

(Model.)

O. H. ARNO.
Mechanical Musical Instruments.

No. 231,978.

Patented Sept. 7, 1880.

Fig:1.

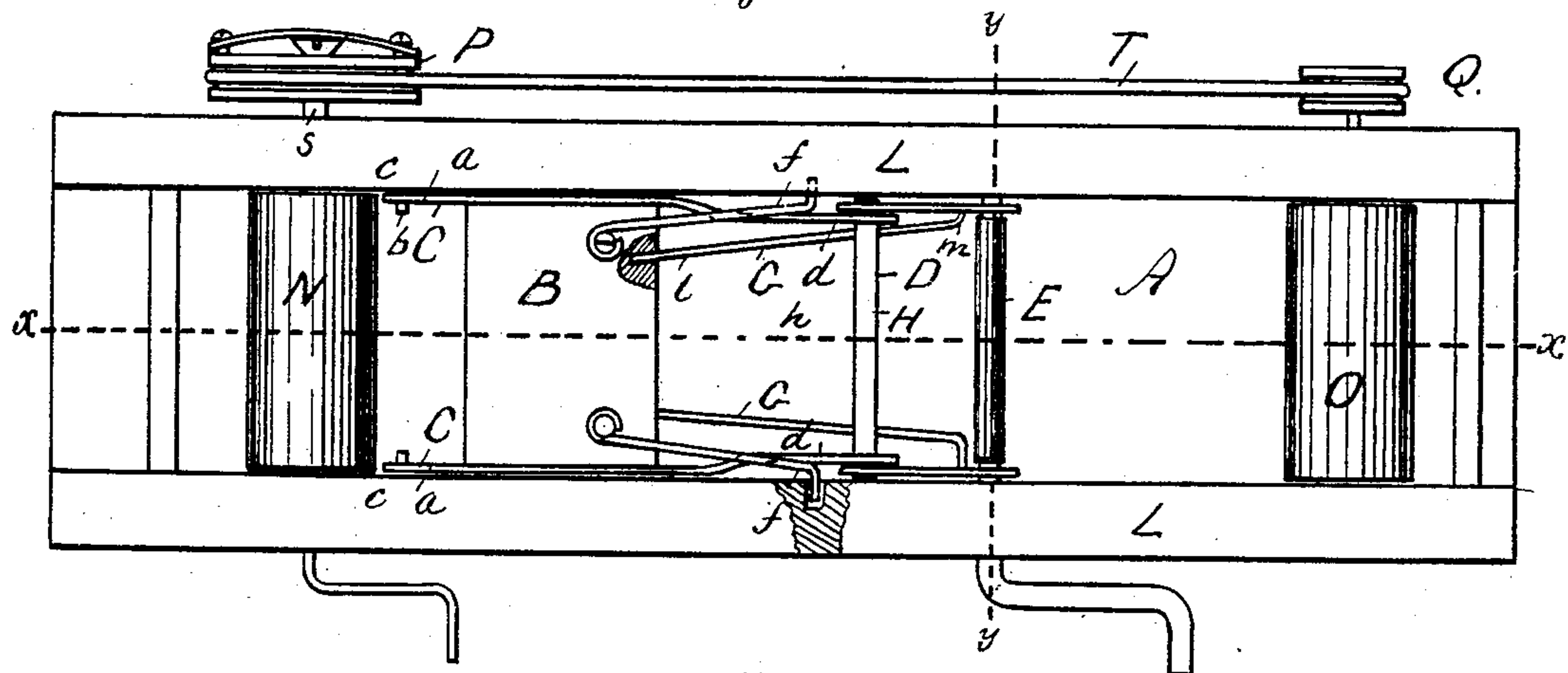


Fig:2.

