

J. ARMSTRONG.
FASTENING FOR VAULT COVERS.
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947,584.

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Fig. 1.

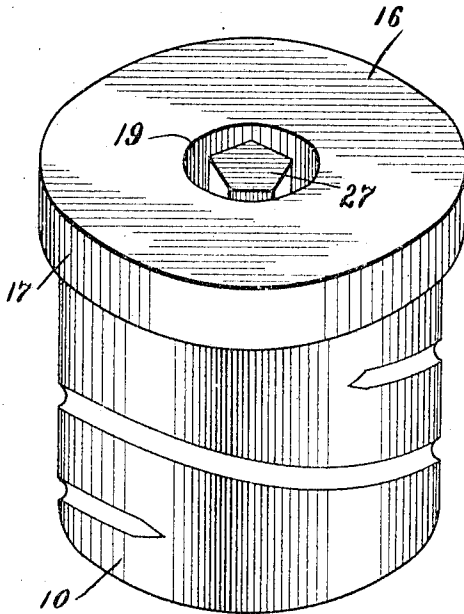


Fig. 2.

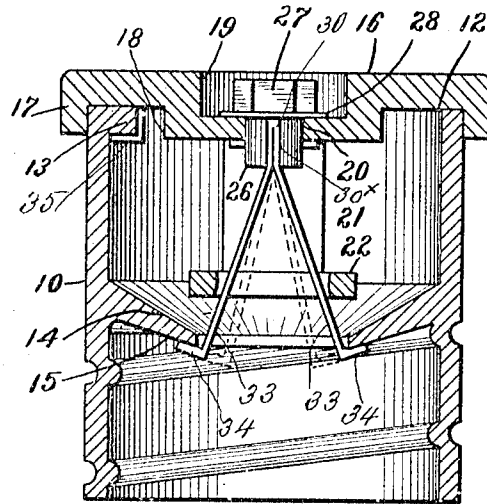


Fig. 3.

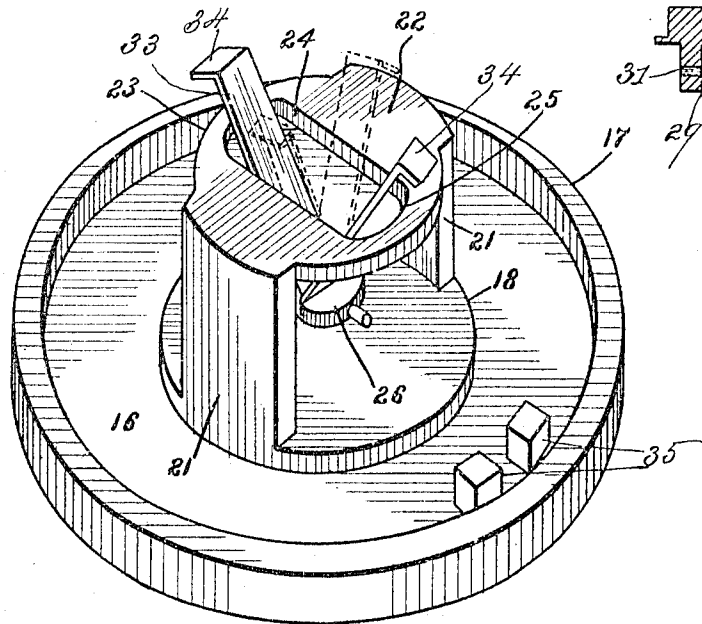
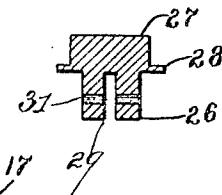


Fig. 4.



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FASTENING FOR VAULT-COVERS.

947,584.

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To all whom it may concern:

Be it known that I, JAMES ARMSTRONG, a citizen of the United States of America, residing at Kansas City, in the county of Jackson and State of Missouri, have invented certain new and useful Improvements in Fastenings for Vault-Covers; and I do hereby declare that the following is a full, clear, and exact description of the invention, such as will enable others to make and use the same, reference being had to the accompanying drawings, forming a part of this specification.

The invention relates to fastenings to the covers to the vault openings in gas and water service boxes, access to which openings is often required to be had expeditiously.

The object of the invention is to enable the fastening devices to release themselves upon rotation.

The invention consists in the novel construction and combination of parts, such as will be first fully described and then specifically pointed out in the claims.

In the drawings: Figure 1. is an isometric view of the upper end portion of the water service box-casing, with the cover in a closed position. Fig. 2. is a vertical, sectional view of the box and cover as seen in Fig. 1. Fig. 3. is an isometric view of the cover enlarged, and in an inverted position, the under portion of the locking arms being shown in a closed position. Fig. 4. is a detail view of the nut and spindle.

