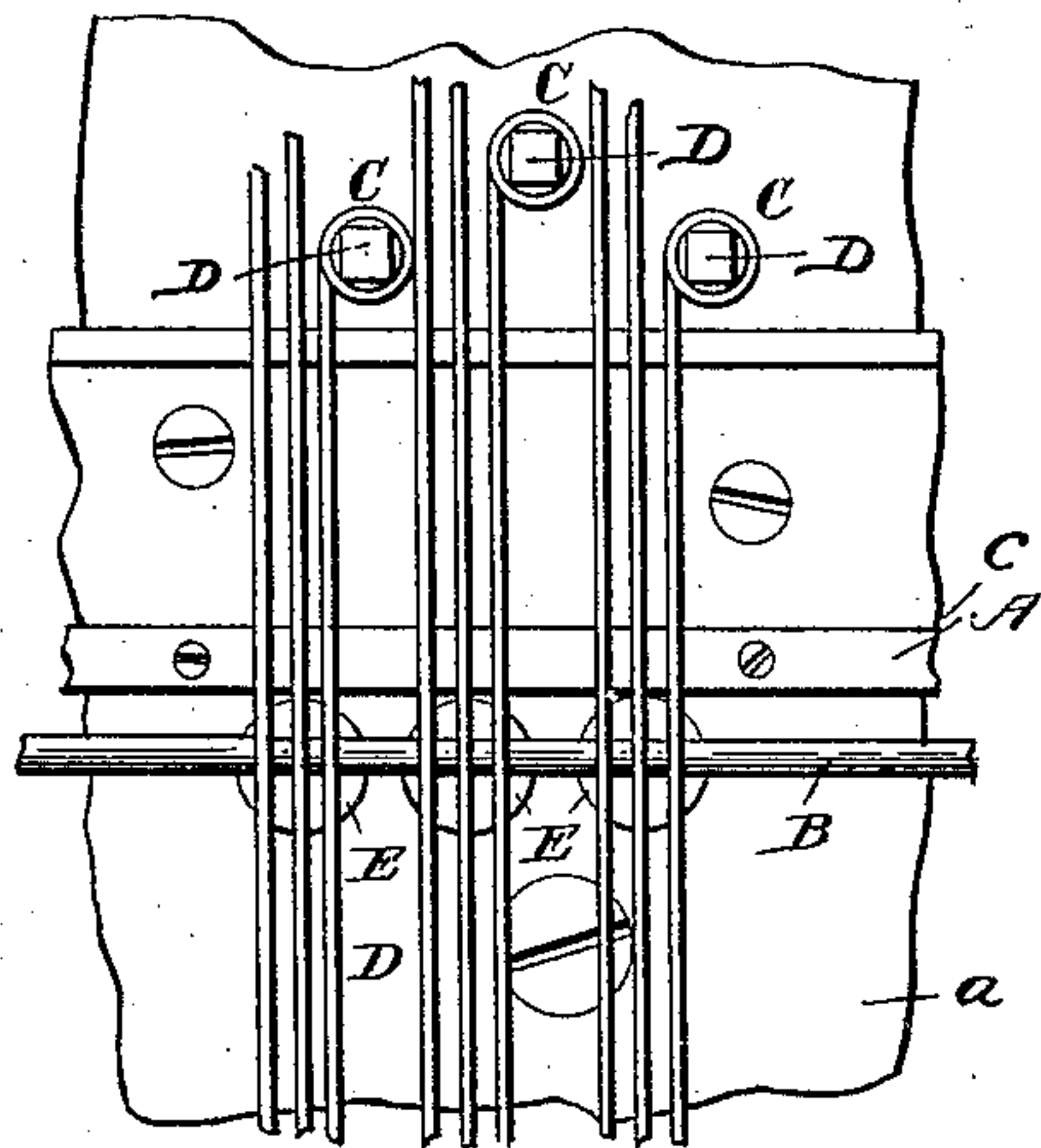


(No Model.)

