

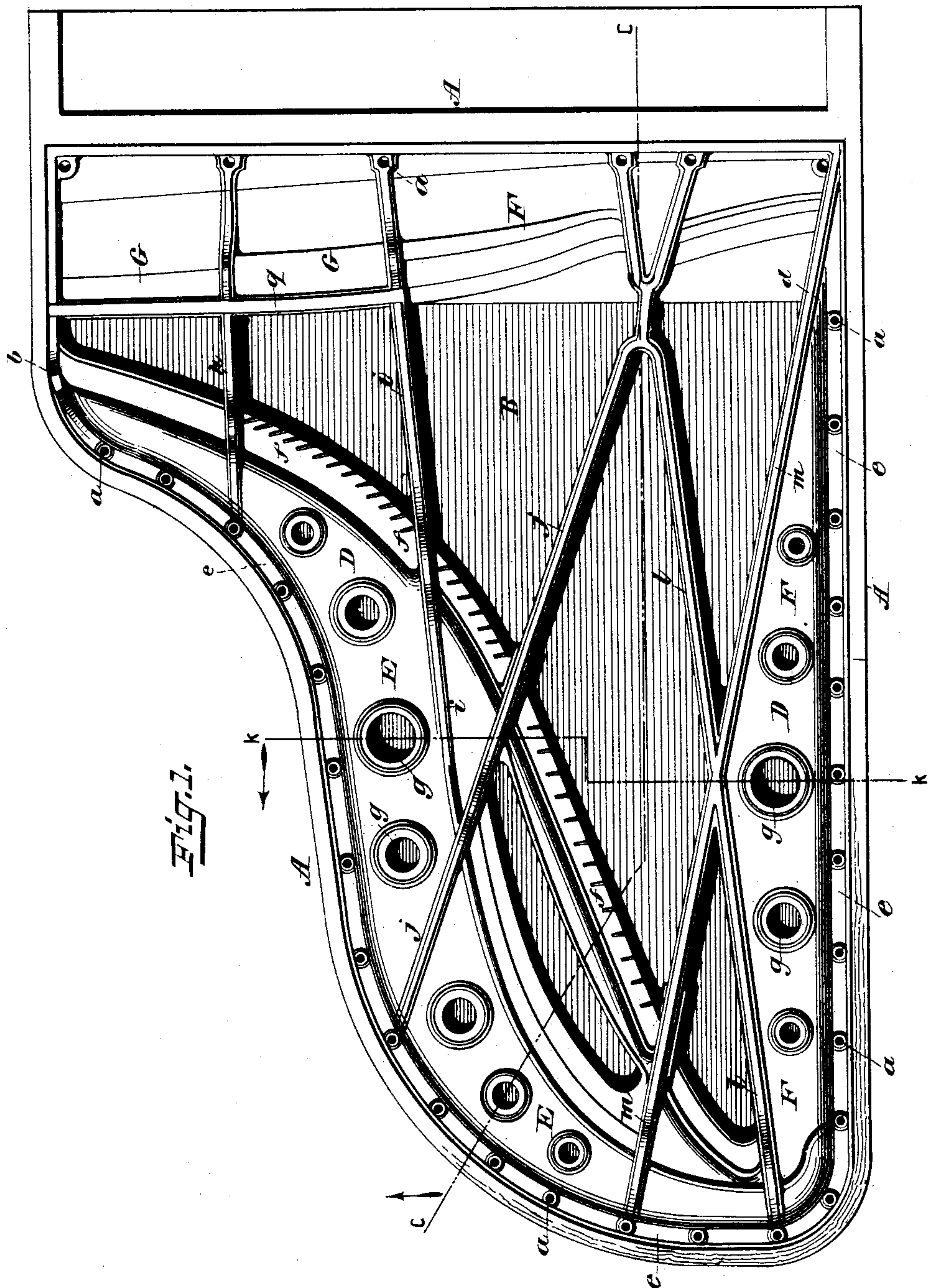
(No Model.)

3 Sheets—Sheet 1.

P. GMEHLIN.
PIANO PLATE.

No. 403,583.

Patented May 21, 1889.



WITNESSES:

Gustave Dietrich
J. F. Bourne.

