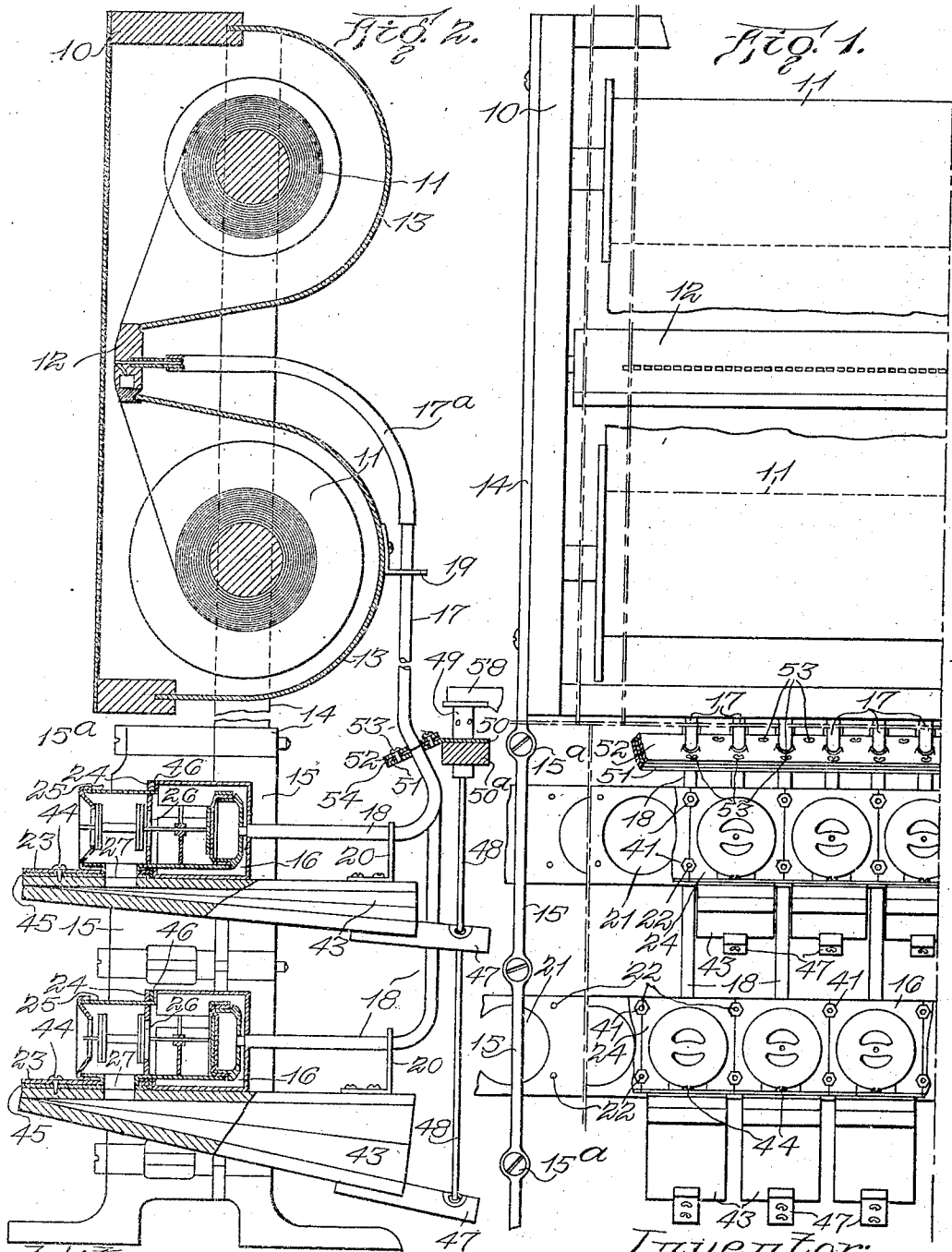


W. A. WATSON.  
 TRACKER CONNECTION FOR AUTOMATIC MUSICAL INSTRUMENTS.  
 APPLICATION FILED JUNE 29, 1914.

1,290,436.

Patented Jan. 7, 1919.



