

No. 760,377.

PATENTED MAY 17, 1904.

T. BEYER.
PIANO ACTION.

APPLICATION FILED MAY 11, 1903.

NO MODEL.

Fig. I.

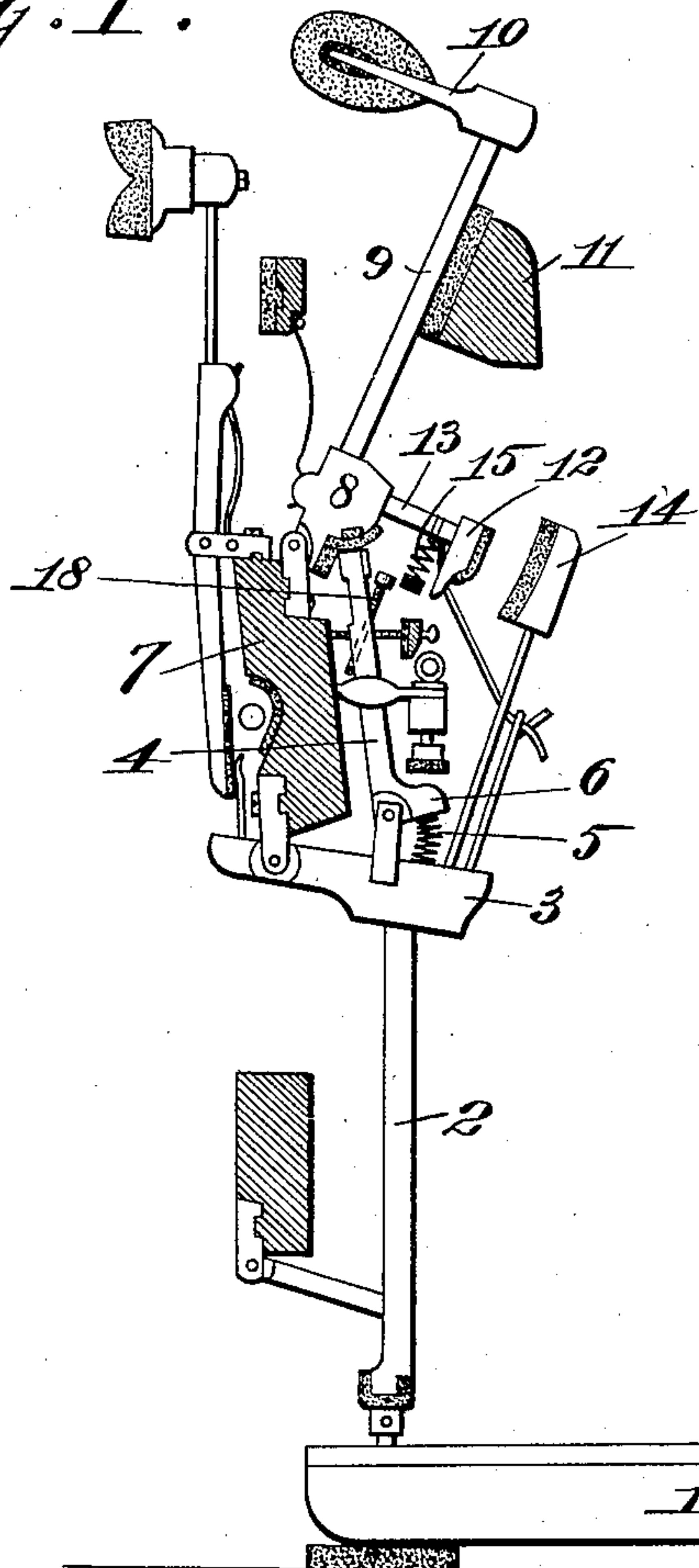


Fig. II.

