

United States Patent

[11] 3,543,801

- | | | |
|------|-----------|---|
| [72] | Inventors | Floyd L. Thayer
Goose Point, Duxbury, 62332;
Wallace S. Pinkham, R.F.D. State Rd.,
Vineyard Haven, Massachusetts 62568 |
| [21] | Appl. No. | 731,946 |
| [22] | Filed | May 24, 1968 |
| [45] | Patented | Dec. 1, 1970 |

- | | | | |
|-----------|------------------------------|---------------------|-----------|
| [56] | References Cited | | |
| | UNITED STATES PATENTS | | |
| 555,078 | 2/1896 | Collins | 138/89 |
| 835,645 | 11/1906 | Smith | 220/24.5X |
| 1,560,489 | 11/1925 | Yager | 138/89X |
| | FOREIGN PATENTS | | |
| 11,179 | 1896 | Great Britain | 220/24.5 |

Primary Examiner—Herbert F. Ross
Attorney—Munroe H. Hamilton

- [54] CLOSURE MEANS FOR CONDUITS AND THE LIKE**
1 Claim, 4 Drawing Figs.
- [52] U.S. Cl.**..... **138/89,**
138/96, 220/24, 220/24.5
- [51] Int. Cl.**..... **F161 55/12**
- [50] Field of Search**..... **138/89, 96,**
96(T); 215/52, 53; 220/24(A), 24.5; 285/214,
323(Cursorv)

ABSTRACT: Cover means for an open end pipe section is comprised by a cover element for engaging against the end of the pipe section. Adjustable gripper mechanism mounted on the back of the cover means resiliently engages an inner peripheral portion of the pipe section in response to rotative movement of a handle extending through the front side of the cover means.

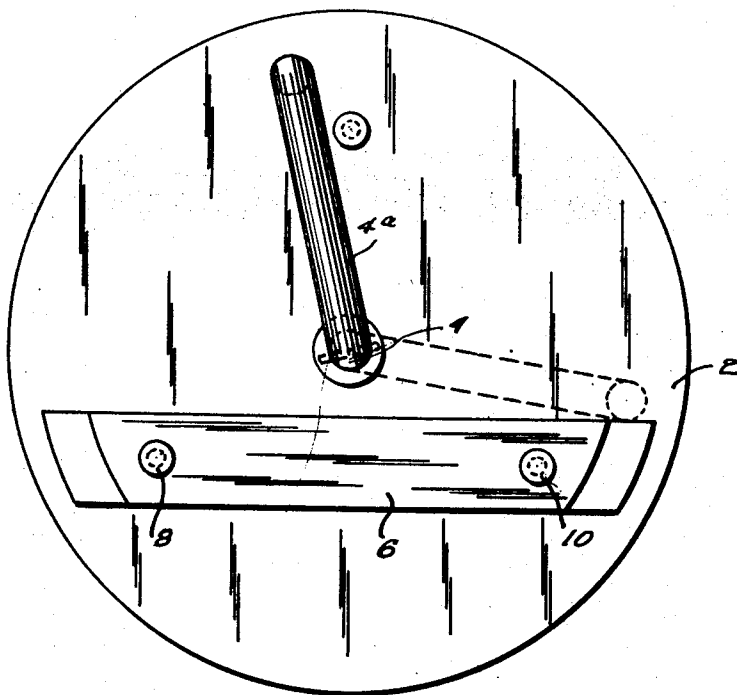


Fig. 1.

