A. W. KURZ.

VAULT HEAD.

APPLICATION FILED MAY 27, 1903. RENEWED DEC. 11, 1908.

967,940. Patented Aug. 23, 1910.

Fig. 1.

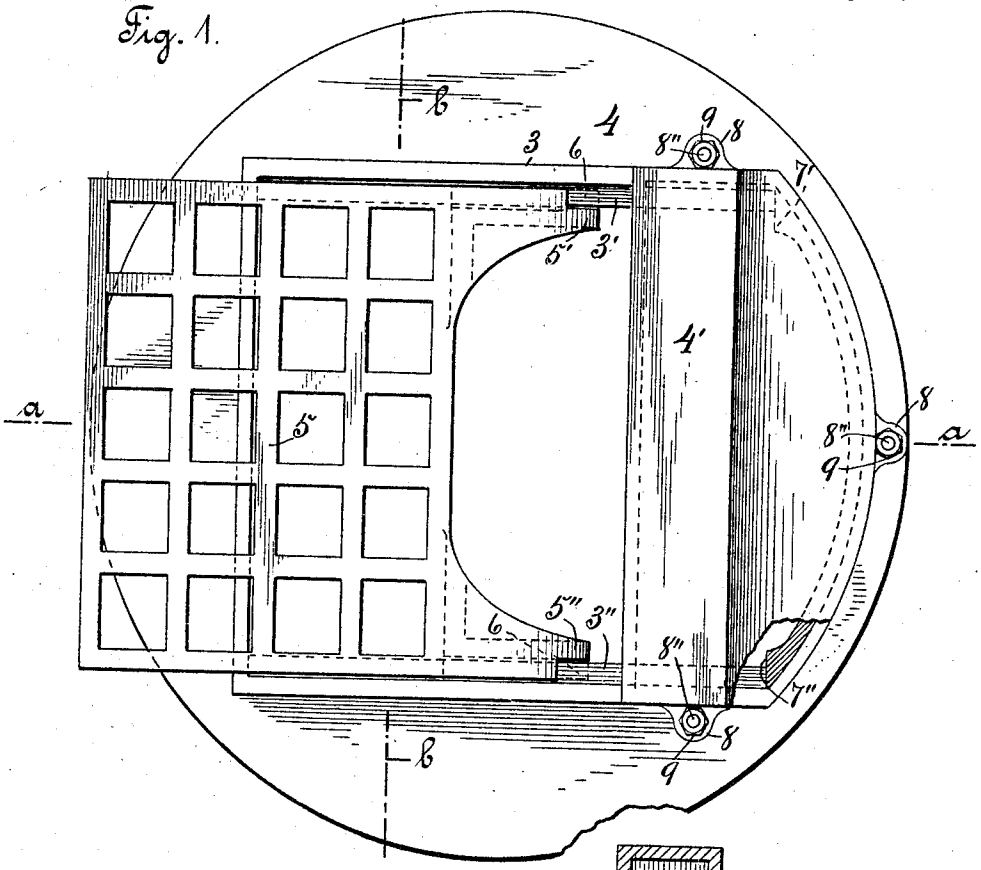


Fig. 2.

