A. JOHNSON.

PIANO FELT DAMPER.

APPLICATION FILED MAY 7, 1913.

1,169,832. Patented Feb. 1, 1916.

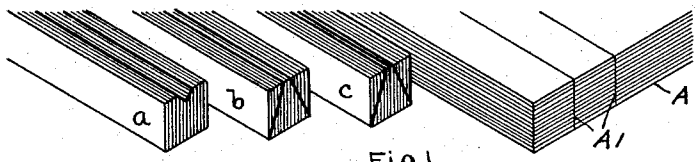


Fig. 1.

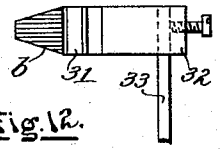


Fig. 12.

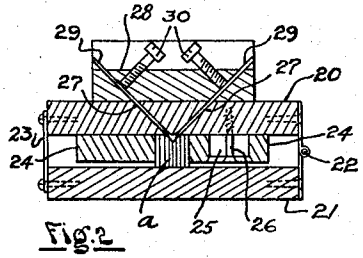


Fig. 2.

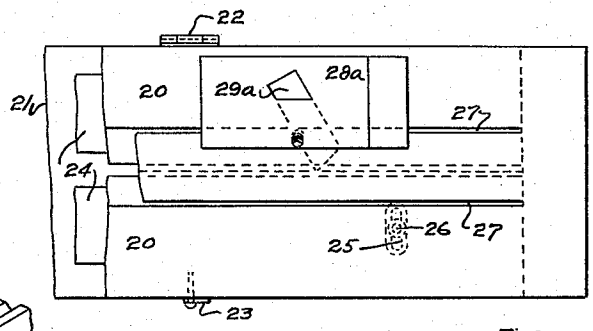


Fig. 3.

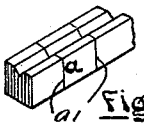


Fig. 4.

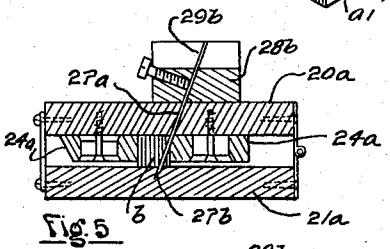


Fig. 5.

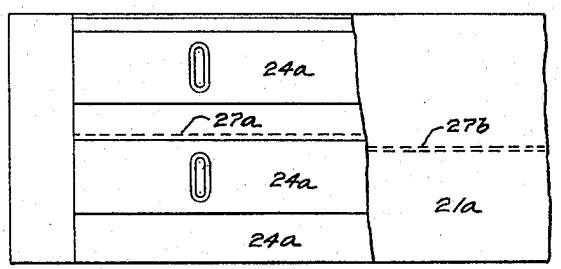


Fig. 7.

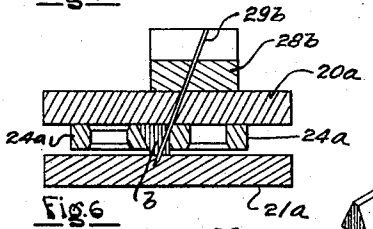


Fig. 6.

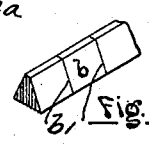


Fig. 8.

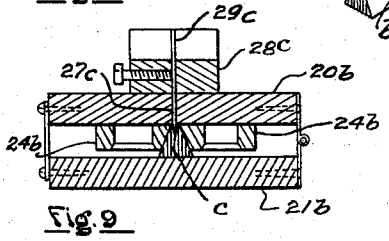


Fig. 9.

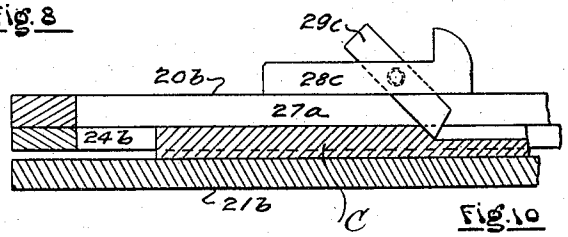


Fig. 10.

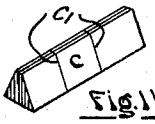


Fig. 11.

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UNITED STATES PATENT OFFICE.

ALBERT JOHNSON, OF NEW YORK, N. Y.

PIANO FELT DAMPER.

1,169,832. Specification of Letters Patent. Patented Feb. 1, 1916.

Original application filed September 7, 1912, Serial No. 719,188. Divided and this application filed May 7, 1913. Serial No. 766,179.

To all whom it may concern:

Be it known that I, ALBERT JOHNSON, a citizen of Sweden and resident of the borough of Manhattan, in the county of New York and State of New York, have invented certain new and useful Improvements in Piano Felt Dampers, of which the following is a specification.

The above entitled invention is divided out from a previous disclosure made by me and forming the subject matter of an allowed application for patent, filed Sept. 7—1912, Serial No. 719,188, (Now Patent No. 1,117,577.)

