

W. FISCHER.

PIANO ACTION.

No. 321,201.

Patented June 30, 1885.

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Fig. 1.

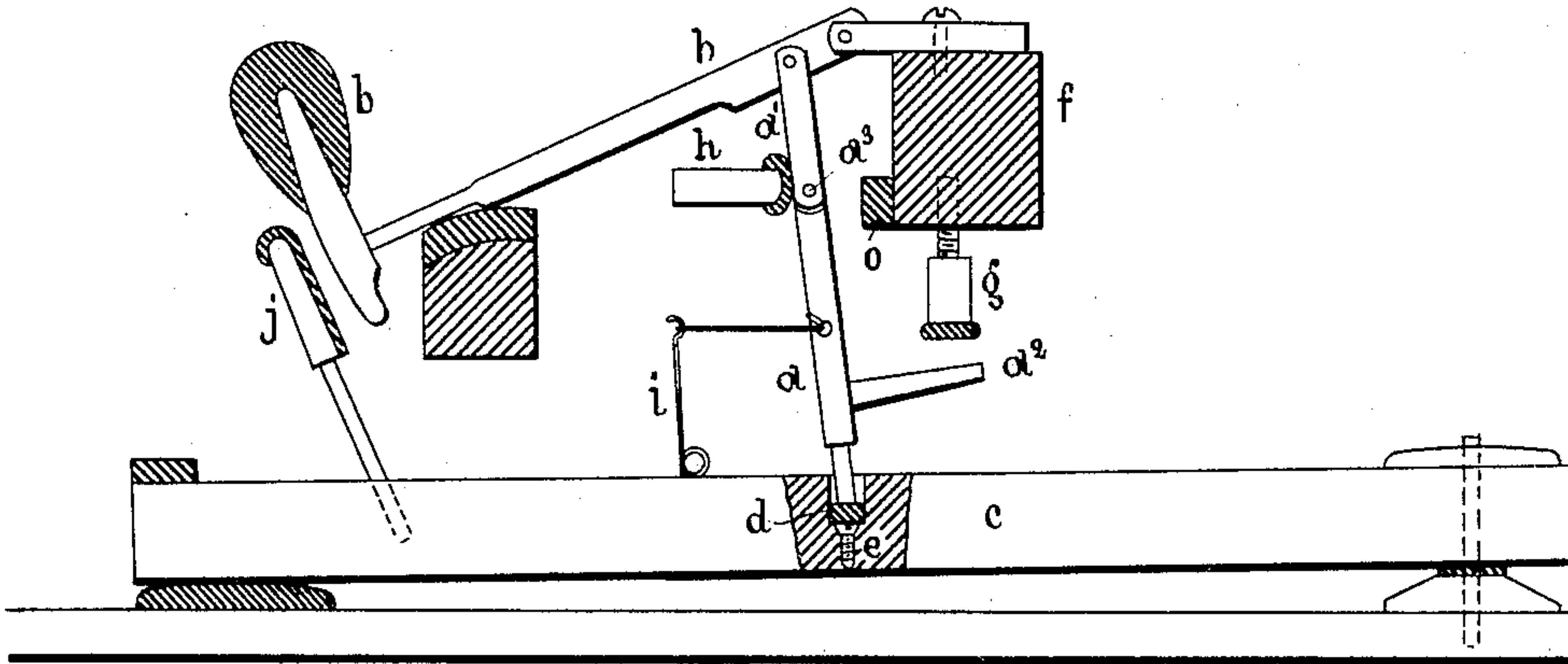
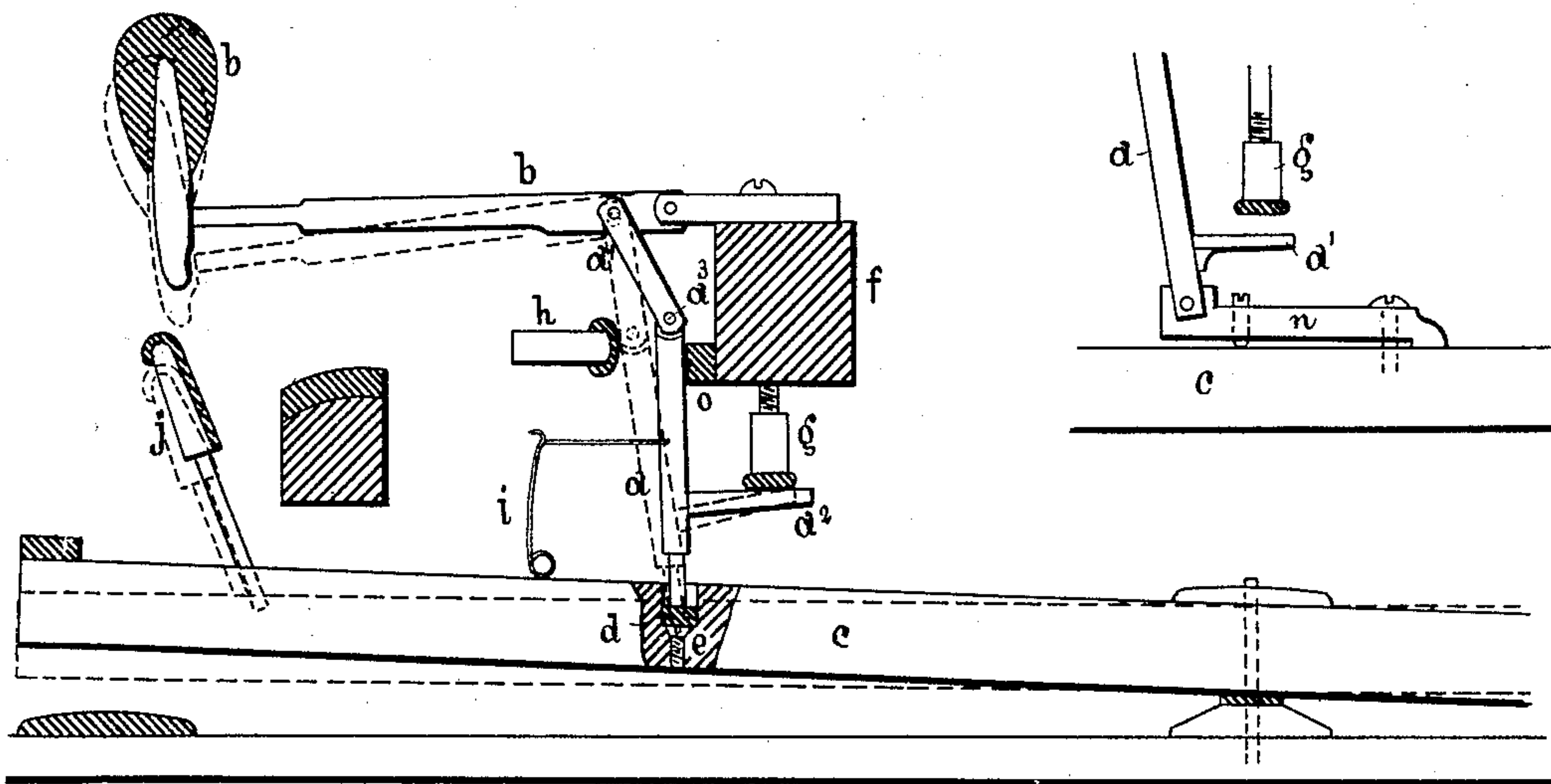


