

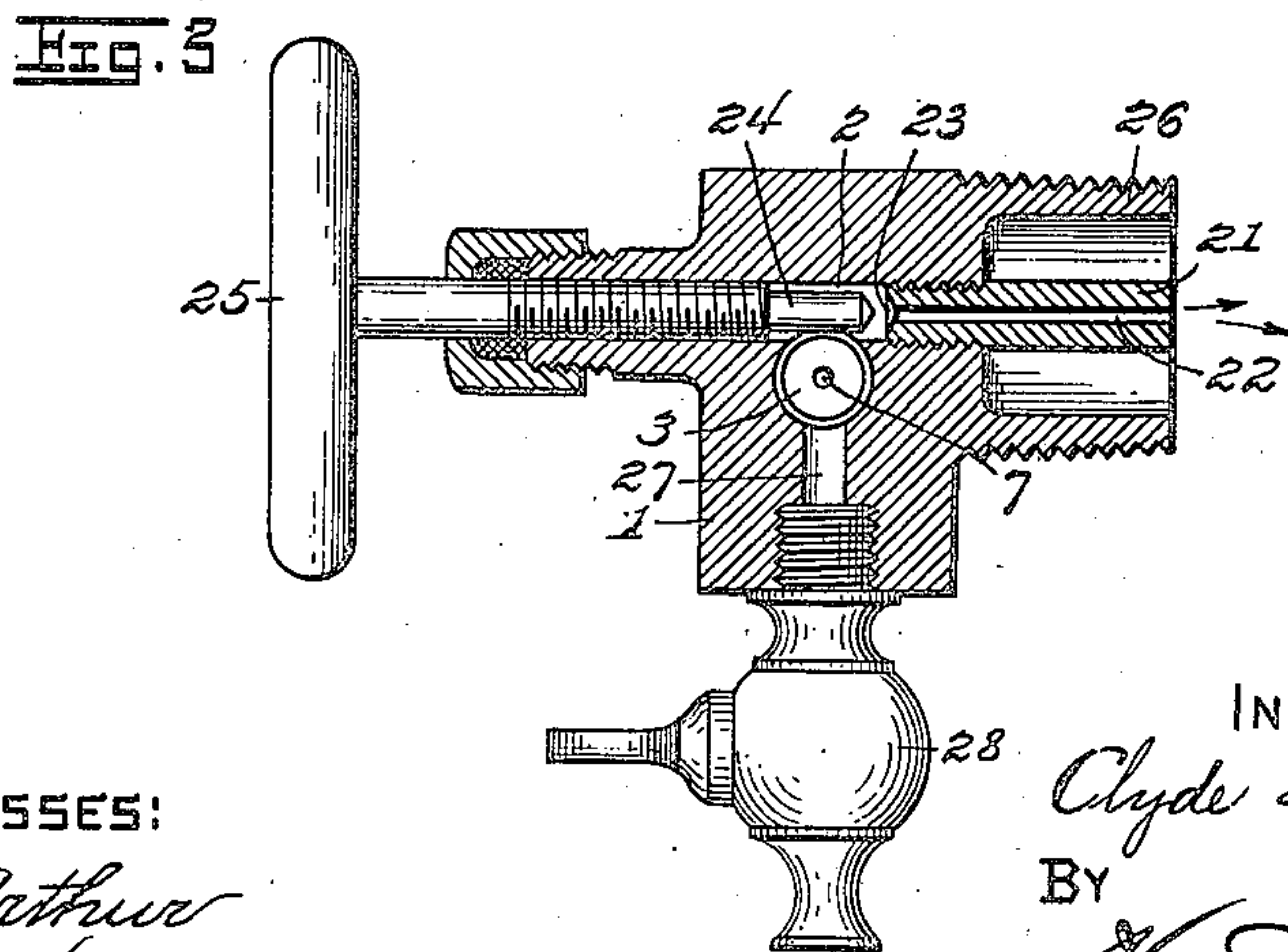
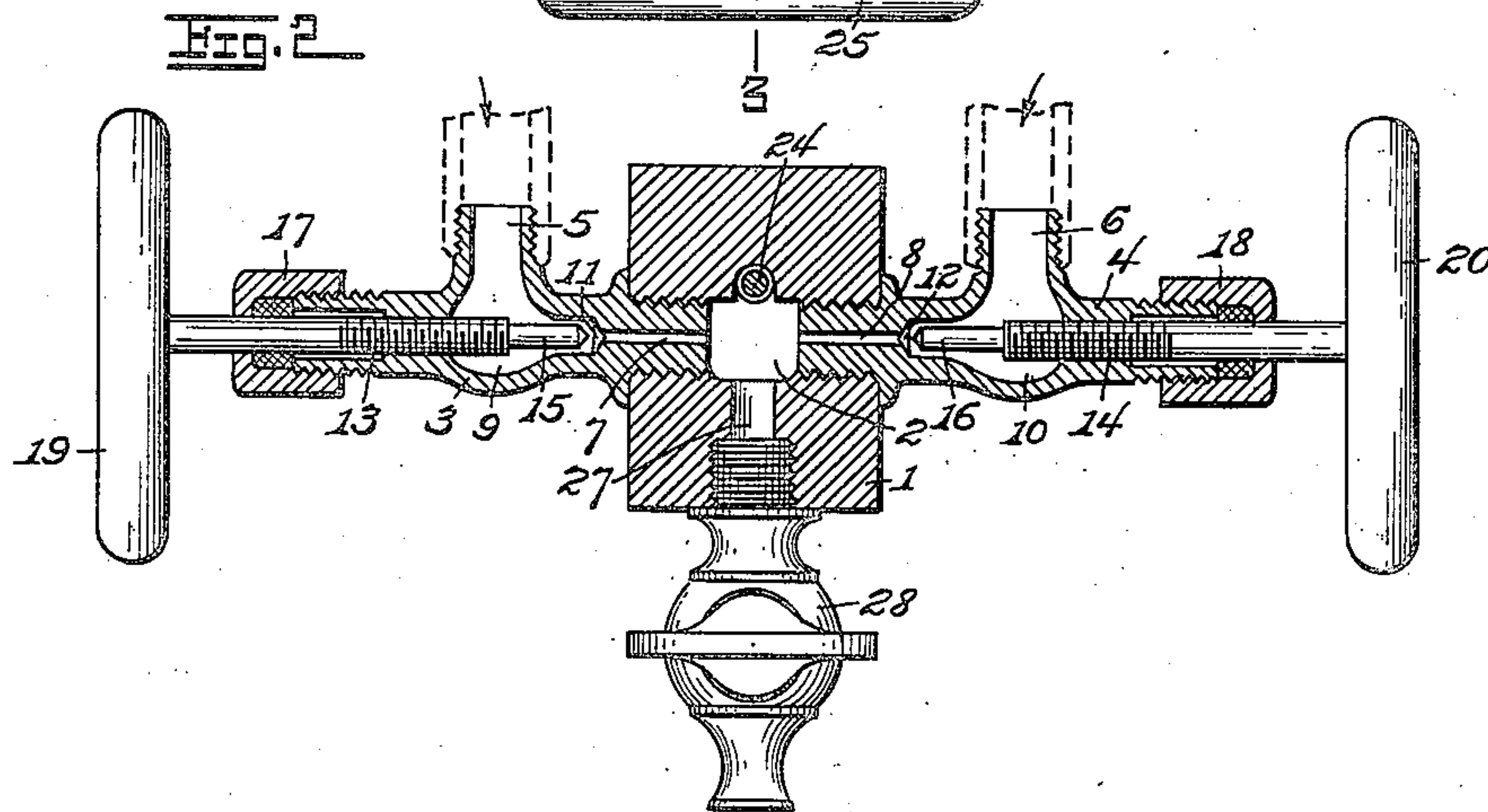
