

No. 654,715.

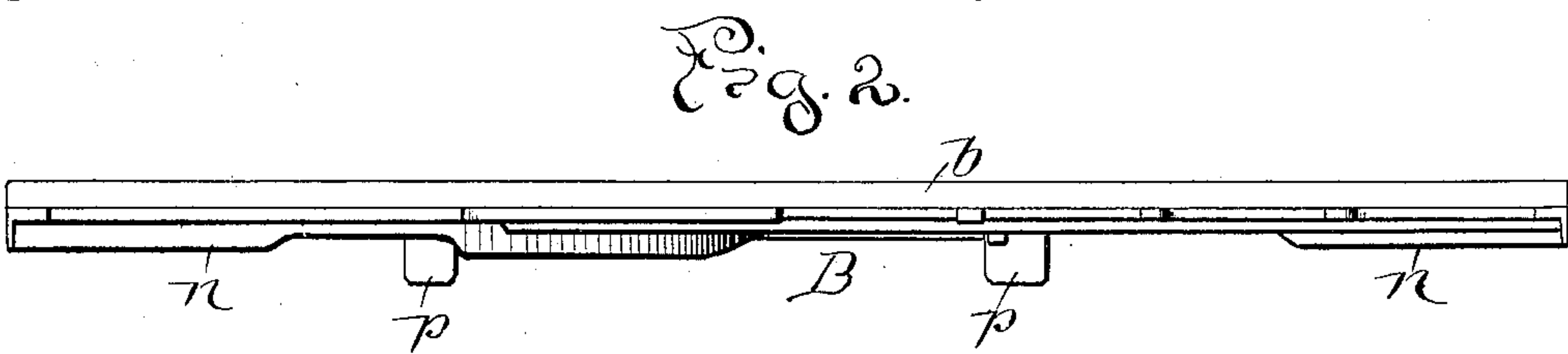
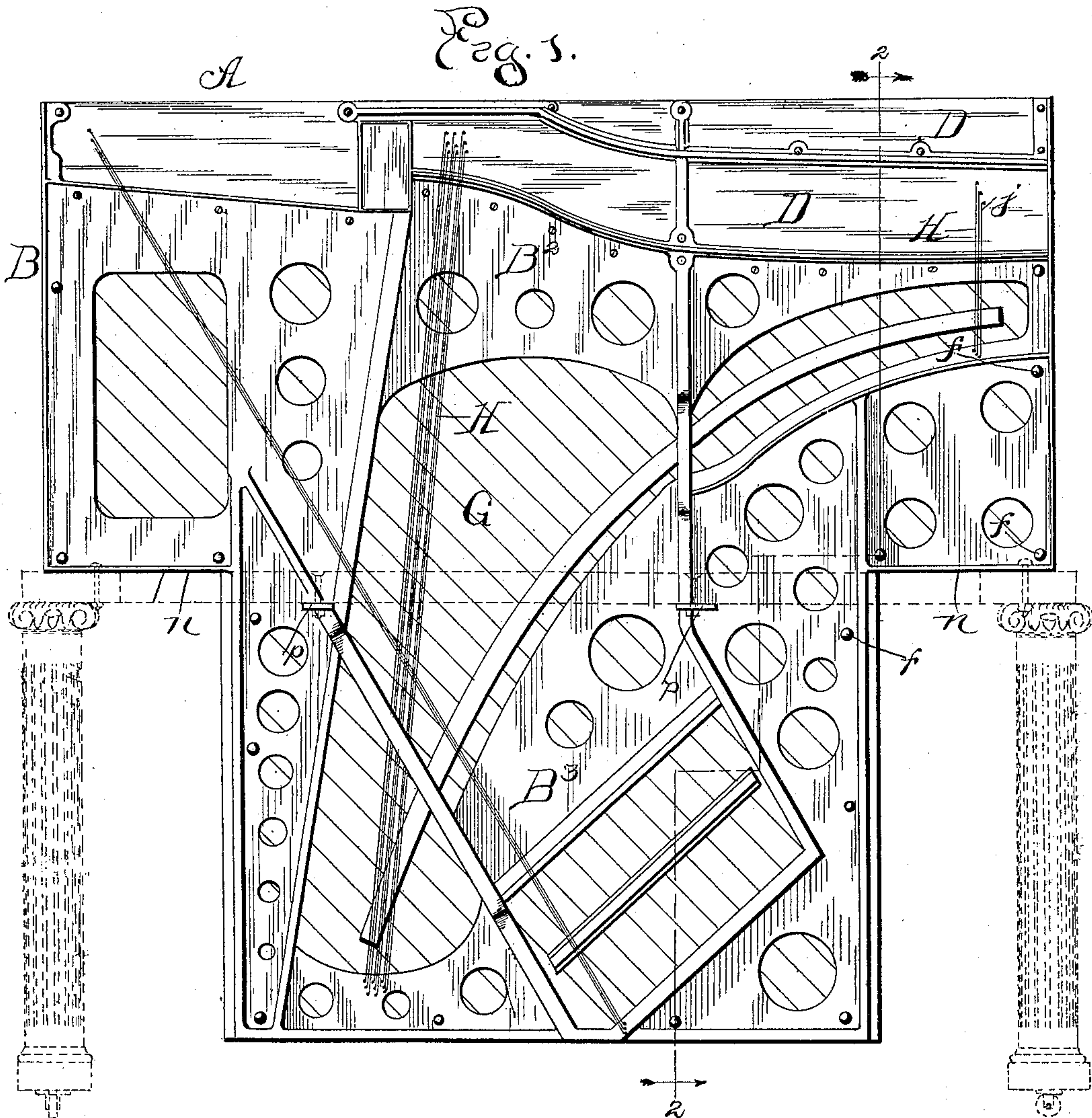
Patented July 31, 1900.

