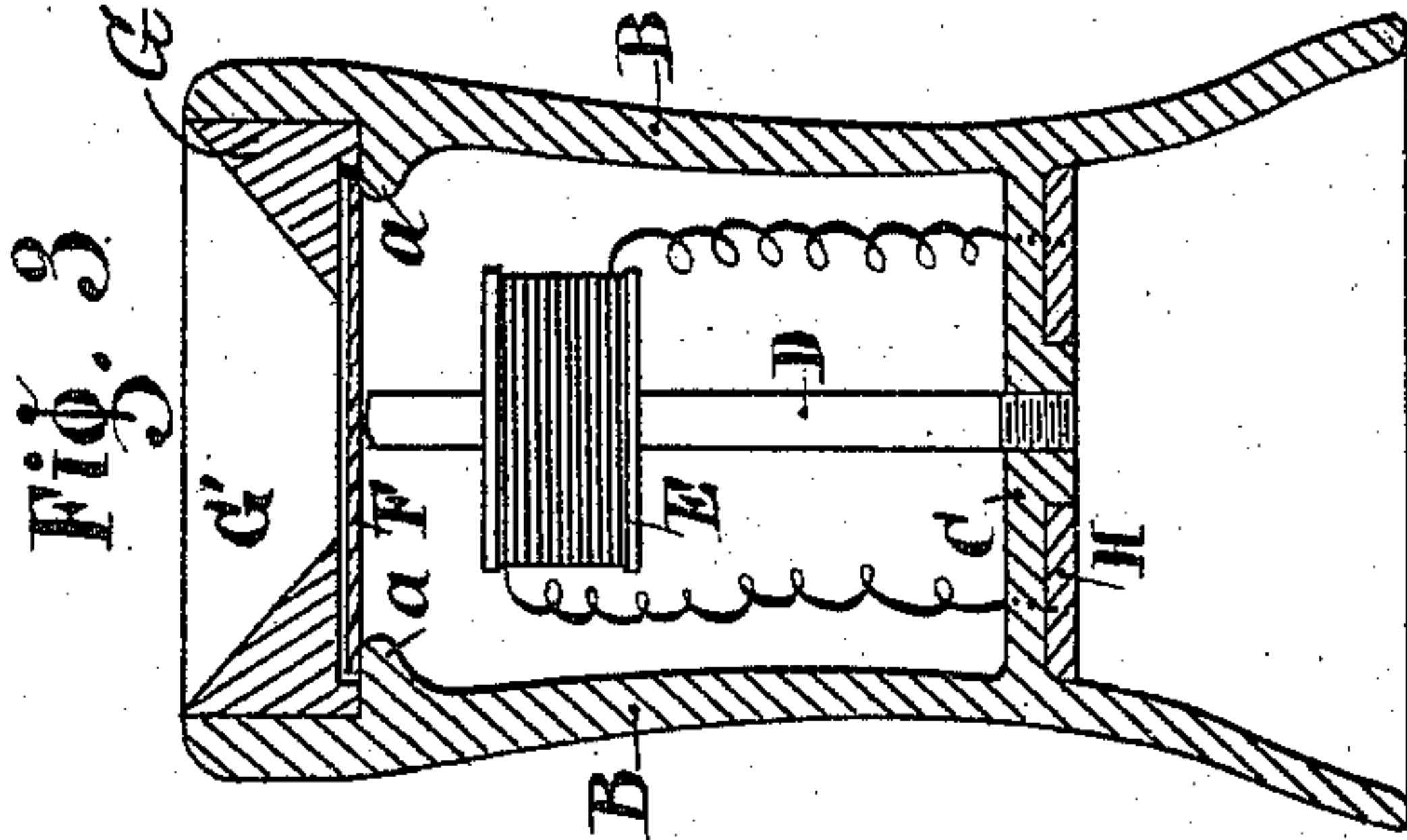
