

(No Model.)

F. B. LONG.
PIANOFORTE AND AGRAFFE THEREFOR.

No. 529,282.

Patented Nov. 13, 1894.

Fig. 1.

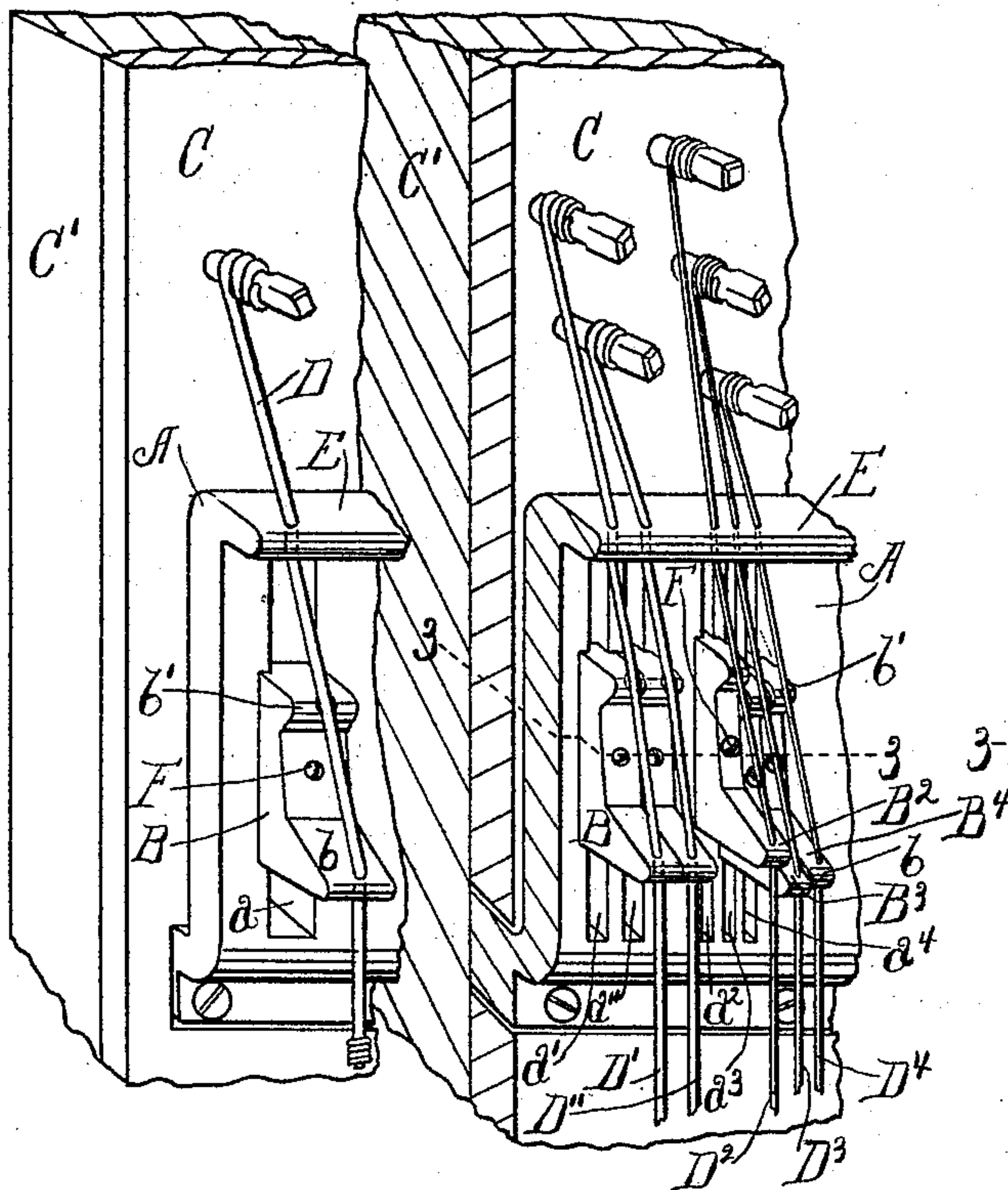


Fig. 2.

