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STREET MANHOLE COVER

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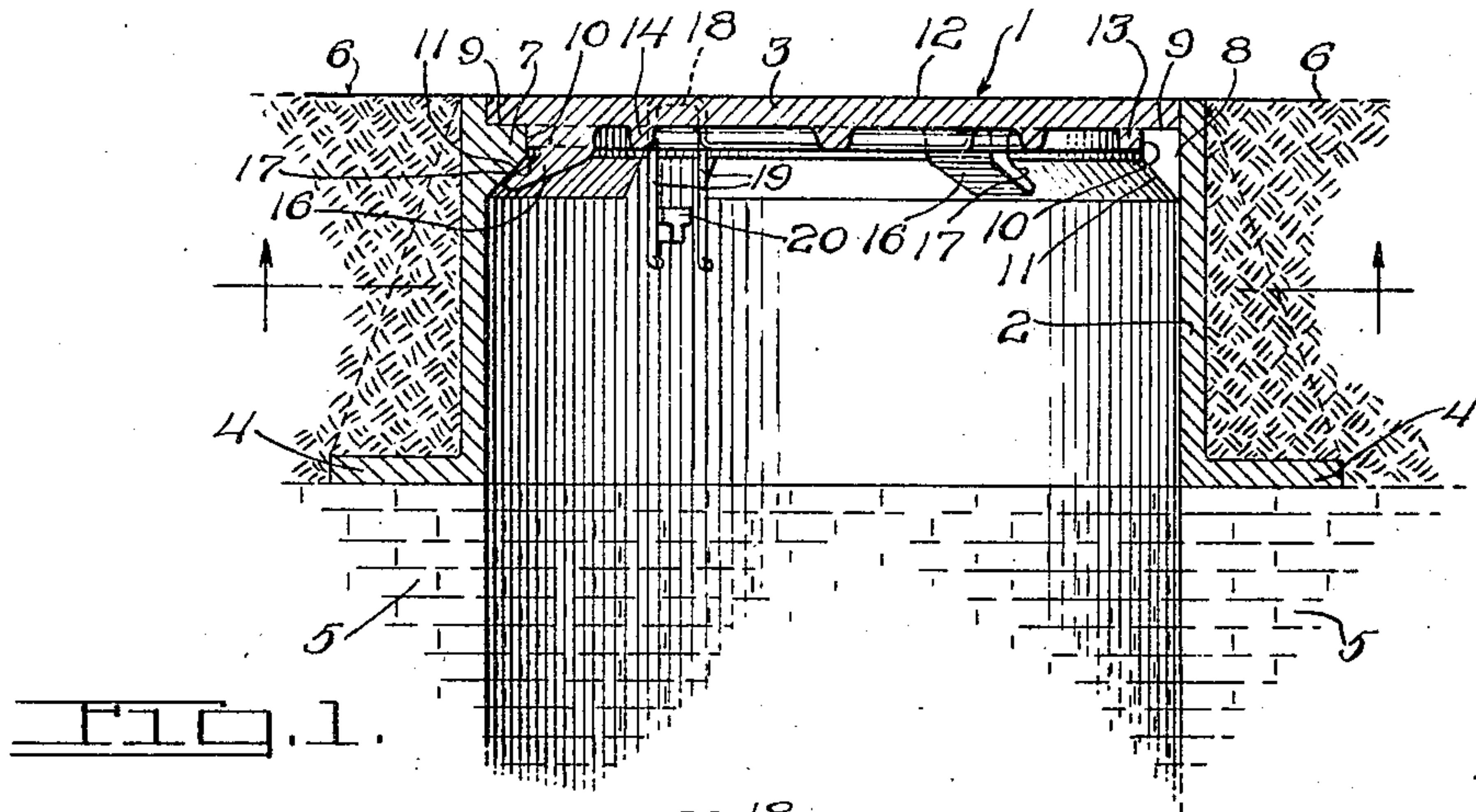


FIG. 1.

