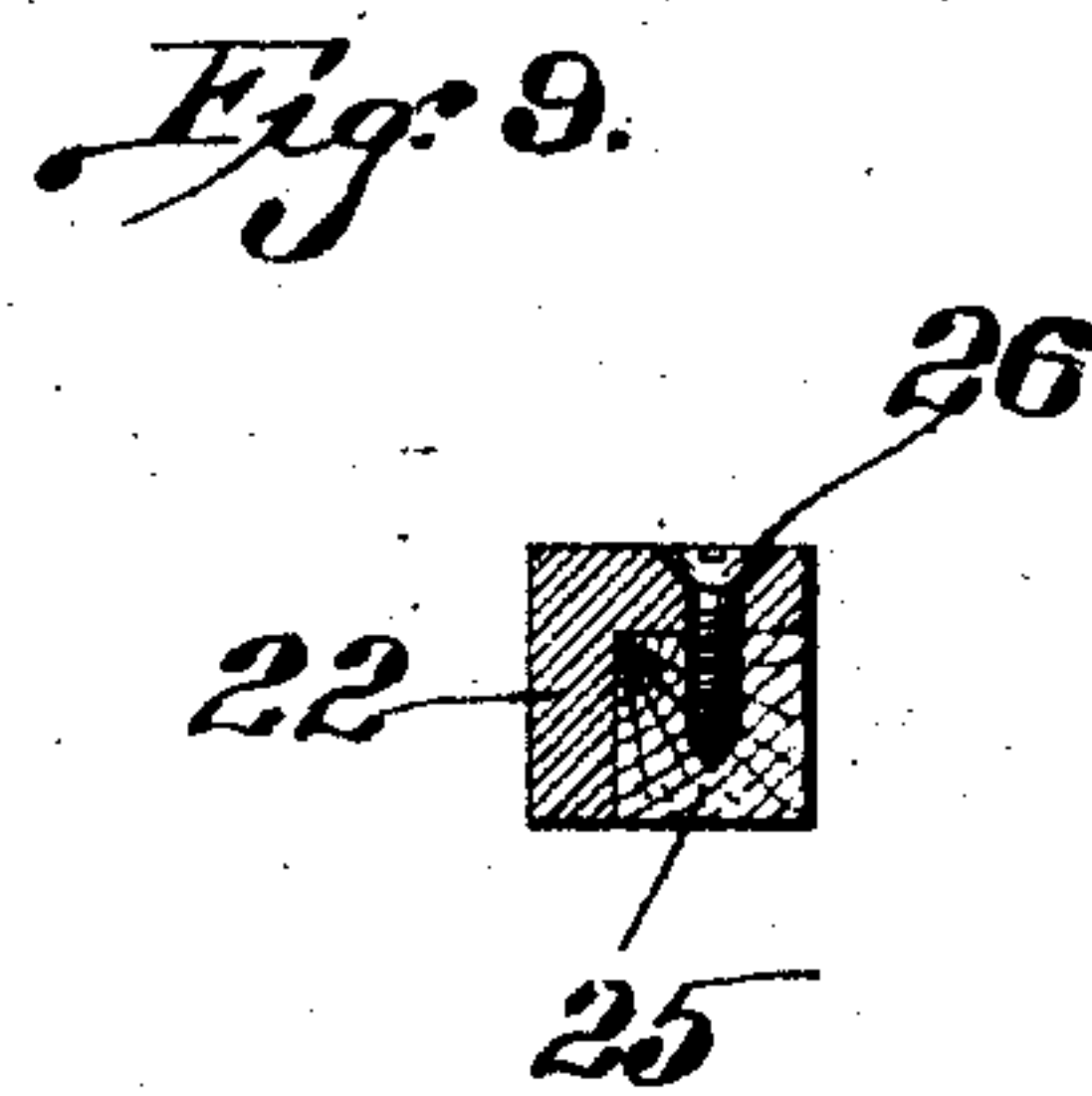