J. F. CONOVER.
PIANO.

(Application filed Sept. 28, 1898.)

(No Model.)

3 Sheets—Sheet 1.



Witnesses:
J. B. Keir
A. Miller Belfield.

Inventor:
James F. Conover,
By Chas. C. Bulkeley,
att'y.

No. 654,715.

Patented July 31, 1900.

J. F. CONOVER.

PIANO.

(Application filed Sept. 28, 1898.)

(No Model.)

3 Sheets—Sheet 2.

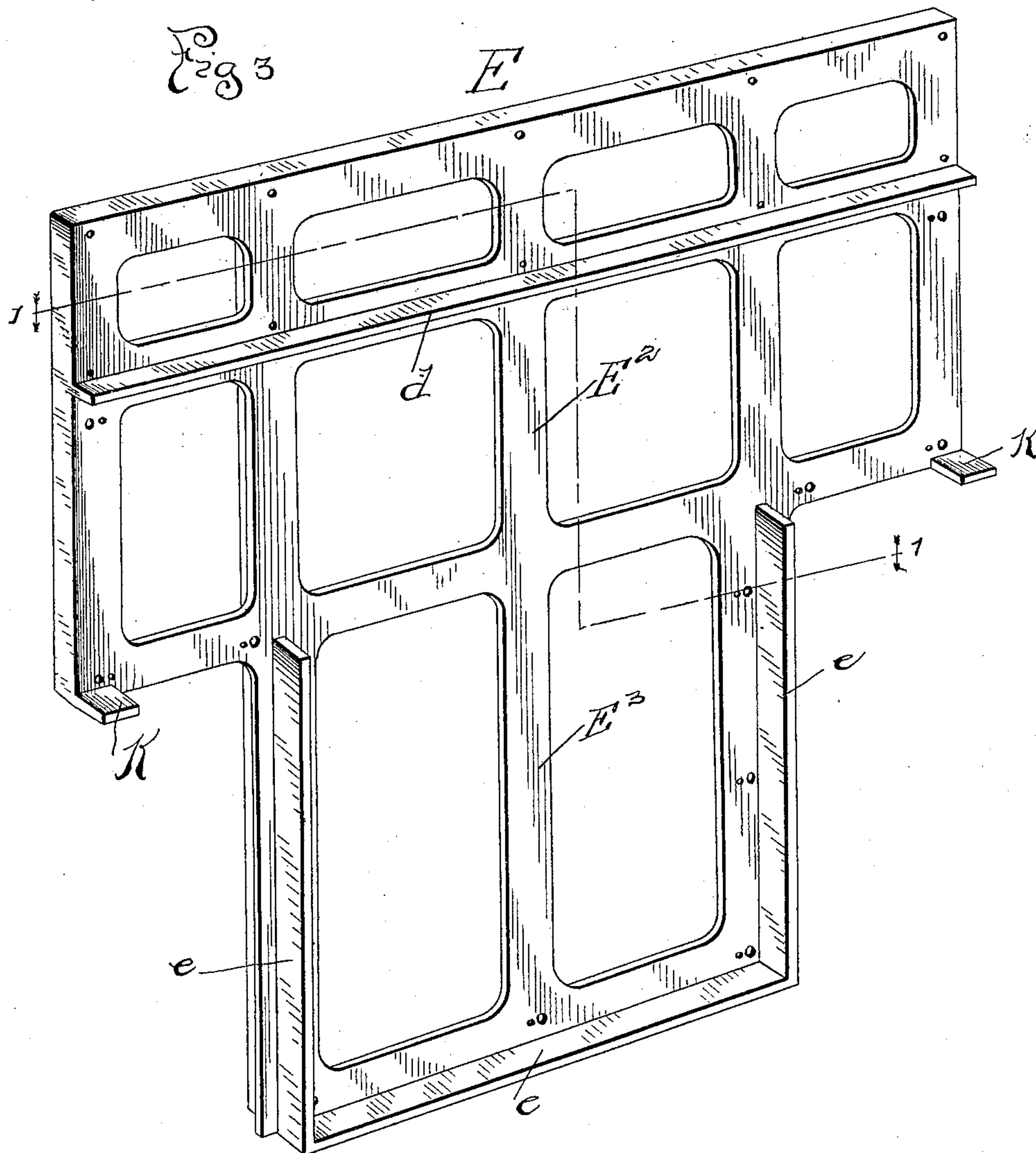
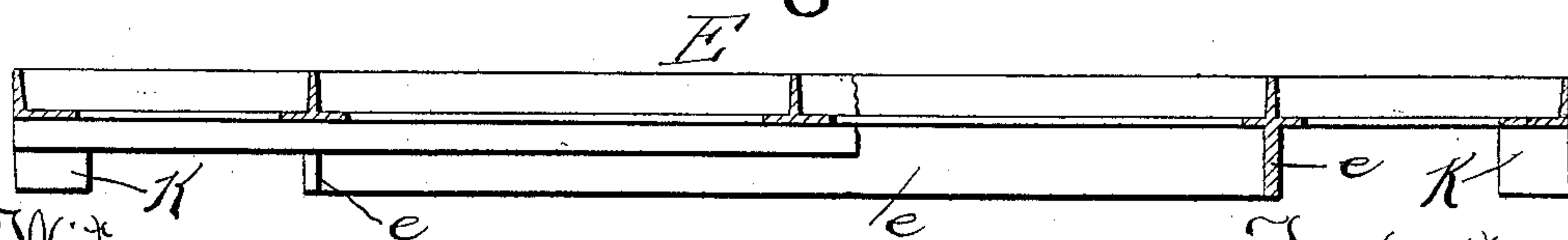


Fig. 4.



Witnesses:

A. Miller Belfield

Harry B. White

Inventor.

James F. Conover,
By Chas. C. Buelch, atty.

No. 654,715.

