

C. A. NEEDHAM.
 Mechanical Musical-Instrument.
 No. 226,341. Patented April 6, 1880.

Fig 2.

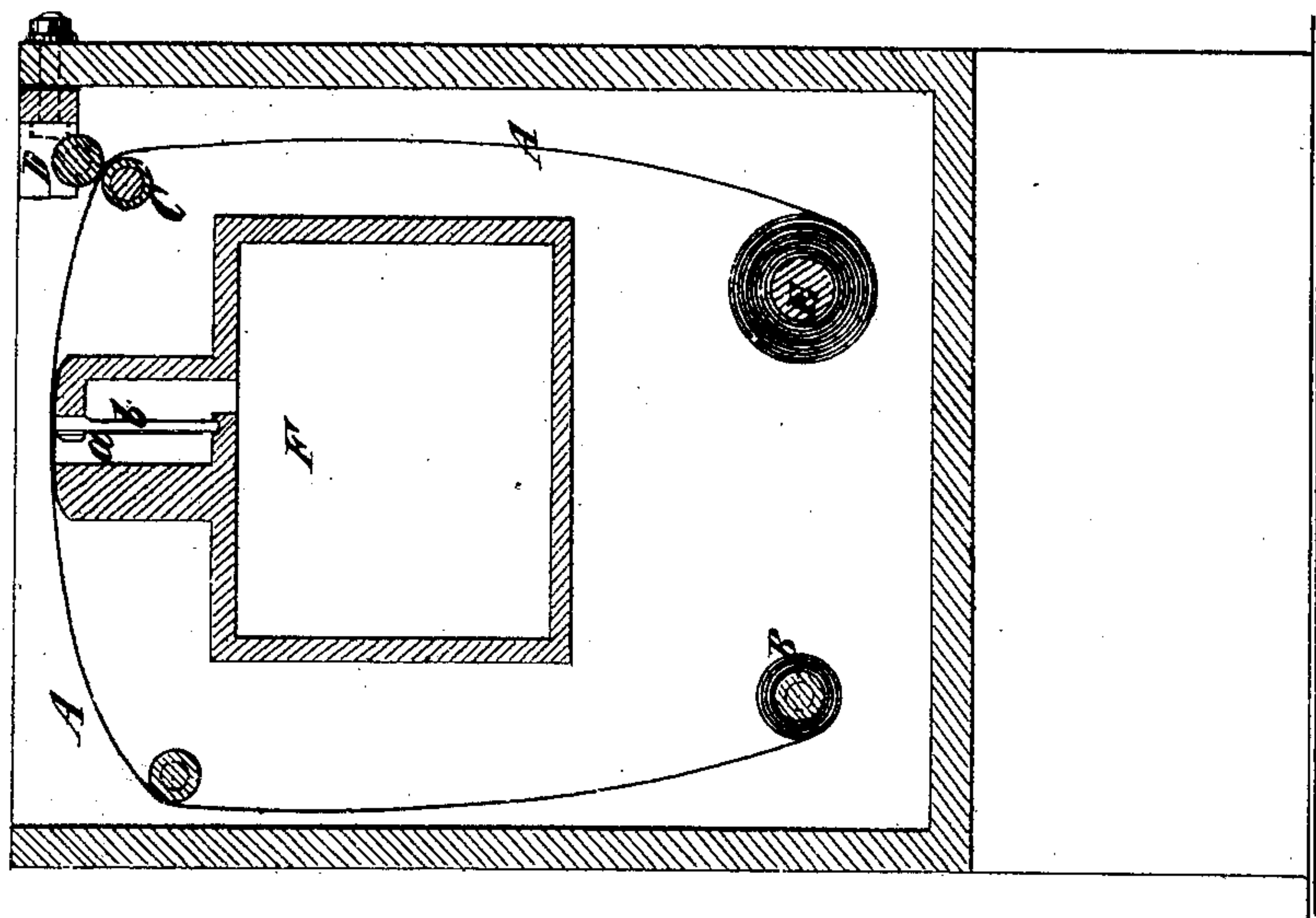
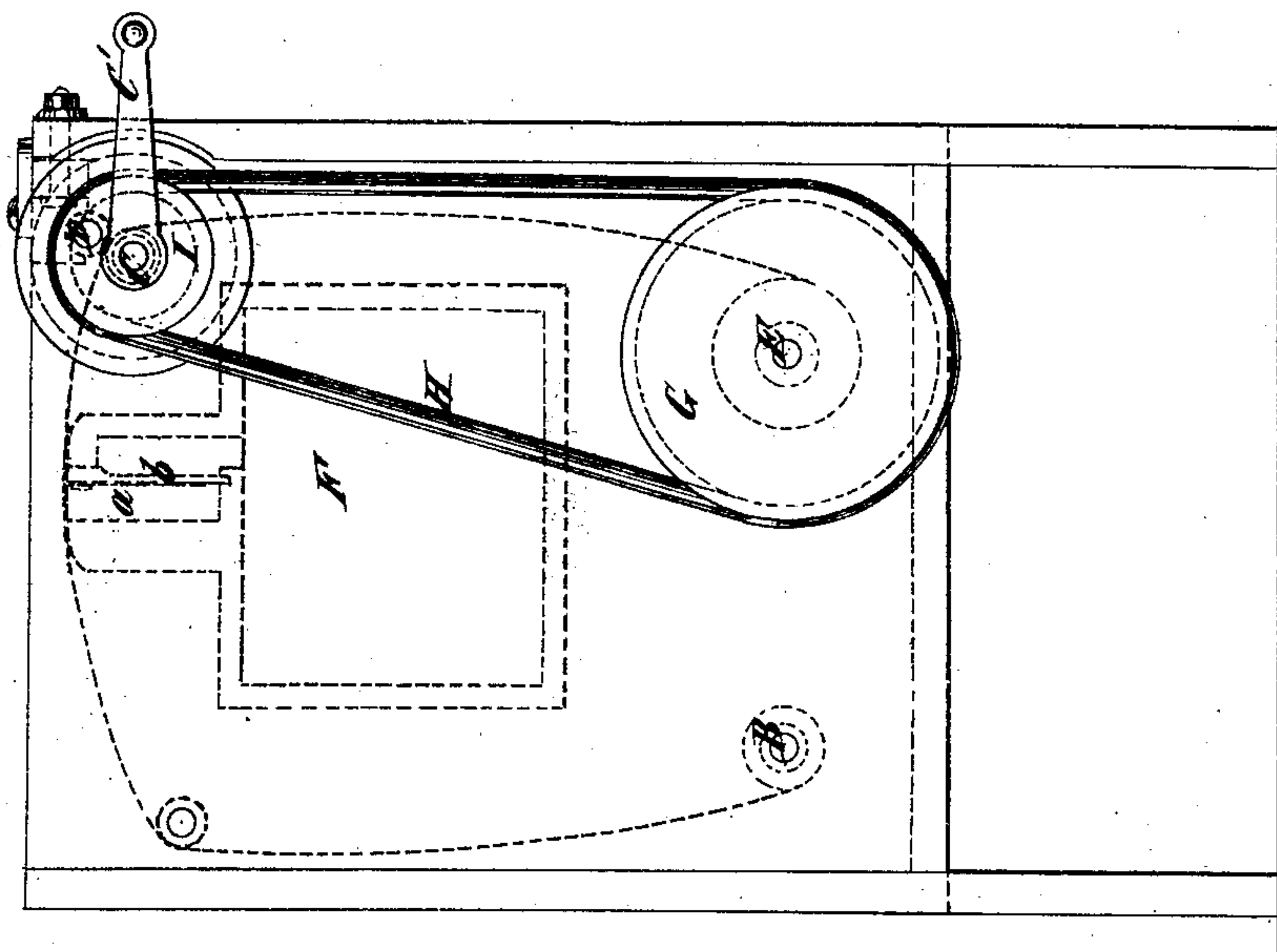