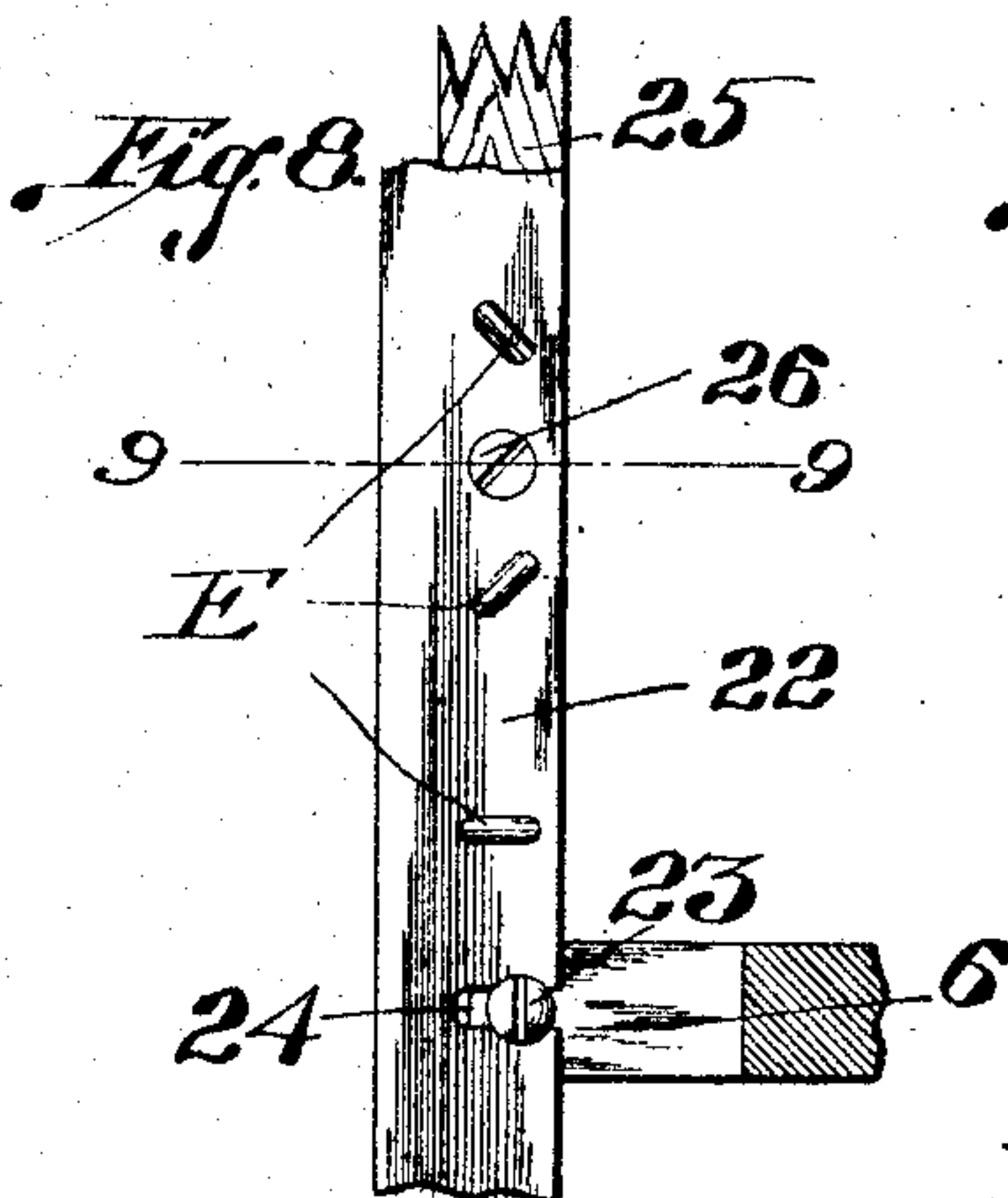
