

No. 685,270.

Patented Oct. 29, 1901.

R. A. GALLY.

PNEUMATIC TRACKER FOR MUSICAL INSTRUMENTS AND AUTOMATIC MUSIC SHEET THEREFOR.

(Application filed Apr. 25, 1901.)

(No Model.)

Fig. 1

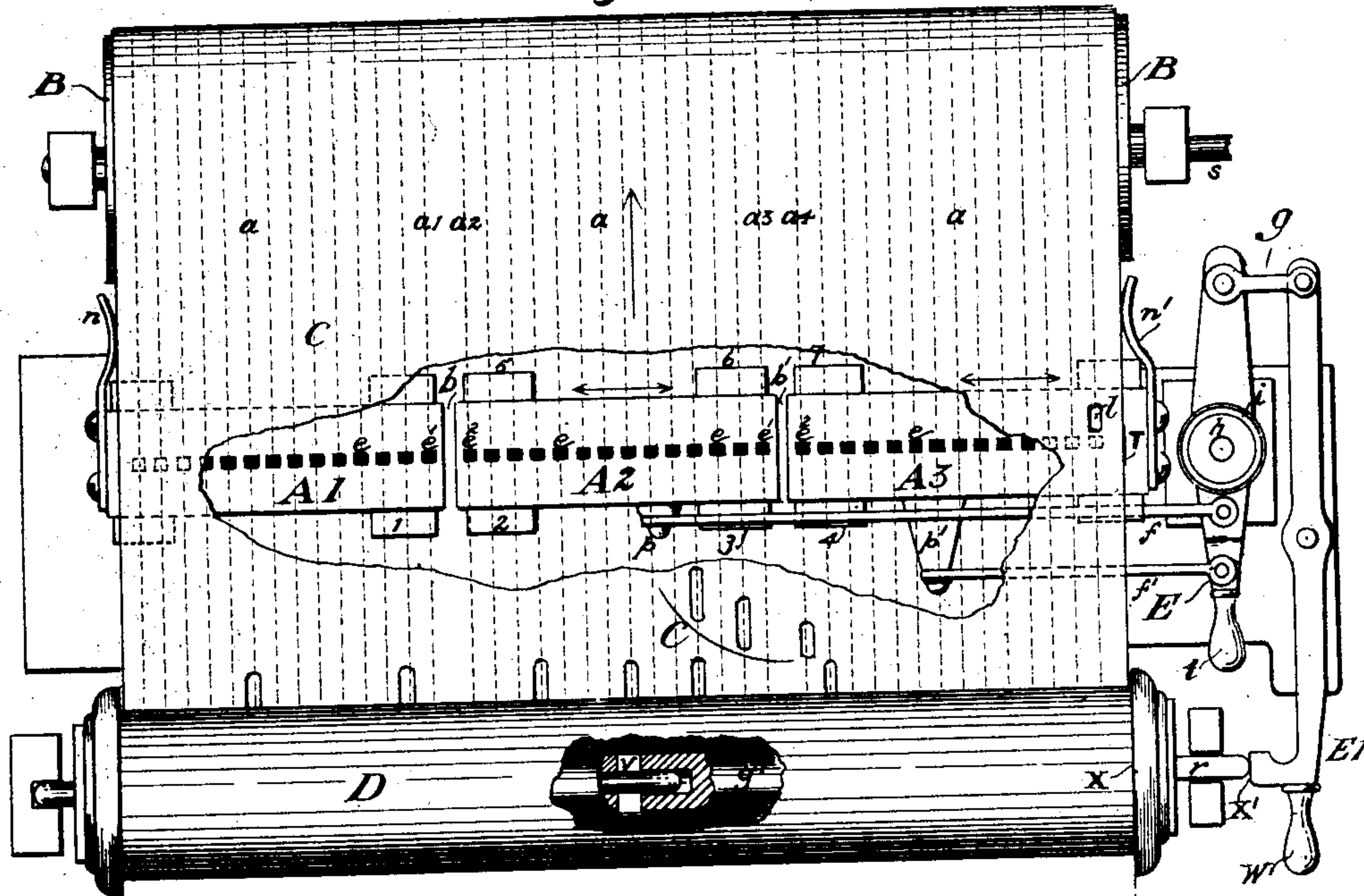


Fig. 2.