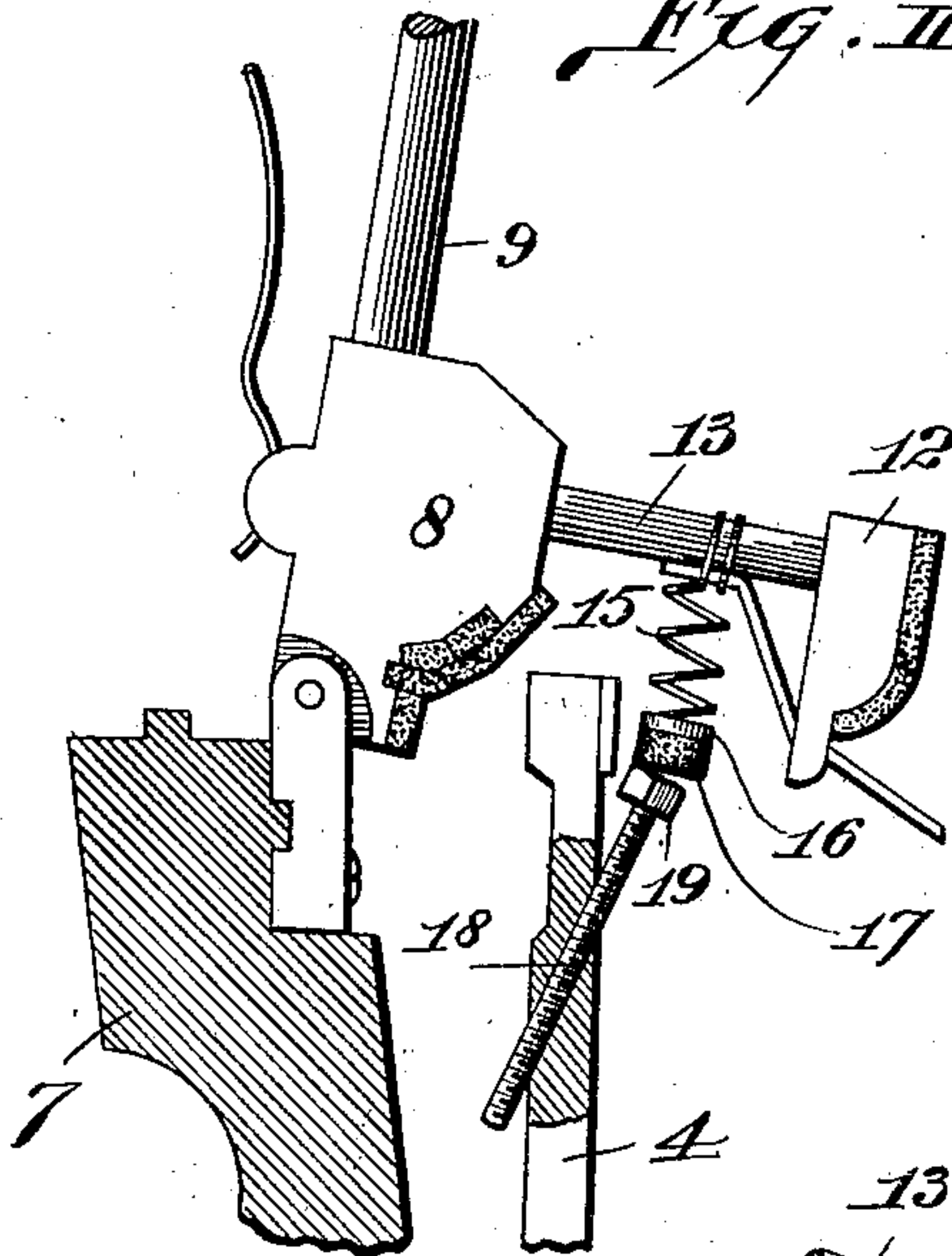


Fig. v.

