

(No Model.)

2 Sheets—Sheet 1.

F. L. WING.
PIANO KEY BED SUPPORT.

No. 350,517.

Patented Oct. 12, 1886.

Fig. 1.

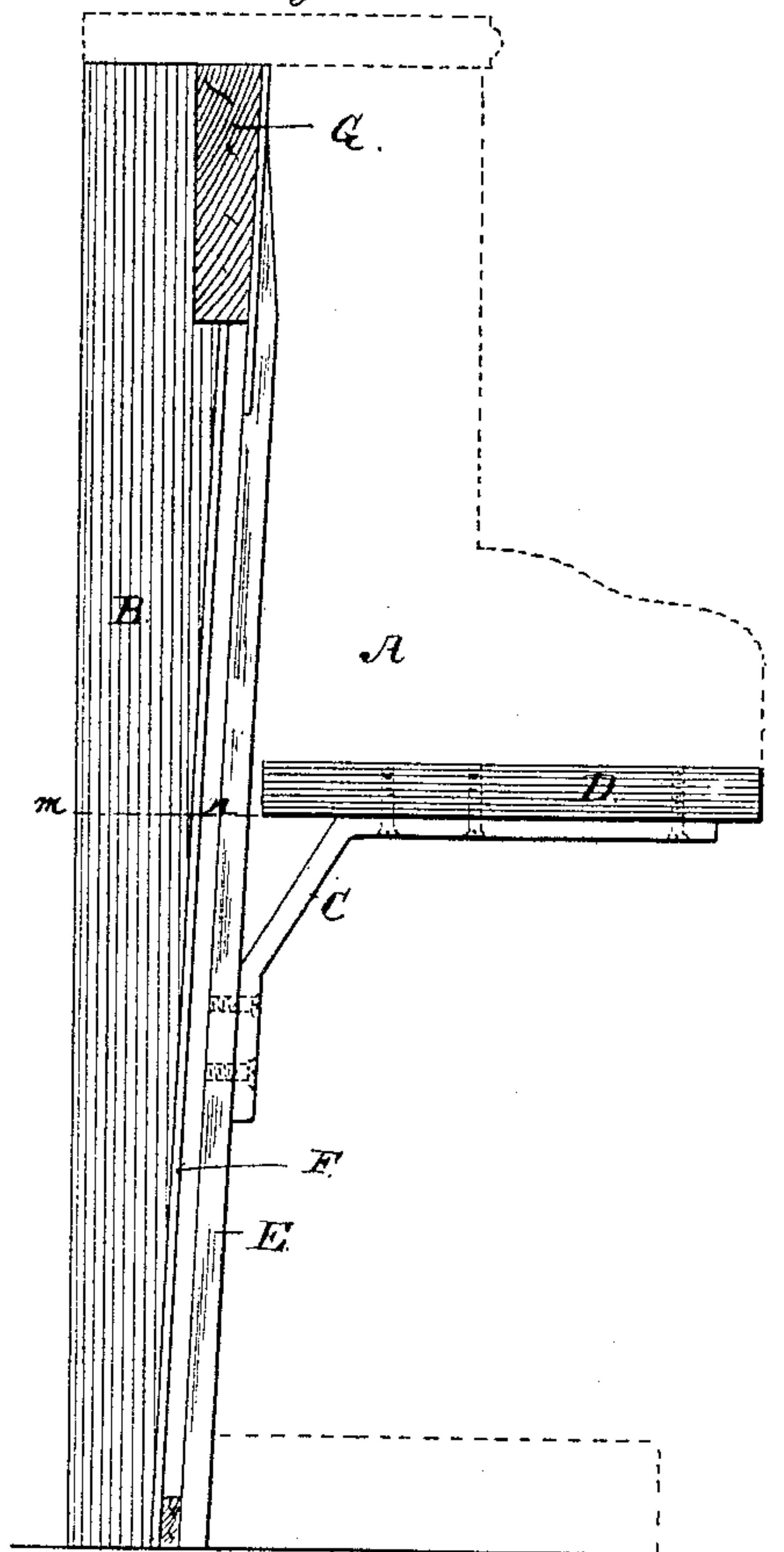


Fig. 2.

