

M. LEY.
PUMP FOR WINE AND SIMILAR LIQUIDS.
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Fig. 1.

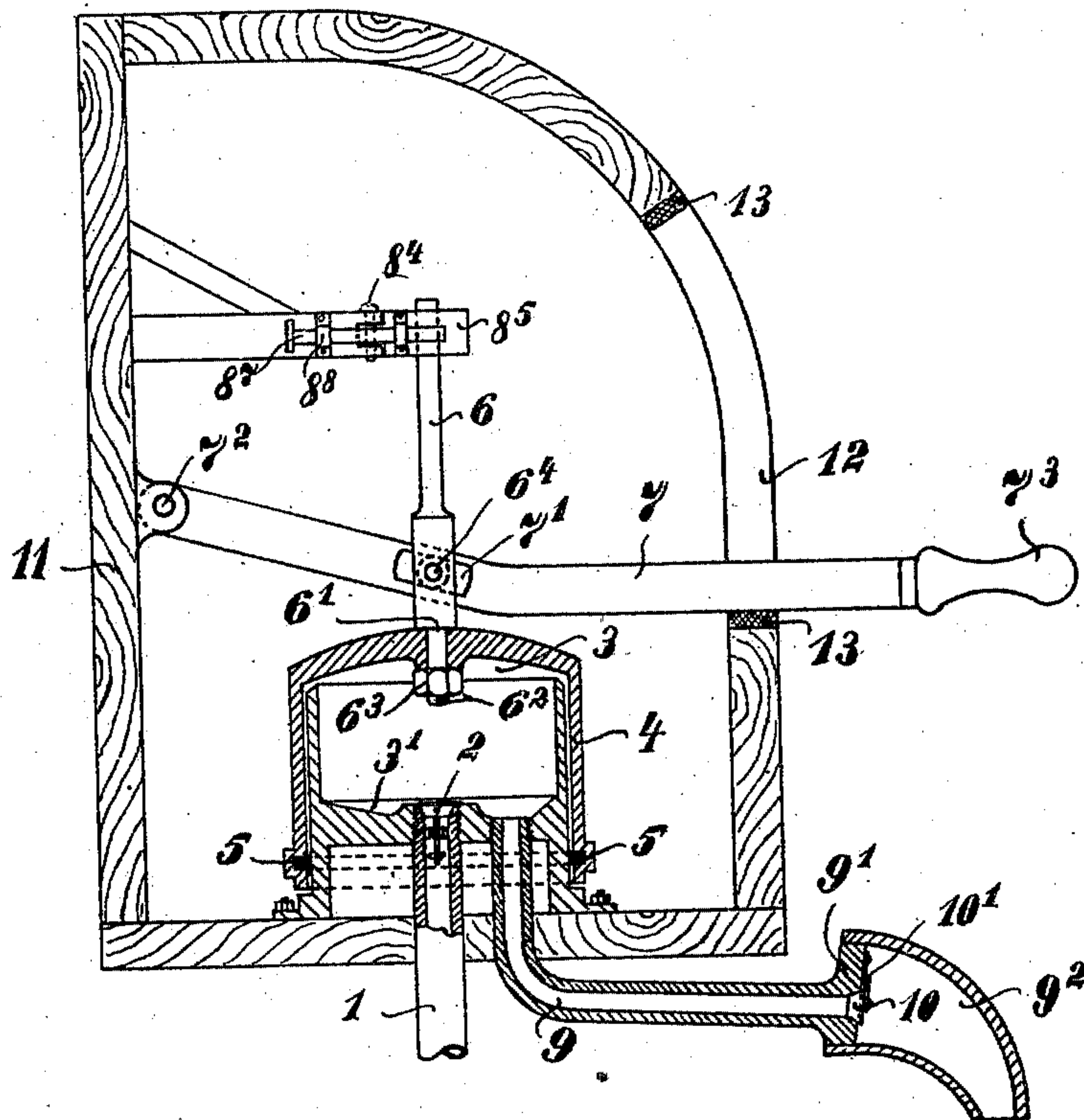


Fig. 2.

