Hews, Marsh & Tileston,

Piano,

No. 3,045. Patented Apr. 10, 1843.

Fig. 1.

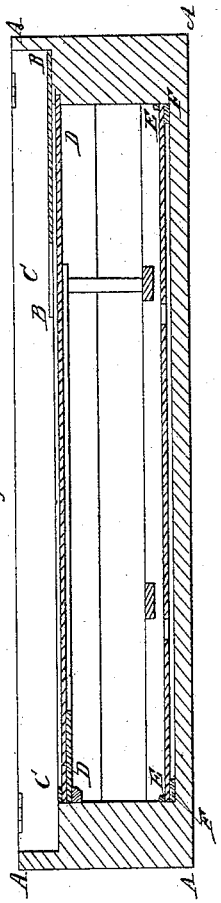


Fig. 3.

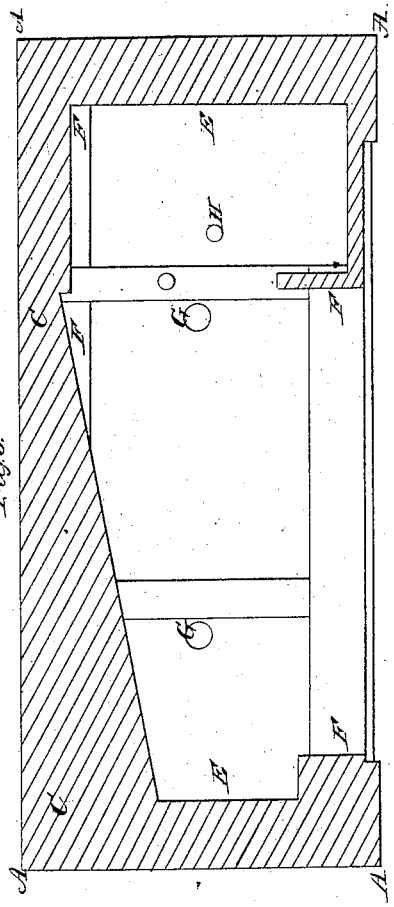


Fig. 2.

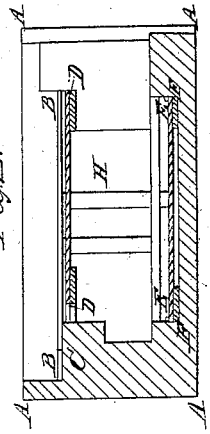
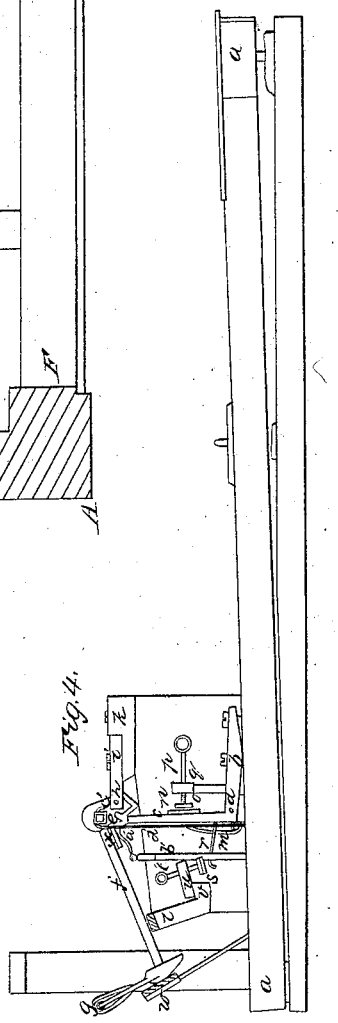


Fig. 4.



UNITED STATES PATENT OFFICE.

GEO. HEWS AND RICH. C. MARSH, OF BOSTON, AND N. W. TILESTON, OF DORCHESTER, MASSACHUSETTS.

PIANOFORTE.

Specification of Letters Patent No. 3,045, dated April 10, 1843.

