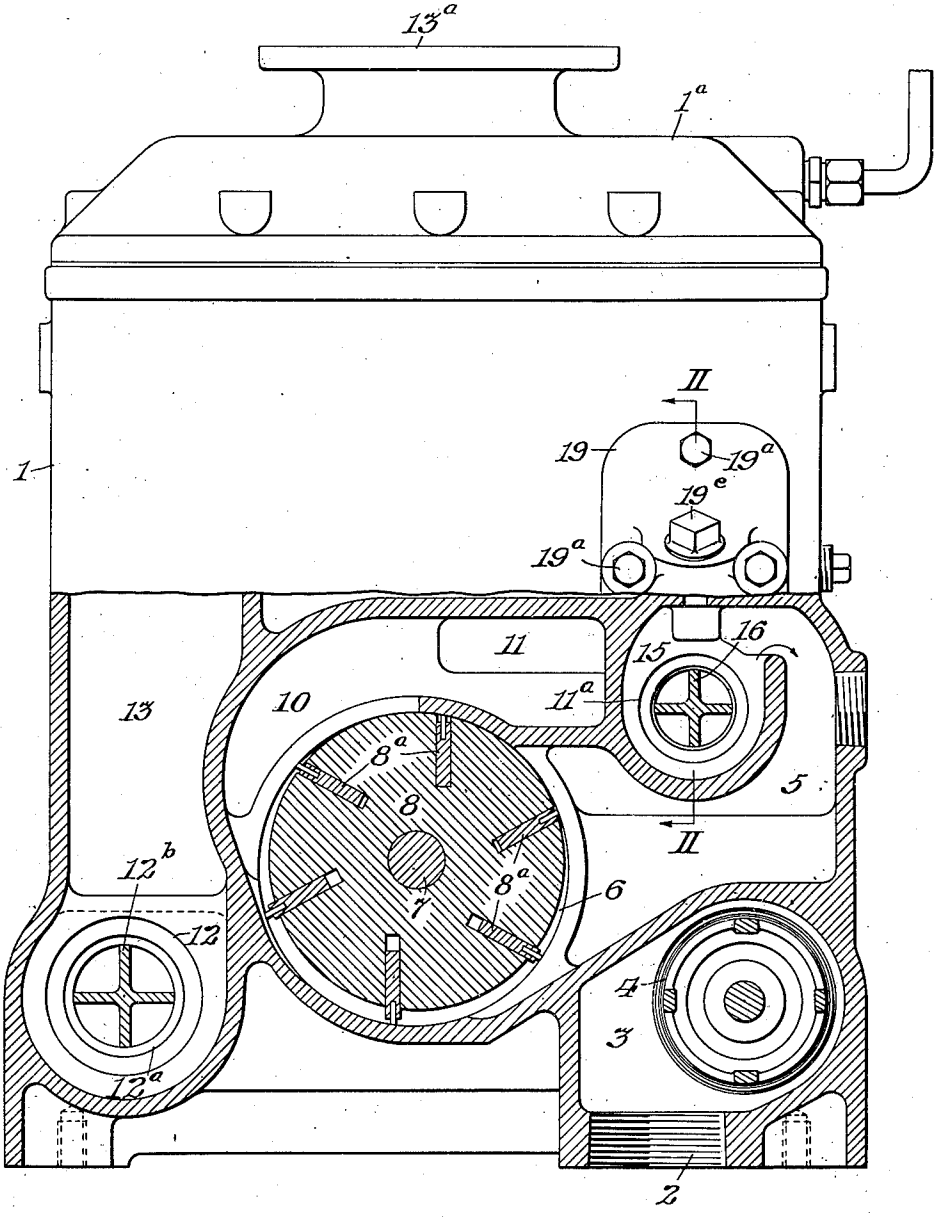
Dec. 9, 1941. M. J. GOLDBERG 2,265,278

FLUID DISPENSING APPARATUS

Filed April 10, 1940 3 Sheets-Sheet 1

FIG. I.