Witnesses:  
 Alexander L. Pelkey  
 Mary M. Cassidy

Inventor:  
 William A. Watson  
 by A. W. Harrison  
 Atty.

# UNITED STATES PATENT OFFICE.

WILLIAM A. WATSON, OF MALDEN, MASSACHUSETTS.

TRACKER CONNECTION FOR AUTOMATIC MUSICAL INSTRUMENTS.

1,290,436.

Specification of Letters Patent.

Patented Jan. 7, 1919.

Original application filed September 5, 1913, Serial No. 788,297. Divided and this application filed June 29, 1914. Serial No. 847,796.

*To all whom it may concern:*

Be it known that I, WILLIAM A. WATSON, of Malden, in the county of Middlesex and State of Massachusetts, have invented certain new and useful Improvements in Tracker Connections for Automatic Musical Instruments, of which the following is a specification.

This invention relates to pneumatically controlled mechanisms and especially to the connections between the tracker bar of a self-playing musical instrument and the valve devices which control the playing mechanism of the character described and illustrated in my application 788,297, filed September 5, 1913, of which this is a division.

One of the objects of the present invention is to provide means whereby the parts can be readily removed from the musical instrument, said means being accessible without first removing other parts of the tracker mechanism.

A further object is to provide improved means for supporting the tracker box and the tubes which connect the tracker bar with the valve mechanism.

With these and other objects in view my invention consists in the improvements which I shall now proceed to describe and claim.

Of the accompanying drawings:

Figure 1 is a front elevation of so much of an instrument of the character described as is necessary to an understanding of my improvements;

Fig. 2 represents a vertical section of parts shown in Fig. 1.

The same reference characters indicate the same parts in both views.

The tracker box 10 contains and provides bearings for the rolls 11 of a perforated sheet such as the note sheet employed in self-playing musical instruments. Said box supports also the tracker bar 12, the rear portion of the box being shown as composed of trough-shaped metal sections 13. The box is supported by standards 14 rising from suitable frame brackets 15 which are preferably composed of two members at each end of the box, said two members being separably connected by screws or bolts 15<sup>a</sup>, as indicated in Fig. 2.

The brackets 15 support one or more suction chambers 16, each comprising an elongated seamless metal box or shell which is

preferably square in cross-section. When there are two of such wind chests or suction chambers for the purpose of arranging the power pneumatics and other controlling mechanisms in two banks, the two chambers 16 will, of course, be connected at one or both ends, as is usual in such devices when arranged in banks, any suitable or preferred pumping bellows being employed to produce a partial vacuum in the chambers 16.

The openings in the tracker bar have short tapering metal tubes, as usual, extending rearwardly, said tubes being connected by curved tubes 17<sup>a</sup>, usually of rubber, with tubes 17, and the latter are connected to tubes 18 (preferably by a coupling hereinafter described), the lower ends of the tubes 18 leading to the suction chambers 16, as hereinafter described. The tubes 17 and 18 pass through apertures in brackets 19, 20, hereinafter described. The front of each elongated box 16 or suction chamber is formed with a series of openings 21, preferably circular, as indicated in Fig. 1, the front wall of said box 16 being provided with a plurality of threaded pins 22, which project forwardly to receive securing nuts hereinafter described.

Removably secured to the front of the box 16 are the valve carriers, a portion of each extending from an opening 21 into a suction chamber. A description of one valve carrier will suffice for all. As best shown in Fig. 2, an angular bracket 23, 24, constitutes the main frame of the valve carrier, said bracket supporting a cylindrical chamber 25, a port 26 in the bracket plate 24 communicating with the chamber 25. A short pipe or port 27 extends from the chamber 25 down through the bracket member 23.

The upright member 24 of the bracket is formed with suitable edge notches so that when a series of valve carriers are mounted as shown in Fig. 1, with the edges of the several bracket members 24 in contact, said notches will provide apertures for the threaded pins 22. The valve carriers when so placed are secured in position by nuts 41 fitting the threaded pins 22.

Each chamber 25 connects, by means of port 27, with the power pneumatic 43 which is connected to the bracket member 23 by screws 44. Suitable packing 45 is confined between the bracket member 23 and the top of power pneumatic 43, and suitable packing 46 is confined between the bracket member

24 and the front face of the suction chamber 16, said packings of course formed with openings as indicated in Fig. 2. Each power pneumatic 43 has a projection or toe 47 connected by a link 48 with a capstan 49 for the usual piano action when the mechanism is used in connection with a self-playing piano.

