(No Model.)

C. F. T. STEINWAY.

Piano Forte Hammer.

No. 231,630. Patented Aug. 24, 1880.

Figure 1.

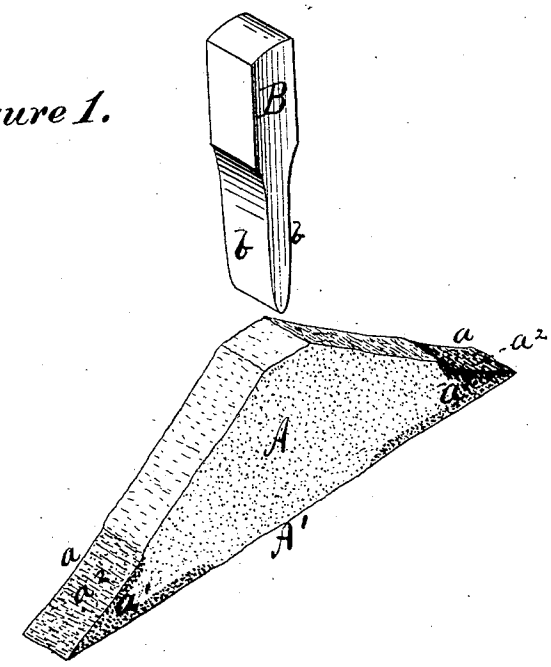
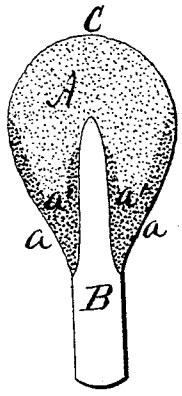


Figure 2.



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UNITED STATES PATENT OFFICE.

C. F. THEODOR STEINWAY, OF NEW YORK, N. Y.

PIANO-FORTE HAMMER.

SPECIFICATION forming part of Letters Patent No. 231,630, dated August 24, 1880.

Application filed April 12, 1880. (No model.)

To all whom it may concern:

Be it known that I, C. F. THEODOR STEINWAY, of the city and State of New York, have invented certain Improvements in Piano-Forte Hammers, of which the following is a specification.

My improvements relate to that class of piano-forte hammers which contain devices for overcoming the tendency of the felt body of the hammer to yield laterally; and my invention consists in stiffening those portions of the felt which embrace the wooden head of the hammer by applying to them a liquid capable of being absorbed by the felt and of subsequently becoming hard, and thus rendering that portion of the felt to which it is applied comparatively inelastic.

My object may be accomplished by the use of a variety of liquids. Thus, common glue or liquid gelatine may be applied to the felt, either by the immersion of the tail of the hammer therein, or, what is better, the liquid glue or gelatine may be applied with a brush to the felt body before it has been bent around and fastened to the wooden head. After the glue or gelatine has become dry and hard it will be found that those portions of the felt body of the hammer to which it has been applied are comparatively stiff and inflexible, and the felt body is given a greater capacity to resist the tendency to expand laterally induced by the impact of the nose of the hammer upon the strings. By this means the nose of the hammer is made to more durably preserve its original shape, and in this respect the hammer has advantages similar to those obtained by the use of the piano-hammer ligature or clamp described in my application for a patent therefor, filed March 10, 1880.

In carrying out my invention I prefer to use liquid bichromate of potassium and gelatine, and to apply it to the acute angles of the felt body, and to allow it to dry and harden thereon before bending the felt body around the wooden head of the hammer and gluing it thereto.

This is an especially advantageous mode of applying the hardening-liquid, because, first, the hardened surface of the felt affords a better hold for the glue by which the felt is fastened to the sides of the wooden head; secondly, the ends of the felt body are rendered non-absorbent, and the glue-joint is hence protected from moisture; and, thirdly, the end portions of the outer surface of the felt body are so stiffened as to become comparatively non-extensile, and hence the central portion is subjected to extreme tension when the felt body is bent around and secured to the wooden head.

The accompanying drawings, illustrating my invention, are as follows:

Figure 1 is an isometrical perspective, exhibiting the shape of the felt body and the wooden head prior to the bending of the felt body around the wooden head. Fig. 2 is a side elevation of the hammer, showing the felt body bent around and fastened to the wooden head.

The drawings represent the felt body A of a piano-string hammer of the ordinary form, and a wooden head, B, over which the felt body is bent and to the sides of which it is glued.

The end portions, *a a*, of the felt body are hardened by the application of a suitable liquid, preferably bichromate of potassium and gelatine, which I usually apply with a brush in quantity sufficient to permit of its absorption by the felt to about the extent indicated by the darkened portions *a' a'*. The two oppositely-inclined surfaces a^2 a^2 of the hardened felt are those which, when the felt body is folded around the wooden head, are glued to the sides *b b* thereof.

The surface A' of the central portion of the felt body becomes, when the blank is affixed to the wooden head, the surface of the nose C of the hammer, and acquires a condition of extreme longitudinal tension because of the comparatively unyielding and non-extensile character of the end portions, *a*, of the felt body. Thus it will be seen that while the material composing the nose of the hammer is permitted to retain its natural resiliency, it is prevented from expanding laterally by the rigid and unyielding character of the remaining portions of the body, which are glued to the wooden head.

I claim as my invention—

1. A piano-string hammer consisting of a wooden head covered by a body of felt or other suitable material, those portions of the covering-body below the nose being hardened or rendered less elastic than the central portion of the body, which forms the nose of the ham-

mer, substantially as and for the purpose set forth.

2. A body for a piano-string hammer composed of felt or other suitable material, the end portions of which have been rendered comparatively inelastic by the application thereto of a liquid capable of being absorbed by the material of which the body is composed and of becoming hard when dry, substantially as set forth.

3. A piano-string hammer having a body of felt or other suitable material, in which the glued joint of the body with the wooden head is protected from moisture by the waterproofing of the ends of the body which enfold the wooden head, substantially as described.

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