INVENTOR.

Paul Gmehl

BY *Wiesen, Steele & Knapp*

ATTORNEYS.

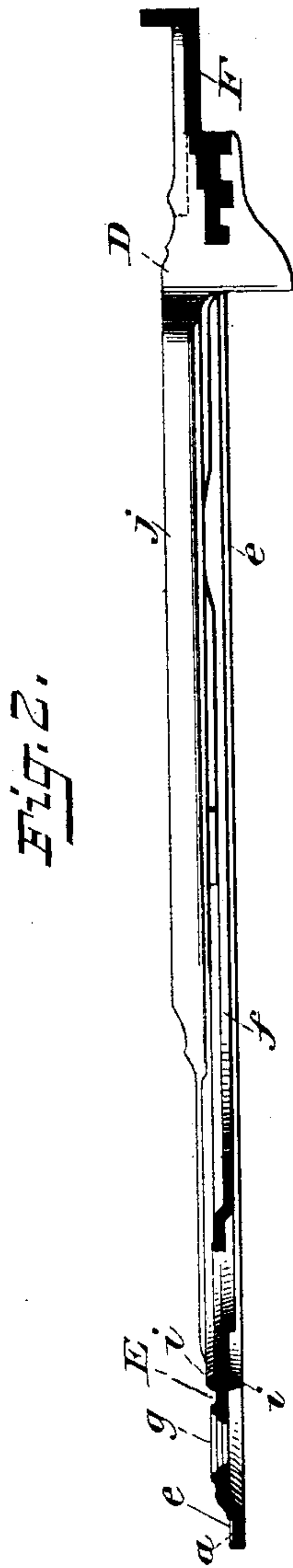
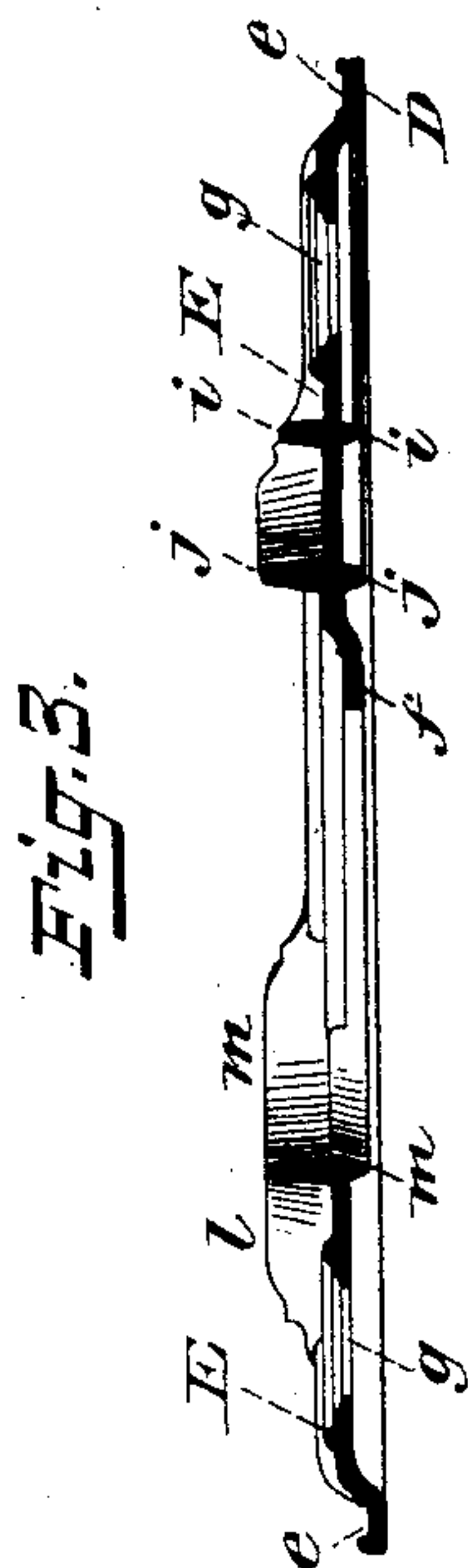