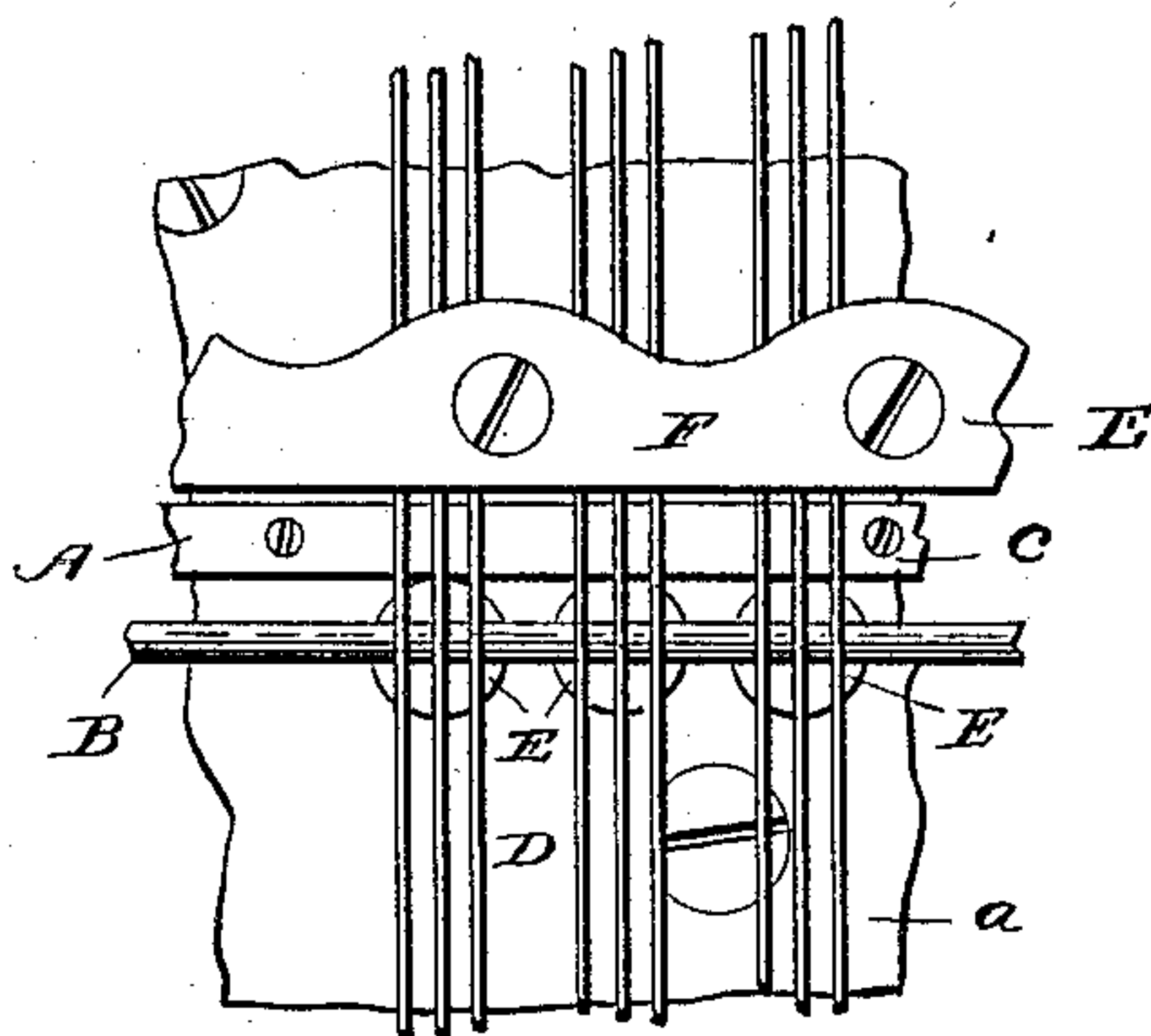
A. H. HASTINGS.  
PIANO.

No. 466,346.

