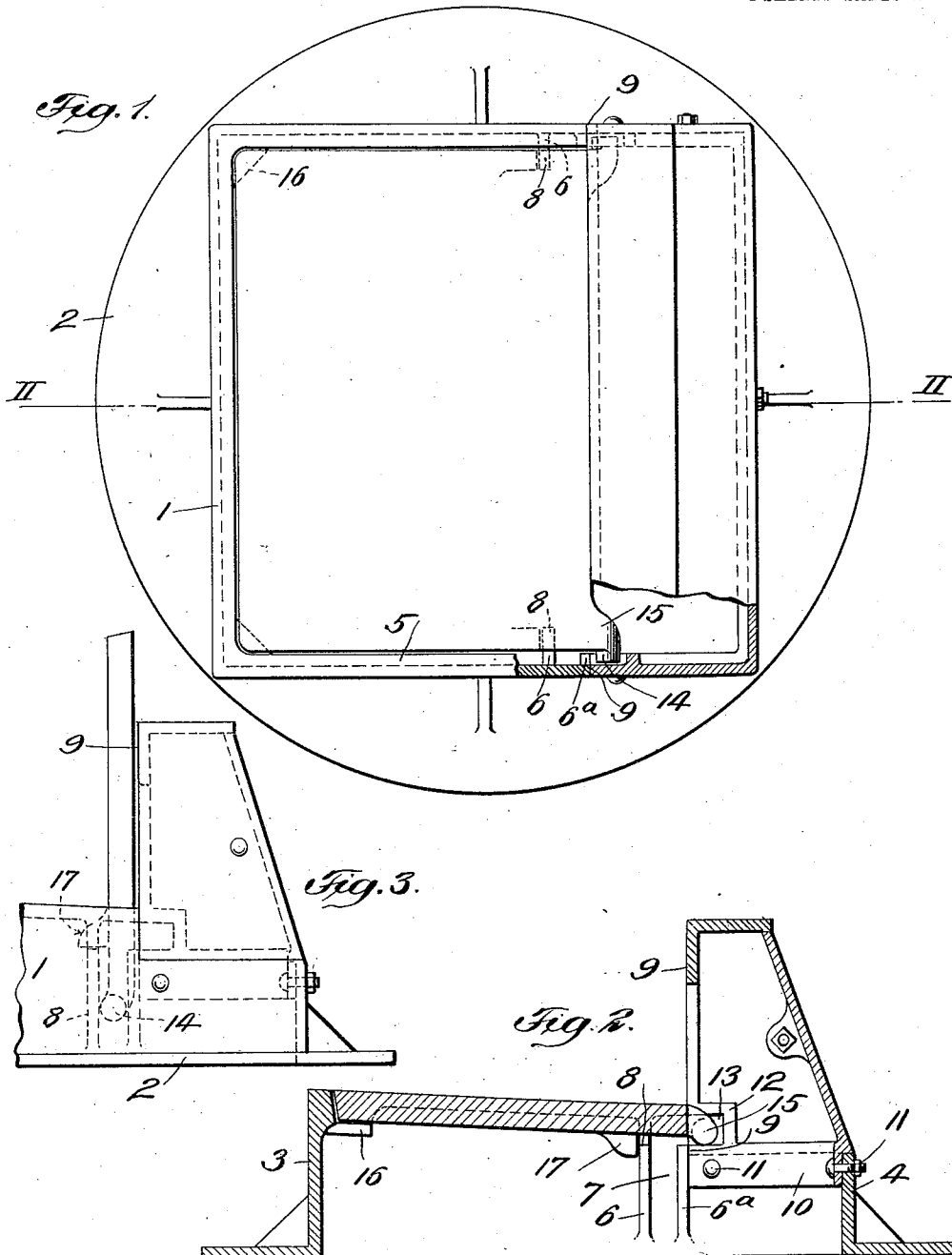


A. W. KURZ.
VAULT HEAD,
APPLICATION FILED DEC. 6, 1911.

1,056,802.