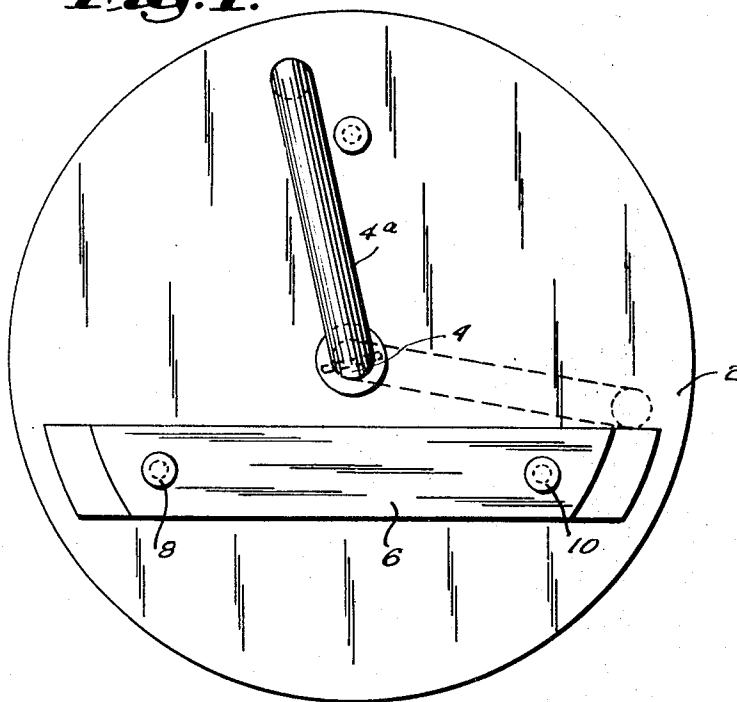
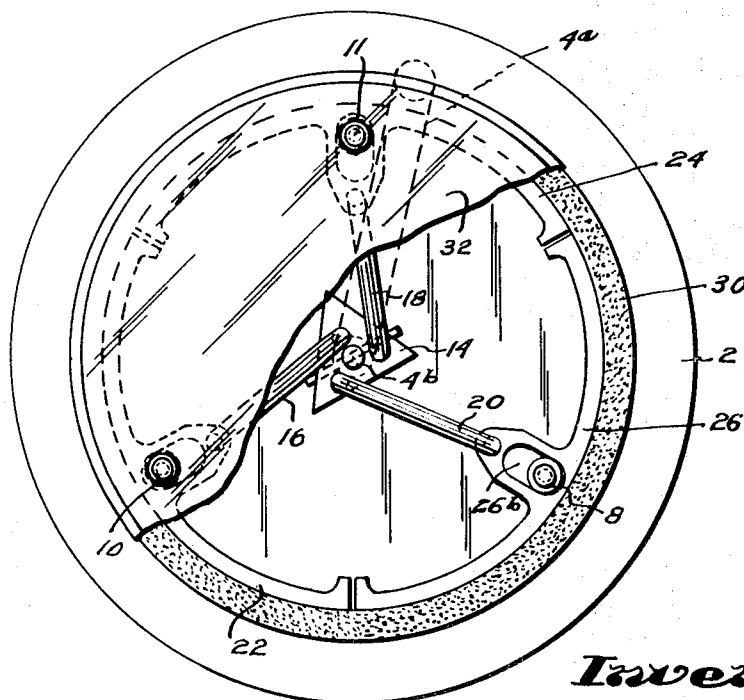


Fig. 2.



Inventors

Floyd L. Taylor
Wallace S. Pinkham

by

Marion H. Hamilton
Attorney

Fig. 3.

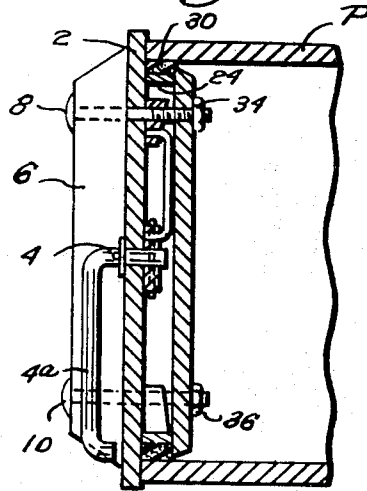
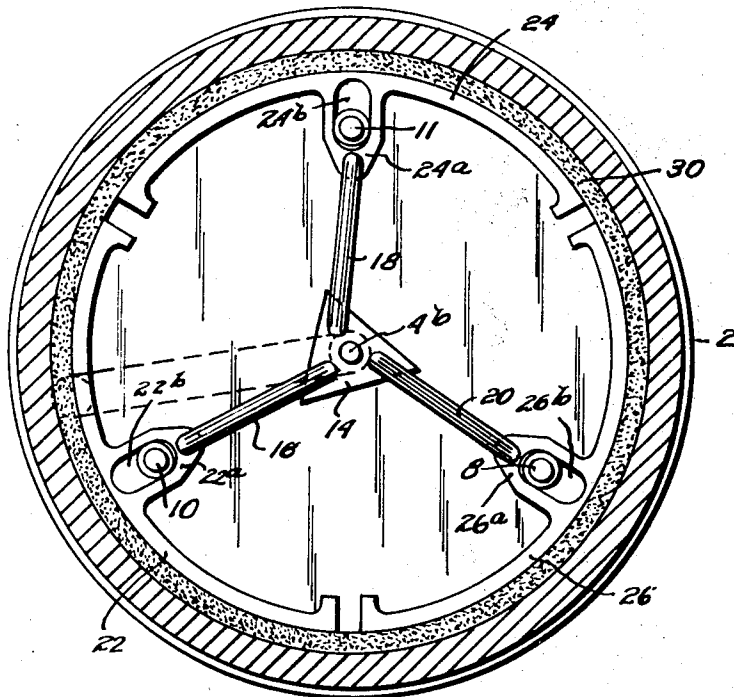