Fig 1.



Witnesses
 John Becker
 Fred Haynes

Inventor
 Charles A. Needham
 by his Attorneys
 Brown & Brown

UNITED STATES PATENT OFFICE.

CHARLES A. NEEDHAM, OF NEW YORK, N. Y., ASSIGNOR TO HIMSELF AND
ELIAS P. NEEDHAM, OF SAME PLACE.

MECHANICAL MUSICAL INSTRUMENT.

SPECIFICATION forming part of Letters Patent No. 226,341, dated April 6, 1880.

Application filed February 24, 1879.

To all whom it may concern:

Be it known that I, CHARLES A. NEEDHAM, of the city, county, and State of New York, have invented certain new and useful
5 Improvements in Mechanical Musical Instruments, of which the following is a specification.

My invention relates to that class of mechanical organs and other mechanical musical instruments in which the notes are produced by a perforated music-sheet which is fed through the instrument. In instruments of this kind the music-sheet is usually wound upon a roller, which may be called a "music-
15 roller," and after passing through the instrument is wound upon another roller, which may be called the "take-up roller;" and the object of this invention is to prevent undue strain upon the music-sheet owing to the increased size of the roll of music upon the take-up roller as it is wound thereon.

To this end the invention consists in a novel combination of devices whereby the rotation of the take-up roller is caused to correspond
25 with the proper movement of the music-sheet, and the liability of the latter tearing is obviated.

In the accompanying drawings, Figure 1 represents a side view of an instrument embodying my improvements, and Fig. 2 a vertical section thereof.

Similar letters of reference designate corresponding parts in both figures.

A designates the perforated music-sheet, and B the music-roller, upon which the music-sheet is wound preparatory to playing. C designates the feed-roller, to which motion may be imparted by means of a crank, C', and D a roller acting in conjunction therewith, to
40 produce a proper movement of the music-sheet. E designates the take-up roller, upon which the music-sheet is wound after passing through the instrument.

Although these improvements are particularly applicable to reed and pipe organs and musical instruments, they may, with slight modifications, be embodied in musical instruments of various other kinds. I have here represented them as applied to a reed instrument.
50 ment.

F designates the wind-chest, and *a* the reed-tubes in a reed or action board, in which are placed reeds *b* of the ordinary kind.

As the music-sheet is wound upon the take-up roller E the roll of music increases in size, 55 and it is obvious that if the take-up roller were rotated at a uniform speed it would cause a great strain upon the music-sheet and liability of tearing the same.

This difficulty may, in a measure, be obviated by making the take-up roller of a large diameter, as it would then require a less number of rotations of the roller to wind a given length of sheet than it would if the roller were of small diameter, and consequently the increase in the size of the roll of music would be relatively less. 65

To further obviate this difficulty I impart motion to the take-up roller by means of a slipping driving device, which shall effect the proper taking up of the music-sheet as long as the take-up movement is commensurate with the feed, and which, when there is a tendency to take up more rapidly than the sheet is fed, shall slip and cause the take-up roller to rotate at a slow speed. This slipping driving device consists of a pulley, G, mounted on the shaft of the take-up roller, and a belt, H, for imparting motion thereto from a pulley, I, on the shaft of the feed-roller C. 80

As before stated, the take-up roller E is preferably of larger diameter than the feed-roller, and consequently the size of the pulley G should bear the same relation to that of the take-up roller that the pulley I bears to the feed-roller. 85

Suitable guide-rollers are arranged so that the music-sheet, in its passage from the feed-roller to the take-up roller, is deflected properly, so as to pass over the action or reed board. 90

By my invention I provide a simple and effective means for regulating the rotation of the take-up roller, so that its circumferential velocity shall at all times be commensurate to the feed of the music-sheet. 95

I do not claim the combination, with a perforated action-board in a musical instrument, of a perforated strip or sheet and winding and unwinding and feed rollers so arranged that 100

the said strip or sheet has its flexure always in the same direction; but

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

- 5 1. In a mechanical musical instrument, the combination of feed-rollers, the shaft of one of which is provided with a suitable pulley and operating-crank, a take-up roller having also a suitable pulley, the belt connecting said
10 pulleys, and a music-roller adapted to hold a roll of paper in position to pass between the feed-rollers and connect with the take-up roller, substantially as specified.

2. In a mechanical musical instrument, the combination of feed-rollers C D, the shaft of 15 one of which is provided with a pulley, I, and an operating-crank, C', a take-up roller, E, provided with a pulley, G, the belt H, the music-roller B, an action or reed board over which the music-sheet passes, and guide-roll- 20 ers for properly deflecting said sheet, substantially as specified.

CHAS. A. NEEDHAM.

Witnesses:

HENRY T. BROWN,
T. J. KEANE.