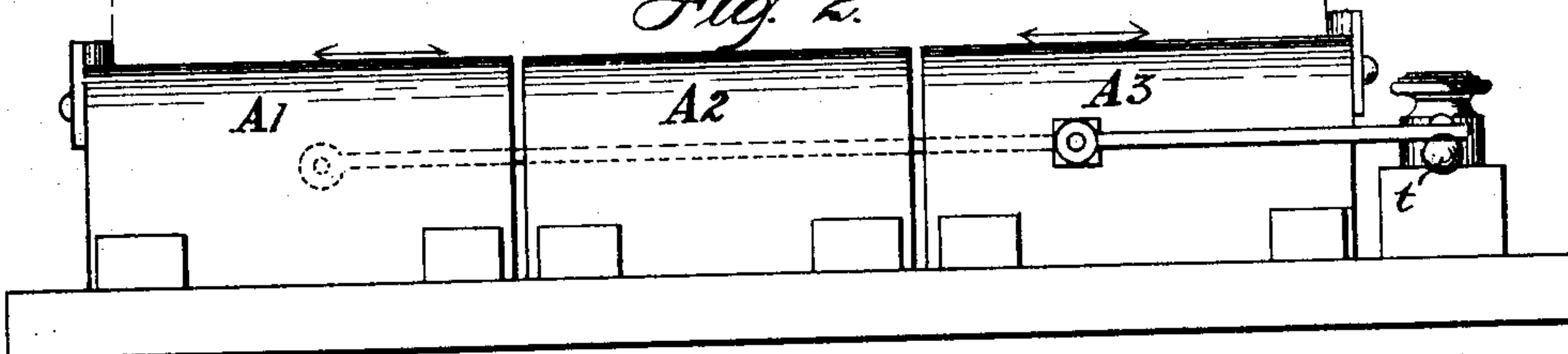
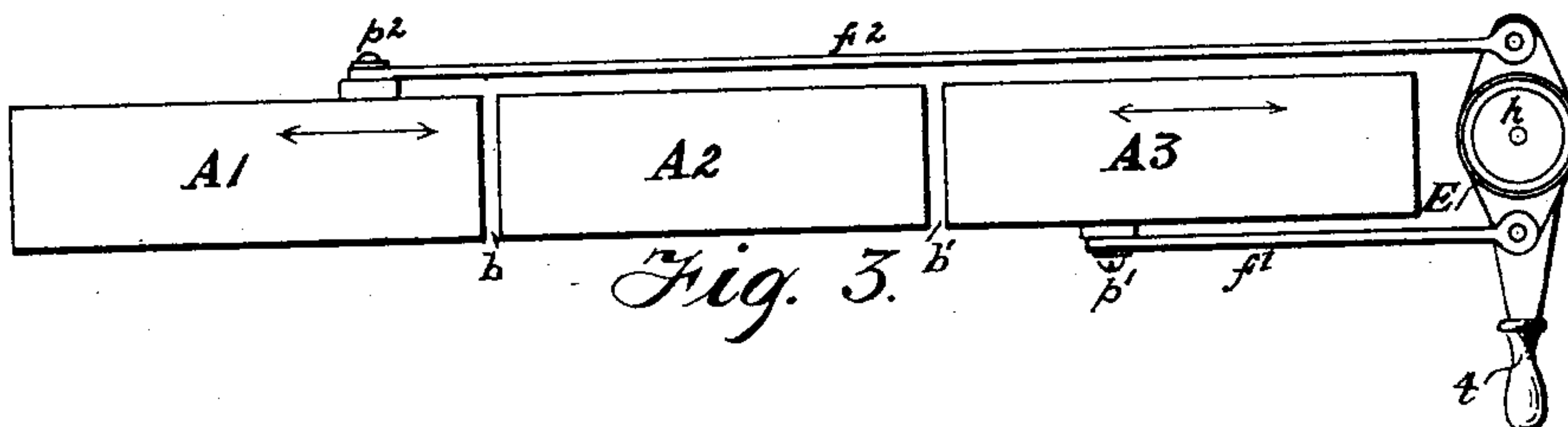


Fig. 3.



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PNEUMATIC TRACKER FOR MUSICAL INSTRUMENTS AND AUTOMATIC MUSIC-SHEET THEREFOR.

SPECIFICATION forming part of Letters Patent No. 685,270, dated October 29, 1901.

Application filed April 25, 1901. Serial No. 57,373. (No model.)

To all whom it may concern:

Be it known that I, ROBERT A. GALLY, a citizen of the United States, residing at Brooklyn, in the county of Kings and State of New York, have invented new and useful Improvements in Pneumatic Trackers for Musical Instruments and Automatic Music-Sheets Therefor, of which the following is a specification.

My invention relates to the adjustable pneumatic tracker of a mechanical or automatic musical instrument and its operating music-sheet; and it consists in so constructing and arranging such apparatus as to secure ready and accurate adjustment of the tracker to a comparatively narrow music-sheet.

