Jan. 23, 1934. R. H. WEST 1,944,384

STEP FOR MANHOLES

Filed May 21, 1930

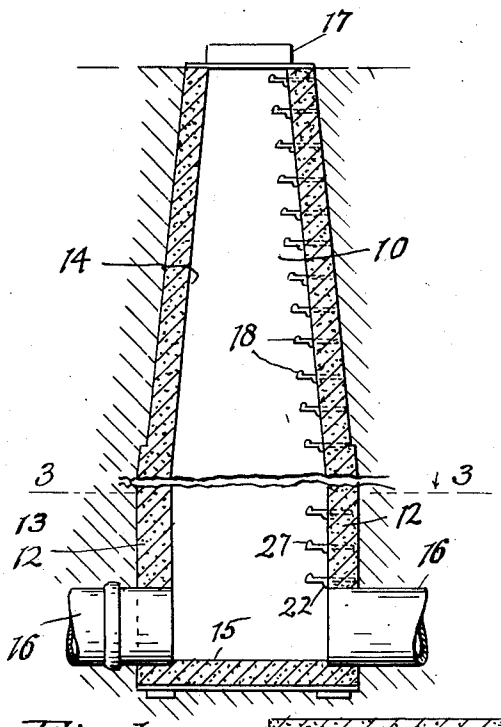


Fig. 1.

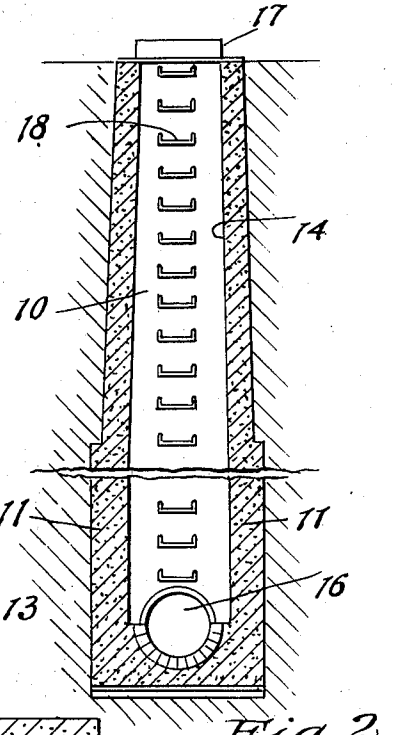


Fig. 2.

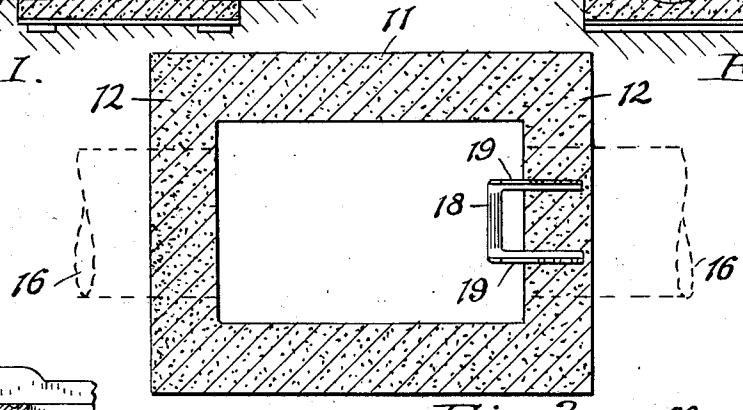


Fig. 3.

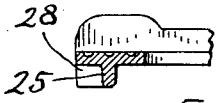


Fig. 5.

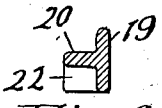


Fig. 6.

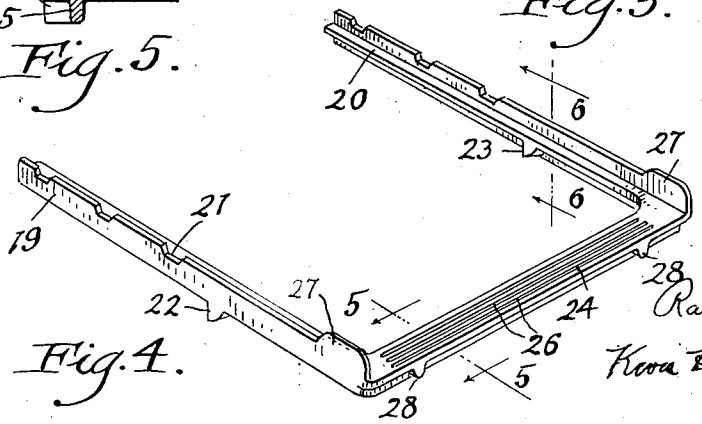


Fig. 4.

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STEP FOR MANHOLES

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6 Claims. (Cl. 72—100)

This invention relates to a step for use in connection with manholes and the like, and has for its primary object, to provide a step which is simple in construction, efficient in operation and acid-resisting so as to be durable in use.

Another object of the present invention is to provide a step of the character referred to in the form of a steel casting properly reinforced and having means for positioning the step in proper relation with respect to the wall with which it is employed.