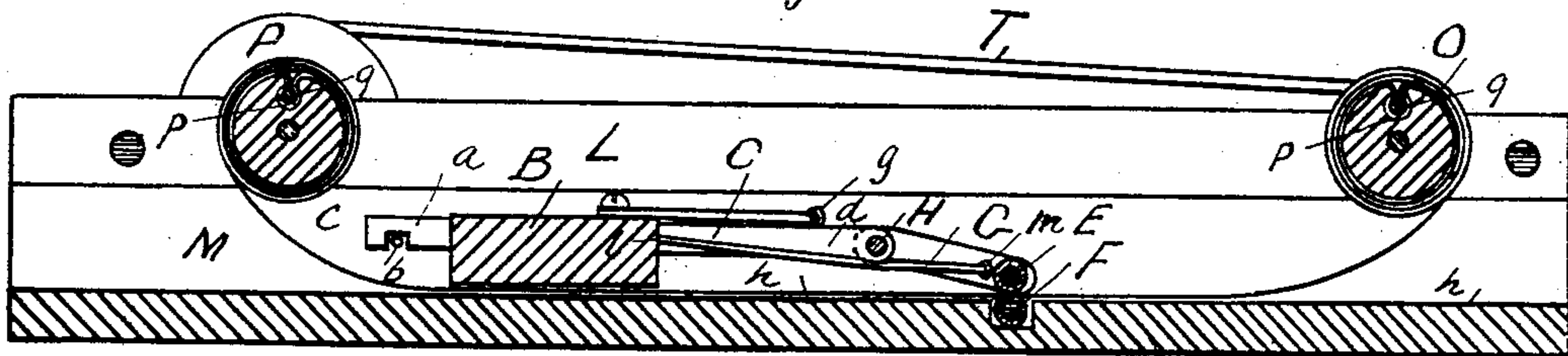


Fig:3.

