

(No Model.)

I. BASSETT.
ORGAN TREMOLO.

No. 478,552.

Patented July 12, 1892.

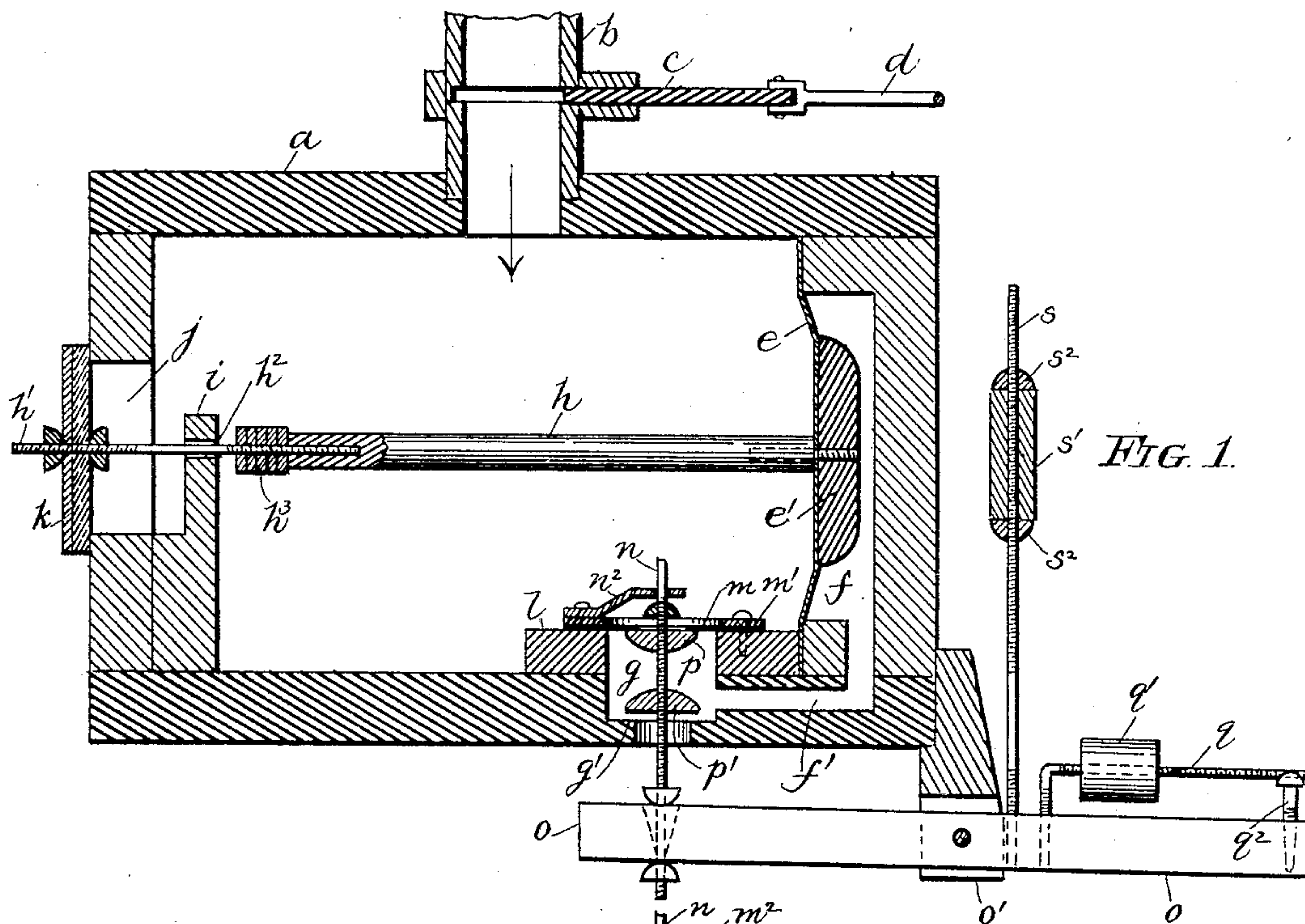


FIG. 1.