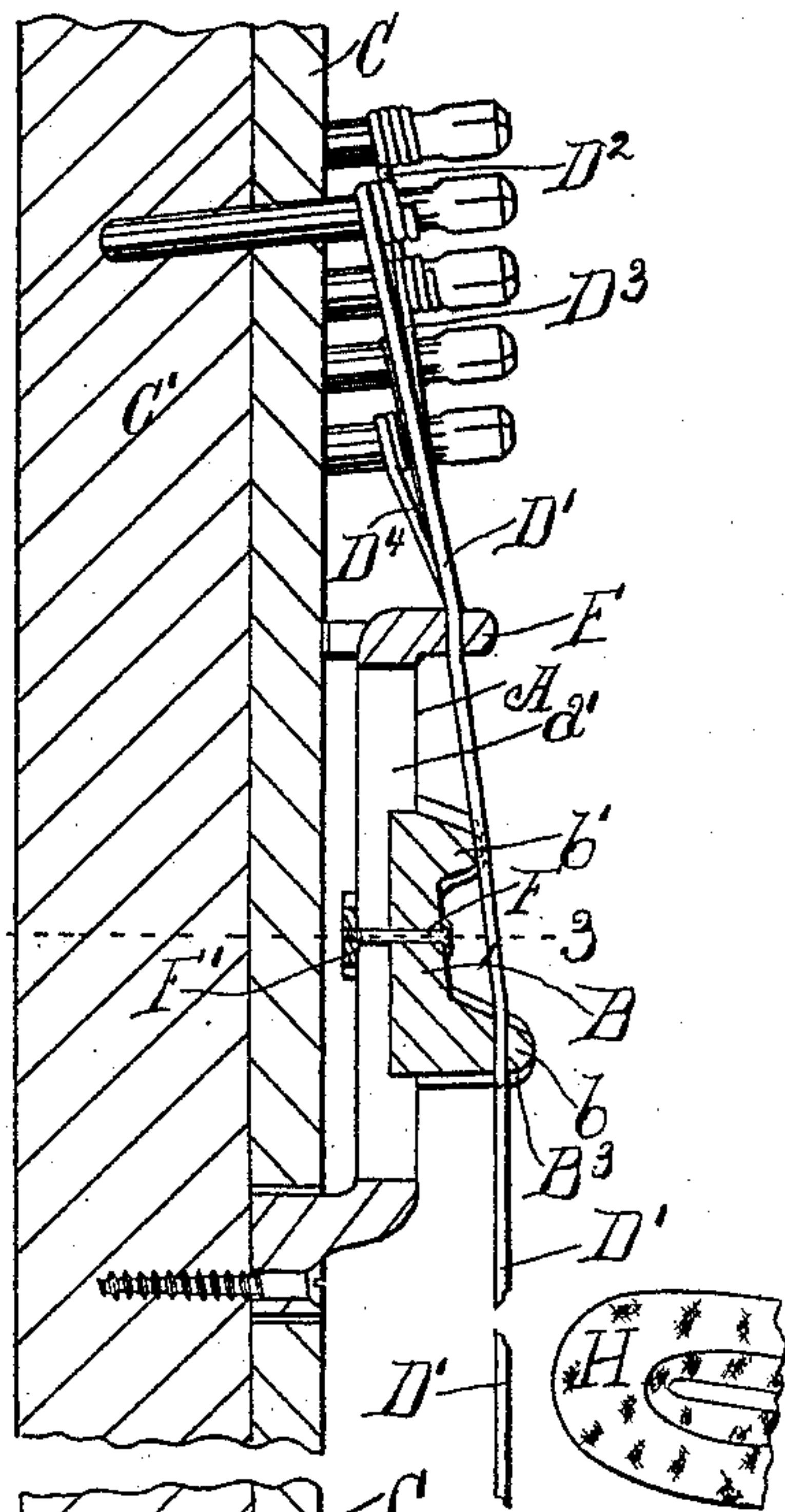


Fig. 3.

