April 28, 1953 W. T. BIELER 2,636,378

ANTIFREEZE TESTER

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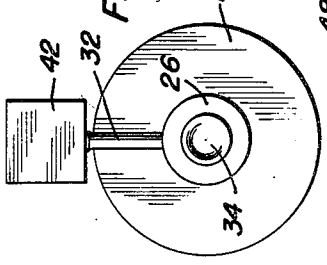

Fig. 2.

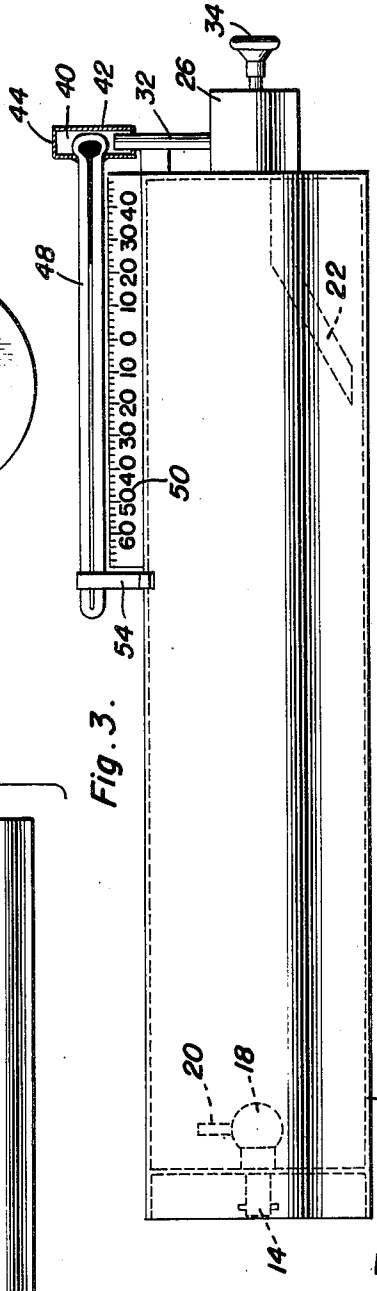

Fig. 3.

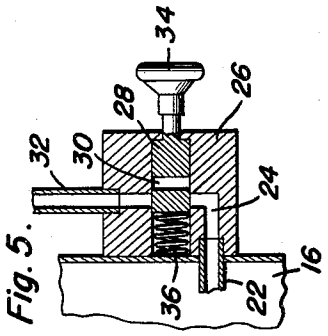

Fig. 5.

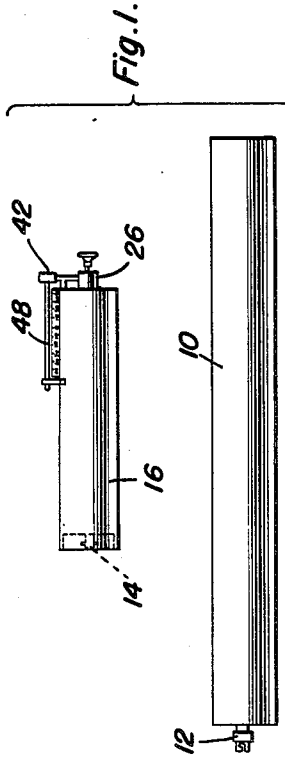

Fig. 1.

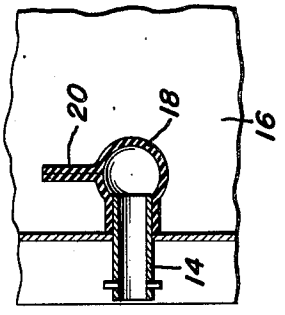

Fig. 4.

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ANTIFREEZE TESTER

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1 Claim. (Cl. 73—17)

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This invention relates to novel and useful improvements in testers for anti-freeze and other substances including mixtures of anti-freeze and water.

An object of this invention is to test a specimen of a substance, as a mixture of alcohol and water, by subjecting the specimen to a low heat condition in a zone, the general temperature of the zone being indicated on a thermometer.

