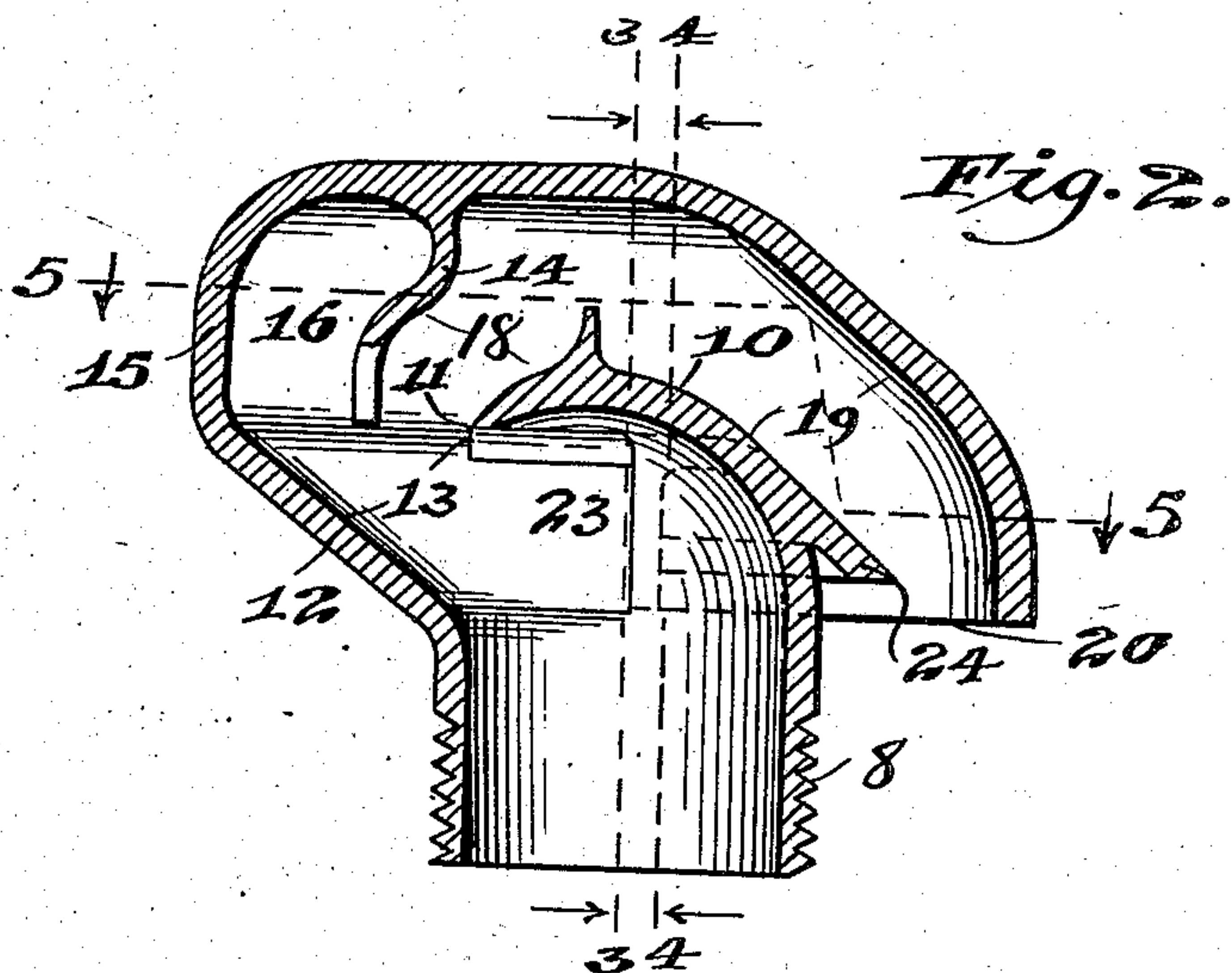