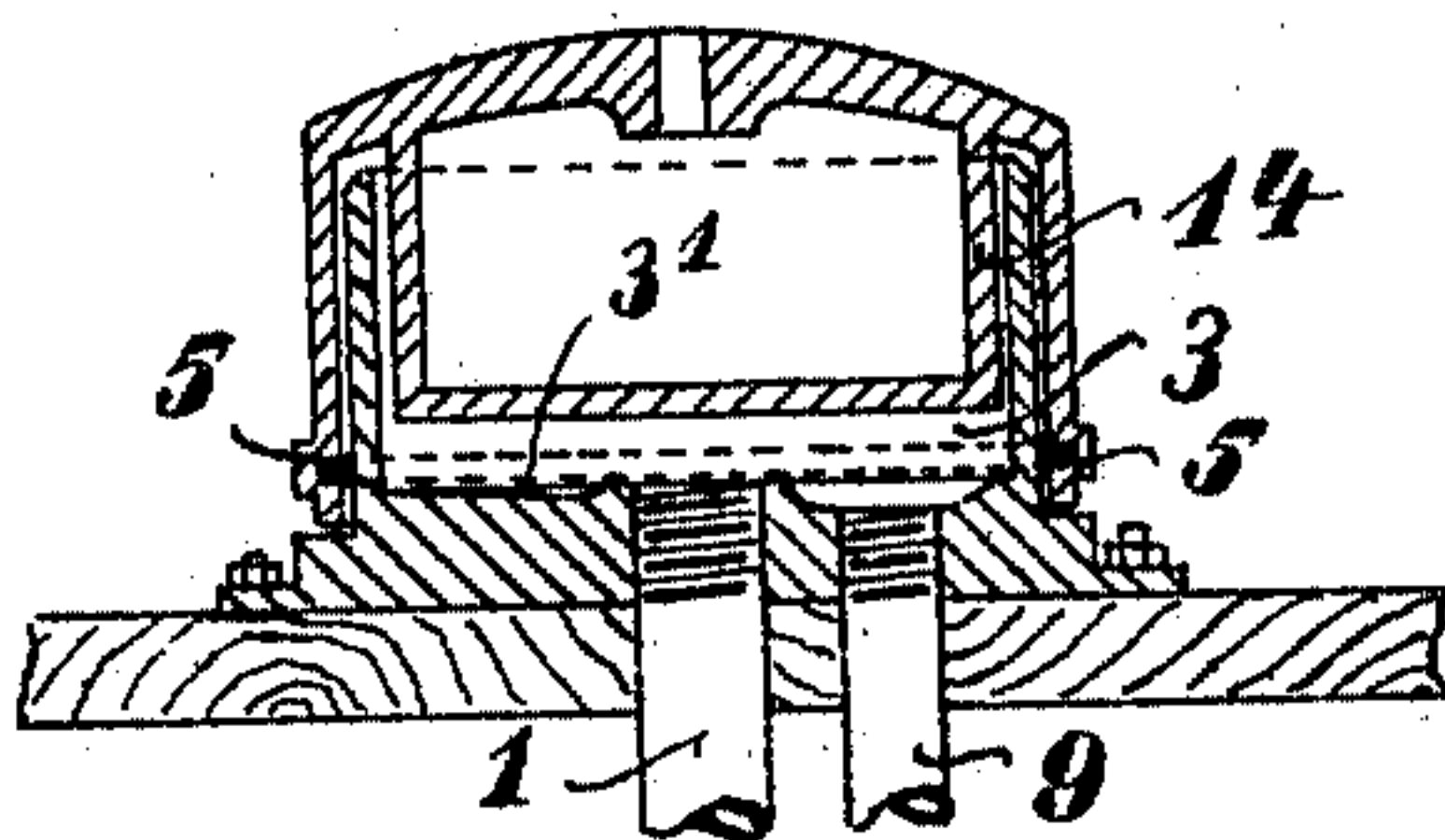
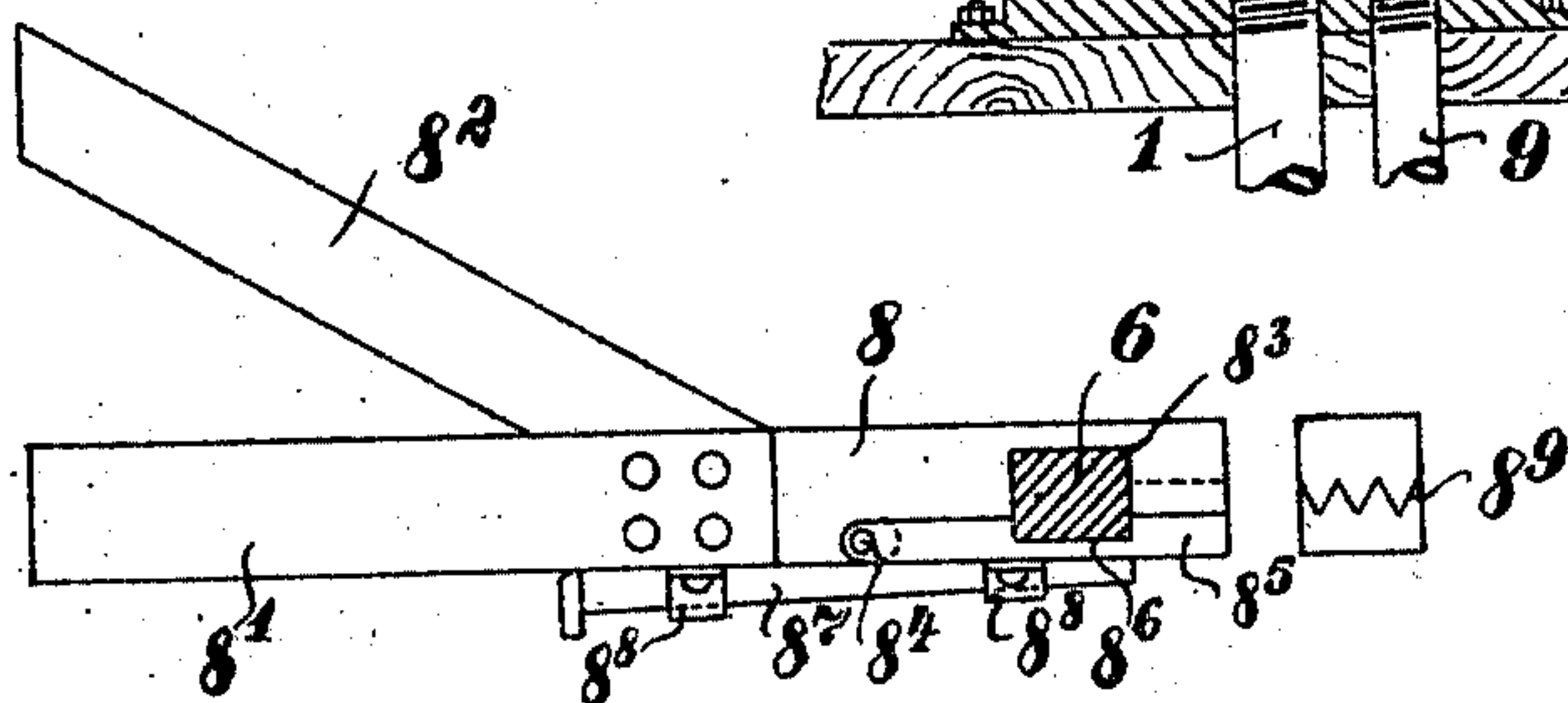


