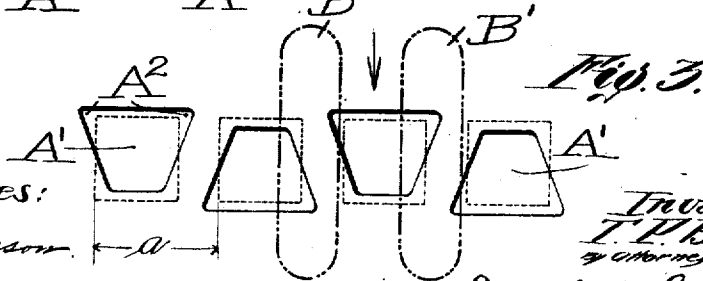
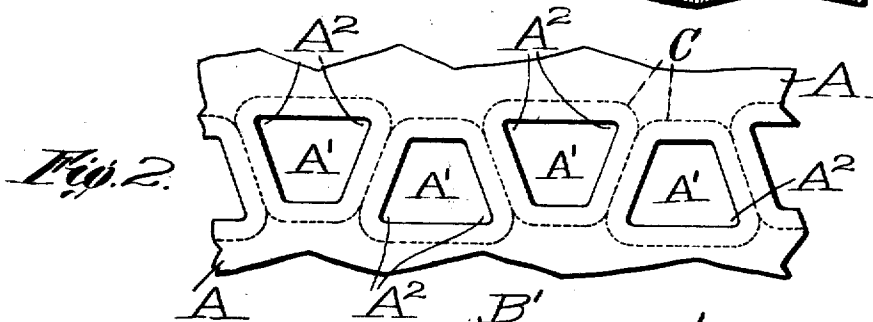
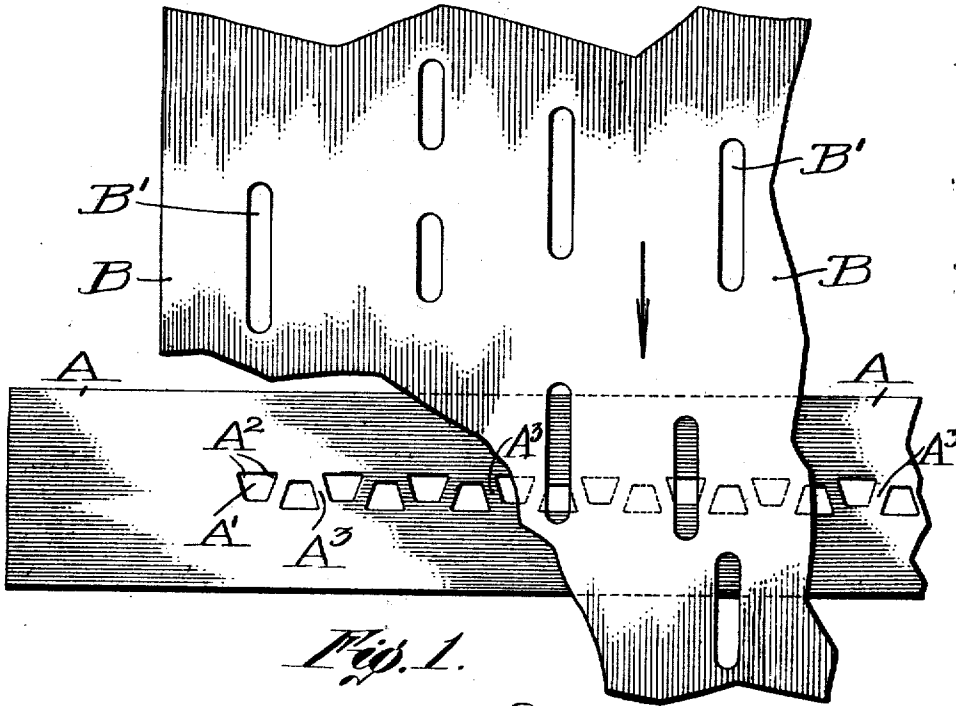


T. P. BROWN.
TRACKER.

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1,011,568.