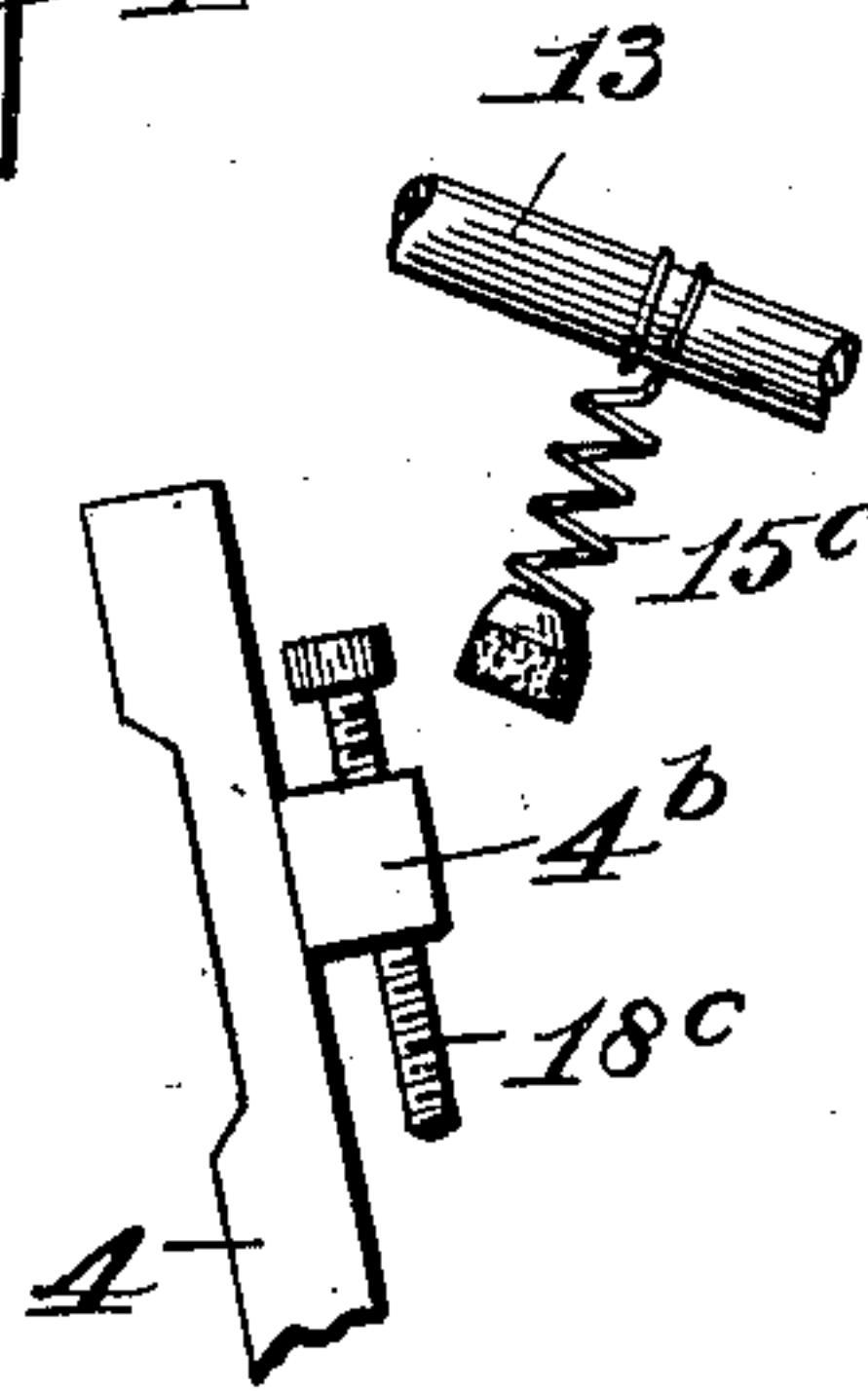


Fig. III.