Fig. 2.

Fig. 3.

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Witnesses:
Halter Blandford
Geo. H. Lea

Inventor:
Wilhelm Fischer
by Maxwell Bailey
his attorney

(No Model.)

2 Sheets—Sheet 2.

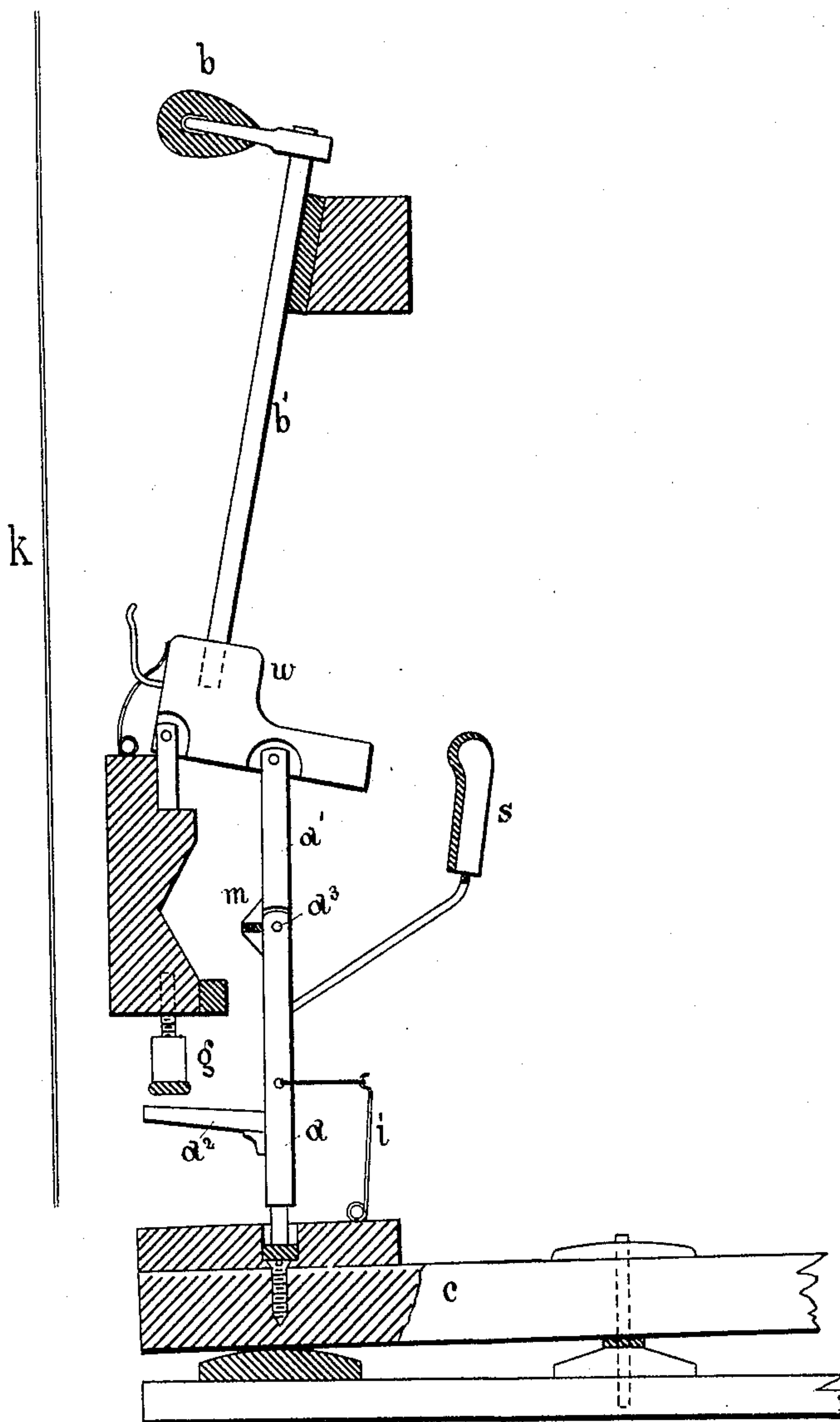
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Fig.4.



Witnesses:
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Inventor:
Wilhelm Fischer
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UNITED STATES PATENT OFFICE.

WILHELM FISCHER, OF LEIPSIC, SAXONY, GERMANY.

PIANO-ACTION.

SPECIFICATION forming part of Letters Patent No. 321,201, dated June 30, 1885.

Application filed February 19, 1885. (No model.)

To all whom it may concern:

Be it known that I, WILHELM FISCHER, a subject of the King of Saxony, and residing in Leipsic, Saxony, German Empire, have invented new and useful Improvements in Piano-Actions, of which the following is a specification.

My invention consists in improvements in piano-actions which enable the player to repeat notes with greater rapidity than has heretofore been possible, and by means whereof the action is rendered more simple and durable than those usually employed.

In the ordinary piano-actions the key-lever acts on the stem or butt of the hammer by a jack or hopper which comes out of engagement with the hammer every time a note is sounded, and which does not re-engage with it before the key-lever has returned to its position of rest; hence a note cannot be repeated until time has been allowed for the full rise of the key.

On the annexed two sheets of drawings are represented two different piano-actions involving my improvement.

Figure 1 is an action for pianos with horizontal strings, the parts being shown in their position of rest. Fig. 2 represents the same action with the parts in two other positions, and Fig. 3 a modification of a portion thereof. Fig. 4 is an action for an upright piano.

