F. T. ROBERTS.

INFLATED ARTICLE.

APPLICATION FILED AUG. 16, 1917.

1,355,271.

Patented Oct. 12, 1920.

3 SHEETS—SHEET 1.

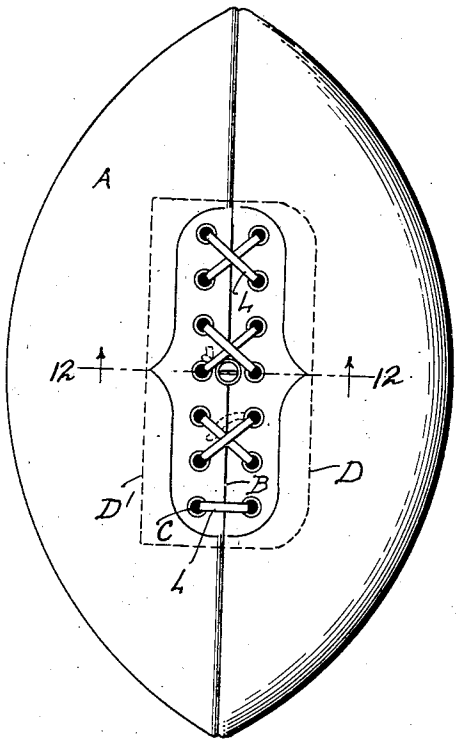



Fig. 1

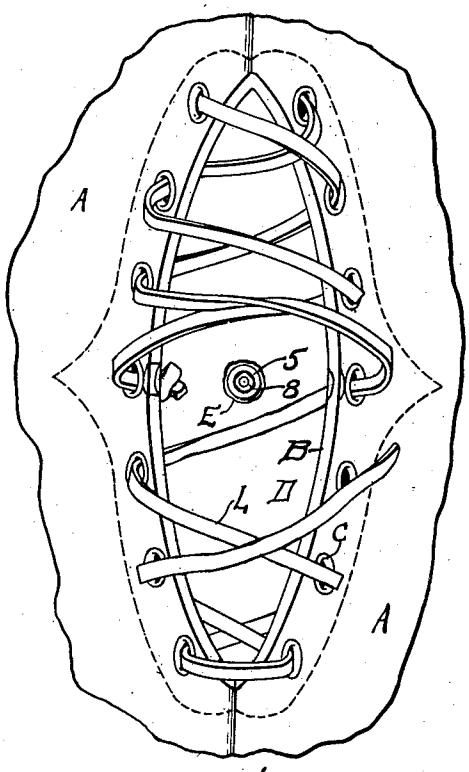



Fig. 2

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3 SHEETS—SHEET 2.