The upper ends of all of the tubes 18 are connected to a plate 51 having a suitably supported flange 50, the ends of the tubes 18 being secured in apertures in the plate 51 in any suitable manner, as by brazing, if desired. A plate 52 removably connected to the plate 51 by screws 53 has apertures in which the lower ends of the tubes 17 are secured, as by brazing. For this purpose, of course, the tubes 17 will be of metal, at least, those portions of the tube which are connected to the plate 52.

Other portions of the tube 17 may be flexible, as of rubber. A packing strip 54, having ports, is confined between the plate 52 and top 51 of the box, so that there will be an air-tight joint between each tube 18 and its communicating tube 17. Owing to the fact that the coupling plates 51, 52 are inclined forwardly and downwardly, the screws 53 which connect them are presented in such direction that they can be manipulated by a suitable tool inserted from the front of the mechanism when it is desired to remove parts for examination or repairs. The flange 50 is supported by the capstan rail 50<sup>a</sup>. A particular reason for the separable coupling described is to enable the capstan 49 to be vertically adjusted in the usual manner, to properly and accurately actuate the wippens 58 of the piano action. When access is to be had to the capstans, the screws 53 and 15<sup>a</sup> are removed, and then the spool box and the tubes 17, 17<sup>a</sup>, removed, all as a unit, the plate 52 and the bracket 19 holding all the tubes 17 against liability of displacement or bending, ready for restoration of the coupling after adjustment of the capstans has been effected. Usually, there are eighty-eight of the tubes 17 in one row. This structure also steadies the spindle-box in place so there can be little or no vibration, because the standards 14 form front legs for the box and the rigidly held tubes 17 supported by the capstan rail 50<sup>a</sup> provide rear legs. As the tubes 18 are also supported by the capstan rail, and the bracket 20 secured to the power pneumatics is hung upon said tubes, the rear ends of said pneumatics are firmly supported. There are usually forty-four of the tubes 18 in each of the upper and lower rows or banks.

It will now be understood that, owing to the location or position of the coupling, including the plates 51, 52, and the forward

inclination of the coupling, the screws 53 are readily accessible from the front of the mechanism without necessitating preliminary removal of other parts of the tracker mechanism.

Having described my invention, I claim:

1. In an instrument of the character described, a series of power pneumatics, valves and primary pneumatics for controlling the power pneumatics, substantially rigid tube sections connected with said primary pneumatics, and a bracket hung upon said tubes, the power pneumatics being connected to said bracket.

2. In an instrument of the character described, the combination with two sets of metal tubes, of two metal plates, each plate having apertures, the ends of the tubes of one set being permanently secured in the apertures of one plate and the ends of the tubes of the other set being permanently secured in the apertures of the other plate, whereby the tube ends of each set will be held assembled in proper relationship, and separable means for connecting the two plates together with the tubes of the two sets in alinement.

3. In an instrument of the character described, the combination with two sets of tubes in alinement, of a coupling for said sets comprising separable inclined plates having the ends of the two sets of tubes secured thereto, and screws for separably connecting said plates, said screws being accessible for removal.

4. In an instrument of the character described, the combination with two sets of tubes in alinement, of a coupling for said sets comprising inclined plates having the ends of the two sets of tubes secured thereto, and means for separably connecting said plates, said plates being in position to be accessible without first removing other parts of the tracker mechanism.

5. An instrument of the character described, comprising a tracker box, power pneumatics and valve controlling mechanisms therefor below said tracker box and spaced therefrom, two sets of tubes in alinement for connecting the tracker bar with said valve mechanisms, and a coupling for said sets, said coupling comprising forwardly inclined plates having the tubes connected thereto, and means for separably connecting said plates, said coupling being located behind the space between the tracker box and the valve mechanisms.

In testimony whereof I have affixed my signature, in presence of two witnesses.

WILLIAM A. WATSON.

Witnesses:

A. W. HARRISON,  
A. F. RANDALL.