In all the figures, *b* is the hammer; *c*, the key-lever, and *k* the string. From the key-lever *c* motion is imparted to the hammer *b* by means of a jack or hopper made of two parts, *a* and *a'*, jointed together at *a''*, and the upper one whereof, *a'*, is pivoted or otherwise flexibly connected to the stem of the hammer, while the lower one, *a*, rests on the key-lever, means being employed for preventing the jack from shifting laterally on the said lever. Preferably the part *a* is loosely inserted with its foot, having a piece of felt, *d*, attached to it, into a hole drilled into the key-lever, and at the bottom of this hole there may be an adjusting-screw, *e*. The two jack parts are normally maintained in a straight line by means of a spring, *i*, and a stationary bar, *h*, provided with a smooth and soft facing, the spring drawing the parts against the bar. Instead of using this bar, lugs or shoulders *m*—such as are

shown in Fig. 4, and one of which is also fitted with a facing of soft material—may be arranged on the two jack parts close to their joint, the said lugs or shoulders abutting against each other when the jack is drawn straight by the spring. On the side toward which the jack can bend or deflect its part *a* is provided with an arm, *a''*, and at a certain distance above this arm there is a stop, *g*, having a piece of felt or leather attached to it. When the key of the action thus arranged is touched, the impulse imparted through the medium of the jack in its straight state to the hammer will cause the latter to fly toward the string; but before the impact of the hammer against the string takes place the arm *a''* on the lower jack part comes in contact with the stop *g*. (See Fig. 2.) The jack is thereby bent in its joint *a''*, which moves in a lateral direction, so that the impulse of the jack upon the hammer ceases. The hammer, however, in consequence of the momentum imparted to it, flies onward and finishes its course, so as to sound the string, the jack not offering any opposition to this motion, as the connection between the part *a* and the key-lever is sufficiently loose to allow the hammer in pulling through the part *a'* on the part *a* to raise the latter by as much as may be required. If preferred, the stem of the hammer may also be made elastic to such a degree that if it encounters resistance from the jack it will bend during the latter part of the motion of the hammer-head. After percussion has taken place the hammer rebounds from the string; but it recedes a small distance only so long as the key-lever remains raised at its back end, the position of the hammer being under the said condition determined by the jack in its bent state, provided always that the spring *i* be of sufficient strength to prevent the hammer in rebounding from bending the jack beyond the proper limit. Preferably, however, a felt cushion, *o*, is attached to the bar *f*, and arranged to keep the jack part *a* from being deflected too far, and a hammer-check, *j*, is with advantage provided, which catches the hammer as it rebounds. If, while the hammer and the jack are in the position stated, the end of the key-lever is allowed to descend by so much only as that the arm *a''* of the jack

will become free of the stop *g*, the jack will be drawn straight again by the spring *i*, and is then ready to transmit a renewed motion of the key to the hammer. This position of the hammer and the key is shown in dotted lines in Fig. 2. For repeating a note it is thus not necessary that the key should in the interval return to its position of rest. In consequence any note may be repeated by means of this action more rapidly than otherwise.

As shown by Fig. 3, the jack may be pivoted at its lower end to the key instead of being brought in relation thereto in the manner stated above; but this arrangement necessarily requires the hammer-stem to be elastic.

n is a piece screwed to the key-lever, and provided with a regulating-screw for adjusting the jack.

In the action for an upright piano shown by Fig. 4, the jointed jack acts on the foot *w* of the hammer-stem, and the hammer, when flying back from the string, is caught by a check, *s*, attached to the jack part *a*, and so arranged that the end of the hammer-foot *w* will come in contact with it at the proper moment. In all other respects the jack, its arm *a*², the spring *i*, and the stop *g* are alike to the corresponding parts of the action described above, and operate in like manner.

I claim as my invention—

1. In a piano-action, the combination, with the hammer *b* and key-lever *c*, of a jack or hopper consisting of two parts, *a* and *a'*, jointed together and connected with the stem of the hammer and the key-lever, as described, the arm *a*² on the jack part *a*, the spring *i*, and the stop *g*, substantially as and for the purpose described.

2. The combination, in a piano-action, of the hammer *b*, key-lever *c*, jointed jack *a a'*, arm *a*², spring *i*, and stop *g*, the two jack parts being provided with the lugs or shoulders *m*, substantially as and for the purpose specified.

3. The combination, in a piano-action, of the hammer *b*, key-lever *c*, jointed jack *a a'*, arm *a*², spring *i*, and stop *g*, the lower jack part, *a*, carrying a hammer-check, *s*, as hereinbefore set forth.

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

WILHELM FISCHER.

Witnesses:

FRITZ HELMRICH,
C. BORNGRAEBER.