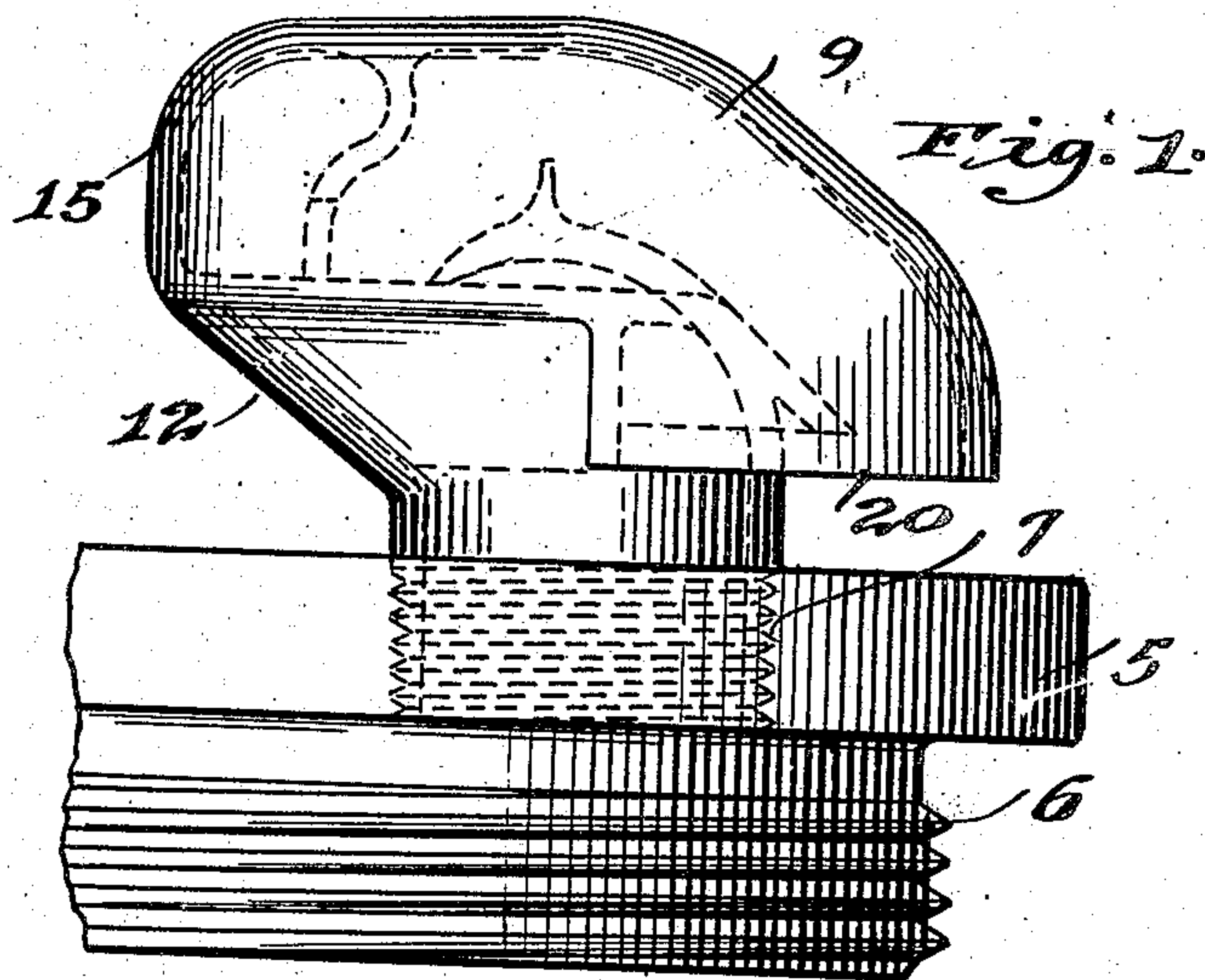


