

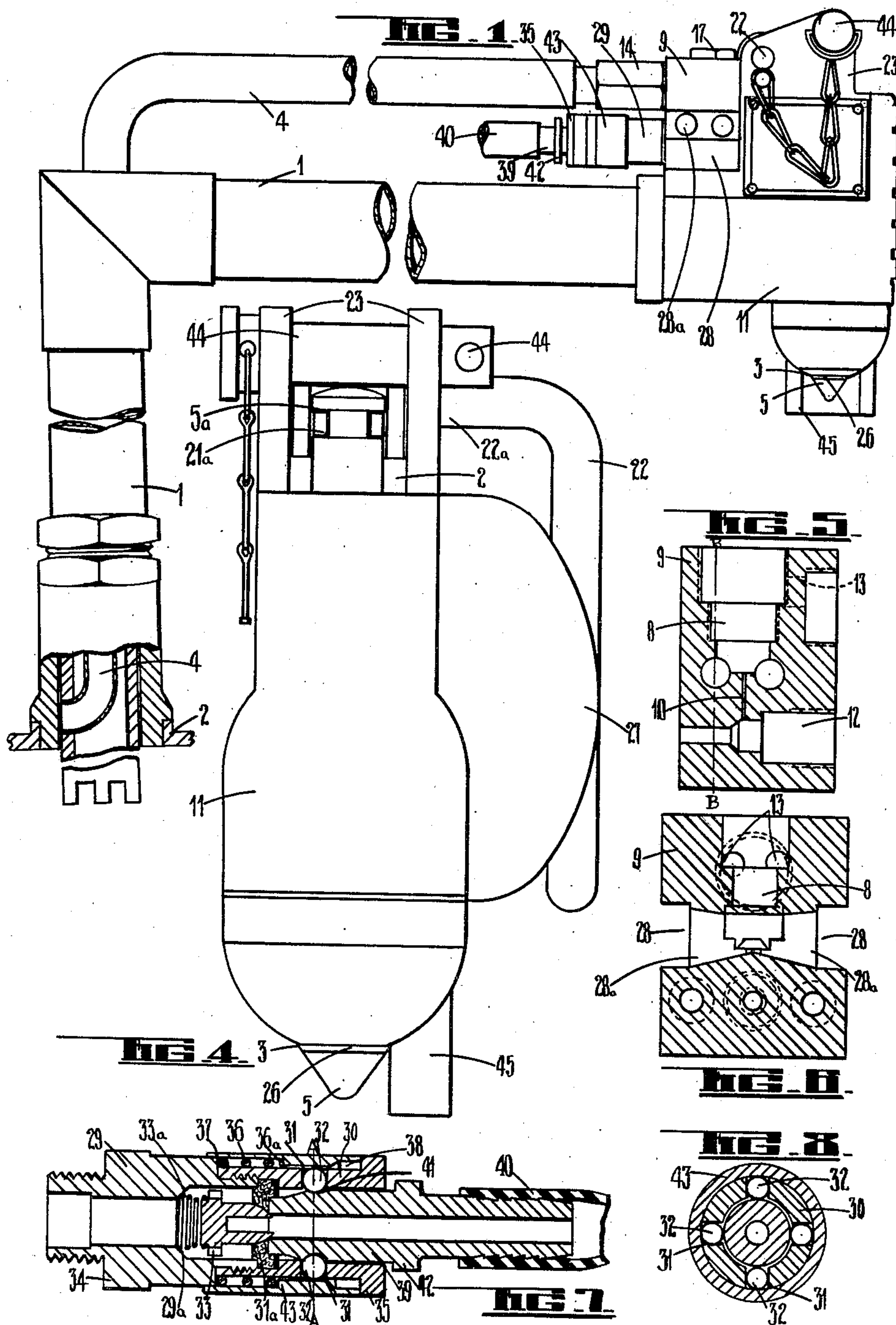
Feb. 6, 1951

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APPARATUS FOR USE IN THE DELIVERY
OF LIQUIDS FROM CONTAINERS

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2 Sheets-Sheet 1



Inventors
B. J. Todd
R. E. Turner
By Glenck Downing Deedold
Attys.