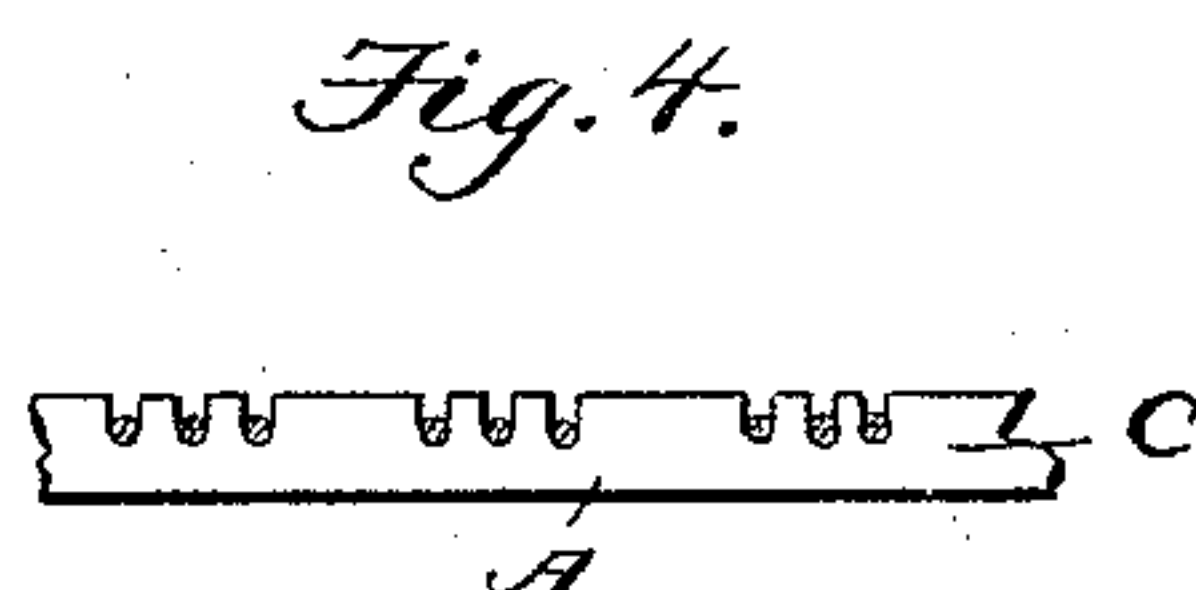
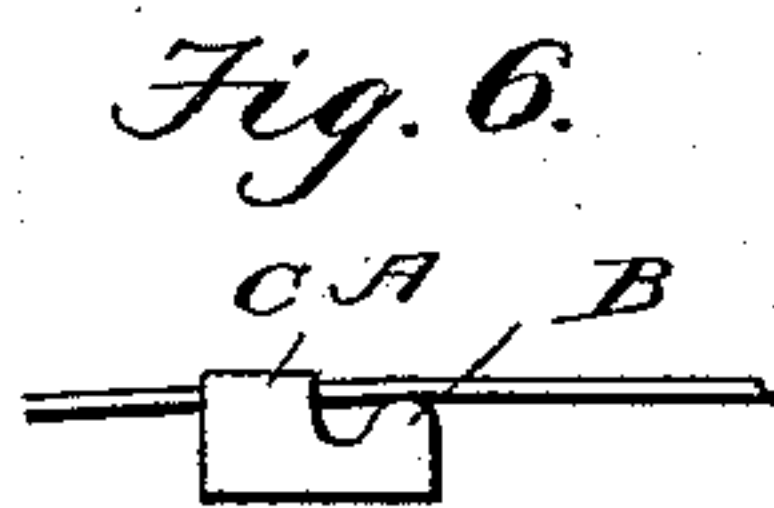