Patented Dec. 12, 1911.



Witnesses:

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TRACKER.

1,011,568.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, THEODORE P. BROWN, a citizen of the United States, residing at Worcester, in the county of Worcester and State of Massachusetts, have invented a new and useful Tracker, of which the following is a specification.

This invention relates to that class of pneumatic musical instruments in which a perforated music sheet travels over a tracker having openings therein through which the air is directed to the pneumatics for operating the instrument.

As is well known, owing to the contraction and expansion of the sheet and other causes, the music sheet frequently wanders to one side or the other of the line along which it is supposed to travel. This results in bringing the perforations in the music sheet slightly out of registration with the holes in the tracker and where the sheet wanders a great distance it results in restricting the opening provided by the registration of the music sheet perforations with the tracker ducts, thus interfering with the effect produced. So far as I am aware the only means which has been provided for overcoming this difficulty is to add pneumatic, electrical, or other mechanical devices for automatically restoring the sheet to central position when it wanders. These devices being mechanical naturally are not perfect and they sometimes get out of order thus making it impossible to use the device satisfactorily for a time and they also add to the expense of construction and maintenance.

The principal object of this invention is to provide means of such a simple character for avoiding these difficulties that it will not have any mechanical parts that can in any way get out of order and will not add anything to the cost of the instrument or to the cost of repairs.

With this object in view, the invention consists in so shaping and arranging the tracker ducts that even if the sheet wanders, they will register with the music sheet perforations sufficiently to get substantially the full striking effect, so that no mechanical devices will be required for preventing slight variation.

Further objects and advantages of the invention will appear hereinafter.

Reference is to be had to the accompanying drawing in which—

Figure 1 is a plan on enlarged scale of a musical instrument tracker constructed in accordance with this invention showing how the music sheet travels thereover. Fig. 2 is a further enlarged plan of a portion of the tracker, and Fig. 3 is a diagrammatic view on the same scale as Fig. 2 showing the effect when the music sheet wanders to one side and also showing in dotted lines the position of ordinary tracker holes to illustrate the difference in effect when the sheet wanders.

The invention is shown as applied to an instrument having a tracker A over which a music sheet B is adapted to travel in a well known way. The music sheet is provided with the usual perforations B'. The tracker instead of being provided with square ducts is shown as provided with openings or ducts A' having a main portion of a width not less than the width of the music sheet perforations B' and having an extension A² on each side projecting beyond the body portion and adapted to be uncovered by the music sheet perforations as the same travels over the tracker. These extensions of each hole are shown as on the same side of the tracker. This results in getting a maximum area of tracker opening without increasing the real space which the ducts take up. While this is a general description of the shape of the tracker ducts, it will be observed by inspection of the drawings that they preferably are made of the shape of a trapezoid and arranged so that the base of each one is arranged on the opposite side of the tracker from the base of the two adjacent openings so that the tracker ducts are alternately arranged along the tracker. Furthermore, these ducts are shown as off-set slightly, the base of each duct being a short distance nearer the edge of the tracker than the short sides of the two ducts at each side thereof. It is to be noted that as the total space taken up by a square tracker opening and the bridge between two of them on an ordinary tracker is one-ninth of an inch in this