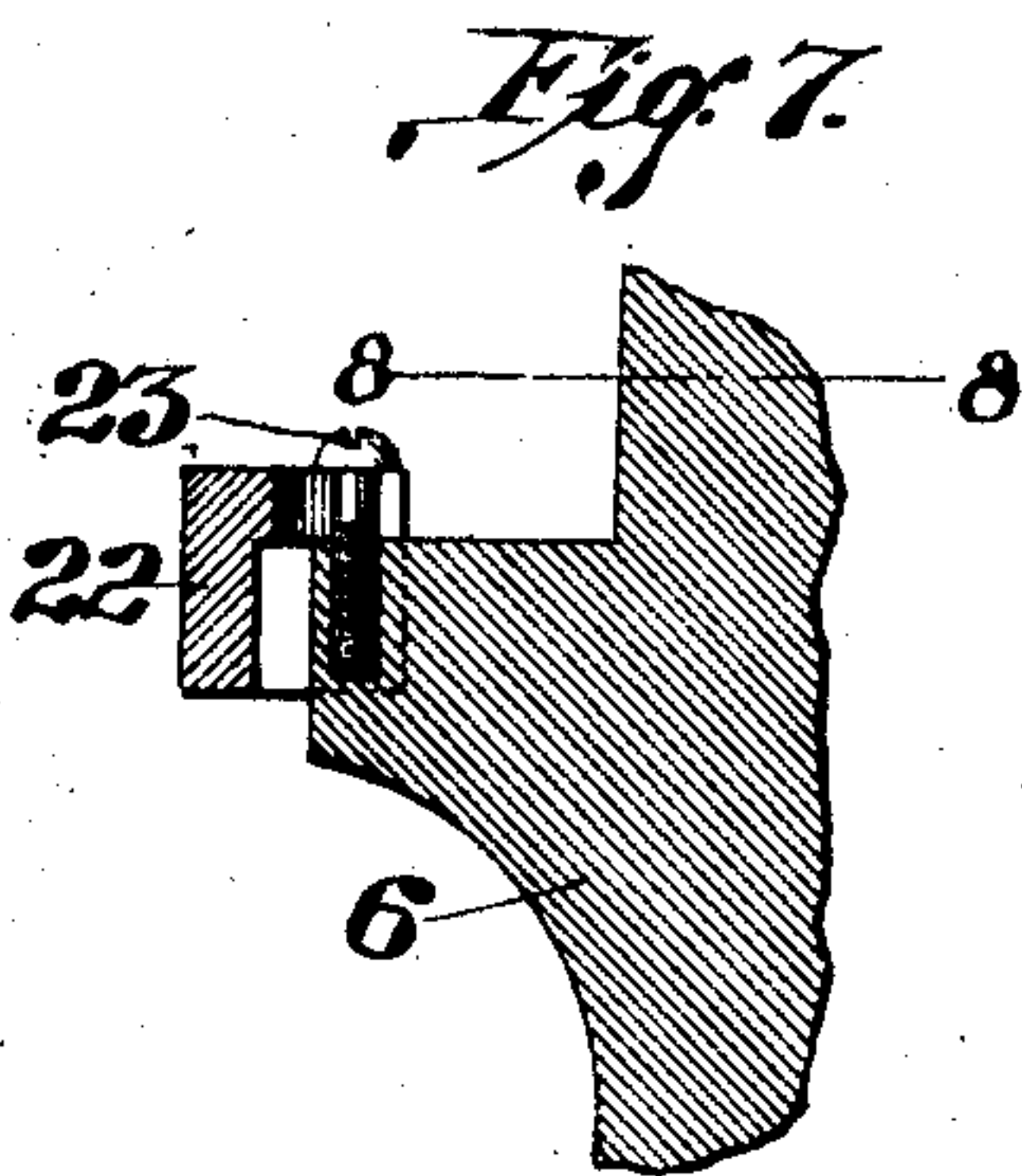
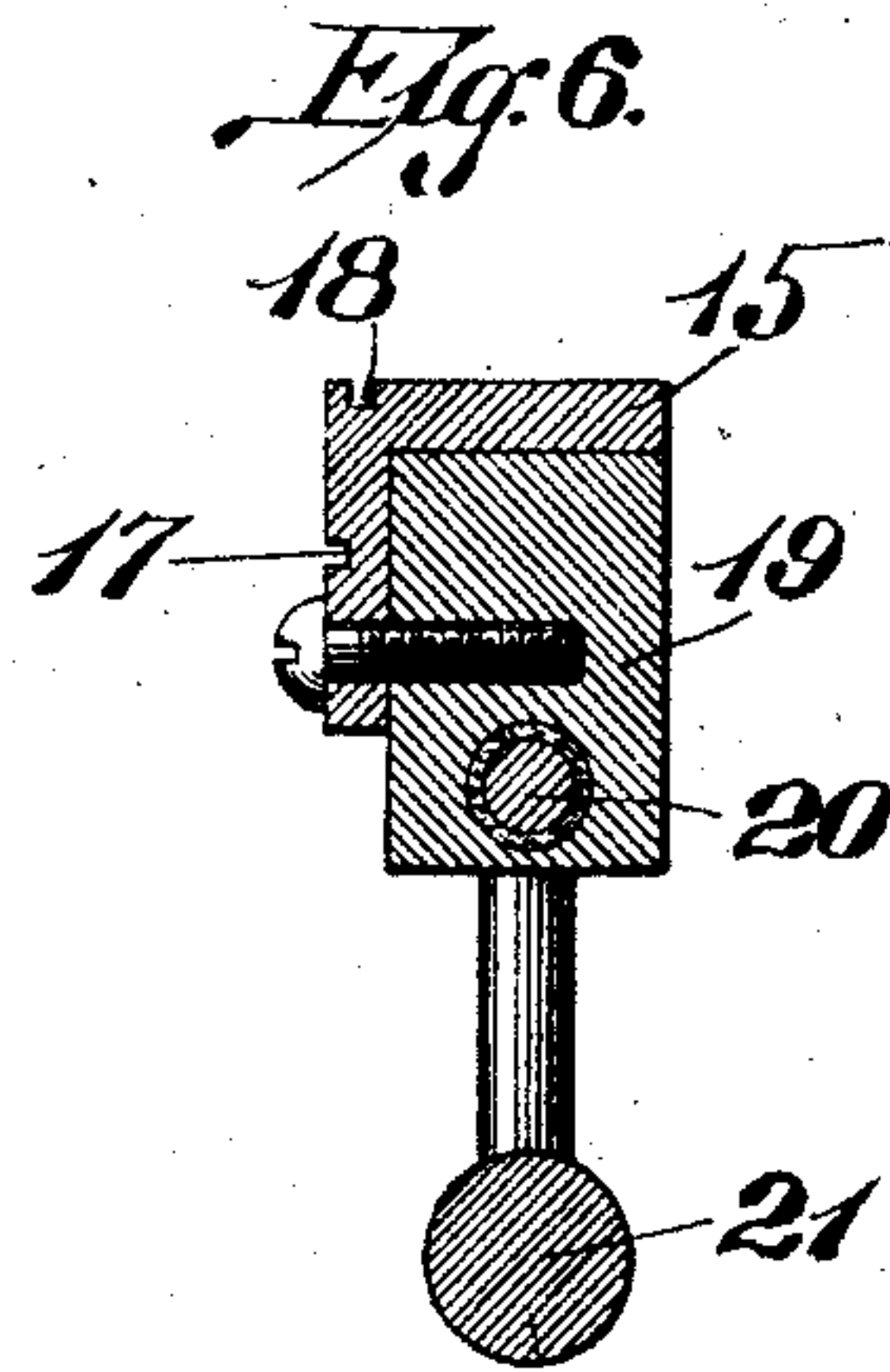