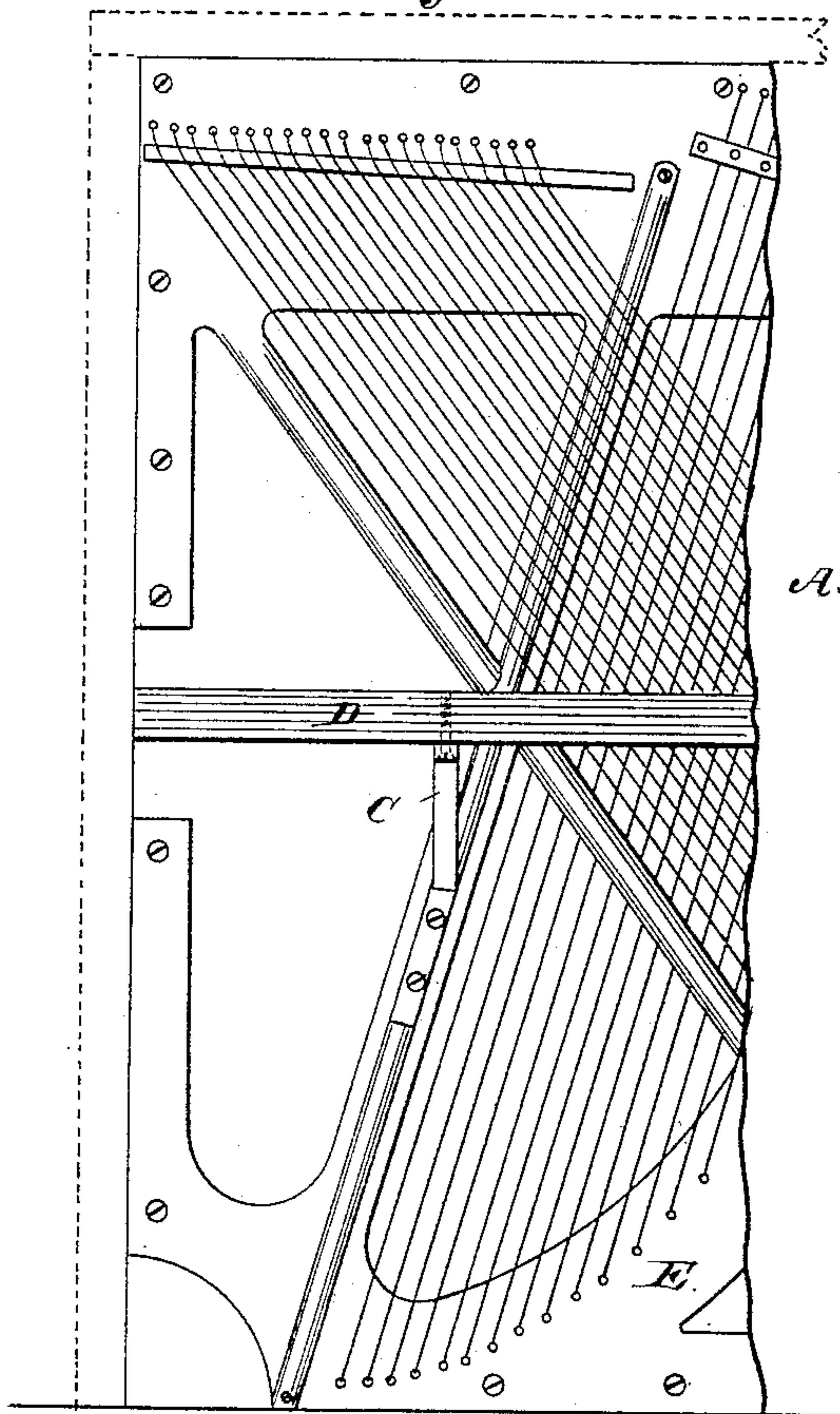


Fig. 3.