This invention relates particularly to bass string dampers and aims to provide superior felt-blocks therefor of the varieties known in the pianomakers' art as "singles", "doubles" and "trichords".

Blocks of square section cut from a sheet of ordinary piano felt can be torn apart much more easily along planes approximately parallel to the original surfaces of the sheet than along other planes (or by a pull at right angles to the original surfaces than by one parallel to the latter); and experience shows that a damper is more durable if it is so cut and so mounted that any point on it moves toward the piano string or wire in a line parallel to the original surface of the felt. This is true of all forms of dampers disclosed herein, each of which has a plane of symmetry parallel to said surface.

Primarily, the invention has for its object to produce a bass string damper of materially stronger construction than those in use heretofore.

A further object is to provide a novel and advantageous method of making felt-blocks of the type referred to, whereby their wearing qualities will be considerably increased.

Other objects and advantages will become apparent as the description proceeds.

Reference will be had to the accompanying drawing, which is made up of selected figures from the allowed application aforesaid, for a detailed description of this method and the products resulting from its practice, as the invention contemplates.

In the said drawing:—Figure 1 is a composite view illustrating in perspective one end of a sheet of felt from which a number of parallel strips have been cut, some of the latter being completely severed from and turned up at right angles to the former to show the relative standing position they are to occupy throughout the operation of forming the damper blocks. Fig. 2 represents in cross-section a device adapted for cutting a V-groove in some of the felt strips, such as Fig. 4 shows for instance. Fig. 3 is a fragmentary top plan view of the device shown in the preceding figure, except that a modified form of cutter is here substituted. Fig. 4 illustrates part of a finished strip, which when cut cross-wise into short lengths makes what are known in the trade as "single wedge blocks", that is to say, rectangular blocks having each a V-shaped notch at top. Fig. 5 is a transverse section of a device for beveling on either side a strip of the kind represented by Fig. 8. Fig. 6 is a view similar to Fig. 5, excepting that a certain side member is reversed therein. Fig. 7 is a fragmentary bottom plan view of the latter named device. Fig. 8 represents part of a strip which, when cut slantingly and lengthwise from both sides and divided up into proper lengths, forms "double wedge blocks", that is, slightly truncated triangular blocks. Fig. 9 is a cross-section of a device for cutting the center slit of the strip shown at Fig. 11. Fig. 10 is a broken sectional elevation of the device represented by Fig. 9, Fig. 11 is a fragmentary perspective view of a strip, which when divided up gives "trichord wedge blocks" the same being similar to those obtained from the strip shown at Fig. 8, but having besides a vertical slit in the top, and Fig. 12 is a fragmentary plan view of a piano damper-lever with a felt block attached thereto.

As far as may be practicable, the various elements constituting the several devices herein described and illustrated will be designated by the same reference characters as were employed in the parent application above mentioned.

The initial step in producing the divers blocks is the cutting up of the felt into strips of like texture and regular dimensions. This is effected by taking a sheet of felt suitably fulled and pressed to a uniform thickness, such as indicated at "A" on the right hand side of Fig. 1, and dividing it up by parallel cuts "A^1" into rectangular strips *a b c* having each a width equal to the height of the blocks to be made. The succeeding steps relating to the operations for producing the

notch, beveled sides, and slit hereinbefore referred to, constitute what will be termed the "shaping" or "trimming" for all strips and blocks. The light and closely set parallel lines in said Fig. 1 are not intended to represent any peculiar stratification of the felt, but merely indicate what may be considered, practically as well as theoretically, the lines on which the felt compressed in sheet form will part the more readily.

To obtain the single wedge blocks, a strip *a* is turned on its edge as represented on the left hand side of Fig. 1, and thus positioned is placed in the holder shown in Figs. 2 and 3, which comprises elongated top and bottom members 20 and 21, hinged together at longitudinal edges, as at 22, and provided with hook catches 23, or other suitable locking means, at their opposite edges. Side retainers or retaining members 24 are located between the aforesaid members 20, 21 and may be carried by the top member. Adjustment of the side members toward and away from each other to accommodate strips of different thicknesses (as distinguished from their widths which correspond to the heights of the blocks to be) is provided for by slots 25, receiving the screws 26. The strip *a* is held in the box or elongated chamber thereby formed, with its grain, that is to say, its severed surface uppermost, as indicated by the vertical lines in Fig. 2.

A notch in the top or upturned edge of the strip *a*, characteristic of single wedge blocks, is formed by means of a cutter or cutter blades 29 guided by longitudinal, downwardly convergent slots 27 in the upper member 20 of said holder. Fig. 2 shows a knife holder 28 slidable longitudinally along the surface of the member 20 and carrying two reversely inclined blades 29 set in convergent slots and held by set-screws 30. Through this agency both cuts to form the notch can be made simultaneously by moving the tool holder and knives longitudinally of the clamp. Meanwhile the sides of the strip (corresponding to its top and bottom respectively when first severed from the felt sheet) are confined and firmly held between the side retainers 24.