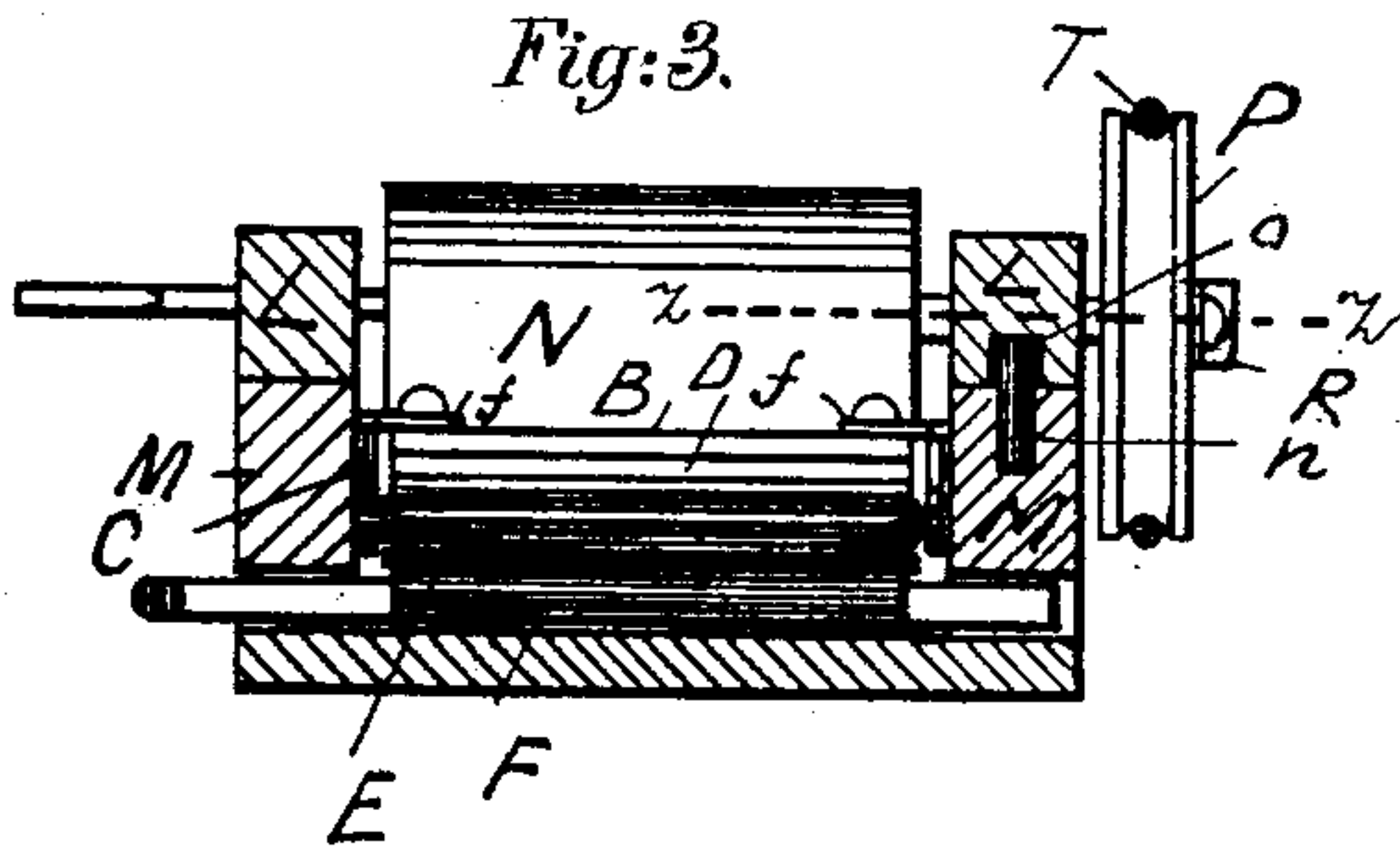
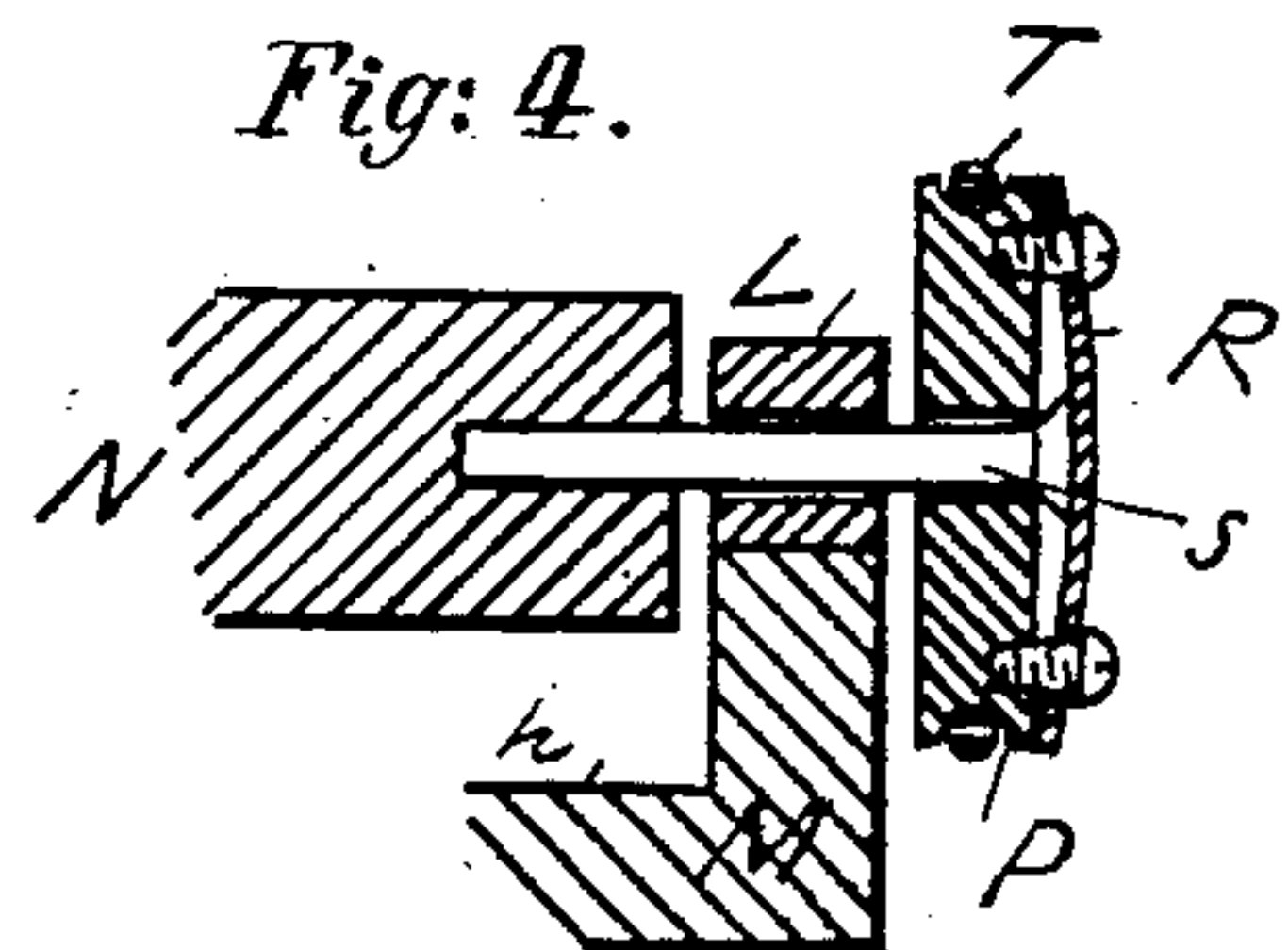