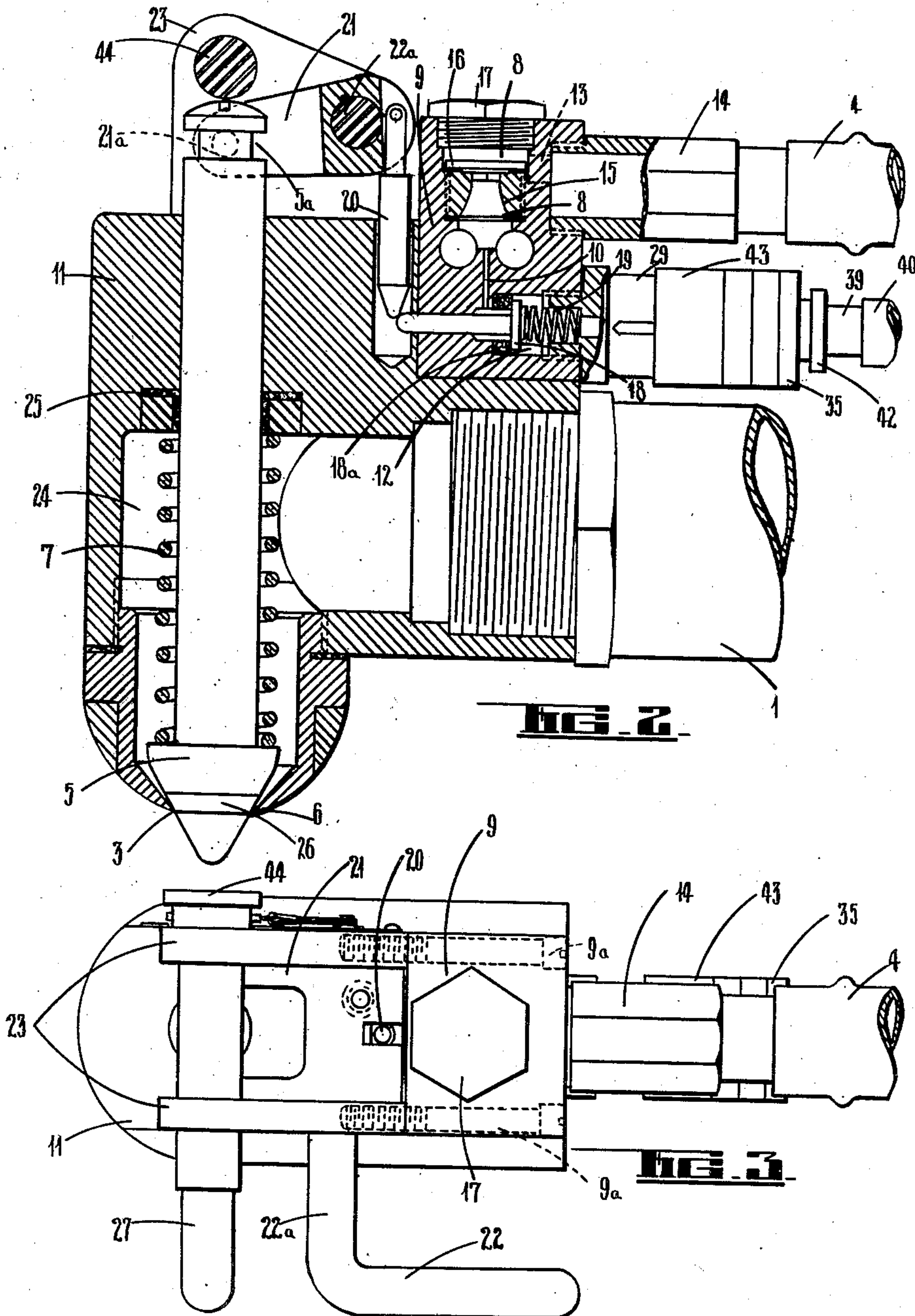
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B. J. Todd
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By *Glascott Downing Reekle*
Attys