Fig. 4.



Inventors

Floyd L. Thayer

Wallace Pinkham

Alvin H. Hamilton

Attorney

by

CLOSURE MEANS FOR CONDUITS AND THE LIKE

This invention relates to cover means for tubular bodies and, in particular, to a capping device for closing or capping an exposed open end of a section of pipe or other similar conduit body, or covering other openings.

In one specific aspect the invention is concerned with problems arising in connection with the construction of pipelines where sections of pipe are laid out in a trench or other area in a position to be joined together. Under these conditions dirt, stones and other materials may become lodged in the pipe sections and in the case of relatively large diameter pipe sections especially, difficulty may be experienced from animals entering the pipe sections or from cave-ins with mud and flood water seeping into the bottoms of the pipe sections. Moreover, in the case of special types of pipe sections such as those made of clay, transite, cement and even more durable materials such as cast iron and steel there may occur damage when the pipe sections are pried or forced into place against one another by means of tools such as crow-bars, hammers and the like.

It is therefore a chief objective of the present invention to guard against the problems indicated and to devise a capping device for temporarily closing an open end of a pipe section in order to exclude dirt, animals and the like from entering into the pipe section prior to its being connected to other pipe sections.

Still another object of the invention is to provide a conveniently applied capping device which may be installed and instantly locked into place by one simple hand operation, and which may be made to accommodate a range of pipe diameters.

Still another object of the invention is to devise a combination closure device and pry block assembly by means of which a leverage or prying force may be exerted against a block portion and transmitted through the capping device with the displacement force being distributed substantially, uniformly around the pipe edges so that breaking or chipping of the edges may be prevented.

The nature of the invention and its other objects and novel features will be more fully understood and appreciated from the following description of a preferred embodiment of the invention as illustrated in the accompanying drawings, in which:

FIG. 1 is a side elevational view of the capping device of the invention.

FIG. 2 is another elevational view of the capping device as viewed from the opposite side thereof, with portion being broken away to indicate more clearly pipe gripping mechanism.

FIG. 3 is a cross-sectional view illustrating a pipe section with the capping device of the invention engaged thereagainst in a closed position, and

FIG. 4 is an elevational view further illustrating the gripping mechanism of FIG. 2 by showing the operating linkage in a fully extended position.

The principal parts of the capping device of the invention include a cover, a handle located through the cover and a gripping mechanism for securing the cover to a pipe section. Referring more in detail to these parts as shown in the drawings, numeral 2 denotes the cover element which may be of generally circular shape and constructed of any desirable material such as wood, plastic, metal and the like. The diameter of the cover element may be of varying dimensions chosen with reference to varying sizes of openings in pipe sections or other members to be covered. In FIG. 1 the cover element is viewed from an outer side and in FIG. 2 the inner side of the cover is indicated.

As shown in FIG. 3, the cover is, in one preferred embodiment, designed for engagement against an edge portion of a pipe section P to close the open end of the pipe section. It will be understood that pipe section P is intended to be representative of various types of tubular bodies, including manholes and other structures with openings to be closed. However, the pipe section P, as indicated, is also intended to be illustrative espe-

cially of a pipe section of the class commonly laid end to end with other pipe sections in constructing a pipe line for fluid materials.