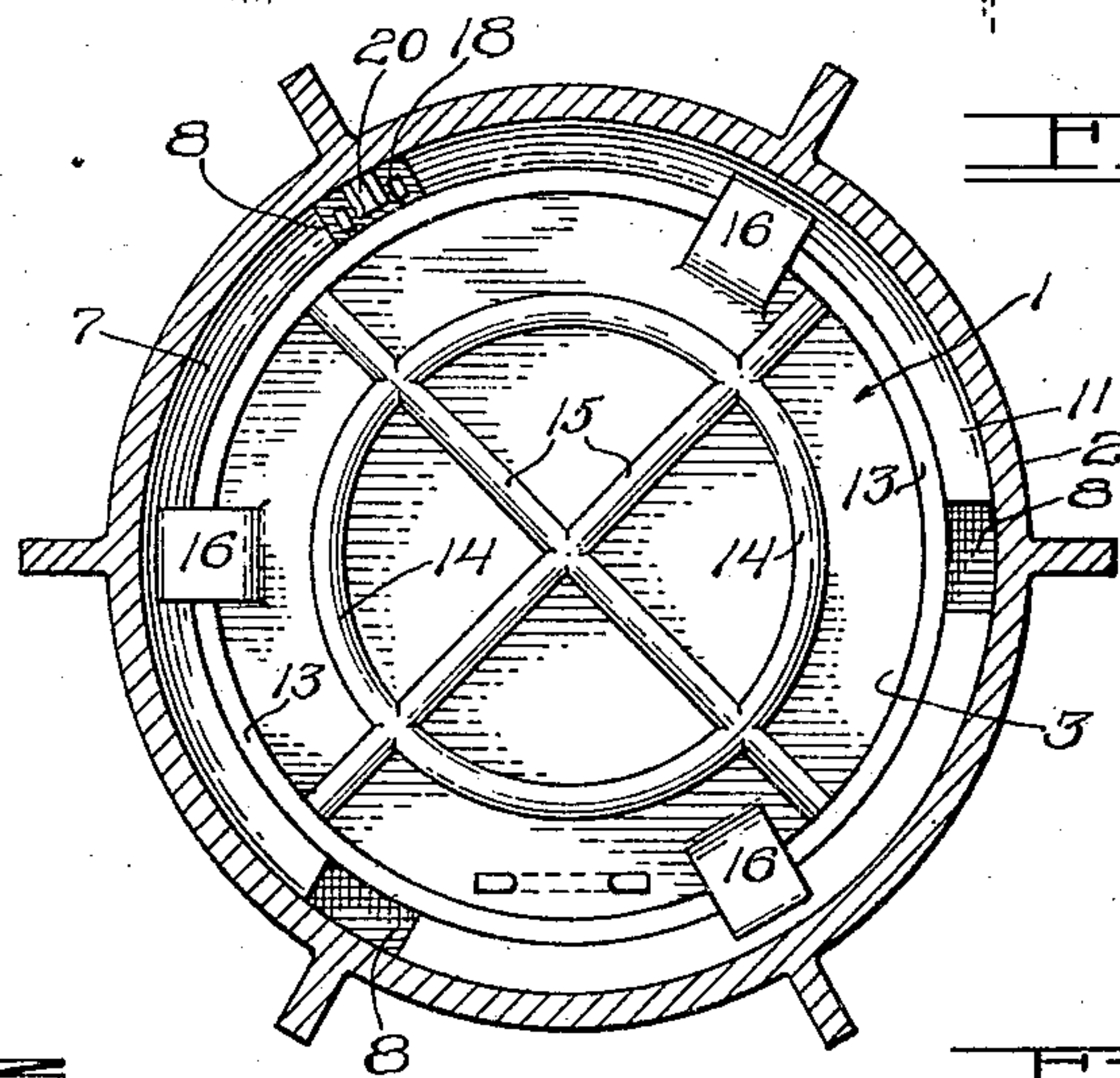


FIG. 2.