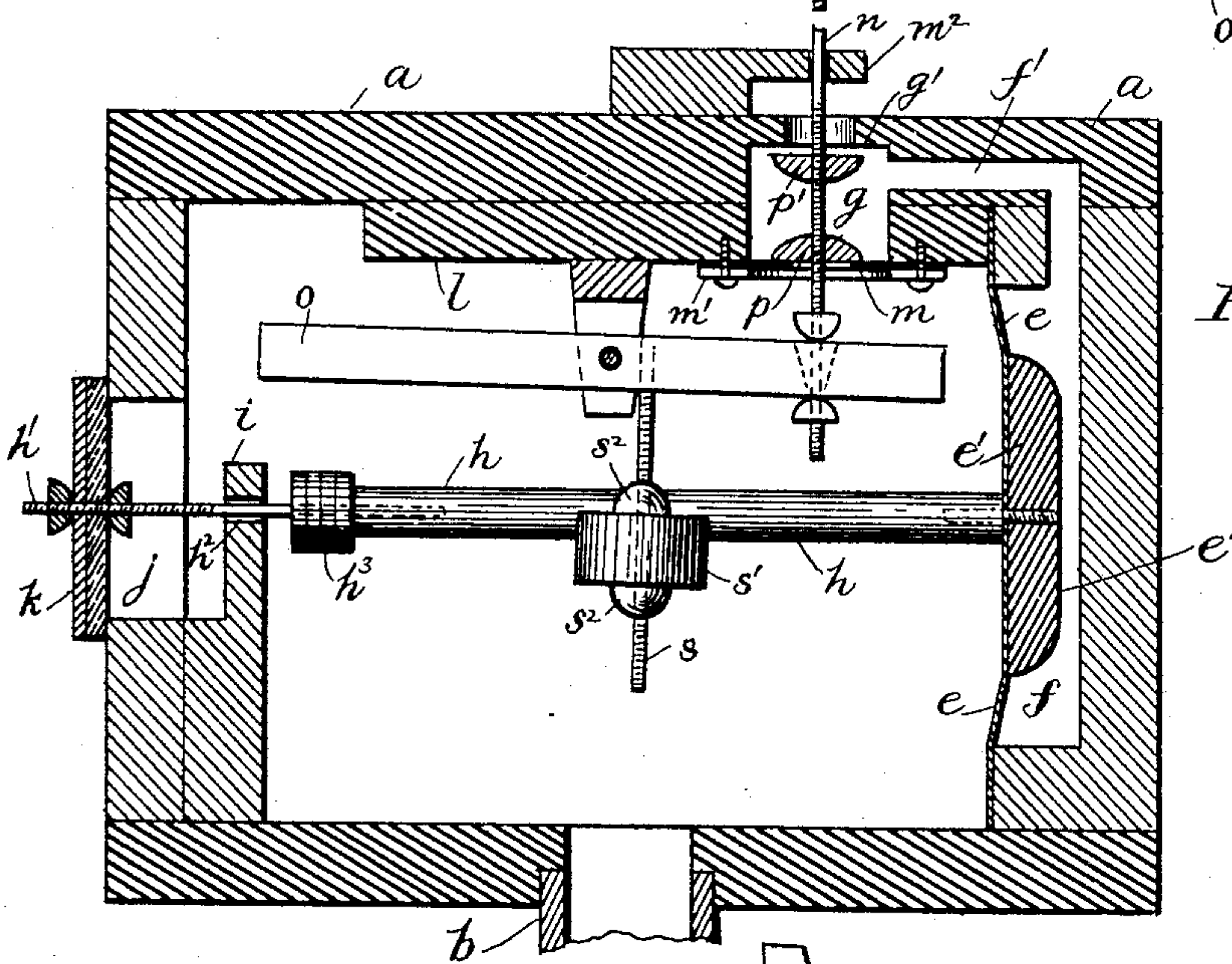


FIG. 2.