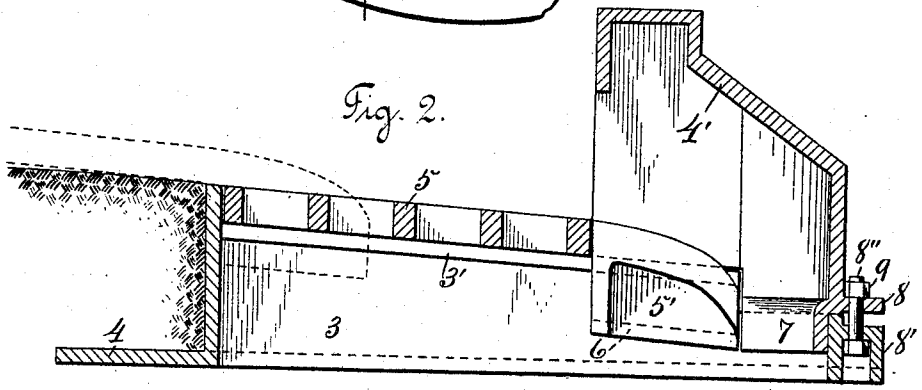
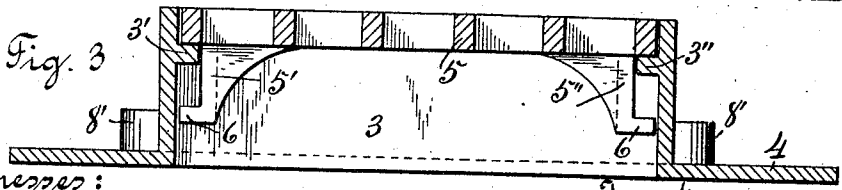


Fig. 3



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UNITED STATES PATENT OFFICE.

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VAULT-HEAD.

967,940. Specification of Letters Patent. Patented Aug. 23, 1910.

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To all whom it may concern:

Be it known that I, AUGUST W. KURZ, a citizen of the United States, and a resident of Cleveland, in the county of Cuyahoga and State of Ohio, have invented certain new and useful Improvements in Vault-Heads, which improvements are fully set forth in the following specification.

This invention relates to improvements in structures of that class employed in connection with subterranean vaults for the purpose of controlling, each the entrance to the vault with which it is conjoined, such structures being commonly known as "vault heads."

The objects of this invention are to provide a structure of the character indicated which shall be simple and inexpensive as regards construction; durable, efficient and reliable in practical service; which shall embody features of construction insuring a novel operative relation between the main member of the device and the lid therefor; which shall be attractive in appearance, and which shall possess certain well-defined advantages over prior analogous structures.

The invention consists in the novel disposition and relative arrangement of the various coöperating parts thereof, whereby the attainment of the above objects is rendered practicable; in certain combinations; and in certain details of construction, all of which will be specifically referred to hereinafter and set forth in the appended claims.

The invention is clearly illustrated in the accompanying drawings, wherein similar reference-numerals denote corresponding parts throughout the several views, and as to said drawings: Figure 1 is a plan view of a vault head embodying my said improvements, a portion of the keeper which I purpose making use of, being broken away to better disclose certain minor features of the construction, and the lid employed being partially displaced from the position it normally occupies in service. Fig. 2 is a central, vertical, longitudinal section, along the line *a*—*a* of Fig. 1, the lid aforenamed being seated for service. Fig. 3 is a transverse section along the line *b*—*b* of Fig. 1, the keeper above referred to being removed.

In a general sense my invention comprises a main member forming a man-hole, and a lid therefor, the latter spanning said man-hole, under normal conditions, and being at all times interlocked with said member, the interlocking relation between said lid and said cover being such as to permit the former to undergo bodily a displacing movement from the position it normally occupies in service.

In carrying out my invention, reference being had to the accompanying drawings, I employ a main member 3, forming a man-hole for the structure as a whole, said member being provided with opposing, interior ribs 3′ 3″, each formed integral therewith by preference, having a base flange 4, and, in this instance, being extended rearwardly to receive a keeper, 4′. These several parts may be each readily produced from metal by the process of casting.

For spanning the man-hole of the device, I employ a lid 5, the same, in this instance, being illustrated as approximating the form of a grate. Under normal conditions the lid 5 seats at its opposite side portions on the ribs 3′ 3″; and in order that its upper surface may register flush, or substantially so, with the upper edges of the member 3, the interior ribs 3′ 3″ are depressed accordingly, each with respect to the upper edge of that portion of the member 3 along which it extends.