UNITED STATES PATENT OFFICE

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APPARATUS FOR USE IN THE DELIVERY OF LIQUIDS FROM CONTAINERS

Bryan James Todd and Robert Edmund Turner,
Wellington, New Zealand, assignors to Asso-
ciated Motorists Petrol Company Limited, Wel-
lington, New Zealand, a company of New Zea-
land

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The invention relates to apparatus for use in delivering liquid from containers under the action of compressed air, and is concerned particularly with that type of apparatus which comprises a discharge pipe adapted for insertion in a liquid container so as to extend therefrom, and provided with a dispensing head having a valve controlled liquid outlet and a valve controlled compressed air inlet, the valves of said outlet and said inlet being operable from a lever mounted on the head, while an air transfer pipe fitted with an air injector and a non-return valve is provided for use between the dispensing head and the interior of the container from which liquid is to be dispensed.

This invention contemplates a dispensing head through which compressed air is passed for delivery to a container for the purpose of ejecting liquid therefrom, and also to and through which head the ejected liquid is passed for delivery therefrom, provision being made on the latter for the operation of a liquid discharge valve and a compressed air inlet valve both mounted in the head at the same time and by the same means. The invention also includes the feature of an injector in the form of a Venturi arrangement in the head interposed in the compressed air line particularly designed to admit a proportion of diluent air at atmospheric pressure and escape means for excess compressed air at high pressure when the pressure in the container has reached a pre-determined limit of safety before the supply of high pressure air is cut off.

It is an object of the present invention to provide improvements in the aforesaid type of liquid dispensing apparatus, in order to simplify the latter, render it less liable than heretofore to get out of order, to increase the difficulty of improper use of the apparatus, and render the construction such that the various parts can be formed and finished by simple mechanical operations, and be readily assembled to produce the complete apparatus.

Particularly is it an object of the invention to co-relate and assemble the compressed air admission control valve, the air injector, and the non-return valve in a single unit capable of being produced separately from and fitted to the dispensing head, for the purpose of facilitating production of the apparatus and providing a construction in which access to all working parts may be readily had for inspection, adjustment and repair purposes.

With the aforesaid objects in view there is provided by the invention, apparatus for use in

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delivering liquid from containers into which compressed air is injected for the purpose of ejecting liquid therefrom, and comprising a liquid discharge pipe provided with a dispensing head having a valve controlled liquid outlet, a valve controlled compressed air inlet and an air transfer pipe to the container, characterised by the provision on said head of a valve chamber block, containing a chamber for and a compressed air admission control valve, adapted to be placed in communication with a source of compressed air, and a further chamber open to the chamber containing the compressed air admission control valve, and also open to atmosphere, adapted to be placed in communication with the air transfer pipe, said further chamber containing a Venturi arrangement, and a non-return valve, and means on said head for operating the valve of the liquid outlet and the air admission control valve.

For a further understanding of the improvements comprising the invention, reference is made to the accompanying drawing wherein

Figure 1 is a general assembly view in elevation of the improved apparatus,

Figure 2 a sectional elevation,

Figure 3 a plan view, and

Figure 4 a front elevation of the dispensing head of the apparatus,

Figure 5 a sectional elevation of the valve chamber block in which are housed the air valve, and the non-return valve,