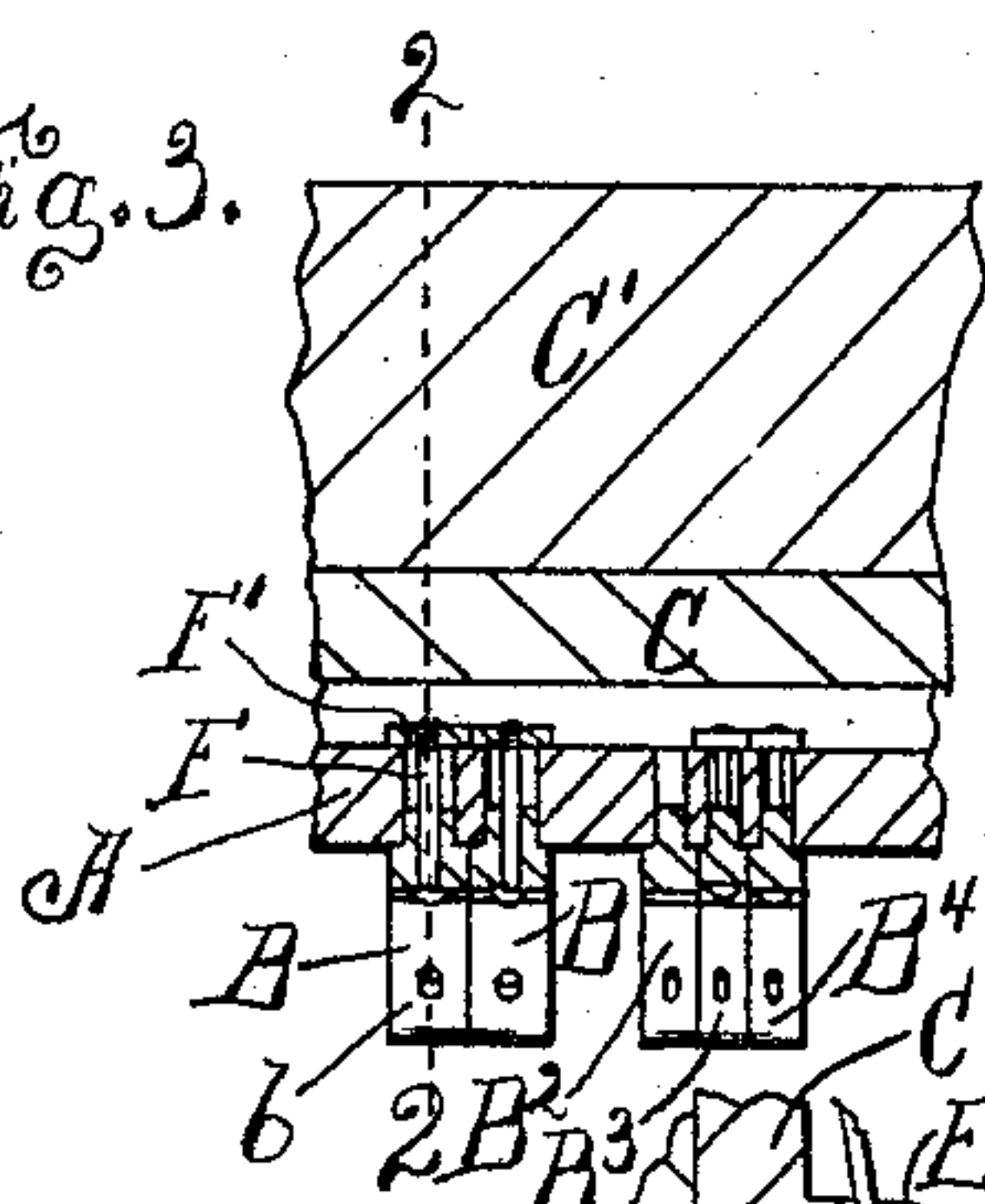


Fig. 4.