Fig. 3.



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UNITED STATES PATENT OFFICE.

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PUMP FOR WINE AND SIMILAR LIQUIDS.

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Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, MATTHIAS LEY, a subject of the Grand Duke of Luxemburg, and a resident of Grevenmacher-on-the-Moselle, in the Grand Duchy of Luxemburg, have invented certain new and useful Improvements in Pumps for Wine and Similar Liquids, of which the following is a full, clear, and exact specification.

My invention relates to pumps and more especially to pumps for wine and similar liquids. Such liquids require pumps of particular construction, because in other pumps, as are usual for water, the wine or the like would be damaged.

The object of the invention is to provide a pump which is adapted to be applied for pumping wine. In order to obtain such a pump I provide a pump in which the wine is prevented from coming in contact with the movable parts of the pump, and thus it is not churned by the piston. Furthermore I arrange my pump so, that the wine does not flow over the tightening surfaces, these surfaces generally being covered with dust of metal or rubber or leather or the like, which of course must be prevented from becoming mixed with the wine.

A further essential feature of my invention is, that after each stroke of the piston all the liquid is expelled from the pump, so that none remains which would oxidate or ferment and afterward damage the fresh wine entering the pump.

With these and other objects in view I construct my pump so, that the suction chamber is not full of liquid as customary in other pumps but contains air. This construction secures the principles of the invention as set forth hereinbefore. The liquid cannot touch the piston and the other movable parts, because the air included in the suction chamber rests between the liquid and the piston.

Reference is made to the drawings in which like parts are designated with like numbers of reference and in which—

Figure 1 is a vertical sectional elevation of the pump constructed according to the principles of the invention, Fig. 2 is a like sectional elevation of a modified form of the pump, Fig. 3 is a plan view of a detail.

Referring to the drawings 1 designates the inlet pipe through which the wine is sucked into the suction chamber 3. The

chamber 3 is separated from the inlet pipe 1 by means of an automatic suction valve 2. The dimension of the suction chamber 3 is determined by the quantity of liquid, which is to be sucked in during each stroke. The piston is not of the usual form but is constructed as a cap having hollow cylindrical form open at the lower end and fitted over the suction chamber 3. The cap 4 has at its lower end an annular recess 5 in which is inserted packing material. Thus, the cap 4 slides over the outer surface of the cylindrical suction chamber 3 and the wine being within the chamber does not come in contact with the tightening surfaces. The bottom of the suction chamber is inclined toward a point and opens at its lowermost portion into the outlet pipe 9 which has on its end a flange part 9¹. A cap 9² is fitted to the end of the pipe 9. The latter is closed by means of the valve 10 which is fastened to the flange part 9¹ by means of the flat spring 10¹. The pressure by which the valve 10 is closed is so small as to let out very little quantities of liquid without a pressure being exerted on the same.