W. E. SHARP.
SAFETY VENT FOR TANK CARS.
APPLICATION FILED JAN. 12, 1909.

924,587.

Patented June 8, 1909.

2 SHEETS—SHEET 1.



Witnesses,
S. D. Mann
S. H. Ford

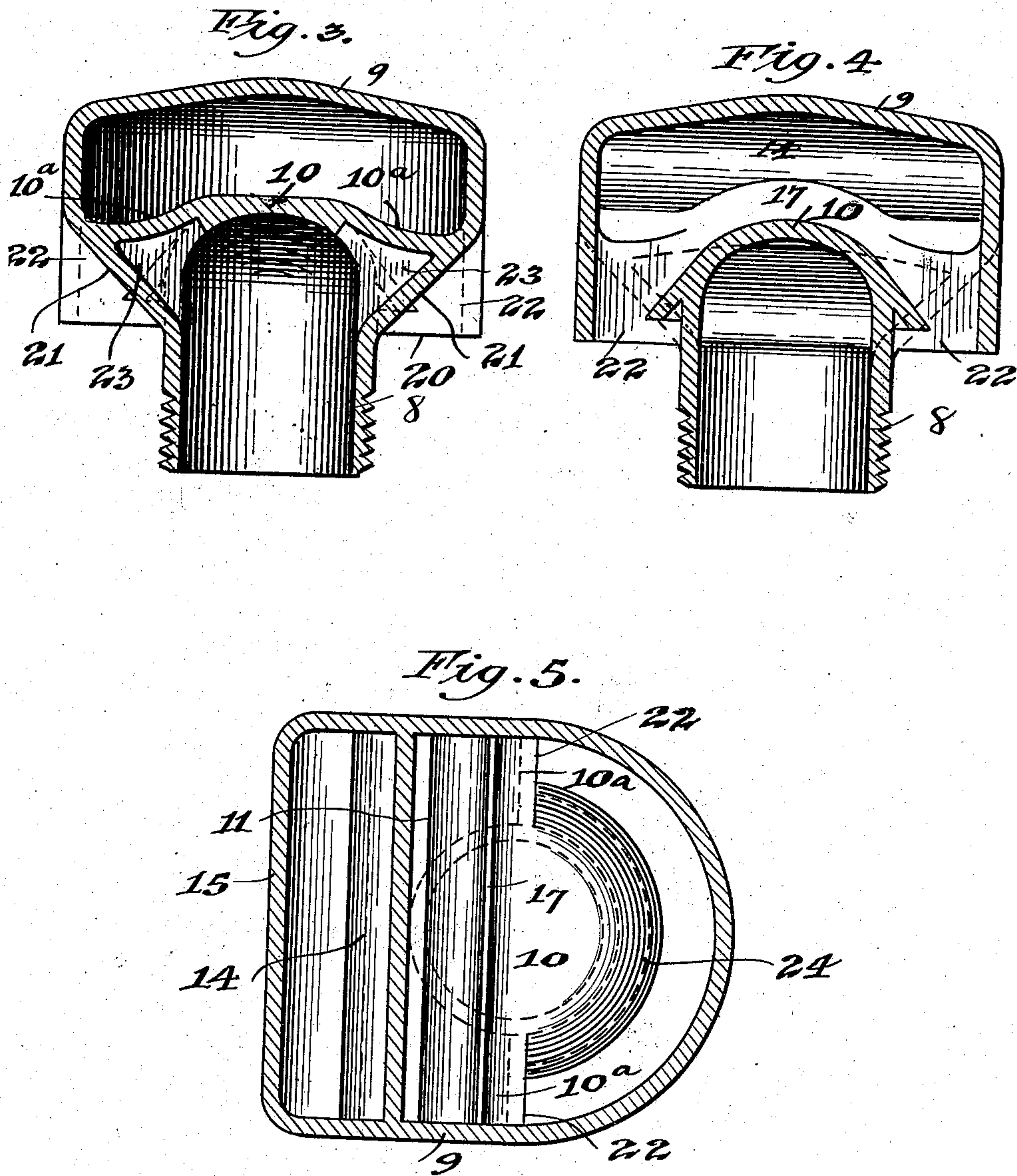
Inventor,
William E. Sharp,
By *Offield, Fowler & Lathrop*
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UNITED STATES PATENT OFFICE.

WILLIAM E. SHARP, OF CHICAGO, ILLINOIS, ASSIGNOR OF ONE-HALF TO GEORGE B. ROBBINS, OF HINSDALE, ILLINOIS.

SAFETY-VENT FOR TANK-CARS.

No. 924,587.

Specification of Letters Patent.

Patented June 8, 1909.

Application filed January 12, 1909. Serial No. 471,855.

To all whom it may concern:

Be it known that I, WILLIAM E. SHARP, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Safety-Vents for Tank-Cars, of which the following is a specification.

This invention relates to tank cars, having reference more especially to a new and improved safety vent therefor. The present requirements of the Master Car Builders' Association specify for the use of tanks carrying volatile or inflammable materials safety valves set to open at a specified pressure; for tanks carrying volatile or non-inflammable materials, vents depending on frangible lead disks for safety; and for tank cars carrying non-inflammable or non-volatile materials, a small splash vent of not less than two inches in diameter.

On account of the cost of application and expense for inspection and tests, the application of a safety valve to tank cars of the above-mentioned character is not desirable, provided a satisfactory open vent can be employed. It has been demonstrated by test that a two-inch vent hole in the dome or cover, while meeting the requirements of the M. C. B. specifications, is at the same time objectionable, as it admits dirt to the inside of the tank, and in rough usage the oil or other material handled in a tank equipped with such a vent will splash out to a greater or less extent, and there is, therefore, a liability to loss on account of such an opening.

