No. 794,434. PATENTED JULY 11, 1905.

L. P. VALIQUET.

UNIVERSAL JOINT MECHANISM.

APPLICATION FILED OCT. 1, 1903.

Fig. 1.

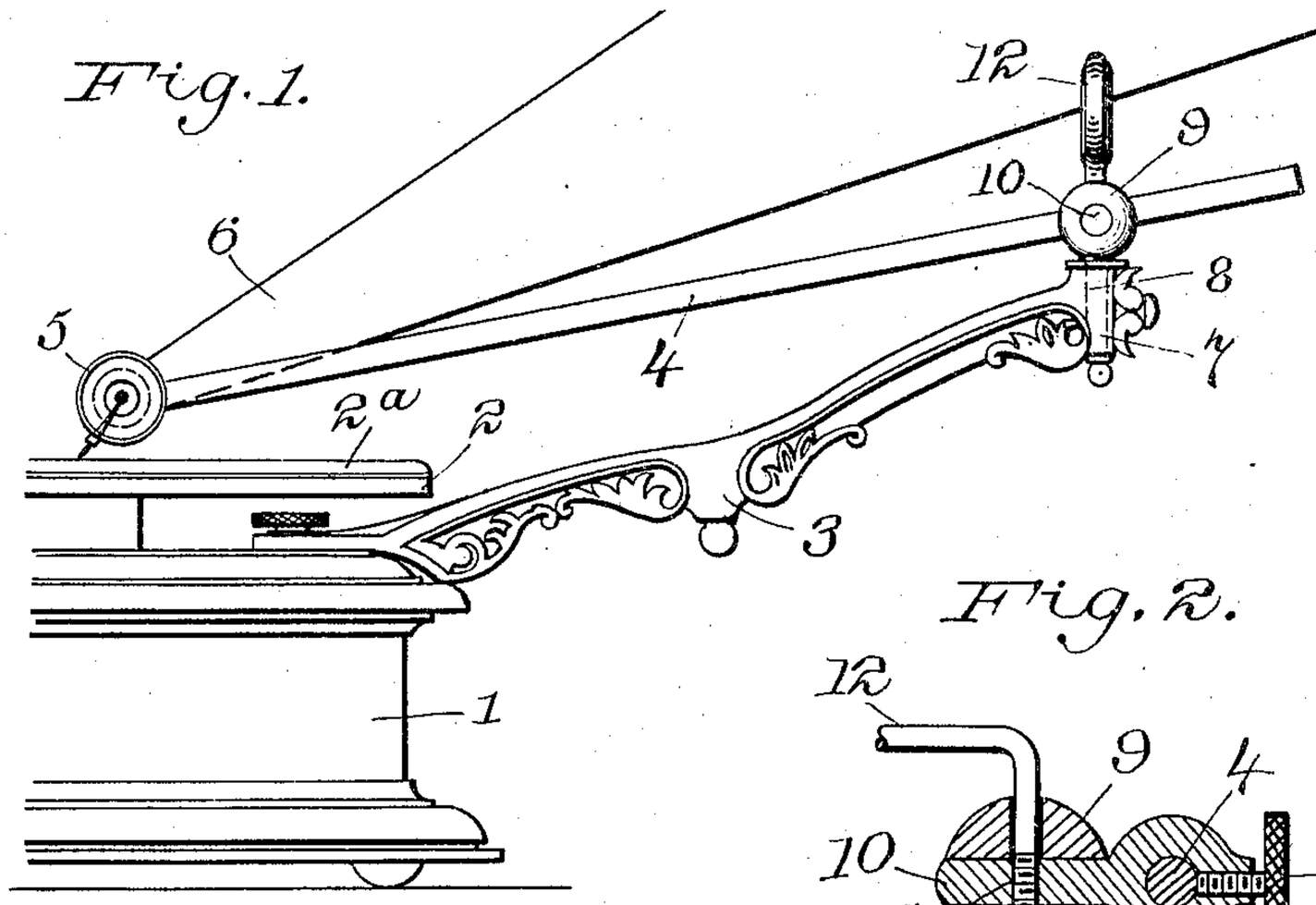


Fig. 2.

