No. 17,320. PATENTED MAY 19, 1857.

S. B. DRIGGS.

PIANOFORTE ACTION.

Fig. 1.

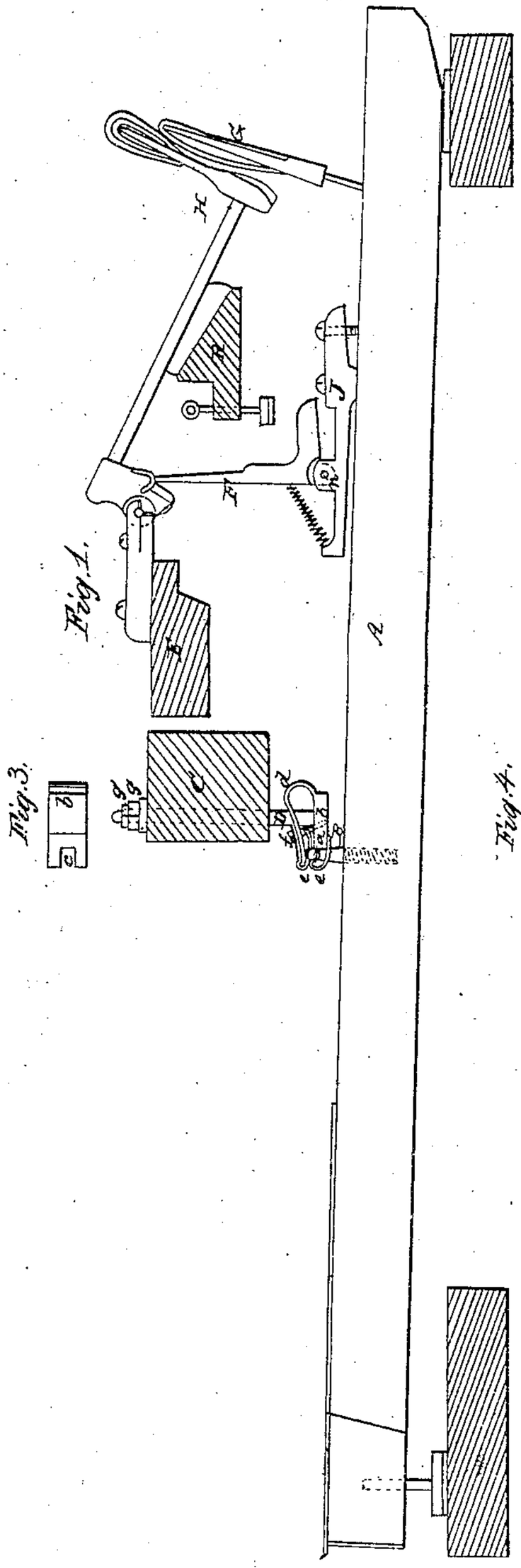

Fig. 6.

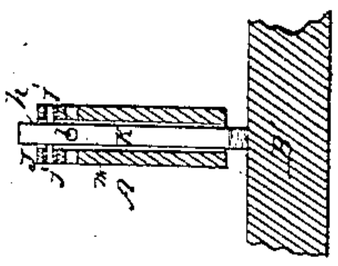

Fig. 3.

Fig. 4.

Fig. 7.

Fig. 5.

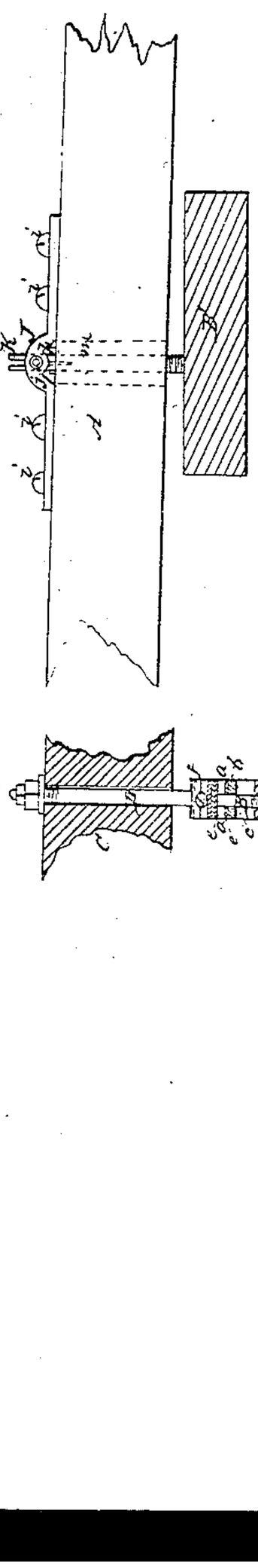

Fig. 2.

UNITED STATES PATENT OFFICE.

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

PIANOFORTE-ACTION.

Specification of Letters Patent No. 17,320, dated May 19, 1857.

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 Pianoforte-Actions; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, making a part of this specification.

This invention consists in balancing or placing the centers of motion of the keys at, near, or above the top thereof, instead of at the bottom, as in all piano-forte actions heretofore used; thus bringing the said centers of motion in the same horizontal plane or nearly so with the centers of motion of the jacks or flies which are always above the keys, by which means the hammers are caused to strike with a force proportionate or nearly so to the force applied to the keys by the fingers of the player.