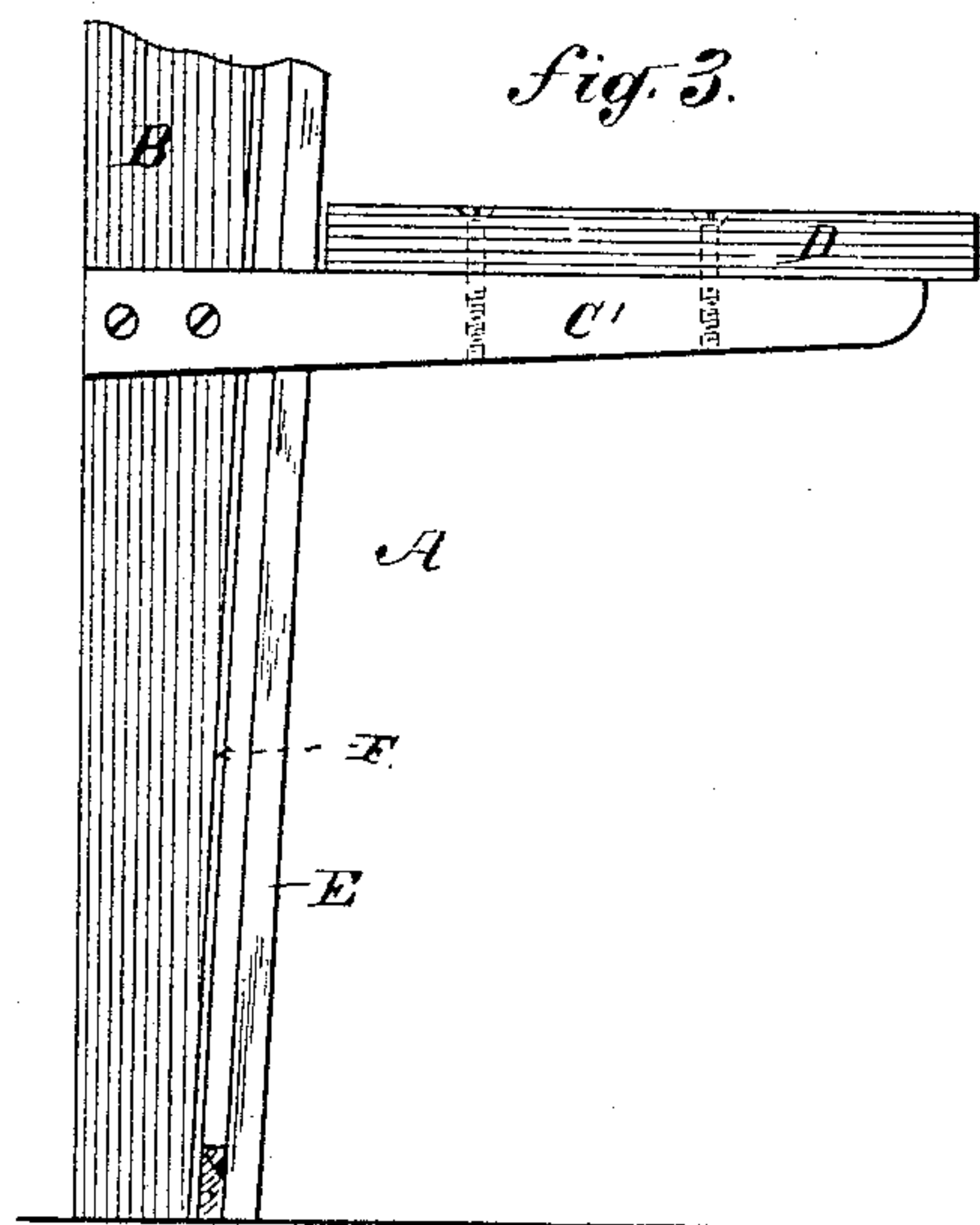
