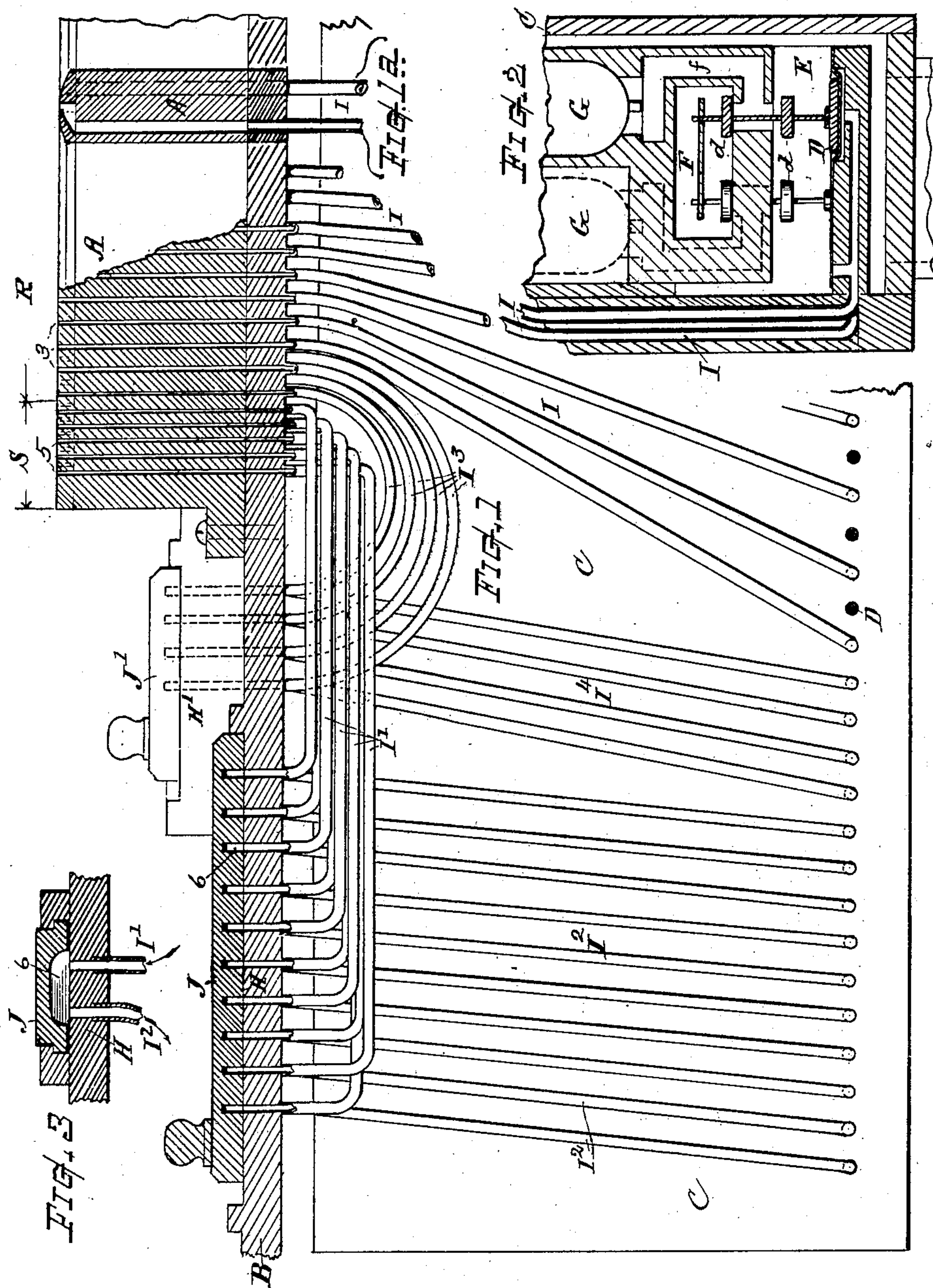


C. L. DAVIS.
MECHANICAL MUSICAL INSTRUMENT.

APPLICATION FILED NOV. 12, 1902.

NO MODEL.

2 SHEETS—SHEET 1.



Witnesses.

W. V. Suck
Simon & Co.

Inventor.

