J. S. Ives,

Tuning Musical Instruments,

No. 4,499. Patented May 9, 1846.

Fig: 1.

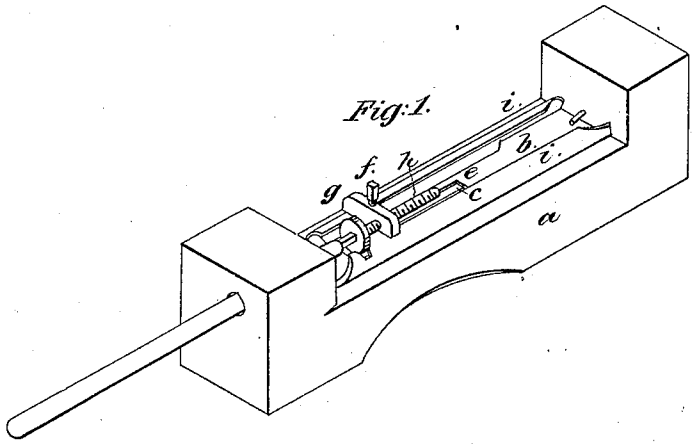


Fig: 2.

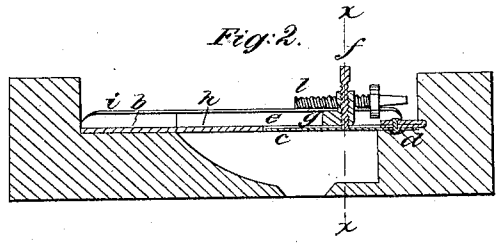
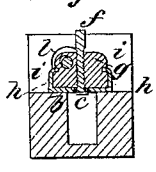


Fig: 3.



AM. PHOTO-LITHO. CO. N.Y. (OSBORNE'S PROCESS)

UNITED STATES PATENT OFFICE.

J. SHALER IVES, OF NEW YORK, N. Y.

IMPROVEMENT IN TUNING METALLIC REEDS.

Specification forming part of Letters Patent No. **4,499**, dated May 9, 1846.

To all whom it may concern:

Be it known that I, J. SHALER IVES, of the city, county, and State of New York, have invented new and useful improvements in the method of tuning the metallic reeds of seraphines, accordions, æolians, and all other instruments depending upon the vibrations of metallic reeds for their tones; and I do hereby declare that the following is a full, clear and exact description of the principle or character thereof which distinguishes them from all other things before known, and of the manner of making, constructing, and using the same, reference being had to the accompanying drawings, making part of this specification, in which—

Figure 1 is a perspective view; Fig. 2, a longitudinal vertical section, and Fig. 3 a cross-vertical section taken at the line X X of Fig. 2. These drawings only exhibit one of the reeds connected with a section of the top of the wind-chest of an æolian attachment of a piano, the others being all arranged in the same manner.

The same letters indicate like parts in all the figures.

Accordions, seraphines, and all other instruments deriving their tones from the vibrations of metallic reeds have been seriously objected to on account of the difficulty of tuning them, this having generally been effected heretofore by filling, scraping, or otherwise reducing the thickness of the reeds; but of late various attempts have been made, with more or less success, to effect this end on the principle heretofore employed in tuning the metallic reeds of organs, which consists in using a slide which presses on the reed and holds it firmly on the edges of the plate, for in the organ the reeds extend over the edges of the plate that surrounds the apertures, and the reeds are gripped between the bed on which they rest and the tuning-pressers, the tone required in organs admitting of this; but in the instruments above referred to the reeds vibrate freely in the wind-apertures, and therefore it was necessary to make material alterations in this old mode to adapt it to the tuning of the reeds in that class of instruments to which I have referred; but all these modifications are too complex and expensive, as they grip the reeds on both sides, and the two grippers must be connected, that they may move together, which requires the reed to be of equal thickness from end to end, instead of being thicker toward the heel, and, besides this, they do not admit of the adjustment of the plane of the reeds relatively to the aperture by which it is made to "speak," (as is technically termed,) adjustment for this purpose being as important as it is for tuning.

The object of my improvements is to simplify and cheapen the construction and provide means for the adjustment of the reeds to make them speak. These ends I obtain by making the reeds which are attached to the bottom of their appropriate plates to spring up through the apertures in which they vibrate, so that by the application of an adjustable pressure above them their plane can be regulated relatively to the apertures with the greatest nicety to insure their speaking and giving out the best tones, the vibration being insured for a good tone by the pressure of the spring of the reed against the presser. This pressure I make by means of a screw (or other mechanical equivalent) connected with a slide adapted to the top of the plate, and regulated by means of a screw to adjust its position relatively to the length of the reed for the purpose of tuning; and the cheapness I attain by making the plate to which each reed is attached with its edges to lap over and form the ways for the slide to work in, so that by making this slide with two parallel branches or bars to fit in the grooves thus formed it (the slide) can be made to fit them by simply bending the branches or bars that they may act as springs.

In the accompanying drawings, *a* represents a part of the top of the wind-chest, and *b* the metal plate, to the bottom of which the heel of the reed *c* is secured by a rivet, *d*, or screw, so that the reed shall vibrate freely in a slot or aperture, *e*. This reed is made to spring up, as represented by dotted lines, so that when it is pressed down to its appropriate speaking position it shall not rattle against the presser and injure the tone. Pressure is made on the upper surface of the reed by the point of the screw *f*, tapped in a metallic slide, *g*, which has two parallel branches or bars, *h h*, that rest on the plate *b*, one on each side of the slot or aperture, and the whole slide is kept down on the top of the plate by the turned edges *i i* of the plate, which are bent up and then over the branches *h h*, the body of the slide being notched to receive the edges *i i* of the plate. The object of making the slide with the two branches

h h is to afford a ready means of making them slide without trembling by simply bending the parallel bars or branches, which gives them sufficient spring to slide freely without shaking or vibrating. This slide is operated for tuning by means of a screw, *l*, tapped into it, and provided with a flange or fillet, which takes into a notch in one of the turned edges of the plate, so that by turning this screw by means of a key the slide is made to move toward or from the heel of the reed, and as the point of the screw *f* rests on the reed this adjusts the length of the vibrating part of the reed to raise or lower the tone.

It will be obvious that instead of the screw *f*, that regulates the speaking of the reed, an adjustable slide may be substituted, but with less advantage, and that the screw *l* for regulating the tuning may be variously arranged without in any manner affecting the principle of my improvements.

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

1. Tuning metallic reeds that vibrate within the apertures for the passage of the wind by means of adjustable pressers that act against the spring of the reeds, substantially as herein described.

2. Making the slide with the parallel spring bars or branches, substantially as herein described to insure the working of the slide without being affected by the vibration of the reed, as described.

3. Making pressure on the top of the reed by an adjusting-screw or other analogous device to regulate the speaking of the reed, as described.

J. SHALER IVES.

Witnesses:
CHS. M. KELLER,
A. P. BROWNE.