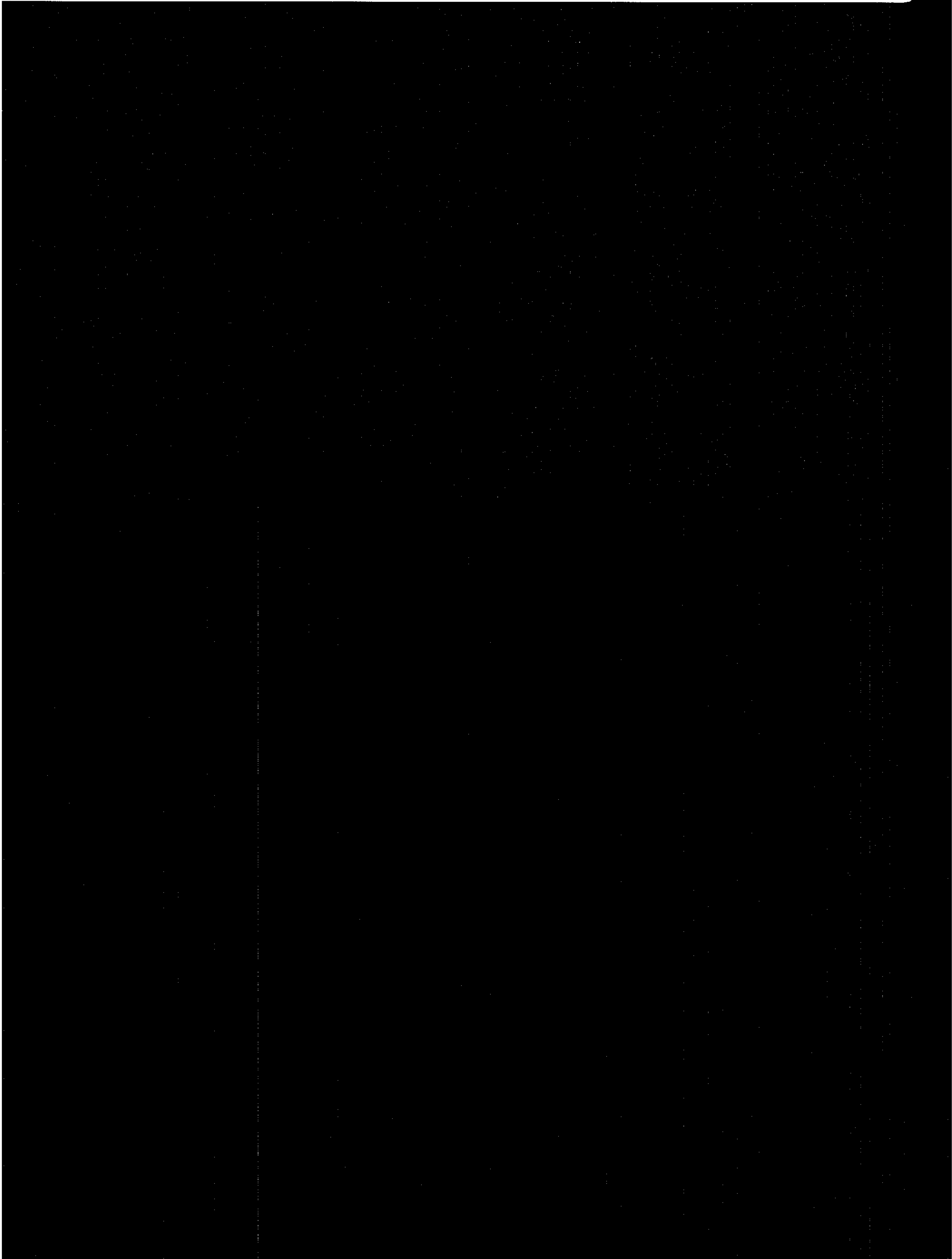
Figure 6 a sectional elevation of the valve chamber block on the line B—B, Fig. 5,

Figure 7 a sectional elevation of the air hose connector, and

Figure 8 a cross sectional view of the hose connector on the line A—A, Fig. 7.

In applying the improvements to the aforesaid type of apparatus, there is provided a liquid discharge pipe 1 adapted for insertion in a closed liquid container 2 to extend to, or to near the bottom thereof, and also above same, said pipe 1 having externally of the container 2 and above the highest available liquid level therein, a valve controlled outlet 3 in the dispensing head 11 of the apparatus, for liquid to be discharged from the container 2.

