

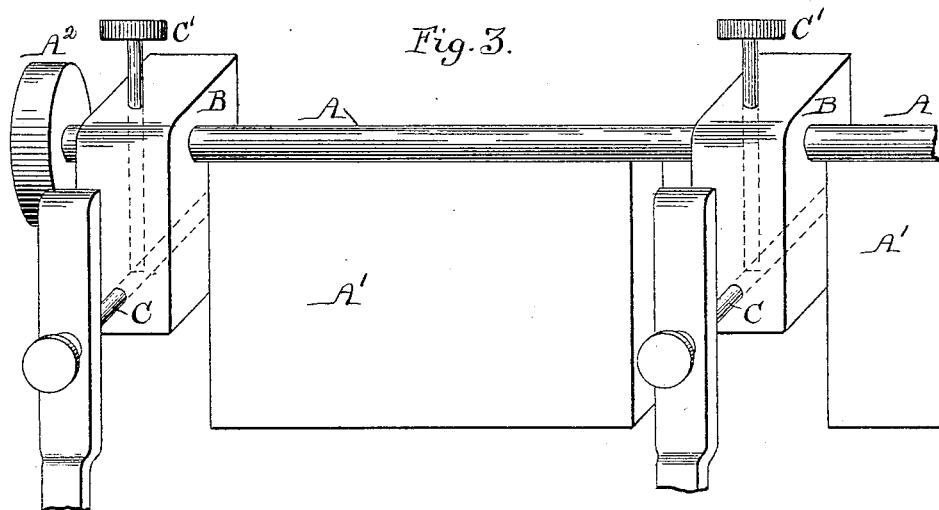
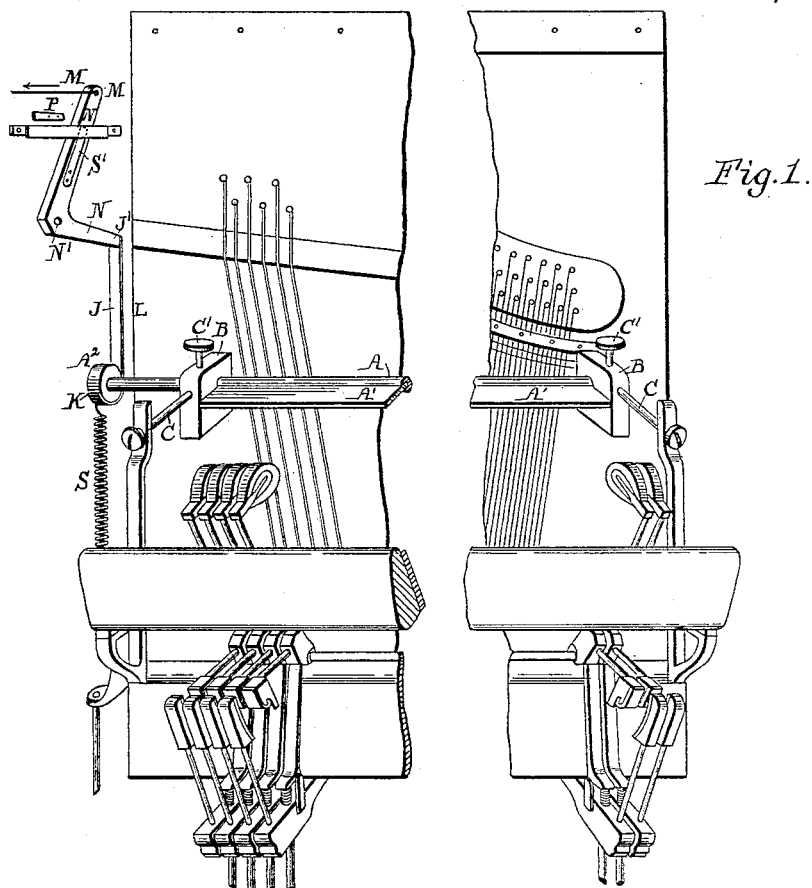
(No Model.)

3 Sheets—Sheet 1.

F. W. HALE.  
PIANOFORTE MUTE.

No. 493,622.

Patented Mar. 14, 1893.