Similar numerals of reference indicate corresponding parts in all the figures of the drawing.

Referring to the drawing, 10 indicates the casing, which forms the upper portion of an ordinary water service box, and as shown is cylindrical in form. The outer surface of the casing 10 is screw-threaded so as to be inserted within a screw-threaded casing or member (not shown), and of the required length. In the upper end of the casing is the opening 12, and upon the inner surface of the casing within said opening is a lug 13.

Upon the inner surface of the casing, at a point a considerable distance downwardly from the opening 12, in the casing, is a flange or keeper 14, as shown concentric with said inner surface and integral with the casing, and which flange extends inwardly a short distance, and the upper and lower surfaces are inclined downwardly to a large degree and the upper surface being inclined

in a greater degree than that of the lower surface 15, the flange forming a keeper, as further explained.

16 indicates the cover to the opening 12, in the casing 10, upon which is a flange 17, which extends downwardly a short distance upon the outer surface of the casing 10, and concentric therewith.

The central portion of the cover extends downwardly from its inner surface a slight distance, as at 18, so as to increase sufficiently the thickness of this portion of the cover.

In the outer surface of the cover is a depression 19, concentric with the vertical, axial line of the casing 10, the surface of which depression is upon a line horizontally with the opening 12, in the said casing 10. In said depression 19 is a small, circular opening 20, concentric with the sides of said depression, which extends through the thickened portion 18, of the cover, for the purpose further explained. With the outward, downwardly-extended portion 18, of the inner surface of the cover 16, are connected rigidly the upper ends of the depending plates 21, arranged opposite in position to each other, the lower ends extending downwardly to a position a short distance above the inclined surface of the casing 10. With the inner surfaces of said lower ends of the depending plates 21 is connected the respective side portions of a horizontal cam plate 22, the ends of which as shown are curved at 23, in the arc of a circle and extended in length a short distance beyond the lines of the depending plates 21, and at right angles thereto. In the central portion of the plate 22 is a wide opening 24, extending in the direction of and to a position quite near the curved ends 23, of the cam plate, the ends 25, of said opening, being curved outwardly from the lines of the sides of said opening, these surfaces forming the cam surface of the cam, as further explained.

In the opening 20, in the depression 19, in the cover, is a short spindle 26, with the upper end of which in the depression 19, is connected rigidly a hexagonal-shaped nut or head 27, upon which head 27 and the surface of the depression 19, and extending around the spindle 26, is a flange 28. In the spindle is a slot 29, extending from the lower end portion upwardly, nearly to the nut or head 27, and diametrically to said spindle.

The fastening device consists of a strip of

metal 30, such as spring steel, of the proper length, and narrow in width. This strip is bent at a point midway its length, as at 30°, and the parts of the strip at the bending point brought closely together and inserted within the slot 29, in the spindle 26. In said spindle 26 is a perforation 31, extending transversely to the slot 29, and within said perforation is a pin 31*, extending through the folded parts of the strip of metal 30, within the slot 29, the ends of the pin extending outwardly upon the lower surface of the portion 18, of the cover 16, thereby retaining the spindle from withdrawal from the opening 20.

At a point in line transversely to the lower end of the spindle 26, the outer ends of the strip of metal 30 are outwardly-inclined in the proper degree, to form the spring-arms 33, and these arms are extended downwardly through the opening 24, in the cam plate 22, to a position in line horizontally with the lower, inclined surface of the flange 14, and portions 34, of the respective lower ends of said arms, are bent at right angles and extended outwardly a short distance, and to a locking position on the lower surface 15, of the flange 14, on the inner surface of the casing 10.

On the inner surface of the cover 16 are cast two lugs 35, arranged in position a short distance apart and upon the respective sides of the lug 13, on the inner surface of the casing 10, the office of which lug is to prevent the turning of the cover on the casing.

In order to unlock the spring arms 33 and release the cover, which arms are shown in a locked position and opposite in position to the sides of the opening 24, in the cam plate 22, a wrench of the ordinary description is applied to the head or nut 27, and rotation imparted to the spindle 26, in the opening 20, in the cover 16, and the spring arms are brought in contact with the respective sides of the opening 24, in the cam plate, moving said arms from a position opposite the curved ends of the said opening 24, to a position transverse to said opening, as seen in dotted lines in Figs. 2 and 3, in moving to which position on cam surfaces of the opening 24, from the curved end portion to the straight lines of the sides of said opening the spring arms are drawn toward each other, releasing the lower bent, locking portions 34 from the lower surface 15, of the flange or keeper, and moving said portions to a position inwardly from the flange, as seen in dotted lines (Fig. 2), in which position of the spring-arms the cover is permitted to be removed from the casing 10. Upon replacing the cover upon the casing, the nut or head 27 is given another turn in its circle of rotation, and the spring arms move from the sides of the opening 24, in the

cam plate, and to the position in full lines in Figs. 2 and 3, the arms engaging with the keeper or flange 14, as before.

