

No. 713,676.

Patented Nov. 18, 1902.

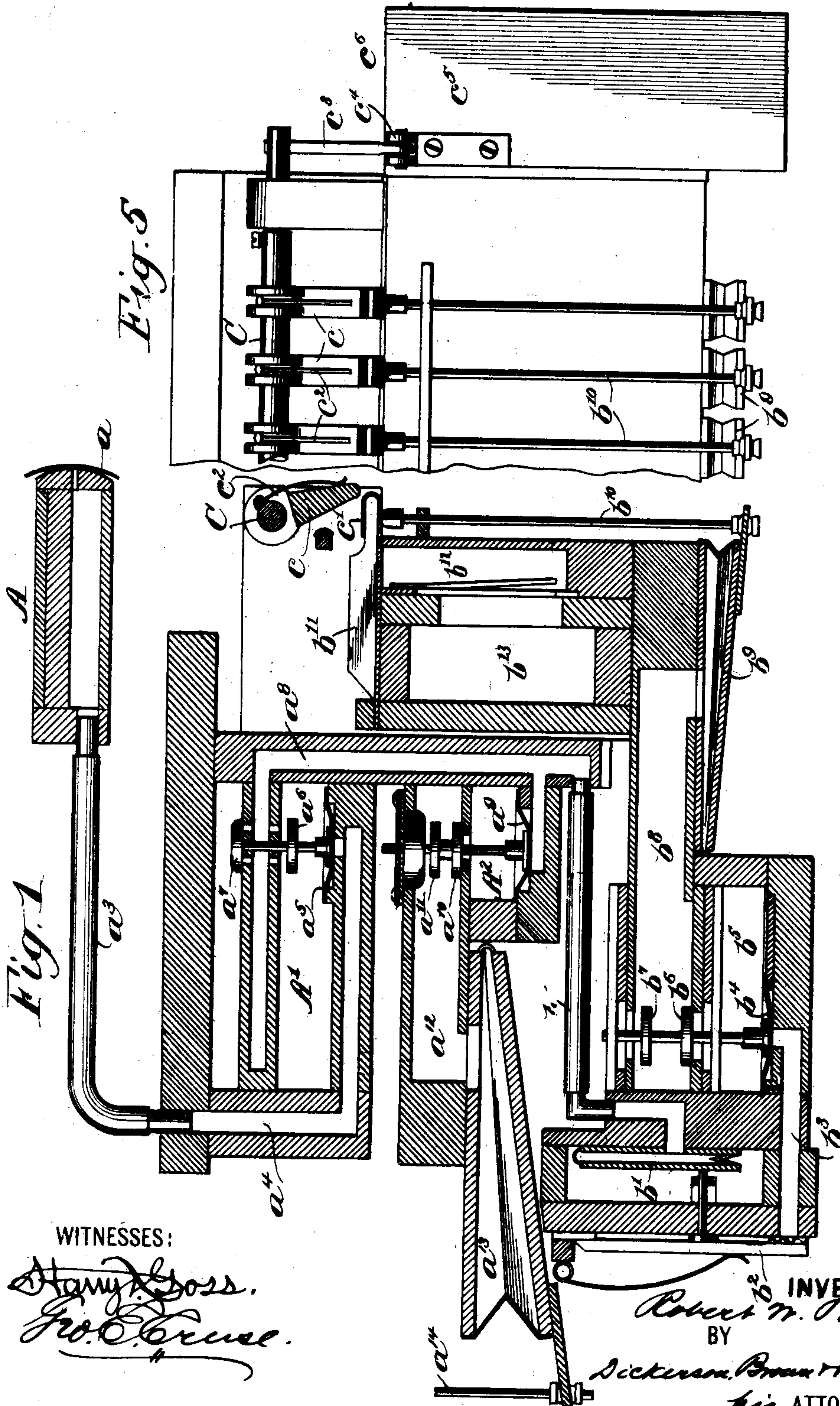
R. W. PAIN.

MELODY STOP FOR MECHANICALLY PLAYED MUSICAL INSTRUMENTS.

