

(No Model.)

W. L. HAWES.
PIANO ACTION.

No. 515,078.

Patented Feb. 20, 1894.

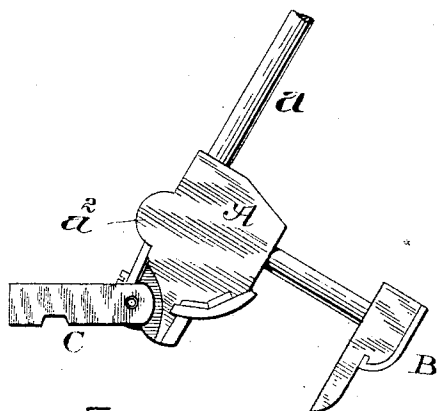


FIG. 1.

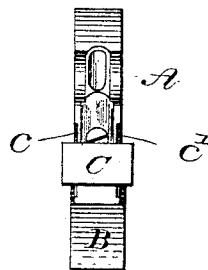


FIG. 2.

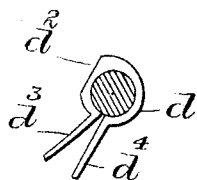
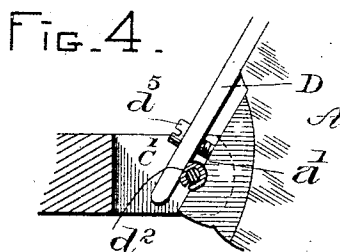
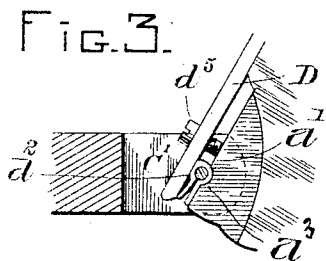


FIG. 5.

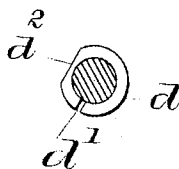


FIG. 6.

WITNESSES.

J. W. Dolan

J. W. Cummings.

INVENTOR.

William L. Hawes
by his atty

Clarke & Raymond

UNITED STATES PATENT OFFICE.

WILLARD L. HAWES, OF WAKEFIELD, MASSACHUSETTS.

PIANO-ACTION.

SPECIFICATION forming part of Letters Patent No. 515,078, dated February 20, 1894.

Application filed March 6, 1893. Serial No. 464,755. (No model.)

To all whom it may concern:

Be it known that I, WILLARD L. HAWES, a citizen of the United States, residing at Wakefield, in the county of Middlesex, in the State of Massachusetts, have invented a new and useful Improvement in Piano-Actions, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming a part of this specification, in explaining its nature.

A hammer of a piano action is generally carried by a pin which is supported at each end by stationary flanges, and which passes through a section of the hammer knuckle which extends between the flanges, the flanges acting not only to support the pin, but to a limited extent to steady or guide the hammer. Heretofore, the pin bearing in the knuckle has been in whole or in part of wood and of the size of the pin, and while this has answered much better than might be expected, still if the pin bearing or hole becomes worn, as is very likely to happen, it is enlarged and permits the hammer to wobble, and the flanges do not act with sufficient nicety to maintain the hammer in its proper path or insure its always striking the string in the same place; and it is therefore desirable that the knuckle have a pin bearing of a nature to resist wear, be easily adjustable and removable, cheaply made and attached.

My invention is carried into effect by forming the pin bearing of metal in the form of a sleeve or bushing, preferably split upon one side from end to end, and having a hole of a size to receive the hammer pin and having one surface flattened. This bearing is held upon a face of the knuckle with its curved section contained in a recess therein by means of a plate which is attached to the knuckle by a screw, and which bears upon the flat surface of the bearing and serves to lock it against the knuckle, and also to adjust its bore to the pin.

In the drawings: Figure 1 is a view in side elevation of a sufficient portion of a piano action to represent my invention. Fig. 2 is a view in rear elevation thereof. Fig. 3 is a sectional view thereof. Fig. 4 is a view illustrating a slight modification. Figs. 5 and 6 are enlarged views of two forms of bearings.

A, is the knuckle, *a* the hammer stem, B,

the bumper, C C' the stationary flanges or supports, to which the hammer knuckle is pivoted, and which are carried by a rail. The hammer knuckle has the face *a'* provided with the recess *a''*. This recess receives the rounded portion *d* of the bearing. The bearing is made of metal in the form of a sleeve of about the length of the width of the knuckle, and preferably has an opening *d'* from end to end, and the flattened surface *d''*. It also may have the arms *d'''* *d''''* which serve to form a longer support, and also a spring to open automatically the joint or space between the hammer face *a'* and the holding plate D when the holding screw *d''''* of the said plate is loosened.

The holding plate D is preferably of metal, although it may be of wood and integral with the knuckle. In the drawings it is represented as of metal, its hammer end extending slightly between the lips *a'''*, its outer end bearing upon the flat surface *d''* of the bearing, being held against it firmly by the screw *d''''*. By giving the bearing a longitudinal opening it is made easily adjustable to the pin which it holds, so that a good fit is obtainable without filing or otherwise fitting the parts. By providing the flat surface *d''* in such relation to the opening *d'* that it shall be quartering in relation thereto the bearing can always be so located that the pressure of the holding plate *d* will be rightly applied for the purpose of properly adjusting it to the pin. And by giving it a flat surface it is held more firmly and securely in place than if it were rounded throughout, and it is desirable of course that the bearing should be very firmly held. By providing it with arms *d'''* *d''''* which are normally open, and which are closed by the action of the holding plate D, a means is provided for automatically opening the pin holding recess or of moving outward the holding plate upon the release of the plate holding screw *d''''*.

Having thus fully described my invention, I claim and desire to secure by Letters Patent of the United States—

1. In a piano action a hammer bearing to receive its holding pin or pivot, comprising a hollow sleeve having the flattened surface *d''*, as and for the purposes described.

2. In a piano action a hammer pin bearing

comprising a sleeve having a single longitudinal slot or opening, as and for the purposes described.

3. In a piano action a hammer pin bearing
5 comprising a sleeve for receiving and holding the pin having a flattened side and a single longitudinal opening, as and for the purposes described.

4. In a piano action a hammer pin bearing
10 for receiving the hammer holding or pivot having a flattened surface, a single longitudinal opening, and spring arms, as and for the purpose described.

5. In a piano action the combination of the
15 hammer knuckle having the face a' provided with a recess a^2 to receive a section of the hammer pin bearing, the said bearing having a flattened surface, the holding plate D fastened to the knuckle by a screw and arranged
20 to bear upon the flattened surface of the bearing, and the pin extending through the bear-

ing and supported by the flanges C C', as and for the purposes described.

6. The combination in a piano action of the
knuckle, the holding plate or clamp D, an ad- 25 justable bearing between said holding plate and the knuckle adjusted as to size by the action of said plate upon it, and a pin extending through said bearing and supported by the flanges C C', as and for the purposes de- 30 scribed.

7. In a piano action, the combination of the
knuckle, a clamping plate D, the bearing
piece having a spring for opening the clamp
upon the release of its holding screw, and a 35 pin passing through the bearing and held by the flanges C C', substantially as described.

WILLARD L. HAWES.

In presence of—

FRANK W. HAYDEN,
J. B. WILEY.