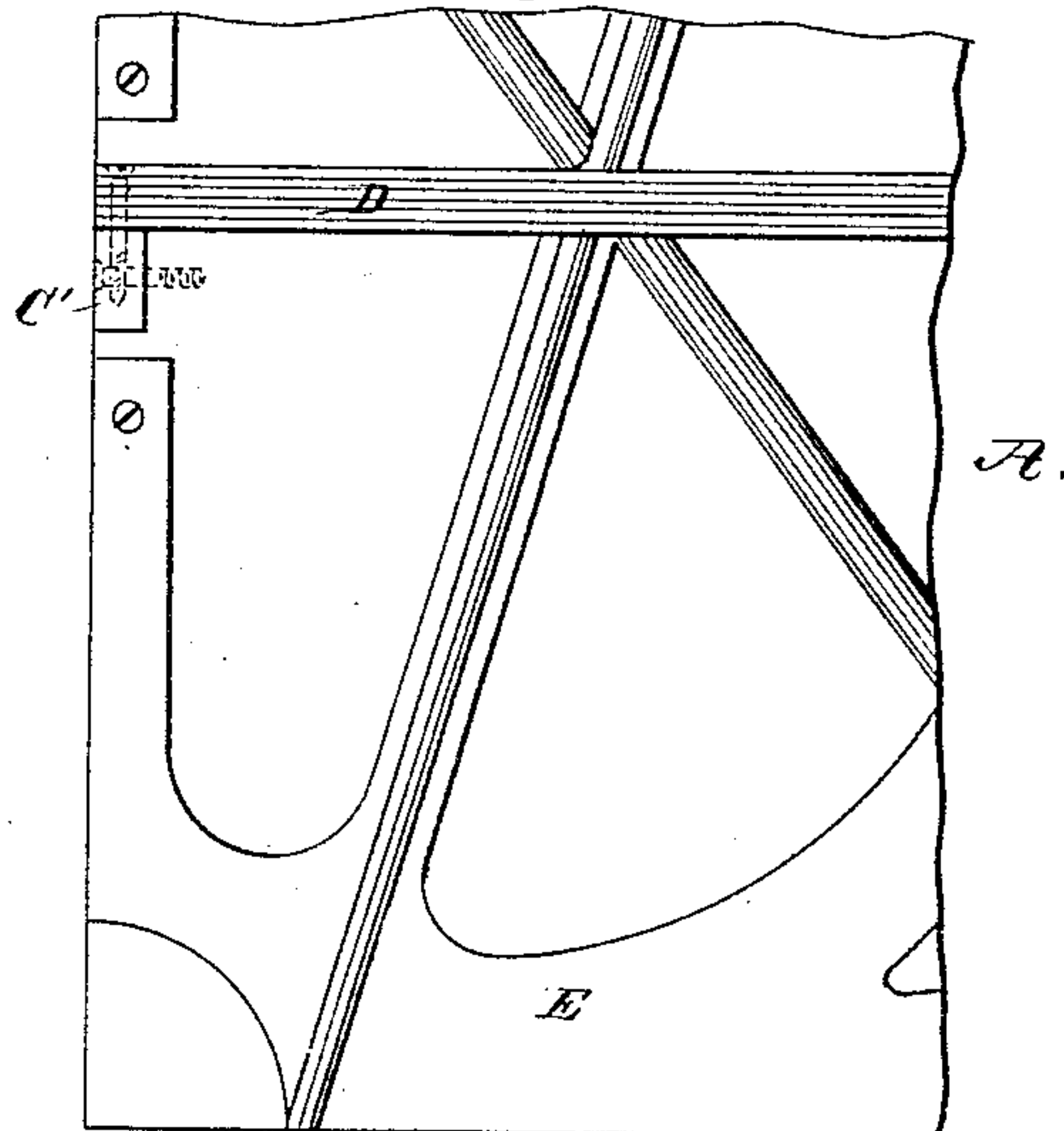