To all whom it may concern:

Be it known that we, GEORGE HEWS and RICHARD C. MARSH, both of Boston, in the county of Suffolk and State of Massachusetts, and NATHANIEL W. TILESTON, of Dorchester, in the county of Norfolk and State aforesaid, have invented new and useful Improvements in Pianofortes, and that the following description, taken in connection with the accompanying drawings hereinafter referred to, forms a full and exact specification of the same, wherein we have set forth the nature and principles of our said improvements by which they may be distinguished from others of a similar class, together with such parts or combinations as we claim and wish to have secured to us by Letters Patent.

Our improvements consist, firstly, in using a secondary or "sub-sounding board" as we term it, to be arranged at some distance below the upper or ordinary one; and secondly in such an arrangement of the machinery or mechanical devices constituting the action, as will render it powerful, and at the same time will enable the performer to repeat the stroke with the hammer upon the string, without allowing the hammer to return to the rest block after each stroke.

The figures of the accompanying plate of drawings represent our improvements.

Figure 1, is a longitudinal and vertical section of a piano "case" showing the position and arrangement of the two sounding boards, and Fig. 2, is a transverse vertical section of the same, while Fig. 3, is a horizontal section taken below the upper sounding board. Fig. 4, is a side elevation of our new action, or of the machinery or apparatus composing the same detached or separate from the piano "case."

As our first improvement consists only in the use or application of a sub-sounding board, the other parts of the piano shown in the drawings, or Figs. 1, 2, 3, will not be particularly described, but merely referred to, as they may be formed and arranged in any of the various ways now in common use.

A, A, A, A, Figs. 1, 2, 3, is the exterior casing of the piano. B, B, is the frame or plate (usually made of iron), in which the plate pins are confined. C C is the block or bar in which the tuning pins are screwed in the usual manner. D D is the upper or ordinary sounding board, shaped and confined in position substantially in the usual way. E E is the secondary or subsounding board, which is of the rectangular shape shown in Fig. 3, instead of being cut away as the upper one must be to make room for the action of the hammers upon the strings. This sub-sounding board should be arranged in the lower part of the instrument and in most cases below the key levers, and is supported either in grooves around the interior of the sides of the casing, or between blocks or a block frame F F F F, glued or otherwise fixed around said interior as shown in Figs. 1, 2, 3, or in any other convenient manner. It may have any number of holes G, G, formed in it to allow the air to circulate freely above and below it, so as not to check its vibrations. One or more connecting posts H, formed of the same kind of wood as the sounding boards (viz, bass wood), or of any other suitable kind, may be arranged between the upper and lower boards so as to connect their vibrations or render the same simultaneous or nearly so. This mode of connecting the boards as specified may be used or dispensed with according to the option of the manufacturer, and the position of the lower board may also be varied, as it may be found to be immaterial whether the same is placed above or below the key levers, it being necessary only to arrange the two boards at some considerable distance apart.

The office of a sounding board, it is well known, is to strengthen or give body or volume to the tone produced by the vibrations of the strings, and it will readily be perceived that the use of the secondary or subsounding board, to which the upper one will communicate vibrations, whether they are connected or not, will tend greatly to enhance the volume or body of the tone, so that by the use of the two, even the smaller class of instruments may be rendered quite powerful. We are aware that a double sounding board, or two sounding boards in close contiguity with each other, have been used or tried, but they have been found to fail in practice, whereas the arrangement of the two boards, according to the plan above described, greatly improves the quality of the instrument.

The above constitutes the description of

our first improvement, and we shall now proceed to describe the machinery composing our peculiar "action," premising however that the same is an improvement on what is called the "French grand action" in distinction to the English and other "actions."

