

C. F. T. STEINWAY.
Improvement in Piano-Fortes.

Fig. 1.

This technical drawing illustrates a complex mechanical assembly, possibly a steam engine or pump mechanism, shown in a cross-sectional view. The central component is a large, curved, bowl-shaped structure labeled 'A'. A vertical shaft or piston rod, labeled 'E', passes through the center of this structure. To the right of the main bowl, there is a circular component with a multi-lobed internal design, resembling a valve or a flywheel. Various connecting rods, levers, and structural supports are shown, with labels 'a' through 'z' indicating specific parts. The entire mechanism is housed within a rectangular frame. The drawing is a detailed line drawing, typical of engineering or patent illustrations from the late 19th or early 20th century.

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No. 127,384.

Fig 3.

Patented May 28, 1872.

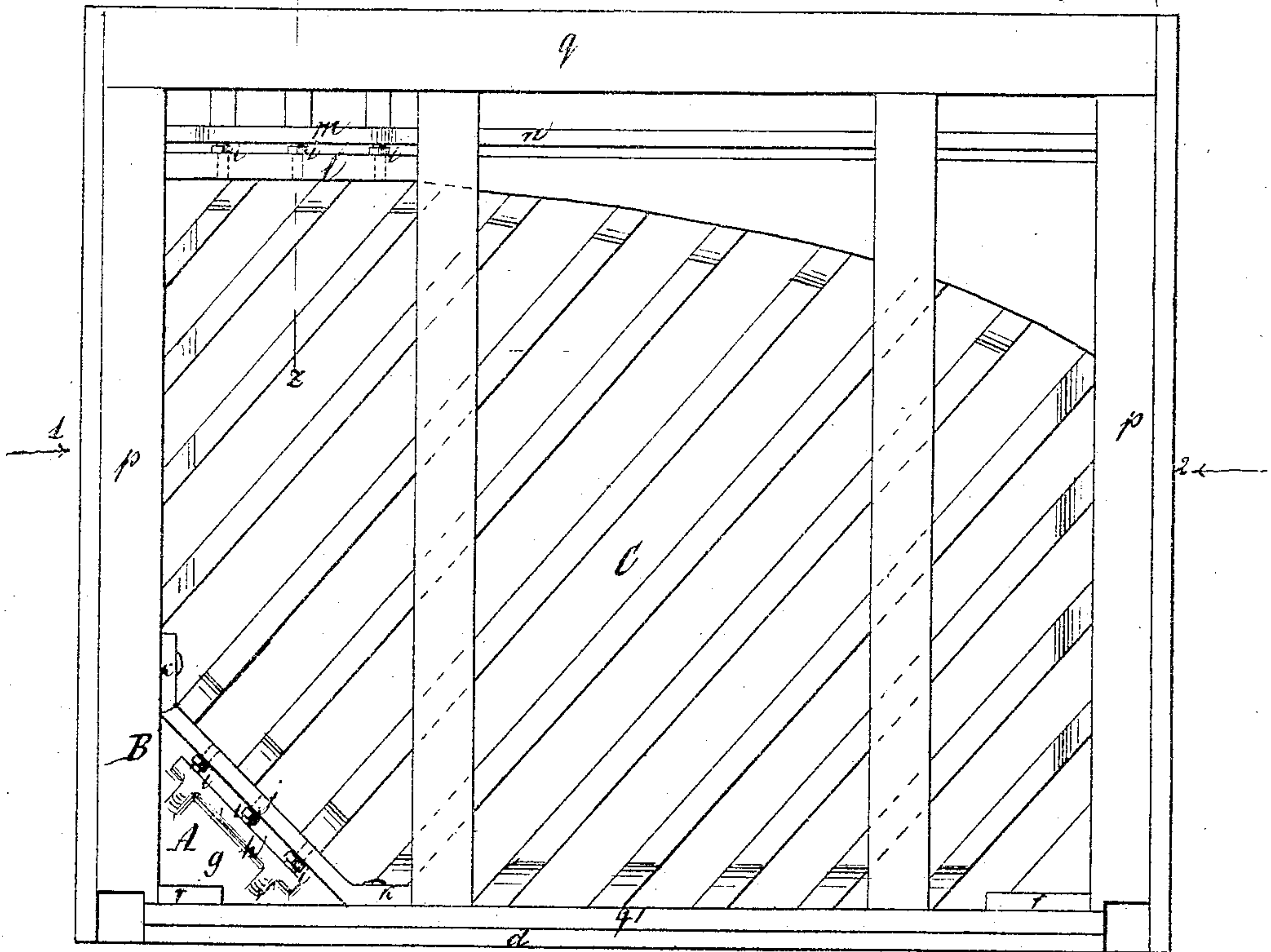
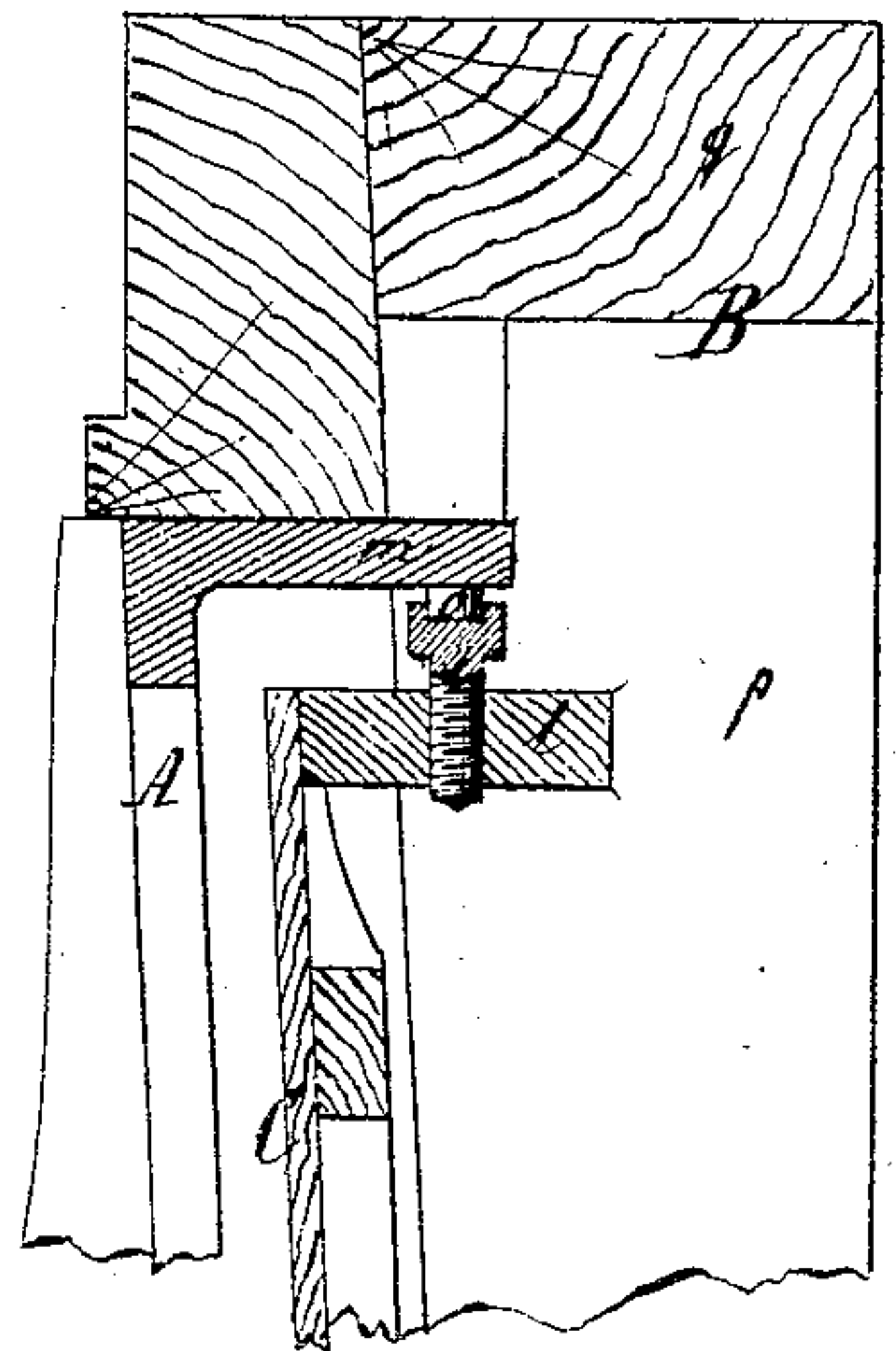
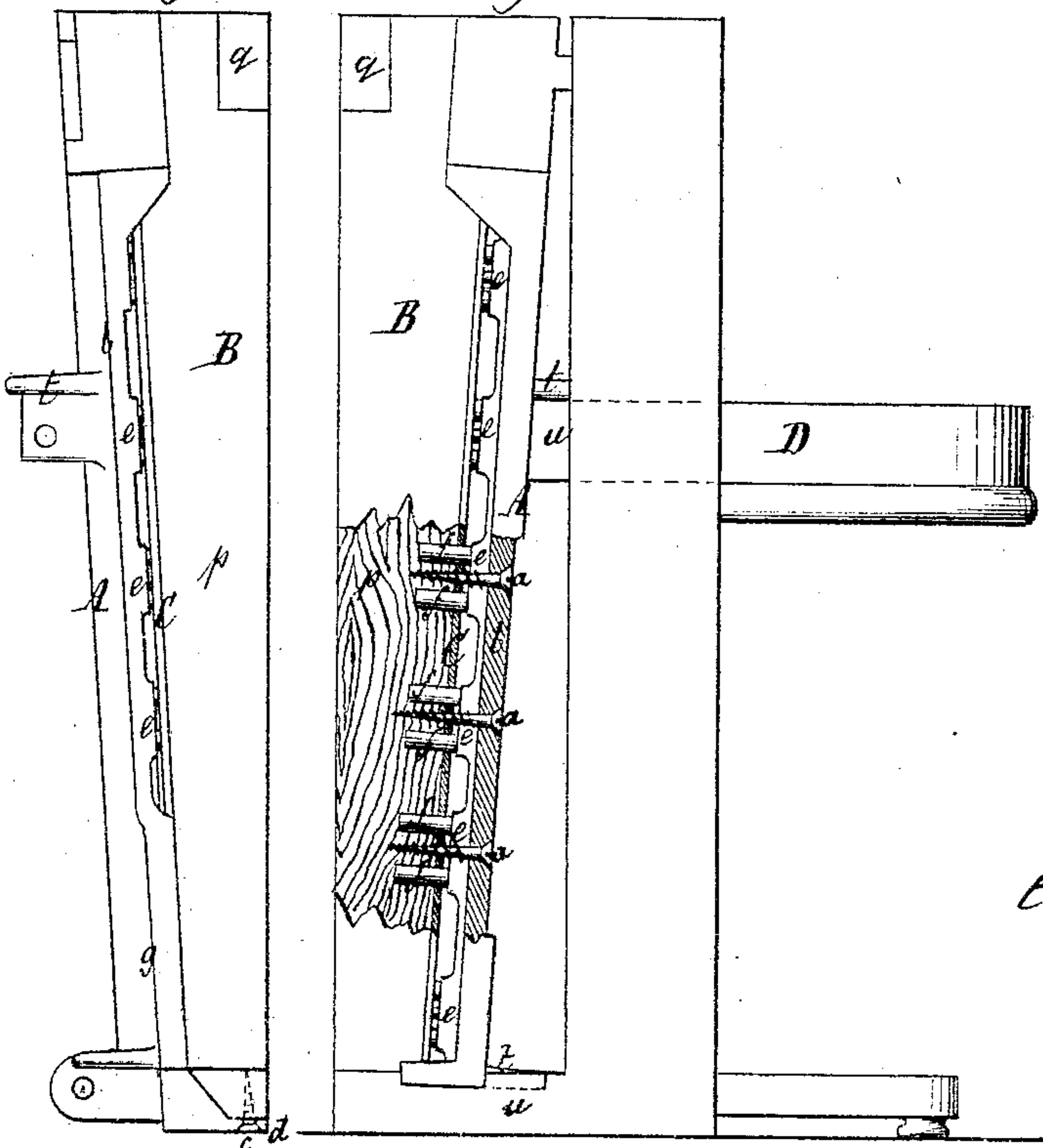