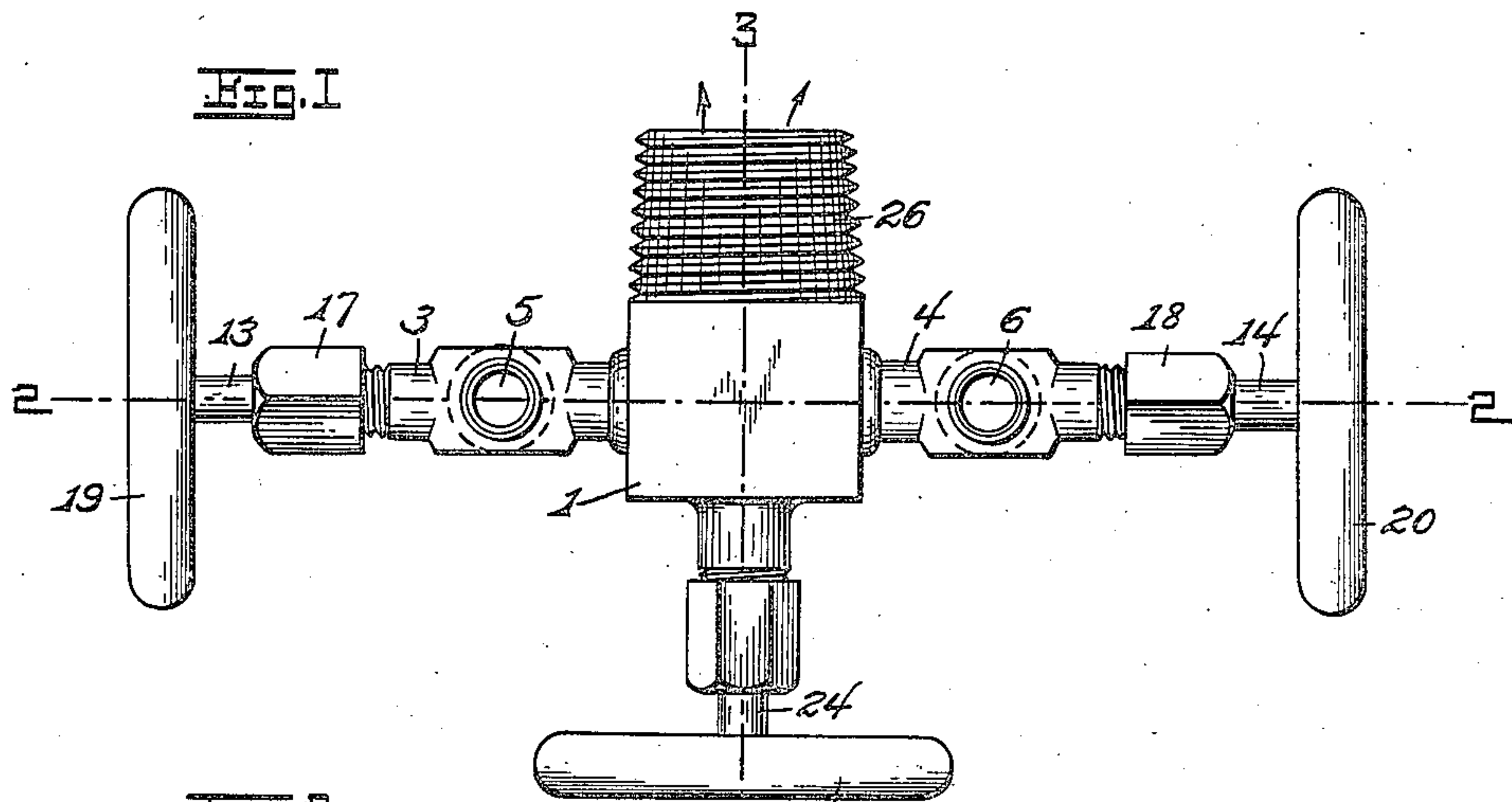
C. D. McHENRY.

