No. 676,355. Patented June 11, 1901.

W. B. DORWARD.

CISTERN CURB.

(Application filed Jan. 12, 1901.)

(No Model.) 3 Sheets—Sheet 1.

Fig. 1.

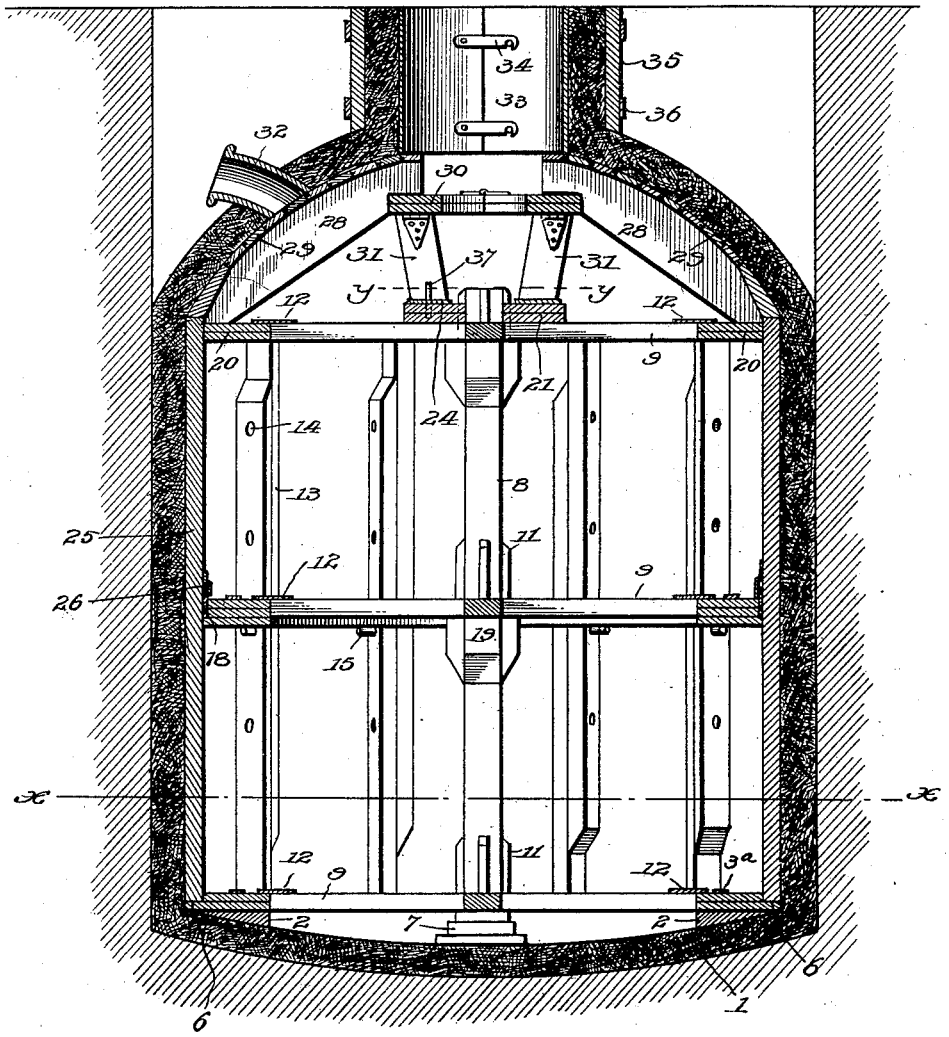
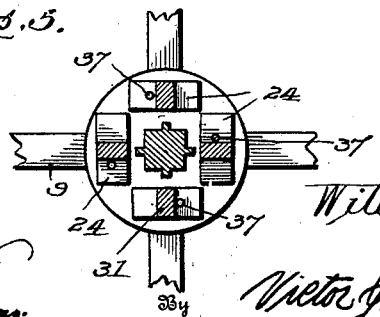


Fig. 5.



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(No Model.) 3 Sheets—Sheet 2.

Fig. 2.

