

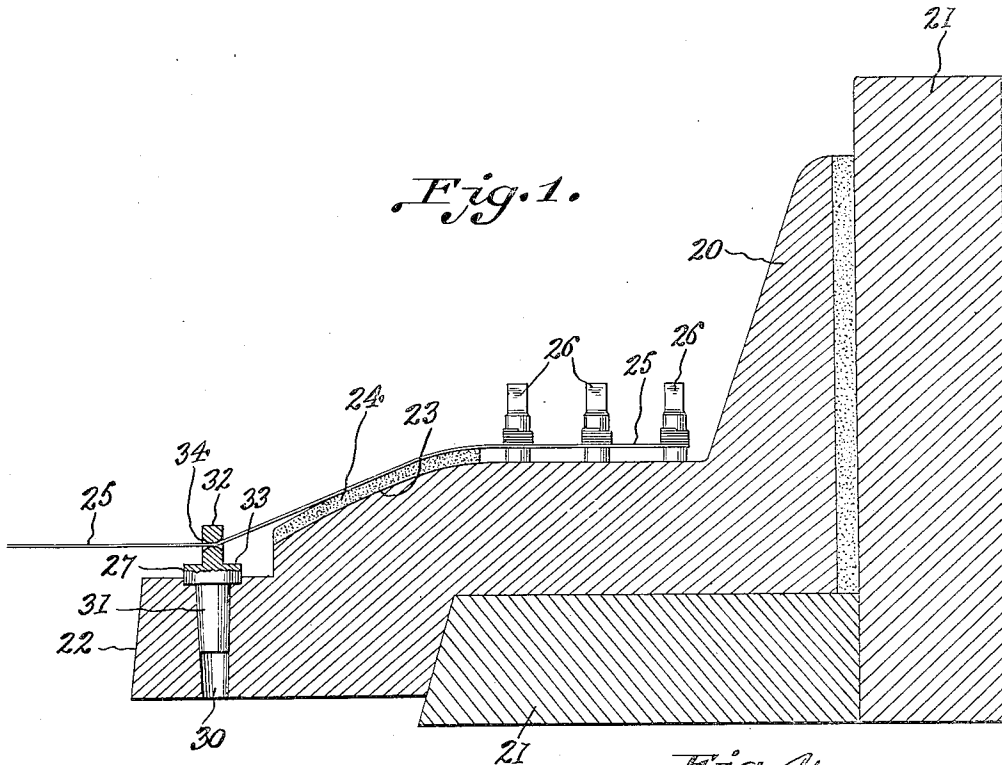
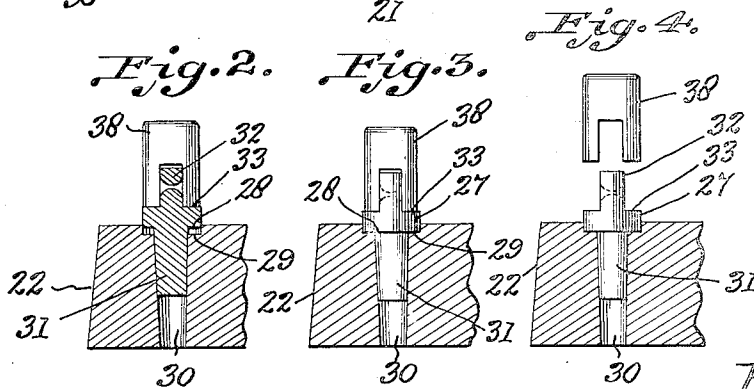
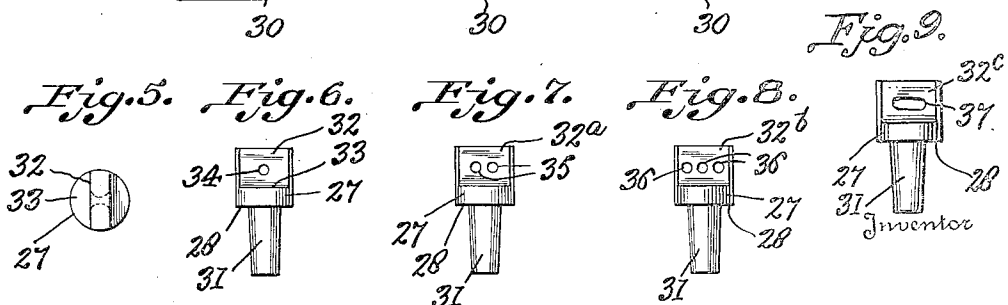
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PIANO, AND MORE PARTICULARLY TO THE MOUNTING OF STRINGS THEREON

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PIANO, AND MORE PARTICULARLY TO THE
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The present invention relates to pianos, and more particularly to the mounting of strings thereon.