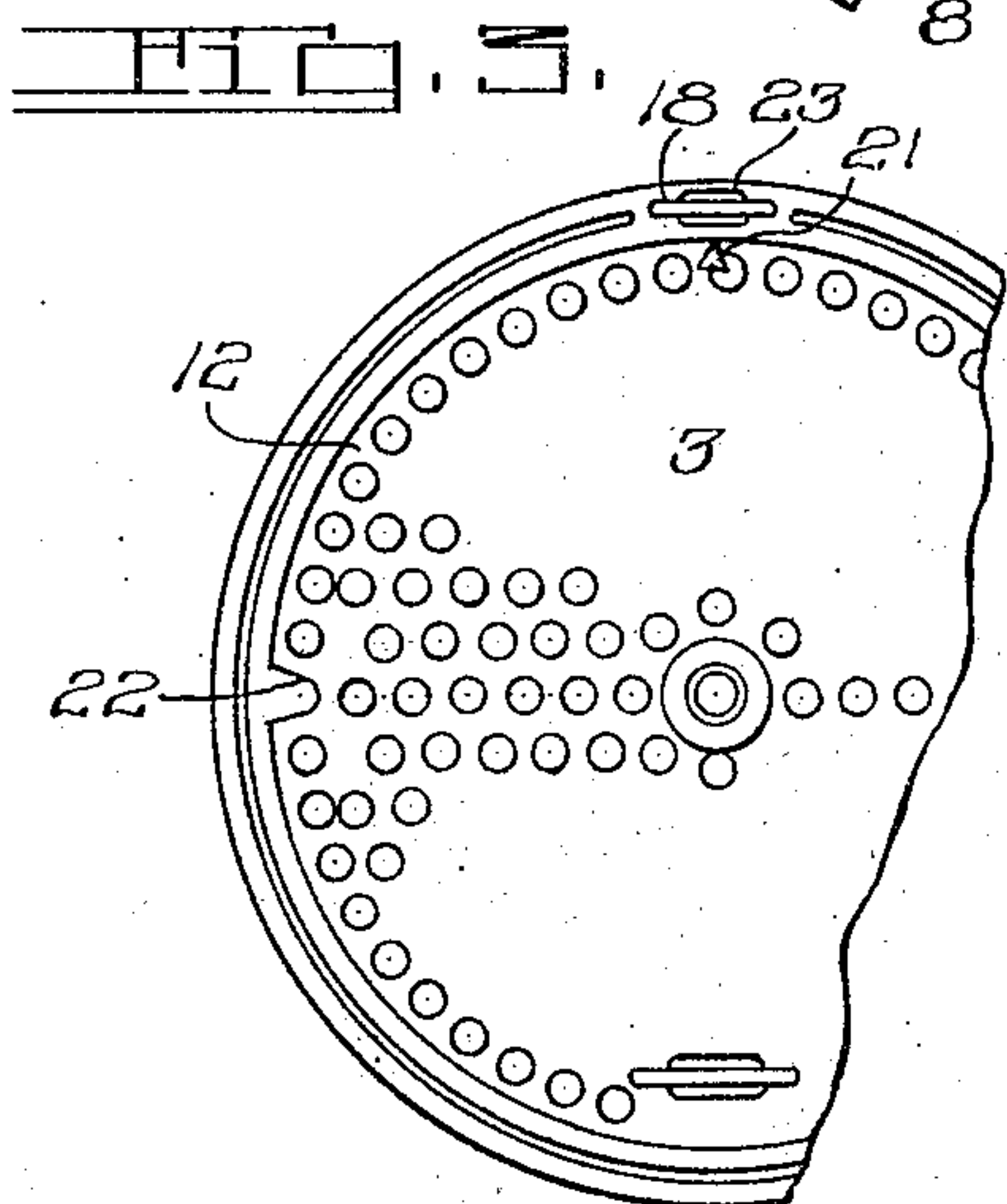


FIG. 3.