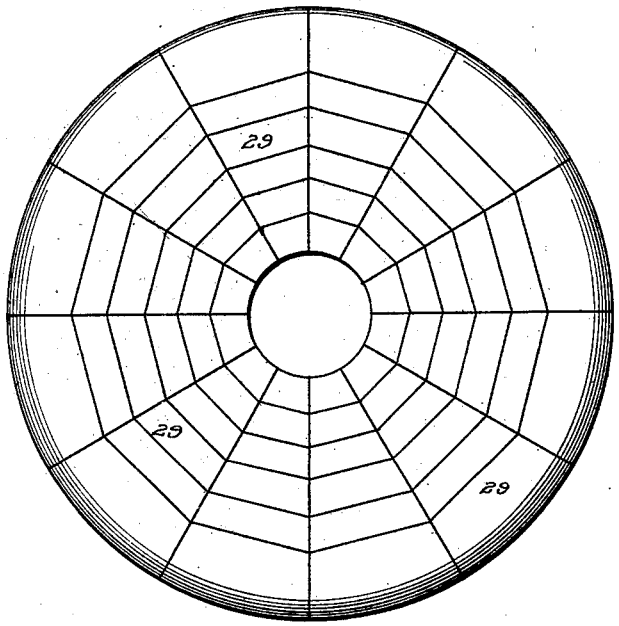
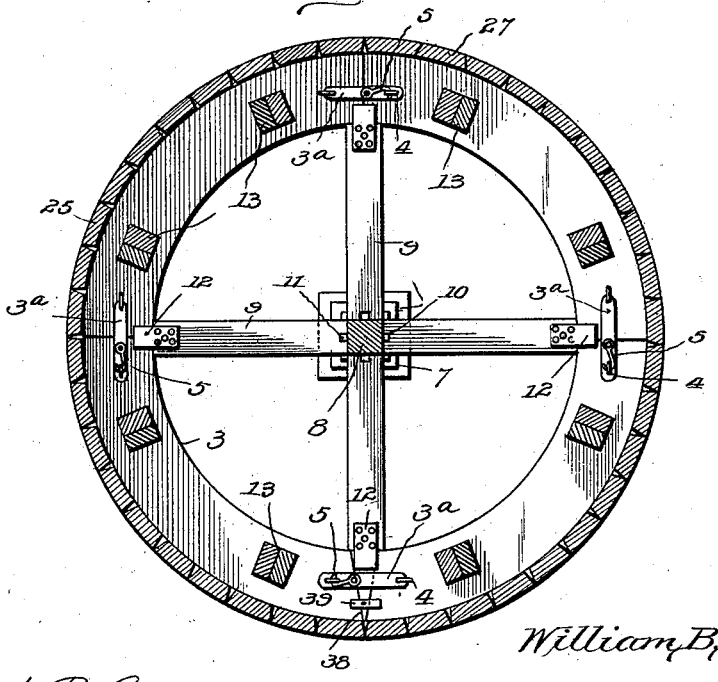


Fig. 3.



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(No Model.) (Application filed Jan. 12, 1901.) 3 Sheets—Sheet 3.

Fig. 4.

