S. B. Driggs,

Piano.

No. 23,834. Patented May 3, 1859.

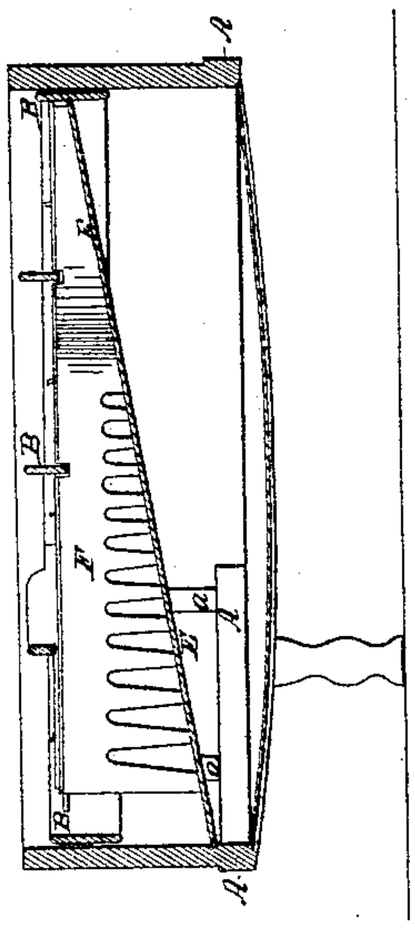

Fig 2.

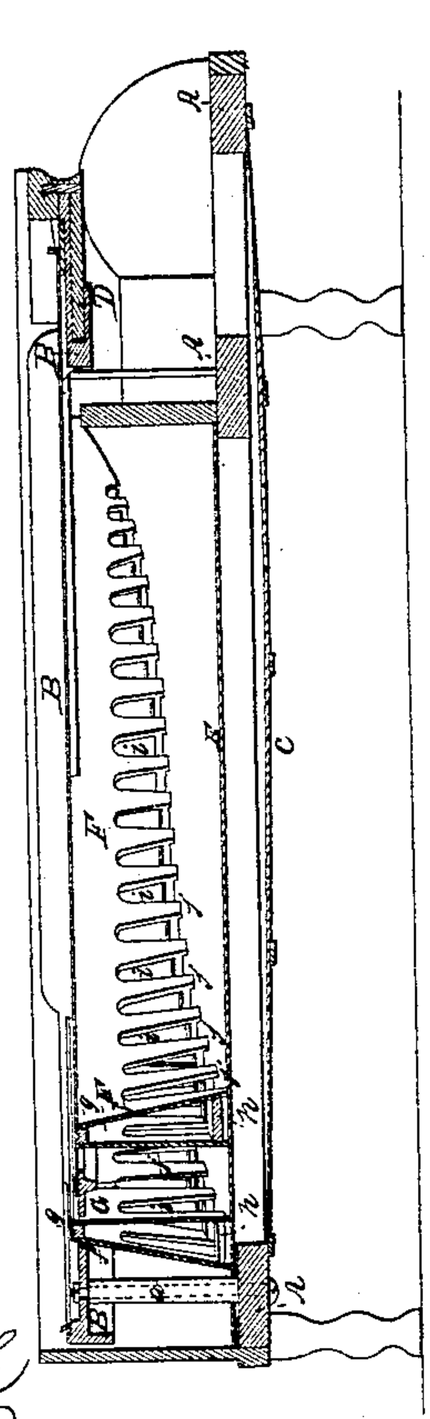

Fig 1.

