

Oct. 1, 1935.

F. S. MARSH ET AL

2,015,904

PORTABLE CONTAINER FOR COMPRESSED GASES

Filed June 13, 1931

Fig. 1.

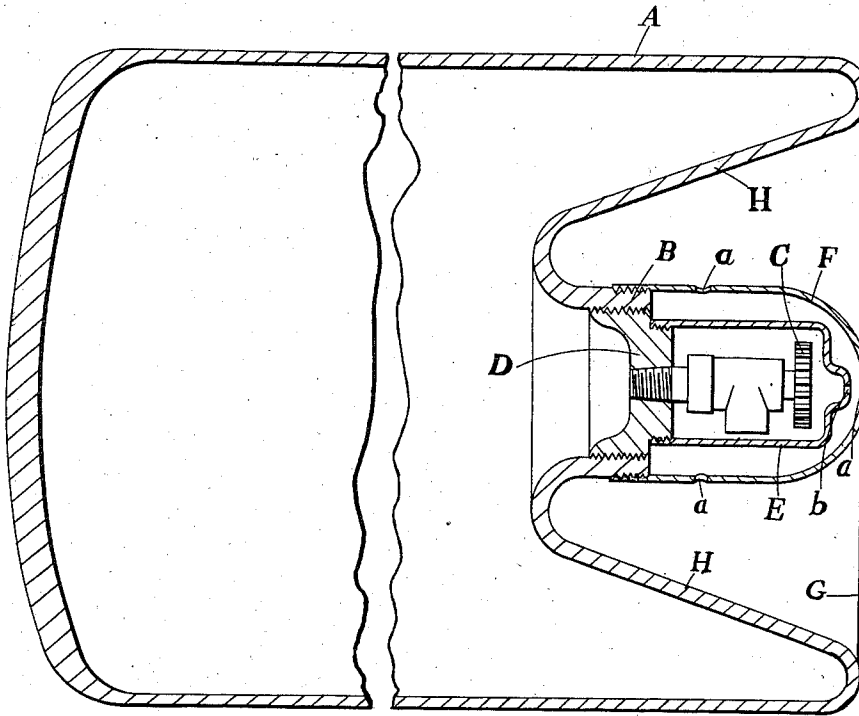
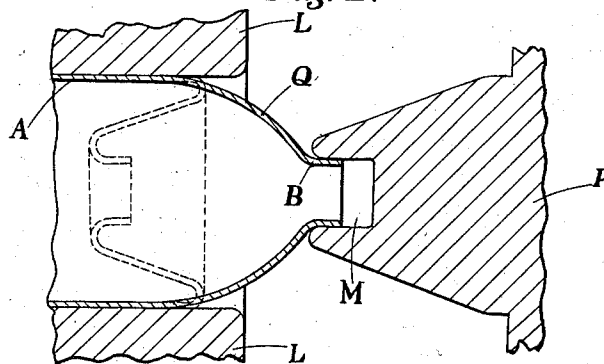


Fig. 2.



INVENTOR
F. S. MARSH AND J. H. BAGGALEY

BY *Johnnie*
ATTORNEY

UNITED STATES PATENT OFFICE

2,015,904

PORTABLE CONTAINER FOR COMPRESSED GASES

Frank Salton Marsh and John Henry Baggaley,
Chesterfield, England, assignors to The Chesterfield Tube Company Limited, Chesterfield, England

Application June 13, 1931, Serial No. 544,202
In Great Britain November 28, 1930

2 Claims. (Cl. 220—3)

The invention relates to portable containers for compressed gases of the type, commonly called "gas cylinders or bottles", which are formed by drawing or forging down the open end of an open-ended blank to form a neck to which is secured the valve by means of which the cylinder is filled.

These containers carry gases under high pressure and to avoid accidents care has to be exercised in transit to protect the valves from damage. For this purpose it is usual to provide protecting caps to the valves and it has been proposed to provide protecting caps open at the top which are permanently secured by welding to the top or dome of the cylinder.

