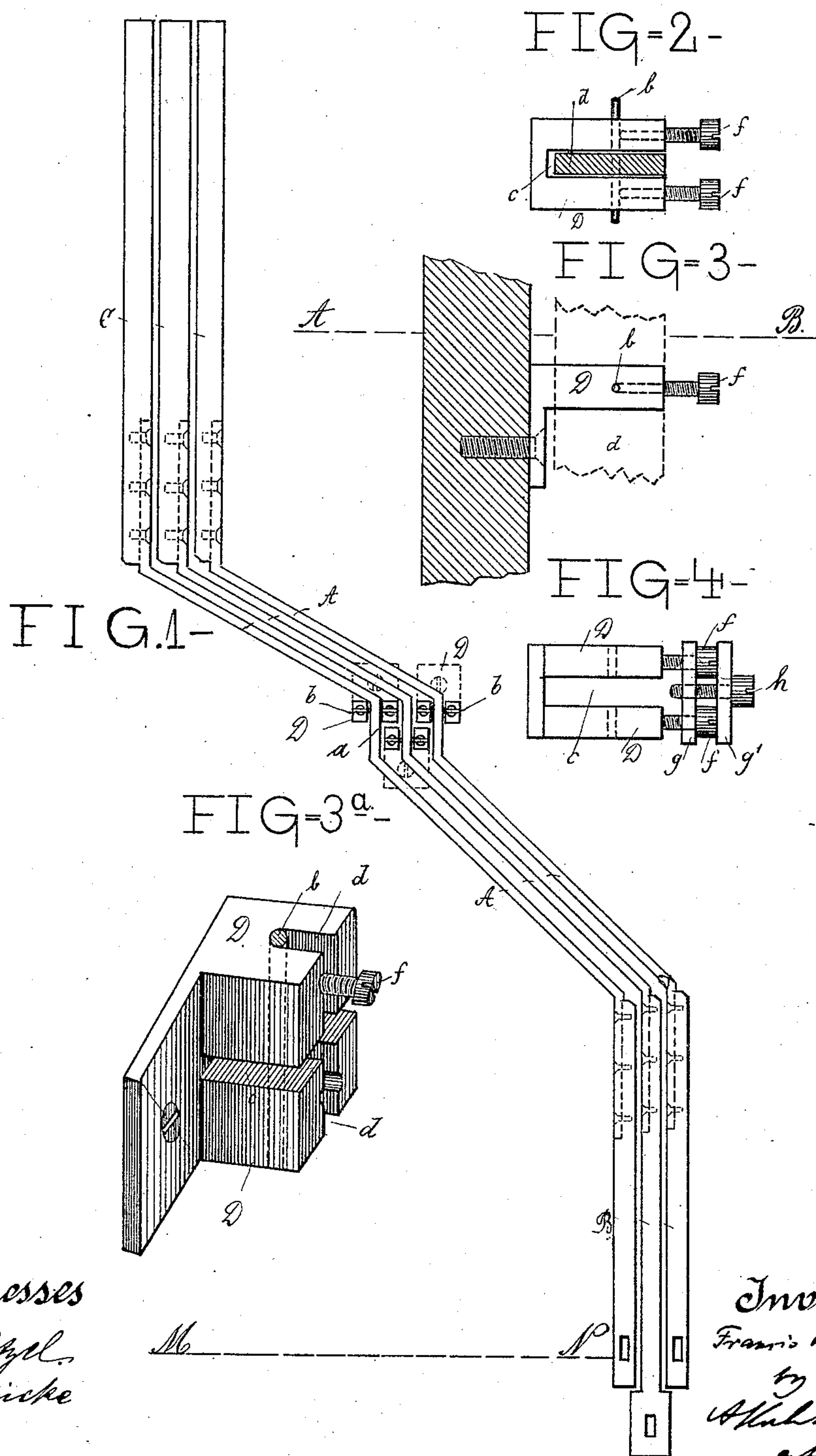


(No Model.)

F. B. BOYES.
PIANO KEY LEVER.

No. 442,166.

Patented Dec. 9, 1890.



Witnesses
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UNITED STATES PATENT OFFICE.

FRANCIS BRYAN BOYES, OF VIENNA, AUSTRIA-HUNGARY.