Patented Mar. 25, 1913.

2 SHEETS—SHEET 1.



WITNESSES:

Julius H. [Signature]
J. R. Miller.

INVENTOR

August W. Kurz
BY
Davis & Davis
his ATTORNEYS

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2 SHEETS—SHEET 2.

Fig. 4.

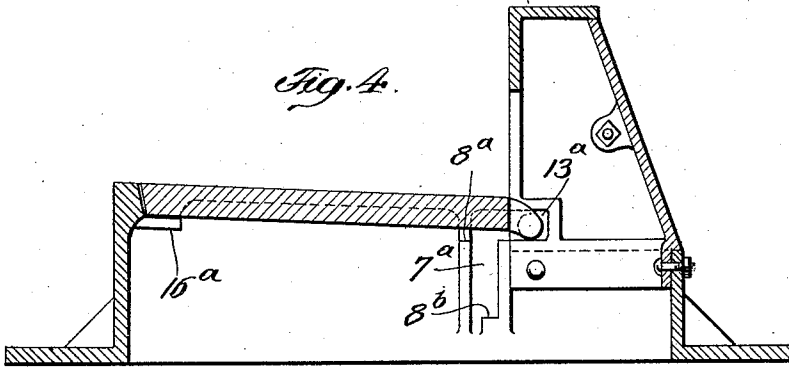


Fig. 5.

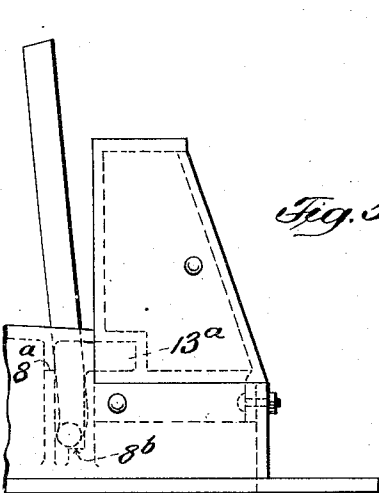


Fig. 7.

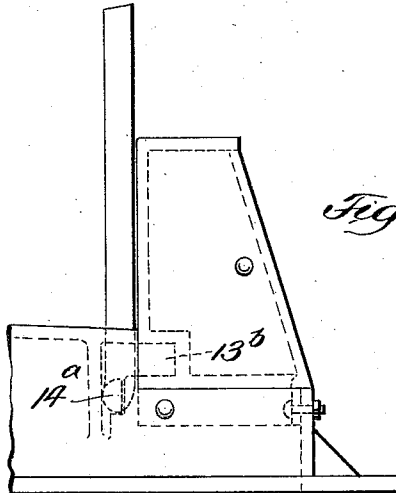
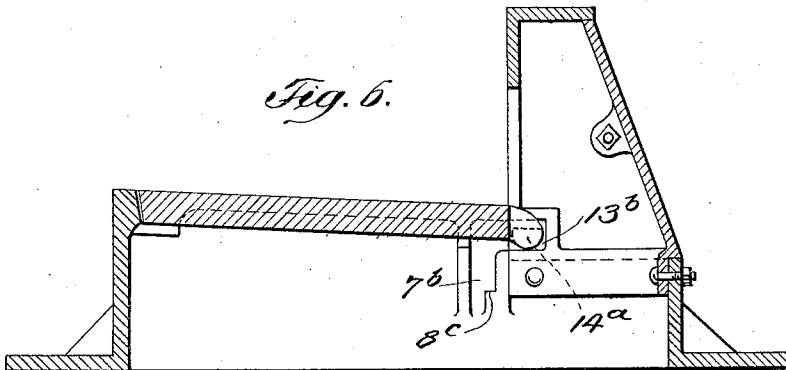
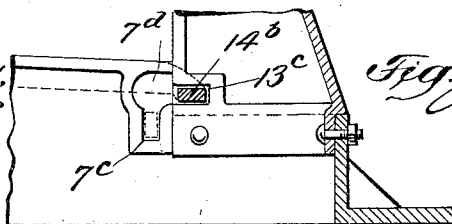


Fig. 6.