The lid 5 is provided at its rear with opposing, depending legs 5′ 5″, which legs terminate, the former in a laterally projecting foot 6, taking under the rib 3′, and the latter in a like foot 6′, taking under the rib 3″ the foot being in effect an outwardly projecting flange, the space between the flange and the side of the lid proper forming a groove for the reception of rib 3″. The legs 5′ 5″ are arranged, each at a point somewhat inwardly from the adjacent side of the lid 5, the feet 6 6′ are accordingly overhung, each by a portion of said lid, and grooves 5‴ 6‴, at the opposite sides of said lid, are accordingly formed to receive, respectively, the ribs 3′ 3″. The legs 5′ 5″ are respectively of sufficient width, and the portions of the lid 5 which overhang the feet 6 6′ are respectively of sufficient extent, to insure at all times and under all conditions a loosely interlocked relation between the lid 5 and the main member 3. Thus an interlocking effect is secured between the lid 5 and the member 3, and the arrangement and length of the ribs 3′ 3″, respectively, are such as to maintain this interlocking relation between said lid and said member, under all displacing movement of the lid, in

the practical operation of the device as a whole.

The rear vertical portions of the member 3, forming the extension thereof which receives the keeper 4′, terminate upwardly at a plane below the ribs 3′ 3″, to permit the adjustment for service of the lid 5 with respect to the said ribs, and such adjustment of said lid is effected before the keeper 4′ is adjusted and fastened in position on the member 3, as will be clearly apparent from Fig. 2 of the drawings.

For the purpose of preventing full removal of the lid 5 from the device as a whole, as rearwardly along the ribs 3′ 3″, I employ the keeper 4′, which may approximate the form of a hood, such as ordinarily used in this class of devices, and as illustrated in the drawings, or the same may take any other appropriate form rendered advisable by the conditions involved in the practical installation of the device as a whole. The keeper 4′ in this instance is provided with a depending lip 7, which is enlarged at its respective ends to form stops 7′ 7″, (Fig. 1), against which the rear portions of the legs 5′ 5″ abut, respectively, under tendency on the part of the lid 5 to move rearwardly, as from the position it is shown as occupying in Fig. 2 of the drawings.

When taking the form of a hood, the keeper 4′ is provided, by preference, with the usual intake, as customary in structures of this class; and the same may be firmly fastened to the member 3 in any common and approved manner. In this connection, however, I have shown said keeper as being provided with a lateral eye-clip 8, the member 3 with an inverted socket 8′, registering with said clip, a headed bolt 8″ extending upwardly through the crown of said socket and through said clip, and a nut 9 on said bolt, above said clip and bearing downwardly on the latter. It will be understood that a plurality of clips 8, sockets 8′, bolts 8″ and nuts 9, may be employed substantially as indicated in the drawings.

When constructed as herein described, it is essential that provision be made for the adequate lifting, in the first instance, of the lid 5 bodily, or essentially the forward portion thereof, in order that said lid as a whole, or essentially its forward portion, may escape the front wall of the member 3, and admit of being displaced forwardly, as to the position indicated in dotted lines in Fig. 2; and to the attainment of this end suitable play is left between the feet 6 6′ and the ribs coöperating therewith, aforenamed, as clearly illustrated in Fig. 3 of the drawings.

While I have in my claims called for a lid and keeper which together span the manhole opening, a lid or keeper which should only substantially cover the said opening would be within the intent of my invention.

It will be seen that the extent to which the free end of the lid may be raised depends upon the breadth of the feet and the width apart of the ribs. If the ribs are broad in comparison with the space between the ribs, then the cover can be tilted but a short distance before the upper and lower diagonal corners of the foot will come in contact with the upper and lower ribs, and prevent further tilting movement, but if the feet are narrow or the legs long, the lid would be free to be tilted to a much greater angle. Care must be taken, however, that if the lid is adapted to be raised to a considerable angle there be means to prevent any liability of the lid being angled out by a turning movement in a horizontal plane. This will occur if the legs be narrow, hence it is desirable that the legs have a wide contact surface parallel with the side of the head, if the lid is intended to be opened to a greater degree than just sufficient to slide it.

