

D. L. BOLLERMANN.

Improvement in Hammer Flange Butts of Piano actions.

No. 121,077.

Patented Nov. 21, 1871.

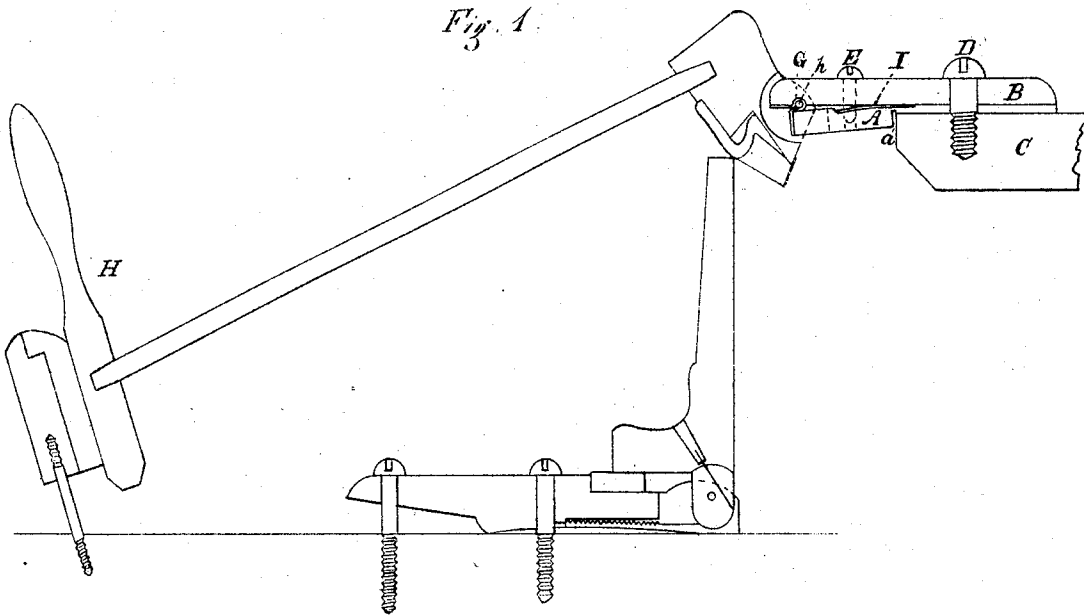


Diagram.
old-

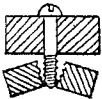


Fig. 2.

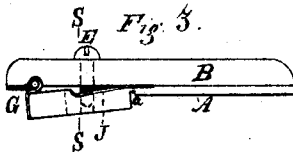
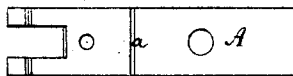


Fig. 4.

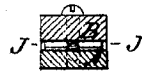


Fig. 5.



Fig. 6.



Fig. 7.

Witnesses.

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IMPROVEMENT IN HAMMER-FLANGE BUTTS OF PIANO ACTIONS.

Specification forming part of Letters Patent No. 121,077, dated November 21, 1871.

To all whom it may concern:

Be it known that I, DOMINIC L. BOLLERMANN, of Mount Vernon, in the county of Westchester, State of New York, have invented certain new and useful Improvements in Piano-Forte Actions, of which the following is a specification:

The invention relates to that part of the action which is usually called the hinge-butt. It is the part which is fixed upon the rail to carry the pivot of the hammer. Many modifications have been made in the construction of the hinge-butt to allow the ready adjustment of the position of itself, and consequently of the path of the hammer, and to allow the ready removal and replacing of the hammer in case repairs are necessary. All are subject to objection in the want of sufficient strength and elasticity with a proper flexibility to allow the parts to open and a proper security against opening too far. Among other devices some French manufacturers have screwed upon the top of each hinge-butt a thick plate of brass, which adds greatly to the expense. Other manufacturers have bored a hole through the butt of such size as to nearly cut off the lower branch and introduce a thin cylinder of tempered steel open on one side, corresponding to a saw-kerf, which partly divides the upper from the lower part. All the modifications in which the whole hinge-butt is made of one piece of wood and the division or split is made by a saw-kerf subject the work to a liability of being considerably out of truth. The hole which carries the center for the hammer in such case requires to be bored or drilled by an instrument, which is liable to run. I esteem it far preferable to make the hinge-butt by the old and long-approved plan of making the top and bottom in two pieces glued together half their length, and to make the lower part properly flexible by a transverse saw-kerf on the under face. I adopt this plan. This construction allows the recess for the hammer-center to be made by sawing across a great number at once, and it is certain to be exactly in line. My invention allows for the highest degree of perfection in the work, a high degree of economy in the construction, and, in addition to all its other advantages, provides for effectually insuring against an evil which has become very serious in this class of work—the splitting of the lower part.

The following is a description of what I con-

sider the best means of carrying out the invention.

The accompanying drawing forms a part of this specification.

Figure 1 is a side elevation of the hinge-butt half open. This figure also gives a general idea of its relation to the other parts, which it is not necessary to repeat in the other figures. Fig. 2 is a plan view seen from below. Fig. 3 is a side elevation. Fig. 4 is a cross-section on the line S S in Fig. 3. Fig. 5 is one form of the spring detached. Fig. 6 is another and generally preferable form. Fig. 7 is an edge view of the spring. On the left is a diagram in cross-section, showing how the strain tends to break the parts.