Fig. 4.



Witnesses:
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Edw. L. Wing

Inventor
Frank L. Wing

(No Model.)

2 Sheets—Sheet 2.

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Fig. 5.

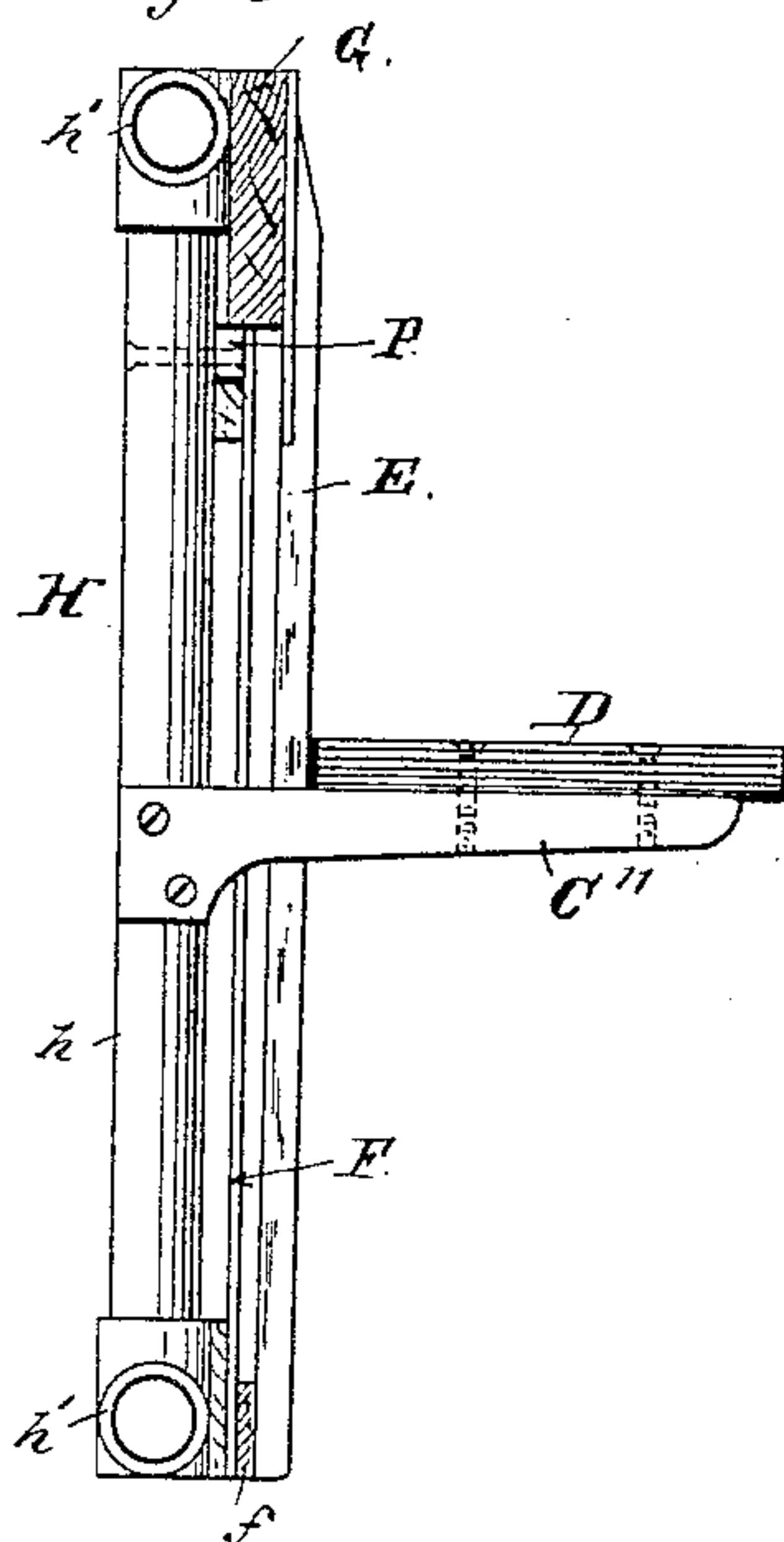


Fig. 6.

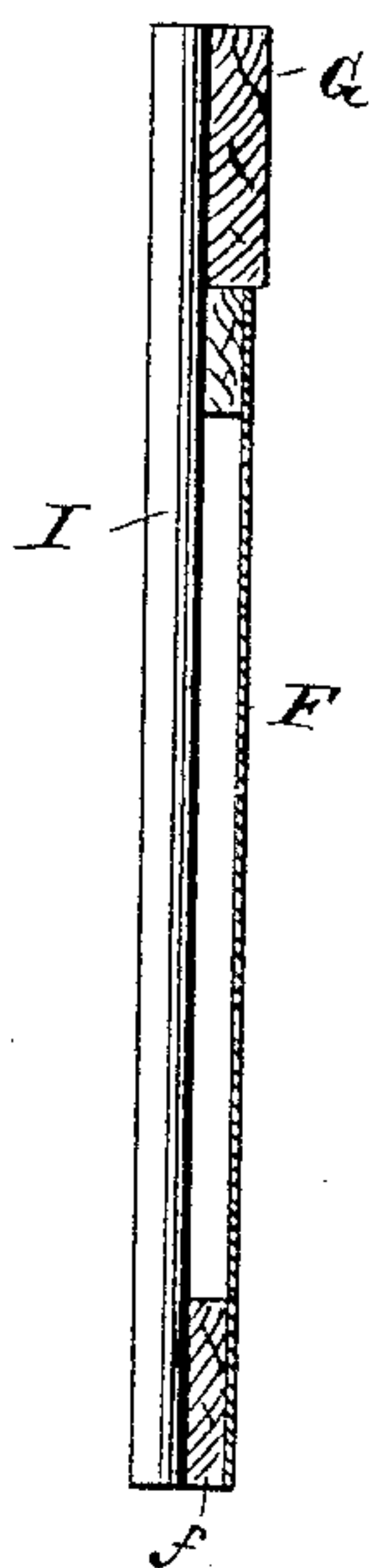


Fig. 7.