Witnesses:  
*Elizabeth A. Cunn.*  
*Geo. L. Gardner.*

Inventor:  
*Francis W. Hale*

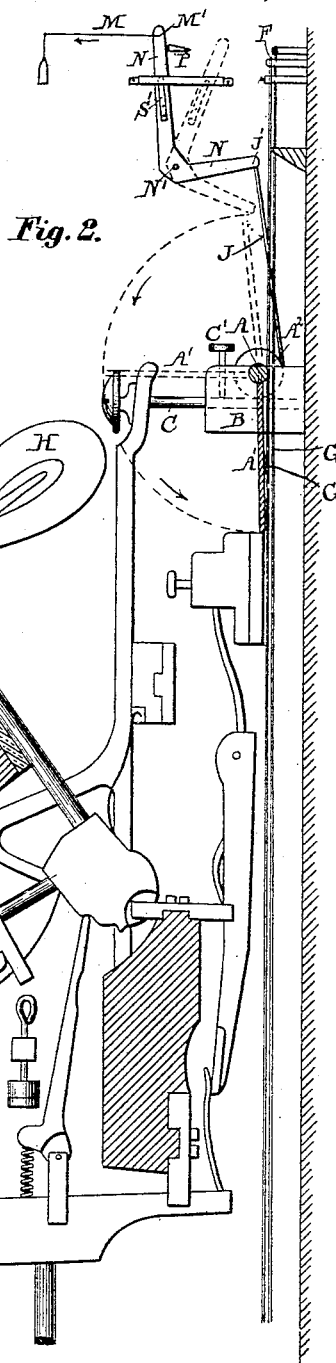
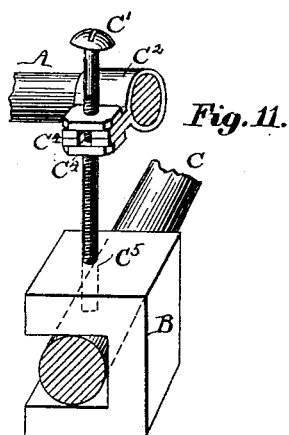
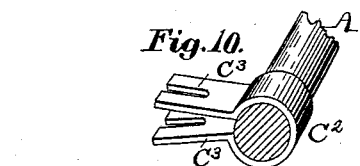
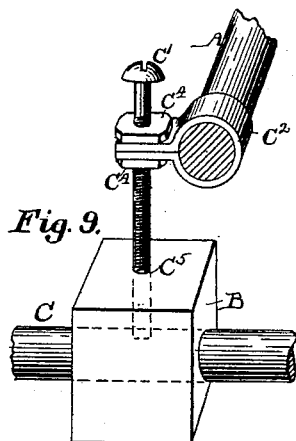
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3 Sheets—Sheet 2.

F. W. HALE.  
PIANOFORTE MUTE.

No. 493,622.

Patented Mar. 14, 1893.



Witnesses:

Elizabeth J. Arney.  
Geo. L. Gardner.

Inventor:

Francis W. Hale

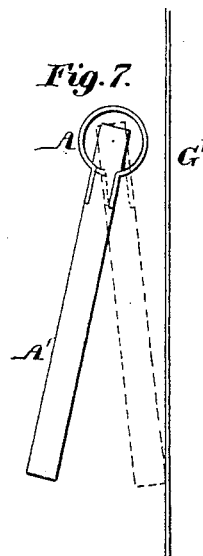
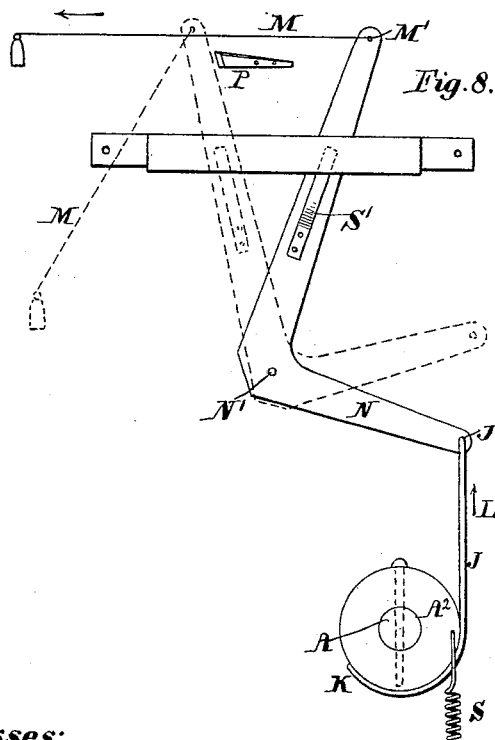
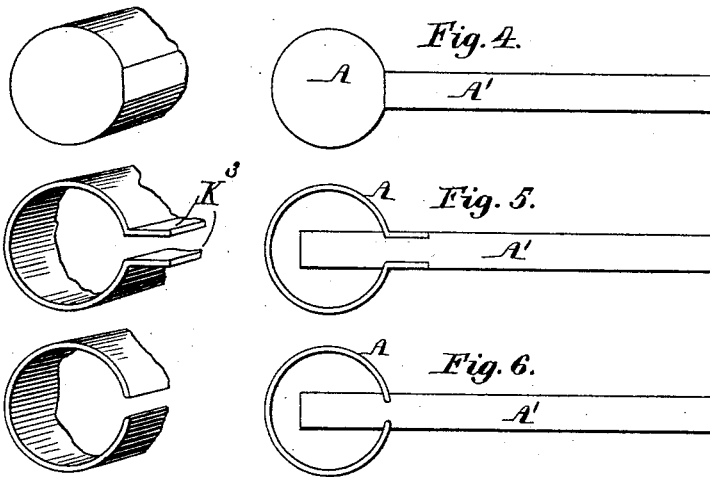
(No Model.)