WITNESSES:

Julius H. Miller
J. R. Miller



INVENTOR

August W. Kurz
BY *Davis & Davis*
ATTORNEYS

UNITED STATES PATENT OFFICE.

AUGUST W. KURZ, OF NEW YORK, N. Y.

VAULT-HEAD.

1,056,802.

Specification of Letters Patent.

Patented Mar. 25, 1913.

Application filed December 6, 1911. Serial No. 664,236.

To all whom it may concern:

Be it known that I, AUGUST W. KURZ, a citizen of the United States, residing in the borough of Manhattan, city, county, and State of New York, have invented certain new and useful Improvements in Vault-Heads, of which the following is a specification.

This invention relates to improvements in means for controlling the entrance to vaults, basins or the like, the same being commonly known as vault heads.

One of the main objects of the invention is to provide a vault head of simple construction consisting of a cover and a main member, the cover being loosely interlocked with the main member, the construction being such that the cover may be readily shifted from its normal or spanning position to its open or guarding position.

Another object of the invention is to provide means whereby in the normal or spanning position of the cover the trunnions or other pivotal supports for the cover will be located near one edge thereof and will be protected by a suitable keeper, whereby said cover cannot be tilted upwardly by a weight applied to the cover at or near the pivotal edge thereof.

There are other objects and advantages of the invention which will appear hereinafter.

In the drawings, Figure 1 is a plan view of a vault head with the cover in its normal or spanning position; Fig. 2 a vertical sectional view thereof on the line II—II of Fig. 1; Fig. 3 a side elevation of a portion of the vault head, the cover being in its raised or guarding position; Fig. 4 a sectional view similar to Fig. 2 showing a slightly different form of cover holding means; Fig. 5 a side elevation of a portion of the vault head shown in Fig. 4, the cover being in its raised or open position; Fig. 6 a sectional view similar to Fig. 4 showing another slightly different form of cover holding means; Fig. 7 a side elevation of a portion of the vault head shown in Fig. 6, the cover being in its raised or open position, and Fig. 8 a vertical sectional view of a portion of the vault head showing another slightly different form of cover holding means.

Referring to the various parts by numerals, 1 designates the main member which comprises a rectangular upstanding wall forming a manhole, said main member hav-

ing a horizontal outwardly extending base flange 2 at its lower edge. This main member is adapted to be placed on the top of a vault or basin, or sewer entrance, and is provided with a suitable manhole cover adapted to be raised to permit of access to the basin or the like through the manhole. The rear wall 4 of the main member is adapted to be arranged close to the curb line and is somewhat lower than the front wall 3. The side walls are reduced in height adjacent the rear wall for a purpose which will hereinafter appear, and said side walls where they are not reduced in height are provided with inwardly extending flanges 5 along their upper edges. On the inner surfaces of the side walls are formed inwardly extending vertical parallel ribs 6 and 6^a said ribs being separated a short distance from each other to form vertical channels 7 between them. The ribs 6^a are arranged directly below the rear ends of the flanges 5 and the ribs 6 are arranged forwardly therefrom a short distance. The ribs 6 are reduced in width near their upper ends to form the shoulders 8 and their reduced parts are carried upwardly to the flanges 5. The entrance into the upper end of the channel 7 is at the rear of the reduced parts of the side walls of the main member. The lower ends of said channels may be open or closed as desired; as shown, they are open so that no dirt or other obstruction can accumulate therein. The ribs 6 extend inwardly beyond the inner edges of the flanges 5, as shown clearly in dotted lines in Fig. 1, and the inner surfaces of the reduced parts of the said ribs are flush with the inner surfaces of the flanges 5 so that said reduced parts form stops for the cover trunnions, as will be more fully hereinafter described.