While I have shown and preferably use a lid which slides on the head away from the hood, yet I do not wish to be limited to a lid sliding in that direction, as without substantial change, except in proportion, it might slide within the hood, though I do not believe this to be the preferable construction.

Though I have illustrated my improvement in connection with the vault head of a catch-basin manhole it will be understood that the principle of my invention may be as well applied to the openings into other kinds of vaults or conduits, and whether the openings be small or large.

It will be seen that my improved vault head is particularly well adapted for the purposes for which it is intended, and further that the same may be modified to some extent without materially departing from the spirit and principle of my invention.

Having thus described my invention what I claim and desire to secure by Letters-Patent, is:

1. A vault head comprising a main member forming a man-hole, and a lid for said member, said lid normally spanning said man-hole and being at all times loosely interlocked with said member for a bodily lateral displacing movement from one position to another on the head, substantially as herein specified.

2. A vault head comprising a main member having interior, opposing ribs, and forming a man-hole, and a lid for said member, said lid normally spanning said manhole and being loosely interlocked with said member through the medium of said ribs, for a displacing movement from one position to another on the head, substantially as herein specified.

3. A vault head comprising a main member having interior, opposing ribs and form-

ing a man-hole, and a lid for said member, said lid normally spanning said man-hole and being provided with opposing, depending legs terminating, the one in a foot projecting under one of said ribs, and the other with a like foot projecting under the opposite rib, whereby said lid is loosely interlocked with said member for a displacing movement from one position to another on the head, substantially as herein specified.

4. A vault head comprising a main member forming a man-hole; a lid for said member; and a keeper conjoined with said member, said lid normally spanning said man-hole and being at all times loosely interlocked with said member for a displacing movement from said man-hole, and said keeper serving to check the displacing movement of said lid in one direction, substantially as herein specified.

5. A vault head comprising a main member having interior, opposing ribs each depressed somewhat with respect to the upper edge of that portion of said member along which it extends, said member also forming a man-hole, and a lid for said member, said lid normally spanning said man-hole, normally seating on said ribs, and being at all times so interlocked with said member as to permit the lifting thereof bodily, or essentially its forward portion, in the first instance, sufficiently to escape the forward wall of said member, in the displacing movement of said lid from one position to another on the head, substantially as herein specified.

6. A vault head comprising a main member forming a man-hole, and a lid for said member, said lid normally spanning said man-hole, normally seating within, and so that its upper surface registers substantially flush with the upper edges of the adjacent walls of, said member, and being at all times so interlocked with said member as to permit the lifting thereof bodily, or essentially its forward portion, in the first instance, sufficiently to escape the forward wall of said member, in the displacing movement of said lid from one position to another on the head, substantially as herein specified.

7. A vault head having a manhole opening, a lid spanning a portion thereof, and a keeper spanning the remainder of said opening, the lid having an extension thereon projecting under the said keeper when in its normal position, said extension being interlocked at all times with the head and having a sliding engagement with said head when the lid is being displaced, substantially as described.

8. A vault head having a manhole opening, a lid spanning a portion thereof, and a hooded keeper spanning the remainder, the hood of the said keeper having a side opening toward the lid, and the lid having an extension projecting into said opening when the lid is in its normal position, said extension being interlocked at all times with the head and having a sliding engagement with said head when the lid is being displaced, substantially as described.

9. A vault head having a manhole opening, a lid spanning a portion thereof and a keeper spanning the remainder of said opening, the lid having an extension thereon projecting under said keeper when in its normal position and having an interlocking engagement with said head at all times, substantially as described.

10. For a vault head, a lid having oppositely disposed downwardly projecting legs on the end of said lid, each of said legs terminating in a laterally projecting foot, substantially as described.

11. For a vault head, a lid substantially angular in general outline having legs projecting downwardly at the corners of one side of said lid, said legs terminating each in a lateral foot, substantially as described.