Charles L. Davis
By Chas. H. Burleigh
Attorney

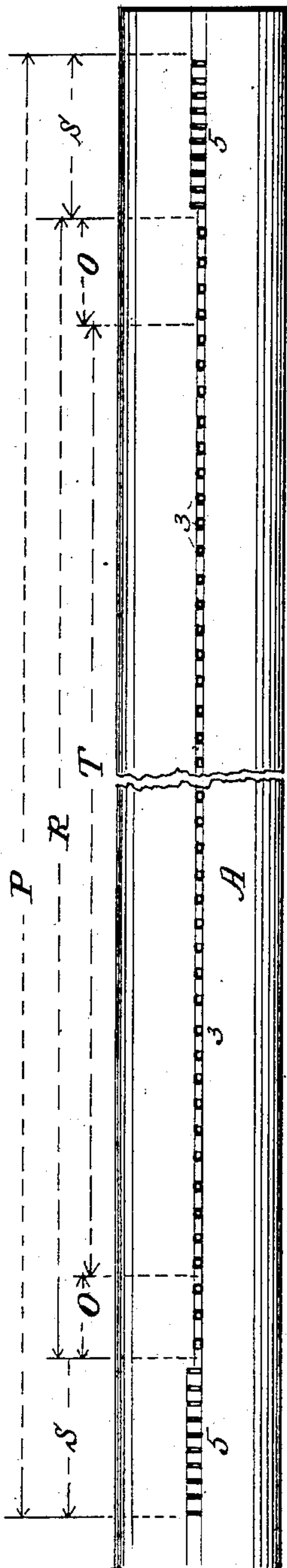
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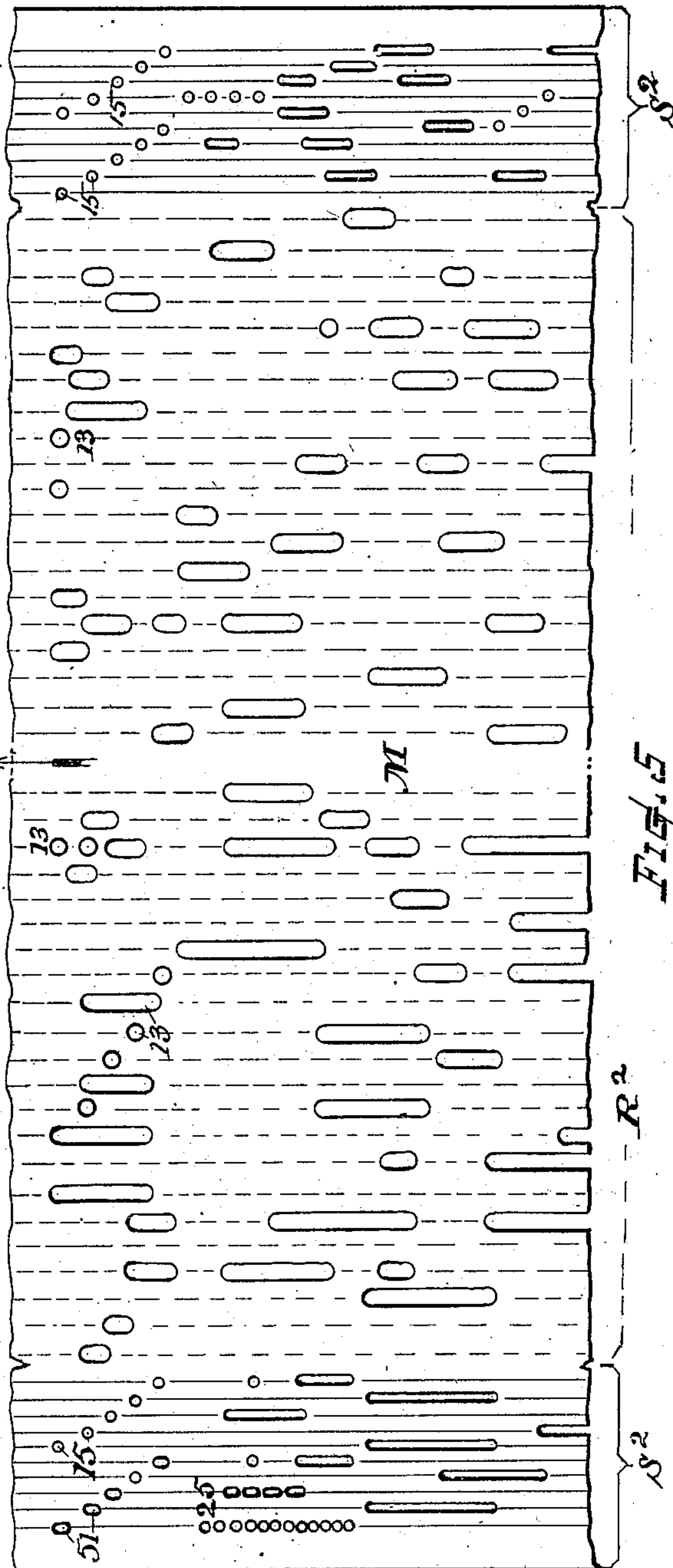
NO MODEL.