On the main member, and at the reduced part thereof, is secured a hood 9 which serves as a keeper to prevent the disconnection of the cover from the main member. The lower edges of this hood rest on the upper surface of the rear wall 4 and on the upper surfaces of the reduced parts of the side walls of the main member; while the forward side of said hood bears against the vertical rear edge of the side walls where the same are cut away, as shown clearly at 9. The hood is formed with a flange which fits within the main member, and said hood is secured by bolts 11 which pass

through the said flange and the vertical walls of the main member. On its forward edge the hood is provided with a rectangular flange 12 which forms a channel or socket 13 open at its forward end said open end registering with the upper open end of the channel 7, as clearly shown in Fig. 2 of the drawings. The upper members of the socket forming flanges 12 register with the rear ends of the flanges 5, as shown clearly in Fig. 2 of the drawings, so that the socket 13 forms the horizontal rearward extension of the channel 7 said socket being within the hood.

The cover is provided at the rear ends of its sides with laterally or outwardly extending trunnions 14, said trunnions normally extending into the sockets 13 and resting on the lower walls of said sockets. These trunnions are preferably formed on rearward extensions 15 of the cover so that they are rearward of the rear edge of the cover, the main body of the cover preferably terminating at the forward or front line of the hood. The hood is closed at its rear side and open at its forward side, said opening being equal in width to the width of the cover so that the extensions 15 of the cover may extend into said hood, as shown clearly in Fig. 1. Where the front wall of the main member joins the side walls thereof, cover supporting lugs 16 are formed, said lugs being adapted to be engaged by the forward corners of the cover when it is in its normal spanning position.

On the under surface of the cover near its sides are formed depending bearing lugs 17, said lugs, when the cover is in its normal spanning position, lying close to the upper ends of the ribs 6, and adjacent the shoulders 8 on said ribs. These lugs serve as bearings by which the cover is supported when in its open or guarding position.

It is manifest that in order to swing the cover to its vertical open position it is first necessary to lift the front end of the cover and then draw the cover forwardly sufficiently to release the trunnions 14 from the sockets 13 and to permit said trunnions to drop down into the channels 7. By lifting the front end of the cover and permitting the trunnion lugs to pass down into channels 7, the bearing lugs 17 will engage the shoulders 8 and serve as means for supporting it in its vertical or open position. When the cover is in its vertical position the lugs 17 will rest on shoulders 8 and will hold the cover raised, for the reason, that the point of support is considerably forward of the center of gravity so that the tendency of the cover is to swing rearwardly against the hood. To return the cover to its closed position it must be first bodily lifted sufficiently to permit it to be swung forwardly free of the shoulders 8. When it has been

lowered to its spanning position it must be shoved inwardly or rearwardly sufficiently to bring the trunnions 14 into the socket 13, said trunnions resting on the lower walls of said sockets and serving as means for supporting the rear or inner edge of the cover.

It is manifest that by reason of locating the trunnions 14 within the hood in the normal spanning position of the cover, it will be impossible to tilt the cover upwardly by any downward pressure applied to any part of the cover. This is of great advantage for the reason that passing trucks and other heavy vehicles will not tend to tilt the cover as the cover must necessarily be engaged by them between its points of support and consequently there can be no tendency to tilt the cover on its trunnions.

It is also manifest that when the hood is bolted in place on the main member it will be impossible to disconnect the cover from the main member without first detaching the hood. It is also manifest that the cover cannot be removed from the main member by passing it downwardly through the channel 7. This will be prevented by the bearing lugs 17. It is also manifest that the trunnions cannot be drawn forwardly beyond the channel 7 by reason of the fact that the ribs 6 extend upwardly to the flanges 5. The trunnions 14 extend laterally or outwardly beyond the side edges of the cover so that they fit under the side flanges of the main frame when they are moved forwardly out of the sockets 13, and if moved sufficiently far forward they will contact with the ribs 6.