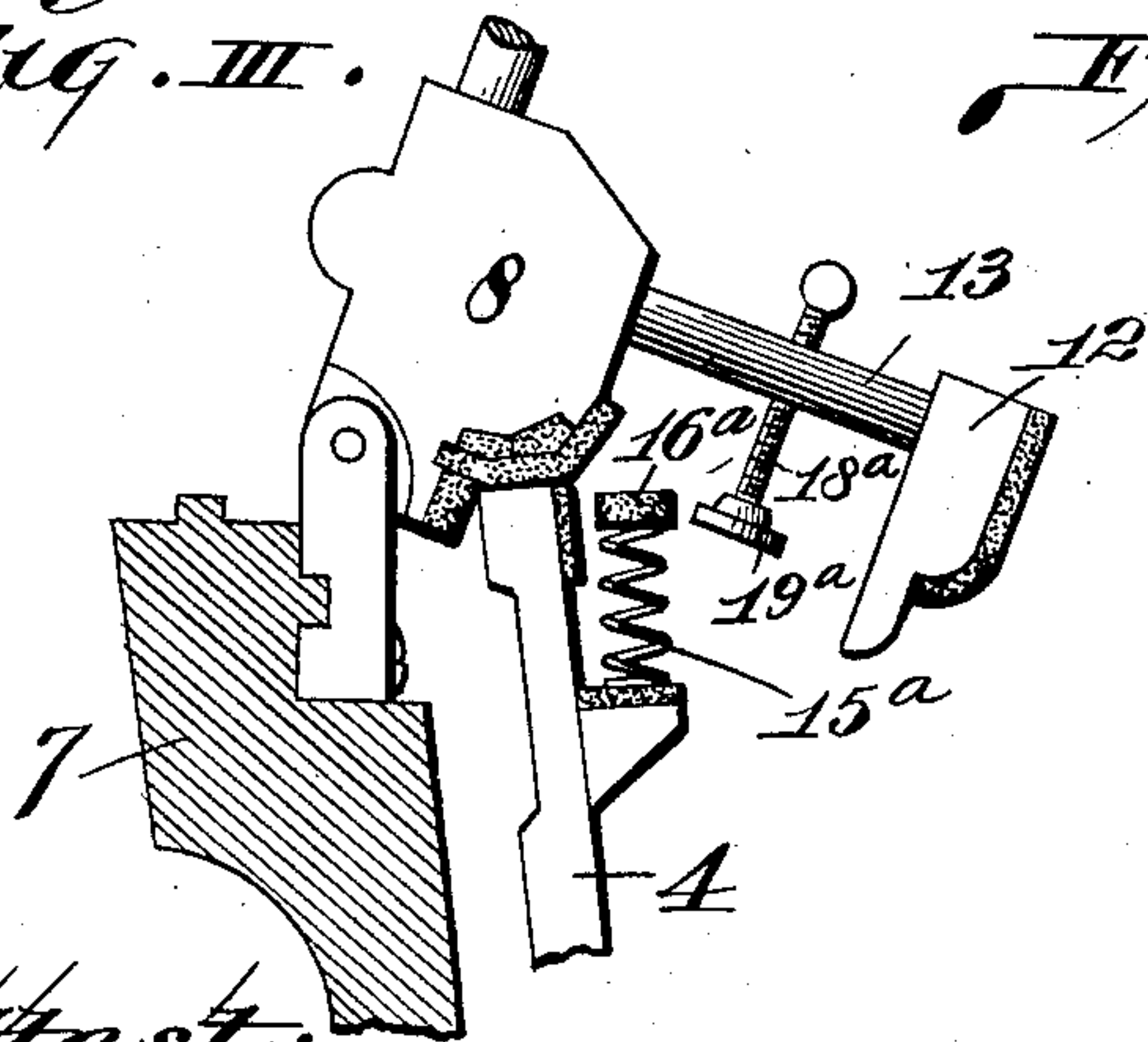
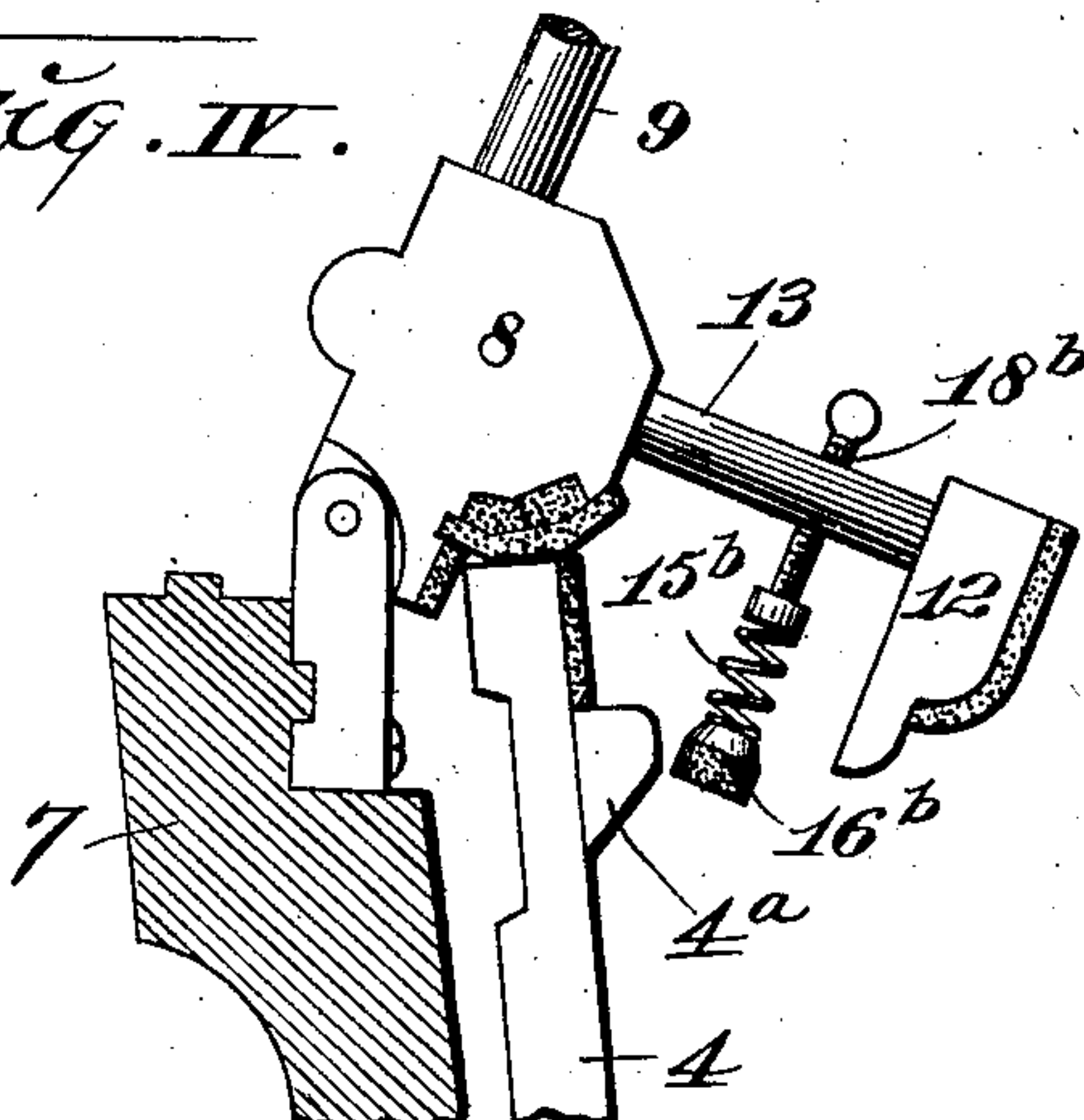


