No. 791,636. PATENTED JUNE 6, 1905.

C. W. MANZEL.

OIL PUMP.

APPLICATION FILED MAR. 11, 1903.

Fig. 2.

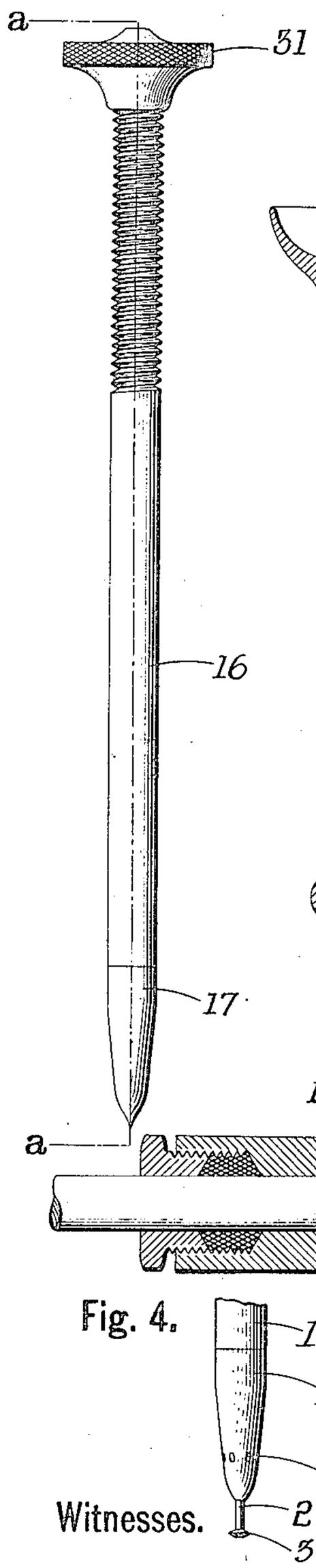

Fig. 1.

