Dec. 17, 1968 B. T. BRIGANDI 3,416,769

EXTENSION AND EXPANSION VALVES

Filed March 10, 1965

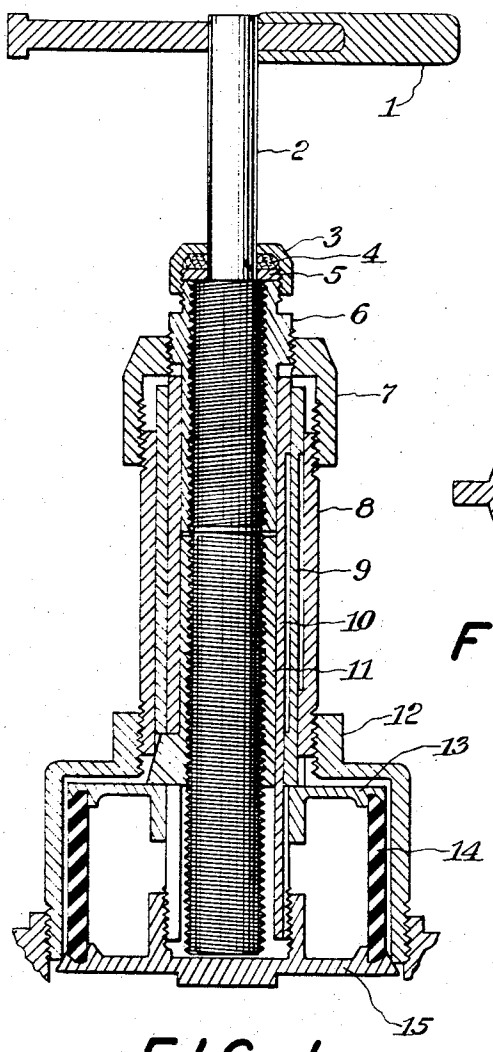

FIG. 1

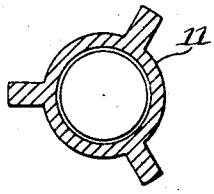

FIG. 2

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EXTENSION AND EXPANSION VALVES

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ABSTRACT OF THE DISCLOSURE

An extension and expansion valve which is adapted to be connected into the main sewer trap of a building and can be used to shut off the drainage system to prevent overflows in the external sewage system from flowing back into the building drainage system and being discharged into various plumbing appliances in the building. The valve has an actuator adapted to be screwed into the leg of the main sewer trap cover opening which is provided with a plug member. This member is outwardly expandable after being extended to shut off position.

Summary of the invention

My valve has a hollow bottom vertical housing with a hollow expandable flexible vertical cylinder therein provided with upper and lower end covers. A vertical stem rotatable manually about its own axis extends upwardly out of the housing. The cylinder constitutes the plug which is outwardly expanded by a mechanism which moves the top cover toward the bottom cover upon suitable rotation of the stem whereby the cylinder is vertically compressed and expanded radially outward. The reverse action moves the covers apart to relieve the vertical compression and permit radial compression of the cylinder.

Brief description of the drawings

In the drawings:

FIG. 1 is a longitudinal cross section of my valve; and

FIG. 2 is a horizontal cross section of a portion thereof.

Detailed description of preferred embodiment

Referring now to FIGS. 1 and 2, a vertical hollow housing **12** can be screwed into a suitable opening in one leg by the outer threads in housing **12**.

A hollow vertical cylinder plug **14** which is flexible and expandable and open at top and bottom ends is disposed in the housing. The bottom end is sealed by bottom cover **15** and the top end is sealed by top cover **13**. A hollow vertical sleeve **8** threadedly engages at its bottom end the top end of housing and extends vertically upward therefrom. A coupling **7** threadedly engages the upper end of the sleeve. A nut sleeve **6** threadedly engages coupling **7**. Nut **3** engages sleeve **6** with packing **4** and washer **5** squeezed therebetween.

A second vertical sleeve **9** is disposed within sleeve **8**; a third vertical sleeve **10** is disposed within sleeve **9**. An axially movable sleeve **11** is disposed within sleeve **10**.

A vertical stem **2** extends downwardly through nut **3**, sleeve **6**, and sleeve **11**, through a port in cover **13** into a central or axial position with respect to plug **14**. Stem **2** has right hand and left hand threads, one thread holding stem **2** mated to fixed sleeve **6** to seal in gases and water with the aid of washer **5** and nut **3**, the other thread engaging sleeve **11**.

Sleeves **9** and **10** are telescopic but non-rotating since sleeve **8** has at its bottom end inside protrusions that mate with vertical cut-outs with extension stop in sleeve **9** and sleeve **9** has at its bottom inside end inside protrusions that mate with vertical cut-outs with extension stop in sleeve **10**. The bottom end of sleeve **10** is secured to cover **15**. Sleeve **11** protrudes out of vertical cut-outs from inside sleeve **10** to be secured to cover **13**.

The resilient plug unit comprising covers **13** and **15** and cylinder plug **14** by rotation of stem **2**, by handle **1**, is axially movable within housing **12** and downward therethrough until sleeves **9** and **10** are telescopically downwardly extended; at this point sleeve **11** presses cover **13** downwardly toward cover **15** to outwardly expand plug **14** to fill in the flow opening in the sewer trap and thus prevent flow of water and the like from an external sewage system into a house sewage system.

When the stem is rotated in the opposite direction, first the plug **14** is outwardly contracted by upward movement of sleeve **11** and then the sleeves telescopically contract one upon the other until the plug unit is withdrawn into the housing as shown in FIG. 1.

While I have described my invention with particular reference to the drawings, my protection is to be limited only by the terms of the claims which follow.

I claim:

1. An extension and expansion valve comprising:
   - a hollow vertical housing open at top and bottom ends;
   - a plug unit disposed in said housing and including an expandable flexible vertical hollow cylinder having top and bottom covers;
   - a stem rotatably mounted in the open top end of said housing; and
   - a connecting means connecting said stem to said plug unit which upon rotation of said stem in one direction first moves said unit vertically downward out of the housing and thereafter moves the top cover toward the bottom cover to produce outward expansion of said plug, said expansion and downward movement being reversible to corresponding inward contraction and upward movement upon reversing the direction of rotation of the stem, continuous rotation of said stem being the sole means for effecting movement, expansion and contraction of said plug.

2. A valve as set forth in claim **1** wherein said mechanism includes a plurality of vertical hollow sleeves disposed one within another and extending out of the housing, said stem extending through the innermost sleeve.

3. A valve as set forth in claim **2** wherein innermost sleeve is movable axially up and down in accordance with rotation of the stem, said innermost sleeve when fully disposed downward having its bottom end bearing against the top cover to move same toward the bottom cover and expand the plug.

4. A valve as set forth in claim **3** wherein said plurality of sleeves is equal to four, the outermost sleeve being fixed in position.

5. A valve as set forth in claim **4** wherein the two inner sleeves disposed between the innermost and outermost sleeves telescope into and out of each other in accordance with stem rotation.

References Cited

UNITED STATES PATENTS

1,175,253	3/1916	Fulton	251—265
1,616,392	2/1927	Provost	251—191 X
2,867,243	1/1959	Bowan	138—89
2,953,154	9/1960	Agoliati	137—247.13
3,108,780	10/1963	Wishart	251—189 X

FOREIGN PATENTS

1,205,040	10/1959	France.

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251—191, 265; 137—247.13; 138—90