The lower walls of the sockets 13 form primary seats for the cover while the shoulders 8 form what might be termed secondary seats adapted to be engaged by the supporting lugs to maintain the cover in its open or raised position. The trunnion lugs; the flanges 12 forming the sockets 13; the ribs 6 and 6^a; the flanges 5 and the supporting lugs 17 are all so proportioned and arranged that it will be impossible to detach the cover from the main member by placing it at an angle with respect to the main member. These parts are of such size and are so located that no matter what the angle of the cover some one of them will interfere with its detachment from the main member, and for this reason the cover cannot be detached without first disconnecting the hood.

In Fig. 4 the hood is provided with the socket 13^a to receive the trunnions of the cover, the lower walls of said socket forming primary seats for the cover; and the channels 7^a are formed with secondary seats 8^b near their lower ends on which the trunnions rest when the cover is in its raised or open position. In this form of the device the supporting lugs 17 are dispensed with and the shoulders 8^a merely form means on

which the cover is pivotally swung in moving it from its closed to its open position and the reverse. The secondary seats 8^b are located a sufficient distance below the shoulders 8^a so that said shoulders will prevent the cover swinging forwardly to its closed position. Said shoulders 8^a cooperating with the rear walls of the channels 7 will prevent the cover swinging forwardly and downwardly to its spanning position until it has been bodily lifted sufficiently to free it from the said shoulders. As soon as the cover has reached its normal spanning position it is forced rearwardly to bring the trunnions into the sockets 13^a to permit the forward corners of the cover to drop down on the corner supports 16^a.

The form of device shown in Figs. 6 and 7 is quite similar to that shown in Figs. 4 and 5. The trunnions 14^a are somewhat narrower than the trunnions shown in Figs. 1 and 4 and they are arranged to fit into narrow channels 7^b when the cover is in its vertical or open position. As shown in Fig. 6, the trunnions are semicircular, their under parts being rounded while their upper surfaces are flat. The channels 7^b are restricted in width so that they snugly receive the reduced trunnions 14^a. The straight upper surfaces of the trunnions fit closely against the rear walls of the sockets 7^b and by that means prevent the forward swinging of the cover when the same is in its vertical position. To lower the cover to its normal spanning position it is first necessary to bodily lift it sufficiently to release the trunnions 14^a from the restricted channels 7^b. These channels are provided at their lower ends with secondary seats 8^c. It is manifest that as the angular trunnions support the cover in its raised position the channels 7^b may be formed quite shallow, as shown in Figs. 6 and 7, without in the least impairing the efficiency of the construction.

In Fig. 8 the cover is provided with narrow rectangular trunnions or supports 14^b which fit correspondingly shaped sockets 13^c in the hood. In this form of the device the main member is provided with similarly restricted sockets 7^c which are adapted to receive the trunnions 14^b and to snugly hold the same. At the junction of the sockets 13^c and 7^c enlarged recesses 7^d are provided to permit of the turning of the cover when the trunnions 14^b are free from the sockets 13^c and 7^c. In this form of the device the socket 7^c may be very shallow to receive the trunnion 14^b and the shoulder 8 is unnecessary.

It is manifest from the foregoing that I provide a vault head of very simple construction which will be durable, efficient and reliable in practical service.

My invention embodies novel features of

construction whereby a loosely interlocking relation between the main member and the cover is insured.

What I claim is:

1. A vault head comprising a main member forming a manhole, a cover, a trunnion lug formed on said cover, a bearing lug formed thereon adjacent said trunnion lug, a seat adapted to be engaged by the trunnion lug to support the cover in its normal spanning position, means to be engaged by the bearing lug to support the cover in its vertical position and to prevent the downward withdrawal of the cover from the main member, and means adapted to be engaged by the trunnion to prevent the upward removal of the cover from the main member.

2. A vault head comprising a main member forming a manhole, a cover, a trunnion lug formed on said cover, a bearing lug formed on said cover adjacent the trunnion lug, a keeper connected to the main member and formed with a seat for the trunnion lug when the cover is in its normal spanning position, means carried by the main member and adapted to be engaged by the bearing lug to support the cover in its open vertical position.