(Application filed May 24, 1901. Renewed Apr. 21, 1902.)

(No Model.)

2 Sheets—Sheet 1.



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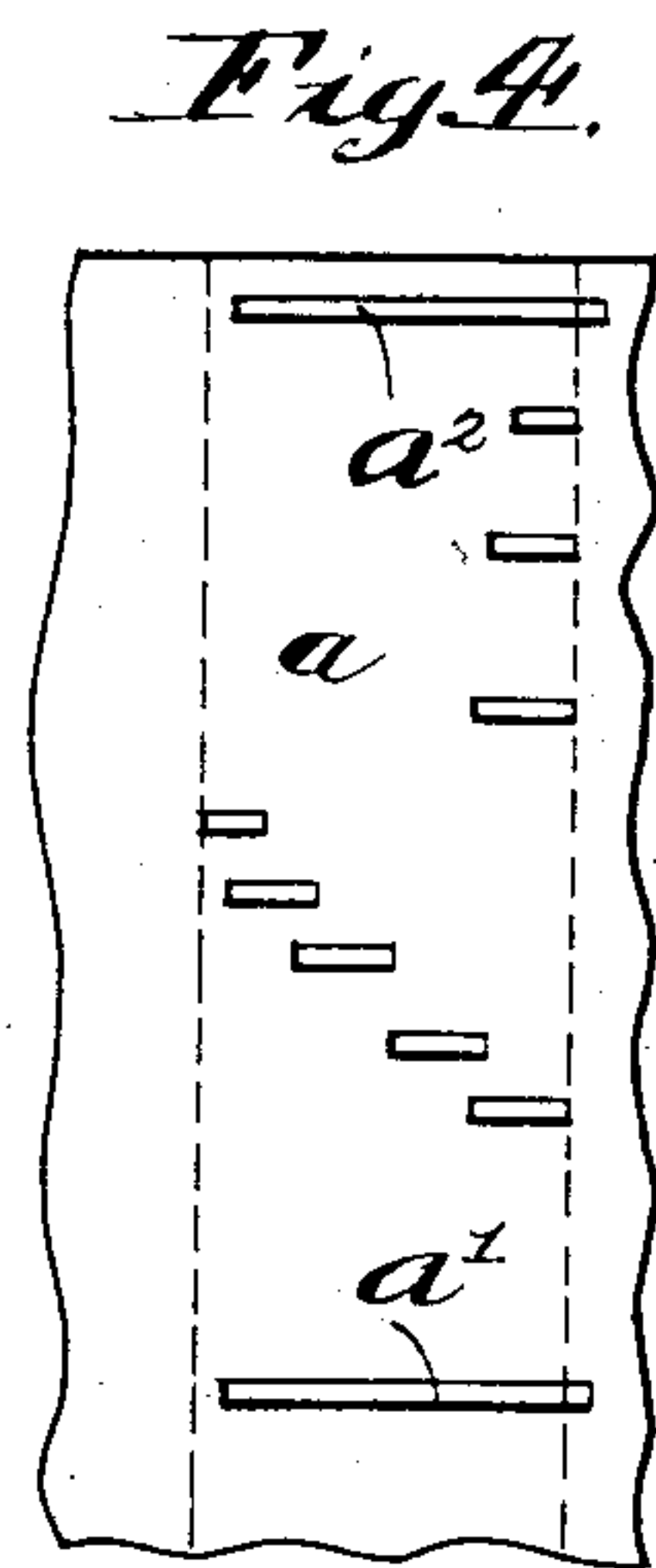
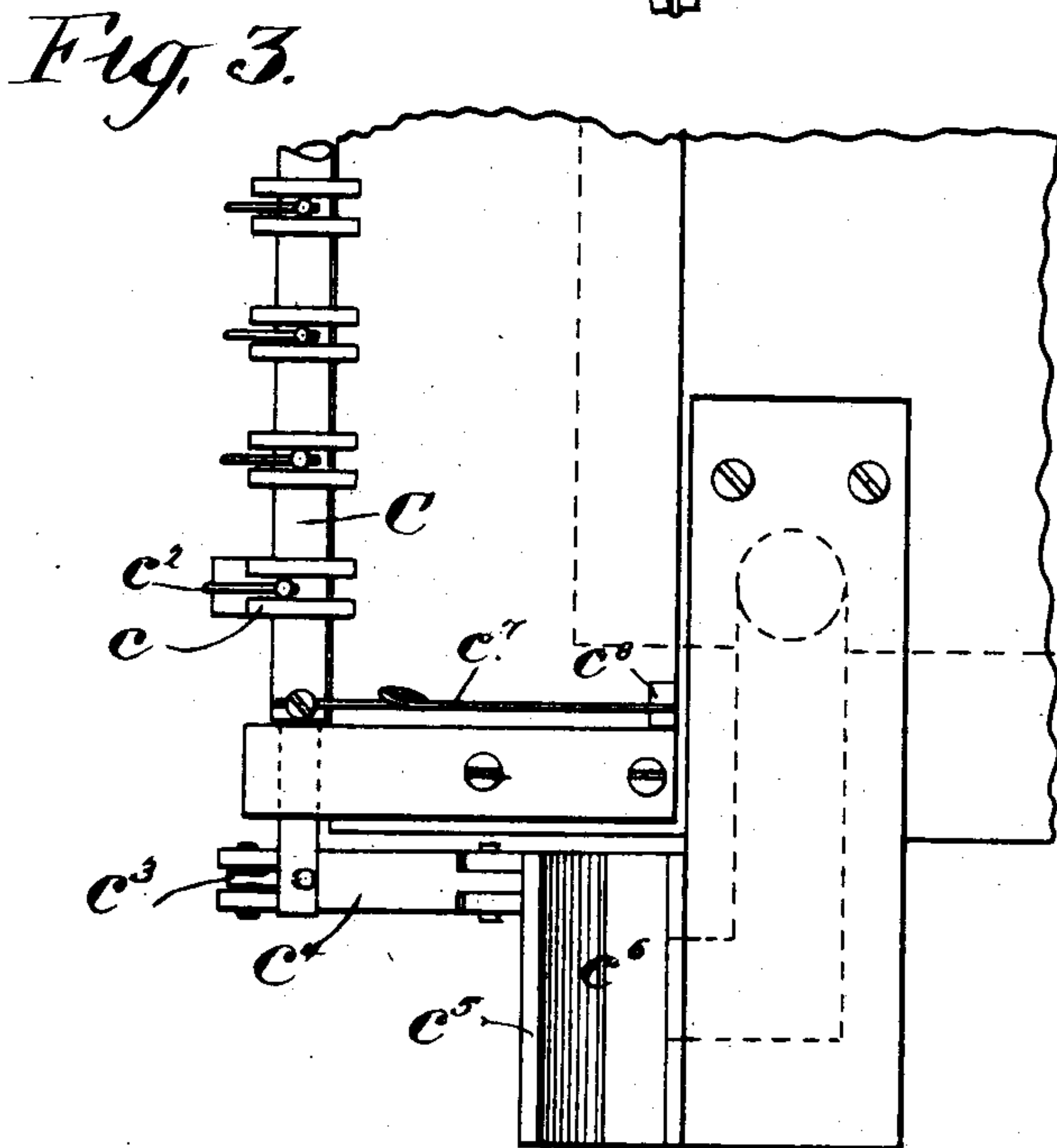
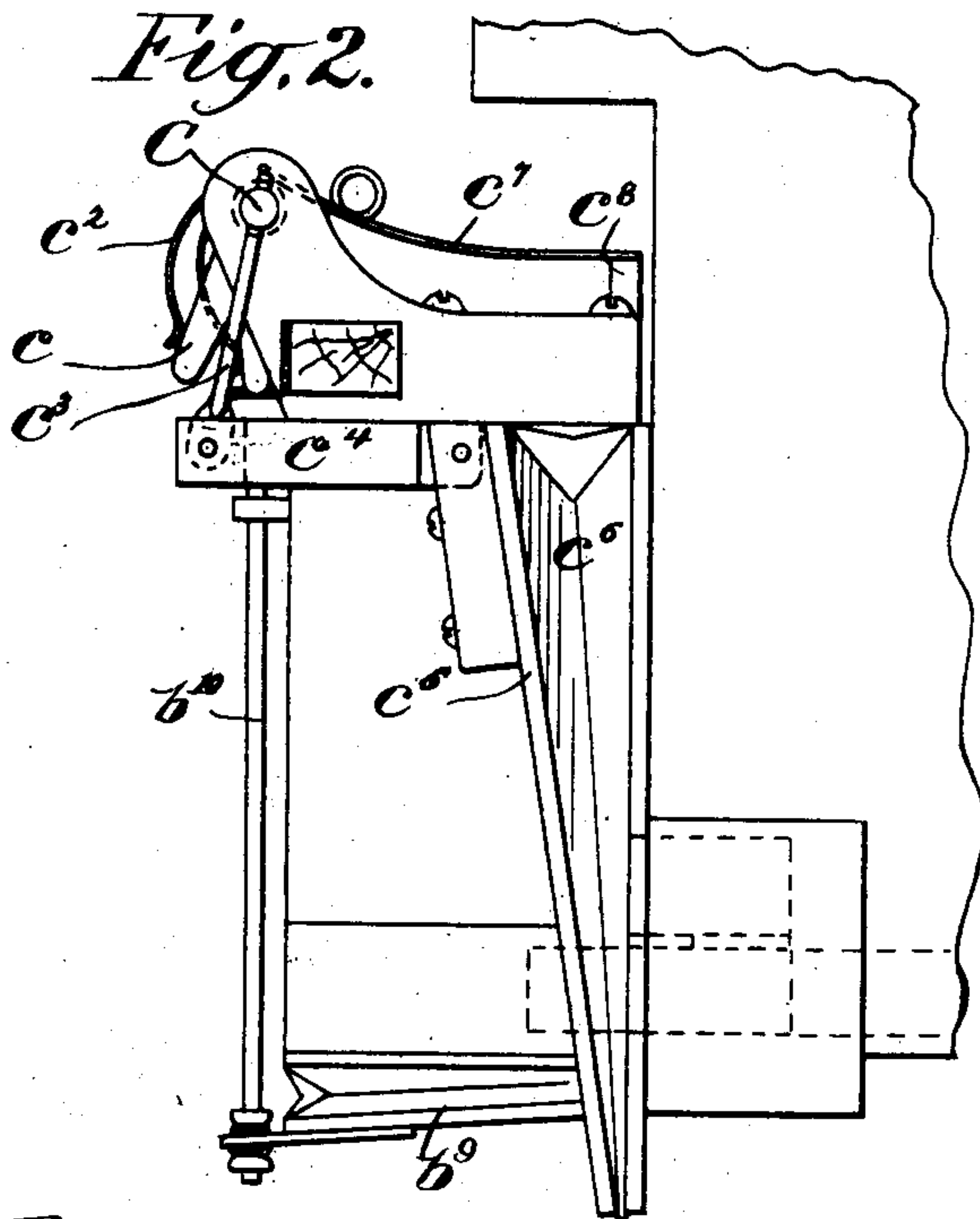
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(Application filed May 24, 1901. Renewed Apr. 21, 1902.)

