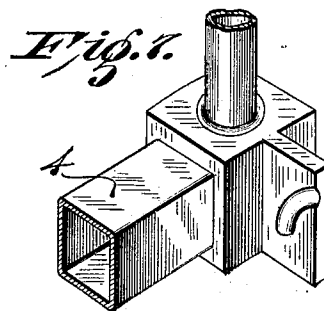
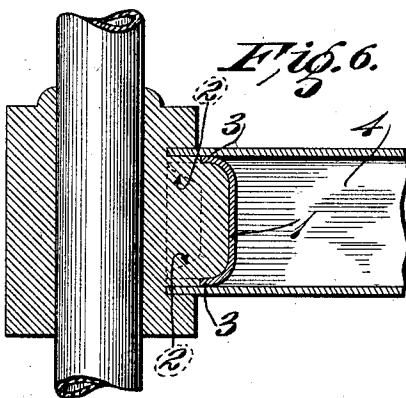
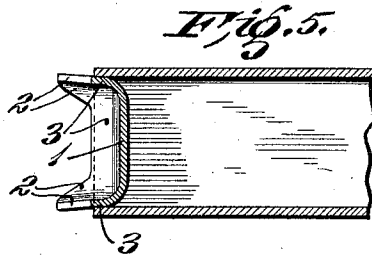
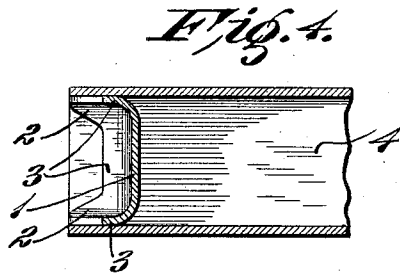
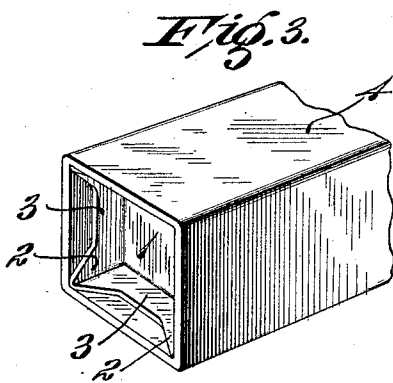
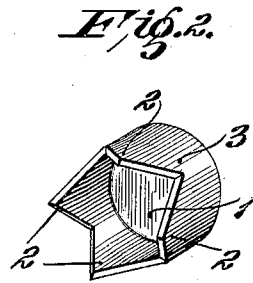
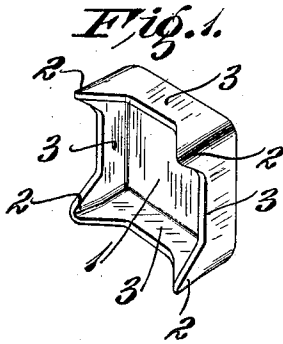


F. B. UPTON.
CLOSURE FOR TUBING.
APPLICATION FILED NOV. 3, 1911.

1,047,341.

Patented Dec. 17, 1912.

2 SHEETS—SHEET 1.



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By [Signature] his attys.

1,047,341.

Patented Dec. 17, 1912.

2 SHEETS—SHEET 2.

Fig. 8.

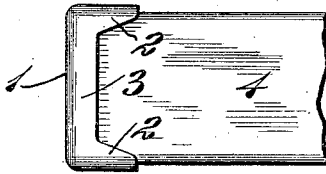


Fig. 12.

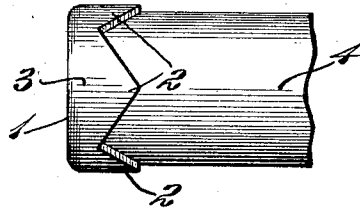


Fig. 9.

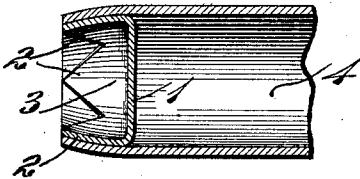


Fig. 13.

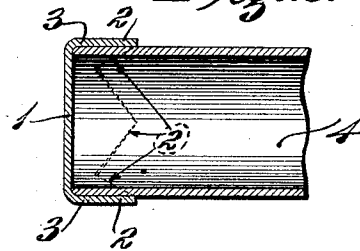


Fig. 10.