2 SHEETS—SHEET 2.



Witnesses.

W. R. Suck
Simon & King



Inventor.

Charles W. Davis
By Chas. H. Burlingame
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UNITED STATES PATENT OFFICE.

CHARLES L. DAVIS, OF MERIDEN, CONNECTICUT, ASSIGNOR TO WILCOX & WHITE COMPANY, OF MERIDEN, CONNECTICUT, A CORPORATION OF CONNECTICUT.

MECHANICAL MUSICAL INSTRUMENT.

SPECIFICATION forming part of Letters Patent No. 730,517, dated June 9, 1903.

Application filed November 12, 1902. Serial No. 130,960. (No model.)

To all whom it may concern:

Be it known that I, CHARLES L. DAVIS, a citizen of the United States, residing at Meriden, in the county of New Haven and State of Connecticut, have invented a new and useful Improvement in Mechanical Musical Instruments, of which the following, together with the accompanying drawings, is a specification sufficiently full, clear, and exact to enable persons skilled in the art to which this invention appertains to make and use the same.

My present invention relates to improvements in the construction of the tracker and mechanisms combined therewith, the prime object being to provide means whereby a pneumatic instrument of the class named is adapted for employing music sheets or strips of various widths and comprising different numbers of notes—as, for instance, music-sheets of fifty-eight notes, of sixty-five notes, or of eighty-five notes, more or less—on the same tracker-range and without inconvenience in the operation.

Another object is to provide a pneumatic-tracker for a music-sheet having a series of note-openings formed on a normal or regular scale (as six notes per inch, more or less) and an additional or supplementary series of notes at one or both ends of the range formed on a narrower scale, (as ten notes to the inch, more or less,) as more fully hereinafter explained.

Another object is to provide a mechanical musical instrument with a pneumatic-tracker having a range of ducts or orifices formed on a normal scale adapted for coacting with an ordinary perforated music sheet or strip of moderate width and supplemented at either or both ends of its range by additional ducts or orifices adapted for coacting with a music sheet or strip of greater width and means combined with the tracker ducts or conduits for shutting off and opening said additional ducts at a position between their mouth-orifice and the primary pneumatics to thereby render the instrument operative with music-sheets of different widths.

Another object is to provide in the tracker for pneumatic piano-playing instruments a combined scale or note space system that will

give a large number of notes on a comparatively narrow tracker-space and increase the number of notes represented without increasing the width of the music-sheet or tracker-range to an excessive extent.

These objects I attain by means such as explained in the following detailed description, the particular subject-matter claimed being hereinafter definitely specified.

The nature of my invention consists in providing a tracker with a main series of orifices arranged on a certain normal uniformly-spaced scale and with an additional or supplementary series of orifices at one or both ends of the tracker spaced or arranged on a narrower scale than that of the main series; also, in providing in combination with the passages between said supplementary tracker-ducts and their primary pneumatics a means for shutting off and opening said passages, whereby the instrument is adapted for playing with a music-sheet of greater width and number of notes by merely closing or opening the cut-off gate or valve that regulates said supplementary series of tracker-ducts.

