

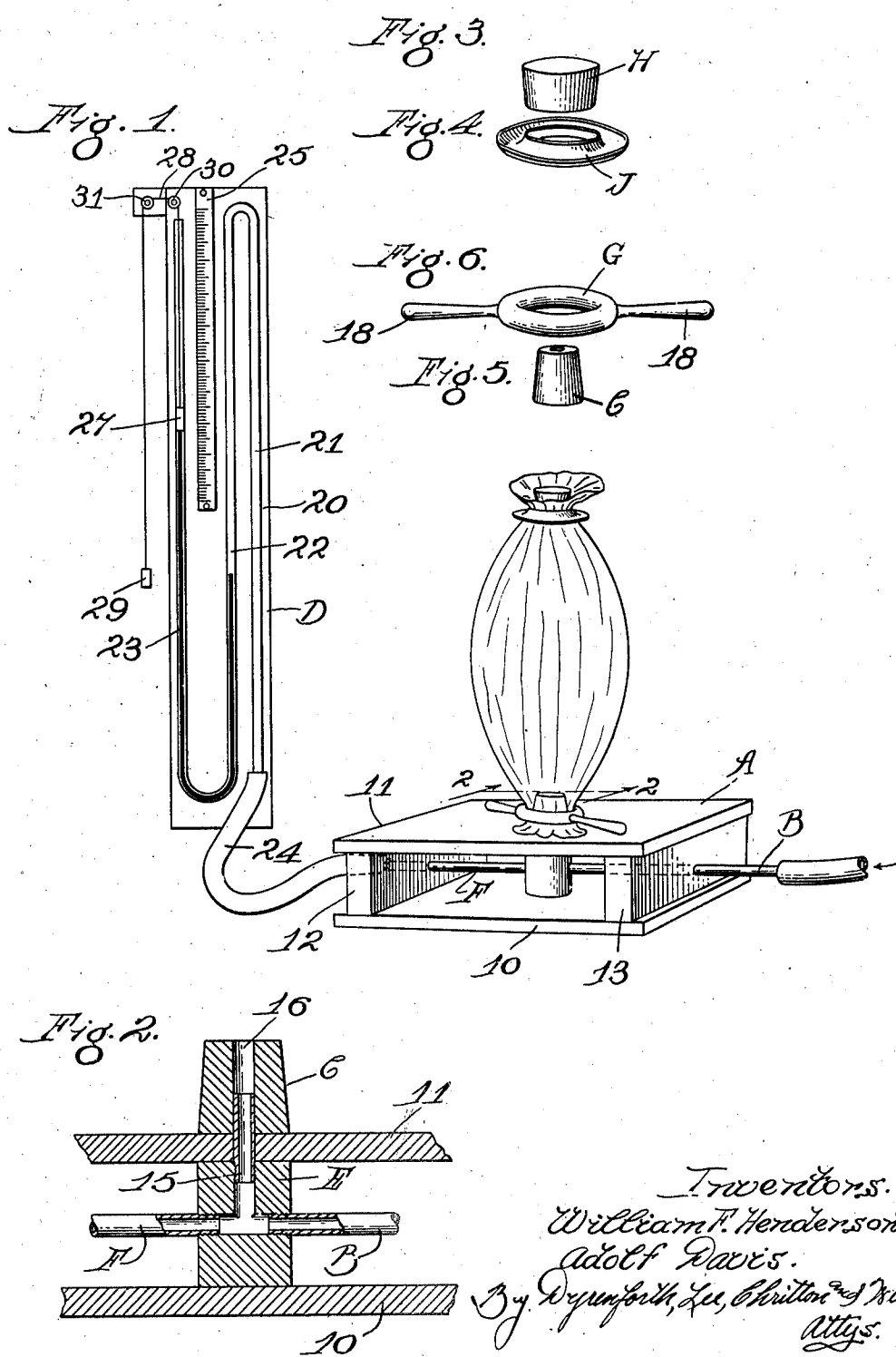
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TESTING APPARATUS

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TESTING APPARATUS

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1 Claim. (Cl. 73—51)

This invention relates to apparatus for determining the bursting pressure of tubes, or the equivalent, and is particularly adapted to be employed to ascertain the bursting pressures of cellulose sausage tubes.

The primary object of the invention is to provide improved apparatus which will inflate a cellulose sausage tube or casing until it bursts and then indicate the pressure that obtains in the tube or casing at the instant it is ruptured.

Apparatus embodying the invention is particularly advantageous as the inflation of the tubes and the consequent stretching thereof subjects them to conditions approaching those imposed upon the tubes or casings in a sausage factory and therefore any fault or imperfection common to a number of tubes and of a type which would render the tubes unsatisfactory for use in sausage factories may be noted and corrected.

Many other objects and advantages will appear as this description progresses, reference being had to the accompanying drawing, in which:—

Figure 1 is a perspective view of a tube testing device which embodies the invention, the testing device comprising a manometer which is shown in elevation.

Fig. 2 is a fragmentary vertical section taken on line 2—2 of Fig. 1.

Fig. 3 is a perspective view of a cork or stopper for closing one end of a tube which is being tested.

Fig. 4 is a perspective view of a ring or annulus which is employed to clamp one end of the tube to the stopper, shown in Fig. 3.