(No Model.)

2 Sheets—Sheet 2.



Witnesses
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UNITED STATES PATENT OFFICE.

ROBERT WILLIARD PAIN, OF NEW YORK, N. Y., ASSIGNOR TO THE AEOLIAN CO., OF NEW YORK, N. Y., A CORPORATION OF CONNECTICUT.

MELODY-STOP FOR MECHANICALLY-PLAYED MUSICAL INSTRUMENTS.

SPECIFICATION forming part of Letters Patent No. 713,676, dated November 18, 1902.

Application filed May 24, 1901. Renewed April 21, 1902. Serial No. 103,914. (No model.)

To all whom it may concern:

Be it known that I, ROBERT WILLIARD PAIN, a citizen of the United States, residing in the city of New York, county and State of New York, have invented certain new and useful Improvements in Melody-Stops for Mechanically-Played Musical Instruments, of which the following is a specification.

My invention relates to mechanical musical instruments of that type which employs a perforated music-sheet, which sheet controls the operation of the sound-producing devices.

More particularly my invention relates to a melody set of sound-producing devices for such instruments, the operation of which is also controlled by the perforated music-sheet.

I will describe a musical instrument embodying my invention and then point out the novel features thereof in the claims.

In the accompanying drawings, Figure 1 is a vertical sectional view of a mechanical musical instrument embodying my invention. Fig. 2 is an end view thereof. Fig. 3 is a detail top view. Fig. 4 is a view of a portion of a perforated music-sheet. Fig. 5 is a detail front view.

Similar letters of reference designate corresponding parts in all of the figures.

Fig. 1 represents the means in a mechanical musical instrument which are employed to sound a note in the instrument proper and to sound a note in the additional or melody set of sound-producing devices. It will be understood that there may be any number of the complete devices shown in Fig. 1 to make up a mechanical instrument of any size.

A represents a tracker-board, and a a perforated music-sheet passing thereover. The perforated music-sheet is provided with the usual note-perforations of a musical piece. The perforation of the note which is to be accented or played in the melody set of sound-producing devices is cut a little in advance of the other notes in the chord. The purpose of this is to cause the means controlling the speaking or sounding of the note in the melody set to be in such position as to have the melody-note sounded at the same time as the others in the chord. In addition to the note-perforations and the melody-note perforations a I provide marginal perforations a^2 , which correspond with the melody-perfora-

tions a^1 . The function of these marginal perforations is to operate a mechanism which will prevent the sound-producing devices of the melody set other than the melody-note sounding at the same time as the melody-note.

a^3 represents a pipe forming a communication between a passage in the tracker-board and a passage a^4 , leading to a primary exhaust-chest A^1 . Provided over the passage a^4 where it enters the exhaust A^1 is a diaphragm a^5 , which operates pallets a^6 a^7 . The pallet a^6 opens a passage a^8 to the primary exhaust A^1 , while the pallet a^7 opens the same passage a^8 to the atmosphere. Normally the passage a^8 is open to the exhaust A^1 .

a^9 represents a diaphragm for closing one end of the passage a^8 , and this diaphragm separates this passage from a secondary exhaust A^2 . The exhaust A^1 is stronger than the exhaust A^2 , so that the diaphragm a^9 will normally be in the position shown in Fig. 1. When, however, the exhaust A^1 is cut off from the passage a^8 , the diaphragm a^9 will be bowed upward.

a^{10} a^{11} represent pallets operated from the diaphragm a^9 . The pallet a^{10} controls a vent of the passage a^{12} to the exhaust A^2 , while the pallet a^{11} controls the vent of the passage a^{12} to the atmosphere. The passage a^{12} is open to a pneumatic a^{13} , which through a connection a^{14} operates a sound-producing device either directly or indirectly.

b represents a passage which communicates with the passage a^8 . At one end of the passage b there is a pneumatic b^1 , which, as shown, is normally collapsed. When a passage a^8 is vented to the atmosphere, a passage b is also vented to the atmosphere, and atmospheric pressure causes the pneumatic b^1 to expand. The expanding of the pneumatic b^1 moves a pallet b^2 , which opens a passage b^3 to the atmosphere. At the opposite end of the passage b^3 is a diaphragm b^4 , one side of which is exposed to an exhaust in a chamber b^5 . Each diaphragm b^4 operates pallets b^6 b^7 , one of which, b^6 , controls a vent of a chamber or passage b^8 to the exhaust, and the other of which, b^7 , controls a vent for said chamber to the atmosphere. A pneumatic b^9 is open to the chamber b^8 and is normally expanded. When the position of the pallets b^6 b^7 are changed, the pneumatic b^9 is opened to the exhaust and

is collapsed. As it collapses a rod b^{10} , connected therewith, raises a pallet b^{11} from off a vent of a reed-cell b^{12} and allows an exhaust in a chamber b^{13} to draw air past a vibrating tongue. Any other sound-producing device may be substituted for the vibrating tongue.