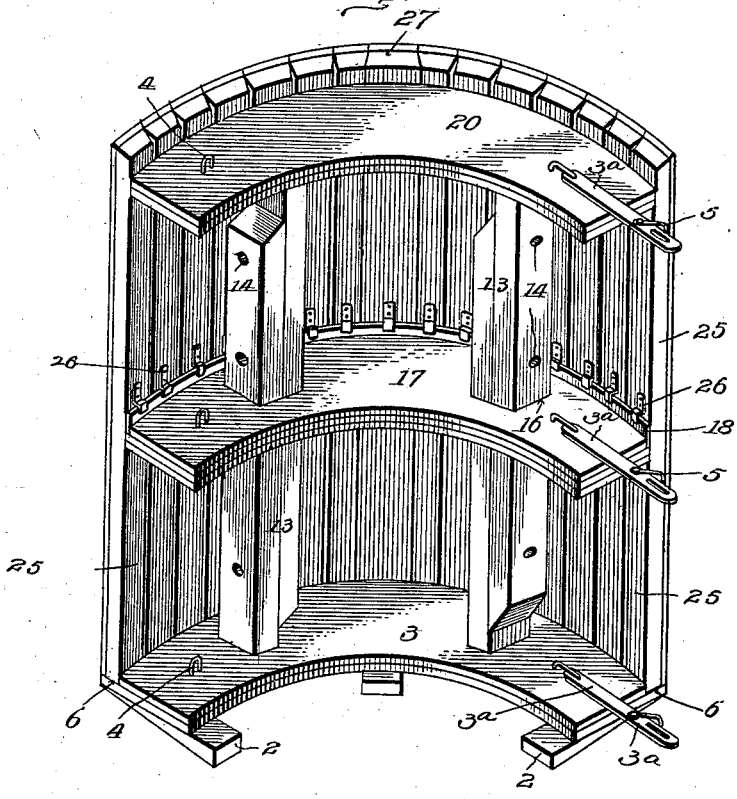


Fig. 6.

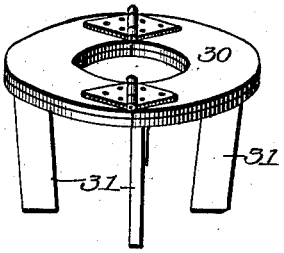
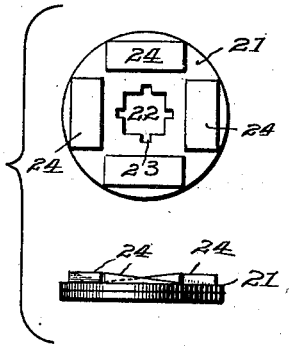


Fig. 7.



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UNITED STATES PATENT OFFICE.

WILLIAM B. DORWARD, OF LAWRENCE, KANSAS.

CISTERN-CURB.

SPECIFICATION forming part of Letters Patent No. 676,355, dated June 11, 1901.

Application filed January 12, 1901. Serial No. 43,053. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM B. DORWARD, a citizen of the United States, residing at Lawrence, in the county of Douglas and State of Kansas, have invented new and useful Improvements in Cistern-Curbs, of which the following is a specification.

My invention relates to new and useful improvements in adjustable curbs for cisterns, and is more especially an improvement upon the device shown and described in Patent No. 292,420, granted to me on January 22, 1884. Its primary object is to provide a device of this character which is adapted to be set up for the construction of cisterns of different sizes and which after the cement or other material placed therearound is hardened can be taken apart and readily removed through the neck of the cistern.

A further object is to provide means of novel construction whereby the cistern may be adjusted vertically to a desired height.

Another object is to provide staves which form the side walls of the curb and which are detachably secured in a novel manner to the frame of the curb.

With these and other objects in view the invention consists in providing a curb-frame which comprises, preferably, three similar rings formed in sections, which are adapted to be secured in any suitable manner. Adjustable uprights are arranged between the upper and lower rings and extend through apertures formed within the middle ring of the frame, and means are provided whereby these uprights may support said middle ring. A standard is arranged at the center of the curb, and braces extend therefrom and engage the rings, serving to prevent the same from moving inward toward the center. Ribs are arranged upon the upper ring, and the inner ends thereof are supported upon a jointed ring having standards which are adapted to bear upon a block arranged at the center of the upper ring. These ribs form the dome of the curb and any suitable number may be employed. The inner ends of the ribs support a preferably metallic strip, which is adapted to be bent into cylindrical form and the adjacent ends thereof secured together. A jacket of suitable construction is adapted to be arranged without this cylinder and to inclose the same, leaving sufficient space therebetween to form the neck of the cistern when cement, concrete, or other material is placed therein.

The invention also consists in the further novel construction and combination of parts hereinafter more fully described and claimed, and illustrated in the accompanying drawings, showing the preferred form of my invention, and in which—

Figure 1 is a vertical transverse section through the cistern, showing the curb in position therein. Fig. 2 is a top plan view of the dome of the curb. Fig. 3 is a section on line *x x* of Fig. 1. Fig. 4 is a detail view of one of the sections of the curb, showing the ring-sections, the standards thereof, and the staves secured to said ring-sections. Fig. 5 is a section on line *y y* of Fig. 1. Fig. 6 is a perspective view of the dome-support, and Fig. 7 is a plan and elevation of the base of said support.