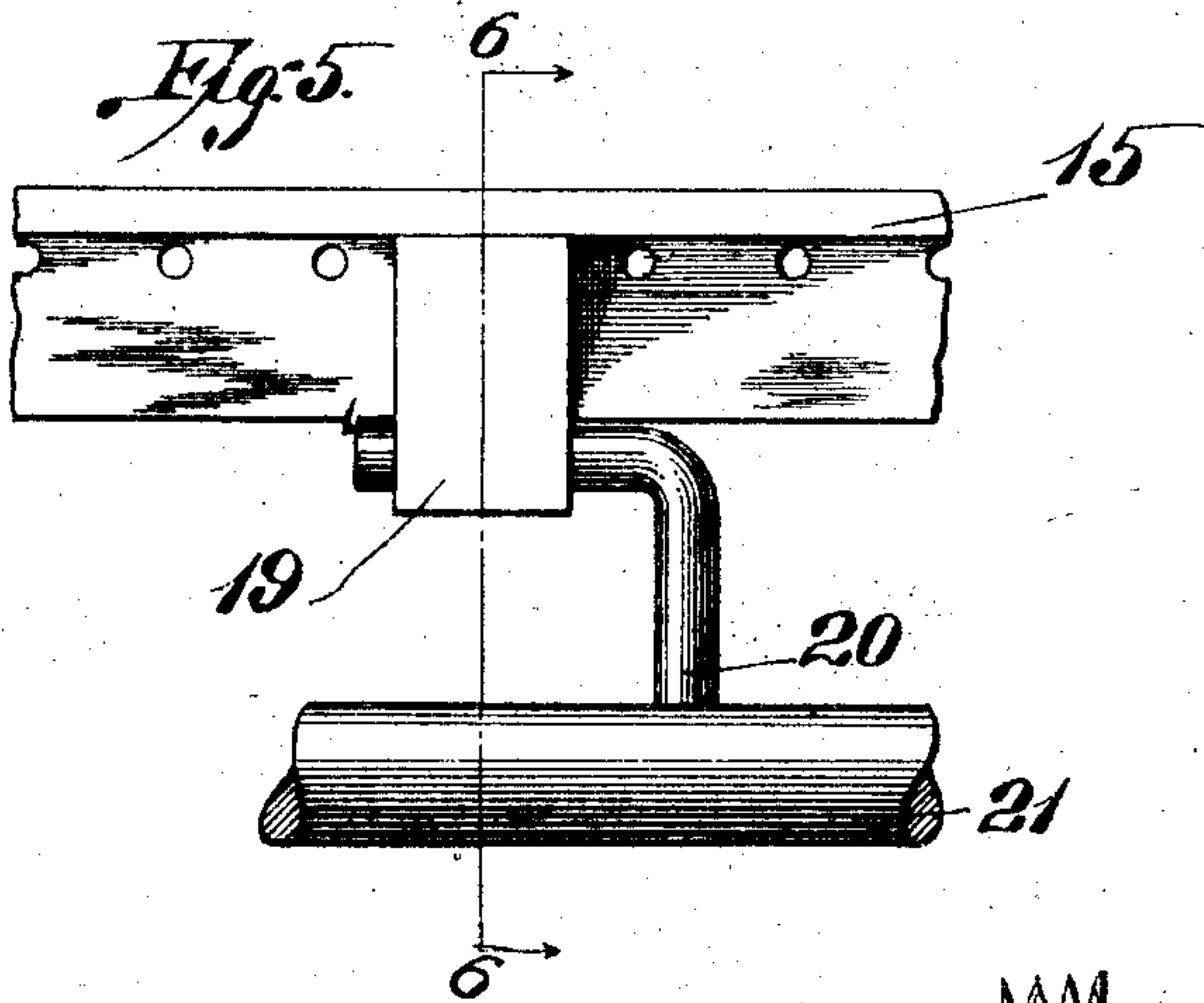