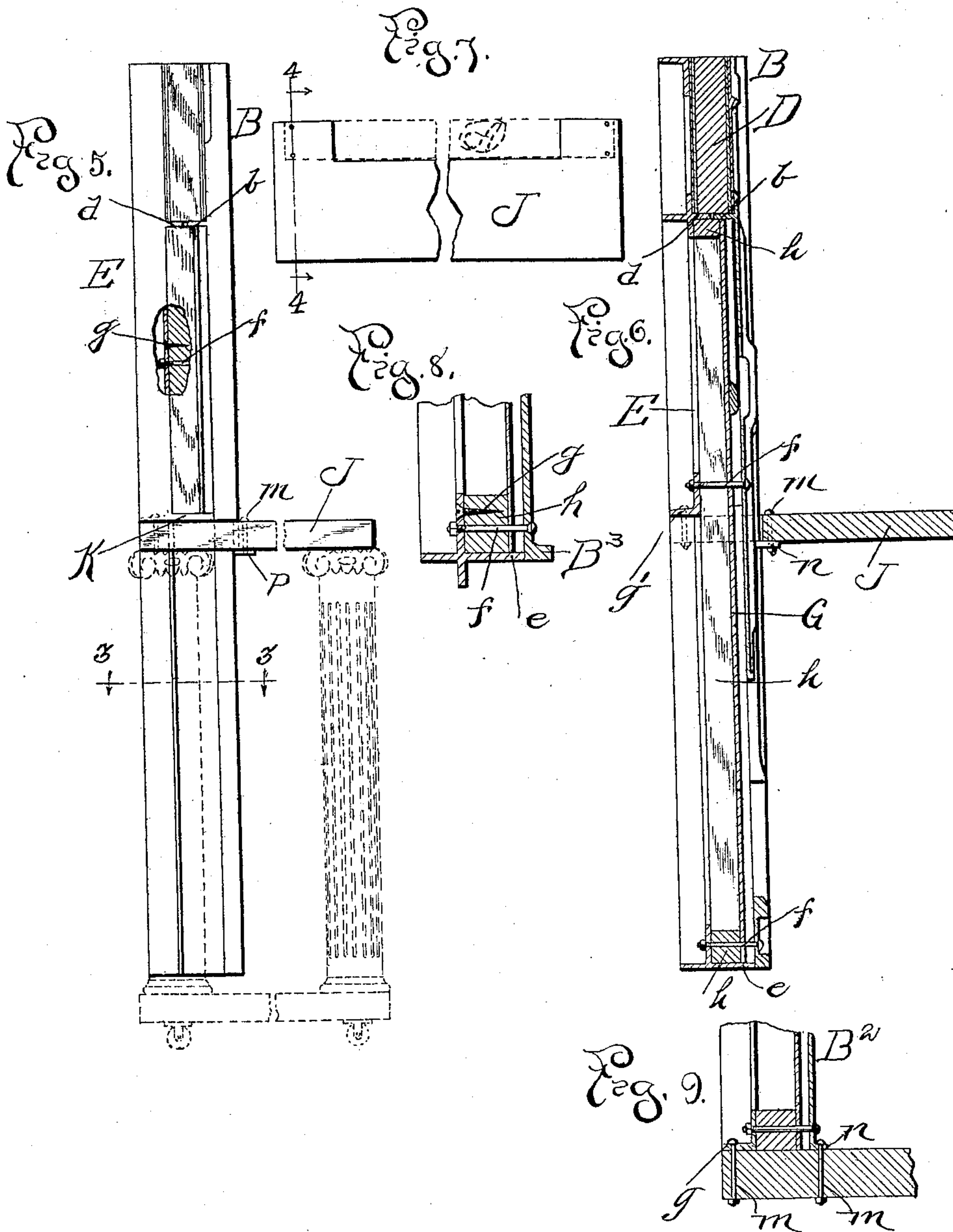
Patented July 31, 1900.

J. F. CONOVER.
PIANO.

(Application filed Sept. 28, 1898.)

(No Model.)

3 Sheets—Sheet 3.



Witnesses
J. B. Weir
A. Miller Belfield.

Inventor:
James F. Conover,
By Chas. C. Bulkley, atty.

UNITED STATES PATENT OFFICE.

JAMES F. CONOVER, OF CHICAGO, ILLINOIS.

PIANO.

SPECIFICATION forming part of Letters Patent No. 654,715, dated July 31, 1900.

Application filed September 28, 1898. Serial No. 692,077. (No model.)

To all whom it may concern:

Be it known that I, JAMES F. CONOVER, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a certain new and useful Improvement in Pianos, of which the following is a specification.