Fig. 5 is a perspective view of a tapered nozzle through which the tubes are inflated, and

Fig. 6 is a perspective view of a ring or annulus member adapted to clamp the tube to the nozzle, shown in Fig. 5.

As set forth above, apparatus embodying the invention is particularly adapted to be employed to determine the bursting pressures of sausage tubes or casings which are formed from cellulose, but it is to be understood that our invention is limited to this use only to the extent indicated in the appended claim.

As illustrated in the drawing, a preferred embodiment of the invention comprises a stand or base A; a tube or pipe B communicating with a supply of compressed air; a tapered nozzle C through which the tubes or casings are inflated; a manometer D; a block E, having passages leading from the pipe B to the nozzle C, a pipe F

ring or annular member G adapted to clamp one end of a tube or casing on the nozzle C; a cork or stopper H insertable in one end of a tube or casing which is being tested to close that end; and a ring or annulus J which is employed to clamp the tube or casing to the cork or stopper H.

The stand or base A may be of any suitable construction. In this instance, it comprises a bottom board 10, a top board 11 and transverse members 12 and 13 which rest upon the bottom board 10 and support the top board 11.

The transverse members 12 and 13 are apertured to receive the pipes B and F which project into the block E and communicate with each other and with a pipe 15. The pipe 15 is screw-threaded into the block E and projects therefrom through the top board 11 into the nozzle C. The nozzle C is preferably tapered, and is preferably formed from rubber, or the equivalent. It will be noted that the nozzle C is provided with a central passage 16 through which air may flow from the pipe B.

The ring or annulus G is preferably provided with handles 18 to facilitate handling thereof, and it is employed to clamp one end of a tube or casing, which is to be tested, on the tapered nozzle C (see Fig. 1). The other end of the tube or casing is then drawn through the ring or annular member J and the cork or stopper H is inserted as illustrated in Fig. 1 so that the wall of the casing is clamped between the member J and the stopper H. The stopper H is preferably formed from rubber, or the equivalent.

The manometer D comprises a glass tubing 20 bent to provide vertically disposed portions 21, 22 and 23. The upper ends of the portions 21 and 22 communicate with each other and the lower ends of the portions 22 and 23 communicate with each other. The pipe F communicates with the lower end of the portion 21 through rubber tubing 24. A quantity of mercury in the portions 22 and 23 is adapted to indicate pressures obtaining in casings inflated by the apparatus, a scale 25 being provided so that readings may be taken. A float 27 rests upon the mercury column in the portion 23 and is connected by a string 28, or the equivalent, to a weight 29, the string 28 being trained over pulleys or sheaves 30 and 31. The construction is such that when the manometer is subjected to pressure the mercury will rise in the portion 23 and raise the float 27. However, when the pressure is relieved and the mercury falls in the portion 23, the float 27 will remain in its upper position and a reading may be taken of the maxi-

num pressure to which the manometer was subjected. It is obvious that the reading must be doubled inasmuch as the pressure is recorded by the difference in the mercury levels in the vertically disposed portions 22 and 23.

When the above described apparatus is utilized to determine the bursting pressure of cellulose sausage tubes or casings, the pipe B is preferably connected to a source of compressed air which is under a pressure of 75 lbs. per square inch. The compressed air is admitted slowly to the apparatus and at a velocity which will not cause the mercury to rock.

In practice, it has been found that the bursting pressure for cellulose tubes or casings is of the order of 7 lbs. per square inch, or approximately one-half of an atmosphere.

Of course, the apparatus must be built and standardized, more or less, to suit the types of tubes to be tested. The data obtained is largely empirical, but it may be used successfully for comparing samples with standards which have been adopted. For such comparisons, conditions such as the rate of air flow, the length of the test sample, diameter of the test sample, and the conditions such as moisture and temperature of the sample must be standardized.

In the operation of the apparatus, after the sample has been properly mounted therein, the operator must lower the float 27 to the mercury in the arm 23 before the sample is subjected to pressure. Then when the compressed air is admitted to the sample, the mercury column in the arm 23 raises the float 27 until the sample fails.

In some instances, we prefer to omit the stopper

H and the annular member J as the upper ends of the casings will be held closed by the fingers.

While we have shown and described certain embodiments of our invention, it is to be understood that it is capable of many modifications. Changes, therefore, in the construction and arrangement may be made without departing from the spirit and scope of the invention as disclosed in the appended claim, in which it is our intention to claim all novelty inherent in our invention as broadly as possible, in view of the prior art.

What we claim as new, and desire to secure by Letters Patent, is:

In apparatus for testing a tube formed of cellulose; an upper closure, free of supporting structure, comprising a tapered stopper and a gathering ring; a tapered nozzle insertable into the lower end of the tube; an annular member for clamping said end of said tube to the tapered surface of said nozzle; a plurality of interconnected pipe sections disposed in the form of a T; a box-like standard supporting and enclosing said pipe sections, one of said sections leading to said nozzle; a source of fluid pressure connected to another of said sections; and a maximum indicating manometer communicating with the other of said sections, said manometer comprising tubes bent to form a plurality of vertically disposed arms, mercury in said arms, a stick float resting upon a column of said mercury, and means for counterbalancing said float

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