

H. D. LAUSON.
MIXING VALVE.

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903,206.

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Fig. 1.

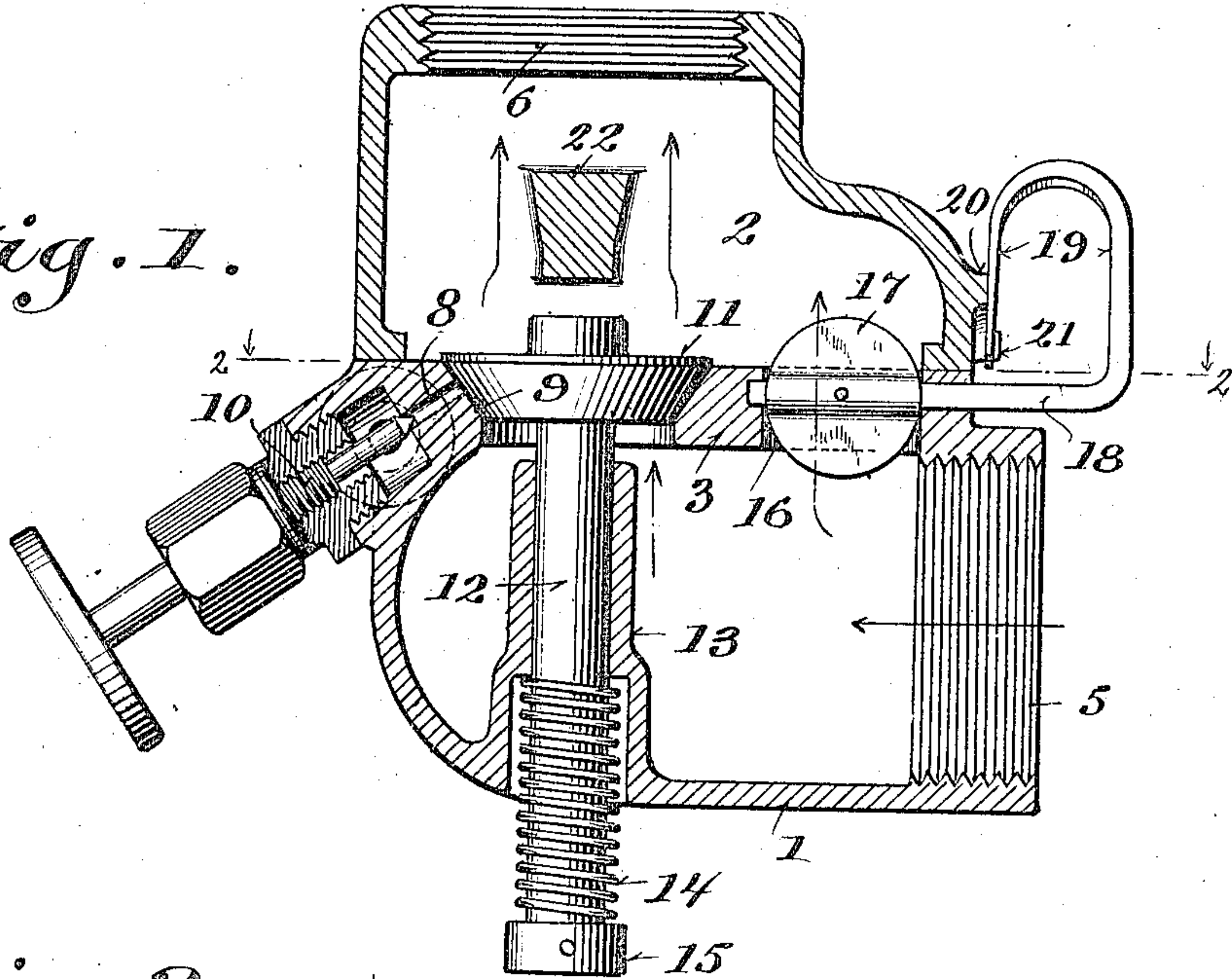


Fig. 2.