case the long side of the trapezoidal opening can be made substantially one-ninth of an inch so that the end of the long side of one opening is in transverse alinement with the end of the long side of the next opening which is on the other side of the tracker. In the drawings this proportion is substantially maintained so that (allowing for rounded angles) the long side of each opening is very slightly less than the longitudinal distance between the ends of the long sides between the two adjacent openings. In other words, it is substantially equal to the shortest distance between the two adjacent openings on opposite sides thereof. The off-set will amount in these proportions to about one-sixtieth of an inch which will not affect the time of the sounding of the notes sufficiently to be observed. To further explain the position and relative location of these openings, it may be said that the bridges or spaces A^3 between them are oblique to the direction of travel of the music sheet and that they are alternately arranged. They are of the same width as in the case of square ducts, that is, wide enough to provide room for the walls of the lead tubes C on the back of the tracker. This generally is about $1/27$ of an inch. From this arrangement it results that when the music sheet properly tracks, as is indicated in Fig. 1, the off-sets A^2 are not brought into operation but the instrument will be played with the same effect as would be the case with the square tracker holes. If, however, the sheet wanders to one side as indicated in Fig. 3, which shows an amount of wandering greater than usually takes place, the extensions A^2 will have the effect of widening the openings which are uncovered by the perforations so that a more nearly perfect sounding of the notes will be the result. This is to be compared with the effect when square holes in the tracker are used, as shown in dotted lines in Fig. 3. In that case, with the amount of wandering indicated in that figure, the width of the opening uncovered by the music sheet perforations would be not over two-thirds of that uncovered in case of the present invention. On account of the trapezoidal shape of the openings, and of the fact that the extensions are on both sides of the center but on the same side of the tracker, it makes no difference which way the sheet wanders. In either case the maximum duct opening is secured. This result is obtained because the width of the duct at the wide part is substantially equal to the shortest space between the two adjacent ducts. In case the sheet wanders enough to allow each perforation B' to overlap the next duct A' at the side, it will let only a little air into that channel and as these channels are bled anyway, it will practically

amount to no more than enough to supply the bleeder opening and will not result in sounding that note, unless the wandering is sufficient to allow the air to enter a square opening in the same location sufficiently to sound that note.

Although I have shown and described one specific form and arrangement of duct openings, I am aware that the invention can be carried out without following this exact shape and arrangement. Therefore I do not wish to be limited strictly thereto, but—
What I do claim is:—

1. A pneumatic musical instrument having a tracker provided with ducts over which a perforated music sheet is adapted to pass, said ducts having equal spaces between them, each duct having a dimension longitudinally of the tracker substantially equal to the shortest distance between the two ducts on opposite sides of it.

2. A pneumatic musical instrument having a tracker provided with ducts over which a perforated music sheet is adapted to pass, said ducts having equal spaces between them, each duct having a wide and a narrow part in the face of the tracker, the wide part being substantially as wide as the shortest distance between the two ducts on opposite sides of it.

3. A pneumatic musical instrument having a tracker provided with ducts over which a perforated music sheet is adapted to pass, each duct having a main portion of a width not less than the width of the music sheet perforations and having a continuous extension on each side, said extensions of each duct being on the same side of the tracker.

4. A pneumatic musical instrument having a tracker provided with ducts over which a perforated music sheet is adapted to pass, each duct having a main portion of a width not less than the width of the music sheet perforations and having a continuous extension on each side, the extensions of each two adjacent ducts being on the opposite sides of the center of the tracker.

5. A pneumatic musical instrument having a tracker provided with ducts over which a perforated music sheet is adapted to pass, the spaces on the face of the tracker between said ducts being oblique and extending in directions alternately to the right and left of the direction of travel of the music sheet.

6. A pneumatic musical instrument having a tracker provided with duct openings in its face of trapezoidal shape.

7. A pneumatic musical instrument having a tracker provided with duct openings on its surface of trapezoidal shape, the wide bases thereof being alternately arranged.

8. As an article of manufacture a musical instrument tracker having duct openings

on its surface wider at one part than at another in the direction of the length of the tracker.

9. A pneumatic musical instrument having a tracker provided with duct openings of trapezoidal shape, the wide bases thereof being alternately arranged, and each alternate opening being transversely offset.

10. As an article of manufacture, a tracker for a pneumatic musical instrument having in its face a row of duct openings

therealong, each alternate one of said row being transversely offset with respect to the others.

In testimony whereof I have hereunto set my hand, in the presence of two subscribing witnesses.

THEODORE P. BROWN.

Witnesses:

ALBERT E. FAY,
C. FORREST WESSON.