

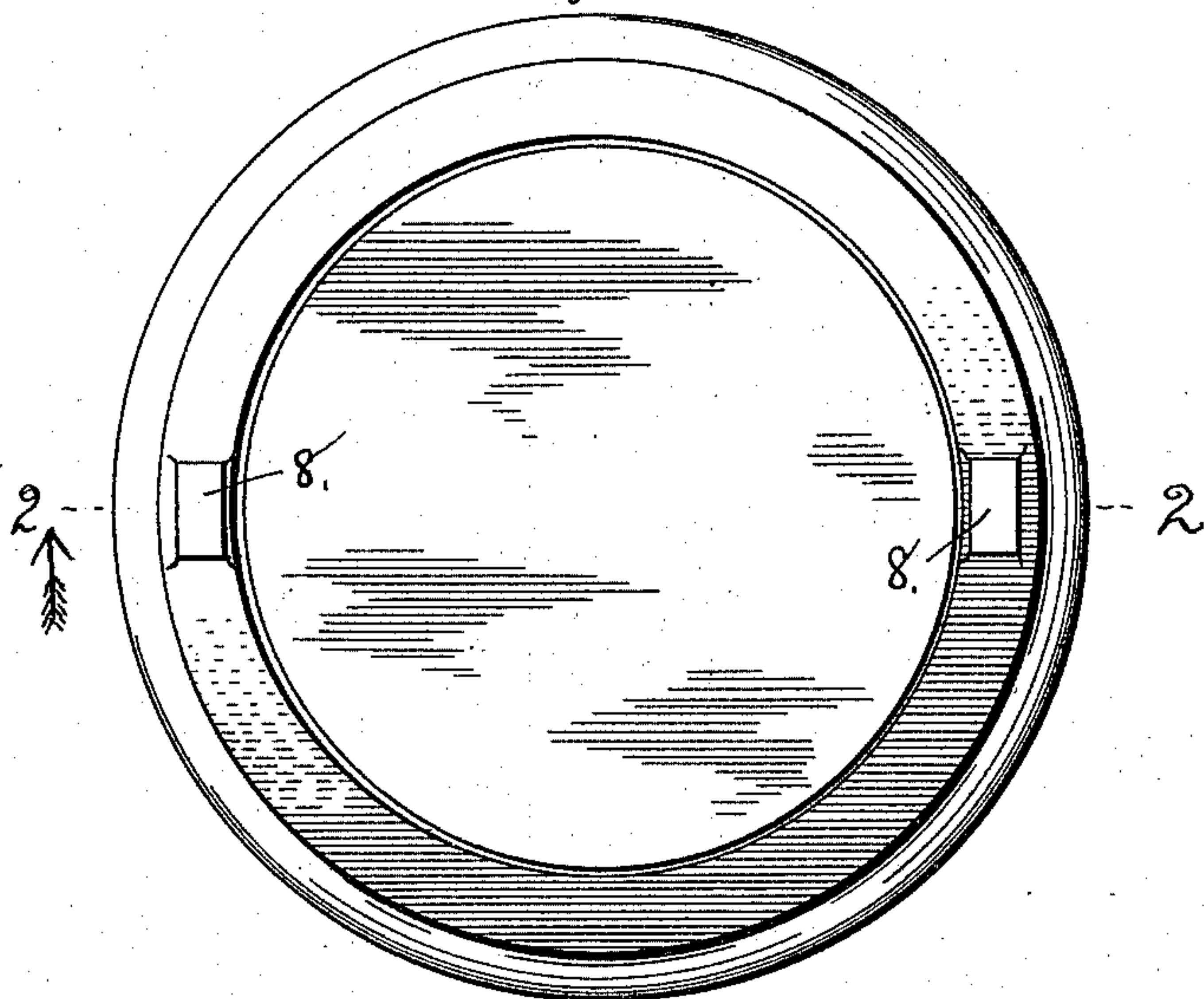
(No Model.)