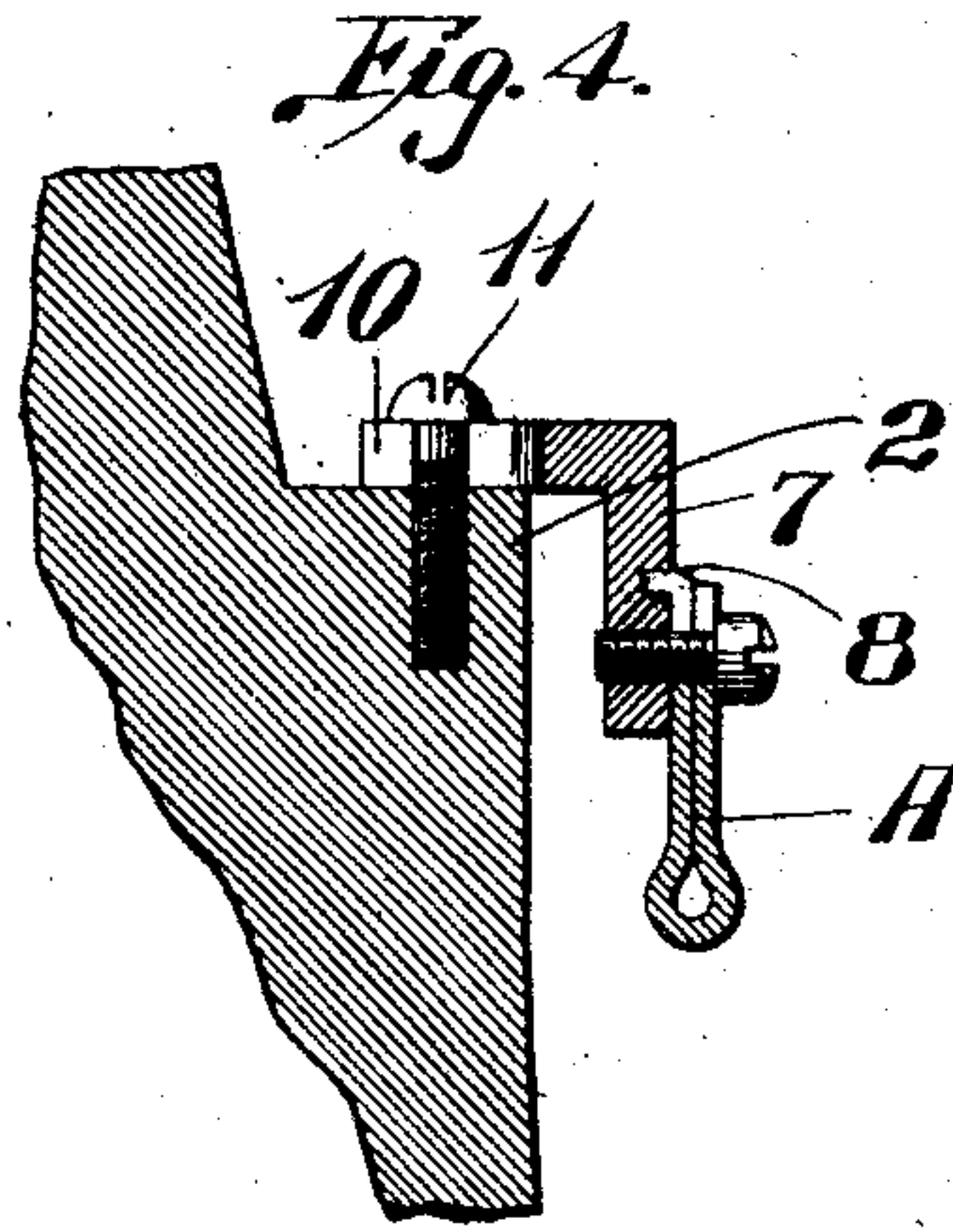