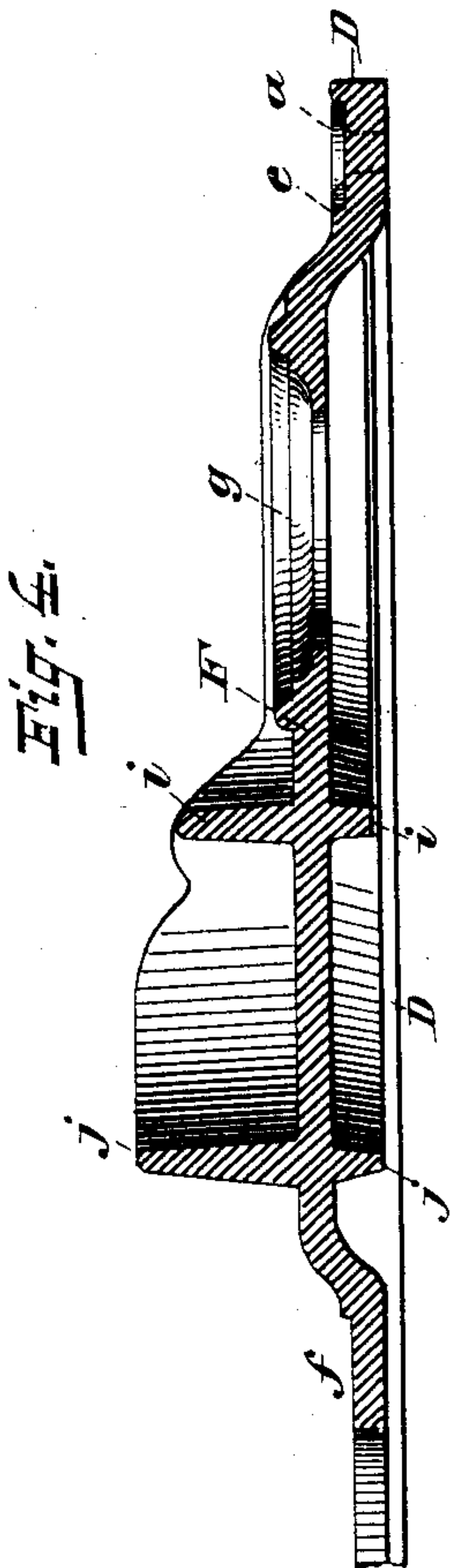
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3 Sheets—Sheet 2.