Fig. 3

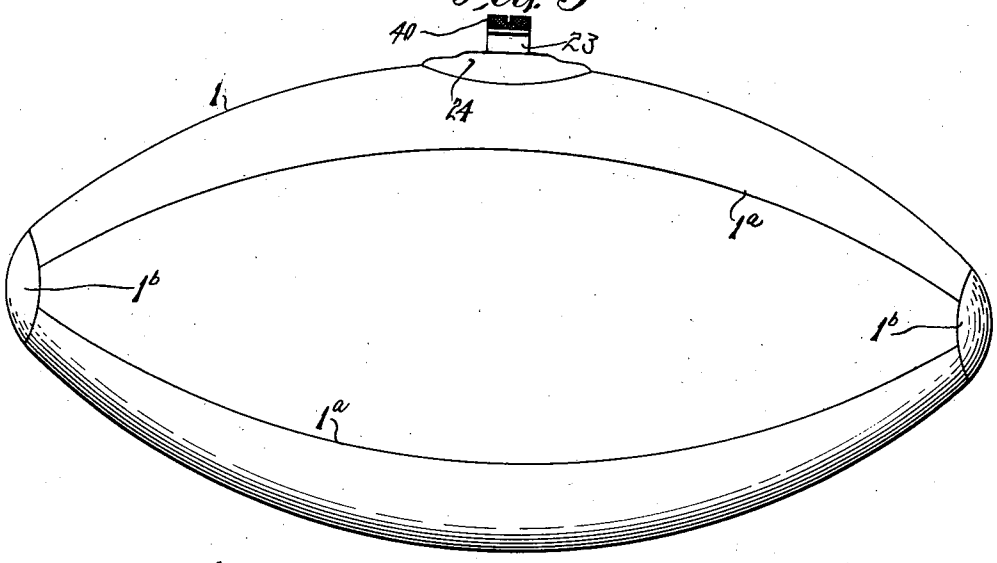



Fig. 4

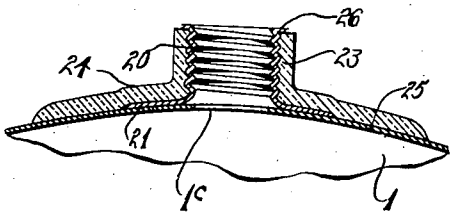
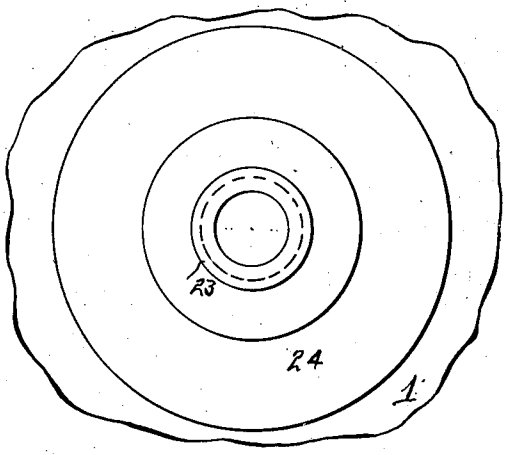



Fig. 5



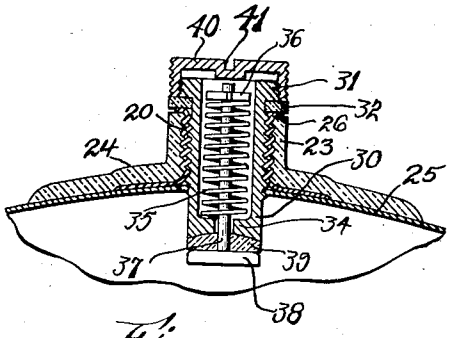




Fig. 6

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3 SHEETS—SHEET 3.

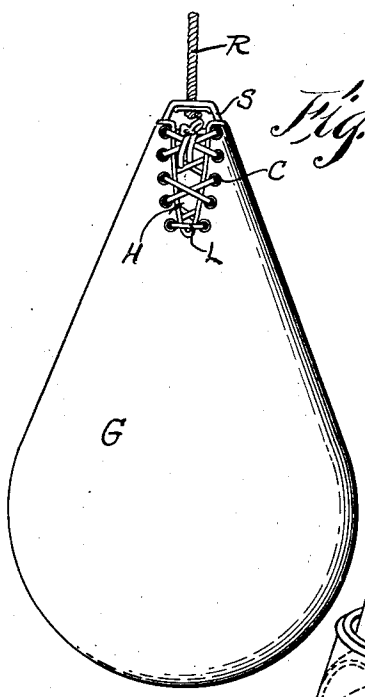



Fig. 7.

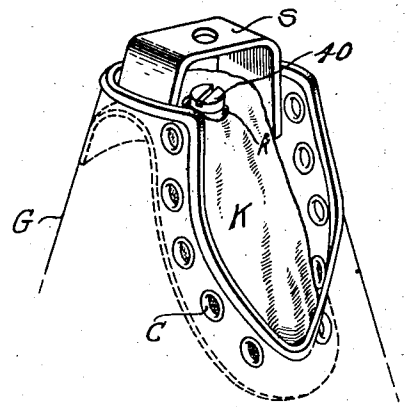



Fig. 8.

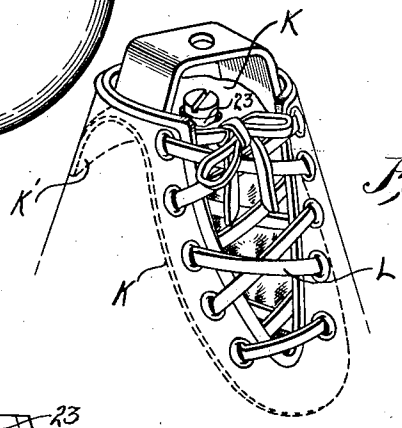



Fig. 9.