C represents a rod suitably journaled so that it may rotate on its longitudinal axis and located adjacent the pallets b^{11} .

c represents a number of fingers, one for each pallet, which are loosely mounted on the rod C. The ends of the fingers normally rest against the edges of the pallets b^{11} and in such position that a pallet may be pushed past a finger or a finger be moved onto a pallet. To hold the fingers in such position, felt c^1 may be provided on the ends of the pallets or on the fingers or on both. Coacting with each finger is a spring c^2 , one end of which is fixed to the rod C. The function of these springs is to have the fingers rotated with the rod when the rod is rotated.

c^3 represents a lever which is rigidly connected with the rod C and through which the rod C is rotated.

c^4 represents a link which is connected with the lever c^3 and the movable member c^5 of a pneumatic c^6 . The pneumatic is operated from the marginal openings in the perforated music-sheet. The same arrangement of parts shown in Fig. 1, with the exception of the pneumatic b^9 and the parts operated thereby, are employed to collapse and expand the pneumatic a^6 . Each time a marginal opening passes over an opening on the tracker-board the pneumatic c^6 is caused to collapse, and thus rotate the rod C, which moves all the fingers c over the pallets except the finger of the pallet controlling the tone being sounded. This rotation of the shaft, however, is not accomplished until the note in the melody set has started to sound.

c^7 represents a spring, one end of which is secured to the rod C and the other end of which rests upon a support c^8 . The function of this spring is to insure the return of the shaft and finger to their normal position when the pneumatic c^6 is expanding.

The marginal openings in the music-sheet are made a little to the rear of the opening of the melody-note in each chord, but in advance of the remaining notes in the chord, and is of a length equal to nearly the length of the melody-note.

Instead of having the fingers c act to hold down pallets to prevent sound-producing devices from speaking or sounding they may act to operate or engage upon some other device or means, which, if held or otherwise engaged, would prevent their sound-producing devices from speaking or sounding. Hence wherever I have used the term "pallets" I mean any part or feature of a sound-producing device necessary for its sounding or speaking.

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

1. A melody set of sound-producing devices, means whereby the playing of a sound-producing device in said set will prevent the other devices in said set playing, and a traveling music-sheet having marginal openings for controlling said means.

2. In combination with a mechanically-played musical instrument comprising sound-producing devices, an additional set of sound-producing devices forming a melody-stop, a perforated music-sheet for controlling the sounding of the devices of the musical instrument and a device in the melody set and having marginal openings, and means in connection with the melody set of devices, the operation of which means is controlled by the said marginal openings for preventing the sounding of devices in the melody set other than the melody-note.

3. In combination with a mechanically-played musical instrument comprising sound-producing devices, an additional set of sound-producing devices forming a melody set, a perforated music-sheet for controlling the sounding of the devices of the musical instrument and a device in the melody set, and said sheet also having marginal openings, and means in connection with the melody set of devices comprising a pneumatic the operation of which pneumatic is controlled by the said marginal openings for preventing the sounding of devices in the melody set other than the melody-note.

4. A melody-stop for mechanically-played musical instruments consisting of a number of sound-producing devices, devices controlled by a perforated music-sheet for permitting each of said devices to speak or sound, and said music-sheet also having marginal openings and means comprising a rotatable rod, fingers movable therewith which are adapted to engage with said devices to prevent their operating, and a pneumatic for rotating said rod the operation of which pneumatic is controlled by the marginal openings in the music-sheet.

5. A melody-stop for mechanically-played musical instruments consisting of a number of sound-producing devices, devices controlled by a perforated music-sheet for permitting each of said sound-producing devices to speak or sound, and said music-sheet having marginal openings, and means comprising a rotatable rod, fingers movable therewith which are adapted to engage with said second-mentioned devices to prevent their operating, a pneumatic for rotating said rod the operation of which is controlled by said marginal openings, and a spring for assisting in the rotation of said rod in one direction.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

ROBERT WILLIARD PAIN.

Witnesses:

OWEN WARD,

W. CORNELL BENJAMIN.