P. GMEHLIN.
PIANO PLATE.

No. 403,583.

Patented May 21, 1889.



WITNESSES:

Gustave Dietrich.
T. F. Bourne

INVENTOR

Paul Gmehl.

BY *Briesen, Steele & Knauth*

ATTORNEYS.

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Fig. 5.

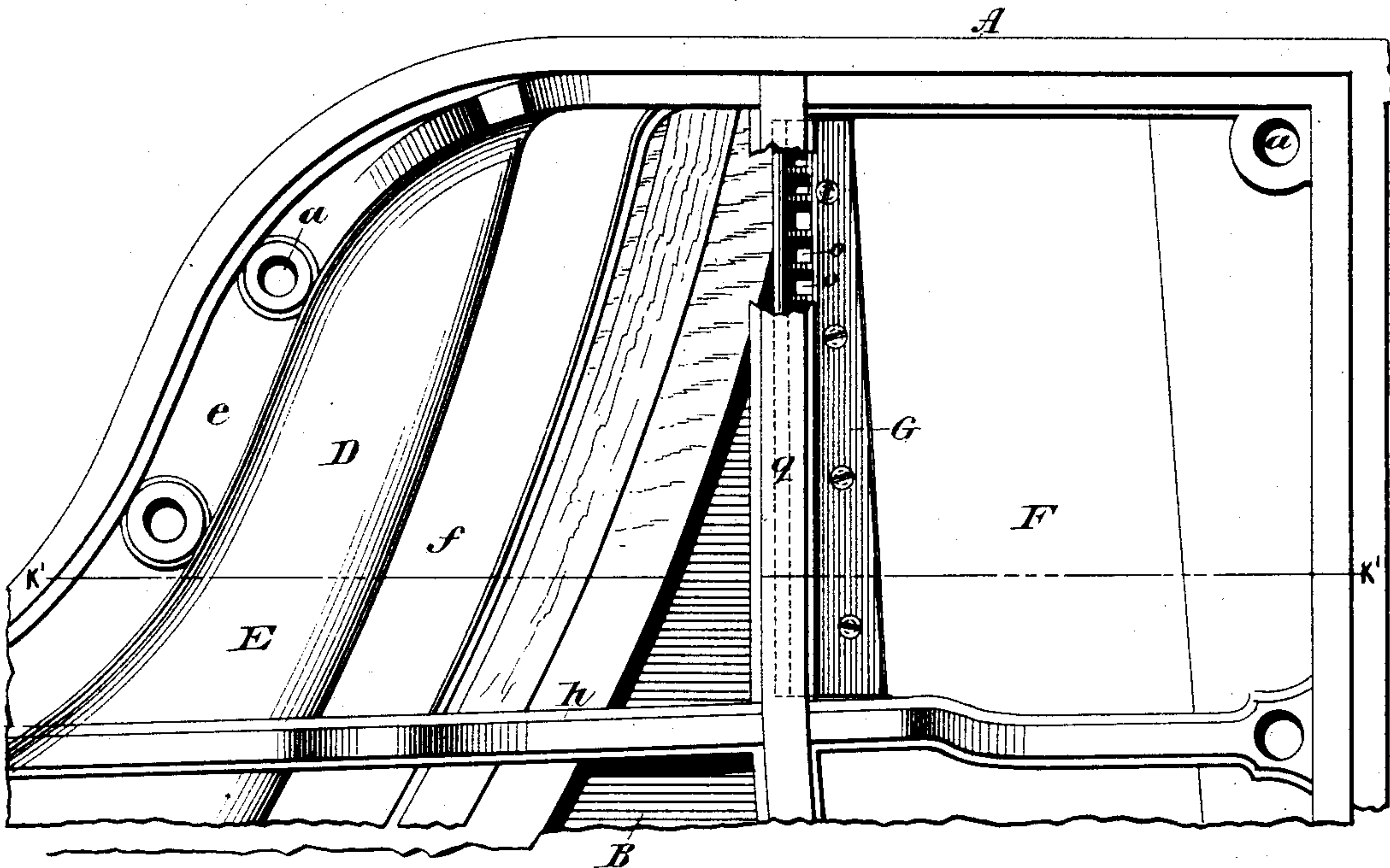


Fig. 6.

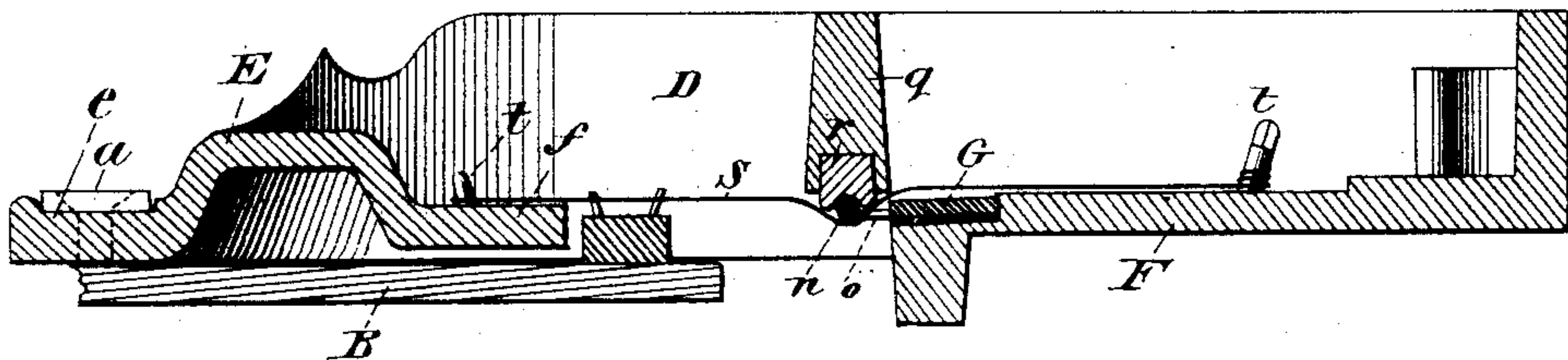


Fig. 7.

