April 21, 1925. 1,534,309

F. FRANKEL

METAL SOUND BOARD FOR PIANOS AND THE LIKE

Filed Aug. 24, 1923

Fig. 1.

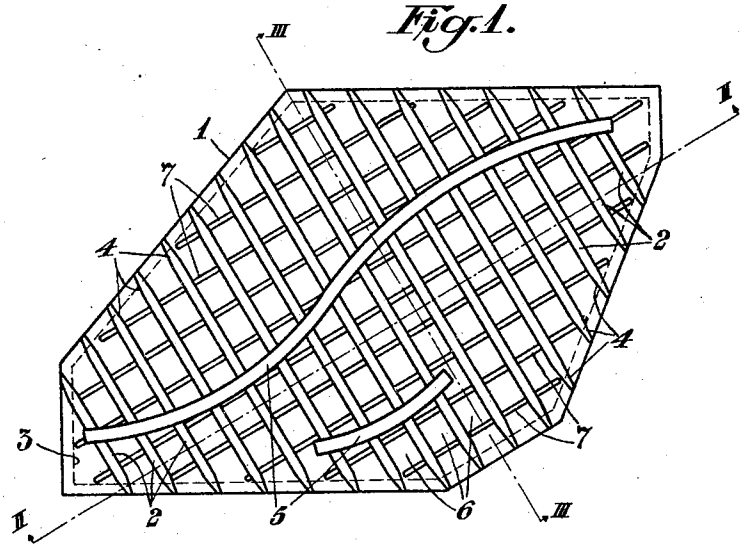


Fig. 2.

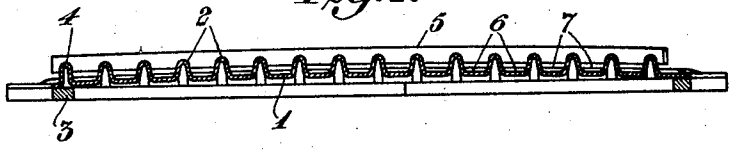


Fig. 3.

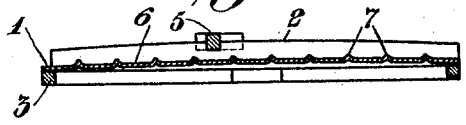


Fig. 4.

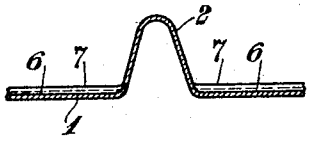
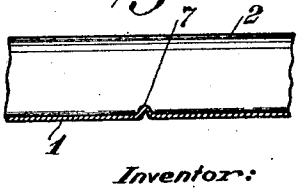


Fig. 5.



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Patented Apr. 21, 1925. 1,534,309

UNITED STATES PATENT OFFICE.

FRIDOLF FRANKEL, OF STOCKHOLM, SWEDEN.

METAL SOUND BOARD FOR PIANOS AND THE LIKE.

Application filed August 24, 1923. Serial No. 659,113.

To all whom it may concern:

Be it known that I, FRIDOLF FRANKEL, a subject of the King of Sweden, residing at Stockholm, in the Kingdom of Sweden, have invented a new and useful Improvement in Metal Sound Boards for Pianos and the like, of which the following is a specification.

As is now well known, the resounding power of sounding boards and sounding plates becomes better the higher the inherent tension is in the board or plate. The purpose of the present invention is to increase the resounding power of such sounding boards or plates which are provided in a manner previously described with corrugations or bent-up folds or ribs having approximately V-shaped cross section formed in the plate or board, and the invention is characterized by that the portions of the plate or board between said projecting corrugations or ribs are contracted or shortened in relation to said corrugations or ribs by folds, ridges or the like formed in said portions by pressing or the like. Owing to the said portions of the plate or board being contracted or shortened in this manner in relation to the intermediate corrugations or ribs, there will of course be set up a certain tension between the said portions of the plate and the corrugations which increases the resounding power. There is also produced a certain bending of the corrugations or ribs so that the plate or board obtains a certain cup-shape or convexity which also increases its capability of supporting the pressure from the strings when the plate is used as a sounding board in a piano.