In the drawings, Figure 1 represents a front sectional view of a part of a pneumatic-tracker and such parts of a music-playing instrument as will illustrate the nature of my invention, a transverse section of the tracker-board being shown at Fig. 1^a. Fig. 2 is a sectional view illustrating one suitable well-known arrangement of pneumatics in connection with which my invention may be employed. Fig. 3 represents a cross-section of a cut-off valve or means for opening and closing the air-passages from the supplementary series of tracker-ducts to the primary pneumatics. Fig. 4 represents a top view of the mouth-piece or face of a tracker as constructed in accordance with my invention; and Fig. 5 represents a portion of a perforated music sheet, strip, or band adapted for use with a tracker such as illustrated in Fig. 4. The lines thereon indicate the scales or rows of the note-openings. In Figs. 4 and 5 the delineation is shortened to bring the figures within the limit of the drawing sheet by omitting a central portion on each figure; but it will be understood that such omitted portion is in

regular uniform continuation of the normal scale shown adjacent to the break.

My invention is especially applicable to automatic piano-players and other pneumatic-ally - operated music - playing instruments wherein a perforated traveling music sheet or strip is employed to act as a valve for the tracker ducts or openings that communicate with primary pneumatics, the action of which is controlled by the passing of the music-sheet over said tracker-ducts in well-known manner.

Referring to the drawings, A denotes the tracker-board; B, the frame or casing; C, the wind-chest or part containing the pneumatic-action, which may be of any suitable or desired construction, or, as illustrated in Fig. 2, wherein D indicates the primary pneumatics; *d*, the primary air-valves actuated thereby; E, the exhaust - chamber; F, the flushing-leader or air-inlet trunk; *f*, the air-passages, and G the main or operating pneumatics, which latter are in practice combined with the devices that effect the sounding of notes in the music-scale and which may be of well-known structure and operation.

In accordance with my invention the mouth-piece or face of the tracker A is provided with a main series of ducts or orifices 3, formed on regular uniform scale or spacing of, say, six to the inch and with normal size of openings, said series of ducts disposed along the tracker-range for the distance indicated at R and comprising, say, sixty-five notes, while at the ends of the tracker-face there is provided a supplementary series of ducts or orifices 5, formed on a narrow scale or spacing of, say, ten to the inch and with their openings of less lateral dimension than those of the main series, said supplementary series being disposed as at S and comprising, say, ten notes at each end of the tracker-range. The orifices 5 of the supplementary series are preferably made longer in the direction of the music-sheet feed than are those of the main series, (see Fig. 4,) so that proper area of exposure is thereby attained in the operation of the music-sheet perforations upon the narrow-scale series. The combined range of the main series R and supplementary series S represents the maximum number of notes and note-playing actions of the instrument and provides a tracker of eighty-five notes embraced in the distance indicated at P.

In this specification I have referred to the main or central scale as "six to the inch," that being a proper and convenient scale as employed for pneumatic-trackers and music-sheets in practice, while the supplementary or end series I have preferably made ten to the inch; but I do not confine my invention to the exact dimension of scales here named, since the scales can in various instances be made somewhat larger or smaller without departing from the nature of this invention.

I indicates the pipes or windway-passages

from the tracker-ducts to the respective primary pneumatics D, that control the note-playing actions, those in the supplementary series being provided with a means for shutting off and opening the passages. Said means, as here shown, consists of a valve or gate J, having cross-channels 6 and arranged to slide on a valve-seat H, into which the pipes or tracker-ducts lead, as indicated at I', and from which at adjacently-corresponding points pipes or ducts lead, as at I², to the corresponding primary pneumatics. The cut-off valve may be disposed at any convenient position between the tracker-duct mouth and the primary pneumatic. In the present instance it is shown as arranged on the frame B. By sliding back the valve J the solid part of the valve is brought over the ducts in the valve-seat and the cross-channels 6 over the solid part of the valve-seat, thus offsetting the passages and shutting off the supplementary series S from effective operation. If desired, any other suitable form of valve devices may be employed for effecting the opening and closing of the ducts of the supplementary series for a corresponding result. The supplementary series of ducts at the right and left hand ends of the tracker can have separate shutting-off valves J for each series or all may be controlled by a single valve, if preferred, the several pipes or conduits being extended to the same valve-seat.