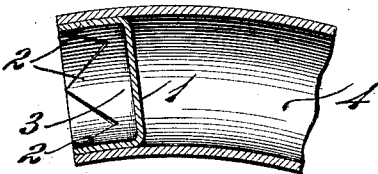


Fig. 14.

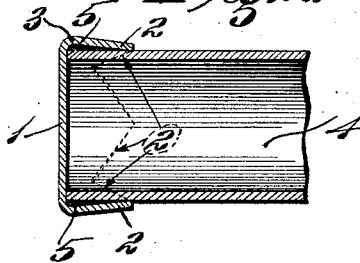


Fig. 11.

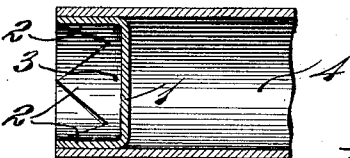


Fig. 15.

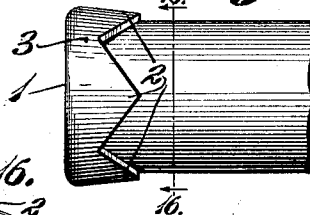
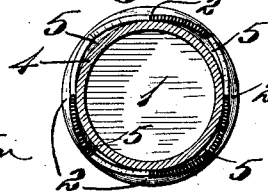


Fig. 16.



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UNITED STATES PATENT OFFICE.

FRANK B. UPTON, OF CHATTANOOGA, TENNESSEE, ASSIGNOR OF ONE-THIRD TO WILLIAM E. HERON AND ONE-THIRD TO SHIRLEY T. HERON, BOTH OF CHATTANOOGA, TENNESSEE.

CLOSURE FOR TUBING.

1,047,341.

Specification of Letters Patent.

Patented Dec. 17, 1912.

Application filed November 3, 1911. Serial No. 658,365.

To all whom it may concern:

Be it known that I, FRANK B. UPTON, a citizen of the United States, and a resident of the city of Chattanooga, in the county of Hamilton and State of Tennessee, have invented a new and useful Improvement in Closures for Tubing, of which the following is a specification.

This invention relates to closures for tubes which latter have bodies of metal cast onto their end portions, or in cases where the end portions of the tubes are joined to posts or other members by a cast metal connection, as, for example, in metal bedstead constructions and the like.

The invention has for its principal objects to secure uniformity in the amount of metal used in casting; to secure a strong joint with a minimum of metal in the casting; to produce a closure which may be used either as an insertible plug or a cap, as desirable; to provide for positioning the devices uniformly in tubes when used as plugs; and to attain certain advantages herein-after more fully appearing.

The invention consists in the parts and in the arrangements and combinations of parts hereinafter described and claimed.

In the accompanying drawings which form part of this specification and wherein like symbols refer to like parts wherever they occur,—Figure 1 is a perspective view of a closure adapted for square tubes; Fig. 2 is a perspective view of a closure adapted for round tubes; Fig. 3 is a fragmentary perspective view of a square tube showing a closure inserted as a plug; Fig. 4 is a longitudinal section through a fragment of a square tube with a plug inserted therein; Fig. 5 is a view showing a plug partially inserted; Fig. 6 is a fragmentary view, partly in section, showing a cast metal joint between a bedstead post and tubular end rail; Fig. 7 is a fragmentary perspective view of the structure shown in Fig. 6; Fig. 8 is a side elevation of a fragment of square tubing showing a closure applied as a cap; Fig. 9 is a longitudinal section of a fragment of round tubing showing a closure inserted as a plug and the end portion of the tubing contracted; Fig. 10 is a view showing a round tube with a plug therein and the tube bent; Fig. 11 is a view of a round tube with a plug therein before being contracted or bent; Fig. 12 is a side view of a

round tube showing a closure applied as a cap; Fig. 13 is a longitudinal section of the tube and cap shown in Fig. 12; Fig. 14 is a longitudinal section through a round tube showing a cap applied whose normal diameter is greater than that of the tube, the prongs of the cap being bent in or contracted upon the tube; Fig. 15 is a side elevation of the parts shown in Fig. 14; and Fig. 16 is a section on the line 16—16 of Fig. 15.

The closures 1 may be made to suit tubes of any cross section. In other words, they are made to conform to the contour of the particular tubing to which they are to be applied. The tubing in most general use is either round or square. Hence, only such tubing is shown in the drawing.

