

(No Model.)

F. N. WINNE.
SAFETY VALVE.

No. 564,812.

Patented July 28, 1896.

Fig A.

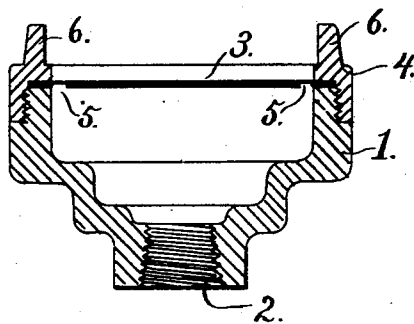
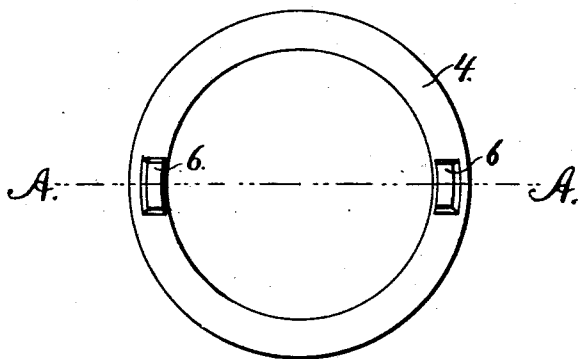


Fig B.



Witnesses
L. Bridgman
C. H. Harmon

Frank N. Winne Inventor
By his Attorney *Paul Symestvedt.*

UNITED STATES PATENT OFFICE.

FRANK N. WINNE, OF EVANSTON, ILLINOIS, ASSIGNOR TO THE CRANE COMPANY, OF CHICAGO, ILLINOIS.

SAFETY-VALVE.

SPECIFICATION forming part of Letters Patent No. 564,812, dated July 28, 1896.

Application filed March 4, 1895. Serial No. 540,473. (No model.)

To all whom it may concern.

Be it known that I, FRANK N. WINNE, a citizen of the United States, residing at Evanston, in the county of Cook and State of Illinois, have invented a new and useful form of Safety-Vent, of which the following is a specification.

The devices commonly used to prevent the accumulation of excessive pressure consist of a case containing a winged valve held shut by a spring under adjustable tension. Such apparatus is often uncertain in action, because of the liability of corrosion of the seat causing the valve to stick fast, or of some one accidentally or maliciously altering the tension of the adjusting-screw against the spring.

To overcome the above-mentioned difficulties, constructions have been used in which excess of pressure was avoided by the provision of a rupture-plate, adapted to burst at a certain predetermined point and thus relieve the strain. Such devices, as heretofore made, have proven rather unreliable in respect that from the difficulty of getting the plates of just the proper strength throughout the range of variation in the points at which they would rupture was too great for safety. It is obvious that the slightest irregularity at any point in the thickness of the rupture-plate would cause wide variation in the force necessary to burst it.

The object of my invention is to overcome these difficulties, to attain which end I provide a plate which has a groove cut in it near its circumference. This groove is made of just the depth necessary to permit the breakage to occur at the desired pressure, thus making it immaterial what the thickness or quality of the metal may be which is within this circle.

Reference being had to the accompanying drawings, Figure A is a vertical section of the apparatus, taken on the line A A of Fig. B. Fig. B is a plan view of the ring or top side.

1 is a case having in its under side a screw-threaded connection 2, provided for the purpose of affording ready means of attachment

to the pipe which comes from the receptacle containing the stored pressure.

3 is a rupture-plate held in place in the case 1 by a screw-ring 4. The plate 3 is preferably made of thin cast-iron with a groove 5 turned near its periphery and in its under side only, for the purpose of making it weaker at that point. The outer wall of the groove aligns with the inner wall of the screw-ring 4, by which arrangement the plate will be prevented effectually from yielding at points beyond the groove and toward the periphery of the plate, so that when pressure is brought to bear on the plate it will exert force from the weakened portion inward. As the groove is cut in the plate in its under side only, and as the weakest portion of the plate is in alignment with the inner wall of the screw-ring, it follows that when undue pressure is brought to bear on the plate that the lift or upward bulge thereof will cause the weakened portion to rupture and break away, the inner wall of the screw-ring acting as an abutment or shearing edge, against which the upper surface of the outer boundary of the weakened portion bears. This groove is turned to a depth just sufficient to permit the breakage of the plate at that point under a predetermined pressure. When such pressure is exceeded, the entire center of the plate bursts outward and thus affords a full and free escape for the fluid, relieving the apparatus instantly of all danger of explosion from the strain.

On the screw-ring 4 are cast two lugs 6 6 for the purpose of facilitating the removal of the plate 3 after it has been ruptured and its replacement by a new one.

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

A safety-vent comprising a casing having its upper portion reduced and threaded, a ring adapted to be screwed onto the threaded portion of the casing, and a rupture-plate secured between the screw-ring and the casing and having a circumferential groove in its under surface only, the outer wall of the

groove being in alinement with the inner wall of the said ring, whereby, when undue pressure is brought to bear on the plate, the lift or upward bulge thereof will cause the
5 weakened portion to rupture and break away, the inner wall of the screw-ring acting as an abutment or shearing edge against which the

upper surface of the outer boundary of the weakened portion bears, substantially as described.

FRANK N. WINNE.

Witnesses:

C. A. G. WAYMAN,
A. D. MACGILL.