a a Fig. 4, is the key lever which operates the "action." *b* is the lower or horizontal block of a "French jack," screwed or otherwise properly secured to the top of the key-lever, as shown in the figure. *c* is the fly of the jack, the bottom of which turns on a fulcrum or pin at *d* in the horizontal block *b*, while the top is in contact with the leather which covers the notch or cam part of the center block *e* of the hammer *e f g*. The center block and of course the whole hammer turns or plays on a fulcrum or pin *h*, arranged in the forked projection *i*, which is screwed or otherwise confined to the top of the center rail *k*, and when the hammer is in a stationary position the arm of the same lies or is sustained upon the rest-block or beam *l*, the top of which is covered with cloth in the usual manner. At the back of the fly *c*, is the usual spring *m*, (coiled at its lower end as seen in the drawing), which tends to keep the top of the fly under the notch in the center block. On the front side of the fly, a little below the center of the same, a piece of flannel *n* or other suitable soft substance is glued (see Fig. 4,), and when the fly *c* is in its position under the notch of the center block, or returns to said position, it rests or abuts against the cloth surface of the adjustable button *o*, which is moved forward and back by means of the screw wire *p*, which works through the upright stud *q*, firmly fixed to the horizontal block *b*. It will readily be seen that the button *o* and spring *m* regulate the position of the fly *c*, and give to the "French jack" the character and properties of the "English jack", and at the same time enable it to retain all its own peculiar advantages for simplicity &c. From the back of the fly and near the bottom part of the same, a damper wire *r* projects, the end of which, when the fly is raised by the motion of the key lever, abuts against the underside of the clock surface of the vertical adjustable button *s*, which is moved up and down by means of its screw wire *t* working in the projection *u*, secured to the ledge or rail *v* of the rest beam *l*. It will readily be seen that the object of this arrangement of the damper wire *r* and button *s* is to throw the fly out from the notch of the center block *e* of the hammer *e f g*, as soon as possible after the strings have been struck, and leave the spring *m* to press it back again almost immediately, to allow another stroke to be given without permitting the hammer to fall so far as to be caught by the damper *w*. To facilitate this operation we glue or fasten to the under side of the arm *f* of the hammer *e f g*, a block *x* the lower surface of which is covered with wash leather or other proper substance. One end of a bent spring *a'* presses against the leather face of the block *x*, while the other or coiled end is fastened to the top of the vertical standard or stud *b'*, as shown in the figure, said stud being firmly fixed at its lower end to the key lever *a a*. In order to counteract the tendency which the spring *a'* would have to keep the hammer up, or prevent its return from the string, we glue or otherwise properly fasten to one side of the center block *e*, the horizontal peg or block *c'* as shown in Fig. 4. This block *c'* is grooved a little on its top, which is also covered with wash leather, and in the groove the hooked end of the confining wire *d'* fits, the lower end being screwed into the top of the key lever *a a*, so as to be susceptible of adjustment, if any be required. From this it will be seen that the whole preponderating weight of that end of the key lever on which the action is arranged serves to control the effect of the spring *a'*, and render its operation useful, while the said spring gives additional force to the blow of the hammer, and after the same has been caused to strike the string once, keeps the hammer head in the vicinity of the strings, and in conjunction with the damper wire *r* &c., (which throws the fly *c* out from the notch of the center block *e*), and the spring *m* which presses it back under the same, the performer is enabled to repeat one tone, or the stroke upon one set of strings, as often as he pleases without permitting the hammer to return to its resting position, which affords a great mechanical facility for execution.

Having thus described our improvements in piano fortes, we shall now specify our claims:

1. We claim the use or arrangement of a secondary or "subsounding board," in a piano forte or other similar instrument, fixed in the lower part of the instrument below the action, meaning to claim the same whether the two boards be connected or not, the whole being for the purpose herein before specified.

2. We claim in a, "French grand action," the combination of the bent spring *a'*, attached to the top of the vertical standard *b'* and working under the arm *f* of the hammer *e f g*, and hooked confining wire *d'*, working with the horizontal block or peg *c'* on the side of the center block *e*, with the hammer *e f g* and fly *c*, the above specified combination being for the purpose of giving to the said "French action" the case of the English action, while it retains its own pe-

culiar power and elasticity or quickness, and for enabling the performer to repeat a tone or stroke of a hammer, without permitting, (after each blow), the return of the hammer to its resting position.

In testimony that the foregoing is a true description of our said invention and improvements we have hereto set our signatures this fourth day of February in the year eighteen hundred and forty three.

GEO. HEWS.
RICHARD C. MARSH.
NATHL. W. TILESTON.

Witnesses:
R. H. EDDY,
EZRA LINCOLN, Jr.