Rotatably supported through the center of the cover 2 is a handle means 4 having an inner end 4^a which projects beyond the cover element. The opposite end of the handle is formed with an angularly bent portion which extends across the cover in spaced relation to it to constitute a convenient handgrip portion 4^a.

Solidly secured to the cover element 2 in a position to limit rotative movement of the handle grip portion 4^a, is a pry block 6 secured, for example, by means of bolts 8 and 10, and as may be seen in FIG. 3 the block 6 is made of a thickness such that it may receive the hand grip portion 4^a thereagainst as further indicated in dotted lines in FIG. 1.

The handle 4 functions to operate an adjustable gripper mechanism for engaging an inner peripheral surface of the pipe section P. In one preferred embodiment of the adjustable gripper mechanism we may provide a cam element 14 which is fixed at the inner end 4^a of the handle member as shown in FIGS. 2, 3 and 4 and which may, for example, be of a triangular shape. Pivotaly attached to the cam 14 are links 16, 18 and 20 and each of the links are arranged in a radially outwardly extending position with their outer ends being pivotaly attached to respective expanded shoe elements 22, 24 and 26 at lug portions 22^a, 24^a and 26^a.

Each of the lug portions 22^a, 24^a and 26^a are formed with respective elongated slots 22^b, 24^b 26^b through which extend the two fastening bolts 8 and 10 and also a third bolt 11. By means of these elongated slots the expander shoes 22, 24 and 26 may be moved radially inwardly and outwardly by means of the links 16, 18 and 20 when the cam 14 is turned in one direction by the handle 4. Surrounding the expander shoes 22, 24 and 26 is a resilient annular expansion ring 30 which may, for example, be made of rubber or other suitable resilient material. The normal diameter of the expander ring 30 is chosen such that it will be in a slightly stretched condition when placed around the expander shoes 22, 24, 26 in the position shown in FIG. 2. When the handle is turned and the links are moved into the position shown in FIG. 4 the expander ring is circumferentially extended and forced into contact with the pipe section P as illustrated in FIG. 3. An inner cover element 32 overlies the adjustable gripper mechanism and may be secured by means of the bolts 10, 11 and 12 and holding nuts as 34 and 36.

It will be observed that when the expander ring 30 is increased in diameter it provides a resistance acting through the links and at one point the links are resiliently held in an out-of-center position at which point the handle grip 4^a is snapped into abutting relation to the pry block 6 and thus will remain in this position.

We may also desire to employ other expansion shoe arrangements and we may also utilize more than one handle. Likewise, it may be desired to substitute in place of the links described one or more cams mounted for rotation and acting directly against the shoes. Other forms of cam elements may also be utilized and the expander ring may be made in other forms than the continuous annular form described.

While we have described a preferred embodiment of the invention, it will be understood that various changes and modifications may be resorted to within the scope of the appended claims.

We claim:

1. A pipe accessory to be used with a pipe section which has exposed outer edge portions and which is of the class customarily laid end to end in fitted relationship with other pipe sections in constructing a fluid pipeline, said pipe accessory comprising a cover element, expansible gripper means supported at the inner side of the cover element for adjustably engaging with inner peripheral surfaces of the pipe section and holding an outer annular portion of the cover in abutting relationship against said outer edge portions of the pipe, said expansible gripper means including a handle located through the

3

4

cover and rotatable about the central axis of the cover to expand the gripper means, said handle having an angled extremity extending radially outwardly from the said central axis of the cover, a rigid pry block member secured to the outer side of the cover in spaced relation to the axis of rotation of the handle, said pry block projecting beyond the handle in a position to limit rotative movement of the angled extremity when the gripper mechanism is in a fully expanded position, said pry block extending for a substantial distance between two op-

posite edges of the cover element in a chordal relationship and presenting an elongated bearing surface which lies in a plane external to the handle extremity and against which axially directed pry bar forces may be exerted without contact with the handle extremity and transmitted to exposed outer edge portions of the pipe without damage thereto when the said pipe section is moved into fitted relationship with an adjacent pipe section.

10

15

20

25

30

35

40

45

50

55

60

65

70

75