5 An object of the present invention is to provide an improved agraffe and a string frame plate mounting therefor admitting of the uniform mounting of the agraffes on the plate as to height and also the accurate transverse adjustment of the head of the agraffe with respect to the axes
10 of the strings.

It is well known that agraffes at the present time are threaded into socket openings in the string frame or plate and are secured or turned down into the openings until the agraffe is properly seated on or in the plate. The difficulty with this construction is that when the agraffe is turned down tight on the plate seat, the head of the agraffe is often not in proper transverse alignment with the string and it is necessary therefore
15 to further turn the agraffe tighter in position or raise it by turning backwardly to obtain the required position of the head. The benefit of the plate rest or seat for supporting the agraffe head is thus lost and washers and other devices have been resorted to for taking up the difference in the seating of the agraffe in the plate incident to the necessary adjustments thereof.
20 25

Another difficulty encountered with this present construction is that the agraffes are disposed at different heights on the plate and the strings are consequently not held in the necessary common plane to obtain the best results in the operation of the piano action.
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Another object of the invention is therefore to overcome these various difficulties and to provide an agraffe which may be firmly seated in one definite position upon the string frame or plate so that all of the agraffes of the string frame or plate are at the required height, and wherein the agraffe head may be turned into the required transverse alignment with respect to the string axes so that all of the agraffes will be firmly supported and will be properly aligned throughout the entire string frame.
35 40

45 A further object of the invention is to provide a construction of agraffe and supporting plate therefor wherein the lining up of the holes parallel with the line of strings may be accomplished after the agraffes are seated on the plate and before they are finally secured in place by use of a template or pattern to insure that all of the agraffe heads will be properly aligned transversely to their strings.
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55 The invention also has for an object to provide a construction of agraffe wherein its seating is positive and extremely solid and wherein the structure is such that the agraffe is limited as to depth when forced into the string frame or plate to insure a uniform line for the string holes
60

throughout the plate and to offset energy losses from vibrating strings.

A still further object of the invention is to provide a construction of agraffe and mounting therefor wherein a harder material than usual
5 may be employed, such as hard brass or bronze, wherein no threads are required and wherein the strings are thus prevented from cutting into the material so as to insure a more accurate limit to the speaking length of the strings at the front of the scale, and to provide an agraffe construction wherein fewer operations and fewer tools are required on the automatic screw machine in which agraffes are made; resulting in greater ease, speed
10 and more economical manufacture.
15

With the foregoing and other objects in view, the invention will be more fully described hereinafter, and will be more particularly pointed out in the claims appended hereto.

In the drawing, wherein like symbols refer to
20 like or corresponding parts throughout the several views.

Figure 1 is a transverse section taken through the front portion of a string frame, showing the supporting case and a portion of string frame
25 with the improved agraffe structure mounted therein.

Figure 2 is a fragmentary sectional view taken through a portion of the plate with an agraffe pin partly mounted therein and in position to be
30 transversely aligned with respect to the strings, a seating tool being shown as applied to the head of the agraffe.

Figure 3 is a similar view showing the agraffe seated in the string frame or plate.
35

Figure 4 is a like view showing the tool removed and with the agraffe properly seated and positioned in the plate.

Figure 5 is an upper end view of the agraffe.

Figure 6 is a side elevation thereof, showing
40 one string aperture for use in the bass section of the string frame.

Figure 7 is a like view showing a slight modification wherein the head of the agraffe is provided with two string openings for use in the bass
45 string section of the frame.

Figure 8 is a like view of a further modified form of agraffe, showing three string openings for use in the treble section of the string frame, and

Figure 9 is a similar view showing a further
50 modification wherein the head of the agraffe is provided with an elongated slot for accommodating a number of strings.

Referring now to the drawing, and first to Figure 1, 20 designates a string frame mounted
55 in the usual manner in a case 21 which may be a portion of a piano or the like, and the string frame 20 is provided with a flat portion 22 in which the agraffes are supported and adjacent which is disposed the bearing 23 having a pad 24 60

of felt or the like over which strings 25 are drawn after passing through the agraffe. The strings 24 are secured to tuning pins 26 mounted on the string frame outwardly of the bearing 23.

5 This construction is at present well known with the exception of the particular structure of the agraffe and the adjacent portion of the string frame or plate 22 in which the latter is mounted.

The agraffe comprises a head 27 which is of 10 disc form presenting a downwardly facing annular shoulder 28 adapted to seat in the bottom of a counterbore or seat 29 formed in the upper face of the string frame or plate 22 and which is coaxial with a smooth downwardly tapering bore 15 30 reamed or otherwise suitably provided in the plate 22. This bore 30 preferably extends through the upper and lower faces of the plate 22 and is given a slow or gradual taper. The head 27 of the agraffe has a shank 31 which is also of a 20 slow taper and of desired length for wedging engagement in the upper portion of the bore 30, as shown in Figures 3 and 4.