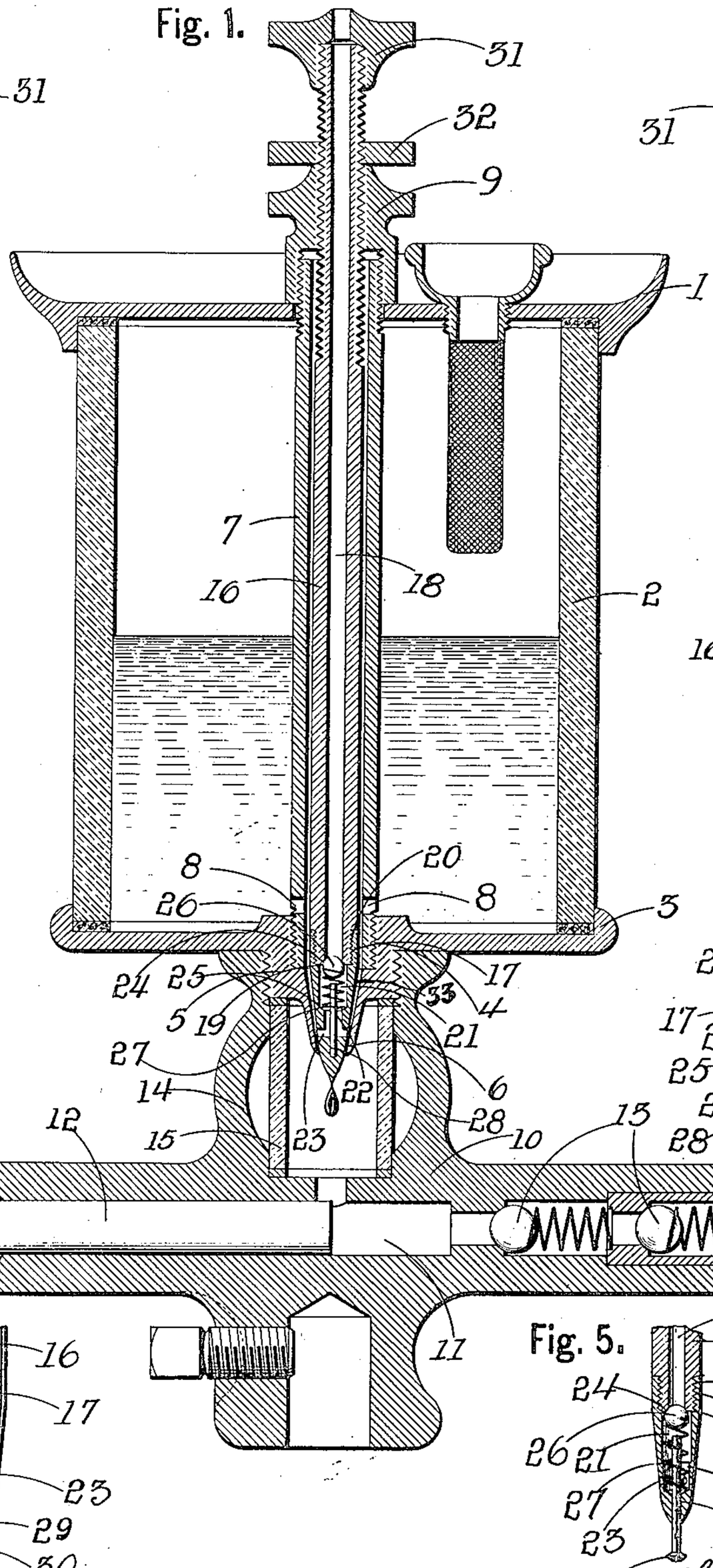

Fig. 3.

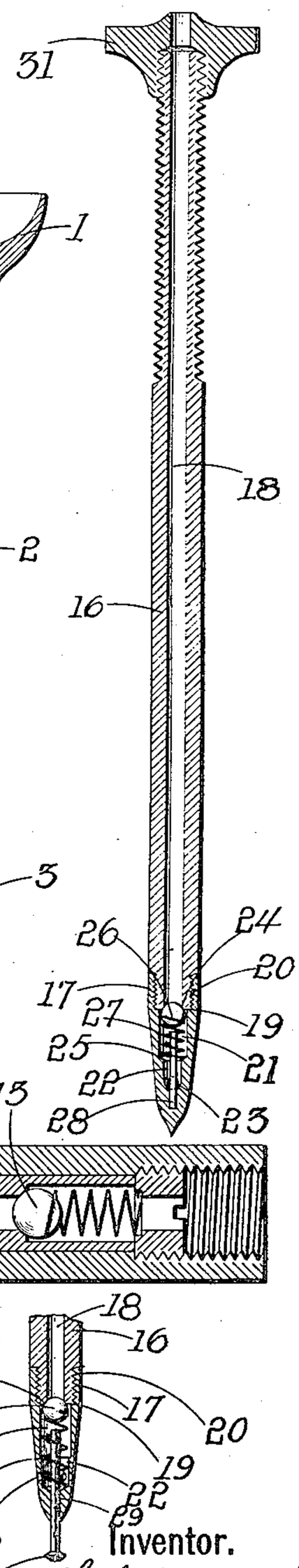

Fig. 4.

Witnesses.

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Fig. 5.

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No. 791,636. Patented June 6, 1905.

UNITED STATES PATENT OFFICE.

CHARLES W. MANZEL, OF BUFFALO, NEW YORK, ASSIGNOR TO MANZEL BROS., OF BUFFALO, NEW YORK.

OIL-PUMP.

SPECIFICATION forming part of Letters Patent No. 791,636, dated June 6, 1905.

Application filed March 11, 1903. Serial No. 147,302.

To all whom it may concern:

Be it known that I, CHARLES W. MANZEL, a citizen of the United States, residing at Buffalo, in the county of Erie and State of New York, have invented a certain new and useful Improved Oil-Pump, of which the following is a specification.

This invention relates to an improved oil-pump; and one of the features of the invention has reference to a hollow or tubular spindle which extends vertically through the cup and through which air is conducted to relieve the partial vacuum created by a feeding mechanism to draw oil from the oil-cup.

Another feature has reference to a valve mechanism for closing the passage through the tubular spindle and preventing the filling of said tubular spindle with oil.

Another feature has reference to a button or knob on the lower end of the spindle which constitutes an enlargement for forming large drops of oil.

The invention also has reference to certain details of construction, all of which will be fully and clearly hereinafter described and claimed, reference being had to the accompanying drawings, in which a preferred adaptation of the invention is shown.