EMULSIFIER.

APPLICATION FILED NOV. 24, 1913.

1,154,868.

Patented Sept. 28, 1915.



WITNESSES:

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# UNITED STATES PATENT OFFICE.

CLYDE D. McHENRY, OF MARTINS FERRY, OHIO.

## EMULSIFIER.

1,154,868.

Specification of Letters Patent.

Patented Sept. 28, 1915.

Application filed November 24, 1913. Serial No. 802,825.

*To all whom it may concern:*

Be it known that I, CLYDE D. McHENRY, a citizen of the United States of America, and resident of Martins Ferry, county of Belmont, and State of Ohio, have invented certain new and useful Improvements in Emulsifiers, of which the following is a specification.

This invention relates broadly to emulsifiers, and particularly to a device for producing an emulsion of fluids.

The primary object of the invention is to provide a device for producing a combustible emulsion of oil and water.

A further object is to provide a device wherein each of two fluids not readily comminglable are broken up into minute particles and the particles of the one are intimately mixed with those of the other in any desired proportion, and whereby the emulsion so formed is regulatably discharged.

With these and other objects in view, the invention resides in the features of construction, arrangement of parts, and combinations of elements which will hereinafter be fully described, reference being had to the accompanying drawings, forming a part of this specification, in which—

Figure 1 is a top plan view of the invention; Fig. 2 is a longitudinal section on the line 2—2, Fig. 1; and Fig. 3 is a transverse section on the line 3—3, Fig. 1.