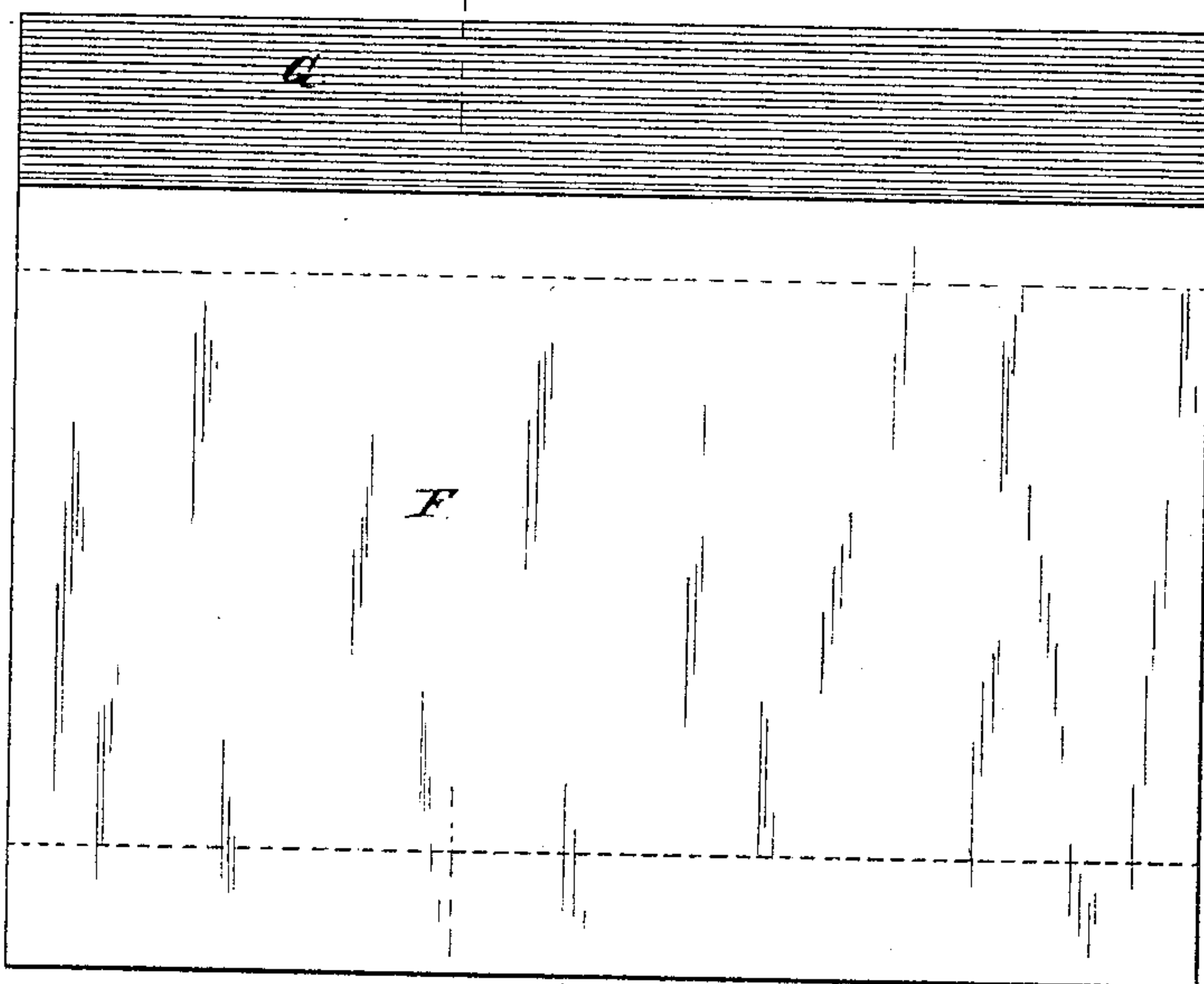


Fig. 8.



Witnesses:
Henry Eichling
Amos Cook

Inventor

Frank L. Wing

UNITED STATES PATENT OFFICE.

FRANK LEEMAN WING, OF BROOKLYN, ASSIGNOR TO CHARLES U. WING,
OF NEW YORK, N. Y.

PIANO-KEY-BED SUPPORT.

SPECIFICATION forming part of Letters Patent No. 350,517, dated October 12, 1886.

Application filed May 1, 1885. Serial No. 164,145. (No model.)

To all whom it may concern:

Be it known that I, FRANK LEEMAN WING, a citizen of the United States, and a resident of Brooklyn, in the county of Kings and State of New York, have invented certain new and useful Improvements in Piano-Fortes, of which the following is a specification.

My invention relates to improvements in the manufacture of piano-fortes.

10 The objects of my improvements are, first, to afford facilities for the regulating and finishing of upright pianos independently of the varnished portions of the case; second, a new and improved construction, in lieu of the back-
15 case frames of uprights, which will impart greater strength in proportion to the weight and cost.

My improved frames also have the advantage of improving the tone and increasing the
20 vibration of the instrument.

These improvements are secured by means of the mechanisms illustrated in the accompanying drawings.