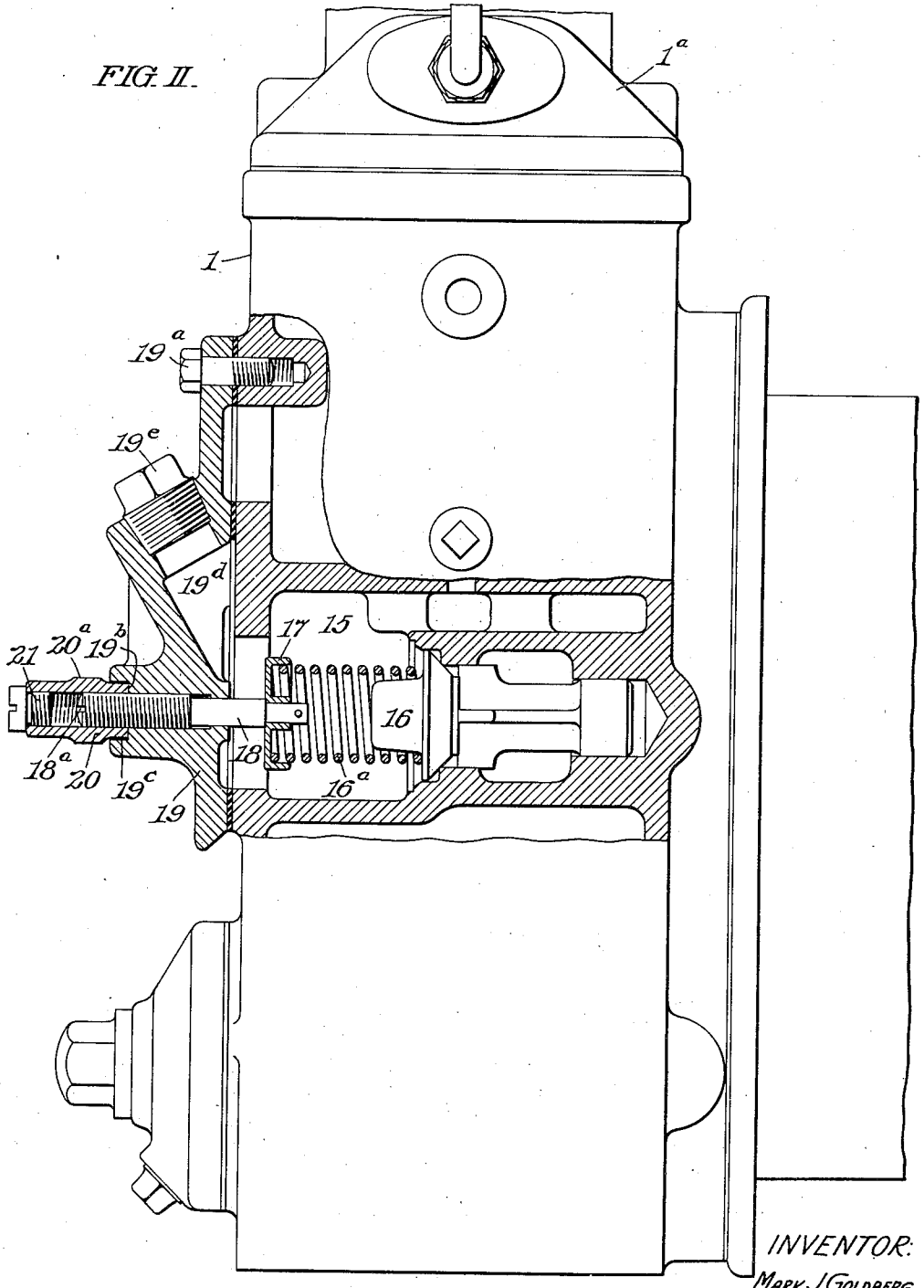
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FLUID DISPENSING APPARATUS

Filed April 10, 1940 3 Sheets-Sheet 2

FIG. II.



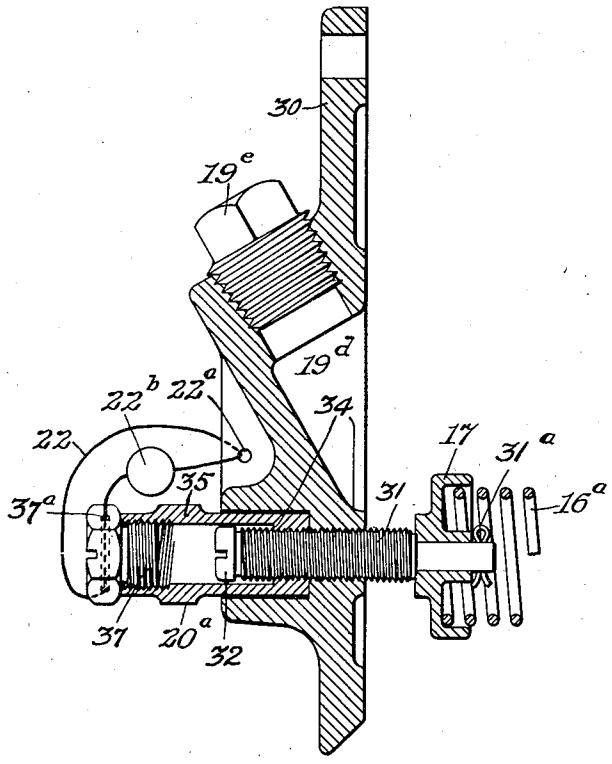
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FLUID DISPENSING APPARATUS

Filed April 10, 1940 3 Sheets-Sheet 3

FIG. III.