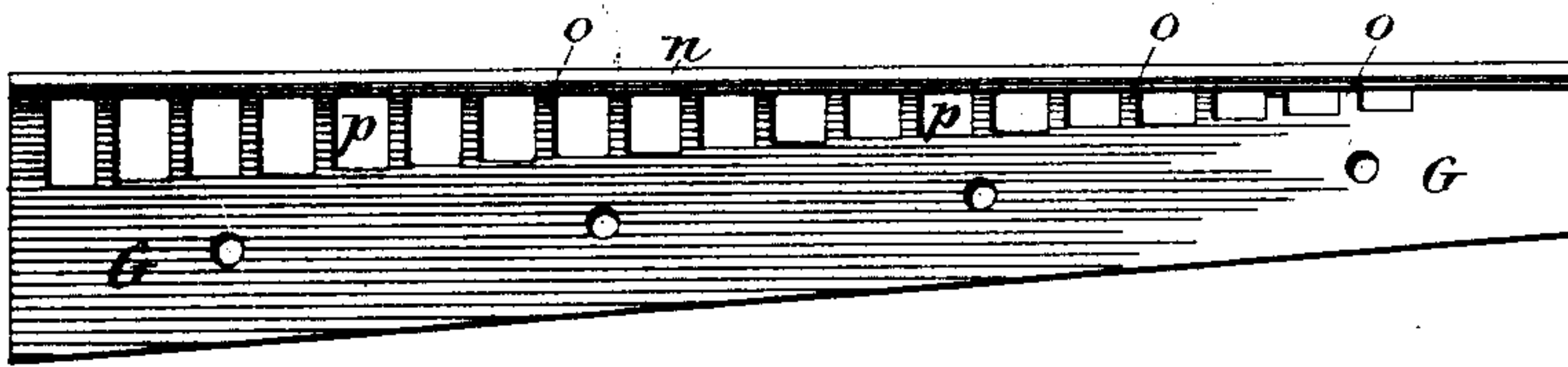
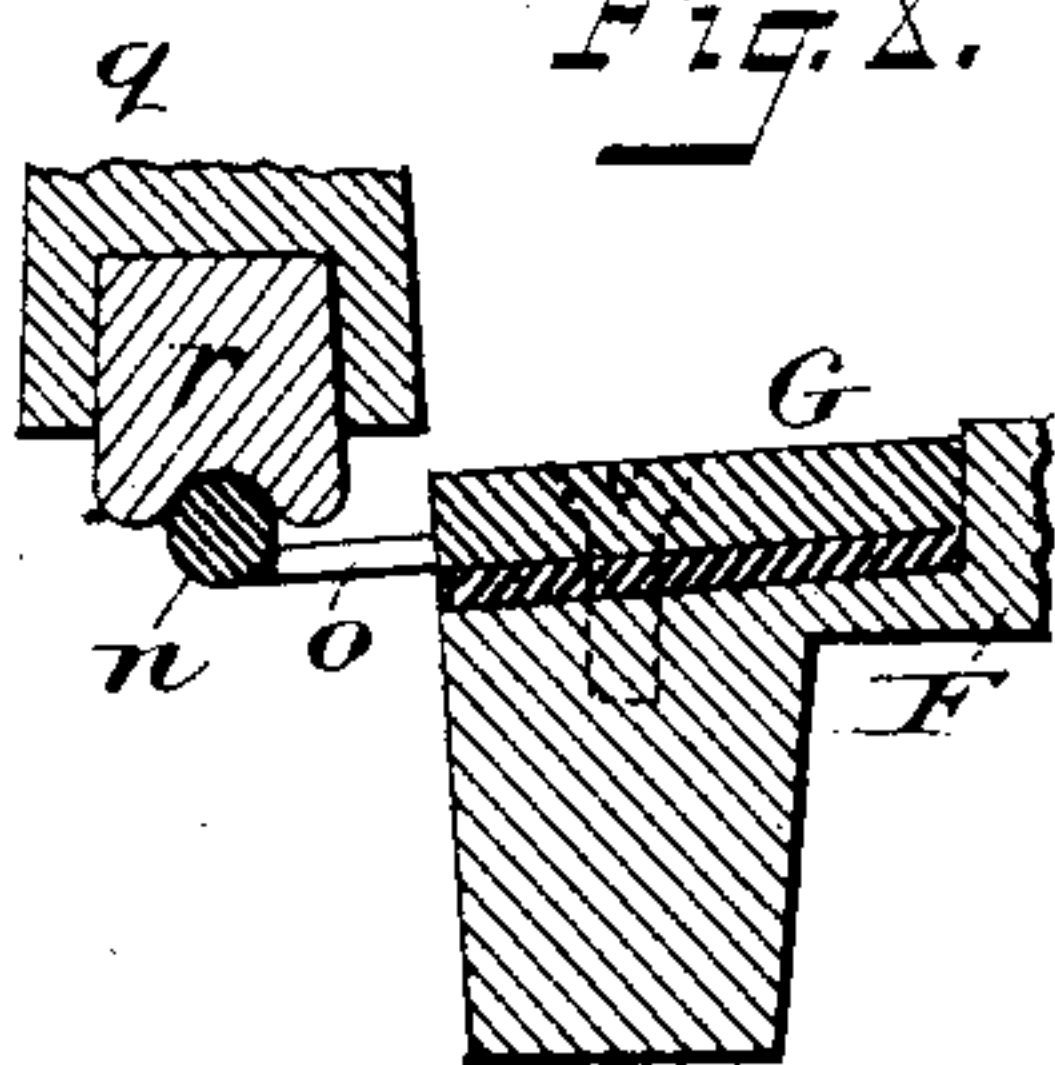