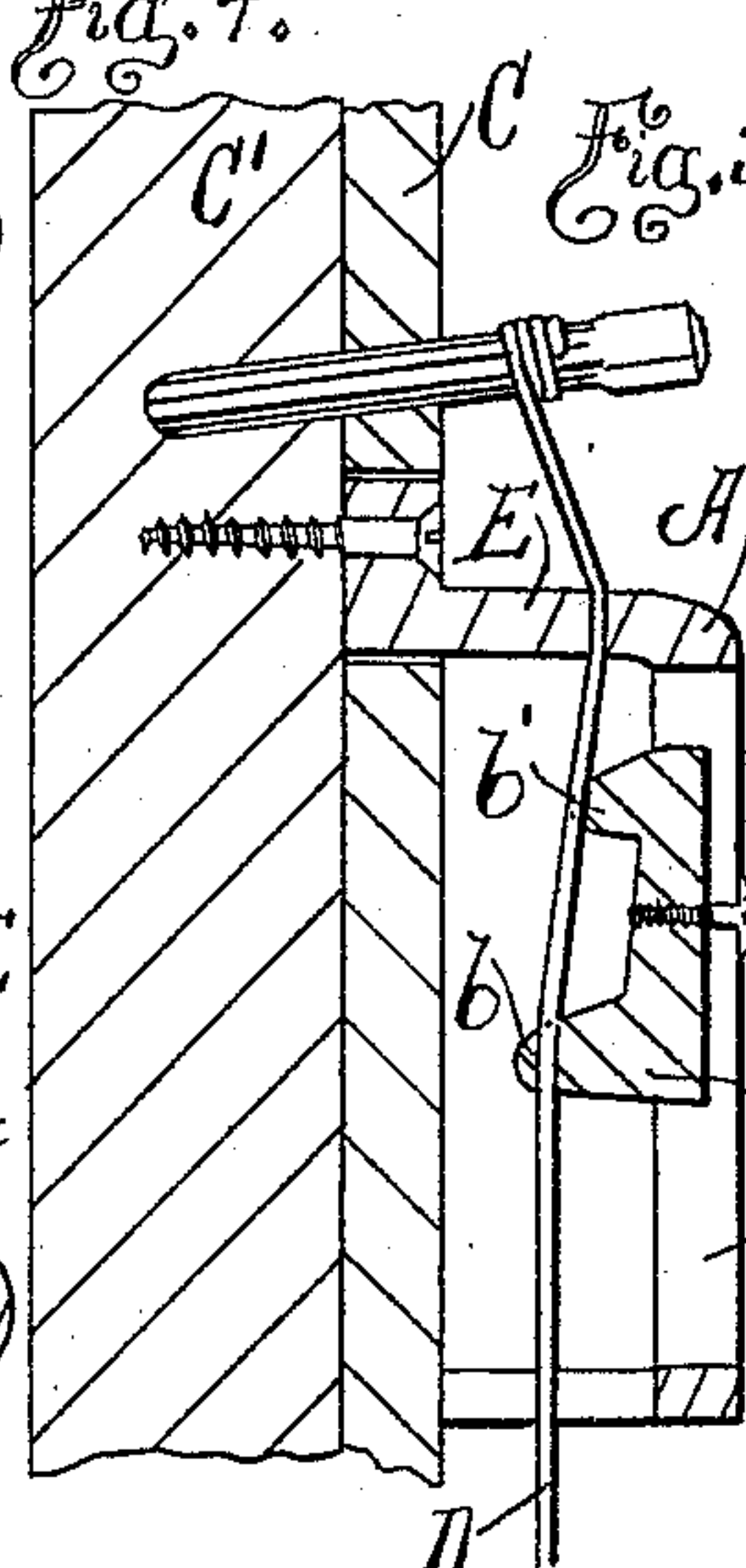