3 Sheets—Sheet 3.

F. W. HALE.  
PIANOFORTE MUTE.

No. 493,622.

Patented Mar. 14, 1893.



Witnesses:  
Elizabeth S. Cunningham  
Geo. L. Gardner.

Inventor:  
Francis W. Hale

# UNITED STATES PATENT OFFICE.

FRANCIS W. HALE, OF BOSTON, MASSACHUSETTS.

## PIANOFORTE-MUTE.

SPECIFICATION forming part of Letters Patent No. 493,622, dated March 14, 1893.

Application filed February 25, 1892. Serial No. 422,748. (No model.)

### *To all whom it may concern:*

Be it known that I, FRANCIS W. HALE, of Boston, in the county of Suffolk and State of Massachusetts, have invented a new and useful Improvement in Pianoforte-Mutes, of which the following, taken in connection with the accompanying drawings, is a specification.

The object of my invention is to provide an improvement upon the so-called soft stops or mutes, which are attached to pianofortes for the purpose of diminishing the tone of the instrument. A great objection to many such devices now in use lies in the fact that they must be removed from their fastenings whenever the piano is to be tuned or re-strung. As a result of this removal, they very soon get out of order, besides taking much valuable time from the tuner, who cannot begin tuning until the soft stop is disconnected.

The methods heretofore employed in the attachment of the mute itself and also the construction of the parts to which it is attached are crude and impracticable. The expense furthermore, of all such devices hitherto manufactured largely forbids their general use by the majority of pianoforte students.

By means of mechanism shown in the following figures, I am able to produce a superior mute which does not obstruct free access to the tuning pins and which can be quickly attached by any person to any make of piano at small cost, without cutting or marring any part of the pianoforte case. This object I attain by the mechanism shown in the accompanying drawings, in which

Figure 1 is perspective of the parts of an upright pianoforte that are in connection with my improvement. Fig. 2 is an end elevation, showing the different parts that constitute the action of a piano, together with the essential parts of my invention. Fig. 3 is a perspective view in front, showing the roller and mute enlarged. Figs. 4, 5 and 6 are views showing methods of attaching the mute to a roller. Fig. 7 shows the mute in its different relations to the strings. Fig. 8 shows the mechanism for operating the mute. Figs. 9, 10 and 11 are views of adjustable roller fixtures.

In all the drawings A. represents the mute roller and A'. the mute. The mute roller A. is journaled in fixtures B. B (Figs. 1, 2 and 3.)

Said fixtures being secured to the action posts C. by means of set screws C'. the mute, then in working position, hangs nearly vertical, as shown in Fig. 7. (Full lines showing it away from the strings but in working position,—dotted lines showing it still nearer the strings but also in working position.) The object of these two positions is to produce a variation in the volume of the tone which a given stroke of the hammer shall produce. The mute, when out of working position, may rest either in a horizontal position, as shown in Fig. 1, or rest vertically above the roller, as shown by dotted lines, Fig. 2.

The mute A'. is composed of a strip of felt, or any suitable material, securely fastened to the roller A. and extending radially from it. The direction of rotation, as shown by arrow heads Fig. 2, is such that if continued far enough it will eventually bring the mute into direct contact with the strings, and, further, by thus placing the roller and mute at a point between the tuning pins F. and the hammer's contact G. on the strings G'. the cumbersome mechanism heretofore used to produce a vertical descent of the mute is done away with, the tuning pins are left unobstructed, and at the same time a new and important advantage is secured as follows:

By stopping the mute at different distances from the strings G'. (as shown by full and dotted lines Fig. 7) it is possible to greatly vary the amount of tone a given stroke of the hammer H. can produce, as, for example, when the mute A'. is stopped some distance from the strings, say three-sixteenths of an inch, as shown by full lines in Fig. 7, a very light tone is produced, while, if the mute is stopped very near the string, but not touching it, as shown by dotted lines Fig. 7, a louder tone will be produced; but if the mute is rotated until it comes into direct contact with the strings, their vibration will be to a very large extent prevented, and a consequent diminution of tone will result.

When it is desirable to use the mute in two or more positions as above described, I arrange a series of inclined stops similar to the one shown in Fig. 8. P.