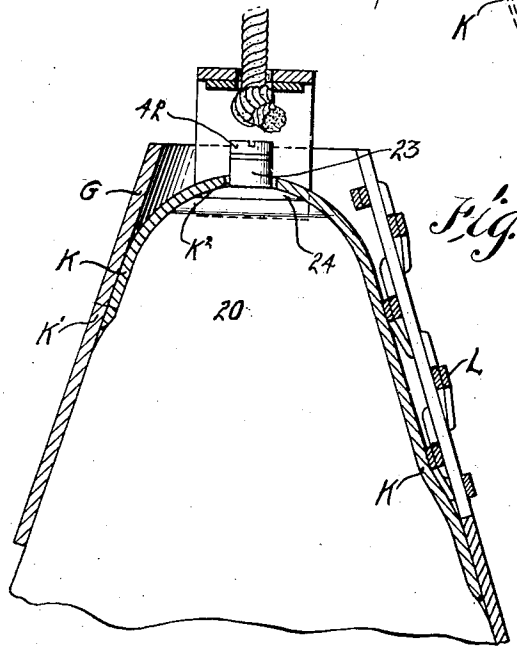



Fig. 10.

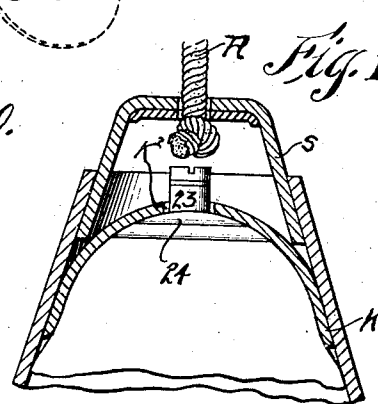



Fig. 11.

Inventor

Fred Thomas Roberts,

By Baker Macklin

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# UNITED STATES PATENT OFFICE.

FRED THOMAS ROBERTS, OF CLEVELAND, OHIO, ASSIGNOR, BY MESNE ASSIGNMENTS, TO PARAMOUNT RUBBER CONSOLIDATED, INC., OF PHILADELPHIA, PENNSYLVANIA, A CORPORATION OF DELAWARE.

## INFLATED ARTICLE.

1,355,271. Specification of Letters Patent. Patented Oct. 12, 1920.

Application filed August 16, 1917. Serial No. 186,477.

*To all whom it may concern:*

Be it known that I, FRED THOMAS ROBERTS, a citizen of the United States, residing at Cleveland, in the county of Cuyahoga and State of Ohio, have invented a certain new and useful Improvement in Inflated Articles, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings.

This invention relates to inflating valves and means for connecting them with the bladders for foot balls, basket balls, punching bags and the like, and the essential object is to provide a simple, effective inflating valve and bladder connection therefor which may be capable of being cheaply manufactured and conveniently used.

Usually the bladders for such articles have been provided with a long, flexible stem through which the bladder is inflated and which may be bent upon itself and tied to retain the air. These tubes present several difficulties interfering with proper high pressure of inflation and with the neat and proper lacing of the article. Accordingly, a more specific object of this invention is to avoid the objections referred to by using a short, metallic valve and so constructing the bladder that it may receive the valve body and be conveniently secured thereto in an air-tight manner, with the valve projecting but slightly beyond the usual flap for closing the laced opening in the article casing.

The provision of a short metallic valve projecting but a short distance from the bladder has been a matter of considerable experiment and patents have been issued for various methods of accomplishing this. However, generally speaking, these have all met with the objection of great difficulty in securing the valve to the bladder and in making the valve small enough to avoid affecting the balance of the article and still provide for firmly securing the same. Most of such attempts have resulted in providing a valve and bladder connection which is so expensive as to be prohibitive for commercial use.

Still another object is the adaptation of my invention to a punching bag in such a manner as to permit the bag to be inflated to contain much more than the usual internal pressure without danger of bursting the bladder at the lace opening. The usual form of pear-shaped punching bag laces well toward the top, but right at the top is left an opening not closed or protected by a flap. In accomplishing the above object, I arrange the flap to inclose the bladder and provide this protection and still not interfere with the proper and convenient lacing of the bag casing.

My invention will be hereinafter more fully described in connection with the accompanying drawings, and the essential characteristics summarized in the claims.