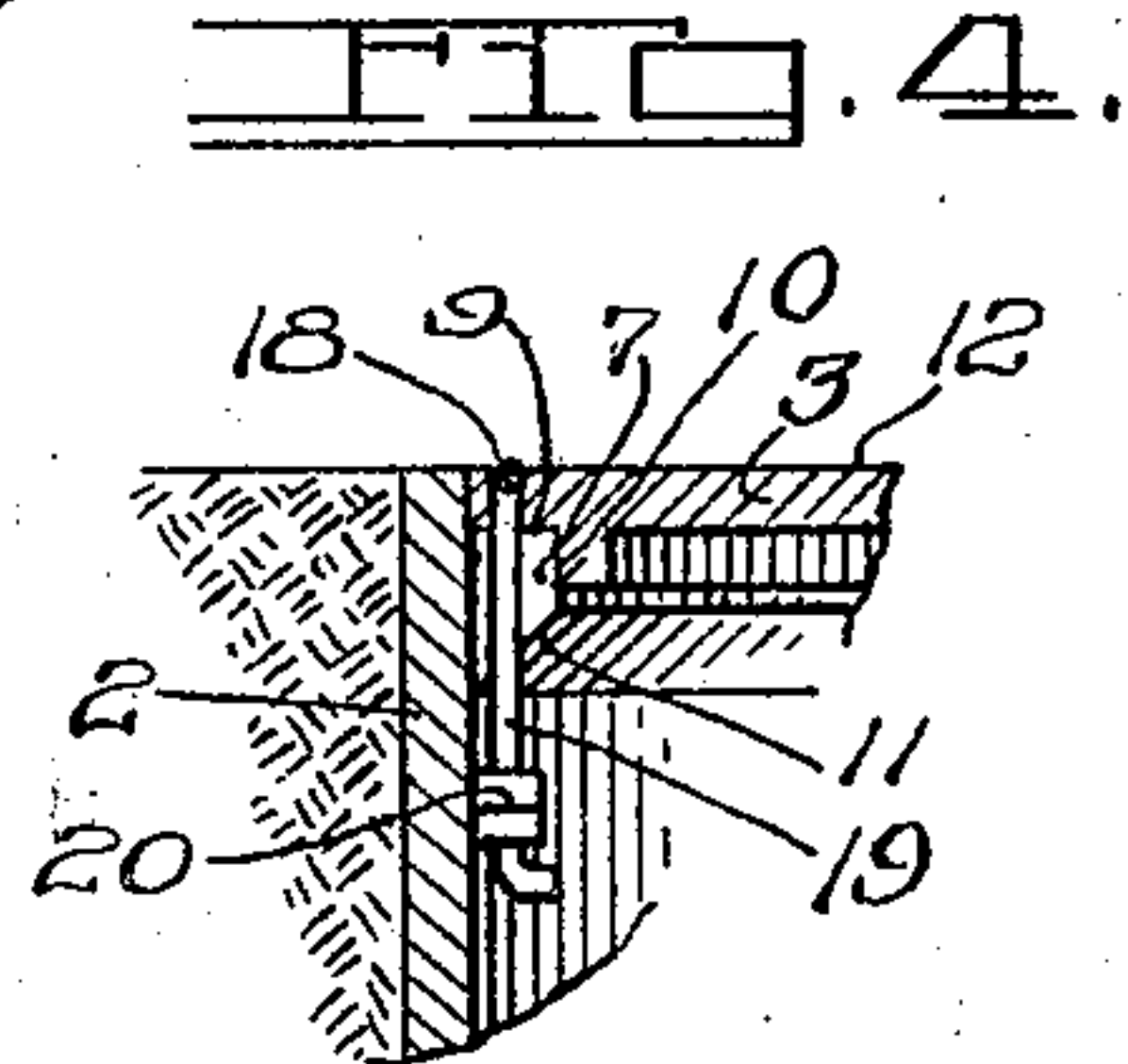


FIG. 4.

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# UNITED STATES PATENT OFFICE.

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## STREET-MANHOLE COVER.

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This invention relates to improvements in manhole closures and especially to those of the type utilized in street construction wherein the cover sections of such closures occupy horizontal positions flush with the street surface and sustain the weight of vehicular and other traffic.

Under such conditions it frequently happens that the cover sections become loose and oscillatory so that the same, under the applied pressures of traffic, rock and move freely with respect to the base sections and in many instances become completely disconnected from such base sections so as to leave such closures in an open and therefore dangerous condition.

It is therefore an object of the present invention to provide a manhole closure wherein the cover section thereof may be securely fastened to the complemental base sections to preclude undue relative movement between said sections and particularly to prevent any looseness on the part of the cover section when the latter occupies its applied or operative position upon the base section.

Another object of the invention resides in the provision of a manhole closure formed to include a base section provided with a plurality of spaced arcuate flanges arranged internally thereof and disposed adjacent to the top of the base section, said flanges serving to provide a seat for the cover section and at the same time to cooperate with a plurality of integrally formed lugs provided upon the upper surface of the cover section and arranged to engage with the corresponding surfaces of said flanges, the arrangement being such that when the cover is initially applied to the base sections the lugs pass between the spaced flanges of the base sections but by partially rotating the cover section the lugs will be moved into engagement with the under surfaces of said flanges to securely position the cover section and especially to hold the same against rocking or tilting movement relative to the base section.