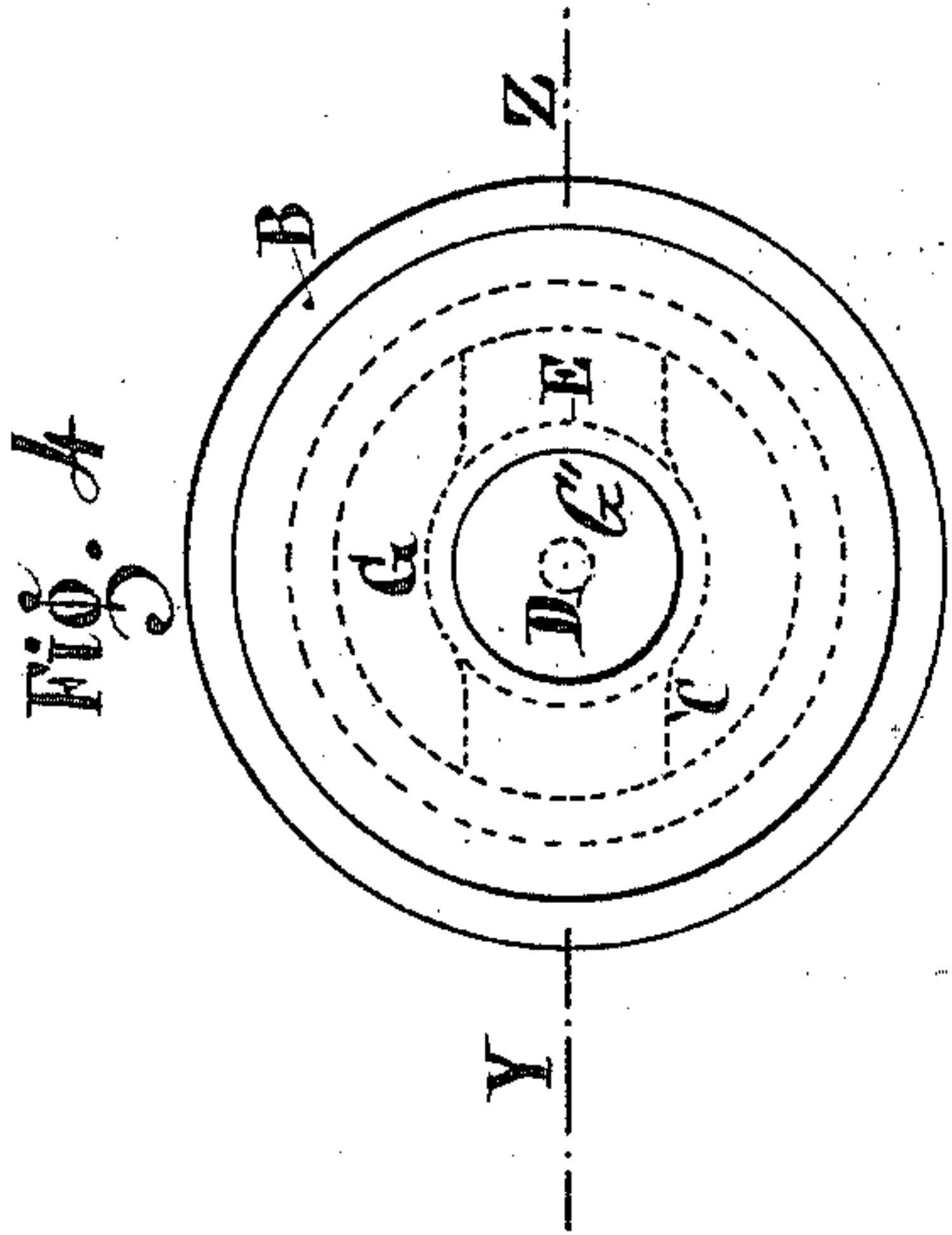