To meet all of the requirements of the M. C. B. specifications, to provide an open vent which will protect the car owner and shipper against loss on account of slopping out, as well as on account of the admission of dirt to the inside of the car through the vent, and to provide a vent that will meet all of these requirements at a minimum cost for the original application, and will not require any expense for inspection and repairs and maintenance, I have designed the vent constituting the subject-matter of the present application, which, in its general character, comprises a cowl-like structure having a hollow or tubular neck adapted to be screwed or otherwise secured in a vent opening in the dome cover of the tank car, and a hollow head having a vent passage to the atmosphere of a cross-sectional area at all points

not less than the cross-sectional area of the neck, and internal baffles and pockets which are so formed and disposed as to arrest and cause to flow back the oil or other material that may splash upwardly through the neck. The device also, in its most complete and preferred form, includes a baffle or deflector located adjacent to the mouth of the vent opening designed to arrest the particles of dust, dirt or other foreign matter that may tend to enter the vent passage.

My invention will be readily understood when considered in connection with the accompanying drawings which illustrate an approved mechanical embodiment thereof, and in which—

Figure 1 is an elevational view of one-half of the dome cover of a tank car with my improved safety vent applied thereto. Fig. 2 is a central vertical section through the safety vent in a direction longitudinally of the car. Fig. 3 is a vertical section through the safety vent in a direction transverse to the car, on the line 3—3 of Fig. 2, looking in the direction indicated by the arrows. Fig. 4 is a view similar to Fig. 3 on the line 4—4 of Fig. 2, looking in the direction indicated by the arrows. Fig. 5 is a horizontal section on the offset line 5—5 of Fig. 2, looking downwardly.

Referring to the drawings, 5 designates the dome cover of a tank car provided as usual with the threaded flange 6 by which it is screwed into the top of the dome to close the usual manhole opening therein. In a two-inch internally threaded vent opening 7 in the dome cover is screwed the threaded neck or shank 8 of my improved vent protector or housing. This device comprises a generally cowl-like casting having the threaded neck 8, above mentioned, for application to the dome cover, and a head 9 extended laterally of said neck on all sides and cored in such a manner as to provide a vent passage to the atmosphere having at all points thereof a cross-sectional area not less than that afforded by a circular opening of the diameter of the neck, but which passage is of such form and direction as to check the splashing out therethrough of the contents of the car, as well as to arrest and prevent the ingress, to any appreciable extent, of dirt, sand, and other objectionable foreign matter from the outside. The head is also provided with interior transverse partitions

or baffle-plates so formed and located as to cooperate in preventing the splashing of the contents of the car through the vent passage, as well as providing pockets so formed and located as to catch and return so much of the contents of the car as may, under rough handling of a loaded car, splash up through the neck into the head.

More specifically describing the internal formation of the head, it will be observed that substantially one-half of the circular wall of the neck is extended upwardly into the head and curved inwardly over the upper end of the neck, thereby forming a baffle-plate 10 integral with which are lateral wings 10^a (Figs. 3 and 5) that extend to the side walls of the head. The free edge 11 of the baffle 10 lies opposite the slanting portion 12 of the rear wall of the head and forms with the latter a throat or passageway 13 from the neck 8.

Depending from the top wall of the head above the passageway 13 is a transversely curved baffle-plate 14 which extends from side to side of the head and forms, in combination with the upright portion 15 of the rear wall of the head, a pocket or cul de sac 16. On the upper surface of the baffle-plate 10 and its wings 10^a is formed an upwardly extending rib or baffle 17, said baffle projecting across the main vent passage formed between the top and side walls of the head and the baffles 10 and 14, the upwardly extending portion of said passage being indicated by 18, and the downwardly extending continuation thereof being indicated by 19, said passage terminating in a substantially semi-circular open end or mouth 20 lying adjacent to and outside the upwardly and inwardly projecting wall of the neck 8 which constitutes the baffle 10. The lower portions of the rear halves of the side walls of the head are slanting or inclined, as shown at 21; said slanting walls forming a junction with vertical transverse walls 22 which extend between the outer sides of the semi-circular mouth 20 and the vertical edges of the upward extension of the neck. This internal construction forms, between the walls 21 and 22 and the wings 10^a of the baffle 10, a pair of lateral pockets 23 of substantially triangular form, the open mouths of which, as in the case of the pocket 16, are directed toward and deliver into the neck 8 whereby any material splashing upwardly through the neck and lodging in said pockets is readily drained back.