In constructing a cistern by employing a curb forming the subject-matter of this application the bottom of the hole within which the cistern is to be located is covered with a concave layer of cement or concrete of desired thickness, as shown at 1 in Fig. 1. Wedges 2 are then arranged at suitable intervals around the edges of the base 1, and a ring 3, formed, preferably, of four similar sections, is placed thereon, the ends of said sections being held together by means of straps 3^a, which are adapted to engage staples 4 and to be secured thereto by means of hooks 5, pivoted upon the straps. Each of the sections of this lower ring is, as shown in the drawings, formed of two layers or thicknesses of wood or other material, the upper thickness being of less width than the lower thickness, thereby forming a recess 6 at the outer edge of the ring, which is for the purpose hereinafter more fully described. Blocks 7 are arranged upon the base 1 at the center thereof and serve to support a standard 8, which extends upward through the rings at the center thereof. Braces 9 are then placed in position, with their inner ends contacting with the standards at the sides thereof and resting upon the block 7. These inner ends are each recessed, as at 10, for the reception of feathers 11, arranged longitudinally upon the standard 8 and which

prevent lateral movement of the braces. Plates 12 are secured to the outer ends of the braces 9 and extend therefrom, and these plates are adapted to extend over the inner edge of the ring 3, and thereby retain the braces in the position shown in Figs. 1 and 3. Standards or strips 13 are then placed in a vertical position upon the ring 3 at regular intervals. Each of these supports comprises two similar strips having perforations 14 therein at desired intervals. Any one of these perforations in each strip is adapted to receive a pin 15, which extends transversely through the strips and holds them in proper relation to each other. These supports are adapted to be placed within apertures 16, formed within a second ring 17, which is similar to the ring 3, before described, and is, like said ring, formed of preferably four sections secured together by means of straps, hooks, and staples. It will be seen that when the sections of the ring 17 have been lowered a sufficient distance they will contact with the pins 15 in the supports and be held in position at the desired distance above the ring 3. A hoop 18 is secured to the periphery of the ring 17 and extends upward from the upper face thereof. This hoop is secured to the ring in any suitable manner, as by means of nails or screws, and is formed in sections equal in number and size to the sections of the ring. Blocks 19 are arranged upon the sides of the central standard 8 at points in horizontal alinement with the ring 17, and these blocks serve to support braces 9, similar to those before described, and which also engage feathers 11, projecting from the face of the standard. The upper ends of the strips 13 contact with and support a third ring 20, which is formed of sections secured together and which is otherwise similar to the rings 17 and 3 before described. Braces 9 are provided for this ring, and the inner ends thereof are secured to the central standard 8 in the same manner as are the braces before referred to. A preferably circular block 21, such as shown in Fig. 7, is provided with an aperture 22 at the center thereof for the reception of the upper end of the central standard 8, and this block is adapted to lie upon the inner ends of the upper braces 9, rotary movement thereof being prevented by the feathers 11 at the upper end of the standard and said feathers lying within recesses 23, formed within the walls of the aperture 22. Wedges 24 are arranged upon the upper face of this block and at right angles to each other, the reduced ends thereof being removed from each other. After the rings have been placed in the positions herein described staves 25 of the proper height are placed with their lower ends within the recess 6, formed at the upper edge of the lower ring 3. Each of these staves is provided at the center with a downwardly-extending hook 26, which is adapted to engage the upper edge of the hoop 18, before referred to, when the staves are in position within the recess 6. These hooks will, as is obvious, hold the staves in an upright position and prevent the same from being removed until after they have been disengaged from the hoop. The sides of the staves are beveled inwardly and toward each other, one of them, however, 27, being beveled in the opposite direction. This last-named stave is adapted to be placed in position after the remaining staves have been secured to the hoop. After the staves have been all placed in the position the concrete or cement to form the walls of the cistern is packed between the earthen wall and the staves. The frame of the dome of the cistern is then placed in position. This frame comprises ribs 28, which are arranged in pairs, the ribs of each pair being connected by means of strips or slats 29. The outer or lower ends of the ribs are beveled and bear upon the upper ring 20, before referred to. The inner and upper ends of the ribs are supported by a ring 30 (shown in Fig. 6) and comprise two similar sections hinged together and provided with standards 31, which are hinged to the lower surface thereof at regular intervals. These standards are adapted to rest upon the wedges 24 on the block 21, and it will be understood that when they are slid upon said wedges the ring will be forced upward, thereby firmly binding the sections of the dome together. These sections 29 of the dome are also provided with edges which are beveled inwardly and toward each other, one of them, however, being beveled in the opposite direction and being adapted to be placed in position last and removed first. After the dome has been constructed as herein described cement or concrete is placed thereover, and, if desired, a section of pipe 32 may be placed therein, as shown in Fig. 1. When the frame of the dome has been completely covered, a strip of preferably sheet metal is bent into cylindrical form and placed upon the inner ends of the ribs 28. The adjacent ends of this strip 33 are secured together by means of a hook 34 or in any other suitable manner. A jacket, comprising vertical ribs 35, secured to the bands 36, is then placed outside of the strip 33, with its lower edge bearing upon the cement of the dome. The space between this jacket and the strip 33 is then filled in with cement or concrete and the construction of the cistern is completed. The curb is left in position until the cistern is hardened, and the parts are then removed by reversing the operation hereinbefore described.