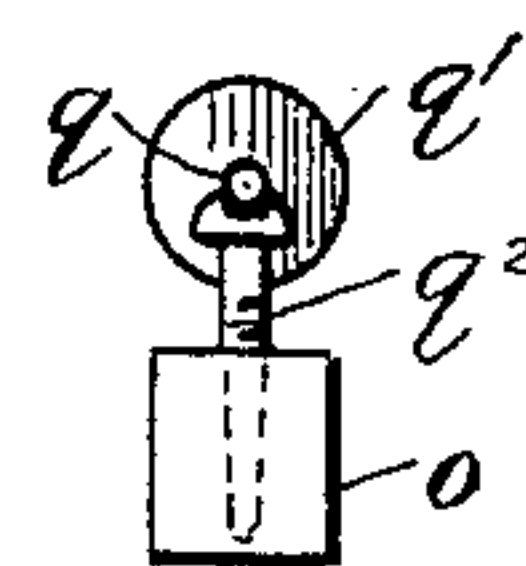


FIG. 3.

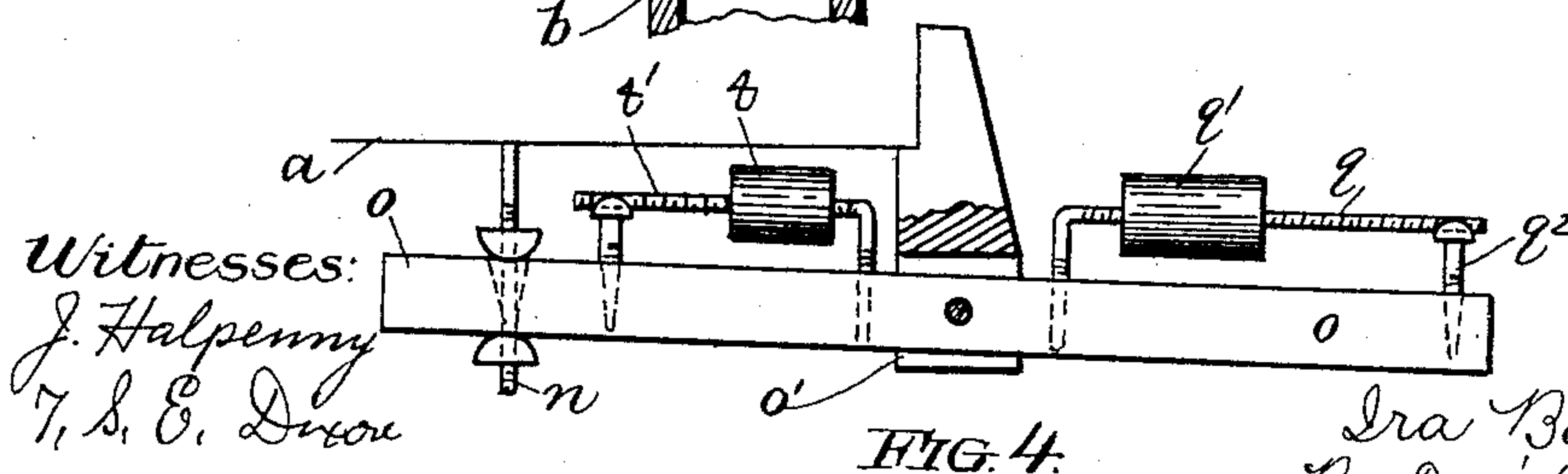


FIG. 4.

Witnesses:
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Inventor:

Ira Bassett,
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his Atty.

UNITED STATES PATENT OFFICE.

IRA BASSETT, OF CHICAGO, ILLINOIS.

ORGAN-TREMOLO.

SPECIFICATION forming part of Letters Patent No. 478,552, dated July 12, 1892.

Application filed March 8, 1892. Serial No. 424,211. (No model.)

To all whom it may concern:

Be it known that I, IRA BASSETT, of Chicago, in the county of Cook and State of Illinois, have invented a new, useful, and Improved Adjustable Tremolo for Organs, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming a part of this specification, in which corresponding letters of reference in the different figures designate like parts.

The object of my invention is to provide a simple, cheap, and effective tremolo for organs, which may be so constructed that its movements may be adjusted to any desired speed, while the mechanical effect so common in the use of such devices may be avoided, and a soft, flexible, uniform pulsation imparted to the tones of the organ pipes or reeds, all of which is hereinafter more particularly described, and definitely claimed.