With the objects above indicated, and other objects hereinafter explained in view, the invention consists in the construction and combination of elements hereinafter described and claimed. Referring to the drawing:

Figure 1 is a vertical longitudinal sectional view of a manhole showing steps embodying the present invention.

Figure 2 is a transverse sectional view of the manhole as shown in Figure 1.

Figure 3 is a transverse sectional view taken on line 3—3 of Figure 1.

Figure 4 is a perspective view of the step embodying the present invention.

Figure 5 is a transverse sectional view taken on line 5—5 of Figure 4.

Figure 6 is a transverse sectional view taken on line 6—6 of Figure 4.

In the drawing there is illustrated one manner in which the step embodying the present invention may be employed. A manhole 10 is shown which consists of side walls 11 and end walls 12 of the usual brick construction. The manhole 10 extends into the ground any suitable distance and has the lower portion 13 thereof extending upwardly with the side walls 11 and end walls 12 substantially parallel, the upper portion 14 of the side and end walls being inclined inwardly toward the surface of the ground. The manhole 10 also is provided with a suitable bottom or floor 15.

The end walls 12 are provided with suitably aligned openings which receive and in which are secured the ends of conduits 16. These conduits 16 may be employed for the usual purposes and may be secured within the lower portion of the end walls 12 in any suitable manner. At the upper portion or top of the manhole 10 there is provided the usual manhole cover 17 of cast iron or other suitable material. This may be secured to the upper end of the manhole 10 in any suitable manner. The structure so far described is common to the usual type of manhole and forms no part of the present invention.

The step which is adapted to be used in connection with manholes such as heretofore described and embodying the present invention, is clearly illustrated in Figure 4. It comprises a U-shaped member 18 in the form of a chrome-silicon steel casting which has many advantages in connection with the commercial manufacture of such steps, the primary one being strength to assure dependability. The preferred analysis of the metal is:

Carbon	20%
Sulphur and phosphorus	not over .04%
Manganese	.4 to .7%
Silicon	2%
Chromium	12%

The free legs 19 are T-shaped in cross section with the webs 20 extending inwardly toward each other, the legs being substantially parallel with each other, thereby materially reinforcing the free legs 19 and at the same time providing additional surface for engagement with the structure with which it is to be employed. Spaced notches 21 are provided in the upper flanges adjacent the free ends of the legs 19 and are adapted to receive the mortar or concrete to more rigidly maintain the step in its proper position. Depending lugs 22 are formed integral with the free legs 19 and are provided with laterally extending edges 23 which are adapted to engage the wall or other support with which the step is to be used so as to properly locate the latter within the wall structure. This permits each step to be assembled in the desired manner.

The cross member 24 of the U-shaped member 18 is T-shaped in cross section as shown in Figure 5. The longitudinally extending web 25 is formed integral with the cross member 24 which latter is likewise formed integral with the free legs 19. The upper surface of the cross member 24 is sufficiently deep to enable receiving the foot of a person climbing up the same. To prevent the possibility of the person scaling the wall by means of the steps, from slipping, longitudinally extending grooves 26 are provided therein. Additionally upright extensions 27 are provided adjacent the forward end and are continuations of and formed integral with the upper flanges of the free legs 19. These extensions 27 are disposed directly across the ends of the cross member 24 extending upwardly a sufficient distance to prevent a man's foot from slipping off of the cross member laterally. Lugs 28 may be provided at the forward end of the cross mem-

ber 24 to reinforce the web 25 and the cross member 24.

In Figures 1, 2 and 3 there is shown the manner in which the step 18 is supported within a manhole 10. This manhole may be constructed of brick or concrete as desired, and the free legs 19 of the step 18 are positioned so that the lugs 22 engage with the upright wall permitting the portion forwardly thereof including the cross member 24 to be exposed. When the concrete or mortar is properly filled in, it will engage the T section of the legs 19 as well as the notches 21, and thereby rigidly maintain the step 18 in proper position.

While I have described the preferred embodiment of the invention, it is to be understood that I am not to be limited thereto inasmuch as changes or modifications may be resorted to without departing from the spirit of the invention as defined in the appended claims.

Having thus described my invention, I claim

1. A step of the character described comprising a substantially U-shaped casting, positioning means on said casting located on the arms intermediate the ends thereof.

2. A step of the character described comprising side members spaced apart, a cross member connecting said side members adjacent one end thereof, locating means on said side members, and notches on said side members between said locating means and the other end of said side members.

3. A step of the character described comprising a substantially U-shaped casting, the free legs of which are T-shaped in cross section, and locating means carried by said free legs.

4. A step of the character described comprising a substantially U-shaped casting, the free legs of which are T-shaped in cross section with the webs thereof extending toward each other, the connecting portion between the free legs being T-shaped in cross section, with the webs thereof extending downwardly, and locating members carried by said free legs.

5. A step of the character described comprising a casting having side members spaced apart, a cross member formed integral with the ends of said side members, grooves upon the upper surface of said cross member and extending longitudinally thereof, and locating members formed integral with said side members.

6. A step of the character described comprising side members spaced apart, a cross member formed integral with the ends of said side members, upright extensions formed integral with the ends of said side members and extending across the ends of said cross member, and locating members carried by said side members.

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