J. T. HAYDEN.  
SAFETY VENT.

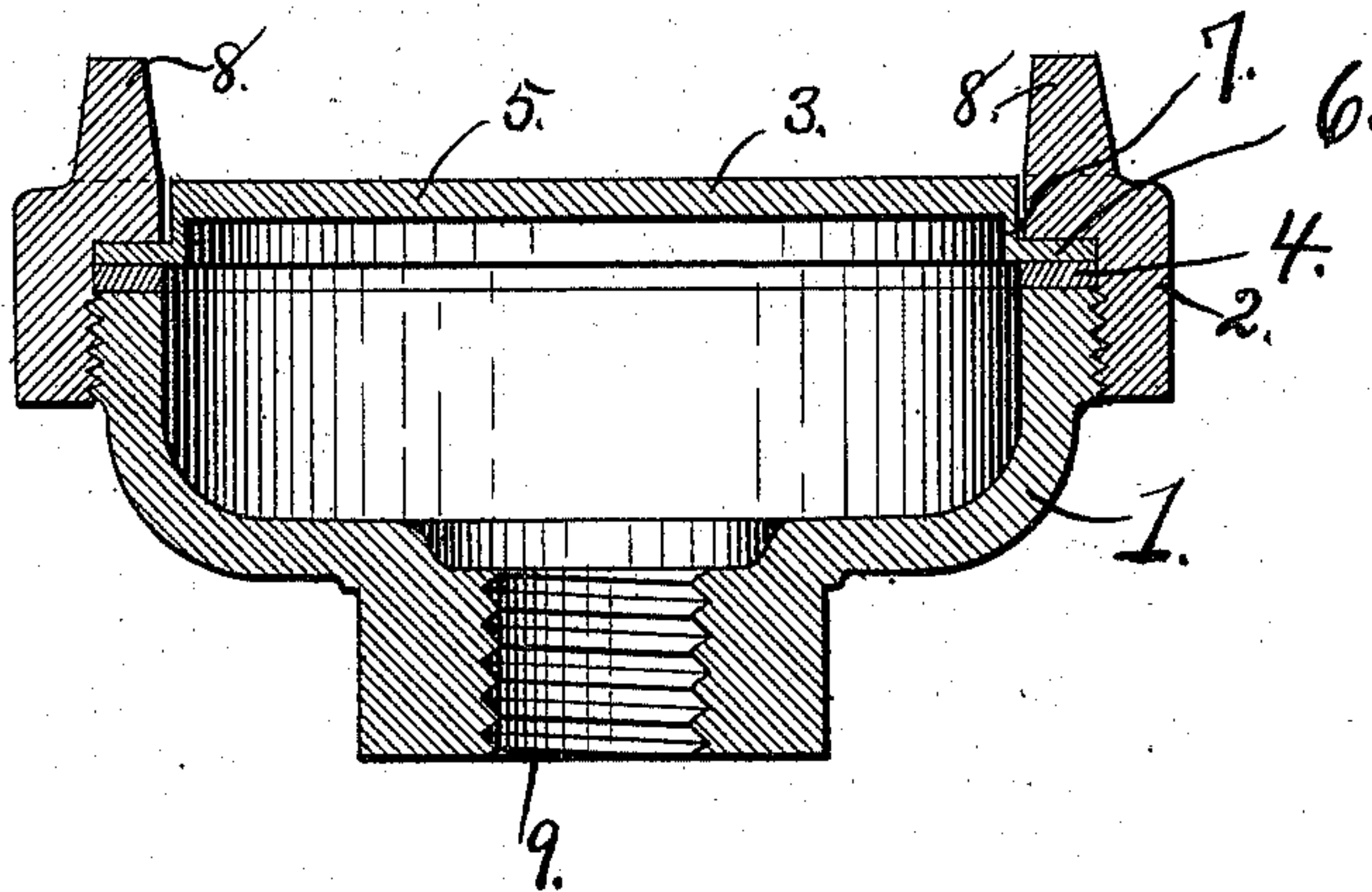
No. 571,476.

Patented Nov. 17, 1896.

*Fig 1.*



*Fig 2.*



*Witnesses*  
*John Conway*  
*Robert Sanford*

*Inventor.*  
*James T. Hayden*  
*by his atty*  
*Paul Synnestvedt.*



# UNITED STATES PATENT OFFICE.

JAMES T. HAYDEN, OF OAK PARK, ILLINOIS, ASSIGNOR TO THE CRANE COMPANY, OF CHICAGO, ILLINOIS.