Preferably, the closures are stamped and formed from sheet metal having more or less resiliency. They each comprise a body portion adapted to close the tube when inserted as a plug or used as a cap. They are provided with prongs 2, preferably four of them. In the case of the square closure, as shown in Fig. 1, the prongs are preferably located at the corners. In the case of the round ones there are also preferably four prongs located equidistant around the body. The prongs 2 are preferably flared slightly outward so that in forcing the closures into the ends of the tubes the prongs are sprung inwardly. This causes them to bind tight against the tube so as to hold the plugs in place. The arrangement also permits of the devices being applied in tubes whose sizes and contours vary slightly.

In practice, the body portions may be cupped or provided with side flanges 3 just sufficiently deep to stiffen them; the prongs or fingers 2 being continuations of said flanges. That is, the prongs are formed by cutting away or serrating the flanges; and, in some cases the flanges may be cutaway close to the body web between the prongs.

In applying devices as inserts or plugs, as shown in Figs. 3 to 5 and 9 to 11, inclusive, they are forced into the tubes 4 until the ends of the prongs come flush with the ends of the tubes. Hence, they are always inserted a like distance and the same amount of the molten metal enters the end portion of each tube in casting the joints. The metal adheres to the inner faces of the tubes in the spaces between the prongs. Consequently

the tubes will not pull off the closures as often happens in cases where the latter are merely cupped and not provided with the retaining and positioning prongs. In such cases, if the closures are only inserted to the depth of the side flanges no metal adheres to the inner side of the tube; and if they are inserted deeper, there is no means for readily locating them at uniform depths. Hence, a greater or less amount of metal is used in each casting.

As shown in Fig. 6, the metal of the joint is cast around the outer side as well as the inner side of the tube in one solid body. This being the case, the amount of metal used in the casting may be smaller than otherwise.

A further advantage of the plugs made in accordance with the present invention, is that they may be inserted in the tubes before the latter are bent or contracted at their ends, as they frequently are in some cases, and the bending or contracting of the tubes tends to tighten the plugs therein rather than displace them. That is, the prongs will give sufficiently to allow the plugs to conform to whatever shape the tubing may be formed.

As shown in Figs. 8 and 12 to 16, inclusive, the closures are shown as applied as caps on the outside of the tubing. In some cases, the closures may be of a size to fit snugly around the tubing as shown in Figs. 8, 12 and 13. In others, the body portion may be of larger diameter and the prongs have to be bent or contracted in upon the tube as shown in Figs. 14, 15 and 16. In each case, a considerable amount of the metal will adhere to the tube between the prongs. The amount may be equal to or greater or less than that which adheres to the circumferential portions of the cap, depending upon the relative areas of the surfaces of the prongs and the cutaway portions or spaces between them. Hence the tubing will not pull out of the cap. So, too, a smaller amount of metal may be used than otherwise. Furthermore, if there is a break in the casting, the liability of its extending entirely around the tube is lessened.

In cases where the closures are applied as shown in Figs. 14, 15 and 16, the flanges 3

and adjacent portions of the prongs or projections 2 will be spaced from the tube, as at 5. Therefore, some of the molten metal will flow into these spaces so as to firmly unite the cap and tube, and thereby make the joint more secure.

Obviously, the device admits of considerable modification without departing from my invention. Therefore, I do not wish to be limited to the exact constructions shown.

What I claim is:

1. A combination plug and closure device for hollow bedstead tubing comprising a solid body portion adapted to close the tube and having widely separated marginal projections adapted to lap and engage the tube.

2. A combination plug and closure device for hollow bedstead tubing comprising a cupped body portion having separated marginal projections.

3. A combination plug and closure device for hollow bedstead tubing comprising a solid body portion adapted to close the tube and having widely separated tapered marginal projections adapted to lap and engage the tube.

4. In a bedstead structure, the combination with a hollow tubular frame member, of a closure comprising a solid body portion adapted to close the tube and having widely separated marginal projections lapping and engaging the end portion of the tube, and a chill cast in engagement with said closure and the portion of the tube in the region thereof.

5. In a bedstead structure, the combination with a hollow tubular frame member, of a closure inserted in said tube, said closure comprising a solid body portion closing the tube and having widely separated marginal projections lapping and engaging the tube, said projections extending outward and the ends thereof being coincident with the end of the tube, and a chill cast in engagement with said closure and the portion of the tube in the region thereof.

Signed at Chattanooga, Tennessee, this 30 day of Oct., 1911.

FRANK B. UPTON.

Witnesses:

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P. J. PATTERSON.