FIG. IV.



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UNITED STATES PATENT OFFICE.

THEODORE BEYER, OF ST. LOUIS, MISSOURI.

PIANO-ACTION.

SPECIFICATION forming part of Letters Patent No. 760,377, dated May 17, 1904.

Application filed May 11, 1903. Serial No. 156,531. (No model.)

To all whom it may concern:

Be it known that I, THEODORE BEYER, a citizen of the United States, residing in the city of St. Louis, in the State of Missouri, have invented certain new and useful Improvements in Piano-Actions, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification.

My invention relates to a balance-check introduced into a piano-action to serve as a medium for holding the hammer of the action in a position intermediate of its limits of movement, so that repetitions of its movement to the piano-strings may be quickly accomplished without the necessity of permitting the return of the action-operating key to its normal position.

My invention consists in features of novelty hereinafter fully described, and pointed out in the claims.

Figure I is a side elevation of a piano-action embodying my improvement. Fig. II is an enlarged view of parts shown in Fig. I. Figs. III, IV, and V are elevations of similar parts to those shown in Fig. II, illustrating modifications of my invention.

1 designates the rear end of a piano-keyboard key which is surmounted by the extension 2, which carries the jack-rocker 3, as usual.

4 is the jack, which is pivotally supported above rocker 3 and the upper end of which is maintained normally in a rearwardly-projected position by a spring 5, situated beneath the heel 6 of the jack and resting on the rocker 3.

7 designates the center rail of the piano, to which the hammer-butt 8 is pivoted in the usual manner. The hammer-butt 8 carries the shank 9, to which the hammer 10 is secured.

11 is the hammer-support rail, against which the shank 9 normally rests.

12 designates the back-stop of the action carried by the shank 13, connected to the hammer-butt 8 and facing the back-check 14, which is supported by the jack-rocker 3.

All of the parts thus far described are well-known features of construction in a piano-action, and no invention, *per se*, is herein claimed

for such parts, they being described only for the purpose of providing for the description of my improvement in connection with them, as will be presently set forth.

Other parts of the piano-action than those described are illustrated in the drawings; but the description given is deemed sufficient, as it sets forth all of the parts of the action with which my improvement is in any way concerned.

In piano-actions heretofore made, so far as I am aware, there has been constant tendency of the upper ends or arms of the jacks, such as that, 4, illustrated in my drawings, to pass upwardly and forwardly beneath the hammer-butt 8 after the hammer has been moved to a piano-string upon the depression of the corresponding keyboard-key. Whenever this forward and upward movement of the jack occurs, the upper end of the jack is placed out of position to bear directly and with throwing effect against the hammer-butt after the keyboard-key has been depressed and has partially returned to its normal position. For this reason it has been impossible to quickly actuate the string-striking hammer in repeating action; but instead it has been found necessary to permit the keyboard-key to return fully to normal position in order that the jack may resume direct bearing engagement with the hammer-butt beneath it. In order to prevent the occurrence of the conditions stated, I provide a balance-check which occupies a position between the jack of the action and the shank of the back-stop carried by the hammer-butt and through the medium of which the hammer is balanced between the limits of its movement immediately after a string has been struck thereby and is maintained in such balanced position to hold the jack in a position where it will engage the hammer-butt directly for a repeating stroke when the hammer is in position intermediate of the limit of its movement to and from its corresponding string.