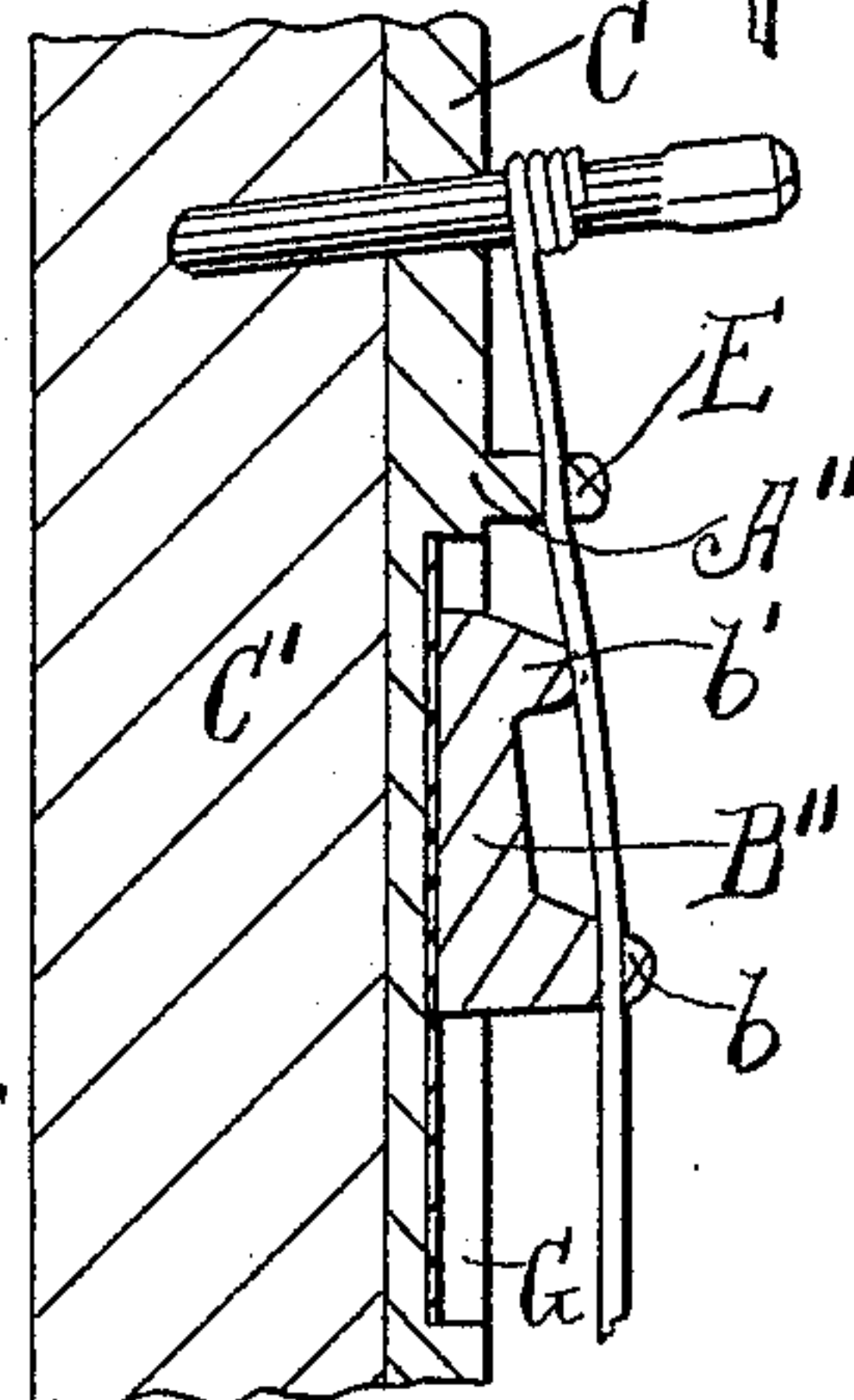


