J. MAAS.

NEEDLE VALVE.

APPLICATION FILED JAN. 29, 1908.

938,601. Patented Nov. 2, 1909.

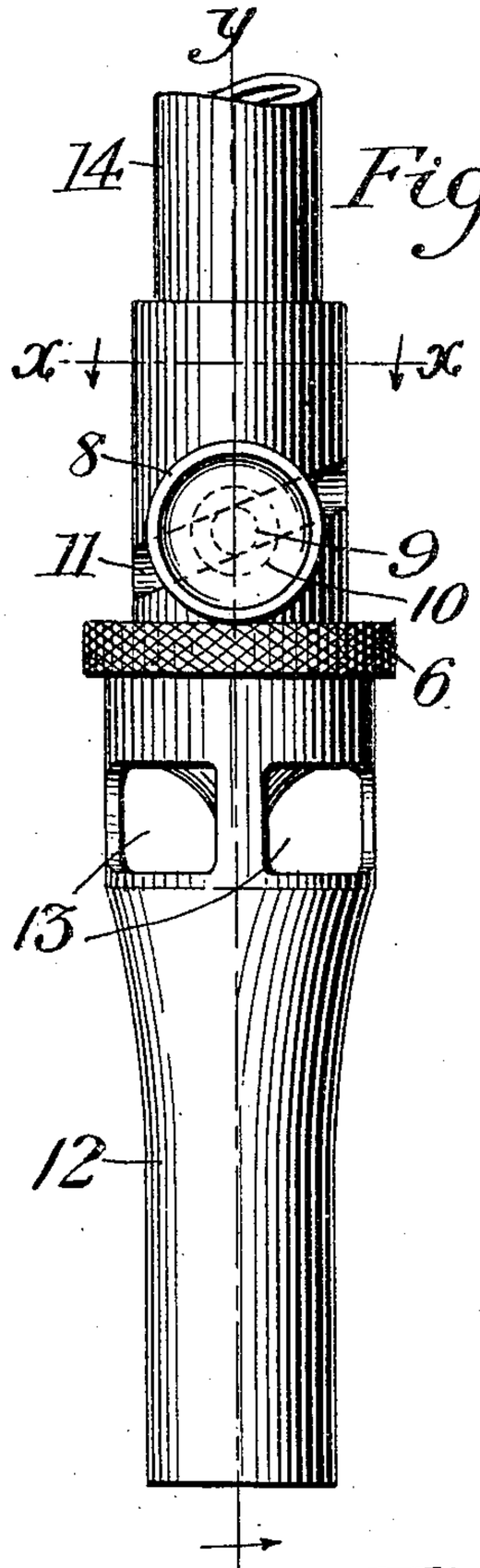

Fig. 1.