As an example of the invention a sounding board for a piano constructed according to the present invention is illustrated in the accompanying drawing. Fig. 1 shows the front side of the sounding-board, Fig. 2 is a section on the line II—II in Fig. 1, and Fig. 3 is a section on the line III—III in Fig. 1, Figs. 2 and 3 both showing the curvature or convexity of the board in an exaggerated way. Figs. 4 and 5 show to a larger scale detail views of the sections of the board illustrated in Figs. 2 and 3 respectively.

The sounding board illustrated in the drawing is formed, in a manner previously described, of a whole continuous metal plate 1 in which there are formed corrugations or bent-up folds or ribs 2 which have an approximately U-shaped or V-shaped cross section. The said ribs 2 preferably project above the front side of the sounding-board 1 to which side the bridge or bridges 5 over which the strings are stretched, are secured. When attaching the plate 1 to the fastening rim 3 by soldering, welding or in any other suitable manner, each rib 2 is squeezed or pressed together in suitable manner at its ends 4 at the edges of the plate, so that the cross section of said ends 4 of the ribs becomes slightly narrower than that of the intermediate portions of the ribs, and in this manner the edges of the sounding board become contracted or shortened so that the portion of the plate within said edges obtains a certain cup-shape or convexity, and simultaneously a certain tension will be produced in the same.

According to the present invention there are formed in the portions 6 of the board between the projecting corrugations or ribs 2 folds or ridges 7. Such folds or ridges 7 may be formed in the plate, for instance, by pressing the plate between dies one of which has a ridge or tooth of approximately V-shaped cross section and the other of which has a groove of corresponding shape. These folds or ridges 7 are formed in the plate 1 after the corrugations or ribs 2 have been produced in the plate which may be effected in any manner well known in the art for producing corrugated plates. Owing to said folds or ridges 7 in the plate between the ribs 2 the said portions 6 of the plate will of course become shortened in relation to the ribs 2, so that an increased tension is produced between the said portions 6 of the plate and the ribs 2, and therefore the resounding power of the board is also increased. The said shortening of the plate between the ribs will of course also be conducive to further increase the cup-shape or convexity of the plate. The said folds or ridges 7 may be formed in the plate before or after the plate is secured to the rim 3, and they are naturally located at an angle to the ribs 2 though not necessarily at right angles to the same, and further the ridges 7 between the different ribs 2 need not be in alignment.

Owing to the high tension produced according to the present invention in a sounding plate its resounding power is increased

to such great extent that, for instance, when the plate is used as a sounding board of a piano there is obtained in the instrument a great, noble and beautiful tone heretofore never attained. Sound boards according to the invention may of course also be used for other stringed musical instruments, and they may also be built into the walls of concert halls, lecture-rooms and the like in order to improve the acoustic properties of such localities.

I claim:

1. A metal sounding plate provided with bent-up ribs having approximately V-shaped cross section and projecting above the front side of the sounding plate, the portions of the plate between said ribs being contracted in relation to said ribs in a direction substantially parallel to said ribs.

2. A metal sounding plate provided with bent-up ribs having approximately V-shaped cross section and projecting above the front side of the sounding plate, and having folds in the portions of the plate between said ribs contracting said portions in relation to said ribs.

3. A metal sounding plate provided with bent-up ribs having approximately V-shaped cross section and projecting above the front side of the sounding plate, each of said ribs being pressed together at its ends at the edges of the sounding plate, for the purpose of producing contractions of the edge portions of the sounding plate, the portions of the plate between said ribs being contracted in relation to said ribs.

4. A metal sounding plate provided with bent-up ribs having approximately V-shaped cross section and projecting above the front side of the sounding plate, each of said ribs being pressed together at its ends at the edges of the sounding plate, for the purpose of producing contractions of the edge portions of the sounding plate, and having folds in the portions of the plate between said ribs contracting said portions in relation to said ribs.

FRIDOLF FRANKEL.