It will be seen that the strip 33 can be readily removed by unlocking the hooks 34 and springing the adjacent ends of the strips over each other. This will obviously decrease the diameter of the cylinder and the same may then be readily removed from the neck. The jacket being located outside of the neck can, as is obvious, be removed in any suitable manner. The standards or supports 31

are knocked off of the wedges 24, causing the ring 30 to drop, and said ring is folded upon itself and can be drawn out through the neck. The other parts can then be removed after the same have been detached from each other.

I preferably provide pins 37 upon the wedges, so as to prevent the supports or standards 31 from slipping downward upon the inclined faces of the wedges. These pins can be removed when desired. Each of the rings I also provide, preferably, with a wedge 38, which is adapted to lie between the adjacent ends of two of the sections. A strip 39, of metal or other material, is pivoted upon each of these wedges and is adapted to overlap the edges of the sections of the rings, thereby retaining the wedges in position. When it is desired to remove the rings, these wedges are first removed after the braces 9 have been disengaged from the stationary rings. As soon as these wedges are taken out the sections of the rings will be loosened and can be readily detached.

After the parts of the curb have been removed the bottom walls and neck of the cistern should be gone over with cement and all the rough parts thereof filled in.

It will of course be understood that when it is desired to adjust the frame of the curb to cisterns of greater height it is necessary to employ a larger standard 8 and longer staves 25. The supporting-strips 13, however, can be adjusted by sliding the sections thereof upon each other and placing the pins 15 in engagement with desired apertures 14.

In the foregoing description I have shown the preferred form of my invention; but I do not limit myself thereto, as I am aware that modifications may be made therein without departing from the spirit or sacrificing the advantages thereof, and I therefore reserve the right to make all such changes in the details of construction as may properly fall within the scope of my invention.

Having thus fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. A curb comprising similar rings arranged one above the other, the lower ring having a recess in its periphery; a hoop secured to, and extending above, the central ring; and staves resting within the recess and secured to the hoop.

2. A curb having similar rings arranged one above the other, the lower ring having a recess in the periphery thereof; a hoop secured to, and extending from, the central ring; staves resting within the recess; and hooks secured to the inner faces of the staves and adapted to engage the hoop.

3. A curb having rings arranged one above the other formed of similar sections; means for securing the sections together; a hoop secured to the central ring and extending thereabove; staves resting within the recess formed within the periphery of the lower ring; hooks to said staves adapted to engage the hoop; and beveled faces to the staves.

4. A curb having similar rings arranged one above the other and formed of similar sections; means for securing the sections together; a hoop secured to, and extending above, the central ring; staves, the lower ends of which rest within a recess formed within the periphery of the lower ring; hooks to said staves adapted to engage the hoop; a standard; and braces secured to the sides of the standard and to the rings.

5. A curb having similar rings arranged one above the other and formed of similar sections; means for securing the sections together; a hoop secured to, and extending above, the central ring; staves, the lower ends of which rest within a recess formed within the periphery of the lower ring; hooks to said staves adapted to engage the hoop; a standard; feathers upon the standard; and braces engaging the feathers at their inner ends and detachably secured at their outer ends to the rings.