Fig. 4.

Fig. 5.

Fig. 6.



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UNITED STATES PATENT OFFICE.

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IMPROVEMENT IN PIANO-FORTES.

Specification forming part of Letters Patent No. 127,384, dated May 28, 1872.

To all whom it may concern:

Be it known that I, C. F. THEODOR STEINWAY, of the city, county, and State of New York, have invented a new and useful Improvement in Piano-Fortes; and I do hereby declare the following to be a full, clear, and exact description thereof, which will enable those skilled in the art to make and use the same, reference being had to the accompanying drawing forming part of this specification, in which drawing—

Figure 1 represents a sectional front view of an upright piano-forte constructed according to this invention, the key-board and the case containing the same having been cut off so as to expose the metal frame and the wrest-plank. Fig. 2 is a horizontal section of the same in the plane $x x$, Fig. 1. Fig. 3 is a rear view of the wooden case supporting the sounding-board, the metal frame, and the wrest-plank. Fig. 4 is an end view of the same looking in the direction of arrow 1 in Figs. 1 and 3. Fig. 5 is a sectional end view of the same looking in the direction of arrow 2 in Figs. 1 and 3. Fig. 6 is a transverse section of the wrest-plank, part of the metal frame and the sounding-board, with the wooden case supporting these parts, in a larger scale than the previous figures, the plane of section being indicated by the line $z z$, Fig. 3.

Similar letters indicate corresponding parts.