Fig. 5.



THE PRESS,

P. W. Harbeson.

F. M. Townsend

Fig. 6.

Inventor.

Frank B. Long

Hazard Townsend
his atty.

UNITED STATES PATENT OFFICE.

FRANK B. LONG, OF LOS ANGELES, CALIFORNIA.

PIANOFORTE AND AGRAFFE THEREFOR.

SPECIFICATION forming part of Letters Patent No. 529,282, dated November 13, 1894.

Application filed June 29, 1893. Serial No. 479,136. (No model.)

To all whom it may concern:

Be it known that I, FRANK B. LONG, a citizen of the United States, residing at Los Angeles, in the county of Los Angeles and State of California, have invented new and useful Improvements in Pianofortes and Agraffes Therefor, of which the following is a specification.

The object of my invention is to provide means whereby each string of a pianoforte may be operated upon independently to bring the striking point of the string into proper relation with its hammer to cause such string to give forth its most perfect tone.

My invention comprises a pianoforte having each string provided with a movable agraffe adapted to be moved longitudinal the string after the string is tuned, to thereby bring the exact striking point of each unison string directly under the hammer, and suitable means for clamping the agraffe to the agraffe plate.

My invention also comprises the combination in a pianoforte, of an agraffe plate provided with series of guide grooves or slots each adapted to receive the tongue of a movable agraffe therein, and arranged longitudinal of the string for which the agraffe is adapted, and sliding agraffes arranged to receive the piano strings respectively, and each provided with a tongue arranged projecting into its guide groove to allow the agraffe to be moved along the string to change the tone quality of each string independent of the other strings.

The accompanying drawings illustrate my invention.

Figure 1 is a perspective view of a fragment of a piano provided with my invention, and shows a portion of the agraffe plate with my improved agraffe thereon with fragments of strings in position. Fig. 2 is a vertical sectional view indicated by line 2—2 Fig. 3 and also shows a fragment of a hammer. Fig. 3 is a cross section on line 3—3 Figs. 1 and 2. Fig. 4 is a vertical section of a preferred form. Fig. 5 is a vertical section of another form. Fig. 6 shows another modification.

In the different views, A A' A'' indicate different forms of agraffe plates.

B, B', B'' and B''' indicate different forms of agraffe.

C indicates the piano plate.

C' indicates the pin block.

D D', &c., indicate the strings.

a a', &c., indicate slots or grooves in the agraffe plates to respectively receive the tongues of the agraffes.

My improved agraffe is provided with front and rear bridges b b' to receive the string. The front bridge b is perforated and the rear bridge b' is notched to receive and hold the string in its proper position. The agraffe plate A is provided with a rear bridge E which is perforated to allow the strings D D', &c., to be passed therethrough.

In the form shown in Figs. 1, 2 and 3 the agraffe is mounted on the outside of the agraffe plate A, and a screw F and nut F' are arranged to clamp the agraffe in a fixed position on the agraffe plate when the agraffe has been adjusted as desired.

In the form shown in Fig. 4 the agraffe is mounted between the agraffe plate and the piano plate and the screw f passes through the slot a''' and screws into the agraffe thus to clamp it in position.

In Fig. 5 the agraffe is seated simply in a groove G in the piano plate and slides back and forth therein. The groove is milled into the piano plate and is bushed as may be required.