Fig:4.



Witnesses:

W. S. Bellows,
Geo. Haushalter

Inventor:

O. H. Arno.
Per Brown Bros.,
Attorneys

UNITED STATES PATENT OFFICE.

OLIVER H. ARNO, OF WILMINGTON, ASSIGNOR TO AMERICAN AUTOMATIC ORGAN COMPANY, OF BOSTON, MASSACHUSETTS.

MECHANICAL MUSICAL INSTRUMENT.

SPECIFICATION forming part of Letters Patent No. 231,978, dated September 7, 1880.

Application filed March 12, 1880. (Model.)

To all whom it may concern:

Be it known that I, OLIVER H. ARNO, of Wilmington, in the county of Middlesex and State of Massachusetts, have invented certain
5 new and useful Improvements in Mechanical Musical Instruments, of which the following is a specification.

This invention relates to that class of mechanical musical instruments adapted for the
10 automatic playing of a musical tune or composition by and from the passage of a perforated strip of paper in certain relations to the sound-producing devices.

The invention consists in the arrangement
15 of the music-sheet and carrying-rollers in a frame which is capable of being readily removed from or replaced on the top of the instrument, and, further, in a novel construction and combination of parts for confining the
20 music-sheet as it passes through the guideway and maintaining it in the proper relation to the sound-producing mechanism, all of which features will be fully hereinafter described in detail.

In the accompanying plate of drawings,
25 Figure 1 is a plan view of the race or guideway for the perforated strip of paper to a mechanical musical instrument of the class stated, and shows the present improvement as applied
30 thereto; Fig. 2, a longitudinal section on line *x x*, Fig. 1; Fig. 3, a cross-section on line *y y*, Fig. 1; Fig. 4, a horizontal section on line *z z*, Fig. 3.

In the drawings, A represents the race or
35 guide way for the perforated strip of a mechanical musical instrument of the class hereinbefore stated.

B is a block lying across the guideway A. The perforated strip passes between this block
40 and the upper surface of the guideway. This block, if the instrument is of the class now known to the trade as the "orguINETTE," is the reed-board, and if the instrument is of the character shown in the Letters Patent of the
45 United States issued to me dated March 11, 1879, No. 213,160, and other Letters Patent, and my applications now pending in the United States Patent Office, it is simply a block having suitable openings in lines with the perforations of the paper strip through which op-

erates the mechanism that is provided for automatically opening and closing the valves to the reeds of the instrument. This block B is fixed between two parallel arms, C C.

These arms extend to the front and to the
55 rear of the block, and at their rear extension, *a*, they hook over horizontal pins *b*, fixed to the sides *c c* of the guideway A.

D is a frame hung to the front extension, *d*,
60 of the arms C. This frame D carries an india-rubber roll, E, which, with another similar roll, F, in the bed of the guide or race way A for the perforated strip, lie across such way and make the feed-rolls for the perforated strip. These feed-rolls when the block B is in
65 position are one above the other.

ff are two hooks pivoted to the upper side
of block B and projecting to the front thereof. These hooks enter holes *g* in the sides *c c* of the raceway, and when so entered lie over the
70 upper edge of the front extension of the arms C C to the block B.