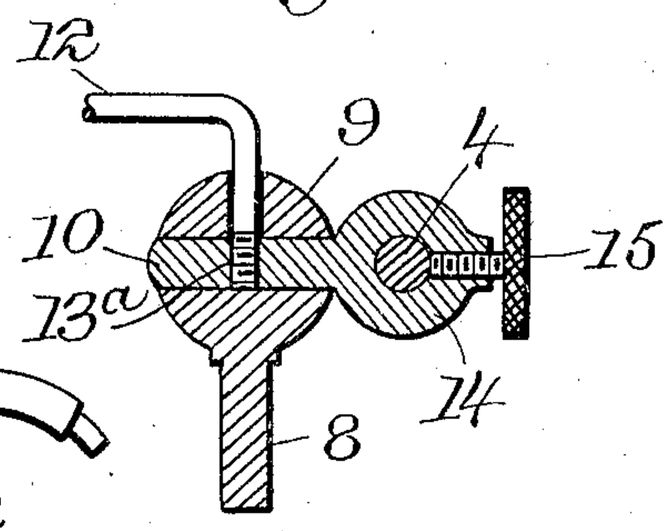


Fig. 3.

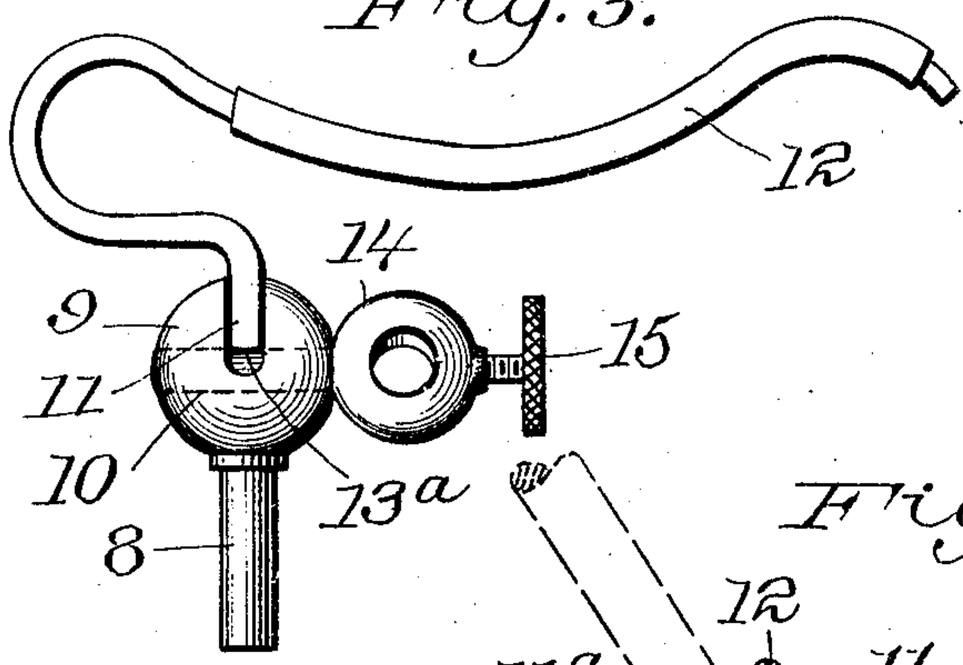
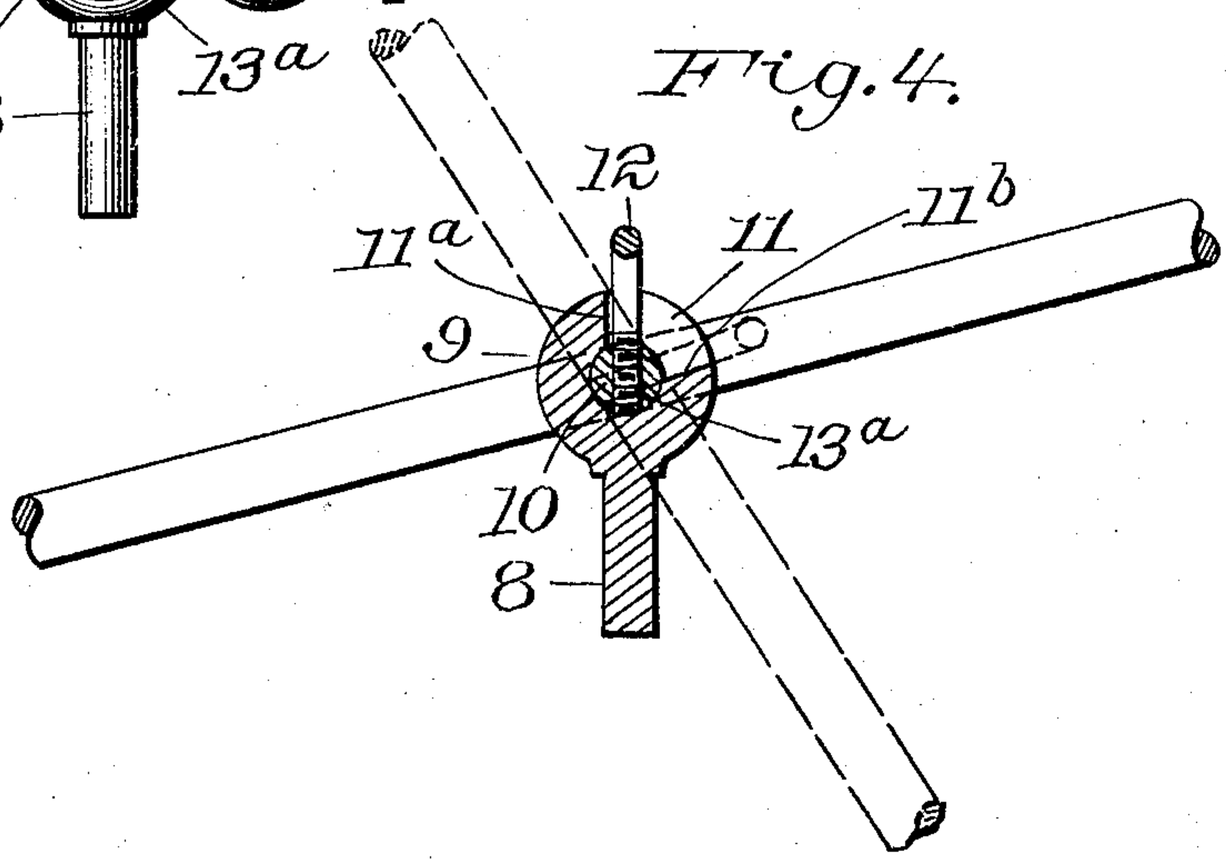


Fig. 4.



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No. 794,434. Patented July 11, 1905.

UNITED STATES PATENT OFFICE.

LOUIS P. VALIQUET, OF NEW YORK, N. Y., ASSIGNOR TO VICTOR TALKING MACHINE COMPANY, A CORPORATION OF NEW JERSEY.

UNIVERSAL-JOINT MECHANISM.

SPECIFICATION forming part of Letters Patent No. 794,434, dated July 11, 1905.

Application filed October 1, 1903. Serial No. 175,299.

To all whom it may concern:

Be it known that I, LOUIS P. VALIQUET, a citizen of the United States of America, and a resident of the borough of Bronx, city, county, and State of New York, have invented certain new and useful Improvements in Universal-Joint Mechanism, of which the following is a specification.