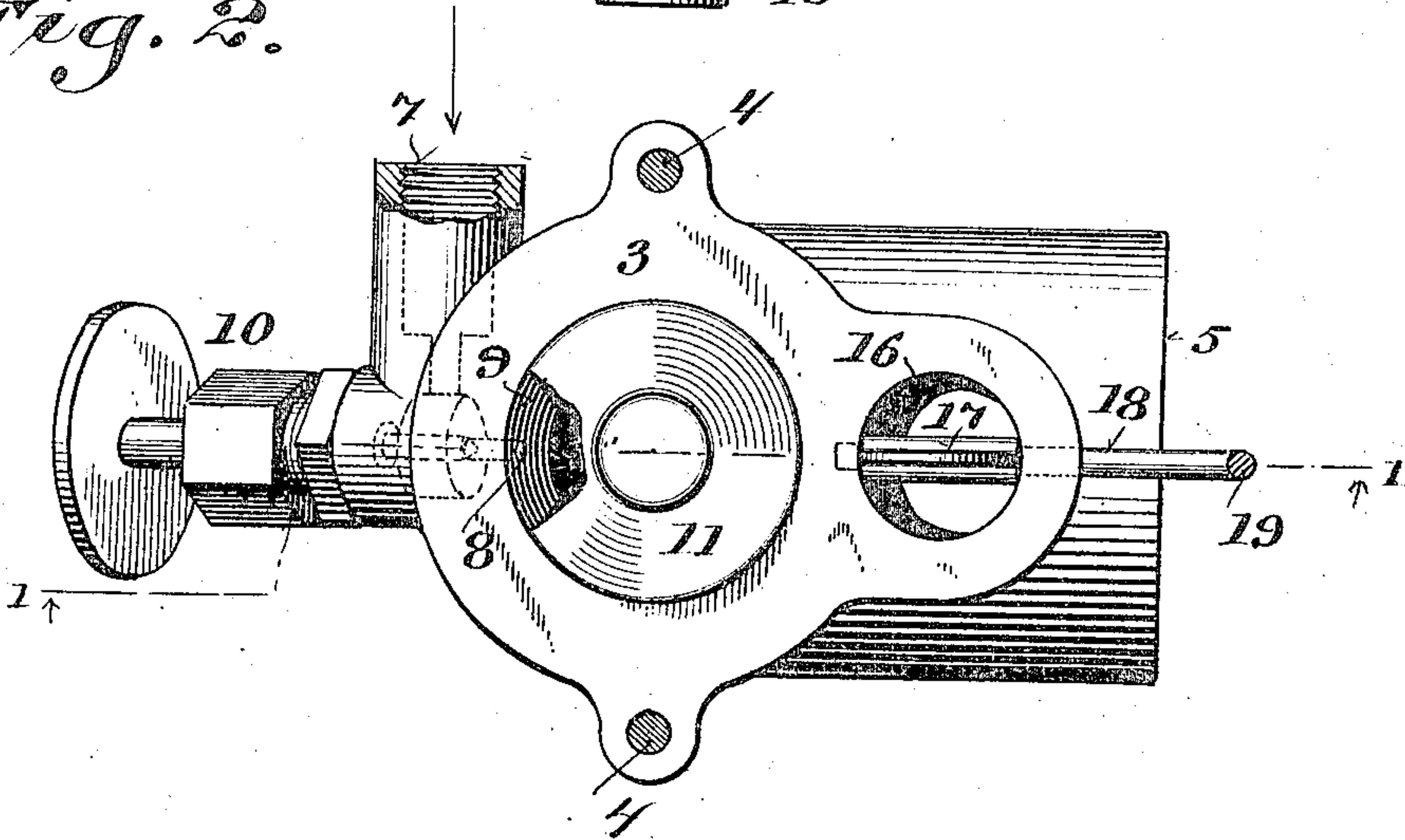
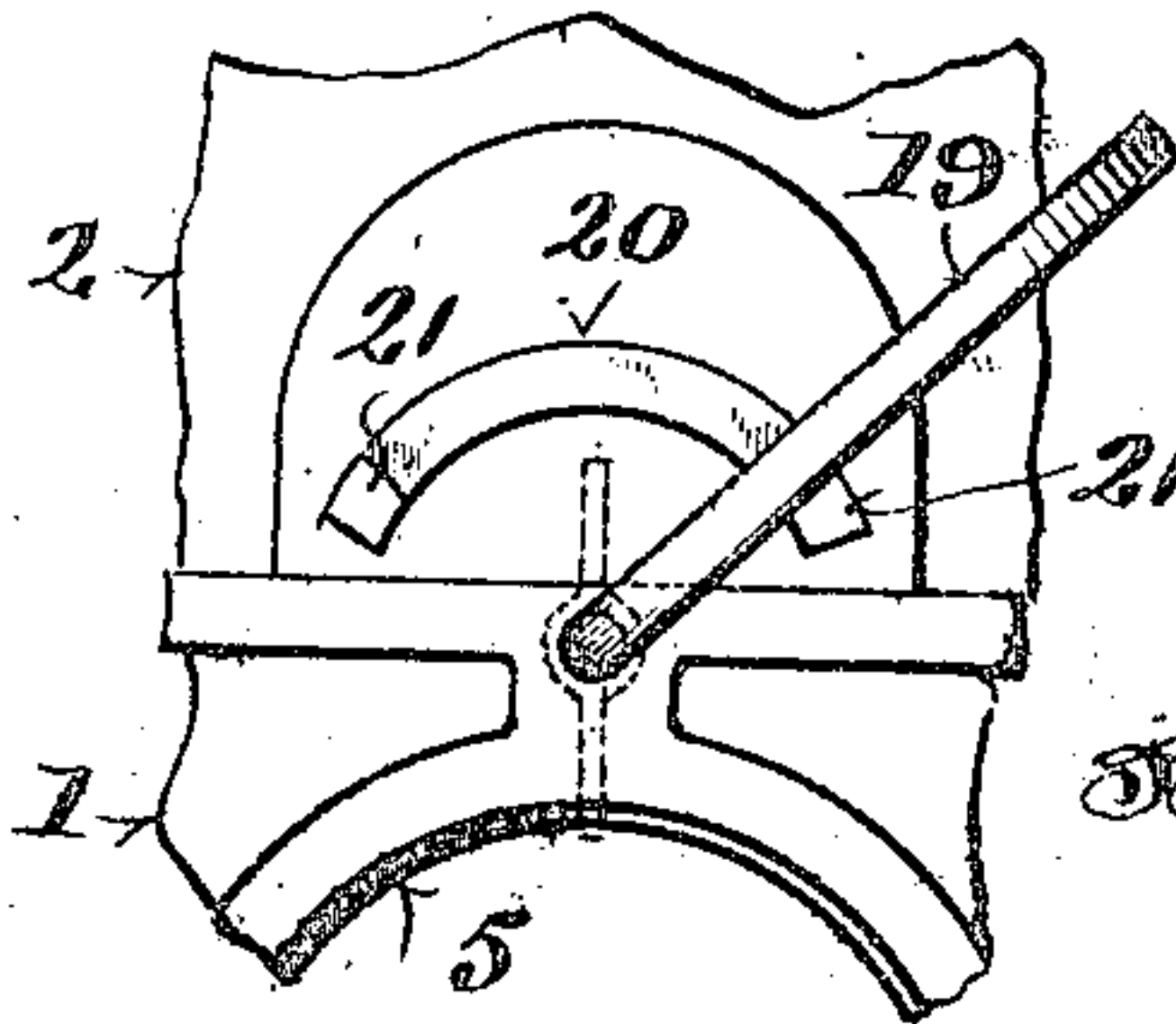