The holes *g* are situated at a suitable height
from the upper surface, *h*, of the guideway for the hooks when entered in them to hold the
75 block B firmly and rigidly in position between such points of entering of the hooks *ff* and the pins *b b*, over which the rear extensions of the arms C C are hooked, as hereinbefore described. This fastening of the hooks *ff* causes, through
80 the front extension of the arms C C, pressure upon spring-rods G, which at one end, *l*, enter the front side of the block B, and at the other end, *m*, are fastened to side arms of the feed-roll frame D, and between such ends lie un-
85 der a cross-rod, H, of said front extension, *d*. The feed-roll E is thus made to press with a yielding pressure upon the under feed-roll, F.

L is a frame resting upon the side rails, M,
90 of the race or guideway A, and held thereon by dowel-pins *n* and sockets *o*. This frame L carries two rolls, N O, one at the rear of the block B and the other at the front of the feed-rolls EF. These rolls turn in suitable bearings
95 of their carrying-frame, and the roll N is the music-roll—that is, the roll having the perforated sheet which is to be passed through the race or guide way and under the block B rolled upon it—and the roll O is the take-up roll, upon which the perforated sheet of the music-
100

roll N is to be wound as fast as it passes under the block B and between the feed-rolls E F, and which feed-rolls are the means by which the perforated paper sheet is drawn under the block B from the music-roll N.

The music and take-up rolls have each a groove, *p*, from end to end, which is round in cross-section, and opens to the outer periphery of the rolls by an opening of narrower width.

q is a round rod lying within the round portion of the groove *p*. This rod, with the said groove *p*, fastens the end of the perforated strip of the paper to the rolls N O, and this is done by simply laying and looping the end of the perforated sheet within the groove, and then forcing the rod therein from one end of the roll to the other. The groove *p* can be of other shapes in cross-section, if desired.

The music-roll N has a grooved pulley, P, and the take-up roll a similar grooved pulley, Q, which pulleys are connected by an endless belt, T. The paper, as it is drawn by the rolls E F under the block B from the music-roll, is by this belt-connection at the same time rewound on the take-up roll. The pulley P to music-roll N is loose upon the shaft S.

R is a spring-band which lies across the end of the shaft, and at each end fastened to the pulley. This spring-band confines the pulley to the shaft with a yielding contact.

The pulley-and-belt connection above described drives the take-up roll from the music-roll, and as the pulley of the take-up roll is smaller than the pulley of the music-roll the slack of the perforated strip is always taken up and the strip is always kept at a suitable tension from the arrangement of the larger pulley-wheel on its shaft, as it obviously can yield or slip as may be necessary.

The carrier-frame L for the music and the

take-up rolls can be readily removed from the instrument, and by an obvious construction of their bearings in the frame L the rolls can be readily attached and detached therefrom.

Again, the block and the feed-roll E, carried by the front extension of its arms C C, by simply unfastening the hooks, can be detached when desired and again replaced and fastened as before.

If the perforated strip extends between the two rolls, music and take-up, and is under the block B, the block and its connections must be removed before the frame and such rolls can be detached, as aforesaid.

The spring-band R on the music-roll can be applied to the take-up roll O instead, if desired.

Having now described my invention, what I claim, and desire to secure by Letters Patent, is—

1. In a mechanical musical instrument, the guideway A, having vertical side rails, H, in combination with a frame, L, detachably secured upon the said side rails, and provided with the rollers N and O, which carry the music-sheet, as herein shown and described, said roller-carrying frame being capable of removal and replacement at will, as set forth.

2. A block, B, having arms C C extending to front and rear of same, a frame, D, and its feed-roll E, hung to said arms, in combination with devices, substantially such as described, for fastening the said block and feed-rolls in position within the guideway A for the perforated strip, and for producing a yielding pressure upon the feed-roll E, all substantially as and for the purpose described.

OLIVER H. ARNO.

Witnesses:

EDWIN W. BROWN,
W. S. BELLOWS.