March 10, 1953 J. E. RAGSDALE 2,630,833

AIR CUSHION FITTING FOR FLUID LINES

Filed May 31, 1947

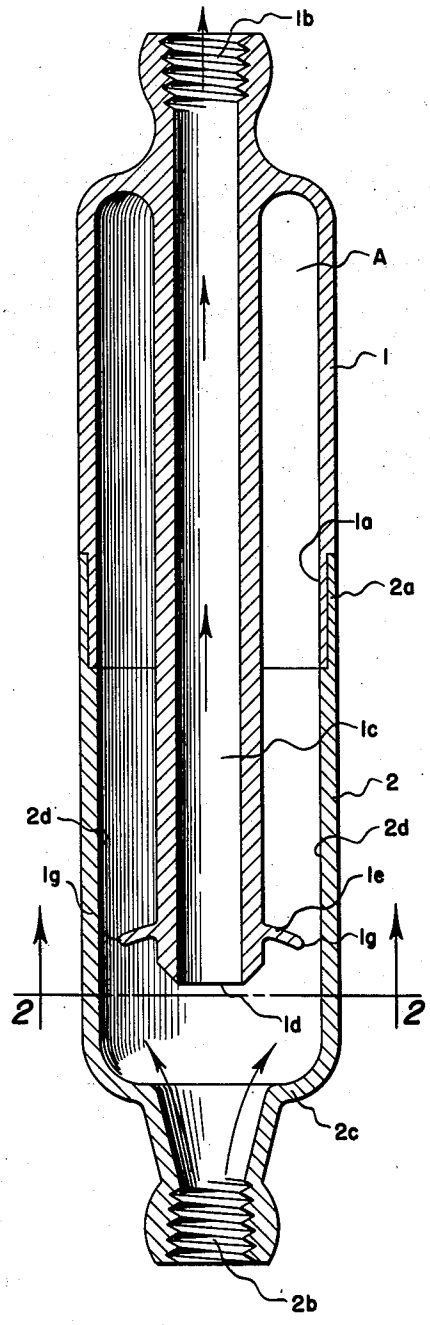

FIG. 1

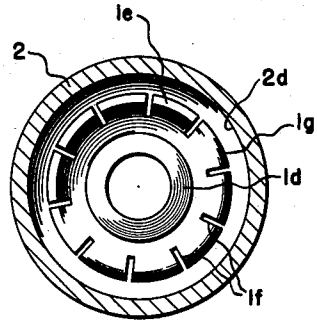

FIG. 2

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AIR CUSHION FITTING FOR FLUID LINES

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3 Claims. (Cl. 138—26)

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My invention relates to an air cushion fitting for fluid lines, more particularly to an improvement over my former patent application for Air Cushion Fitting for Fluid Lines, Serial No. 706,169 filed October 28, 1946, now abandoned, and the objects of my invention are:

First, to provide an air cushion for fluid lines of this class in which I have provided baffle means particularly adapted for use in connection with large capacity fluid lines;

Second, to provide an air cushion of this class in which a baffle is provided near the inlet end thereof in which radially disposed slots together with peripheral clearance of the baffle provides efficient cushioning of surges in my air cushion fitting when connected with large capacity fluid lines;

Third, to provide an air cushion fitting for fluid lines of this class in which the hollow cylindrical chamber is provided with a concentric tubular outlet portion extending into said chamber near the inlet end thereof and having a baffle near said inlet end extending radially and peripherally of said tube whereby initial cushioning of surges in said air cushion fitting is accomplished whereby large capacity fluid lines are readily accommodated by said air cushion fitting;

Fourth, to provide an air cushion fitting of this class in which the outer casing thereof is provided with an overlapping joint which greatly facilitates the manufacture of said air cushion fitting when employing the annular baffle therein according to my present invention; and

Fifth, to provide an air cushion fitting of this class which is very simple and economical of construction; efficient in operation and which will not readily deteriorate or get out of order.

With these and other objects in view, as will appear hereinafter, my invention consists of certain novel features of construction, combination and arrangement of parts and portions as will be hereinafter described in detail and particularly set forth in the appended claims, reference being had to the accompanying drawing and to the characters of reference thereon forming a part of this application in which:

Fig. 1 is a longitudinal sectional view of my air cushion fitting for fluid lines and Fig. 2 is a transverse sectional view thereof taken from the line 2—2 of Fig. 1.

Similar characters of reference refer to similar parts and portions throughout the views of the drawing.