Figures 1, 3, and 5 are end views of my im-
25 provements in upright-piano movements, and illustrate more particularly the improved supports for the key-beds described hereinafter in this specification. Figs. 2 and 4 are front views of two (2) varieties of these movements.
30 In Fig. 2 the strings and pins are shown also. Fig. 7 shows in front elevation a corrugated metal back frame having the wrest-plank and sounding-board attached in position. Fig. 8 is a top view of the same, while Fig. 6 is a ver-
35 tical section through the line X X. (Shown in Fig. 8.)

The arms or brackets marked C C' C'', Figs. 1, 2, 3, 4, and 5, show my improved supports for the key-bed. By the employment of these
40 brackets the manufacturer will be enabled to fit the key-bed in place, ready for the superimposed action, without relying upon the sides of the case as a support while the instrument is in the shop undergoing the process of as-
45 sembling the different internal parts together.

In Figs. 3 and 4, C shows one of two brackets fastened one to each end of the back frame at the proper height and supporting the key-bed D. The key-bed for this purpose may rest
50 either on the upperside of the bracket or be suspended from the under side thereof by means of

screws, &c., as desired or deemed preferable. The dotted lines bound the case after it is fastened to the body of the instrument. The method hitherto has been to fasten the arm or
55 bracket which supports the key-bed to the case proper, instead of to the body of the instrument. The exterior or outer portion of this arm has been veneered and varnished and made to form part of the exterior ornamental casing. 60
As a mere auxiliary support to the inner or back edge of the key-board, some makers have had cast upon the surface of the iron plate two or three short knobs, which were merely designed to keep the inner edge from
65 sagging out of the horizontal. My improvement, however, consists in a very strong and an entirely independent support for the key-bed, without reference to the sides or the front of the case. In this way I am en-
70 abled to regulate and finish the piano complete while the sides of the case are yet in the varnish-room. The result is accomplished by means of the long arms or brackets, such as C C' or C''. These are fastened either to
75 some part of the back frame, B, (see Figs. 3 and 4,) or otherwise are projected outwardly from the iron plate, sounding-board, wrest-plank, or the bottom of the piano, at some point near the ends of the instrument, (see
80 Figs. 1 and 2,) the object in each case being the same—namely, to afford a perfectly firm support for the entire key-bed D. Of the two methods, I prefer to fasten long brackets or arms to each end of the back framing, as in
85 Figs. 3 and 4; but I do not confine myself to either plan, as there are for some styles advantages in favor of supporting the key-bed D by means of a bracket extending from the plate, board, wrest-plank, or bottom of cas-
90 ing, as shown by brackets, (marked C,) Figs. 1 and 2. The method by which these long brackets or arms C C' C'' are attached to the body of the piano is not important so long as it provides sufficient strength. They may be
95 either let into rabbets or grooves cut in the back frame or screwed or bolted to either of the parts above mentioned.

In Figs. 1 and 2 the bracket may be cast with the plate, or be welded or bolted, as suited
100 to the fancy of the constructing piano-maker. The bracket C, Figs. 1 and 2, projects back-

ward from some point near the outer edge of the key-bed D. At its inner extremity the bracket C is fastened either to the plate, sounding-board, bottom of the case, to the timbers 5 behind the sounding-board, or to the wrest-plank.

In Figs. 1 and 2 the bracket is shown fastened at its inner extremity to the iron plate, which will sufficiently illustrate the principle 10 involved. As the bracket C passes outside of the line of the front frames of the case, it will be necessary to cut a small opening or slot in the top of the case panel or frame beneath the key-bed D, or otherwise to cut a recess in the 15 under side of the key-bed itself, so that the long arm C shall not prevent the lower panel of the case from being fitted in its proper position—to wit, just below the inner edge of the key-bed D.

I am aware of the fact that buttons or knobs cast upon the surface of the iron plate just below the key-bed have been employed in some instances to act as an auxiliary support to the case itself; but these short projections meet an 25 entirely different object from the long bracket or arm devised by me, as C C' C''. These long brackets projecting beyond the case form supports sufficient in themselves to hold the key-bed without making any connection to 30 the sides of the case, as is now universally done. The said short knobs would not reach to the line of the back ends of the keys proper, and have been merely and only designed to keep the extreme backedge of the key-bed D from sagging or dropping out of an exact hori- 35 zontal position, while the main supports were the projecting side portion of the case proper—i. e., according to the old system now in vogue. The improved brackets, as C C' C'', on the 40 other hand, are supports for the entire key-bed, as they project well forward and under the fronts of the keys, and thus support firmly in a horizontal position the entire surface of the key-bed D.

My improved supports, as shown, I have 45 designed to act independently of any other support whatever, to sustain the key-bed and the superimposed action-work.