My invention relates to certain improvements in the construction of the strain-supporting parts of a piano and also to the means of adjusting and securing the interior parts of the piano within the case. The piano-strings when under tension impose a great strain upon their fastenings and also upon the means for supporting the parts to which the strings are secured. In the earlier forms of piano construction the frame or strain supporting member was made of wood. In the evolution of the instrument an iron string plate or frame was adapted, secured upon the wooden frame, and by this means it became possible to increase the tension of the strings, and thereby enlarge the tone. Thus an iron plate or frame is used, backed and reinforced by heavy beams of wood, constituting the wooden frame. This wooden frame is securely glued and fastened permanently and firmly to the necessarily-heavy end pieces of the case, these two end pieces unitedly assisting in supporting the string-plate and resisting the increased strain. This means of supporting the string plate or frame has not proved satisfactory, owing to the unequal expansion and contraction of the wood and iron under varying temperatures. This construction also renders it necessary to secure the internal parts within the interior of a finished case, and thus the work of action-finishing, action regulation and tuning can only be done after the long and elaborate process of finishing the case has been completed. It also renders any change or substitution of cases impracticable.

One of the objects of my invention is to provide a metal supporting-frame of such a construction as to withstand that great strain of the strings tending to buckle or twist the frame, which shall hold the wrest-pin or tuning-pin block from distortion under the strain of the strings and which shall also afford a solid foundation for the sounding-board and

inclose both the sounding-board and tuning-pin block, thereby shielding them from injury, and accomplish these ends without employing the heavy wooden supporting or backing frame hitherto used. My invention in this connection consists in a double or duplex string-frame of a construction hereinafter described, between the two parts or members of which the sounding-board is positioned and secured.

My invention has a further object in view to provide means whereby my improved duplex frame, with strings attached, containing and holding the sounding-board and tuning-pin block, may be connected to and with the key-bed to provide a structure capable of support entirely independent of the case, whereby the work of action finishing, regulating, and tuning may progress simultaneously with the work of finishing the case, thereby effecting a great saving of time in the manufacture of an instrument and also permitting the selection and adjustment of any one of a number of cases upon any given interior construction. In this connection my invention consists in the combination, with the duplex frame of, a key-bed so constructed as to be attachable to the duplex frame, which latter, with the key-bed, constitutes a unitary construction capable of support independent of the case.

My invention consists, further, in certain arrangement and construction about to be described, reference being now had to the accompanying drawings, in which—

Figure 1 is a front elevation of my improved string-frame with the sounding-board and wrest-plank or tuning-block adjusted in position between the two parts of said frame. Fig. 2 is a top edge view of the front plate of the string-frame, which front plate carries the strings. Fig. 3 is a perspective view of the back plate of the string-frame. Fig. 4 is a cross-sectional view on the line 1 1 of Fig. 3, partly broken away. Fig. 5 is a side elevation of the duplex string-frame, the supporting-legs being shown by dotted lines. Fig. 6 is a vertical sectional view on the line 2 2 of Fig. 1, showing the manner of securing the two parts of the duplex frame together, with the sounding-board between them, and also the manner of holding the wrest-plank

or tuning-pin block in position. Fig. 7 is a plan view in detail, showing the construction of the key-bed. Fig. 8 is a detailed section on the line 3 3 of Fig. 5. Fig. 9 is a detailed sectional view on the line 4 4 of Fig. 7.

I will first describe the construction of the two parts of the duplex iron string-frame and then point out the way in which they are held together, and also the means for holding the sounding-board and tuning-pin block in position.

The front plate or member of the string-frame A is designated at B, Figs. 1 and 2, and comprises what may be termed the "body" or "main" portion B² and the downward extension B³, which latter projects below the key-bed when adjusted in position thereon. This front plate is cut away at its extreme upper portion to provide means of access to the wrest-plank or tuning-pin block D from in front of the string-frame A. The tuning-pin block is secured in a manner about to be described.