The ducts or pipes I of the main series R, with the exception of a few at the ends of the series, are, as usual, carried direct to their primary pneumatics. With those ducts indicated at O (see Fig. 4) I arrange a suitable shutting-off valve J'. The portions of the pipes or conduits I³ lead from the tracker to the valve-seat H', and the portions I⁴ extend from said seat to the primary pneumatics. By this means the regular or main series can be reduced in its range and effect from sixty-five to a fifty-eight note range, as indicated at T, without other change than the mere adjustment of the valve J'. It will thus be seen that an instrument embodying my improvements can operate with equal facility with different widths of music-sheet—as, for instance, with a fifty-eight-note sheet when valves J J' are closed, a sixty-five-note sheet when valve J is closed and J' open, or an eighty-five-note sheet M, having the perforations 13 and 15, when both cut-off valves are open.

A music-sheet such as last named is shown in Fig. 5 to illustrate the corresponding relation of the note-perforations and the tracker-duct orifices; but a music-sheet of such character forms the subject-matter of claims embraced in a separate application for Letters Patent. This music-sheet M consists of a paper sheet or strip, the central portion R² of which has its perforations 13 arranged on a normal uniformly-spaced scale to correspond with the scale of the main series R of the tracker-ducts and provided with a marginal

portion or portions S^2 , with perforations 15, formed on a narrower or more contracted scale and with smaller openings laterally to correspond with the supplementary series of openings in the tracker. The perforations for single short notes of the supplementary series can be formed circular or as oblong holes 51 of narrow width, but having a length equal to the diameter of the single-hole perforation 13 of the central scale. The openings for long notes may be a long slot or series of adjacent holes, as at 25, the cross-bridges being of less dimension than the tracker-orifices, so that they will not cut off the air from said orifices until the entire note has passed over the same.

In this specification for convenience of description I have considered as the range of the tracker and music-sheets the fifty-eight notes, sixty-five notes, and eighty-five notes; but I do not confine my invention to these exact numbers of notes, since the number of notes in either case can be more or less without change in the nature of the invention.

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

1. A tracker for pneumatic music-playing instruments, having within its range a main series of ducts or orifices arranged on a normal uniformly-spaced scale; in combination with a supplementary series of ducts or orifices arranged on a narrower scale, substantially as and for the purpose set forth.

2. A tracker for pneumatic music-playing instruments, comprising within its range a central series of ducts or orifices formed on a normal uniformly-spaced scale, and a supplementary end series of ducts or orifices formed on a narrower-spaced scale; in combination with primary pneumatics, passages leading from said tracker-orifices to said pneumatics, and means for shutting off the passages from said supplementary series of tracker-ducts independently of the main or central series of ducts, for the purpose set forth.

3. In a pneumatic music-playing instrument, a tracker having in its mouthpiece an intermediary series of normally sized duct-orifices arranged on a regularly-spaced scale, and at the ends thereof supplementary series

of duct-orifices arranged in a narrower scale, the openings thereof being of less width and of greater length than those of the main or intermediary series, and means for shutting off and opening the ducts of said supplementary series, for the purpose set forth.

4. In combination with the pneumatic-actions and primary pneumatics pertaining to the note-playing scale; a tracker provided with a main series of orifices arranged in regular uniformly-spaced scale with conduits or pipes leading therefrom to their respective primary pneumatics, and supplementary series of tracker-ducts with orifices respectively arranged at the bass end and treble end of the tracker, a valve-seat disposed upon the casing or tracker-supporting board and including the conduits or pipes leading from said supplementary series of orifices, and conduits or pipes leading to their note-controlling primary pneumatics, a sliding valve having cross-passways in its face arranged upon said valve-seat, and means for moving said valve for varying the range of note-actions, for the purpose set forth.

5. The combination, with the pneumatic-actions and a tracker, representing a maximum number of notes in the music-playing scale, said tracker having its orifices and the ducts or conduits connected with their respective note-controlling primary pneumatics arranged as a main, a supplementary and an intermediate series; a valve-seat and valve-slide including in its control the note-conduits I^1 and I^2 of the supplementary series, between the tracker and note-controlling primary pneumatics, a second valve-seat and valve-slide including in its control a number of note-conduits I^3 and I^4 as an intermediate series at the end of the main series, and main-series note-conduits I , that are directly connected with their primary pneumatics, substantially as and for the purposes set forth.

Witness my hand this 7th day of November, 1902.

CHARLES L. DAVIS.

Witnesses:

FRANK C. WHITE,
J. H. WHITE.