Water service boxes are frequently made with the upper portion rectangular in shape, and that form may be employed, it being observed, that the well-known plumbers' wrench will fit the head 27, and thus remove the cover 16. It is obvious that the head 27 may be employed without the depression in the cover 16, and by extension in length of the spindle, the depression for the head or nut being preferable in water or gas service boxes.

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

1. In fastenings for vault covers, the combination with the vault casing, and a keeper upon the interior of said casing, and with the cover having a central opening, of a rotatable spindle within said opening, means for operating the spindle, and spring-locking arms on the spindle engaging with the keeper, and means carried by the cover for disengaging the locking-arms in the rotation thereof.

2. In fastenings for vault covers, the combination with the vault casing, and a keeper upon the interior thereof, and with the cover having a central opening, a rotatable spindle within said opening, a head thereon, spring-locking arms carried by the spindle engaging with the said keeper, and cams carried by the cover in the path of rotation of the said spring-locking arms.

3. In vault cover fastenings, the combination with the casing, and a keeper upon the interior thereof, of a cover having a central opening, a rotary spindle within said opening, and a head thereto, depending plates upon the inner side of the cover, and a cam plate carried by said depending plates, and spring-locking arms engaging with the said keeper, adapted to come into contact with the said cam plate in rotation.

4. In a locking device for vault covers, the combination with the cover having a central opening, and with rotary locking means within said opening, of depending plates upon the inner side of the cover, a plate secured to said plates and having an opening therein with cam surfaces.

5. In locking devices for vault covers, the combination with the cover having a central opening, and with a rotary spindle within said opening, and with spring-locking arms rotatively connected with said spindle, depending plates upon the inner side of the cover, and a plate secured to said plates having an opening provided with cam surfaces in the path of rotation of said locking-arms.

6. In fastenings for vault covers, the combination with the vault casing, and with a keeper upon the inner surface thereof, and

with the cover having a central opening, a rotary spindle within said opening, a head thereto, depending plates upon the inner side of the cover, and a horizontal cam plate connected with the depending plates and having cam surfaces, and spring arms connected with the said spindle adapted to engage with said keeper and come into contact with the cam surfaces of said horizontal plate.

7. In fastenings for vault covers, the combination with the vault casing, and with a keeper upon the inner surface thereof, and with the cover having a central opening, a rotary spindle within said opening, a head thereto, spring-arms connected with the spindle adapted to engage with the said keeper, depending arms on the inner side of said cover, and a cam plate connected with the said depending plates having an opening through which said spring-arms extend, said opening having cam surfaces with which said spring-arms come in contact, in the rotation of said spindle.

8. The combination with the vault casing, having a keeper upon the interior thereof, and with the cover having a depression in the central portion thereof, and an opening in said depression, a rotary spindle within said opening, a head thereto, said spindle having a transverse opening, spring-arms having their upper ends within said opening, and their lower ends adapted to engage with said keeper, and depending plates on the inner side of said cover, a plate connected with said depending plates, having an opening through which said spring-arms extend, and cam surfaces in said opening,

with which said spring-arms come into contact in the rotation of said spindle.

9. In fastening devices for vault covers, the combination with the cover having an opening in the central portion thereof, and with the vault casing, a downwardly inclined flange or keeper on the inner surface of said casing, a spindle in the opening on said cover, spring-arms connected with said spindle having outwardly-extended portions adapted to engage with said downwardly inclined flange, and means carried by said cover contacting with the arms in the rotation thereof to withdraw said engaging portion of the arms from said flange.

10. In fastening devices for vault covers, the combination with the cover having a depression in the central portion thereof, and an opening in said depression, and a vault casing, and a downwardly-inclined flange or keeper on the inner surface of said casing, a rotary spindle within said opening in the cover, a head thereto, said spindle having a transverse opening in its lower end, spring-arms having their upper ends secured to said spindle within said transverse opening, and outwardly-extended portions to their lower ends, engaging with the said keeper, depending plates connected with the inner surface of the cover, and means carried by said plates coacting with the said spring-arms in the rotation thereof to withdraw the said engaging portions of said spring arms from said keeper.

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