A further object of the invention resides in providing the cover section with a vertically slidable substantially U shaped handle, whereby when the cover section occupies its applied position upon the base section, the spaced legs of said handle will be positioned on opposite sides of a fixed tongue arranged internally of the base section, the said handle and tongue serving to lock the cover

section against axial rotation and to retain the same in such locked position until the handle is lifted so that the legs thereof clear the fixed tongue, which permits of partial rotation of the cover section so that the legs thereof may be registered with the spaces provided between the supporting flanges, thereby allowing the cover section to be lifted from the base section, but this can be brought about only by means of a manual predetermined operation which can not be accidentally effected.

Still further objects reside in a manhole closure of simple, strong and practical construction and one which is economical to manufacture and utilize.

With these and other objects in view, as will appear as the description proceeds, the invention consists in the novel features of construction, combinations of elements and arrangements of parts hereinafter to be fully described and pointed out in the appended claims.

In the accompanying drawing:

Figure 1 is a vertical longitudinal sectional view taken through the manhole closure formed in accordance with the present invention,

Figure 2 is a horizontal sectional view taken on the plane indicated by the arrows of Figure 1,

Figure 3 is a fragmentary top plan view of the cover section,

Figure 4 is a fragmentary vertical sectional view showing the lock connection between the cover and the base section.

Referring more particularly to the drawing the numeral 1 designates the improved manhole closure comprising the present invention in its entirety. Essentially, the closure comprises a base section 2 and a separable cover section 3, both of which may be formed from cast iron or other suitable material. The base section is of cylindrical formation and has a supporting ring 4 integrally cast upon the lower part thereof, as is customary in devices of this kind, the said ring being positioned upon suitable supporting masonry 5 and the body portion of the section 2 may be surrounded by concrete or other material used in street or other surfaces, the upper edge of the base section terminating substantially flush with the street surface 6.

Formed integrally with the inner wall of the base section and arranged adjacent to



the top thereof are seating flanges 7. In the present instance three of such flanges have been shown although any suitable number may be utilized. The flanges are preferably spaced relative to each other so as to provide openings or spaces 8 therebetween, the purpose of which will be hereinafter developed. Each of the flanges 7 includes a flat horizontal upper surface 9, a substantially perpendicular vertically arranged surface 10 and a downwardly and outwardly obliquely arranged surface 11, which latter at its lower edge merges with the inner wall of the base section.

The cover section comprises essentially a flat metallic plate of suitable thickness, the upper surface 12 of which being suitably corrugated or roughened to prevent slipping thereof on the part of objects passing over the closure. The side of the cover section is reinforced by the provision of inner and outer circular and concentrically disposed ribs 13 and 14 respectively, which are united by means of cross ribs 15. The outer rib 14 is of such diameter that the same engages closely with the perpendicular surface 10 of the flanges 7, and the under surface of the closure between the rib 14 and the extreme outer edge of the closure engages with the horizontal surfaces 9 of the flanges 7. In addition, the outer vertical walls of the cover section are arranged to closely engage with the inner wall of the body section disposed above the flanges 7, so that the upper surface of the closure section will terminate substantially evenly with the upper surface portions of the base section 2, as shown in Figure 1.

One of the outstanding features of the present invention resides in forming the under surface of the cover section to include a plurality of equally spaced downwardly projecting lugs or legs 16, which are cast with the cover section at the time of its formation. These lugs are each formed to include an outwardly inclined surface 17, which corresponds closely to the angle of the inclined surface 11 of the flanges 7. In operation, the lugs or legs 16 are positioned so that the same register with the spaces 8 provided between the flanges 7. This allows the cover section to drop downwardly upon the upper surfaces of the flanges 7 and at the same time permits the lower portion of the lugs or legs 16 to clear the flanges 7. Thus, by partially rotating the cover section the lugs or legs 16 are positioned so that the same are out of registration with the spaces 8 and are disposed in immediate engagement with the inclined walls 11 of the seating flanges 7. By this arrangement it will be seen that if the closure section 3 is subjected to localized forces or strains which would tend to tilt or oscillate the cover section relative to the base section, such tilting

or rocking movement is prevented by reason of the locking relationship existing between the lugs or legs 16 and the flanges 7, thus overcoming one of the outstanding objections which have been found to exist in standard manhole closures.