In the accompanying drawings, Figure 1 is a plan view of the adjustable tracker with its adjusting devices and the music-sheet to which the tracker is adjusted. Fig. 2 is a front elevation, and Fig. 3 a plan view, of a modified form of the adjustable tracker and adjusting mechanism.

In Fig. 1 the tracker is shown divided into sections $A^1 A^2 A^3$. The section A^1 is made fixed in its position. The sections A^2 and A^3 are movable, so they may be moved nearer to or farther from the section A^1 to make the tracker as a whole adjustable to the music-sheet C as it expands or contracts by dampness or dryness of the atmosphere.

The sections of the tracker $A^1 A^2 A^3$ are arranged with spaces $b b'$ between them and are in normal position, as shown in Fig. 1, so placed that the tracker can be contracted to adjust it to a sheet that may have been perforated in damp weather or in a damp place. The tracker is adjustable to a sheet expanded by dampness to greater width than represented by the tracker in normal position by expanding the spaces $b b'$ by moving the sections $A^2 A^3$ to greater distance from the fixed section A^1 . It will therefore be seen that the tracker, as to sections, can be adjusted to corresponding sections of the music-sheet under any or all atmospheric conditions.

The necessary partitions between the ducts of an ordinary tracker and the corresponding partitions between the lines of perforations of the music-sheet are usually about one-sixteenth of an inch in thickness and seldom wider, as it is desirable to have the music-sheet as narrow as possible. With this width

of partition in a very narrow sheet for a small instrument having a very limited scale there is not sufficient contraction and expansion of the sheet by atmospheric changes to produce any ill results, as the change is not sufficient to take any one perforation of the sheet across the adjacent partition of the tracker to reach a wrong duct. It is therefore not necessary to make an adjustable tracker to adjust to each and every line of perforations in the music-sheet, but only to adjust in sections, each short section of the tracker adjusting to its narrow corresponding section of the music-sheet similarly to a very narrow sheet with short scale. Thus the sections of the tracker act to a certain extent independently and may have each an independent adjustment, if desired. However, the expansion and contraction of the sheet being usually uniform throughout its width, especially with my self-compensating ventilated spool, (Patent No. 669,342, dated March 5, 1901,) the adjustment of the sections $A^2 A^3$ of the tracker as to the section A^1 , Fig. 1, may be made with a single device constructed to give twice as much movement to section A^3 as to section A^2 . For this purpose I use the lever E , pivoted at h , having two pivoted connecting-links f and f' , connecting the lever E with the tracker-sections A^2 and A^3 , producing the proper movements, as shown, the arm of the lever for link f' being twice the length of the arm for the link f . The pivot h of lever E has a clamp-screw or clamp-nut i , so that the lever E after adjustment is for the time made fast until another adjustment is necessary. In using a tracker divided into more than three sections, A^4 would have three times the movement of A^2 , A^5 would have four times the movement of A^2 , and so on by regular progression.

To make the adjustment of the tracker to the music-sheet with the device as so far explained, having first expanded the tracker to more than the width of the music-sheet, the sheet is then placed with its left-hand edge against the fixed guide n , and then with lever E , having a handle t , the movable guide n' is carried to the right-hand edge of the music-sheet. As the guide n' is attached to the tracker-section A^3 , the tracker is correspondingly set and adjusted to the music-sheet.

When the guides n and n' are not used, the tracker is moved to right or left by lever E until the right-hand edge of the sheet meets a limiting-mark T on the tracker or a duct or a number of ducts in the tracker are brought to register with a guide-hole or guide-holes l in the music-sheet preceding the beginning of the piece of music. With a sectional tracker guide-holes may be placed in the sheet for any or all sections. The guides n and n' serve also another purpose, as shown in the drawings. It will be seen that the take-up cylinder B for the music-sheet is without heads or flanges and that the guides n and n' constantly guide the sheet of whatever width to wind evenly on the take-up cylinder, which avoids the wear of paper incident to headed cylinders from the tendency of the paper to override or rub against the flanges.

When the music-sheet is provided with a self-adjusting music-spool, as shown by D, Fig. 1, which is similar to that of my Patent No. 669,342, the tracker adjustment may be made with lever E', compounded with lever E, the set-stop X' being brought to the end of the journal r of the music-spool or to some other part of the spool-head, the position of which indicates the width of the music-sheet.

Figs. 2 and 3 show front elevations and plans of modified arrangement of tracker-sections and lever-adjusting devices. In this modified form the central section of the tracker is fixed and the two end sections are movable. The connecting-links f' f'' are pivoted to opposite sides of pivot h and to the two end sections of the tracker. Thus for adjustment the two end sections of the tracker move equally, but in opposite directions. With this construction it is necessary to maintain a central position for the music-sheet.