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Patented Dec. 9, 1941

2,265,278

UNITED STATES PATENT OFFICE

2,265,278

FLUID DISPENSING APPARATUS

Mark J. Goldberg, Spring Lake, Mich., assignor to John Wood Manufacturing Company, Inc., Conshohocken, Pa., a corporation of Delaware

Application April 10, 1940, Serial No. 328,799

4 Claims. (Cl. 137—53)

This is a continuation in part of my copending application Serial No. 302,524 filed November 2, 1939, for Letters Patent of the United States, for an improvement in Liquid dispensing apparatus, and relates particularly to the construction and arrangement of a valve which is readily manually adjustable, from the exterior of the apparatus, to variably predetermine the fluid pressure at which the valve may be automatically opened. In that case, as in this, such a valve is shown embodied in apparatus through which gasoline, or other internal combustion motor fuel, may be metered and dispensed, by operation of a pump, and the valve is arranged to control a by-pass conduit from the pressure side to the suction side of such pump, and the adjusting means is arranged to be sealed in any position to which it is adjusted. However, my invention herein claimed may be embodied in any structure to variably predetermine the pressure at which a valve may be automatically opened by the pressure of fluid thereon, for instance gas or water.

My invention includes the various novel features of construction arrangement and method of operation hereinafter more definitely specified.

In said drawings;

Fig. I is a partly sectional front elevation of such a fluid dispensing apparatus, as shown in my application Serial No. 302,524.

Fig. II is a partly sectional side elevation of said apparatus; section being taken on the line II in Fig. I, in the direction of the arrow on said line.

Fig. III is a fragmentary sectional view, showing a modified form of the same valve adjusting elements as are shown in Fig. II, but on a larger scale.

In said figures; the casing 1 has the fluid supply inlet 2, leading into the screen chamber 3 containing the screen 4. The fluid passes through said screen 4 and out the remote end thereof in Fig. I, into the passageway 5 which leads to the pump chamber 6. The pump shaft 7, which is journaled in said casing 1, carries the pump rotor 8, conveniently of the type which is mounted eccentrically in said pump chamber 6, and provided with a circumferential series of blades 8a which freely reciprocate in said rotor, so as to continually bear upon the inner cylindrical surface of said chamber 6 and sweep the fluid from said passageway 5 through said pump chamber 6 out into the pump discharge chamber 10, and thence through the passageway 11, into the control valve chamber 12. Said valve chamber 12 has the port 12a leading into the fluid discharge chamber 13, which port is closed by the spring pressed control valve 12b until a predetermined fluid pressure is attained by operation of the pump, sufficient to open said valve; whereupon, the fluid escapes from the valve chamber 12 into the fluid discharge chamber 13 and thence through the fluid dispensing outlet 13a opening through the cover 1a of said casing 1.

Referring to Figs. I and II; the fluid passageway 11 has the port 11a opening into the by-pass valve chamber 15, normally closed by the by-pass valve 16 under pressure of the spring 16a shown in Fig. II. In order to variably predetermine the pressure at which said by-pass valve 16 will be automatically opened; I provide the abutment ring 17 for the outer end of said spring 16a, loosely mounted upon the inner end of the axially adjustable screw 18 which is carried in the cover 19, in screw threaded engagement therewith. Said cover 19 is rigidly secured over the outer end of said chamber 15, in fluid tight relation with casing 1, conveniently by five bolts 19a. As shown in Fig. II; said screw 18 is provided at its outer end with a single screw-driver slot 18a. However, it may be provided with any other convenient form of wrench-hold. Screw 18 is secured in adjusted position by the lock nut 20 which is in screw threaded engagement therewith and provided with the polygonal wrench-hold 20a, so that it may be tightened against the surface 19b of said cover 19, at the inner end of the socket 19c in which said nut 20 is fitted, as shown in Fig. II. The construction and arrangement are such that it is necessary for the operator to slightly unscrew said nut 20 whenever it is desired to axially adjust the screw 18 to vary the pressure upon said valve 16; and to hold said nut 20 stationary while such adjustment is effected. Whereupon the nut 20 may be again tightened to securely hold the screw 18 in adjusted position.

In order to prevent unauthorized tampering with said means for varying the adjustment of the pressure on the valve 16, I provide said nut 20 with sealing means normally preventing access to screw 18. As shown in Fig. II, such sealing means conveniently consists of the screw plug 21 which is tightly fitted in the end of said nut 20 when the screw 18 is not being adjusted.

When said apparatus is used to dispense liquid, the inlet 2 may be connected with a subjacent liquid supply tank, by a conduit having a so

called "foot valve" at the lower end thereof, which is an upwardly opening check valve, submerged in the liquid which is to be pumped; and it may be necessary to initially, and later, prime the pump with liquid to enable it to suck the liquid from the tank, up through said check valve. Therefore, as shown in Fig. II, I find it convenient to provide the cover 19 with the inlet 19d for the priming liquid; which inlet is normally tightly closed by the screw plug 19e.