Referring to said drawings, in which like designating characters distinguish like parts throughout the several views 1 indicates a body having a mixing chamber 2 formed therein. Threaded into said body from diametrically opposite points are the inner ends of two valve casings 3 and 4, which have, respectively, side-opening inlet ports 5 and 6, end-ports 7 and 8, with intermediate chambers 9 and 10, said chambers terminating at the ends adjacent to the end-ports in valve-seats 11 and 12. Threaded into the outer ends of said casings 3 and 4, respectively, are the stems 13 and 14 of needle valves 15 and 16 which are adapted to be adjusted with respect to said valve-seats 11 and 12 for controlling and regulating the supply of fluids admitted through the end-ports 7 and 8 to the interior of the mixing chamber 2, with which said ports communicate at directly opposite points. Said stems are directed through suitable packing-inclosing caps 17 and 18 mounted on the outer

ends of said valve casings 3 and 4, and have hand portions 19 and 20 fixed on their outer ends.

Having its inner end mounted in the body 1 is a tubular member or nozzle 21 which lies preferably at right angles to said valve casings 3 and 4 and has its bore 22 in communication with the mixing chamber 2, said bore constituting an outlet passage from said chamber. A valve-seat 23 is formed at the inner end of said nozzle 21, and a needle-valve 24 in alinement with said nozzle is adapted to be adjusted with respect to said seat 23 for controlling and regulating the discharge of fluid through the bore or outlet-passage 22, said valve being directed into the mixing chamber at a point over, or laterally of, that at which streams or jets of fluid are admitted to said chamber through the end-ports 7 and 8 so as to not interfere with the said streams or jets coming into direct contact with each other. The stem of said needle-valve 24 is threaded into the body 1 and has a hand portion 25 on its outer end, as shown.

The tubular member or nozzle 21 lies within and is concentric with a tubular extension 26 which is adapted to have a pipe or coil generator (not shown) coupled thereto.

A drain passage 27 is preferably provided in the body 1, the same leading downward from the mixing chamber 2 and communicating with the interior of a drain-cock 28 mounted in said body, as shown.

In practice, the fluids to be commingled, as oil and water, are respectively directed, under pressure, into the valve chambers 9 and 10 through the inlet ports 5 and 6, whence they are directed through the relatively small or restricted end ports 7 and 8 to the mixing chamber 2, the relative proportions of the fluids so admitted being regulated by adjustment of the needle-valves 15 and 16. Said ports 7 and 8 being located to discharge streams or jets from diametrically opposite points, said streams or jets impinge one on the other with considerable force, resulting in each fluid being broken up into minute spray-like particles which then become intimately commingled or united in the form of an emulsion. The said emulsion discharges through the valve controlled outlet passage 22, which is of relatively small capacity, in the form of a jet.

Experimentation with oil and water has shown that the two fluids, acted upon in



proper proportions by means of the device hereinbefore described, produce an emulsion which is adapted to be gasified upon its discharge from the nozzle 21, and that when  
5 gasified and ignited it produces an intense heat.

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

10 1. An emulsifier comprising a body having a mixing chamber therein, valve casings attached to said body having inlet ports therein and having relatively smaller outlet  
15 passages which communicate with said chamber at diametrically opposite points whereby jets of fluids are introduced into said chamber in impinging relation, needle-  
valves controlling said passages, and a nozzle through which fluid is discharged from  
20 said chamber, said nozzle being located in a different plane from said valve casings and having a passage therethrough of relatively small capacity, and a needle valve directed  
25 through said body in line with the last mentioned passage for controlling the latter.

2. An emulsifier comprising a body hav-

ing a mixing chamber therein, valve casings attached to said body having inlet ports therein and having relatively smaller outlet  
30 passages which communicate with said chamber at diametrically opposite points whereby jets of fluids are introduced into said chamber in impinging relation, needle-  
valves controlling said passages, and a nozzle through which fluid is discharged from  
35 said chamber, said nozzle being located in a different plane from said valve casings and having a passage therethrough of relatively small capacity, a needle valve directed  
40 through said body in line with said last mentioned passage for controlling the latter, and a tubular extension formed on said  
body and disposed in concentric encircling relation to the outer end of said nozzle.

In testimony whereof, I affix my signature in presence of two subscribing witnesses.

CLYDE D. McHENRY.

Witnesses:

JAMES M. NOBLE,  
H. E. DUNLAP.