It will be seen that the music-sheet to be used with the adjustable tracker, as described, must be correspondingly constructed in order to be properly operative. The ducts e' and e'' of the tracker at the two breaks in Fig. 1 are necessarily wider apart than those of other portions of the tracker, as there must be not only space sufficient for a partition of suitable thickness, but sufficient space for two section end walls, each of which cannot be properly and safely constructed of much less thickness than the partitions, and besides this a space must be allowed between these end walls, as heretofore explained, to allow for adjustment of the tracker in case the music has been perforated in damp weather and has afterward contracted. The dotted lines showing the lines on which the perforations are made in the music-sheet show that these lines at the divisions of the tracker must be of necessity wider apart than the remaining lines, therefore precluding the use of a music-sheet as ordinarily constructed. The music-sheet must be increased to exceed over the width of ordinary construction about the width of one tracker-duct and one partition at each open space b or "break," as B B',

as shown in Fig. 1, the total extra width of the music-sheet being increased in proportion to however many breaks there may be in the corresponding tracker. An adjustable tracker could be made with all its ducts spaced on very wide scale, having even spacing of the perforation-lines of the sheet throughout sufficiently wide to accommodate the section end walls at the breaks in the tracker; but this would necessitate an unduly wide sheet and would not be as desirable. The music, however, may be arranged to be cut on an ordinary music-cutting machine by skipping a perforation-line in the music at each of the breaks between the sections of the tracker and arranging the music on the remaining lines of the sheet.

Instead of having only one of the sections of the tracker stationary all of the sections may be movable and an adjusting movement for all the sections, the levers and links being arranged accordingly. For example, the tracker being made up of four sections the two sections on the right of a central line may adjust in opposite direction to the two sections on the left of a central line. Any desirable number of sections may be used and the adjustment of all the sections made either all in one direction or to right and left of a given line between any of the tracker-sections.

I do not now claim, broadly, an "adjustable sectional tracker," as such is already shown and claimed in my application filed January 29, 1901, Serial No. 45,217.

I do not in the present application claim the music-sheet with perforations in several groups and wider spaces between the groups, as I have made that particular claim a part of my divisional application of this case, filed October 1, 1901.

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

1. A sectional adjustable pneumatic tracker for automatic musical instruments, each section having apertures and partitions therein in regular series, the end partitions of the sections at the divisions between sections being each greater in width than one-half the regular partition.

2. In a mechanical or automatic musical instrument, an adjustable pneumatic tracker divided into sections for the purpose of adjustment; the sections having a line of openings to the air-ducts with spaces between the openings for necessary partitions to correspond with the ordinary perforations and partitions of a perforated music-sheet, and having at the breaks between the sections of the tracker end partitions each wider than one-half the regular partition and constituting the two end walls of the adjacent sections, and consequent additional space between the end holes when in normal or contracted position, for the purposes set forth.

3. In a mechanical or automatic musical instrument, an adjustable pneumatic tracker

divided into sections for adjustment, provided with a lever-and-link device for adjusting the same; the several links of the device having different movements to produce movements of the several sections of the tracker differing in extent one from the other.

4. In a mechanical or automatic musical instrument, an adjustable pneumatic tracker divided into sections for adjustment, provided with a lever-and-link device for adjusting the same, one of the end sections of the tracker being stationary, and the remaining sections being made movable for adjustment.

5. A perforated music-sheet for a mechanical or automatic musical instrument, in combination with an adjustable pneumatic tracker, the tracker being divided into sections for adjustment, the music-sheet having increased spaces between the lines of perforations corresponding in position to the breaks between the sections of the tracker.

6. In a mechanical or automatic musical instrument operated by a pneumatic tracker and perforated music-sheet guides as n, n' attached to the tracker for directing the movement of the music-sheet and a take-up cylinder for receiving the sheet.

7. In or for a mechanical or automatic musical instrument, a sectional pneumatic tracker, the end sections being relatively adjustable, and guides as n, n' fixed on the end sections as means for adjusting the music-sheet in position to register with the adjustable pneumatic tracker.

8. In a mechanical or automatic musical instrument having an adjustable pneumatic tracker, a perforated music-sheet and a self-adjusting music-spool mechanism for adjusting the tracker to the music-sheet and a controller in such mechanism abutting against the expansible changing end of the spool to control the adjustment of the tracker to the music-spool.

9. The combination with the adjustable tracker A^1, A^2, A^3 , the link-and-lever mechanism, substantially as shown, and the self-adjusting music-spool D and an indicator or controller on the lever abutting against the expansible changing end of the spool to control the adjustment of the tracker to the sheet.

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Witnesses:

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