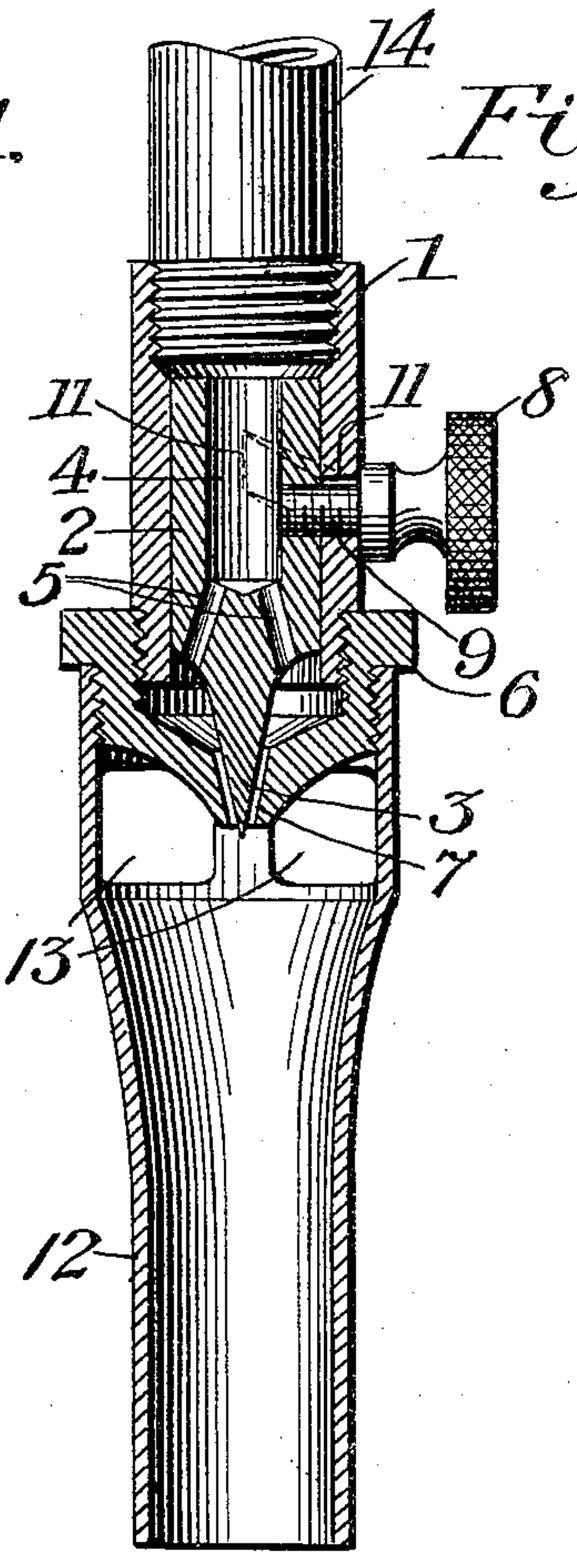

Fig. 2.

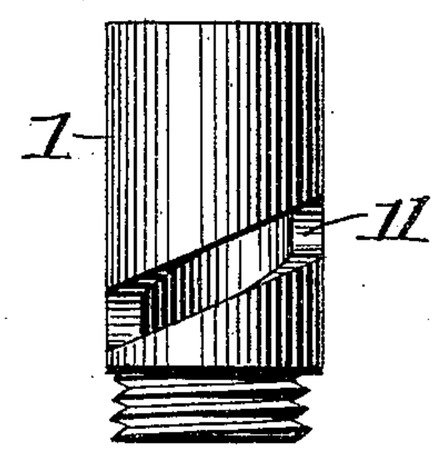

Fig. 5.

Fig. 4.

Witnesses:

T. C. Crust.

N. E. Stockwell

Inventor:

Joseph Maas

by Pennie Goldsborough & O'Neill

Their Attys.

UNITED STATES PATENT OFFICE.

JOSEPH MAAS, OF KALAMAZOO, MICHIGAN, ASSIGNOR TO AMERICAN GAS LIGHT COMPANY, OF KALAMAZOO, MICHIGAN, A CORPORATION.

NEEDLE-VALVE.

938,601. Specification of Letters Patent. Patented Nov. 2, 1909.

Application filed January 29, 1908. Serial No. 413,197.

To all whom it may concern:

Be it known that I, JOSEPH MAAS, a citizen of the United States, residing at Kalamazoo, in the county of Kalamazoo and State of Michigan, have invented new and useful Improvements in Needle-Valves, of which the following is a specification.

My invention relates to improvements in needle valves to be used in any situation where it is desired to regulate, with great nicety, the amount of gas or fluid passing through a valve opening, and its object is to provide such a valve of especially simple and efficient structure.

The invention is designed to be applied to any suitable use, but the specific structure which I have shown in the drawing is especially adapted to use in connection with a Bunsen burner for gas.

In the drawings, Figure 1 represents a side view of the device complete, including the lower end of the gas pipe and the upper end of the Bunsen burner tube. Fig. 2 is a vertical cross-section on the line *y*—*y* of Fig. 1. Fig. 3 is a cross-section and plan looking down from the line *x*—*x* of Fig. 1. Fig. 4 is a side view of the needle point and attached parts. Fig. 5 is a side view of the sleeve within which the valve operates.