As seen in Figs. I and II, my balance-check consists of the following members: 15 is a buffer-spring secured at one end to the shank of the back-stop 12 and extending downwardly therefrom. The lower free end of this buffer-spring carries a head 16, that preferably in-

cludes a felt disk 17. 18 is a bumper which passes through the jack 4, preferably in a diagonal direction, and which is provided with a head 19, located in proximity to the head 5 carried by the buffer-spring 15. The bumper 18 is preferably made with a screw-threaded shank, as illustrated, in order that it may be adjusted vertically to position its head, so that it will receive the impact of the head of the 10 buffer-spring.

In the practical operation of a piano-action supplied with my improvement when the jack 4 is elevated to act against the hammer-butt 8 and subsequently moves forwardly toward 15 the back-stop 12 the head of the bumper 18 moves from the position seen in Fig. I to that seen in Fig. II, in which latter position its head 19 is beneath the head 16 of the buffer-spring 15. It will be understood that when 20 the jack 4 moved to the position seen in Fig. II it actuated the hammer-butt 8 to throw the hammer rearwardly to its corresponding string. When the hammer again moves forwardly toward the hammer-support rail 11, it 25 is yieldingly stopped by the head of the buffer-spring 15 striking against the bumper 18, as seen in Fig. II, such stoppage occurring before the hammer has reached the limit of its forward movement, and the hammer is 30 therefore held in a balanced position. While the hammer is in the balanced position referred to, each upward movement of the jack 4 causes the bumper 18 to act against the head of the buffer-spring 15 to actuate the hammer in- 35 stead of the jack acting directly against the hammer-butt. As a consequence of the hammer being brought to a balanced position, as stated, a quick or any number of quick successive depressions of the keyboard-key may 40 be made by the person performing upon the piano without the least difficulty and without the necessity of allowing the keyboard-key to return to its normal position after each depression, as is the case in piano-actions in which 45 my improvement is not present.

In Fig. III, I have shown a modification in which the positions of my balance members are reversed from those in which they are shown in Figs. I and II, the buffer-spring 15^a, 50 with its head 16^a, being carried by the jack 4 and the bumper 19^a being carried by the back-stop-shank 13.

In the modification shown in Fig. IV the bumper 18^b is carried by the back-stop shank

13 and in turn carries the buffer-spring 15^b 55 and its head 16^b. In this construction the head of the buffer-spring is adapted to receive the engagement of a projection 4^a, carried by the jack 4. In the modification shown in Fig. V the buffer-spring 15^c and its head are car- 60 ried by the back-stop shank and the bumper 18^c passes through the projection 4^b at the side of the jack 4 instead of passing downwardly through the jack proper, as illustrated in Figs. I and II. 65

By locating the lugs and adjusting-screws on the jacks at a point below their upper ends and extending the buffer-spring downwardly a sufficient distance to contact with said lugs and screws the point of contact between the 70 lugs and spring is brought into a horizontal plane below the horizontal plane occupied by the pivot of the hammer-butt, and this feature is very essential, inasmuch as a certain amount of leverage is obtained between the 75 shank and the jack, which, together with the action of the buffer-spring, more quickly accomplishes the return of the jack to its position beneath the hammer-butt. This improved result cannot be obtained where the 80 buffer-spring contacts with the jack in a horizontal plane above the horizontal plane occupied by the pivot of the hammer-butt.

I claim as my invention—

1. In a piano-action, the combination with 85 a hammer-butt, a shank carried thereby, and a jack, and mechanism for actuating said jack, of a buffer-spring carried by said shank, a head carried by said buffer-spring, and an adjustable bumper carried by said jack for en- 90 gagement with said buffer-spring head, substantially as set forth.

2. In a piano-action, the combination with a pivoted hammer-butt, a shank carried thereby, a jack, and mechanism for actuating said 95 jack, of an adjusting-screw carried by said jack, a buffer-spring interposed between the head of the adjusting-screw and the shank; the point of contact between said screw and buffer-spring being in a horizontal plane be- 100 low the horizontal plane occupied by the pivot-point of the hammer-butt, substantially as specified.

THEODORE BEYER.

In presence of—

E. S. KNIGHT,
M. P. SMITH.