Another object of this invention is to test the so-called anti-freeze solutions and mixtures to visually determine the point at which the specimen will freeze and at the same time indicate on a thermometer the temperature at which hardening occurs.

Another object of this invention is to subject the specimen to the cold condition by rapid expansion of a fluid underpressure in the region of the specimen.

Ancillary objects and features of novelty will become apparent in following the description of the preferred form of the invention, located in the accompanying drawings, wherein:

Figure 1 is an exploded view of an article of the invention showing a suggested container for a supply of a compressible fluid such as carbon dioxide, Freon and other gases;

Figure 2 is an end view of the device;

Figure 3 is an elevational side view of the device shown in Figure 1, portions being shown in section to illustrate details of construction;

Figure 4 is an enlarged fragmentary view showing a valve structure within the container holding the carbon dioxide, Freon or the like;

Figure 5 is a sectional view of a suggested form of valve for controlling the egress of the compressible fluid.

A supply tank 10 is illustrated in Figure 1 with a conventional fitting 12 at the end thereof adapted to be removably disposed in the fitting 14 which is disposed at one end of the container 16. Compressible fluid, such as carbon dioxide, Freon and like substances are introduced into the receptacle or tank 10 and are maintained therein by the check valve (not shown) provided in the fitting or adjacent the fitting 12. When the fitting 12 is mated with the fitting 14, the check valve is released so that the fluid under pressure in the tank 10 rushes into the container 16.

When the fluid passes into the container 16 it is issued through the resilient valve 18 having the slotted end portion 20 extending therefrom. This slotted end portion serves in the nature of a valve, preventing back flow of the fluid from the container 16.

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The tube 22 is disposed in the container 16 and has an angular end portion so as to reach the bottom thereof when the container is disposed in a position as disclosed in Figure 3. This tube communicates with a bore 24 formed in the valve block 26. The valve block is secured to one end of the container 16 and has a valve core 28 reciprocatively disposed therein. A passage 30 is formed in the core for communication with the bore 24 whereby the tube 32 is communicated with the bore 24 upon operation of the handle 34 of the valve core 28. A spring 36 reacts on the core 28 and also on one wall of the container 16, constantly urging the valve core outwardly of the valve block 26 and in the valve closing position.

The tube 32 may have a restricted end portion, such as a venturi, if found desirable, in order to increase the velocity of the issuing fluid so as to cause a cold condition or zone 40 within the receptacle 42.

The receptacle 42 is secured to the tube 32 and consists of shim stocks or other very thin highly heat-conductive material. The top 44 of the receptacle forms a support for a specimen in the form of a few drops of material to be tested. The receptable 42 has one or more very small openings therein so that the gases issuing therein may be exhausted. The low heat content of the zone 40 is produced by the high velocity issuance of gas from the tube 32.

A conventional thermometer 48 has its enlarged portion disposed in the receptacle 42. A scale 50 either graded in Fahrenheit or centigrade, is disposed below the thermometer and attached to the receptacle 16 so as to indicate the temperature within the receptacle. A small bracket 54 or the like is employed to hold the thermometer in place.

In operation the container is charged as previously described. A specimen of material to be tested is disposed on a support 44. Then, the valve operator 34 is actuated while the fluid under pressure is within the container 16 causing it to issue through the valve body and into the zone 40. This cools the zone thereby cooling the specimen. At such time as the specimen freezes a temperature reading is taken on the scale 50. This is substantially the freezing point of the solution.

Having described the invention, what is claimed as new is:

An anti-freeze tester comprising a compressed fluid container having ends, an inlet member having a valve located in one of said ends to charge said container, an outlet member for the

container located in the other of said ends, a manually operable valve controlling said outlet member, a receptacle having an exterior surface adapted to receive a few drops of anti-freeze, said receptacle being made of highly heat-conductive material, a thermometer having a bulb at one end located in said receptacle so that the temperature in and of said receptacle may be readily ascertained, and means communicating with the last-mentioned valve and the interior of said receptacle to conduct compressed fluid from said container into said receptacle in order to lower the heat content of said receptacle, said receptacle having openings therein for exhausting fluid therefrom.

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