14 represents the lower end of the pipe connecting with the gas supply. This lower end is exteriorly screw-threaded, and thereby engages with the corresponding interior screw-thread upon the upper end of the pipe extension or sleeve 1. This carries, at its lower end, a valve seat 6, and, in the form shown, it engages, by similar exterior and interior screw-threads, such valve seat in the form of nipple 6, and this nipple also, by similar engagement, carries the removable Bunsen burner tube 12, provided with the customary air inlets 13.

The needle valves in more common use, have their operating thumb screw or wheel located upon the axis of the needle, but in many locations it has been found inconvenient or impossible to operate the valve when thus constructed; and it is my purpose to provide for operating such a valve from the side and without any rack and pinion or similar device. To accomplish this result, I attach the needle point to the lower end of a vertically sliding cylinder or ring; then I provide suitable apertures by which the gas may pass into the interior of this cylinder or ring, and out through the other end thereof into the chamber, where it is in immediate contact with the valve seat and the needle point. In the drawing, I have shown this cylinder or ring by the numeral 2, and the valve and the needle point itself by the numeral 3 and the apertures from the cylinder or ring into the chamber below, by the openings 5. These openings 5 may be made of such a small size that the diaphragm or partition through which they pass will serve as a screen to keep any substantial particles of dirt away from the valve itself, and I find it especially convenient and economical to manufacture this cylinder or ring, and the screen diaphragm and the needle point as one integral casting, thereby conveniently insuring the exact alinement of the axis of the needle point with the axis of the tube in which it is to work.

The needle point, with the sliding parts to which it is attached, is vertically operated manually by means of the set-screw 9, having the head 8; and in order that this operation may take place, I provide a suitable slot 11 passing through the side wall of the sleeve 1, through which slot passes the main stem of the set-screw. This stem also is provided with a shoulder 10, which is outside of the sleeve 1, and it is obvious that when this set-screw is turned down, this shoulder will be clamped against the external surface of the sleeve 1, and will, therefore, hold the needle point exactly in the vertical position in which it has been placed. The set screw 9 serves not only as a means for manipulating the needle and adjusting the same, but also as a means for clamping the needle in the desired position when such has been reached, the set screw being moved in its slot 11 into the proper position and then clamped against the casing 1, without removing the hand from the screw. The movement of the set screw in its slot and the clamping of the set screw may thus be effected in what is practically one operation without necessitating the release of the set screw after the desired position thereof is reached; and thus the adjustment of the needle may be obtained with great rapidity and accuracy. This slot 11 may be of any desirable shape or form, but I find it useful to make it helical or inclined as shown in Fig. 5. In this way, a particularly nice adjustment can be made of the needle point,

since a considerable motion of the set-screw and the slot produces a much less vertical motion in the needle point. The interior of the cylinder or ring 2 is hollow, as shown by the numeral 4, permitting the free passage of the gas. The valve seat nipple 6 is provided with a tapering nozzle opening 7, of substantially the same taper as the needle point 3, and is so constructed that the axis of such opening will aline with the axis of the needle point. By this construction, also, I accomplish a rotary motion of the needle point within the valve seat, and also avoid any tilting of, or side leverage upon, the needle point. My construction also has the advantage of being very easily taken apart for cleaning. By unscrewing the nipple or valve-seat 6 and the set screw 9, the ring or cylinder 2 carrying the needle point, will drop out, or, if the device is inverted, can be lifted out, and the entire passage way is then clear and the needle point, valve-seat and screen opening can be thoroughly cleaned. The parts can, in this way, be taken apart and reassembled almost instantly and without the use of tools.

What I claim is:—

In a needle valve, the combination of a tubular casing having an inclined slot, and a valve seat at one end of the casing, a valve-carrying member mounted to slide in said casing and also to turn therein, and a set screw passing through the slot in the casing and threaded into said member, said set screw having an outer shoulder to abut against the casing in order to clamp the valve in position, and a head by which the set screw may be adjusted in its slot and clamped in adjusted position without removing the hand from said head when such position is reached.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

JOSEPH MAAS.

Witnesses:

PLENNA MEAD,

JOHN L. HOVANDER.