Furthermore, to prevent accidental disengagement between the flanges 7 and the lugs 16, the closure section 3 is provided with a substantially U shaped handle 18, the spaced legs 19 of which being slidably mounted within openings provided adjacent to the perimeter of the cover section 3. Formed internally of the base section is a horizontally projecting tongue 20, which is arranged in registration with one of the spaces 8 provided between the flanges 7. Through the provision of the handle 18 and the tongue 20 it will be observed that when the handle is elevated it may be employed to facilitate the lifting and positioning of the cover section, allowing an operator to position the lugs or legs 16 between the spaces 8 and then to rotate the cover section to assume a locking position. After the cover section has been rotated to a predetermined extent, which is governed by the registration of matched indications 21, the handle 18 is dropped so that the legs thereof will be positioned on opposite sides of the stationary tongue 20. By this arrangement it will be observed that the cover section is locked against movement which might tend to disengage the legs 16 from engagement with the flanges 7. The arrangement, therefore, provides against accidental unlocking of the cover section and requires predetermined manipulation thereof to remove the same from its operative relation with the base section. One edge of the cover section may be provided with a notch 22 in which a crowbar or the like (not shown) may be inserted for facilitating the lifting or other positioning of the cover section. The top of the handle 18 is adapted to be received within a groove 23 formed in the cover section so that the handle will lie flush, when not in use, with the top of the cover section.

In view of the foregoing it is believed that the features and advantages of the invention will be readily understood by those skilled in the art, and therefore a more extended explanation has been omitted.

What is claimed is:

1. A manhole closure comprising a base section and a separable cover section, said base section being formed to include a plurality of internally situated, relatively spaced seating flanges, a plurality of spaced lugs integrally formed with the under side of said cover section and arranged for registration with the spaces provided between said flanges, whereby upon partial rotation of said closure section said lugs may be moved into locking engagement with the



under surfaces of said flanges, and a handle member carried by said cover section and arranged for engagement with a stationary tongue formed with said base section to lock said cover section against rotary movement of an accidental character.

2. A manhole closure comprising a base section formed to include a substantially cylindrical body, spaced flanges projecting internally from said body and formed to include flat horizontal upper surfaces, vertical inner walls and beveled lower walls, a cover section arranged to be separably connected with said base section, said cover section being formed to include a plurality of integral downwardly extending lugs, said lugs being spaced to pass between said flanges when said cover section occupies an initial position of application, the outer walls of said lugs being inclined to correspond with the inclined bottom walls of said flanges, whereby upon rotation of said cover section relative to said body section said legs will be positioned beneath said flanges to preclude vertical movement on the part of said cover section, the outer edge portions of said cover section being seated upon the horizontal upper surfaces of said flanges, and means for locking said cover section against accidental rotation when said cover section is finally positioned upon the base section.

3. A manhole closure comprising a substantially cylindrical base section, spaced flanges positioned internally of said base section and arranged adjacent to the top thereof, said flanges being formed to include sub-

stantially horizontal upper walls, and inclined lower walls, a cover section having a perforate portion thereof seated upon the horizontal upper walls of said flanges, and a plurality of integral lugs depending from the underside of said cover section and cooperative with the inclined lower walls of said flanges to secure the cover section to the base section upon relative rotation between said sections.

4. A manhole closure comprising a base section and a separable cover section, said base section being of substantially cylindrical formation and provided internally contiguous to the upper end thereof with a plurality of spaced arcuate flanges, adapted to constitute a seat for the cover section, a plurality of lugs integrally forming with and depending from the underside of said cover section and situated to register initially with the spaces provided between said flanges, whereby upon relative rotation between said sections said lugs may be moved under said flanges to secure the cover section to the base section and a removable handle member carried by said cover section arranged for cooperation with a stationary abutment formed with said base section for the purpose of locking the cover section against rotation relative to said base section when said section is occupying a predetermined position of closure.

In testimony whereof we affix our signatures.

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