In the construction of my air cushion fitting, I have provided casing portions 1 and 2 having

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telescopically connected portions 1*a* and 2*a* which may be provided with an interference fit or may be sweated together, welded or secured by any other suitable means as desired. This telescopic connected relationship of the casing portions 1 and 2 is substantially intermediate opposite ends of my air cushion fitting. The casing portion 2 is provided with a threaded inlet opening 2*b* and the outlet opening 1*b* in the casing portion 1 communicates with a concentric hollow tubular portion 1*c* extending past the telescopic connecting portions 1*a* and 2*a* to a position near the inlet opening 2*b* of the casing 2. It will be noted that the extending open end 1*d* of the tubular portion 1*c* is in spaced relation with the end portion 2*c* of the casing 2 adjacent the inlet opening 2*b*. Surrounding the tubular portion 1*c* near the open end 1*d* is an annular baffle 1*e*. This annular baffle 1*e* is provided with radially disposed slotted portions 1*f*, as shown best in Fig. 2 of the drawing. The peripheral edge 1*g* of the annular baffle 1*e* is in slight spaced relation to the internal wall 2*d* of the casing 2, all as shown best in Fig. 1 of the drawing. As shown in Fig. 1 of the drawing, the baffle portion 1*e* is slightly concave facing the inlet end 2*b* of the casing ? It will be noted that the chamber A internal of the casing 1 and surrounding the tubular portion 1*c* in connection therewith provides an air cushion space in which air may be compressed by surging fluid passing through the opening 2*b* and into the casing 2 around the baffle 1*e* and through the radially disposed slotted portions 1*f* thereof.

The operation of my air cushion fitting for fluid lines is substantially as follows:

The directional passage of fluid through said air cushion fitting is indicated by arrows in Fig. 1 of the drawing and the sudden interruption of flow therethrough caused by the closing of a valve or the like beyond the outlet end 1*b* of the casing 1 causes a surge of fluid the inertia of which must be accounted for. This surge of fluid, when the flow thereof is so interrupted, passes around the baffle 1*e* through the slotted portions 1*f* thereof and compresses air in the chamber A surrounding the tubular portion 1*c* inwardly of the casing portion 1. The compressibility of the air provides resilient cushioning for the surge of fluid passing through the inlet opening 2*b* of the casing 2 and toward the hollow tubular member 1*c*.

The tendency in a device of this type, operated under household conditions, is for the air entrapped in the chamber or bell A to become gradually dissolved in the water, and the air

cushion thus to be lost. It is the function of the perforated baffle skirt to replenish this air cushion. This it does by agitating the liquid as it moves past and through the baffle skirt, through the narrow annular space between its periphery and the casing wall, and through the perforations *f*, with the effect of releasing air bubbles from the water at the locations of the multiple edge formations on the baffle. This air separation is sufficient, particularly at times of low water pressure, to assure maintenance of the necessary air body in the bell or chamber A.

Though I have shown and described a particular construction, combination and arrangement of parts and portions, I do not wish to be limited to this particular construction, combination and arrangement, but desire to include in the scope of my invention the construction, combination and arrangement substantially as set forth in the appended claims.

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

1. In an air cushion fitting for fluid lines, the combination of a casing having an inlet portion at one end and an outlet portion at the other end, a hollow tubular portion considerably smaller in diameter than said casing positioned concentrically thereof communicating directly with said outlet portion and extending to a position in spaced relation with the inlet portion thereof whereby an air chamber is formed in said casing surrounding said hollow tubular portion, a baffle skirt surrounding said hollow tubular portion near the inwardly extending open end thereof facing said inlet portion, said baffle skirt being annular in form and its periphery being located in slight spaced relation from the inner wall of said casing, and said baffle skirt being provided with radially disposed slots communicating with the periphery thereof and extending inwardly toward said hollow tubular portion.

2. In an air cushion fitting for liquid lines, the combination of a vertically elongated cylindrical casing having two ends, a water inlet opening inside the lower end of said casing, a central imperforate tube extending concentrically of and annularly spaced inside said casing from a point near said lower end of said casing through the upper end of said casing, said central tube and

said other end of said casing being joined to one another to form an air trap between said central tube and the casing, and an annular baffle skirt on the lower portion of said central tube, said baffle skirt projecting radially from said central tube to a position close spaced from the wall of said casing, and said baffle skirt being perforated for passage of thin streams of water therethrough, all in such manner as to effect material agitation of water moving past said baffle skirt and consequent release of air bubbles for collection in said air trap.

3. In an air cushion fitting for liquid lines, the combination of a vertically elongated casing, a water inlet opening inside the lower end of said casing, a water outlet tube leading from said casing having an axially disposed portion disposed in a central position in said casing and having an inlet opening at the lower end of said portion facing but spaced from the water inlet opening into the lower end of the casing, the upper end portion of said casing above the lower end portion of said outlet tube forming an air trap, and baffle means extending substantially radially in the space between the lower end portion of said outlet tube and the wall of said casing, said baffle means being perforated for passage of thin streams of water therethrough, all in such manner as to effect material agitation of water moving past said baffle means and consequent release of air bubbles for collection in said air trap.

JAMES E. RAGSDALE.

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