In practice, the pianoforte is properly scaled as near as possible in the ordinary way and then the agraffe for each string is adjusted to the proper place to give perfect purity of tone to its particular string. In Fig. 1 the agraffes B², B³ and B⁴ are shown at various positions along their several strings and indicate that the several strings D², D³ and D⁴ were somewhat different in quality; possibly on account of physical differences or imperfections so that their striking points varied slightly, and the agraffes have been moved to bring the striking points of all three of the strings beneath the hammer, H, to produce a perfect quality of tone. This adjustment of the agraffes is done wholly with relation to tone so that the quality of tone is established by the ear of the tuner and does not depend entirely upon mechanical measurement for division of strings as has heretofore been the case in adjustment of the ham-

mers in the pianoforte with relation to the proper striking of the string. In tuning pianos having tuning devices other than the ordinary pin and where the leverage is such
 5 that the tuner does not feel direct contact with the string, where the perforation of the agraffe is very oblique or the string takes a very oblique course between the two agraffe bearings, such as is the case in the more com-
 10 mon agraffe arrangement, the tone seems or is perfectly in tune when the tuning is first completed but after the string is used a very little it is noticed to be out of tune. This is caused by the string binding in the oblique
 15 bearings and to a certain extent being thereby prevented from taking at once its perfect position. With the common pin and hammer the expert tuner can give such movement to the pin as to bring the bearings to their proper
 20 place but with other devices than the pin and hammer it is difficult if not impossible to accomplish this.

The agraffe shown in Fig. 6 has its perforation very oblique thus compelling the agraffe
 25 to move back and forth with the string in the slot or groove prepared for it so that the only stationary bearing of the string is that upon the bridge of the agraffe plate between the agraffe and the pin. The string, not having
 30 to pull through the oblique bearing, will remain perfectly in tune as left by the tuner. M is a chock of cork or other suitable material placed below the agraffe when in its proper place to keep the agraffe from sliding down
 35 when the pitch is lowered.

In practice, the scale can be perfectly adjusted as before described and the chock M fitted in below the agraffe to keep it from moving down. In raising the pitch the agraffe
 40 will move but slightly and will afterward readily take its proper position without changing the pitch so that no chock will be required above the agraffe.

My invention is to be distinguished from
 45 that class of movable agraffes in which the oblique string grooves are arranged at such an angle that when the strings are tightened the agraffes are immovably fixed upon the string and cannot be adjusted longitudinal

of the string. This construction defeats the
 50 very object accomplished by me, and while it prevents the unequal tension of the string between the main length of the string and the agraffe, and the pin and the agraffe, the tuning of the string is effected wholly by the
 55 pin and the striking point of each unison string cannot be shifted independent of the others to bring such point directly under the hammer, while in my improved device the agraffe may be shifted upon the string after
 60 the string is tuned thus to bring the exact striking point of each unison string directly under the hammer.

Now, having described my invention, what I claim as new, and desire to secure by Letters
 65 Patent, is—

1. The combination of the agraffe plate having the rear bridge, the movable agraffe provided with the perforated bridge, and means
 70 for clamping the agraffe to the agraffe plate.

2. In a piano forte, the combination of the agraffe plate; the string, the hammer, and the movable agraffe provided with the front perforated bridge and the rear bridge, arranged
 75 to form a bearing for the string and adapted to be adjusted longitudinal of the string after the string is tuned, and suitable means for clamping the agraffe to the agraffe plate.

3. The combination of the agraffe plate having the rear bridge, the movable agraffe provided with the front perforated bridge and the rear bridge and means for clamping the
 80 agraffe to the agraffe plate.

4. In a piano forte, the combination of the agraffe plate; the several unison strings; the
 85 hammer arranged to strike such strings, and the movable agraffes arranged, one to form a bearing for each string of the several unison strings, and each adapted to slide longitudinal of its string independent of the other
 90 agraffes to thereby bring the exact striking point of each string directly beneath the hammer, and suitable means for clamping each agraffe to the agraffe plate.

FRANK B. LONG.

Witnesses:

JAMES R. TOWNSEND,
 ALFRED I. TOWNSEND.