Fig. 8.



WITNESSES:

Gustave Dietrich
T. F. Bourne

INVENTOR,

Paul Gmehl

BY *Brown, Steele & Knauth*

ATTORNEYS.

UNITED STATES PATENT OFFICE.

PAUL GMEHLIN, OF NEW YORK, N. Y.

PIANO-PLATE.

SPECIFICATION forming part of Letters Patent No. 403,583, dated May 21, 1889.

Application filed October 9, 1888. Serial No. 287,675. (No model.)

To all whom it may concern:

Be it known that I, PAUL GMEHLIN, a resident of the city, county, and State of New York, have invented an Improved Piano-Plate, of which the following is a specification.

The object of my invention is to provide a plate for pianos that shall be extremely strong, so as to withstand the strain of the strings, and yet be simple in construction.

Another object of my invention is to provide an improved guide for the strings near the front tuning-pins.

The invention consists in the details of improvement and the combinations of parts that will be more fully hereinafter set forth.

Reference is to be had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a plan view of my improved piano-plate in position in a grand-piano frame. Fig. 2 is a longitudinal sectional view of the plate on the line *c c*, Fig. 1. Fig. 3 is a cross-section thereof on the line *k k*, Fig. 1. Fig. 4 is an enlarged detail sectional view on the plane of the line *k k*, Fig. 1. Fig. 5 is an enlarged detail plan view, partly broken, of the high treble side of the plate, showing my improved guide for the strings. Fig. 6 is a longitudinal sectional view on the line *k' k'*, Fig. 5, showing a string in position on the plate. Fig. 7 is a detail face view of the string-guide, and Fig. 8 is an enlarged detail sectional view through the string-guide and surrounding parts.

In the accompanying drawings, the letter A represents the frame of a grand piano. B is the sound-board thereof, and D represents my improved plate or string-frame. The plate or string-frame D follows substantially the outline of the frame A, and at its edges said plate or string-frame is provided with a series of holes, *a*, to receive bolts from the frame A or sound-board, whereby the plate D is secured in the piano-frame.

The plate or string-frame D has a raised portion or web, E, in form of a flat arch, that extends from near one side, *b*, of the front of plate D, where the same constitutes the pin-plate F continuously along the treble side,

rear end, and base side of the string-frame D until it meets the opposite side, *d*, of the tuning-pin plate F, as shown in Fig. 1, thereby leaving an open central part in the plate or string-frame D. This continuous raised web E is contiguous to a flange or level part, *e*, of the plate or string-frame D, that is provided with the holes *a*. A cross-section of this arched web E, Fig. 3, shows it supported by flange *e* on both sides of plate D.