In Fig. 3 the back plate E is shown having the outline and shape of the front plate A and comprising the body portion E² and the extension E³. The front plate B has a supporting-flange *b*, extended from its rear side, Figs. 2 and 6, and the back plate E has a supporting-flange *d*, extended transversely along its front surface. This back plate also has a marginal flange *e* about its extension E³. The two plates B and E are secured together, with the sounding-board G between them, by means of bolts *f f*, Fig. 6, the sounding-board having an outline similar to that of the plates and fastened to the back plate E by means of screws *g*, Fig. 8, penetrating the lining *h* of the sounding-board. The wrest-plank or tuning-pin block D is held in place between the two plates by means of the supporting-flange *b* on the front plate B and the transverse flange *d* on the back plate E, Figs. 5 and 6. The marginal flange *e* on the back plate E, together with the lugs *k k*, serves to keep the two plates the required distance apart and prevents buckling or twisting, and as the flange *e* and lugs *k k* are wider than both the flange *b* and the flange *d* the latter do not meet together when the bolts *f* are adjusted, and therefore the tuning-pin block D is firmly compressed between the plates and held upon said flanges by the bolts. As the front plate B is open at its upper portion, Fig. 1, access may be had to the tuning-pins *j* of the strings H from the front of the string-frame A. The key-bed J is cut out, as shown in Fig. 7, and it is screwed to the duplex string-frame A by means of bolts *m m*, which clamp the key-bed at the front to the rim *n* and lugs *p p* of the front plate B, and to a flange *g'* on the back of the back plate E, Figs. 6 and 9. Thus the flange *e* and the lugs *k k*, bearing upon the front plate, when the front and back plates are bolted together serve to stiffen and reinforce

the string-frame and render it impossible to buckle or twist the frame under the strain of the strings. By this means the heavy wooden backing frame is dispensed with and a complete metal string-frame is provided.

The tuning-pin block is held very firmly and securely between the two plates and, with the sounding-board, is inclosed between the plates and protected from injury.

When the string-frame containing the sounding-board and tuning-pin block is secured to the key-bed and the whole unitary structure supported temporarily, the work of action finishing, regulating, and tuning may progress independent of the case, which is not possible in the present forms of construction, in which it is necessary to securely fasten the interior mechanism and structure within a finished case and then perform the work of action finishing, regulation, and tuning.

The case may be secured upon the interior structure by bolts or screws in any suitable manner.

Having thus described my invention, what I claim as new therein, and desire to secure by Letters Patent, is—

1. In a piano a duplex or double-string frame, comprising a back plate having a main or body portion and an extension therefrom, a front plate also having a main or body portion and extension therefrom, a sounding-board between said plates, means for securing said plates together and a marginal web on one of said plates projecting angularly therefrom to meet the opposite plate and form a marginal casing to the sounding-board.

2. In a piano construction, a duplex frame having a main or body portion and an extension therefrom, the body portion projecting on either side of the extension to form shoulders, a key-bed secured to said shoulders and cut away to admit the extension and supporting-legs secured to the key-bed to support the frame and other parts of the piano from the floor independently of the case.

3. In a piano construction, a string-frame comprising a front plate and a back plate, which said plates are counterparts in marginal outline and each consisting of a body portion and an extension therefrom, shoulders formed on either side of the plate, a sounding-board and tuning-pin block held between said plates, which latter are bolted together, a key-bed secured to the shoulders and supporting-legs secured to the key-bed to support the parts from the floor independently of the case.

4. In a piano, a duplex or double-string frame comprising a front plate and a back plate each having a main or body portion and an extension therefrom forming shoulders, means for securing said plates together and a marginal web on one of the plates projecting angularly therefrom to meet the opposite plate and form a marginal casing to the sounding-board.

5 5. In a piano, a string plate or frame comprising in construction a main or body portion and an extension therefrom, the body portion projecting on either side of the extension to form shoulders, a key-bed secured under said shoulders and cut away to admit the extension and supporting-legs secured to the key-bed whereby the frame and all the

parts of the piano are supported from the floor independently of the case. 10

In testimony whereof I affix my signature in presence of two witnesses.

JAMES F. CONOVER.

Witnesses:

CHAS. C. BULKLEY,
A. MILLER BELFIELD.