This invention relates to certain improvements which are intended more particularly for upright piano-fortes, but some of which are also applicable to grand or square piano-fortes. These improvements consist in an arch or cupola shaped metal frame, provided with flanges which project down over the edges of the wooden case, and also with lips which descend beneath the level of the sounding-board and form abutments for the heads of screws, which are inserted into parts of the wooden case, and serve to compress the sounding-board in such a manner that the power of resistance of the metal frame against the tension of the strings is materially increased, partly by the arched shape of said plate and partly by the flanges and screws. The heads of the pressing-screws are bored out to receive plugs of India rubber, or other soft and elastic material, to prevent the metallic heads from bearing directly against

the metal frame. The metal frame is also provided with lugs or ears for the reception of screws, which serve to connect the same to the front case containing the key-board, in such a manner that the entire front case can be readily detached from the rear case containing the sounding parts of the piano-forte, and thereby the front case is prevented from interfering with the vibrations of the sounding-board, and at the same time the transportation of the piano-forte is materially facilitated. The wooden case which supports the sounding-board consists of two uprights, which are mortised into a top cross-bar, and connected to a bottom cross-bar by dowels, and combined with a brace and wedges, said brace being provided with screws which press against a ledge of the metal frame, so that the whole can be supported and rendered very firm. The end of the sounding-board bridge is turned in a reversed curve toward the middle of the sounding-board, so as to allow of placing the covered strings in two groups, and to produce a reduced scale.

In the drawing, the letter A designates the metal frame of an upright piano-forte, which is cupola-shaped or rounded at two of its sides, and which is secured to the wooden case B, supporting the sounding-board C, by means of screws $a a$ passing through flanges $b b$, (see Fig. 1,) and also by screws c passing through the bottom flange d which overlaps the edge of the wooden case, as shown in Fig. 4. On the under surface of the flanges $b b$ I have provided projections e , which bear upon dowel-pins f (see Fig. 5) secured in the wooden case, and projecting somewhat above the surface of the sounding-board so as to leave said sounding-board free to vibrate without coming in contact with the metal frame. The top flange n in Fig. 3 is rounded on its inner edge, whereby the strength of the metal frame is materially increased. On one corner, g , my metal frame descends below the surface of the sounding-board, (see Figs. 1 and 3,) and from the under side of this depressed corner projects a ridge, h , (see Fig. 3,) which forms the abutment for screws i , serving to compress the sounding-board. These screws are secured in a brace, j , which is inserted in the corner of the wooden case in a diagonal position, and held in position by lugs k . (See Fig. 3.) Simi-

lar screws *i* are also secured in a bar, *l*, which forms a part of the wooden case, and is situated opposite a projection, *m*, of the top flange *n* of the metal frame. (See Figs. 3 and 6.) The heads of the screws *i* are bored out to receive plugs *o* of India rubber, leather, or other suitable material, which prevent the metallic heads from coming in direct contact with the metallic frame. One of these screws is shown in Fig. 6. The wooden case B in Fig. 3 is constructed of two uprights, *p p*, which are mortised in the ends of the top cross-bar *q*, while their bottom ends are connected by means of dowels *r* with the bottom cross-bar *q'*. By means of the screw *i*, brace *j*, lugs *k*, and bar *l*, the wooden case is supported, and the sounding-board is compressed and rendered sounding. From the front of the metal frame A project lugs or ears *t*, which are perforated with holes to receive screws passing through arms *u* (see Figs. 1 and 2) projecting from the front case D, so that, when said screws are removed, the front case, together with the key-board and its attachments, can be taken away, and thereby the transportation of my piano-forte be materially facilitated. At the same time the front case, being, when in position, connected solely to the metal frame, does not interfere with the vibrations of the strings or of the sounding-board. The sounding-board bridge E (see Fig. 1) is curved at its end so as to form a branch, *v*, extending toward the center of the sounding-board, or in a direction reverse from that described in my patent No. 97,982, dated December 14, 1869. By this inwardly-curved branch of the bridge I am enabled to apply two groups of covered strings,

one group, *s s*, being supported by the main branch of the bridge, while the other group, *s' s'*, is supported by the return branch *v*, as shown in Fig. 1. By this arrangement the scale of the piano-forte can be reduced, and all the strings *s s'*, bearing on one and the same sounding-bridge E, transfer their vibrations to the entire sounding-board, whereby the tone of the instrument is rendered even and uniform.

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

1. The arch or cupola shaped metal frame A, provided with side flanges *b* and with top and bottom flanges *n d*, one corner, *g*, of said frame being depressed beneath the level of the sounding-board, substantially as herein shown and described.
2. The screws *i*, having plugs *o* inserted in their heads, in combination with ridges *h m* on the metal frame A, and with the sounding-board C of a piano-forte, substantially as set forth.
3. The lugs or ears *t* on the metal frame, in combination with arms extending from the front case D, substantially as and for the purpose described.
4. The wooden case B which supports the sounding-board C, constructed of uprights *p p*, transverse bars *q q'*, brace *j*, lugs *k k*, and bar *l*, substantially as set forth.
5. The sounding-board bridge E with its return branch *v*, in combination with the strings *s s' s'*, substantially as described.

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