12. For a vault head, a lid having legs projecting downwardly at two corners thereof each of said legs terminating in a lateral foot, and means for preventing horizontal rotation of said lid, substantially as described.

13. For a vault head, a lid having legs at two corners thereof, said legs projecting outwardly in the same direction and downwardly, each leg terminating in a lateral foot, substantially as described.

14. For a vault head, a lid having downwardly projecting legs thereon terminating each in a lateral foot, and lateral ribs on said head in every position of the lid engaging with said feet, substantially as described.

15. A vault head having an opening other than circular and inward extending projections on opposite sides thereof, and a lid fitting within the opening and having outward extending projections on opposite sides thereof and at corresponding ends of said sides, said projections engaging under the projections on the head.

16. A vault head formed with an opening having two parallel sides, inward extending supporting ribs formed on said sides below the upper edge of the head, a lid adapted to fit within said opening and to rest on the supporting ribs, outward extending projections formed on the sides of said lid at the inner ends thereof and extending under the supporting ribs, and means at the ends of said ribs to prevent the disengagement of the lid therefrom.

17. A vault head comprising a main member formed of an upright flange and a horizontal base flange, the head being entirely open within the upright flange whereby material may pass downward through said

head, a lid for said head adapted to span the upright flange, and means holding said lid in a loose sliding engagement with the upright flange and adapted to prevent the removal from said flange either upward from the head or downward therethrough.

18. A vault head comprising a main member formed with an upright flange and an outward extending horizontal base flange at the lower end of the upright flange, the upright flange surrounding an opening formed through the main member, a lid therefor adapted to fit said opening, and means for holding said lid in a loose sliding engagement therewith, said holding means preventing the withdrawal or removal of said lid from the main member.

19. A vault head comprising a main member formed with an upright flange and an outward extending horizontal base flange at the lower end of the upright flange, the upright flange surrounding an opening formed through the main member, a lid therefor adapted to fit said opening, means for holding said lid in a loose sliding engagement therewith, and detachable means for locking said lid in sliding engagement with the head to prevent its removal from said head either upward therefrom or downward through the head.

20. A vault head comprising a main member formed with an upright flange, the upright flange surrounding an opening formed through the main member, a lid therefor adapted to fit said opening, means for holding said lid in a loose sliding engagement therewith, and detachable means for locking said lid in sliding engagement with the head to prevent its removal from said head either upward therefrom or downward through the head.

21. A vault head having an angular opening, and inwardly extending projections on opposite sides thereof, a lid fitting within the opening and having outwardly extending projections on opposite sides thereof and the corresponding ends of said sides, said projections engaging under the inward projections on the head, and detachable means for preventing the disengagement of the projections and the removal of the lid.

22. A vault head formed with an opening having two parallel sides, inwardly extending supported ribs formed on said sides below the upper edge of the head, a lid adapted to fit within said opening to rest on the supporting ribs, outwardly extending projections formed on the sides of said lid at the inner ends thereof and extending under the supporting ribs, and a detachable hood at the ends of said ribs to prevent the disengagement of the lid therefrom.

23. A vault head formed with an opening having two parallel sides, inwardly extending supporting ribs formed on said sides below the upper edge of the head, a lid adapted to fit within said opening to rest on the supporting ribs, means formed on the lid and engaging said supporting ribs, and means to prevent the disengagement of the lid from said ribs.

24. A vault head comprising a main frame formed with a non-circular opening therein, a lid adapted to fit said opening, means for holding said lid in loose sliding engagement with the head, and detachable means to prevent the disengagement of the lid from said ribs.

25. A vault head comprising a main frame formed with an opening therein, a lid adapted to fit said opening, means for holding said lid in sliding engagement with the frame, a hood detachably connected to said frame and adapted to hold the lid locked to the main frame, the hood securing means being below the side walk level and adapted to be covered by the material of the side walk, whereby the hood can not be detached without disrupting the side walk.

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