Similar letters of reference indicate corresponding parts in all the figures.

C is the rail and A B the upper and lower parts of the hinge-butt. The parts A and B are firmly glued together along that portion which laps upon the rail and are left unglued or free over the other half, or the portion which overhangs the rail, and is intended to open and close. D is the stout screw which holds the entire hinge-butt and its connected hammer to the rail. E is the screw which adjusts the distances apart of the free ends of the parts A and B. It stands loosely in a round hole in the upper part B, and its thread takes tightly in the lower part A. A saw kerf, *a*, extends across the lower side of the lower part A.

So far as has yet been described the construction is old and well-known. So also may be the construction of the entire hammer H, with the jack for operating it and the provision for receiving the wire *h*, which forms the center pivot for the hammer within an envelope of delicate cloth, technically known as bushing, G, held within a recess truly formed across the under face of the upper part B, the bushing G being glued at each end to the respective parts A and B, and being free to open and close upon the pivot *h* as the parts A and B are opened and closed by turning the screw E.

The novelty in my invention lies in a broad-surfaced, metallic, slightly-arched spring, I, which is extended between the parts A and B. It is made of thin steel—the same material and thickness as is used for delicate writing-pens. It is curved in the direction of its length, and is either perfectly flat or very slightly curved in the trans-

verse direction, with an opening to receive the adjusting-screw E. This spring may be inserted by a lateral movement before the screw E is introduced, and the screw E afterward introduced through the opening. The force of the spring I tends to depress the part A and thereby to open the jaw to receive or discharge the hammer-pivot. Now, by turning the screw E, the jaw is closed upon the hammer-pivot *h* to any degree of tightness required. The tightness of the hold upon the hammer-pivot being adjusted with delicacy by setting up on the screw E with greater or less tightness, the parts remain immovably fixed for an indefinite period.

The spring I, formed and arranged as represented, performs the double function, first, of holding the lower part A with a gentle downward tendency against the force of the screw E, (thereby avoiding the necessity of forcing down the part A to remove or introduce the hammer;) and, second, sustaining the lower part A against all danger of splitting. This latter is a very important point. The screw E exerts its force on the center line of the lower part A, and any strain on the pivot due to an irregular motion or blow on the hammer is exerted downward on the same part, not in the center line, but near the extreme edges. The result is an upward pull of the screw E at the center and a downward force on each edge, with a tendency to split the lower part, as shown in the diagram marked "old." The recess grubbed out along the center line to receive the hammer-butt weakens the resistance of the lower part A to a splitting force, and no spring heretofore proposed to depress the lower part has fortified the part in any degree against splitting. My spring accomplishes this desired end. It bears firmly across the upper face of the lower part A. I propose to give the end nearest the hammer-center a slight depression in the middle, so that while it is ready to bear all the way across it will bear most firmly in the middle, where the strain due to the screw E is received.

Thus far I have said nothing of the recess provided in the lower part to receive the spring I. This recess, marked J in Figs. 3 and 4, is of service in several ways, and particularly in aiding to hold the spring I exactly in position and prevent its getting twisted partially around. The invention may be used with some success without this provision, because the screw E, introduced through the opening *i* in the spring I, prevents any displacement of the spring bodily; but the spring is liable to turn, and the recess J effectually guards against any such tendency.

It also facilitates the manufacturing and applying together of the parts A and B by allowing the main surfaces applied together to be absolutely plane.

I make the spring I flat at one end and curled or curved at a small radius at the end nearest the hammer-center. I have tried this with success, and believe it contributes to the perfection of the result; but I do not esteem this curling of the end (or, again, the recess J to receive the spring) as absolutely essential to some degree of success in the use of the improvement.

The preferable opening *i* is a slot with rounded ends and a sufficient length to prevent the screw E from ever touching at either end of the slot. The slot may be extended quite out to one end or the other of the spring, as indicated in Fig. 5; but this defeats in a great part one of the important ends of the arrangement, to wit, the guarding of the wood against splitting.

It will be observed that my invention in no wise weakens the upper part B, which is allowed to retain its full original strength. My hinge-butt is, in consequence, not only better guarded against splitting, and is actively elastic to open the moment the screw E is slackened, but is also firmer to resist the blow of the jack than most other butts. The spring I and the chamber J to receive it may be made longer than represented, and in such case, or in any case, the spring may, if made of very thin metal, be duplicated in thickness like the leaves of an elliptic spring in carriages; or there may be two curved springs applied together like the upper and lower halves of an elliptic carriage-spring; but I do not esteem such complication necessary in general practice.

I claim as my invention—

1. The extended metallic arched spring I, arranged between the parts A and B of the hinge-butt, and adapted to serve relatively thereto and to the screw E and hammer H, substantially in the manner and for the purposes herein set forth.
2. The chamber J, recessed between the parts A and B, arranged as shown relatively to the spring I, and adapted to serve therewith and with the adjusting-screw E and hammer H, as and for the purposes specified.

In testimony whereof I have hereunto set my name in presence of two subscribing witnesses.

DOMINIC L. BOLLERMANN.

Witnesses:

WM. S. GUERINEAU,
WM. H. DRAKE.

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