J. (Fig. 8) is a cord or strap which is fastened to a pulley A<sup>2</sup>. on the roller A. at K. in such a manner that when the cord or strap is

pulled in the direction indicated by the arrow point L. it will rotate the mute A<sup>2</sup> downward into a position in front of the hammers, as shown by full lines Fig. 2, and is retracted

5 by the action of spring S.

N. is a bell crank lever, having its axis at N', to which the cord J. is attached at J'. To the upper end of lever N. is attached a hand cord M. at M'. and which when drawn forward in the direction shown by arrow heads draws the upper end of lever N. by the inclined stop P. in which position the spring S. will force it back so it will be caught and held by the inclined stop P. as shown by dotted lines in Fig. 8. When it is desired to release the mute from its working position, the user pulls the cord M. diagonally, as shown by the dotted lines Fig. 8. This action will draw the upper end of lever N. out of contact with inclined stop P. and the action of spring S. will rotate the roller A. and return mute to its original position, as shown by dotted lines in Fig. 2.

The method of constructing the roller and of attaching the mute to it are shown in Figs. 5 and 6, and constitute a special feature of my invention. In Fig. 4 the mute A<sup>2</sup> is represented as being attached to a wooden roller A. by gluing its edge to a flattened side A. of said roller, but as a wooden roller is very apt to warp and obstruct the free action of the mute, it is unfit for use.

Figs. 5 and 6 show metal tubular rollers, Fig. 5 having flanges K<sup>3</sup>. K<sup>3</sup>. Fig. 6 being a simple tube kerfed through its whole length. I prefer the latter on account of its effectiveness and cheapness. In each case the mute A. is inserted by drawing it longitudinally through the tube in such a manner that the flanges K<sup>3</sup>. K<sup>3</sup>. (Fig. 5) or the edges K'. K'. (Fig. 6) sink into the substance of the mute and hold it fast by a springlike, clamping action. As a result of this method, the use of glue is wholly avoided and the mute, when worn out, may be easily removed and a new one inserted. All danger from warping or the changing of its position is thus wholly avoided.

In order that any person may readily attach this mute to the pianofortes of all makers without loss of time, I have devised the adjustable clamp fixtures shown in Figs. 9, 10 and 11, and which may be used in place of the simple fixture B. shown in Figs. 1, 2 and 3.

55 C'. (Figs. 9 and 11) is a set screw which is threaded over its entire length. The thread

of the set screw corresponds to that of a tapped hole C<sup>5</sup>. in fixture B. When this set screw C'. is turned downward, it binds the post C. and by firmly securing the fixture B. to it, is itself made immovable until released by a backward turn, which releases its grip upon the post C.

C<sup>2</sup>. (Figs. 9, 10 and 11) is a spring clamp, which is made to encircle the roller A. as shown, and is itself secured to the set screw C'. by confining the slotted ends C<sup>3</sup>. of the clamp C<sup>2</sup> between the nuts C<sup>4</sup>. C<sup>4</sup>. The nuts C<sup>4</sup>. are tapped to correspond to threads of set screw C'. By raising or lowering the nuts C<sup>4</sup>. the spring clamp, and with it the mute roller A. are carried to the desired height, which having been done, the nuts are screwed tightly together, thus binding between them the ends C<sup>3</sup>. of the spring clamp C<sup>2</sup>. and holding it secure in the desired position. This gripping of the ends C<sup>3</sup>. of spring clamp C<sup>2</sup>. does not in any wise interfere with the free rotation of the roller within the large end of the clamp, which acts now as a journal to roller A.

I claim—

1. In a pianoforte, the combination of a kerfed tubular metallic roller and a mute composed of any suitable material extending radially from it, substantially as described and for the purpose set forth.

2. In a pianoforte, the combination of a kerfed tubular metallic roller, having the flanges K<sup>3</sup>. K<sup>3</sup>., and a mute composed of any suitable material, substantially as described and for the purpose set forth.

3. In a pianoforte, the combination of a kerfed tubular metallic roller, mute A'. and adjustable fixtures B., C', C<sup>2</sup>., C<sup>4</sup>. and C<sup>5</sup>., by means of which the roller may be readily adjusted at any desired height, substantially as described and for the purpose set forth.

4. In a pianoforte, the combination of a kerfed tubular metallic roller, mute A., fixtures B., C', C<sup>2</sup>., C<sup>4</sup>., C<sup>5</sup>., strap or cord J., bell crank lever N., inclined stop P. spring S. and hand cord M., substantially as described and for the purpose set forth.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, on this 20th day of February, A. D. 1892.

FRANCIS W. HALE.

Witnesses:

H. JENNIE PARKS,  
EARL S. CHAINEY.