## SAFETY-VENT.

SPECIFICATION forming part of Letters Patent No. 571,476, dated November 17, 1896.

Application filed May 8, 1896. Serial No. 590,767. (No model.)

*To all whom it may concern:*

Be it known that I, JAMES T. HAYDEN, a citizen of the United States, residing at Oak Park, Cook county, State of Illinois, have invented certain new and useful Improvements in Safety-Vents, of which the following, taken in connection with the accompanying drawings, is a specification.

My invention relates to that class of devices which are used to provide against unsafe excess of pressure in fluid-pressure storage-receptacles.

More specifically my invention belongs to that class of safety-vents which employ a disk which is adapted to be ruptured by the accumulation of pressure above the determined maximum of safety.

I am aware that it is not new to provide a casing having a removable disk or rupture-plate, and I am ~~also aware that a construction~~ has been proposed in which the casing and rupture-plate are made in one piece. My invention is in the nature of an improvement in the rupture-disk itself, and is applicable to either of the two forms mentioned. It has been found in practice that in all rupture-disks heretofore used the range of variation in the bursting-points has been excessively and unsafely great. By careful experiment made with a large number of disks I have found that while some will burst at three hundred pounds others will not give way until a pressure of seven hundred or in some rare cases eight hundred pounds has accumulated, although all were calculated to vent the pressure at about four hundred pounds to four hundred and fifty pounds. The disks used in the experiments referred to were, as is customary, weakened at some point by being turned down to a predetermined thickness, and a careful examination of the parts after rupture failed to reveal any such variation in thickness as would warrant such radical differences in the range of bursting pressures. Differences in grain and quality of the various metals used must then have been the main cause of the variations, and as this was something very difficult to overcome it occurred to me that by changing the nature of the rupture from a kind of a shearing break to a direct or tensile pull on the metal more

uniform results could be secured. To accomplish this, instead of making my disk flat and weakening it by a groove or channel turned in its face near its edge I constructed it with an offset, so arranged that the part adapted to be ruptured should be approximately cylindrical in shape, and with disks made in this way I have found the variation in range of point of rupture does not exceed one hundred pounds except in exceptional cases, and in most instances it is not as much as that.

Before proceeding to specifically point out my invention in the claims I will now describe it more in detail, reference being had to the accompanying drawings, in which—

Figure 1 is a plan view of a safety-vent containing my improved disk. Fig. 2 is a vertical section on the line 2 2 of Fig. 1.

As a matter of convenience in removing and renewing the disk when it has been ruptured I prefer to form my vent in separable parts, but this is not a part of my invention and not essential thereto, for, as previously intimated, my form of disk can also be used in a vent formed all in one piece, if that be desired.

The body of the vent 1 is threaded around its outer circumference to permit the screwing on of the ring 2, which holds the disk 3 in place. Between the disk 3 and body 1 is provided a packing-ring or gasket 4 to provide against leakage.

The disk 3 is made with a center plate or portion 5, an offset flange 6, and a substantially cylindrical portion 7, which latter is the part designed to be ruptured.

On the ring 2 are lugs 8, provided for the purpose of permitting the use of a flat bar, as a wrench, to unscrew the ring when a new disk is to be put in place. In the lower portion of the body 1 is a screw-threaded opening 9, into which is to be attached the pipe which leads from the fluid-pressure storage-receptacle.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a safety-vent, a rupture-disk, comprising a body portion, a flanged offset, and a cylindrical portion, substantially as described.

2. In a safety-vent, a rupture-disk composed of a flat portion 5, an offset flange 4, and a cylindrical part 7, substantially as described.

5 3. In a safety-vent, a rupture-disk, comprising a body portion, an annular securing edge, and a cylindrical portion, substantially as described.

10 4. In a safety-vent, a rupture-disk, comprising a body portion, a flanged portion and

a weakened cylindrical portion, substantially as shown and described.

5. In a safety-vent, a rupture-disk, comprising a body portion, a securing portion, and a weakened portion approximately cylindrical in shape, substantially as described. 15

JAMES T. HAYDEN.

Witnesses:

JOHN CONWAY,

ROBERT GANFORD.