In the drawings, Figure 1 is a plan or elevation of a foot ball showing the lacing opening closed; Fig. 2 is an enlarged view of the lacing opening after placing the bladder in position but before tightening and securing the lacing; Fig. 3 is a side elevation of a bladder showing my inflating valve and the connection therefor; Fig. 4 is a section through the valve connection on the bladder with the valve removed; Fig. 5 is a plan of the same; Fig. 6 is a section through the valve connection and valve when in position; Fig. 7 is a side elevation of a punching bag equipped with my invention; Fig. 8 is a perspective view of the upper portion thereof, the lacing opening being spread and the lacing removed for clearness of illustration; Fig. 9 is a perspective view of the same after inflation and complete lacing; Fig. 10 is a vertical transverse section on a still further enlarged scale showing the novel arrangement of the flap coöperative with my valve arrangement and protecting the upper end of the bladder; Fig. 11 is a section at right angles to the plane of Fig. 10 cut through the valve and upper portion of the bladder.

Describing the parts by the use of reference characters, A indicates the usual heavy leather casing of a foot ball. B indicates the opening through which the bladder may be thrust to the interior thereof, C a series of large eyelets arranged in a row along each side of the opening, which is usually reinforced, and D indicates the usual protective flap secured at one side of the opening, as indicated at $D^1$ and extending across the opening beneath the casing, as shown.

1 indicates the usual foot ball bladder which may be composed of a number of sections having seams $1^b$. This bladder is of the usual construction and is closed when finished except for a small hole preferably at the middle of one of the sections, and accordingly it is very difficult to secure any valve requiring vulcanizing a shoulder or a flange to the interior of the bladder or to vulcanize in position a valve projecting into the bladder. I have overcome these difficulties by the present invention. After the bladder is formed and an opening provided, as indicated at $1^c$ I place over this opening a metal tubular member comprising a threaded tube portion 20 integral with an outwardly turned flange 21 fitting the normal shape of the bladder when inflated and embraced by a comparatively heavy rubber patch having a tubular portion 23 closely fitting the threaded metal tube and extending outwardly at 24 over the flange and adapted to be vulcanized to the rubber of the bladder along the meeting surfaces at 25. The upper end of the threaded tube may be flanged outwardly, as indicated at 26.

It will be seen that, irrespective of the bladder construction the flanged ferrule or tube may be secured to the bladder in an air tight manner by the arrangement described. In vulcanizing the bladder, soap stone or talc is used in the interior to keep the two sides of the bladder from sticking together. The bladder with this contained separator is laid flat in a pan of soap stone or talc and covered with similar material, and then the pan is placed in a steam vulcanizer. The steam heats the bladder to a vulcanizing temperature and presses downwardly on it, and thus forces the flange 24 tightly against the body of the bladder and forces the sleeve portion 23 against the metal member 20. The result is that the metal tube is firmly affixed to the bladder. After vulcanization the powder in the interior is readily removed through the tube.

The threaded metal tube 20 is adapted to receive the threaded exterior of a valve body 30 closely in the threads and having an enlarged head 31 adapted to stand opposite the flange 26, whereby it may rightly compress a rubber washer 32 to form an air tight joint between the exterior of the valve body and the bladder. The valve body is provided with a longitudinal passage contracted at its lower end, as indicated at 34, to provide a shoulder against which a spring 35 may bear and act upwardly at the other end against a star-shaped collar 36 on the valve stem 37 integral with a valve head 38, thus normally compressing the rubber washer 39 between the head and the concave or beveled surface at the lower end of the valve body. The enlarged head 31 of the valve body is preferably threaded to receive the connection of an inflating tube and also to normally engage internal threads of a cap 40 serving to close and protect the valve and preferably provided with a suitable knurled exterior and a screw driver slot 41, by which it may be removed.

It will be seen that, by this arrangement of valve securing means that I may use a valve body projecting outwardly from the surface of the bladder only a short distance (preferably that equivalent to the thickness of a flap D and the casing A and lacing L) and yet I may secure the desired length of valve body by allowing it to project into the interior of the bladder. The valve body projecting into the interior of the bladder renders the vulcanization of any connection between the valve body and the bladder so difficult that it has heretofore been considered very impractical to use bladder valves of this general character.