6. A curb having similar rings arranged one above the other and formed of similar sections; means for securing the sections together; a hoop secured to, and extending above, the central ring; staves, the lower ends of which rest within a recess formed within the periphery of the lower ring; hooks to said staves adapted to engage the hoop; a standard; feathers upon the standard; braces, the inner ends of which are adapted to engage the feathers; means for limiting the downward movement of said ends; and plates at the outer ends of the braces adapted to bear upon the rings and supporting the outer ends of the braces.

7. A curb having similar rings arranged one above the other; adjustable supporting-strips upon the lower ring and supporting the upper ring; apertures within the intermediate ring adapted to receive said strips; means for locking the strips in adjusted position and for supporting the intermediate ring.

8. A curb having similar rings arranged one above the other; adjustable supporting-strips upon the lower ring and supporting the upper ring; a pin to each supporting-strip for locking the same in adjusted position, said strips adapted to extend through apertures within the central ring; a central standard; braces between said standard and rings; staves; hooks thereto; and a hoop secured to the central ring and extending thereabove, and adapted to be engaged by the hooks.

9. A curb for a cistern having similar rings arranged one above the other; a standard; braces between said standard and rings; staves detachably secured to the central ring; ribs upon the upper ring; a ring supporting the inner ends of the ribs; and hinged braces for said ring.

10. A curb for a cistern comprising similar rings arranged one above the other; staves

secured to one of the rings; a standard; braces extending from the standard to one of the rings; a block mounted upon the standard and braces; a ring formed of similar hinged sections; braces for the ring bearing upon the block; and ribs mounted at opposite ends upon the upper ring and upon the ring of the braces respectively.

11. A curb for a cistern comprising similar rings arranged one above the other; supports for the upper rings; staves detachably secured to one of the rings; a central standard; braces connecting said standard and one of the rings; a block upon the standard and braces; a ring formed of similar sections hinged together; standards hinged to said ring and adapted to contact with the top of the block; and ribs supported at opposite ends upon the upper ring and the hinged ring respectively.

12. A curb for a cistern comprising similar rings arranged one above the other; supports for the upper rings; staves detachably secured to one of the rings; a central standard; braces connecting said standard and one of the rings; a block upon the standard and braces; a ring formed of similar sections hinged together; standards hinged to said ring; wedges upon the block adapted to be contacted by the hinged standards; ribs bearing at opposite ends upon the upper ring and the hinged ring respectively; and strips connecting said ribs in pairs and adapted to form the dome of the curb.

13. A curb for a cistern having similar rings arranged one above the other; strips for supporting the upper rings; staves detachably secured to one of the rings; a central standard; braces connecting said standards and the rings; a block mounted upon the end of the standard and upon the braces of the upper ring; wedges upon the block; a ring formed of similar hinged sections; standards hinged thereto and adapted to bear upon the wedges of the block; ribs supported upon the upper ring and the hinged ring respectively; strips connecting the ribs in pairs and adapted to form the dome of the curb; a strap mounted upon the inner ends of the ribs; and a jacket inclosing said strap.

14. A curb for a cistern having similar rings formed in sections and arranged one above the other; adjustable supports for the upper rings; a central standard; blocks thereon; said standard having feathers adjacent to the blocks; braces bearing at their inner ends upon the blocks and engaging the feathers; plates to the braces overlapping the inner edges of the rings and supporting the adjacent ends of the braces; staves detachably secured to one of the rings; a block on one end of the standard and upon the braces of the upper ring; wedges thereon; a ring formed of similar hinged sections; standards hinged thereto and bearing upon the braces; ribs mounted at opposite ends upon the upper ring and the hinged ring respectively; strips to the ribs forming the dome of the curb; a cylindrical strap upon the inner ends of the ribs; and a jacket inclosing said strap.

15. A curb for a cistern having similar rings arranged one above the other; each of said rings being formed in similar sections; means for securing the adjacent ends of the sections together; a wedge between two of the sections; a hinged strip thereto adapted to overlap the adjacent ends of the sections; means for supporting the upper rings; a hoop secured to the outer edge of the middle ring and extending upward therefrom; staves resting upon the lower ring and overlapping the upper ring; and hooks thereto adapted to engage the hoop.

In testimony whereof I affix my signature in presence of two witnesses.

WILLIAM B. DORWARD.

Witnesses:
ALBERT BREWER,
C. H. CHANDLER.