In Fig. 3 is shown a single blade 29^a held in a holder 28^a and adapted to cut slantingly into the upturned edge of the strip *a* so as to bevel it inwardly in a manner analogous to that in which it is operated upon by the concurrently acting blades 29. The same result is accomplished with the single blade 29^a as with the duplicated knives 29, though necessarily in successive operations.

The outer bevels on the opposite sides of the strip *b*, which represents a double wedge block are conveniently formed in the apparatus shown by Figs. 5, 6 and 7, which in general is similar to that just described with reference to strip *a*. In this apparatus the top member 20^a has a single inclined slot 27^a, properly disposed to guide the blade 29^b, so as to bevel the two sides of the strip *b*, one after the other, the strip *b* being positioned edgewise with relation to the blade and confined precisely as the strip *a*, in the way previously explained. The blade 29^b of course is held in the tool holder 28^b at an angle corresponding to the bevel to be produced. After one side of the strip is beveled, it is turned around end for end and the other side is reversely beveled. Accordingly one of the side members 24^a is reversible as well as adjustable and is provided with one vertical face and one inclined face. Figs. 5 and 6 show its two positions. The bottom member 21^a is provided with a guide groove 27^b in its upper side to receive the end of the knife, which projects below the down-turned edge of the strip.

The strip *c* which is slitted vertically in the center of its up-turned edge, and represents a trichord wedge block is formed preferably by using the apparatus shown in Figs. 9 and 10. This apparatus is similar to the one employed for shaping strip *b*, except that its side members 24^b both have reversely inclined inner sides, and its top member 20^b has a vertical slot 27^c, with which coöperates a vertical knife 29^c carried by a holder 28^c so as to make the vertical slit in the top of the strip *c*. It will be understood that this strip could likewise be shaped in the apparatus of Figs. 5–7, previously to insertion in the apparatus last described, for slitting. In either form of apparatus, the strip *c* will be kept standing on edge and subjected to suitable lateral pressure during the shaping or trimming operation, as in the case of either one of the strips *a* or *b*.

Let is be observed that, in all of the strips *a b c* destined to produce felt blocks for piano-wire dampers, the severed surface of each strip, as parted from the original felt sheet, is parallel to the base of the block, and is intended to be carried foremost at substantially right angles to the line of motion of the block toward the wires of a piano.

The various strips, having been cut off the felt sheet, are placed and clamped in holders (which may be of any suitable construction) with their severed sides presented to the knife. The cutting is effected lengthwise of the strip in each instance (not across it) to trim or shape it. As many longitudinal cuts are made as are necessary to impart the desired shape. In end view or cross section the strip now presents the shape of the finished blocks, which latter are produced by cutting the strip transversely into short lengths, as indicated by the lines a^1, b^1, c^1. These transverse cuts are at right angles to the longitudinal shaping cuts. The blocks thereby obtained are then ready to be applied to cloth covered veneer to form complete dampers, retaining thereon the pecul-

iar disposition of their severed surfaces relatively to the bases when made into the finished articles. The application of the blocks to the veneer may be effected through the medium of any suitable adhesive mixture, and constitutes the final step in the production of felt block dampers.

The felt block illustrated in Fig. 12 is of the same general character as the one represented in Fig. 8, the same being mounted on veneer backing 31 which is fastened to a block 32 carried by the piano damper lever, the upper part whereof is shown at 33.

Having described my invention, what I desire to secure by Letters Patent and claim is:

1. A damper for pianos, comprising a block severed from sheet felt along planes approximately at right angles to the original surfaces thereof, and tapered from one of said planes as a base, the block being mounted by said base on the damper lever in position to move therewith on a line substantially perpendicular to the plane of the base.

2. A damper for pianos, comprising a block severed from sheet felt along a plane approximately at a right angle to one of the original surfaces of the felt, said block being trimmed from said plane as a base, and mounted by said base on the damper lever to act upon a piano-string with its trimmed side inclined to the plane of the base.

3. A damper for pianos, comprising a block severed from sheet felt along a plane approximately at a right angle to an original surface of the felt and its sides trimmed obliquely from said plane as a base, said block being mounted on the damper lever by said base so that the plane of symmetry thereof is parallel to the line of motion of the block when moved toward the piano strings.

4. A damper for pianos, comprising a backing, and a block severed from sheet felt having one side cut in a plane approximately at right angles to an original surface of the felt, said side being positioned on said backing and mounted therewith on the damper lever so that any point on the severed block moves toward the piano strings on a line at right angles to said side.

Signed at the borough of Manhattan in the county of New York and State of New York this 3rd day of May A. D. 1913.

ALBERT JOHNSON.

Witnesses:
H. C. KARLSON,
W. H. GEE.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."