The flange or level part *e* of the plate or frame D rests upon the sound-board B. The upper surface of the web E is on one level throughout its entire length. Along the inner edge of part of the web E the metal of the plate or string-frame D is in the form of a flange, *f*, that is lower than the top of the web E, but slightly above the under side of the flange *e*. To this flange *f* the strings of the piano are to be secured. The web E is provided with a series of openings, *g*, to permit the escape of sound-waves.

Braces *h i j l* extend from the tuning-pin plate F to and along the top of the web E, as in Fig. 1. The brace *i*, while extending along the top of the web E, follows to some extent the curvature of the outer edge of the plate or string-frame D. Part of the brace *l* extends along the inner edge of part of the web E, as shown. A brace, *m*, extends from the hitch-pin plate F along part of the inner edge of the web E until it meets the brace *l*, and then the brace *m* extends to and over the opposite part of the web E. The braces *h, i, j, l*, and *m* extend also along the under side of the web E. (See Fig. 3.) By this system of braces that extend from the tuning-pin plate F to the web E, and along the top and bottom of said web, the plate or string-frame D is materially strengthened. The continuous arched web E, by being raised to one level above the sound-board B, promotes a strong development of sound-waves and increases the volume of sound produced. This arched or curved continuous web E produces an extremely-strong string-frame, because the curved web along both sides and the end of the plate or string-frame cannot be drawn or distorted in any direction by the draft of the strings, the arch of the web E preventing any movement, being

supported by the flange *e* throughout. The braces on the under side of the web *E* also act to stiffen the web and to prevent bending.

In Fig. 7 is shown a face view of my improved guide *G* for strings, Figs. 5, 6, and 8 showing said guide in position on the plate or string-frame *D*.

The guide *G* consists of a plate having a rod or rib, *n*, along one edge, said rod *n* being connected to the plate by strips *o*, spaces or openings *p* being left between said strips *o* for the passage of wires *s*. (See Fig. 6.) The guide *G* may be made in one piece of metal, if desired, the rod *n* and strips *o* being made by cutting a series of openings, *p*, as in Fig. 7.

The guide *G* is to be secured to the tuning-pin plate *F* at one edge thereof, the bar *n* projecting beyond said plate *F*, as in Figs. 6 and 8. The guide *G* may be secured to the plate *F* by screws or otherwise. The rod *n* extends along beneath a cross rod or brace, *q*, of the main plate *D*. *r* is a rod or piece of wood or other material that is let into the brace *q* on its under side. The rod *r* is preferably grooved on its under side to receive the rod *n*, said rod *n* resting against the rod *r*, as shown.

When the guide *G* is in position and the strings *s* are to be set in position, they are passed through the proper openings *p* from the upper side and secured to their respective pins *t* on the flange *f* and the plate *F* in the ordinary manner. When in position, the strings *s* rest against the rod *n*, and this rod determines the length of string that shall extend free from the flange *f*.

Having now described my invention, what I claim is—

1. The piano-plate or string-frame *D*, having continuous arched web *E* extending along two sides and one end of the plate *D*, and provided with the depressed supporting-flange *e* throughout its extent, so that the plate *D* is supported on opposite sides by said flange *e*, as specified.

2. In a piano-plate or string-frame, the continuous arched web *E*, extending along two sides and one end of the plate, the upper side of the web being on the same level, said web being in form of an arch whose ends are both supported by the flange *e*, substantially as described.

3. In a piano-plate or string-frame, the continuous arched web *E*, extending along three sides of the plate, combined with the tuning-pin plate *F*, and with braces passing from said plate *F* to and along the side, top, and bottom of said web and projecting below the bottom thereof, substantially as described.

4. In a piano-plate or string-frame, the raised web *E*, having braces passing along and extending from the upper and also from the lower sides of said web and integral therewith, substantially as described.

PAUL GMEHLIN.

Witnesses:

HARRY M. TURK,
T. F. BOURNE.