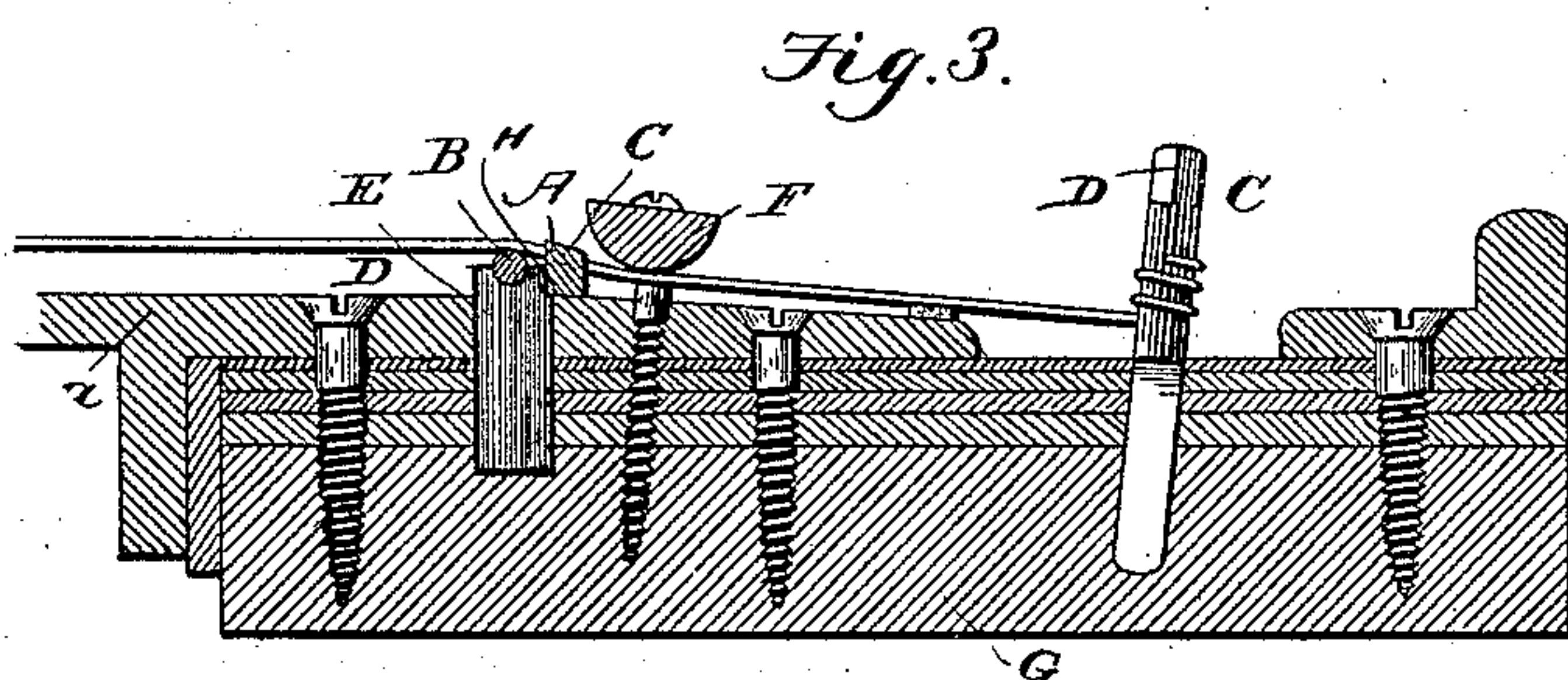
Patented Jan. 5, 1892.