My invention relates generally to universal-joint mechanisms designed to permit only a limited extent of motion in certain directions, and more specifically consists of such a mechanism particularly adapted for the purpose of supporting the sound-box and horn of a talking-machine. In such talking-machines, particularly those of the disk-record type, it is desirable to have the reproducer free to swing in a horizontal direction and also within limits in a vertical direction. The downward motion of the sound-box should, however, be checked at a point slightly below the level of the record-table, so that the reproducer will be supported when clear of the table, and when the sound-box and horn are tipped up their motion should be checked soon after their center of gravity passes to the other side of the supporting-pivot, so that they may rest in that tipped-up position. My invention secures these results by means of a compact self-contained cheap construction, the parts interlocking and dispensing with ordinary fastening devices.

The preferred form of my invention is illustrated in the accompanying drawings, in which--

Figure 1 is a side elevation of a talking-machine with my invention applied thereto, parts being broken away. Fig. 2 is a section in detail. Fig. 3 is a detail view at right angles to plane of Fig. 1, and Fig. 4 is a detail showing the limits of vertical motion in the universal joint.

Throughout the drawings like reference-figures indicate like parts.

1 is the motor-casing of a talking-machine, 2 the rotating table supported thereon carrying a sound-record 2^a, and 3 the ordinary arm for supporting the universal-joint mechanism which guides and supports the sound-box 5 and the horn 6.

In the outer end of the arm 3 is the usual vertical journal-bearing 7, in which is journaled a vertical pivot-pin 8, having an enlarged head 9. A cylindrical opening is bored or otherwise formed in the head 9, the axis of said opening being at right angles to the axis of the pivot-pin or approximately at right angles thereto. The head 9 also has a V-shaped opening 11 formed therein, the point of the V entering the before-described cylindrical opening and the plane of the V being at right angles to the axis of said cylindrical opening, as indicated in Figs. 3 and 4. A short shaft 10 is journaled in the cylindrical opening above described, and this shaft is provided with an exterior enlargement 14, bored at right angles to the axis of the shaft to receive the swinging arm 4, on the end of which is mounted the sound-box 5. This swinging arm 4 is held in any position of adjustment by means of the set-screw 15 or other convenient means.

The horn-supporting rod 12, formed in any convenient shape to engage with the horn 6, has its end of a proper size and shape to pass through the V-shaped opening 11 and threaded to engage with a threaded opening 13^a in the shaft 10, which threaded opening registers with the V-shaped opening 11 when the parts are in their proper position, as shown in Fig. 2.

With the parts proportioned as shown in Fig. 1 one of the edges or walls of the V-shaped opening, as 11^a, is substantially vertical and the other, 11^b, is inclined at the proper angle to the plane of the horizon when the talking-machine is standing upon a horizontal surface.

The operation of the foregoing apparatus is as follows: The parts being assembled, as shown in full lines in the various figures, the sound-box 5 is free to swing on the vertical pivot 8 in a horizontal direction and also free to swing in a vertical direction a sufficient dis-

tance to more than compensate for any inequalities in the record-disk 2^a. When the sound-box is moved to one side of the record-table 2 and allowed to fall, its downward movement is soon checked by the horn-support 12 coming in contact with the wall 11^a of the V-shaped opening 11 in the head 9 of the pin 8. On the other hand, when the sound-box 5, with the horn 6, is lifted up, so that the swinging arm 4 reaches the position shown in dotted lines in Fig. 4, the horn-support 12 will strike the other wall 11^b of the V-shaped opening 11. By that time the center of gravity of the sound-box and horn having passed slightly to the right of the axis of the shaft 10 (looking at the parts as shown in Fig. 4) the weight of the sound-box and horn will hold the same in the elevated or tipped-up position. In taking the apparatus apart it is only necessary to unscrew the horn-support 12 and withdraw it from the V-shaped opening, loosen the thumb-screw 15, and every part can be separated from every other part. In reassembling the parts the insertion of the horn-support 12 into the threaded opening 13^a and tightening of the thumb-screw 15 locks the parts in combination.