In accordance with the present invention the top portion of the cylinder is formed in a re-entrant manner so that the neck is inside the top edge of the container. The re-entrant end is preferably so formed that the neck is so far below the top edge of the container when in the upright position that the whole valve is below this top edge.

With the above construction the valve is protected by the top edge or shoulder of the cylinder.

Another feature of the invention is that to protect the valve two removable caps are preferably provided in place of the one usually employed.

In the preferred construction a mouthpiece is screwed and welded in the neck and the valve is screwed in a central opening in this mouthpiece; one cap is screwed to the outside of a projecting portion of this mouthpiece and the other cap is screwed to the outside of the neck.

The re-entrant top is preferably made by heating the ordinary domed end of the cylinder and subjecting it to end pressure by a die while the wall of the cylinder is prevented from bulging.

A suitable die for this purpose has an exterior shape to fit within the finished re-entrant top of the cylinder and is provided with a central aperture into which fits the neck of the cylinder. During this pressing operation the body of the cylinder is conveniently held between liners which are held together by hydraulic pressure.

In the accompanying drawing which illustrates the invention in a diagrammatic manner, Fig. 1 represents in cross-section one preferred form of high pressure gas cylinder constructed in accordance with the invention,

Fig. 2 illustrates the preferred method of forming the re-entrant top.

Referring first to Fig. 1, the cylinder A has its portion H formed in a re-entrant manner so that the projecting neck B, to which the valve C is secured is sufficiently inside the top G of the cylinder to protect the valve from damage during use and transit.

In the form shown the valve C is screwed into a mouthpiece D which is screwed and welded into the neck B, and the latter is so far inside the top G of the cylinder that the valve is wholly sunk within the recess formed in the end of the cylinder.

As additional safeguards to the valve an inner cap E provided with an outlet hole *b* is screwed on to a projecting portion of the mouthpiece D and an outer cap F provided with holes *a* is screwed on to the outer surface of the neck B.

Referring now to Fig. 2, the cylinder A formed with the usual domed top Q is held in bushes L and is operated upon by a tool P having an opening M into which fits the neck B of the cylinders.

The bushes L serve to prevent the bulging of the wall A of the cylinder when the neck is subjected to end pressure and are preferably held together by hydraulic pressure.

The tool P is pressed forward under heavy pressure, preferably hydraulic and the end Q of the cylinder is heated. Care has to be taken in this operation that too much work is not done at one heat, and in cylinders of usual dimensions three heats are usually necessary.

By adopting a tool P of the shape shown, a perfect recessed form, such as shown in dotted lines, can be obtained free from folds.

It is to be understood that the invention is not restricted to the exact details shown and described but embraces such modifications as come within the ambit of the accompanying claims.

We claim:—

1. A weldless high pressure integral gas container having at one end a neck in the axial line of the cylinder formed for the reception of a valve, a conical wall integral with the wall of the cylinder and with the neck connecting the cylinder wall and neck integral and spaced throughout its full length from both the wall of the cylinder and from the neck, the neck projecting outwardly from the inner end of the conical wall with respect to the cylinder, the free end of the neck terminating at such a distance

from the end of the wall of the cylinder proper
as to permit the application of an appropriate
valve to the neck wholly within such distance,
whereby such neck and valve when connected
5 lie wholly within the overall length of the cyl-
inder and within the outer space provided for
the conical wall.

2. A weldless high pressure gas container open
at one end and having an inwardly extending
10 frusto-conical wall connected to the wall of the

container proper by a curved portion at said open
end, and an open neck connected by a neck por-
tion to said inwardly extending frusto-conical
wall, said container being seamless, closed at
the end opposite the neck with the inwardly ex-
tending frusto-conical wall having substantial-
ly parallel inner and outer surfaces. 5

FRANK SALTON MARSH.
JOHN HENRY BAGGALEY.