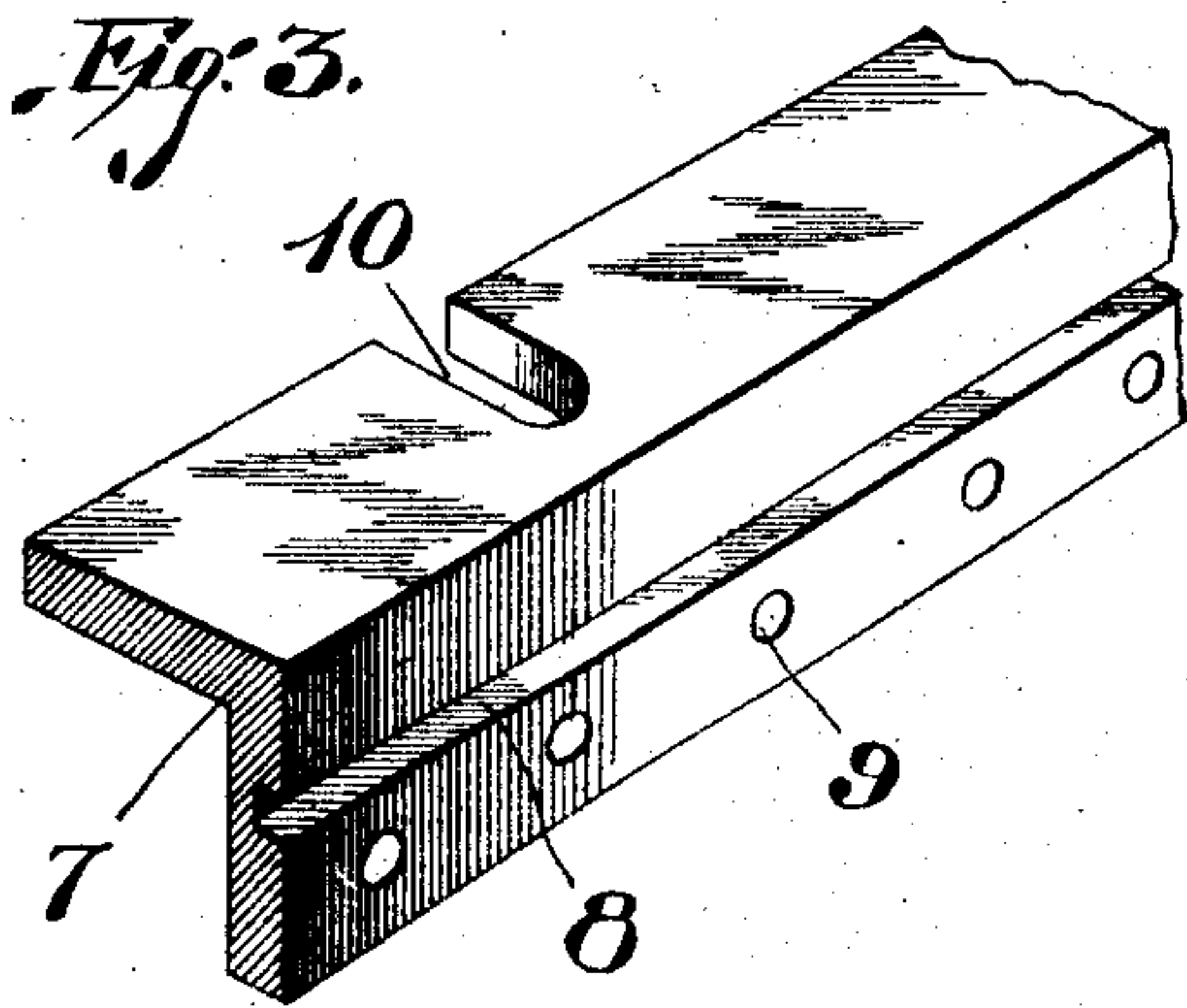


