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DEVICE FOR ASCERTAINING THE EXPANSION OF CONTAINERS AS CAUSED BY INTERNAL PRESSURE

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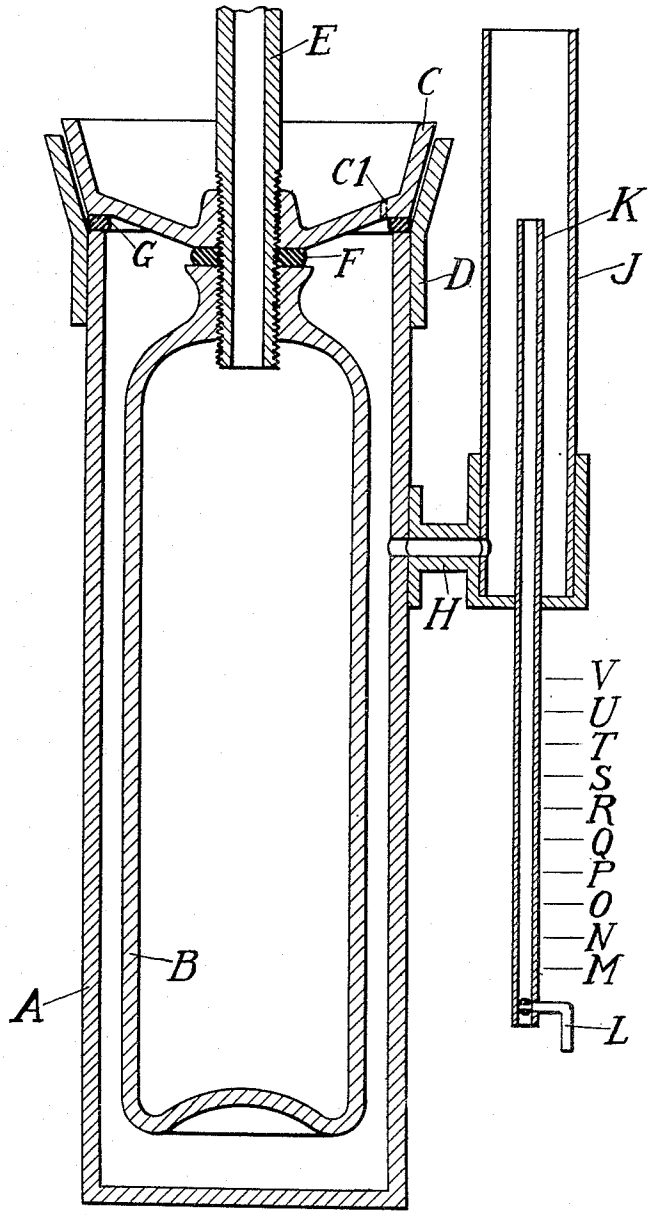

Herman E. Sturcke
INVENTOR

BY

Cipriano Andrade Jr.
ATTORNEY

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HERMAN E. STURCKE, OF PORT ORANGE, FLORIDA; GEORGIE ETTA KUNTZ EXECUTRIX OF SAID HERMAN E. STURCKE, DECEASED

DEVICE FOR ASCERTAINING THE EXPANSION OF CONTAINERS AS CAUSED BY INTERNAL PRESSURE

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My invention relates to a device for ascertaining the expansion of a container as caused by internal pressure, and the object of my invention is to ascertain this expansion in a water jacket wherein a constant water level is maintained.

I attain this object by the mechanism illustrated in the accompanying drawing, in which—

The figure is a sectional side view of my device.

Similar letters and numerals refer to similar parts throughout the several views.

A is the water jacket; B is the container; C is the closure; C^1 is an opening which could be used, if desired, for a pet cock; D is the holder; E is a pressure supply pipe the lower end of which is threaded on the outside to fit into threads on the inner surface of the opening of container B, and on the inner surface of closure C; F is a rubber cushion or gasket; G is a rubber cushion or gasket; H is an element adapted to hold wide glass tube or other material J and also having a hole to conduct water from the interior of water jacket A to the interior of wide glass tube or other material J; K is an inner tube of glass, the top of which is preferably, although not necessarily, in exact horizontal alignment with the highest point of the water contained in the inner surface of water jacket A; L is a valve adapted to open or close the inner tube K; M is the zero point for the water in inner tube K; N, O, P, Q, R, S, T, U and V are different points for accurately determining the exact location of the water at various levels above zero point M in inner tube K.

The operation of my device is as follows: The first thing is to pour water into the top of wide glass tube or other material J, and this water will then run through the hole in element H into the water jacket A. And in order to let said water fully fill the water jacket A, the pressure supply pipe E should be lifted up. And this will also lift closure C as well as container B, and thus clear the space between the top of rubber cushion G and the lower surface of closure C. And then all the air will escape from the inside of water jacket A except the air which may be held back by the outer lower form of the container B. And then the pressure supply pipe E should be let go, whereupon said closure C will drop down into contact with the top of rubber cushion G, thus eliminating any air from coming into the top of water jacket A. Then valve L should be opened, whereupon the water in wide glass tube or other material J will drop down through inner tube K, until the water in wide glass tube or other material J comes to the exact level of the top of inner tube K, and thereupon the water in inner tube K will drop down, and as soon as this water reaches the zero point M, the valve L should be closed, whereupon the top of the water in inner tube K remains at zero point M. Then the pressure supply should be started through pressure supply pipe E at any desired pressure, whereupon said pressure supply will fill the inside of container B, and this inside pressure will expand the container B, whereupon the water inside of water jacket A will be partially forced out through the hole in element H, and the water already level with the top of inner tube K will begin to rise higher, and will thus begin to run down into inner tube K, and will raise the water level from the zero point M to or between any of the other points, N, O, P, Q, R, S, T, U or V. And when the water ceases rising, the actual expansion of container B, by reason of the pressure, can be accurately calculated by the rise of the water in inner tube K above zero point M.

It will of course be understood that my invention is not limited to the exact form of structure shown as my invention covers any mechanical equivalent thereof which will always hold the water at a constant level in the water jacket A when there is either any pressure or no pressure inside of container B. For example instead of raising pressure supply pipe E to let the air escape out of water jacket A, when the water is being fed into water jacket A, said closure C could be fastened firmly to water jacket A, and said air could be escaped by having a pet cock set at the point C^1 shown.

It will be noted that the inside of inner tube K is of much smaller circumferential

area than the inside of wide tube J, and also of much smaller circumferential area than the water space in water jacket A; and as a result thereof, when container B is expanded by pressure and creates even a small outflow of water from water jacket A into wide tube J, when this water falls into inner tube K, it will rise considerably higher than it was in wide tube J, and will thus permit a very accurate calculation of the exact expansion of container B.

I claim:

In a device for ascertaining the expansion of a container under internal pressure, a receptacle having an opening through which the container to be tested may be inserted into the receptacle, means whereby the receptacle opening may be sealed after the container has been inserted into the receptacle and the space in the receptacle outside the container has been filled with liquid, means through which fluid under pressure may be introduced into the container and by which the container may be otherwise sealed, said receptacle having at one side thereof, and communicating therewith, an upright liquid receiver open at its top and having a perforation in its bottom through which a glass tube is inserted so that its upper end is below the upper end of the receiver but as high as the high point reached by the liquid confined in the receptacle, the glass tube extending below the bottom of the receiver and having a valve at its lower end, the protruding portion of the tube having graduations whereby the contents of the tube may be measured.

HERMAN E. STURCKE.