Means for introducing compressed air into the container 2 comprise an air transfer pipe 4 communicating with the interior of the container 2 above the highest liquid level obtainable therein from a valve chamber 3 (Figs. 2, 5 and 6) in a valve chamber block 9 fitted on the head 11, to the lower portion of which chamber 8 compressed



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of the nipple 39 allowing the valve 33 to seat against the sealing ring 31 under the action of the spring 33^a and reclose the way through nipple 29 and ferrule 30.

A locking pin 44 is provided for insertion in the lugs 23 above the stem of the valve 5 to prevent operation of the apparatus and said pin 44 contains a hole 44^a in one end, through which it may be secured in the lugs 23 by means of a padlock to prevent unauthorised use of the apparatus.

Provision is also made for facilitating the placing of a receptacle such as a bottle or the like in the correct position below the outlet 3, to receive liquid discharged therethrough, by means of a centering guide 45 on the head 11 adjacent said outlet, and against which guide the mouth or neck of the bottle or the like is placed to bring the latter into the correct position to receive liquid discharging through the outlet.

What we do claim and desire to obtain by Letters Patent of the United States of America is:

1. Apparatus for use in delivering liquid from containers into which compressed air is injected for the purpose of ejecting liquid therefrom, and comprising a liquid discharge pipe provided with a dispensing head having a valve controlled liquid outlet, a valve controlled compressed air inlet, and an air transfer pipe to the container, characterised by the provision on said head of a valve chamber block, containing a chamber with a compressed air admission control valve therein, adapted to be placed in communication with a source of compressed air, and a further chamber open to the chamber containing the compressed air admission valve, and also open to atmosphere, adapted to be placed in communication with the air transfer pipe, said further chamber containing a Venturi arrangement, and a non-return valve, and means on said head for operating the valve of the liquid outlet and the air admission control valve.

2. Apparatus, as claimed in claim 1, and wherein the chambers in the block are in communication with each other via a jet which co-acts with the Venturi arrangement, at the outlet of which the non-return valve is located.

3. Apparatus, as claimed in claim 1, wherein the chamber which contains the Venturi arrangement and the non-return valve communicates through ports in the block with the air transfer pipe.

4. Apparatus as claimed in claim 1, wherein a plug is mounted in the block beyond the outlet side of the Venturi arrangement, and the non-return valve is comprised by a disc located be-

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tween said plug and the Venturi arrangement so as to seat against the latter under the action of return pressure from the air transfer pipe.

5. Apparatus, as claimed in claim 1, wherein the chamber which contains the Venturi arrangement and the non-return valve, is open to atmosphere through passages in said block and grooves in the latter.

6. Apparatus, as claimed in claim 1, wherein the compressed air admission control valve is spring loaded and adapted to close against its seat under the action of compressed air and the spring, and is provided with a stem and an operating rod forming part of the liquid outlet valve operating means is adapted to engage said stem, so as to move the valve to admit compressed air to the chambers in the valve chamber block.

7. Apparatus, as claimed in claim 6, wherein the stem of the compressed air admission control valve projects from the block, and wherein the rod adapted to engage said stem operates through the head and has a tapered lower end and is pivotally attached at its other end to a lever keyed on the spindle portion of a valve operating lever mounted on the head.

8. Apparatus for use in delivering liquid from the containers, comprising a liquid discharge pipe adapted for insertion in a container so as to extend therefrom, a liquid dispensing head on said pipe, provided with a valve controlled liquid outlet, a valve chamber block on said head containing a chamber adapted to receive air from a source of supply, and housing a compressed air admission control valve and a chamber open to atmosphere and also to the compressed air admission chamber, and adapted to be placed in communication with an air transfer pipe to said container, said chamber being open to atmosphere and containing a Venturi arrangement, and a non-return valve; an operating lever having a spindle portion mounted on the head; a valve lever on said spindle adapted to actuate the valve of the liquid outlet, and a rod actuated by said valve lever to operate the compressed air admission control valve.

BRYAN JAMES TODD.

ROBERT EDMUND TURNER.

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