PIANO-KEY LEVER.

SPECIFICATION forming part of Letters Patent No. 442,166, dated December 9, 1890.

Application filed March 31, 1890. Serial No. 346,081. (No model.)

To all whom it may concern:

Be it known that I, FRANCIS BRYAN BOYES, a subject of the Emperor of Austria-Hungary, and a resident of Vienna, in the Empire of Austria-Hungary, have invented certain new and useful Improvements in Piano-Levers, of which the following is a full, clear, and exact specification.

My invention relates to piano-levers, which may especially be applied to the Janko key-board and to the horizontal English mechanisms.

My improved lever principally consists of an inclined bar forming two knees or angles at its center part and having its fulcrum between these angles. One arm of the lever is connected with the key-board and the other with the mechanism of the action.

In order to make my invention more clear, I refer to the accompanying drawings, in which similar letters denote similar parts throughout the different figures, and in which—

Figure 1 is a plan view of several piano-levers lying one beside the other. Fig. 2 is a sectional view through line A B of Fig. 3; Fig. 3, a side view, and Fig. 3^a a perspective view, of the lever-bed. Fig. 4 represents a securing device for the screws of such bed.

A a A represents the lever obliquely arranged within the instrument, being conveniently made of any suitable material other than wood, by preference of metal, in order to prevent the usual warping or shrinking of wooden parts.

The lever A a A is connected at its ends A A by means of screws, with the wooden arms B, bearing the keys, and with the arms C going to the action mechanism. (Not shown in the drawings.)

The lever A a A at its support a is bent at angles, so that the key-board, as well as the hammer-row of the mechanics, lies parallel to the axles b of the lever A a A. Each axle b (shown in Figs. 1, 2, 3, and 3^a) passes through that part of the lever which is bent at angles, and is situated in a bed D of the construction shown in Figs. 2, 3, and 3^a. This bed D is provided with a longitudinal slot c for the lever A a A, and two other slots d d, through which the axle b passes, which is then fixed

by means of screws f f. The axles for each lever are so arranged as to stand perpendicular to the keys—that is to say, parallel to the key-board, marked by the line M N in Fig. 1— thereby producing both a correct touch and a precisely vertical fall of the single levers without any lateral movement. Of course the arms A A of the lever A a A are arranged in a slanting position to the key-board M N. The screws f f may further be secured by two plates g g', Fig. 4, one of which lies below the other upon the screw-heads, and which plates are pressed together by another screw h, fixing them at any convenient position. The plates g g' are provided with screw-threads, and the screw h engages therewith.

In consequence of the bending at angles of the lever A a A, and in consequence of supporting it in a bed by an axis being parallel to the key-board M N and perpendicular to the keys, any lateral injuring of the lever-axis (inevitable till now with the common inclined transmission-levers) is prevented. Any lateral friction is also avoided, and the piano-lever gets a completely vertical motion without shaking or disturbing its bed.

The bed itself of the lever is arranged so as to produce a very correct motion of the lever A and to make the latter very sensible.

I do not confine myself in carrying my invention into effect to pianos only; but I may use my improved lever in connection with key-instruments of any kind.

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

1. In piano-levers for key-instruments, a double-inclined lever A a A, the arms A A of which are arranged diagonally to the key-board and the part a of which lies perpendicular to the key-board and bears the axle b, lying parallel to the key-board, for the purpose as described.

2. A double-inclined lever A a A, the arms A A of which are arranged diagonally to the key-board and the part a of which lies perpendicular to the key-board and bears the axle b, lying parallel to the key-board, which axle is secured in a bed D, having the slots c and d d, by screws f f, for the purpose as described.

3. A double-inclined lever $\Lambda a \Lambda$, the arms $\Lambda \Lambda$ of which are arranged diagonally to the key-board and the part a of which lies perpendicular to the key-board and bears the
5 axle b , lying parallel to the key-board, which axle is secured in a bed D , having the slots c and $d d$, by screws $f f$, and by the screw h with plates $g g'$, for the purpose as described.

In testimony whereof I have signed this specification in the presence of two subscribing witnesses.

FRANCIS BRYAN BOYES.

Witnesses:

ADOLF LEOPOLD,
NETTIE S. HARRIS.