When the bladder is placed in position within the casing the valve body and the outwardly projecting securing means may extend through an opening E in the flap B and into cutaway notches F in the sides of the lacing opening of the casing and between the lacing without projecting beyond the exterior of the casing when laced and ready for play.

Thus the bladder may be placed inside the foot ball casing and the valve extended outwardly through the flap opening and slightly inflated to hold the valve in this position, whereupon the lacing may be drawn tightly and secured, as shown in Fig. 1, thus entirely closing the casing, and the bladder may then be inflated to any pressure desired without danger of bursting the bladder or pressing it outwardly through the lacing opening. It will be seen that this eliminates the difficulty of folding the usual soft rubber stem into the lacing opening after inflation. Incidentally this latter difficulty, prevents tightly inflating the article because, if it is too tightly inflated, there is not only danger of bursting the bladder before the inflation is accomplished, but the heavy folded stem cannot be thrust into the opening already bulging by the interior pressure.

Referring next to Figs. 7 to 11 inclusive, G indicates a pear-shaped leather casing of a punching bag arranged with an opening at the top for thrusting the bladder into the casing. Into this opening extend the ends of the usual strap S to which may be secured the suspending rope R. The top opening connects with a slit H extending some distance down the side of the bag, and at each side of the slit are eyelets C extending through a reinforced portion of the leather and adapted to receive the lacings L. Usually the bladder 20 is protected from the lacing by a flap K secured to the casing be-

low the slit and extending upwardly and free at its upper end after the manner of a tongue in a shoe, while the upper end of the bladder, shaped to conform to the bag, is fitted with a soft tubular extension projecting upwardly through the opening at the top of the bag and adapted when inflated to be folded under the lacing. Substantially the same objections and difficulties are met with here as in the foot-ball, but with the arrangement of flap described, there is in addition the danger of the bladder bursting at the opening as there is no confining protection at its upper end.

Accordingly, I prefer to arrange a valve connection at the upper end of the pear-shaped bladder 20 after the manner of the foot-ball bladder, described, and then protect the upper end by a flap K, secured at K′ to the leather of the casing G along a portion of the bag opposite the lacing slit. This flap then extends over the top of the bladder and downwardly opposite the lacing opening and also downwardly over each side of the upper end of the bladder, as illustrated in Fig. 11. The arrangement of the bladder connection and valve is of the form heretofore described and is not shown in detail; the external patch 24 and the tubular extension 23 however, appear in Figs. 10 and 11, this valve body projects upwardly through its embracing tube which occupies an opening $K^2$ in the flap K, allowing the cap 12 or 40, with its screw driver slot or knurled exterior, to stand above the flap, but not high enough to interfere with the knot of the rope and in no way interfering with the lacing.

Thus the bladder may be placed in position, inflated somewhat, and then the bag may be laced. The parts would then have the position shown in Figs. 7, 9, 10 and 11. The bag may then be additionally inflated to any desired pressure without danger of bursting the bladder at its upper end and without any further work being required than merely placing the valve cap in position. Heretofore it has been necessary to unlace and lace the bag each time it is to be inflated or the interior pressure increased. With the present construction it is only necessary to remove the valve cap, which may be entirely omitted if desired. No difficulty is encountered in placing the bladder in the bag or removing it, as the flap K can merely be lifted upwardly to a position in no way obstructing the opening in the bag.

Having thus described my invention, what I claim is:

1. In an article having a flexible casing and an inflating bladder, the combination of a soft rubber tubular member having a laterally extending flange adapted to be vulcanized to the bladder around an opening therein, whereby the tubular portion may project outwardly from the bladder wall, and a ferrule of metal closely embraced by said tubular portion, and a valve body occupying said ferrule.

2. The combination of a bladder having an opening, a ferrule having a flange surrounding the opening and fitting against the bladder wall, a securing member comprising a patch overlapping the flange and lying contiguous with the bladder wall and vulcanized thereto, said ferrule having threads, a valve body having coöperating threads and adapted to close the opening and be carried by said ferrule.

3. The combination of a bladder having an opening, a ferrule having a flange surrounding the opening and fitting against the bladder wall, a securing member comprising a patch overlapping the flange and lying contiguous with the bladder wall and vulcanized thereto, said ferrule having threads, a valve body having coöperating threads and adapted to close the opening and be carried by said ferrule, said ferrule having a shoulder at its outer end, the valve body having an opposing shoulder, and a washer adapted to be clamped between said shoulders to form an air-tight connection.