In carrying out my invention, many different ways of supporting or suspending the keys may be employed, all of which it is not necessary to explain in this specification. It will be sufficient to illustrate the principle of my invention by describing one mode of suspending the centers of motion from a rail above the keys, and one other mode of supporting the centers on a rail below the keys.

Figure 1, in the drawing, is a side view, showing a key and all appendages thereof, having the center of motion above it, the said center being suspended from a key-rail above the key. A, is the key, which is of the usual form. B is a T-headed screw, screwed firmly into the top of the key and having its T-head formed into two journals *a*, *a;* one of the said journals being on one side and the other on the other side of the screw, as is shown in Fig. 2, which exhibits a transverse section of the key at its center of motion; the said journals standing horizontally in a position transverse to the key and at about the same distance from the ends of the key as the ordinary center of motion.

C, Figs. 1 and 2, is the key-rail, consisting of a wooden rail extending the whole length of the action a short distance above the keys, and intended to have all the keys suspended from it in the same manner as the key represented. D, is an upright square metal bolt passing freely but snugly through a hole in the key rail, and having a rigid foot piece, *b*, at its lower end, said foot piece having a slot *c*, in its front part as shown in Fig. 2, and also in Fig. 3, which is a bottom view of the said foot piece, to receive the neck of the screw B, and allow the same to play freely therein, and having a groove on the top on each side of the said slot to serve as a bearing for one of the journals, *a*, *a*. *d*, is a spring of sheet brass or other metal of the same width as the foot-piece *b*, attached firmly by riveting soldering or otherwise to the rear of the said foot piece and pressing on the head of the bolt B, for the purpose of confining the journals, *a*, *a*, in their bearings in the foot piece. This spring is provided with a hole to play freely on the bolt D. *e*, is a piece of cloth, felt, or leather, placed between the journals, *a*, *a*, and their bearings in the foot piece, and extending also between the spring *d*, and the head of the bolt B, to constitute a lining for the bearings. *f*, is a screw to regulate the pressure of the spring, to allow the journals, *a*, *a*, whose centers constitute the center of motion of the key, the required freedom of motion. *g*, is a nut fitting to a screw on the bolt D, and resting on the top of the key rail C, serving to support the said bolt, and also to raise or lower the key to allow it the required rise and fall in playing, and g^1 is a jam nut to tighten the nut *g*. By means of the nuts *g*, of the several bolts D, all the keys of the action are enabled to be adjusted to the same level.

The other parts of the action may be the same and have the same arrangement as those of any known action, and may be varied to almost any extent without affecting the principle of my invention. The particular construction and arrangement of these parts, as represented in Fig. 1, is one that is well known. E, is the hammer-rail; H, the hammer; R, the rest-rail; G, the check; F, the fly or jack; and J, the fly or jack bottom.

Fig. 5 is a side view of a portion of a key, having the center of motion above it, supported on a key-rail below the key. Those parts of the action of which this key forms a part, which are not represented, may be supposed to be the same as those represented in Fig. 1.

Fig. 6 is a transverse section of Fig. 5, in a vertical plane passing through the center of motion of the key. A, in the above mentioned figures is the key. B′, is the key-rail on which the key is supported; the said rail extending the whole length of the action,

and serving to support all the keys. J is a plate of metal of about the same width as the key or nearly so, arched at about the middle of its length, as shown in Fig. 1, and having a slot *h*, in the arch, as shown in Fig. 6, and also in Fig. 7, which is a top view of the said plate detached from the key. This plate, which is secured to the top of the key by screws, *i*, *i*, has holes drilled in line with each other transversely through the arched part on each side of the slot, *h*, to serve as bearings for a pin, *j*, the center of which constitutes the center of motion of the key; the said transversely-drilled holes being bushed with felt or leather. The pin, *j*, is clamped by a screw, *l*, in a split-headed square bolt K, which is screwed firmly in an upright position into the key-rail B′. The slot *h*, in the plate J, is large enough to play freely on the bolt K; and a slot *m*, is made in the key, to allow the key to play outside of the said bolt without touching it.

It will be readily understood that, by balancing the key or placing its center of motion at or near the top, as is shown in Figs. 1 and 5, that the center of motion of the fly or jack (indicated by *n* in Fig. 1) will move nearly in a vertical line, instead of in a line considerably inclined as it must be when the center of motion of the key is at the bottom thereof, and far below the said center of motion, *n*, and consequently allows the fly or jack to be arranged more nearly or quite in a vertical position, or at right angles to the key, by which means it is made to act more directly on the hammer, and consequently to act more forcibly thereon, especially in the upper portion of its movement. The hammer is also, by this means, enabled to escape more rapidly, and to be checked in a higher position, thereby admitting of a quicker repeat.

In the *Brevet de Invention*, vol. 18, 1854, Plate 27, Fig. 36, may be found a drawing and description of an improvement in pianofortes by M. Blanchet, in which the center of motion of the key is placed about in the center of the key. I therefore disclaim placing the center of motion at or below the center of the key.

I do not confine myself to either of the modes of balancing or supporting the centers of motion of the keys represented in the drawing or to any other mode of doing it. But

What I claim as my invention, and desire to secure by Letters Patent, is:

Balancing or placing the centers of motion of the keys at, above, or near the top thereof, instead of at the bottom, or center for the purpose herein specified.

SPENCER B. DRIGGS.

Witnesses:

S. H. Wales,

W. Tusch.