No. 882,288.

PATENTED MAR. 17, 1908.

F. G. BILLINGS.
PIANO ACTION FRAME.
APPLICATION FILED MAY 2, 1907.

2 SHEETS—SHEET 2.



Attest
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UNITED STATES PATENT OFFICE.

FREDERICK GEORGE BILLINGS, OF MILWAUKEE, WISCONSIN.

PIANO-ACTION FRAME.

No. 882,288.

Specification of Letters Patent.

Patented March 17, 1908.

Application filed May 2, 1907. Serial No. 371,755.

To all whom it may concern:

Be it known that I, FREDERICK GEORGE BILLINGS, a citizen of the United States, and resident of Milwaukee, Wisconsin, have invented certain new and useful Improvements in Piano-Action Frames, of which the following is a specification containing a full, clear, and exact description, reference being had to the accompanying drawings, forming a part hereof.

My invention relates generally to piano actions, and more particularly to metal rails which are secured to the brackets of the frame of the action, and to which rails various metal flanges are detachably secured.

By my improved arrangement of equipping piano actions with continuous metal rails in the form of angle bars, a very rigid action is produced, the regulation of the parts of the action is made more positive and secure on account of the non-shrinkage of the metal rails, the labor and time involved in assembling the action is greatly reduced, and perfect alinement of all the flanges attached to said rails is insured.

To the above purposes, my invention consists in certain novel features of construction and arrangement of parts, which will be hereinafter more fully set forth, pointed out in the claims, and illustrated in the accompanying drawings, in which:—

Figure 1 is an elevation of one of the brackets of a piano action, and showing the continuous metallic rails secured thereto; Fig. 2 is a vertical section taken through the center of an action equipped with the continuous metal rails, and showing the flanges secured to said rails, and the various parts of the action carried by said flanges; Fig. 3 is a perspective view of a portion of the tongue, or lower flange rail, as constructed in accordance with my invention; Fig. 4 is an enlarged vertical section taken through a portion of one of the brackets, and showing the lower flange or tongue rail in position on said bracket; Fig. 5 is an elevation of a portion of the rail which receives the damper and hammer-butt flanges, and to which rail is secured the blocks to which are pivotally connected the damper lever rods; Fig. 6 is a vertical section taken on the line 6—6 of Fig. 5; Fig. 7 is an enlarged vertical section showing a portion of one of the brackets and the regulating rail attached thereto; Fig. 8 is a horizontal section taken on the line 8—8 of Fig. 7, and showing a portion of the regulating rail; Fig.

9 is a transverse section taken on the line 9—9 of Fig. 8.

Referring by numerals to the accompanying drawings:—1 designates the vertically disposed bracket, such as is made use of in the actions of upright pianos, and formed on the rear side of the lower portion of each bracket is a lug 2, having a horizontally disposed top surface; and formed on the corresponding side of the bracket, a short distance above said lug 2, is a lug 3, having a horizontally disposed top surface. Formed on the rear side of the bracket, immediately above this lug 3, is a notch 4, which is overhung by a lug 5; and formed on the front side of the bracket at a point between the lug 3 and notch 4 is a lug 6, having a flat top surface.

The continuous rail 7, which receives the lower or tongue flanges is in the form of a metal angle-bar, provided in its front face with a longitudinally extending groove 8, which receives the laterally bent upper ends of the tongue flanges; and formed through the vertical portion of this rail, below the groove 8, is a series of screw threaded apertures 9, which receive the screws used in securing the tongue flanges to the rail. Formed in the horizontal portion of the rail 7 are slots 10, having open rear ends, through which slots pass screws 11, which enter the lugs 2 on the brackets 1, and thus rigidly fix the rail 7 to the brackets 1. The horizontal portion of the rail 7 engages on the flat top surfaces of the lugs 2; and, owing to the provision of the slots 10 in the horizontal portion of said rail, the same may be adjusted horizontally, as desired, by loosening the screws 11, which adjustment correspondingly and simultaneously shifts all of the tongue-flanges A carried by said rail 7.