4. In an inflated article having a casing provided with an opening, a portion of which may be closed by lacing, the combination of a bladder fitting the casing, a valve for the bladder at the opening, a rubber tubular member vulcanized to the bladder and surrounding the valve, a ferrule secured to the interior of said tubular member and a flap secured to said casing opposite the lacing and extending around the exposed portion of the bladder and under the lacing and having an opening through which the valve extends.

5. In an article having a flexible casing and an inflating bladder, the combination of a soft rubber member having an extending skirt vulcanized to the bladder around an opening therein and having a tubular portion, a ferrule surrounded by the tubular portion and secured thereto, a valve body adapted to occupy the ferrule, and means for making an air-tight connection between the valve body and ferrule.

6. In an article having a flexible casing and an inflating bladder, the combination of a soft rubber member having an extending skirt vulcanized to the bladder around an opening therein and having a tubular portion and a valve body surrounded by the tubular portion, a ferrule for making the connection between the tubular portion and the valve body, said ferrule being secured in an air-tight manner to the tubular portion.

7. In an article having a flexible casing and an inflating bladder, the combination of a soft rubber member having an extend-

ing skirt vulcanized to the bladder around an opening therein and having a tubular portion and a valve body surrounded by the tubular portion, and means for making a connection between the tubular portion and the valve body, and a metal ferrule forming a connection between the latter tubular portion and the valve body, said ferrule within the tubular portion possessing an internal thread coacting with an external thread on the valve body.

8. In an article having a flexible casing and an inflating bladder, the combination of a soft rubber member having an extending skirt vulcanized to the bladder around an opening therein and having a tubular portion and a valve body surrounded by the tubular portion, and means for making a connection between the tubular portion and the valve body, and a metal ferrule forming a connection between the tubular portion and the valve body, said ferrule being internally threaded and having also a laterally extending flange which lies between the rubber skirt and the bladder body.

9. The combination with a bladder having an opening, of an internally threaded metal ferrule registering with the opening and having a lateral flange adapted to lie along side of the bladder, and a rubber patch overlying said flange and vulcanized to the bladder and having a tubular portion surrounding and embracing said ferrule.

10. In a punching bag and similar articles, the combination of a casing having an opening, a lacing for closing the opening, a bladder fitting the casing, a valve for the bladder, a rubber patch secured to the bladder and having a tubular portion surrounding the valve, means for making a connection between the tubular portion and the valve body, and a support for the casing at one end thereof.

11. In a punching bag, the combination of a pear-shaped casing having an opening at its small end with a slit extending down the side and adapted to be closed by lacing, a bladder fitting the casing and having a tubular extension and a flap secured to the casing adapted to extend over the exposed end of the bladder and under the lacing and having an opening through which said valve may project.

12. The combination, with a flexible air container having an opening, a rubber patch secured to the container around the opening and having an outwardly extending tubular portion, a ferrule occupying the tubular portion and secured thereto, and a valve body occupying the ferrule.

13. The combination, with a flexible air container having an opening, a rubber patch secured to the exterior of the container around the opening and having an outwardly extending tubular portion, a ferrule occupying the tubular portion and secured thereto, and a valve body occupying the ferrule, said valve body being externally threaded and engaging internal threads on the ferrule.

14. The combination, with a flexible air container having an opening, a rubber patch secured to the exterior of the container around the opening and having an outwardly extending tubular portion, a ferrule occupying the tubular portion and secured thereto, said ferrule having an outwardly extending flange lying between the container and said patch.

15. The combination, with a flexible air container having an opening, a rubber patch secured to the container around the opening and having an outwardly extending tubular portion, a ferrule occupying the tubular portion and secured thereto, said ferrule having an outwardly extending flange at its upper end, and means for compressing a gasket against said flange.

16. The combination, with a flexible air container having an opening, a rubber patch secured to the exterior of the container around the opening and having an outwardly extending tubular portion, a ferrule occupying the tubular portion and secured thereto, said ferrule having an outwardly extending flange at its upper end, a valve body occupying the ferrule, said valve body having an overhanging outward flange, and a gasket between the latter flange and the flange of the ferrule.

In testimony whereof, I hereunto affix my signature.

FRED THOMAS ROBERTS.