The inner or lower wall of the portion 19 of the vent passage is formed with a semi-circular downwardly and forwardly projecting ledge 24 that extends partially across the mouth 20 of the passage and constitutes an effective baffle-plate to catch and arrest dirt, sand and other foreign matter that tends to be blown into the mouth of the vent

passage. The transverse baffle 17 in a measure also contributes to this result, as it serves to impede both the entrance of foreign matter and the discharge of the contents of the car outwardly through the vent passage.

From the foregoing it will be apparent that the several baffles and pockets formed on the interior of the head or cowl are adapted to effectually arrest and return any liquid that may splash up through the neck of the device; while at the same time the device provides a free vent opening through the throat 13, vent passages 18, 19, and open mouth 20, which opening at all points thereof is given a cross-sectional area fully meeting the requirements above referred to, so that any gases rising from the material within the car can find a free opening to the atmosphere, and the generation of any confined pressure within the car is obviated. The ledge 24 constitutes the chief means for preventing the ingress of dirt and foreign matter, although the baffle 17 also cooperates to some extent in arresting such small quantities of dirt or sand as may get past the baffle 24, thus making the device practically dirt proof.

I claim:

1. A safety vent for tank cars, comprising a cowl-like structure having a hollow neck adapted to be mounted in a vent opening, and a hollow head in free communication with and extended laterally of said neck, and provided on its under side with a mouth open to the atmosphere.

2. A safety vent for tank cars, comprising a cowl-like structure having a hollow neck adapted to be mounted in a vent opening, and a hollow head in free communication with and extended laterally of said neck, said head having on its under side a mouth open to the atmosphere and an internal baffle overlying and partially covering said hollow neck.

3. A safety vent for tank cars, comprising a cowl-like structure having a tubular neck adapted to be mounted in a vent opening, and a hollow head in free communication with and extended laterally of said neck on all sides and having on its under side a mouth open to the atmosphere, said head being further provided directly over said tubular neck with an internal baffle formed by an upwardly and inwardly directed extension of that portion of the wall of said tubular neck lying adjacent to said mouth.

4. A safety vent for tank cars, comprising a cowl-like structure having a tubular neck adapted to be mounted in a vent opening, and a hollow head in free communication with and extended laterally of said neck on all sides and having a vent passage terminating in a mouth open to the atmosphere, said head being further provided directly over said tubular neck with an internal baf-

5 fle formed by an upwardly and inwardly directed extension of that portion of the wall of said tubular neck lying adjacent to said mouth, and, opposite the free edge of said extension, with a depending baffle constituting a portion of the wall of the vent passage and also forming, on the side of the head remote from the mouth, a pocket communicating with said neck.

10 5. A safety vent for tank cars, comprising a cowl-like structure having a tubular neck adapted to be mounted in a vent opening, and a hollow head in free communication with and extended laterally of said neck on
15 all sides, said hollow head having a vent passage communicating with said neck and the atmosphere, respectively, and a plurality of baffles adapted to arrest the flow of liquid outwardly of said passage and cause the
20 same to flow back through said tubular neck.

6. A safety vent for tank cars, comprising a cowl-like structure having a tubular neck adapted to be mounted in a vent opening, and a hollow head in free communication
25 with and extended laterally of said neck on all sides, said hollow head having a vent passage communicating with said neck and the atmosphere, respectively, and one or more pockets the open ends whereof lie
30 toward said neck whereby to drain back into the latter any liquid caught therein.

7. A safety vent for tank cars, comprising a cowl-like structure having a tubular neck adapted to be mounted in a vent opening, and a hollow head in free communication
35 with and extended laterally of said neck on all sides, said hollow head having a vent passage communicating with said neck and the atmosphere, respectively, and a plurality of transverse walls forming with the outer
40 shell of the head rear and side pockets having open ends communicating freely with said neck whereby to drain back into the latter any liquid caught therein.

8. A safety vent for tank cars, comprising
45 a cowl-like structure having a tubular neck adapted to be mounted in a vent opening, and a hollow head in free communication with and extended laterally of said neck on all sides, said hollow head having an inter-
50 nal baffle overlying and partially covering said neck, and a vent passage above said baffle, the lower end whereof communicates through an open mouth with the at-
55 mosphere, and one or more dust-excluding deflectors formed on the walls of said vent passage and projecting into the latter.

WILLIAM E. SHARP.

Witnesses:

SAMUEL N. POND,
MATTIE B. BLISS.