Fig. 3.



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UNITED STATES PATENT OFFICE.

HENRY D. LAUSON, OF NEW HOLSTEIN, WISCONSIN, ASSIGNOR TO THE JOHN LAUSON MANUFACTURING COMPANY, OF NEW HOLSTEIN, WISCONSIN.

MIXING-VALVE.

No. 903,206.

Specification of Letters Patent.

Patented Nov. 10, 1908.

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To all whom it may concern:

Be it known that I, HENRY D. LAUSON, a citizen of the United States, and resident of New Holstein, in the county of Calumet and State of Wisconsin, have invented certain new and useful Improvements in Mixing-Valves; and I do hereby declare that the following is a full, clear, and exact description thereof.

My invention has for its object to provide a simple and effective oil and air mixing valve for internal combustion engines, the construction and arrangement being such that a percentage of air required is unobstructedly admitted to an upper mixing chamber independent of the remainder, which remainder together with oil is by suction drawn through a port controlled by the usual check-valve. Thus at all times the device insures a constant volume of gas, which volume is sufficient for the charge required to fill the engine-cylinder, and thereby prevents a partial vacuum therein due to premature closing of the aforesaid check-valve.

The invention therefore consists in various peculiarities of construction and combination of parts as hereinafter set forth with reference to the accompanying drawings and subsequently claimed.

In the drawings: Figure 1 represents a sectional elevation of a valve embodying the features of my invention, the section being indicated by line 1—1 of Fig. 2; Fig. 2, a plan sectional view of the same with parts broken, the section being indicated by line 2—2 of Fig. 1, and Fig. 3, a fragmentary detail illustrating the controlling handle and sector therefor of a by-pass valve embodied in the device.

Referring by numerals to the drawings, 1 indicates a casing, which comprises a lower air-chamber. This is separated from a casing 2, comprising a mixing chamber, by a division-wall 3, which wall constitutes a portion of the casing 1. The casing 2 is secured to said casing 1 by bolts 4, and together these casings constitute a single housing for the mixing valve mechanism, which in some instances may be cast in one piece.