(No Model.)

F. L. GOULVIN.  
RESONATOR FOR PIANOS.

No. 572,981.

Patented Dec. 15, 1896.



Witnesses:  
H. R. Boulter  
C. H. Northrup

Inventor:  
Francis L. Goulvin.  
By H. R. Boulter, Attorney.



# UNITED STATES PATENT OFFICE.

FRANCOIS LOUIS GOULVIN, OF VALENCE, FRANCE.

## RESONATOR FOR PIANOS.

SPECIFICATION forming part of Letters Patent No. 572,981, dated December 15, 1896.

Application filed April 30, 1894. Serial No. 509,545. (No model.)

*To all whom it may concern:*

Be it known that I, FRANCOIS LOUIS GOULVIN, a citizen of the French Republic, residing at Valence, France, have invented certain new and useful Improvements in Resonators for Pianos, of which the following is a full, clear, and exact description.

My invention has relation to devices for increasing the sonorousness of sounds, the same being particularly applicable for the purpose of increasing the sonorousness of sounds produced by pianos, said devices being adapted to serve as receivers to convey said sounds to the ears of persons at a distance from the piano, in the manner of a telephone; and my invention has for its object to produce a simple and inexpensive device for attaining the described objects; and my invention consists in the novel construction, arrangement, and combination of parts, as hereinafter fully described, illustrated in the drawings, and pointed out in the appended claim.

In the drawings, Figure 1 is a vertical sectional view on line V X of Fig. 2. Fig. 2 is a plan view of the device. Fig. 3 is a vertical sectional view, on line Y Z of Fig. 4, of the receiver; and Fig. 4 is a plan view of said receiver.

The resonator or (when slightly modified) the receiver is composed of a metallic inclosing casing B, formed at its lower edge into four supporting-feet *b* and provided at its upper part in its interior with an annular offset or shoulder *a*. Integral with the casing is a transverse cross or bridge piece C, to the central part of which is screwed a cylindrical rod D, of magnetic steel. This rod supports an electric bobbin E, wound with insulated copper wire. A thin wooden bridge-piece H is arranged beneath the bridge-piece C. The bridge-piece serves merely as a brace and a support or guide for the wires which pass therethrough.

Upon the shoulder *a* rests a circular vibratory plate or diaphragm F, of sheet-iron, over which is arranged a wooden disk G, supported upon the shoulder *a* out of contact with the diaphragm.

The upper end of the rod D is in contact with the under side of the diaphragm, and the disk G is provided with a central tapering or conical orifice G'.

For the purpose of adapting the sounds of the piano to be readily heard at a distance or by persons who may be somewhat deaf the device is used as a receiver. The casing is made somewhat lengthened to enable it to be the more readily held in the hand for application to the ear, as seen in Figs. 3 and 4, and in this case the copper wire of the resonator would be extended and connected to binding-posts to which two wires would also be connected, leading off to the receiver held in the hand, which receiver would also have binding-posts to which said two wires would be connected, and to which binding-posts would also be connected the copper wires wound on the bobbin of said receiver. If desired, the orifice G' may be made more flaring than that seen in Figs. 1 and 2.

When four of the described devices are placed beneath the rollers of a piano, it will be found that the sound-waves will be collected through the orifice G' and the consequent vibrations of the diaphragm F transmitted through the connecting-wires to the diaphragm of the receiver similarly to the ordinary telephone.

What I claim is—

The herein-described device consisting in the combination with the casing provided with supporting-feet, and having an offset *a*, of the bridge-piece C integral with the casing, the rod D screwed to said bridge-piece, a bobbin E upon said rod, the bridge-piece H, the diaphragm F resting upon the shoulder or offset, *a*, the wooden disk G arranged over the diaphragm and provided with an orifice G', all as and for the purpose specified.

In testimony that I claim the foregoing I have hereunto set my hand this 5th day of February, 1894.

FRANCOIS LOUIS GOULVIN.

Witnesses:

VICTOR MATRAY,  
FREDERIC MATRAY.