In the form of my invention shown in Fig. III; the valve chamber cover 30 is provided with the same essential elements above described with reference to Fig. II, but the screw 31 has its threaded portion extending entirely through the cover 30, with the advantage that the cover is more easily tapped to engage said screw. Moreover, the screw 31 in Fig. III has the head 32 which is larger in diameter than the threaded portion of the screw, so that it projects over the internal shoulder 34 at the inner end of the tubular lock nut 35 and serves to prevent accidental removal of that nut. As shown in Fig. III; the inner end of the screw 31 has the cotter pin 31a extending through it and preventing removal of the screw 31 from the cover 30 and, consequently, preventing removal of the nut 35 by any manipulation thereof exterior to the cover. However, when the cover 30 is removed from the casing 1, and the cotter pin 31a removed from the screw 31, both the nut 35 and the screw 31 may be readily removed from said cover.

In the form of my invention, shown in Fig. II, the sealing screw plug 21 normally prevents access to the interior of the tubular lock nut 20 and thus prevents adjustment of the screw 18 until plug 21 is removed. In the form of my invention shown in Fig. III, the sealing screw plug 37 normally prevents access to the interior of the tubular lock nut 35 and thus prevents adjustment of the screw 31 until said plug 37 is removed. However, as an additional precaution against unauthorized change of the adjustment of the valve 16, by axial movement of said screw 31, I prefer to drill a hole 37a through the head of the sealing plug 37, as shown in Fig. III, to receive the sealing wire 22 which is looped through the hole 22a in the cover 30, and has both of its ends secured in the lead or other soft metal seal 22b, which is tightly pinched thereon; so that it is impossible to remove the screw plug 37 unless and until the sealing wire 22 is broken. The latter construction and arrangement is advantageous in that it normally prevents any change in the adjustment of the valve spring, and, if any unauthorized adjustment of the screw 31 is effected, it is manifested by the fact that the sealing wire 22 is broken. Any other suitable filament may be substituted for said wire.

In gasoline dispensing apparatus, as ordinarily constructed, the dispensing outlet 13a, from the casing 1, is connected with a conduit including, at its distal end, a flexible dispensing hose having, at its discharge end, a nozzle normally closed by a spring pressed check valve which must be manually opened to effect any dispensation. In such an embodiment, adjustment of screw 18 predetermines the pressure limit at which the gasoline can be delivered through the nozzle, and may be varied in accordance with the length of the dispensing conduit, and other conditions of service, for instance the speed of dispensation desired.

Moreover, it may be observed that the cover 19, screw 18 and spring 16a, cooperate to hold the by-pass 15 shut, by valve 16, between the priming liquid inlet 19d, in cover 19, and the pressure side of the pump chamber 6, and thereby compel the priming liquid to pass from said inlet 19d, through by-pass 15 and passageway 5 into the suction side of the pump chamber 6 during each pump priming operation.

However, I do not desire to limit myself to the specific construction, arrangement, or method of operation of my invention chosen for illustration, as it is obvious that various modifications may be made therein, without departing from the essential features of my invention, as defined in the appended claims.

I claim:

1. The combination with a casing including a valve chamber having a port between a fluid inlet and a fluid outlet; of a cover for said chamber, removable from the exterior of the casing; screw means normally rigidly connecting said cover with said casing; a valve at said port; a spring arranged to continually stress the valve toward its closed position; an adjusting screw, extending into the chamber and having its outer end threaded through said cover; an abutment carried by the inner end of the screw bearing on the outer end of the spring; a tubular lock nut having an internally threaded end engaging the outer end of said screw, said lock nut extending beyond the outer end of the screw and having its inner end arranged to bear upon the cover and lock the screw in adjusted position; wherein the outer end of the adjusting screw is larger in diameter than the bore of the internally threaded end of said nut, and prevents removal of the nut while the screw is engaged with the cover; and the inner end of the screw carries means preventing removal of the screw from the cover, until the cover is removed from the casing.

2. A structure as in claim 1; wherein the means preventing removal of the screw from the cover is a pin extending transversely through the screw at its inner end, adjoining the abutment.

3. A structure as in claim 1; wherein the tubular lock nut has at its outer end sealing means normally preventing access to the adjusting screw and including a screw plug in said tubular nut having a hole extending transversely through it exterior to said nut, a sealing wire extending through said plug hole and engaging said cover; and a soft metal seal tightly engaging both ends of said wire.

4. A structure as in claim 1; wherein the outer end of the tubular nut is provided with removable sealing means, including a screw plug normally closing said nut and preventing access therethrough to the adjusting screw.

MARK J. GOLDBERG.