3. A vault head comprising a main member forming a manhole, a cover, a trunnion lug formed on said cover, a keeper connected to the main member and formed with a primary seat adapted to be engaged by the trunnion lug when the cover is in its normal spanning position and means carried by the main member to support the cover in its open vertical position.

4. A vault head comprising a main member forming a manhole, a cover, a trunnion lug formed on the cover, a keeper connected to the main member and formed with a seat adapted to be engaged by the trunnion lug when the cover is in its normal spanning position, a seat carried by the main member adjacent the keeper and adapted to be engaged by the cover when said cover is drawn forward out of the keeper and arranged in a vertical position.

5. A vault head comprising a main member forming a manhole, a cover, a trunnion lug formed on the cover at the rear edge thereof, a keeper formed with a seat adapted to be engaged by said trunnion lug when the cover is in its normal spanning position, a pair of vertical ribs on the inner side of the main member and forming a channel adapted to receive the trunnion lug when the cover is arranged in its vertical position and means for maintaining said cover in its vertical position within said channel.

6. A vault head comprising a main member forming a manhole, a cover, a trunnion lug formed on the cover at the rear edge thereof, a keeper formed with a seat adapted

to be engaged by said trunnion lug when the cover is in its normal spanning position, a pair of vertical ribs on the inner side of the main member and forming a channel adapted to receive the trunnion lug when the cover is arranged in its vertical position, means for maintaining said cover in its vertical position within said channel, and means for preventing the withdrawal of the cover from the main member.

7. A vault head comprising a main member formed with a pair of lugs on its inner side forming a channel, a cover formed with a trunnion lug, a hood formed with a socket adapted to receive said trunnion lug, a bearing lug formed on the cover and adapted to engage the upper edge of one of the ribs to sustain the cover in its vertical position, the trunnion lug being adapted to be received in the vertical channel of the main member when the cover is in its vertical position, said trunnion lug holding the cover against lateral swinging movement until the cover has been lifted sufficiently to permit it to swing to its normal spanning position.

8. A vault head comprising a main member formed with a pair of lugs on its inner side forming a channel, a cover formed with a trunnion lug, a hood formed with a socket adapted to receive said trunnion lug, a bearing lug formed on the cover and adapted to engage the upper edge of one of the ribs to sustain the cover in its vertical position, the trunnion lug being adapted to be received in the vertical channel of the main member when the cover is in its vertical position, said trunnion lug holding the cover against lateral swinging movement until the cover has been lifted sufficiently to permit it to swing to its normal spanning position, and means to prevent the withdrawal of the cover from the main member.

9. A vault head comprising a main member forming a manhole, a cover, a pair of trunnion lugs carried by said cover at its rear edge, a hood connected to the main member and provided at its forward por-

tion with sockets to receive the trunnion lugs of the cover, vertical ribs within the main member spaced a suitable distance apart to form a channel between them, said ribs being adjacent the socket in the keeper and one of said ribs extending upwardly, a flange on the upper edge of the main member and extending inwardly over the channel between the ribs whereby a channel is formed in the main member whose upper end registers with the socket in the hood, and means for sustaining the cover in a vertical position when the trunnion lugs are in the channels formed by the ribs on the main member.

10. A vault head comprising a main member, a cover therefor formed with a rectangular trunnion, a rectangular socket adapted to receive said lug when the cover is in its normal spanning position and a similar rectangular socket adapted to receive said lug when the cover is in its vertical or open position, the walls of said socket engaging the trunnion lug and holding the cover against lateral swinging movement until the cover has been lifted sufficiently to release said trunnion lug from said socket.

11. A vault head comprising a main member forming a manhole, a cover, a trunnion lug formed on the cover, a keeper connected to the main member and formed with a primary seat adapted to be engaged by the trunnion lug when the cover is in its normal spanning position, a seat carried by the main member adjacent the keeper and adapted to be engaged by the cover when said cover is drawn forward out of the keeper and arranged in a vertical position, and means to prevent the withdrawal of the cover wholly from the main member.

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

AUGUST W. KURZ.

Witnesses:

F. R. MILLER,
L. MAGUIRE.