The lower casing 1 is provided with a screw-threaded nozzle 5 for the reception of an air-supply pipe, not shown. The upper casing 2 is similarly provided with a nozzle 6 into which is fitted a pipe (not shown) that

is connected to the gas-chamber of the engine cylinder head, which chamber has the usual receiving valve therein.

The oil-supply is admitted to the housing through a nipple 7, which is threaded to receive a supply-pipe, there being a duct 8 at a right-angle to the nipple, opening into the bevel face of a valve port 9. This duct is controlled by a pin-valve 10 whereby the oil-supply may be regulated to suit the existing conditions. A bevel-face check-valve 11 is fitted into the port 9 having a stem 12, which stem is guided in a sleeve 13 projecting from the lower wall of the casing 1. The stem is shouldered and counterbored at its lower end for the reception of a coil-spring 14 which surrounds the valve-stem and is interposed between the shoulder of the sleeve and a collar 15 fast on the end of the valve-stem.

A by-pass aperture 16 in the division-wall 3 is fitted with a butter-fly valve 17, the stem 18 of which valve has its bearings in said division-wall and projects outside the housing. The stem terminates in a looped handle 19, its free end constituting a spring which is adapted to exert pressure against the face of a sector 20 whereby the valve is held in adjusted position, the sector being integral with the casing 2 and is formed with stops 21 for the spring-end of the handle. The casing 2 is provided with an integral bridge-piece 22 disposed directly in the path of the check-valve 11 and above the same, the bridge-piece serving as a stop to limit the lift of said valve when the same is acted upon by the suction caused through the forward stroke of the engine-piston.

In order to insure a proper mixture of air and gas when the engine is started by hand, the butter-fly valve is closed during the initial stroke of the piston, the suction caused thereby lifts the check-valve 11 from its seat and all the air is drawn through the port 9 together with a charge of oil into the upper mixing-chamber. After the engine is started the butter-fly valve is opened sufficiently to insure a constant full-charge. Owing to the by-pass 16 being restricted, when a suction-stroke of the piston takes place, the first air drawn into the upper mixing chamber will pass through said by-pass, but owing to the latter's limited area, the vacuum will cause a lift of the check-valve to supply a sufficient quantity of air. The lift of said check-

valve also opens the oil-duct 8 and is oil drawn into the mixing chamber together with the air causing a mixture therein which is delivered into the combustion chamber of the cylinder, and as the piston continues on its forward stroke a constant air-supply is added through the by-pass 16, though the suction is insufficient to hold the check-valve open, a condition which exists wherein the by-pass is not employed. Thus a perfect mixture of the charge is insured by adding air thereto through the by-pass 16, which air serves to prevent an over-rich charge of gas, a condition that would attain if the check-valve should be held open during the entire stroke of the engine, in which case oil also would then be continually added to the air.

By the above arrangement it will be understood that a vacuum, due to closing of the check-valve, at the end of the suction-stroke is avoided and a full charge is sustained and admitted to the cylinder with no back-pressure. Another advantage of the described mixing-valve is, that by employing a housing with upper and lower chambers, the check-valve when closed will prevent a spatter of oil in the mixing-chamber and a consequent over-rich charge on the next operation. The desired result is obtained by reason of the lower chamber, which when the check-valve closes will receive any spatter of oil, the upper or mixing-chamber being at all times clear of such accumulations.

I claim:

1. A mixing-valve comprising a housing having a division-wall, a port in the division-wall, an oil-duct in connection with the port, a check-valve closure for said port and oil-duct, a by-pass aperture in the division-wall, an air-inlet in the housing below the division-wall and an air outlet in said housing above said division-wall.

2. A mixing-valve comprising a housing having a division-wall, a port in the division-wall, an oil-duct in connection with the port, a check-valve closure for said port and oil-duct, a by-pass aperture in the division-wall, means for regulating the area of the by-pass aperture, an air inlet in the housing below the division-wall and an air-outlet in said housing above said division-wall.

3. A mixing-valve comprising a housing having a division-wall therein, whereby an upper mixing-chamber and a lower air-chamber are formed, valve-controlled air and oil-inlets in the division-wall, and an air by-pass aperture in said division-wall of less area than the valve-controlled air-inlet.

In testimony that I claim the foregoing I have hereunto set my hand at New Holstein, in the county of Calumet and State of Wisconsin in the presence of two witnesses.

HENRY D. LAUSON.

Witnesses:

CHAS. L. KEEFE,
ED. FUNKE.