Figure 1 represents a central vertical section through the improved oil-cup and its support, also showing a fragmentary side elevation of the feeding-plunger. Fig. 2 is a detached side elevation of the tubular spindle. Fig. 3 is a longitudinal section through the spindle on line *a a*, Fig. 2. Fig. 4 is a fragmentary side elevation of the lower end of a spindle provided with an enlargement or knob. Fig. 5 is a central longitudinal section through the spindle-fragment shown in Fig. 4.

In referring to the drawings in detail, like numerals designate like parts.

The cup preferably consists of a top plate 1, a cylindrical body 2 of glass, and a bottom plate 3. The bottom plate is provided with a screw-threaded opening 4 and a central downwardly-projecting tubular extension 5, which is exteriorly screw-threaded in its upper part and terminates in a reduced tapering portion 6.

A tube 7 is vertically and centrally arranged in the cup, having an upper screw-threaded end, which projects through the top plate 1, and a lower screw-threaded end, which screws into the central opening 4 in the bottom plate. This tube is provided in its lower part with side openings 8, which serve as communicating oil-passages.

9 represents a nut which screws upon the upper end of the tube for fastening the parts of the cup together. The opening through the upper portion or head of the nut 9 is reduced and interiorly screw-threaded. The support 10, upon which the cup is mounted, has a central longitudinal feed-opening 11, in one portion of which a feeding-piston 12 is slidably mounted. A plurality of ball-valves 13 are located in another portion of the opening, preferably two in number. A tubular portion 14 projects upward from the support, in which a glass tube 15, constituting a sight-feed, is placed, and that part of the tubular portion above the glass tube 15 is screw-threaded to receive the screw-threaded portion of the tubular extension 5, (see Fig. 1,) which projects down into the glass tube and serves to feed or conduct the oil into said glass tube. The feeding-plunger is reciprocated to feed the oil by any well-known means.

A tubular spindle is slidably mounted in the tube 7 and consists of a tubular body 16 and a separate lower end part 17, and the body has a central longitudinal opening 18, which forms an air-passage through the cup into the sight-feed. The upper portion of the spindle-body is screw-threaded and screws through the opening in the head of the nut 9, and its lower end is reduced and screw-threaded to fit and screw into the separate cone or tapering part 17, which constitutes the lower end of the spindle. This cone part 17 has a top vertical recess or depression 19, which is screw-threaded near the top, as shown at 20 in Fig. 1, to receive the end of the spindle-body and then reduced to form a valve-chamber 21. The valve-chamber merges at its lower end in

a connecting-passage 22 of reduced area, and a series of side openings or holes 23 extend from said passage through the side of the cone part. The valve-chamber 21 is slightly larger in area than the opening 18 through the spindle 16, so that an annular shoulder 24 is provided at the top of the valve-chamber formed by the inwardly-projecting end of the spindle. An annular shoulder 25 is also formed at the juncture-point of the valve-chamber 21 and the connecting-passage 22.

A valve mechanism is located in the valve-chamber 21 of the cone part of the spindle and consists of a ball 26, which is normally held against the shoulder 24 by a spiral spring 27, which is supported upon the shoulder 25. The object of placing a valve mechanism in the cone is to provide means for closing the opening in the spindle at the bottom, and thereby preventing oil from flowing into and filling the interior of the spindle to the level of the oil in the cup. A vertical pin 28 projects centrally into the valve-chamber and acts as the stop to limit the downward movement of the ball 26. To increase the size of the drops of oil, the pin 28 may be extended vertically downward through the cone part, as shown in Figs. 4 and 5, and provided with a lower projecting end 29, having an enlarged head or knob 30 at its lower extremity. A tubular nut 31 is screwed upon the upper extremity of the spindle-body 16, and a lock-nut 32 is fitted on said spindle-body below the nut 31. The object of making the cone part of the spindle separate from the tubular body is to provide for the easy introduction and removal of the valve parts for cleaning purposes or repair or replacement. The cone end 17 of the spindle is separated sufficiently from the inner wall of the extension 5 and the tapering portion 6 to provide an annular space or passage for oil from the oil-cup through the tube 7 into the sight-tube 15.