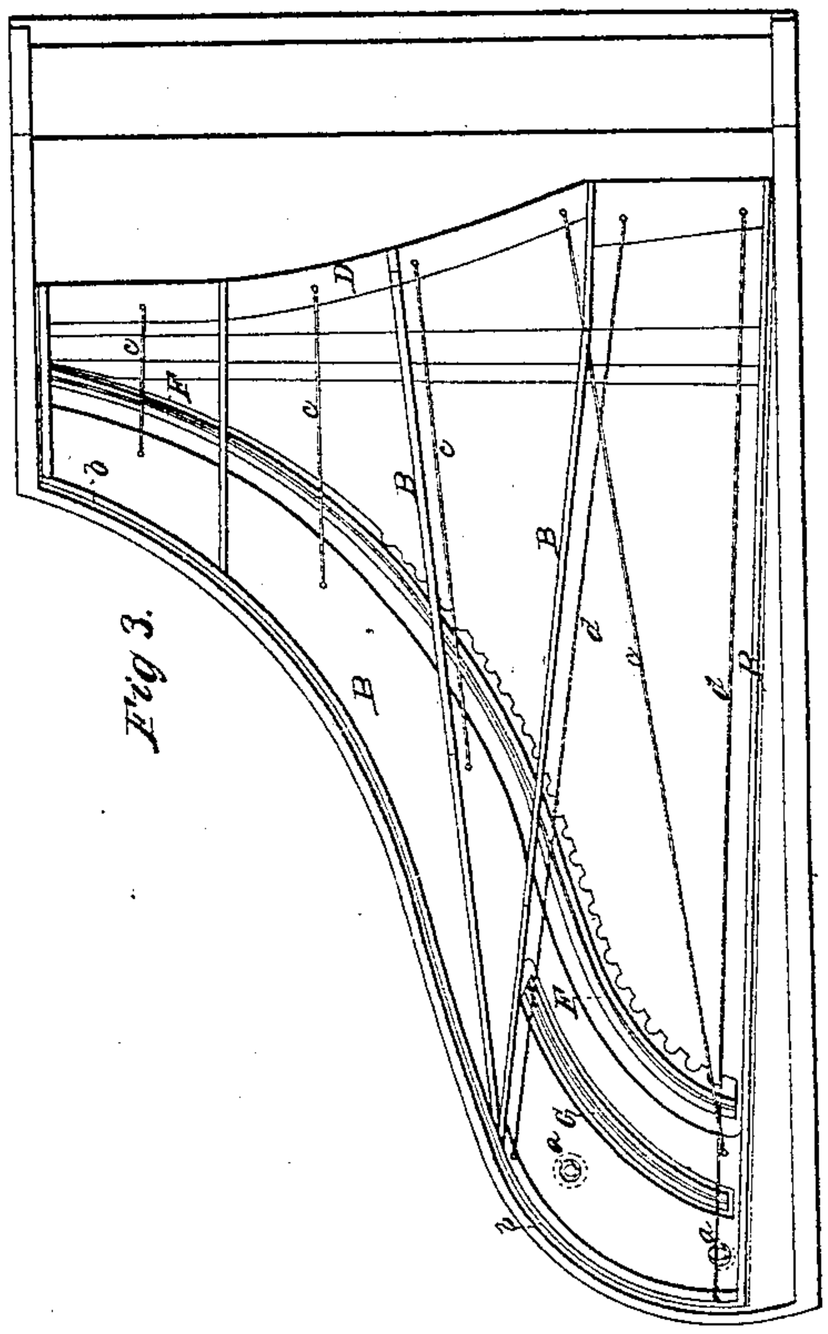

Fig 3.

Witnesses.
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UNITED STATES PATENT OFFICE.

SPENCER B. DRIGGS, OF NEW YORK, N. Y.

PIANOFORTE.

Specification of Letters Patent No. 23,834, dated May 3, 1859.

To all whom it may concern:

Be it known that I, SPENCER B. DRIGGS, of the city, county, and State of New York, have invented a new and useful Improvement in Pianofortes; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawing, forming part of this specification, in which—

Figure 1, is a vertical section taken parallel or nearly so with the strings of a grand piano-forte which has my improvement applied. Fig. 2, is a vertical section of the same taken transversely to the strings. Fig. 3, is a plan of the same with the top of the case removed.

Similar letters of reference indicate corresponding parts in the several figures.

My invention consists in so arranging and applying the sound board and strings, and so constructing and applying the bridge or bridges of a piano-forte, that the depths of bridge at the bearing points of the several strings and the distances of the several strings from the board are all in the same proportion or thereabout to the length of their respective vibrating portions.

To enable others skilled in the art to fully understand and apply my invention, I will proceed to describe it with reference to the drawing.

The drawing represents my invention applied to a grand piano-forte having its stringed part independent of the case as specified in the schedule of my Letters Patent No. 13,942, and having the covered strings "overstrung" and supported on a different bridge than that which supports the remainder of the strings. My invention is however applicable to piano-fortes of ordinary construction.

A, is the bottom frame on which the iron string frame B, is supported by means of blocks at each side at its front end and posts *a*, *a*, at its rear end. This string frame is entirely independent of the sides of the case, and a space *b*, *b*, is left between it and the case all along that part of the said frame which constitutes the hitch plate. C, is the thin vibrating bottom of the case such as is described in my hereinbefore-mentioned Letters Patent.

D, is the wrist plank.

c, *c*, and *d*, *d*, are the strings, those *d*, *d*, of the lower octave being arranged above the others *c*, *c*.

E, is the sound board, and F, G, are the bridges resting on the sound board and supporting the strings, the long bridge F, supporting the strings *c*, *c*, and the shorter but deeper bridge G, the longer strings *d*, *d*. The sound board is made parallel or as nearly so as practicable or convenient to the length of the strings so that every portion of each string is at about the same distance from it, but which is arranged with a gradual descent from the side or end which is under the shortest string to the side or end which is under the longest string, as is shown in the transverse section, Fig. 2. This descent may be straight or may be with a curvature that will bear a proper relation to the horizontal curvature of the bridges F, G, to obtain a depth of bridge at the bearing point of every string and a distance between every string and the sound board, in a certain definite proportion to the length of the vibrating portion of the string and the circle described in its vibrations. The proper depth of bridge and distance between the string and sound board is found by experiment to be generally about one-eighth of the length of the vibrating portion of the string, but this will vary somewhat, according as the thickness of the string is in proportion to its length, a thicker string requiring a less depth of bridge, and distance from sound board. By thus proportioning the distances between the strings and sound board to the length of the several strings, and their circles of vibration, a perfectly free and unchecked vibration is permitted to every string and a purity of tone is obtained throughout the whole scale which cannot be approached in an instrument whose sound board is at the same distance from every string as in the piano-fortes heretofore constructed.

The bridges F and G, being for the most part of greater depth than the bridges ordinarily employed require to be of different construction to give them the requisite stiffness without employing too much material. The construction which I have adopted is represented in Fig. 1, where it will be seen that the bridges are hollow, their sides *f*, *f*, being made of thin wood set up endwise of the grain and united at the top by a continu-

ous crown piece *g*, and near the base by a continuous web piece *h*. The bridge thus formed is lightened by having arches *i*, *i*, cut transversely through it, so that it rests on a series of points or narrow surfaces *j*, *j*.

What I claim as new and desire to secure by Letters Patent is—

So arranging and applying the sound board and strings and so constructing and applying the bridge or bridges of a piano-forte, that the depths of the bridge or bridges at the bearing points of the several strings and the distances of the several strings from the board are all in the same proportion or thereabout to the length of string as herein described.

S. B. DRIGGS.

Witnesses:
WM. TUSCH,
S. F. COHEN.