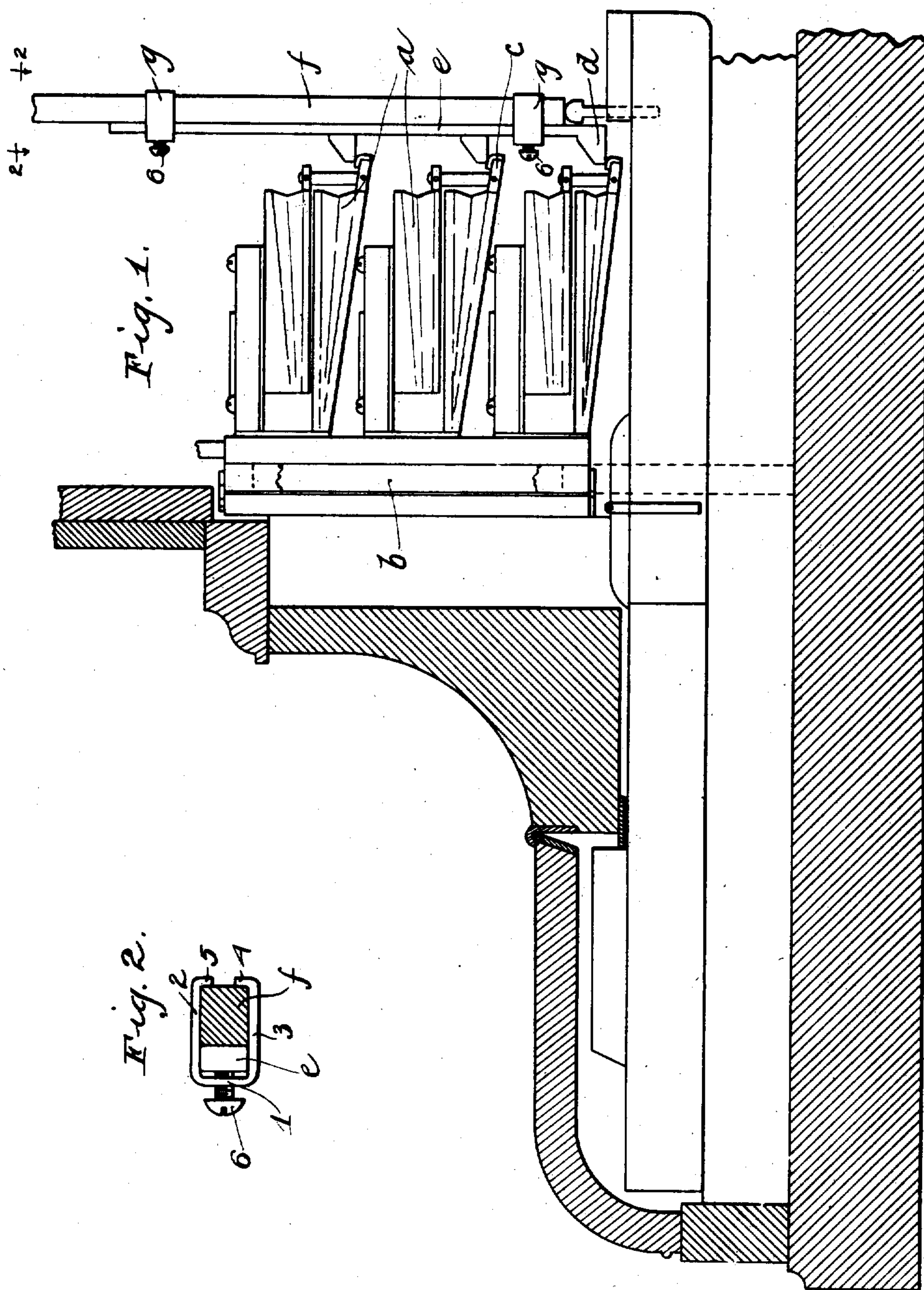


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CLAMPING MECHANISM FOR PNEUMATICALLY OPERATED PIANOS.  
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# UNITED STATES PATENT OFFICE.

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## CLAMPING MECHANISM FOR PNEUMATICALLY-OPERATED PIANOS.

No. 903,285.

Specification of Letters Patent.

Patented Nov. 10, 1908.

Application filed February 21, 1908. Serial No. 416,959.

To all whom it may concern:

Be it known that I, AXEL G. GULBRANSEN, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a certain new and useful Improvement in Clamping Mechanism for Pneumatically-Operated Pianos; (Case 7,) of which the following is a full, clear, concise, and exact description, reference being had to the accompanying drawings, forming a part of this specification.

My invention concerns improved clamping arrangement for use in pneumatically operated pianos.

My invention is of particular utility in pneumatic playing pianos, in which the arrangement is as disclosed in my Patent No. 874,762 of December 24, 1907, in which the pneumatic actions are arranged in horizontal rows or tiers above the keys and in front of the lower ends of the piano abstract rods, the pneumatic actions engaging directly with abutments secured to the abstract rods. It is very desirable that these abutment members be adapted for adjustable engagement with the abstract rods. It is also desirable that they be applied in such manner that the abstract rods will not need to be disturbed or weakened, as, for instance, by drilling holes into the rods for receiving screws, this operation oftentimes resulting in splitting of the abstract rods.

My invention, therefore, contemplates a clamping arrangement which will not require any wear on the abstract rods and is in the form of clamps which embrace the abstract rods and the abutment members, each clamp being provided with a set screw for engaging against the abutment member, thus to firmly clamp the abutment members against the rods.

In the accompanying drawing—Figure 1 is a sectional view of a piano shelf and key compartment showing the general arrangement of the pneumatic actions with reference to the abstract rods; Fig. 2 is a view taken from plane 2—2 of Fig. 1, showing the form of clamp.