Among the advantages of my invention are the solidity and compactness of the construction, the fewness of parts, and the cheapness, resulting from the fact that the various elements may be readily cast, turned, and bored by machinery, with very little costly finishing being required.

While I have illustrated my invention as applied to talking-machines, it is evident that the universal-joint might be employed for other purposes, and it is also evident that various changes could be made in the proportions of the parts and their configuration without departing from the spirit and scope of my invention so long as the relative arrangement described herein is substantially preserved.

Having therefore described my invention, what I claim as new, and desire to protect by Letters Patent, is—

1. In a limited universal-joint mechanism, the combination with a pivoted member having a cylindrical opening extending therethrough transversely to its pivoted axis, of a shaft journaled in said opening, a radial projection also carried by said shaft and means carried by said pivoted member adapted to limit the movement of said projection.

2. In a limited universal-joint mechanism, the combination with a pivoted member having a cylindrical opening extending transversely to its pivoted axis, of a shaft journaled in said opening, a socket carried by the end of said shaft, a radial projection also carried by said shaft and stops on said member adapted to limit the movement of said projection.

3. In a limited universal-joint mechanism, the combination with a pivoted member having a cylindrical opening extending transversely to its axis, of a shaft journaled in said opening, a socket carried by the end of said shaft, a radial pin also carried by said shaft, there being an arcuate slot in said member adapted to limit the movement of said pin and a connection carried by said socket which together with said pin is adapted to form an operative connection with the device upon which said universal joint is used.

4. In a limited universal-joint mechanism, the combination of a journal-bearing, a pivot-pin journaled therein having an enlarged head with a cylindrical opening through said head at right angles to the pivot-pin, and a V-shaped opening in said head in a plane at right angles to the cylindrical opening, the point of the V entering the cylindrical opening, a shaft journaled in said cylindrical opening, and a pin passing through said V-shaped opening and into the shaft.

5. In a limited universal-joint mechanism, the combination of a journal-bearing, a pivot-pin journaled therein having an enlarged head with a cylindrical opening through said head at right angles to the pivot-pin, and a V-shaped opening in said head in a plane at right angles to the cylindrical opening, the point of the V entering the cylindrical opening, a shaft journaled in said cylindrical opening, and a pin passing through said V-shaped opening and into the shaft, said shaft being provided with an exterior enlargement bored with a cylindrical opening at approximately a right angle to the axis of the shaft.

6. In a limited universal-joint mechanism, the combination of a journal-bearing, a pivot-pin journaled therein having an enlarged head with a cylindrical opening through said head at right angles to the pivot-pin, and a V-shaped opening in said head in a plane at right angles to the cylindrical opening, the point of the V entering the cylindrical opening, a shaft journaled in said cylindrical opening, and a pin passing through said V-shaped opening and into the shaft, said shaft being provided with an exterior enlargement bored with a cylindrical opening at approximately a right angle to the axis of the shaft and a set-screw mounted in said enlargement of the shaft.

7. In a mechanism for supporting the sound-box and horn of a talking-machine, the combination of an arm having a vertical journal-bearing, a pin having an enlargement at its upper end journaled therein, provided with a cylindrical opening on a horizontal axis and a V-shaped opening in the upper part in a plane at right angles to the cylindrical opening extending inward to the same, the walls of one end of said V-shaped opening being vertical,

a shaft journaled in said horizontal opening having an exterior enlargement bored through to receive a swinging arm, and a set-screw for holding said arm in place, a threaded opening in the horizontal shaft registering with the V-shaped opening in the head of the vertical pivot, and a horn-support provided with a threaded end adapted to extend through the V-shaped opening in the head and screw into the threaded opening in the shaft.

Signed at New York, N. Y., this 21st day of September, 1903.

LOUIS P. VALIQUET.

Witnesses:
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