The upper portion of the head 27 of the agraffe is flattened at opposite sides to provide an up- 25 standing lug 32 which extends transversely of the head and terminates at the opposite edges of the latter but which being flat, provides at opposite sides of the head upwardly facing opposed shoulders 33. The lug 32 may, as shown in Fig- 30 ures 5 and 6, be provided with a single string opening or aperture 34. As shown in Figure 7, the lug 32^a may be provided with two string openings or apertures 35 or, as shown in Figure 8, the lug 32^b may be provided with three string 35 openings or apertures 36.

As shown in Figure 9, the lug 32^c of the head 27 may be provided with a transversely elongated slot or opening 37 adapted to receive any desired number of strings.

40 In mounting the agraffes on the string frame or plate 22, the shanks 31 are initially fitted in the upper ends of their respective bores 30, as shown in Figure 2 and, by use of a template or any other suitable means, the proper transverse 45 positions of the lugs 32 is determined by rotatably adjusting the agraffe in its initial feeding position. A suitable tool 38 which is kerfed at its lower end is positioned over the lug 32 and en- 50 gaged with the upper shoulders 33 at opposite sides of the lug 32 so that by pressure, tapping or the like on the upper end of the tool 38 the agraffe may be driven first part-way into the opening 30, as shown in Figure 2.

After the lugs 32 have been properly aligned 55 with respect to their strings 25, the tool 38 is forced downwardly so as to wedge and bind the shank 31 of the agraffe in the bore 30, the downward driving movement of the agraffe is re- 60 stricted by engagement of the lower shoulder 28 of the agraffe head with the seat 29 which is sunk in the upper face of the string frame or plate 22. The shoulder 28 and the seat 29 thus not only firmly support the head of the agraffe 65 against lateral pressure between the head and the stem of the agraffe, but they also determine the limit of downward movement or seating of the agraffe so that all of the agraffes of the string frame are disposed in proper horizontal align- 70 ment so as to properly support the strings 25 in the desired plane. The tool 38 engaging the opposite shoulders 28 evenly distribute pressure of

the tool on the opposite sides of the agraffe head and directly in line with the seat 29 in the plate. Thus, a firm seating of the agraffe in the plate is insured in all positions of the lug 32 about the axis of the agraffe.

5 As shown in Figure 4, the tool 38 is now removed and the agraffe is thus disposed in a uniformly seated position in the string frame 22 and also at the desired angle of rotation in respect to the axis of the agraffe. 10

The construction of this agraffe is such that it conforms to conventional string mounting, re- 15 quires less steps and labor in its manufacture, entirely eliminates all turning torsion on the agraffe tending to break it and which dispenses with the use of washers and other devices for attempting to hold the head of the agraffe rigidly on the plate. The turning torsion on the con- 20 ventional agraffe frequently results in the stripping of the threads of the shank and the breakage of the latter is eliminated. With the present construction the agraffe is loosely fitted in the upper end of the bore 30, is aligned with its string, and is then driven straight down into its seat in the string frame or plate in a manner to rigidly 25 hold it in position.

While I have herein described one simple and preferred embodiment of my present invention, it is nevertheless to be understood that the same is susceptible of more or less modification as to 30 the various details thereof, and I accordingly reserve the privilege of resorting to all such legitimate changes therein as may be fairly incorporated within the spirit and scope of the appended claims. 35

What is claimed is:—

1. An agraffe and mounting therefor, comprising a string frame or plate having a smooth bore tapering downwardly therein, said plate 40 having a counterbore in its upper face providing an annular seat coaxial with the bore, and an agraffe having a tapering smooth shank for wedging engagement downwardly in the bore of the plate and having a head on its upper end with a 45 downwardly facing shoulder for engaging the seat to steady the agraffe and determine the height thereof on the plate, said head having an up- standing transverse lug with a string opening therethrough and having upwardly facing shoul- 50 ders at opposite sides of the lug to receive a kerfed tool for seating the agraffe in the plate and for turning the agraffe to true the axis of the string opening with the string.

2. An agraffe and mounting therefor, comprising a string frame or plate having a smooth 55 bore tapering downwardly therein, said plate having a counterbore in its upper face providing an annular seat coaxial with the bore, and an agraffe having a tapering smooth shank for wedging en- 60 gagement downwardly in the smooth bore of the plate, and having a head on its upper end with a downwardly facing shoulder for engaging the seat to steady the agraffe and determine the height 65 thereof on the plate, the bore of the plate being slightly smaller in diameter than the diameter of the shank of the agraffe, to provide a holding action by frictional engagement only and to per- 70 mit the shank to enter the bore to the extent of sealing the head on the counterbore seat of the plate.

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