The supports C C' C'' (shown in Figs. 1, 3, 50 and 5) may be either designed for permanent or temporary service. The value of my improvement, as an aid in the manufacturing process, would be equally great if after the piano-movement was finished without using 55 the case, by means of the supports, as C or C' or C'', the case should be then affixed and the key-bed D then firmly fastened to the case in addition to the brackets. My object is to construct an upright piano by means of my de- 60 vices, which shall be a perfect piano, in playing order before any of the important ornamental portions of the case are attached. In the event that it should be desirable to ship such an uncased movement as I have described, 65 then either permanent or temporary supports may be used. When the latter are used, I

have devised two or more guiding-marks which are made on the body of the instrument. These must be drawn to indicate exactly where the key-bed must be permanently fixed. Such a 70 guiding-mark for one end of the instrument is shown by the letters *m n*, Fig. 1. These marks, if accurately made, will permit mechanics at a distance to adjust the key-bed and action at the exact elevation indicated by the marks, 75 and then to incase the instrument for market. These marks may be made in any way, and may be either elevated or depressed.

By using my improved supports C C' or C'', Figs. 1, 2, and 5, for the key-bed, as above de- 80 scribed, I am enabled to construct a low-priced school-instrument which shall be a complete working machine without any ornamental case whatever. Upon the key-bed suspended or supported by the brackets, as I have above 85 described, I place the key-board, and above the key-board the action in the usual manner, and then proceed to regulate and tune the piano in perfect mechanical shape, but with- 90 out its case. The protection which the case affords can then (when it is desired to make school or practice instruments) be secured by using a loose covering of woolen or other fabric to protect the instrument from dust, &c., when 95 it is not in use.

Figs. 7 and 8 show my improved back frame—namely, a plate of corrugated iron or steel, I, fastened to the wrest-plank and sounding-board. This back plate I make in 100 one piece and large enough to cover the entire back of the instrument. As the strain is somewhat transversely across the instrument, corrugations, according to a well-accepted principle of mechanics, would afford addi- 105 tional strength for resisting the strain. The corrugations employed are curved in shape, and not rectangular. Inasmuch as the former involve the principle of the “arch,” they afford greater strength. For the purpose of economy I employ sheet iron or steel rolled 110 in the usual way, and corrugate it by the use of corrugating-machines, in the same way as in the production of the corrugated sheet-iron of commerce. The thickness of the iron or 115 steel and the extent of the corrugations will vary with the size of each particular instrument. This metal frame is fastened to the wrest-plank and plate by means of bolts pass- 120 ing through the respective parts shown in Fig. 9, as will easily be understood by all piano-makers. This back plate has the advantage of saving space, thus giving more freedom for the working of the keys and action.

I am aware that a wooden corrugated frame made of separate pieces of wood joined to- 125 gether to form rectangular corrugations and requiring to be re-enforced by additional “braces” is not new, and I do not claim, broadly, a corrugated piano-frame. What I do claim, however, is a sheet-metal corrugated 130 frame which has been so corrugated by the operation of a corrugating-machine.

The advantages of my improved frame are, first, extreme cheapness; second, great strength, by reason of the arch-like corrugations and there being no joints to yield; third, 5 small weight in proportion to the inherent strength; and, fourth, improvement in the tone, quality, and power of the piano. This last is due to the fact that the peculiar contour of the frame embodies a series of concaved 10 reflectors, which concentrate and reflect the sound-vibrations; and to the further fact that the frame F forms, in connection with the sounding-board and the ends of the instrument, a large tone-chamber for the vibrations 15 of the piano-forte, (upon the principle of the violin tone-chamber.)

What I claim, and desire to have secured by Letters Patent, is—

1. In a piano-forte, one or more brackets, 20 arms, or equivalent supports, as C' or C'', projecting from the interior framing of the instrument at the end thereof and at any angle, and adapted to support the key-bed D in a hori-

zontal position firmly and independently of the upright portions of the outer case, sub- 25 stantially as described.

2. In a piano-forte, one or more brackets, arms, or equivalent supports, as C, attached to any portion of the interior framing of the instrument, as described, and extending be- 30 yond the front frames of the case, for the purpose of supporting the forward portion of the key-bed firmly in a horizontal position and independently of the upright portions of the outer case, substantially as described. 35

3. The herein-described musical-instrument frame, consisting of sheet metal bent or pressed into curved corrugations, as and for the purposes set forth.

Signed at New York, in the county of New 40 York and State of New York, this 10th day of January, A. D. 1885.

FRANK LEEMAN WING.

Witnesses:

SAML. COHN,

W. TAZEWELL FOX.