In the drawings, Figure 1 is a central longitudinal vertical sectional view of my improved device. Fig. 2 is a like view, showing a modification of said invention. Fig. 3 is an end view in detail of one of the adjustable weights shown in Fig. 1, and Fig. 4 is a detail view of a still further modification of said invention.

Referring to said drawings, *a* represents a closed box or case, which is connected with the main wind-chest of the organ, either by means of a pipe *b* or in any other well-known way. A slide-valve *c*, connected by a rod *d* to a suitable stop in proximity to the keyboard, enables the compressed air to be admitted to or shut off from the case *a* at will.

Within the box *a* I place a flexible diaphragm *e*, which may be made from any suitable flexible material, such as rubber, cloth, or leather. Behind the diaphragm is formed a recess *f*, which communicates by means of a channel *f'* with an opening or recess *g*, communicating both with the outer atmosphere and the interior of the box *a*, as hereinafter stated.

A block of wood or other stiff material *e'* is attached to the back of the diaphragm *e*, to which is rigidly attached the end of a bar *h*, which is extended lengthwise of the box, and to the opposite end of which is attached a

wire rod *h'*, which is passed loosely through a bore *h²*, formed in a bracket or other rigid support *i*. An opening *j* is formed in the end of the box, which is adapted to be closed by means of a valve *k*, attached in the usual way to the wire *h'*. Buffers of felt or wash-leather *h³* are interposed between the end of the bar *h* and the bracket *i* to serve as a cushion and to prevent noise. A block *l* is attached to the inside of the box *a*, in which the cavity or opening *g* is partially formed. Attached to said block and surrounding the opening *g* is a flexible annular valve-seat *m*, which is preferably secured to said block by means of a metal ring *m'*. Passing centrally through the opening *g* is a valve-stem *n*, one end of which is loosely sustained in a bearing in an arm *n²*, while the other is loosely attached to a lever *o*, preferably arranged outside of the box. Mounted upon the stem *n* are valves *p p'*, one of which is adapted to be seated upon the flexible valve-seat *m*, and thus close the opening from the interior of the box, while the other is adjusted to be seated upon a seat *g'* when the valve *p* is open, and thereby close the passage to the outer atmosphere, it being understood that one of said valves is always closed when the other is open. The lever *o* is pivoted to a bracket *o'*, rigidly attached to the box *a*. Upon the opposite side of the pivotal point of the lever from that to which the valve-stem *n* is attached I secure to said lever a screw-threaded wire *q*, upon which is mounted an adjustable weight *q'*, adapted to be moved closer to or farther from said pivotal point by rotating the same upon said wire. A screw *q²*, having a notch in its head, serves as a rest and support for the wire, the spring action of which serves to retain it normally in engagement with said notch. Upon lifting it out of said notch and moving it laterally the weight may be more easily adjusted or removed, if desired. The weight *q'* is intended to be so adjusted as by its gravity to hold the valve *p* normally closed, for the purpose hereinafter stated. Attached to the lever *o*, and extending by choice upwardly and preferably at right angles therefrom, is a screw-threaded wire *s*, on which is placed a weight *s'*, adapted to be adjusted and secured in any given position by means

of lock-nuts s^2 . Said wire and weight may be dispensed with, as hereinafter described; but I prefer to employ it as affording the most satisfactory results.

5 In Fig. 1 I have shown the lever o and the weights attached thereto upon the outside of the box, while the valves $p p'$ are connected with the bottom; but it is obvious that the positions of the respective parts may be re-
10 versed, as shown in Fig. 2, in which the lever o is within the box and the valves $p p'$ are connected with the top. In the latter figure it will be seen that the weight s' is enlarged and so suspended from the lever o as to enable
15 the weight q' to be dispensed with.

In Fig. 4 I have shown a still further modification, in which I employ adjustable weights upon opposite sides of the pivotal point of the lever, the weight t being adjusted upon
20 a screw-threaded wire t' , in substantially the same manner as the weight q' ; but the former is reduced in size, so as to enable the latter to preponderate, and thus hold the valve p normally closed.