The cap 4 is moved by means of the rod 6 and the lever 7. The rod 6 has a shoulder 6¹ which bears against the top of the cap 4, a threaded part 6² of the rod passes through the top of the cap and is secured by a nut 6³. To the rod 6 is secured the bolt 6⁴ which slides in a slot 7¹ of the lever 7, the latter being pivoted on a bolt 7² fastened to the casing 11, within which the whole of the pump is mounted, and having on its outer end a handle 7³. The casing 11 at its front-side has a slot 12 in which the lever 7 may slide. At the bottom and at the top of the slot rubber buffers 13 are provided. On its upper end the rod 6 slides in a guide. This guide may have any suitable form, but I prefer to make it as shown in Figs. 1 and 3, in order to make it dismountable. A bar 8 is fastened to the casing 11 and secured by two stays 8¹ and 8². The bar 8 has a rectangular recess 8³ and to the bar is pivoted by means of a pin 8⁴ a clamping part 8⁵, the latter having a rectangular recess 8⁶, which, when the clamping part is closed, corresponds with the recess 8³ of the bar 8 and the rod 6 is guided in the said recess. The clamping part 8⁵ is pressed against the bar 8 by means of the cone 8⁷ which slides in the eyes 8⁸, one of which is fastened to the bar

8 and the other to the clamping part 8⁵. In order to close surely the clamping device the surfaces 8⁹ of the bar 8 and the clamping part 8⁵ which come in contact with each other may be toothed.

The operation is as follows: The cap 4 is elevated by means of the lever 7, so that the air in the suction chamber 3 expands and the liquid is pressed through the suction valve 2 into the chamber 3 by the outer atmospheric pressure. The lower the pressure of the air expanded in the chamber 3, the higher the liquid may be sucked. In order to obtain a higher degree of vacuum in the chamber 3, the bottom 3¹ of the same may be arranged higher than the lower end of the cap 4, that is to say, the volume of the cap 4 may be greater than that of the chamber 3, so that, when the cap is elevated into its highest position and the chamber 3 full of liquid, the remaining space for the air is greater than that, which is given to the air, when the cap is in its lowest position. The cap being pressed downward, the suction valve will be closed and the liquid will flow out through the pipe 9 and the valve 10. As said hereinbefore the pressure with which the valve 10 is closed is so small, that no pressure is necessary to press the wine through the valve 10. It appears that the wine cannot come in contact either with the cap 4 or with the packing material 5, and that it is not churned during the downward movement of the cap. In order to obtain a higher degree of vacuum in the chamber 3, the cap 4 may be provided with a cylindrical projection 14, so that a very little air space remains when the cap 4 is in its low position and a very high degree of vacuum is obtained, when the cap 4 is elevated to its highest position, without it being necessary to arrange the bottom of the chamber 3 higher, than the lower end of the cap 4—see Fig. 2—but it is essential to the invention that an air space remains between the projection 14 and the bottom of the chamber 3, as otherwise the wine would not be prevented from coming in contact with the projection 14.

I do not limit myself to the details as shown in the figures, but

What I claim is:

1. In a pump for wine and similar liquids, a cup-shaped suction-chamber formed with a bottom and an annular wall extending vertically from said bottom, said bottom having a liquid inlet port and a liquid outlet port, and also having its upper face formed with an annular depression intersecting said outlet port, said depression having a configuration to direct liquid within the chamber toward and into said outlet port, said inlet port being located substantially central of the bottom and having its upper end above the plane of the bottom of the depression, a valve for said inlet port, said valve having its upper face in the plane of the upper end of the inlet port when the latter is closed by the valve, and a cap formed with a skirt loosely surrounding said annular wall, said skirt having a packing movable over and in contact with the outer face of said annular wall, said cap also having a displacing member normally projecting inwardly within said chamber and spaced from the walls thereof, the vertical wall of said member and the skirt being on opposite sides of the annular wall of said chamber, said cap and its member being movable axially.

2. In a pump for wine and similar liquids, the combination of a suction chamber (3) having means for the inlet and outlet of the liquid, and a cap (4) sliding on the outer surface of the suction chamber and a guide rod (6) secured to this cap and a handle-lever (7) for moving said rod up and down with an upper guidance for said rod, consisting of a bar (8) fastened to the pump casing and a clamping part (8⁵) pivoted to said bar, the bar (8) and the part (8⁵) being both provided with a toothed end surface engaging with each other and being secured in the closing position by means of a bolt (8⁷).

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Witnesses:

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