The pneumatic actions *a* are mounted in horizontal rows or tiers from the rear wall of a low pressure chamber *b* extending across the interior of the piano. Each pneumatic action has an abutment extension *c* for engaging with the foot *d* of an abutment member *e*, which abutment members are secured

to the abstract rods *f* of the piano. To adjustably secure the abutment members to the abstract rods clamps *g* are provided whose form is best shown in Fig. 2. Each clamp is bent from sheet material, preferably of a springy nature, and is substantially U-shaped, comprising a front wall 1, side walls 2, 3 and the inwardly turned ends 4 and 5. The front wall has a threaded opening for receiving a set screw 6. The side members 2 and 3 of the clamps are normally sprung inwardly a trifle so that they will clamp the abstract rod to cause the clamp to be self-supporting.

When the abutment members are to be applied two clamps are slipped on each abstract rod and over the abutment member for the abstract rod, which abutment members are in the form of flat rods or plates having the same width as the abstract rods. One of the clamps is then moved to the lower end of the abstract rod and the other remains near the upper end of the abutment member. The set screws 6 are normally loose enough to allow the abutment member to be easily moved longitudinally. The pneumatic action mechanism being in place and the abutments *c* all in proper normal position, each abutment member is moved downwardly until its foot *d* engages the abutment *e* extending from the associated pneumatic action member, whereupon the set screws of the top clamps are tightened. After all the abutment members have been set and locked by setting of the upper clamps, the pneumatic action mechanism is removed and the lower set screws of the lower clamps tightened. Owing to the disposition of the pneumatic action members in horizontal rows, the abutment feet *d* will be in different planes, but the abutment rods *f* preferably make of different lengths so that when the abutment members have all been secured to the abstract rods the top ends thereof will all be in a horizontal line, and likewise the top clamps will all be in a horizontal line, which line is above the plane of the pneumatic action mechanisms. This renders the upper clamps accessible from the top of the pneumatic action mechanisms, and the first adjustment of the abutment members can be very readily made without disturbing the pneumatic action members.

I have shown the abutment members passing through the clamps between the abstract



rods and the set screws, but the clamps could be arranged so that the abstract rods would be between the abutment members and the set screws so that the set screws will be accessible from the rear of the piano. The entire adjustment could then be made without disturbing the pneumatic actions or removing them from the instrument. By the use of these clamps no work is necessary on the abstract rods which retain their original strength. Other clamps of the prior art require that the abstract rods be drilled for screw holes; and very frequently the grain will run crosswise and the abstract rod cracked or split. The clamp also is very simple and inexpensive and its application requires very little labor.

Having thus described my invention, I desire to secure the following claims by Letters Patent—

1. In a pneumatically operated piano, the combination of the abstract rods for the piano, pneumatic action mechanisms arranged within the piano casing in front of the ends of the abstract rods, abutment members for each abstract rod to be engaged by an associated pneumatic action mechanism so that upon actuation of the pneumatic action mechanism the abstract rod will be raised, and means for securing the abutment members to the abstract rods, said means being in the form of metallic U-shaped clamps which embrace the abstract rods and abutment members and which are provided with set screws for locking them in position and for firmly clamping the abutment members to the abstract rods.

2. In a pneumatically operated piano, the combination of the piano abstract rods, pneumatic action mechanisms arranged in front of the abstract rod ends and within the piano casing, abutment members for the abstract rods to be directly engaged by the pneumatic action members, a set of clamps for holding each abutment member to its abstract rod, one clamp engaging at the top of the abutment and the other at the end of the abstract rod, each clamp being in the form of a rectangular U-shaped member formed of sheet material, and a set screw for clamping the abutment member to the abstract rod.

3. In a pneumatically operated piano, the combination of the piano abstract rods, pneumatic action mechanisms arranged within the piano casing in front of the lower ends of the abstract rods, abutment members for connecting the pneumatic action mechanisms directly with the abstract rods, and

clamps for clamping each abutment member to its abstract rod, each clamp comprising a U-shaped body part for embracing the abstract rod and abutment rod, the ends of the body part being turned inwardly, and a set screw passing through the head of the body part for engaging with and clamping together the abutment member and abstract rod within the body part.

4. In a pneumatically operated piano, the combination of the piano abstract rods, pneumatic action mechanisms arranged within the piano casing in front of the lower ends of the abstract rods, abutment members for connecting the pneumatic action mechanisms directly with the abstract rods, clamps for clamping each abutment member to its abstract rod, each clamp comprising a U-shaped body part for embracing the abstract rod and abutment rod, the ends of the body part being turned inwardly, and a set screw passing through the head of the body part for engaging with and clamping together the abutment member and abstract rod within the body part; the body part walls being sprung inwardly so that the clamps will self-support themselves on the abstract rod before the screws are set.

5. In a pneumatically operated piano, the combination of the abstract rods, pneumatic action mechanisms arranged in front of the lower ends of the abstract rods, clamps engaging about the abstract rods, abutment members for the abstract rods, said clamps having passageways therethrough for receiving the abutment members, and set screws for the clamps for clamping the abutment members to the abstract rods.

6. In a pneumatically operated piano, the combination of the piano abstract rod, pneumatic action mechanism arranged in front of the lower end of the abstract rod, an abutment member for directly connecting the pneumatic action mechanism with the abstract rod, spring clamps normally embracing the abstract rod and having a passageway through which the abutment member may slide to be adjusted with reference to the pneumatic action mechanism, and a set screw for each spring clamp for permanently securing the abutment member to the abstract rod.

In witness whereof, I hereunto subscribe my name this 18th day of February, A. D. 1908.

AXEL G. GULBRANSEN.

Witnesses:

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