25 Having thus described the various parts of my improved device, I will now explain its operation.

Upon drawing the slide c the compressed air is admitted into the box a , and as the
30 diaphragm e is of larger area than that of the valve k the pressure upon the former overcomes that upon the latter, which is for the instant closed; but as the chamber is filled the air-pressure opens the valve p against the
35 action of the weight q' , closes the valve p' , when the air, being unable to escape to the outer atmosphere, rushes through the channel f' into the chamber f behind the diaphragm and establishes an equilibrium of
40 pressure between the spaces in front of and behind the diaphragm e . As there is then nothing to hold the valve t upon its seat, the air forces it open, and as a result the pressure in the main chamber is lessened, when
45 the valve p is again seated by the action of the weight q' . This opens the valve p' , and the air behind the diaphragm is permitted to escape to the outer atmosphere, when the pressure upon the diaphragm e closes the
50 valve k . It is obvious that the operation will be repeated as long as compressed air is admitted to the box, each pulsation of the air being communicated through the pipe b to the main wind-chest and thence to the organ-
55 pipes. The speed of the pulsations is governed by means of the weighted lever o , which should have a preponderance of weight upon one side of the pivotal point. I prefer the construction shown in Fig. 1, in which it
60 is practicable to make the weight s' lighter; but any one of the varying forms shown is operative. By adjusting the weight or weights nearer to or farther from the pivotal point of the lever o the speed of the vibrations may
65 be increased or diminished. The adjustable feature described is of the utmost importance, for the reason that it enables the speed

of the air-pulsations to be adapted to the taste of the organist or the character of the music played, as well as to the peculiarities of the
70 instrument itself. In some instruments it is difficult to cause the usual tremolo to work at all, though I have had no difficulty with my improved device in securing the most sat-
75 isfactory results under the most trying con-
ditions.

The employment of the flexible or yielding valve-seat m , as well as that of the buffers h^3 , I regard as of especial importance, for the
80 reason that they render the action of the device noiseless, while the former adjusts itself to any slight variation that may exist in the placing of the double valves $p p'$ with refer-
85 ence to the alternate seating and unseating thereof.

Having thus described my invention, I claim—

1. An organ-tremolo consisting of a box having its interior divided into two chambers by means of a flexible diaphragm, means for
90 connecting the main chamber of said box with the wind-chest of the organ, means for controlling the admission of air from said wind-chest to the main chamber of said box, an opening between the main chamber of said
95 box and the outer atmosphere, a valve of less area than said diaphragm and in operative connection therewith for normally closing said opening, a channel and openings between
100 said secondary chamber and said main chamber and between said secondary chamber and the outer atmosphere, a valve for normally closing the opening to said main chamber, a
secondary valve mounted upon the same stem for closing the opening to said outer at-
105 mosphere when said primary valve is open, and a weighted vibratory lever in operative connection with said valve-stem, substantially as shown and described.

2. The combination, with an organ, of the
110 box a , means for communication between the same and the main wind-chest, a slide for controlling said communication, diaphragm e , valve k , said diaphragm being of larger
115 area than said valve k and connected therewith, opening j , chamber f , channel f' , communicating with the interior of the box and with the outer atmosphere, respectively, valves for
alternately closing one and opening the other of the openings communicating with said
120 channel, and a weighted pivoted lever in operative connection with said valves, substantially as shown and described.

3. The combination, with an organ wind-chest, of a box in operative communication
125 therewith, a movable diaphragm within said box and positively connected with a valve arranged to close an opening to the outer atmosphere, chamber f , channel f' , valves $p p'$, the former having a yielding seat, and weighted
130 lever o , the preponderance of weight being so adjusted as to cause it to normally close the valve p , substantially as shown and described.

4. The combination, with an organ wind-

chest, of the box *a*, having valve-openings therein, diaphragm *e*, valves *k* and *p p'*, chamber *f*, in operative connection with the openings of said valves *p p'*, and pivoted lever *o*,
5 having one or more adjustable weights attached thereto, substantially as shown and described.

In testimony whereof I have signed this specification, in the presence of two subscribing witnesses, this 27th day of February, 1892. to
IRA BASSETT.

Witnesses:

D. H. FLETCHER,
T. S. E. DIXON.