A continuous rail 12, which carries the whip or rocker flanges B, is constructed in the form of an angle bar, similar in size to the rail 7; and formed in the outer face of the vertical portion of this rail 12 is a continuous groove 13, which receives the laterally bent ends of the whip or rocker flanges B. This rail 12 is positioned on the lugs 3 of the brackets 1, and being rigidly fixed thereto by screws 14, which pass through the lower portion of the vertical web of said rail and enter said lugs 3.

A continuous rail 15, in the form of an angle bar, is arranged in the notches 4 of the brackets 1, and beneath the lugs 5, and said

rail is rigidly fixed in position by screws 16
 passing through both the vertical and hori-
 zontal portions of said rail and entering the
 brackets 1 and lugs 5; and formed in the
 5 outer face of the vertical portion of this rail
 is a continuous groove 17, which receives the
 laterally bent lower ends of the hammer-butt
 flanges C. Formed in the top surface of the
 horizontal portion of the rail 15 is a continu-
 10 ous groove 18, which receives the laterally
 bent rear ends of the damper flanges D.
 Fixed to the under side of the rail 15, at suit-
 able distances apart, are blocks 19, in which
 are journaled the horizontally disposed up-
 15 per ends of hangers 20, the lower ends of
 which are seated in the damper lever rod 21.

A regulating rail 22, in the form of a con-
 tinuous angle bar, is arranged on the lugs 6
 and adjustably held thereon by means of
 20 screws 23 passing through open outer-ended
 slots 24 formed in the horizontal portion of
 said rail, and which screws enter the lugs 6.
 A filler 25, of wood or analogous material,
 and rectangular in cross section, is arranged
 25 on the under side of this regulating rail, and
 held thereon by means of screws 26 passing
 through the horizontal portion of said rail and
 entering said filler. Passing through suitably
 located apertures in the horizontal portion of
 30 this rail 22, and through the filler carried there-
 by, are the regulating screws E, the lower ends
 of which are provided with the usual regulat-
 ing buttons F. The filler 25 is positioned be-
 35 neath the regulating rail 22 in order to pro-
 vide sufficient bearing for the regulating
 screws E as they are adjusted vertically to
 regulate the stroke of the jacks.

The rails 7 and 22 can readily be adjusted
 laterally to accurately and simultaneously
 40 shift the positions of the parts carried by
 said rails, and all of the rails being of angle-
 bar form, and being connected to the brack-
 ets 1, provide a very rigid construction,
 which will not warp, and which will always
 45 maintain the operating parts of an action in
 proper position.

I claim:—

1. The combination with a series of verti-
 cally disposed brackets of a piano action, of a
 50 plurality of continuous metal rails in the
 form of angle bars rigidly fixed to the brack-

ets, and which rails are provided in their
 faces with continuous grooves.

2. A piano action frame, comprising a se-
 ries of vertically disposed brackets, a plural- 55
 ity of lugs formed integral with each bracket,
 the corresponding lugs of the brackets being
 in horizontal alinement, metal rails in the
 form of angle bars rigidly fixed to the series
 of horizontally alined lugs, and there being 60
 grooves formed in the faces of said metal
 rails.

3. A piano action frame, comprising a se-
 ries of vertically disposed brackets, a plural-
 ity of lugs formed integral with each bracket, 65
 the corresponding lugs of the brackets being
 in horizontal alinement, and metal rails in the
 form of angle bars rigidly fixed to the series of
 horizontally alined lugs, there being continu-
 ous grooves formed in the faces of said rails. 70

4. A piano action frame, comprising a se-
 ries of vertically disposed brackets, lugs in-
 tegral with the front and rear edges of said
 brackets, and continuous rails in the form of
 angle bars rigidly fixed to said lugs, there be- 75
 ing continuous grooves formed in the faces of
 the continuous rails.

5. A piano action frame, comprising a se-
 ries of vertically disposed brackets, lugs in-
 tegral with the rear sides of the brackets, a 80
 series of continuous rails in the form of angle
 bars rigidly fixed to said lugs, a lug integral
 with the front side of each bracket, and a
 continuous rail in the form of an angle bar
 adjustably secured to the lugs on the front of 85
 the brackets.

6. A piano action frame, comprising a se-
 ries of vertically disposed brackets, a series
 of continuous rails in the form of angle bars
 attached to the rear sides of the brackets, 90
 one of which rails is horizontally adjustable
 on the brackets, and a continuous rail in the
 form of an angle bar adjustably secured on
 the front of the bracket.

In testimony whereof, I have signed my 95
 name to this specification, in presence of two
 subscribing witnesses.

FREDERICK GEORGE BILLINGS.

Witnesses:

C. M. CHESEBRO,
 E. BAUMANN.