The operation of the device is as follows: The movement of the feeding-plunger creates a partial vacuum in the sight-tube 15, which draws the oil located in the annular space 33 between the cone 17 and the inner wall of the extension 5 and tapering portion 6 down onto the projecting end of the cone, to the surface of which it coheres and upon which it slowly flows downward by gravity, finally uniting at the extreme point and forming a globular drop, as shown in Fig. 1. As soon as the oil in the space 33 is drawn therefrom the ball of the valve is automatically forced downward and the valve opened by the excess pressure of the surrounding atmosphere, permitting sufficient air to enter to equalize the pressure within the sight-tube 15. This prevents a continuous or excessive flow of oil under certain circumstances, such as the very fast feeding of thin oil, by automatically equalizing the pressure after the oil forming each drop is drawn down upon the projecting end of the cone. By stopping the top orifice or mouth of the hollow spindle with a finger or by other means a practically continuous flow of oil can be obtained, as the passage of air through the spindle is obstructed, thereby preventing any relieving of the air-pressure.

I claim as my invention—

1. In a device of the class described, an oil-cup, a tube extending through the cup, means for creating a partial vacuum in said tube, and a spindle extending within the tube and having means for relieving said vacuum.

2. In a device of the class described, an oil-cup, a tube extending through the cup, means for creating a partial vacuum in said tube, and a tubular feed-regulating spindle extending within the tube and having means for relieving said vacuum.

3. In a device of the class described, an oil-cup, a tube extending through the cup, means for creating a partial vacuum in said tube, and a spindle extending within the tube and having means for relieving said vacuum; said spindle comprising a tubular body and a cone detachably secured to the lower end of the body, substantially as set forth.

4. In a device of the class described, an oil-cup, a tube extending through the cup, means for creating a partial vacuum in said tube, and a spindle extending within the tube and having means for relieving said vacuum; said spindle comprising a tubular body and a cone detachably secured to the lower end of the body and having a top depression and side openings leading from said depression and a valve mechanism in said depression, substantially as set forth.

5. In a device of the class described, an oil-cup, a tube extending through the oil-cup and having side openings near the lower end thereof for oil passage, means for creating a suction in said tube and a spindle adjustably supported in said tube and having an air-conducting opening for partially relieving said suction, substantially as set forth.

6. In a device of the class described, an oil-cup, a tube extending through the oil-cup and having side openings near the lower end thereof for the passage of oil, a receptacle beneath the oil-cup, means for creating a partial vacuum in said receptacle and a tubular spindle supported in the tube and affording communication between the atmosphere and the tube interior for relieving said partial vacuum.

7. In a device of the class described, an oil-cup, a tube extending through the oil-cup and having side openings near the lower end thereof for the passage of oil a receptacle beneath the oil-cup, a feeding-plunger for creating a partial vacuum in said receptacle and a spindle in the tube for regulating the feed and having a longitudinal opening therethrough, forming an air-passage for relieving the partial vacuum, substantially as set forth.

8. In a device of the class described, an oil-

cup, a tube extending through the oil-cup and having side openings near the lower end thereof for the passage of oil a receptacle, beneath the oil-cup, a feeding-plunger for creating a partial vacuum in said receptacle, a spindle in the tube for regulating the feed and having a longitudinal opening therethrough, forming an air-passage for relieving the partial vacuum and a valve mechanism in said spindle, substantially as set forth.

9. In a device of the class described, an oil-cup, a tube extending through the cup, means for creating a partial vacuum in said tube, and an adjustable tubular air-conducting spindle extending through the tube and arranged to relieve said vacuum, substantially as set forth.

10. In a device of the class described, an oil-cup, a tube extending through the cup, means for creating a partial vacuum in said tube, a tubular air-conducting spindle extending through the tube having means for relieving said vacuum and a valve mechanism in said spindle for preventing the upward passage of oil therein, substantially as set forth.

11. In a device of the class described, an oil-cup, a tube extending through the cup, means for creating a partial vacuum in said tube, a tubular air-conducting spindle extending through the tube having means for relieving said vacuum and means in said spindle for preventing the upward passage of oil therein, substantially as set forth.

12. In a device of the class described, an oil-cup, a tube extending through the cup, means for creating a partial vacuum in said tube, a tubular air-conducting spindle extending through the tube having means for relieving said vacuum and means located in the lower portion of said spindle for preventing the upward passage of oil therein, substantially as set forth.

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Witnesses:
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