*Fig. 1.*



*Fig. 2.*



Witnesses  
E. W. L. L. L.  
H. B. Keefe

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Attorney



# UNITED STATES PATENT OFFICE.

AZARIAH HORACE HASTINGS, OF NEW YORK, N. Y.

## PIANO.

SPECIFICATION forming part of Letters Patent No. 466,346, dated January 5, 1892.

Application filed October 14, 1891. Serial No. 408,719. (No model.)

*To all whom it may concern:*

Be it known that I, AZARIAH HORACE HASTINGS, a citizen of the United States, and a resident of New York city, in the county of New York and State of New York, have invented certain new and useful Improvements in Pianos, of which the following is a specification.

My invention relates to certain new and useful improvements in stringing pianos, and has for its object means for retaining the strings of a piano in their divided and properly-spaced position without the aid of agraffes now commonly employed for this purpose, and still retaining the preferable or desirable bearing bar or wire for the termination of the vibrating length of the strings; also, the prevention of vibration between the tuning-pins and bearing-bar, and also the enhancing of the quality and durability of tone by severing metallic connection between the bearing-bar or bridge and the string frame or plate, all as hereinafter more particularly described and claimed.

In the accompanying drawings, illustrating my invention, in the several figures of which like parts are similarly designated, Figure 1 is a plan view of three unison-strings of a piano strung in accordance with my invention. Fig. 2 is a similar view, with the addition of a pressure-bar. Fig. 3 is a sectional view of Fig. 2, showing the various parts in position. Fig. 4 is a detached elevation of the string-spacing device, and Figs. 5 and 6 are respectively top and side views of the string-spacing device and bearing-bar or bridge cast in one piece.

A represents the string frame or plate; B, the bridge or bearing-bar forming the termination of the vibratory length of the strings, and C the string-spacing guide or device through the notches, grooves, or channels of which the strings are led to the tuning-pins D in the usual manner.

E is a pressure-bar, which may be applied to the strings between the pins D and bridge and bearing-bar B to prevent any vibration and consequent noise between the said points.

In order to promote and enhance the quality and durability of the tone, I prefer to sever metallic connection between the strings, the bearing-bar or bridge B, and the metal

string frame or plate A, and this I accomplish by supporting the said bearing-bar upon dowels F, preferably one for each note, passing through the plate A and into the pin-block O, as shown in Fig. 3; or they may pass through the plate A and into a bar cast onto the plate A. In the ordinary construction these dowels will be recessed or shouldered on one side to support a portion of the string-spacing guide C, as clearly shown at H, Fig. 3.

In "short-plate" construction of upright pianos, where the pin-block can be brought well to the front near the line of strain of the strings, the string-spacing guide C will be supported directly upon the pin-block; but in any event it is preferred to arrange it between the bearing-bar B and the pressure-bar E, so that it will retain the proper relative positions of the strings on said bearing-bar. Where a full iron plate is used in upright or grand pianos, the guide may be supported upon the plate itself or upon the bridge of the plate.

It may sometimes be desirable to cast the bridge or bearing-bar B and the guide C in a single piece and apply them to each note separately or to a section of notes. This is particularly the case in scales where the stringing runs very obliquely, and this desideratum may be readily attained in the manner illustrated in Figs. 5 and 6 of the drawings.

It will be apparent that my invention at once obviates all difficulties heretofore experienced in pinning for string-spacing of three string pianos, chief among which may be mentioned the necessity for the use of small and consequently weak pins, in order that the strings may lie close together, the nicety and skill required in drilling the small holes for the reception of the pins and the noise and generally unfinished appearance attendant upon such construction. It is also obvious that the notches, grooves, or channels of my string-spacing guide C may be cushioned, if desired, as a preventive against noise, and the device may be made of any thickness or thinness which may be desirable or convenient.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. A device for maintaining the relative po-

sition of the strings, in combination with a bridge or bearing-bar supported on dowels, substantially as and for the purposes specified.

2. The combination of a bridge supported  
5 upon dowels, and a string-spacing guide consisting of a grooved or channeled bearing for the strings in close proximity to the said bridge, substantially as described, for the purposes set forth.

10 3. The combination, with a bridge or bearing-bar and a grooved or channeled bearing for the strings in close proximity to said bridge, of a pressure-bar or equivalent device for preventing vibration of the strings be-

tween the tuning-pins and the bridge, substantially as specified. 15

4. A bridge supported on dowels, one for each set of unisons, in combination with a grooved or channeled cushioned bearing for maintaining the strings in their properly- 20 spaced position, arranged in close proximity to the said bridge and between it and a pressure-bar for preventing vibration of the strings beyond the bridge, substantially as specified.

AZARIAH HORACE HASTINGS.

Witnesses:

EWELL A. DICK,  
ERNEST C. WEBB.