No. 858,781. PATENTED JULY 2, 1907.

W. ST. J. BENEDICT.

LOCK FOR VAULT COVERS.

APPLICATION FILED DEC. 16, 1905.

Fig. 2

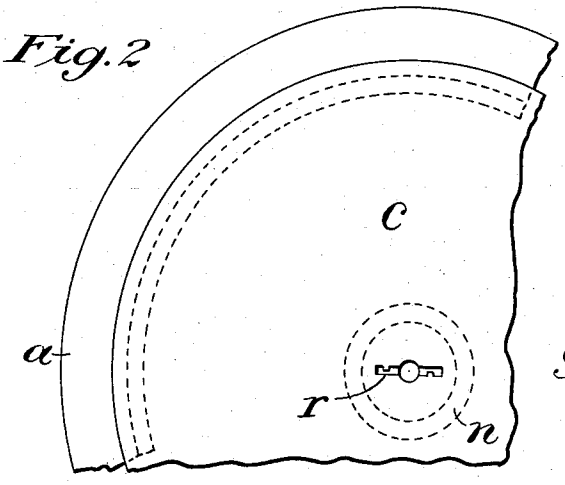


Fig. 4

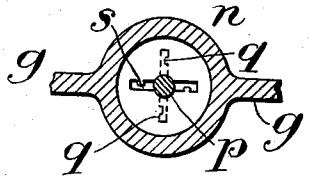


Fig. 1

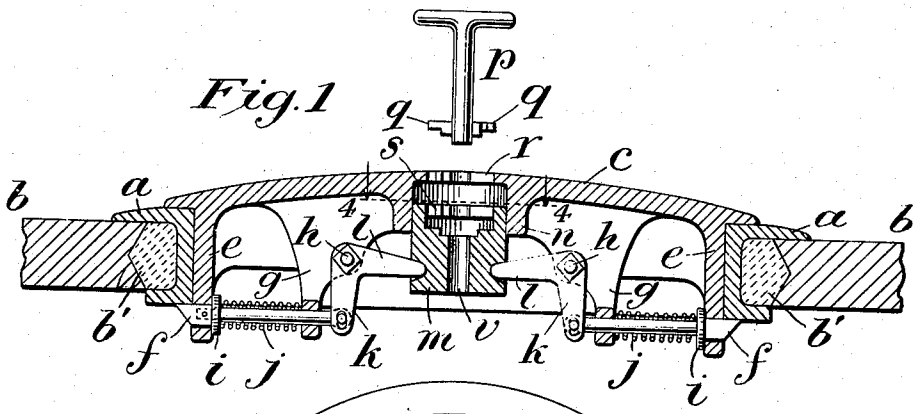
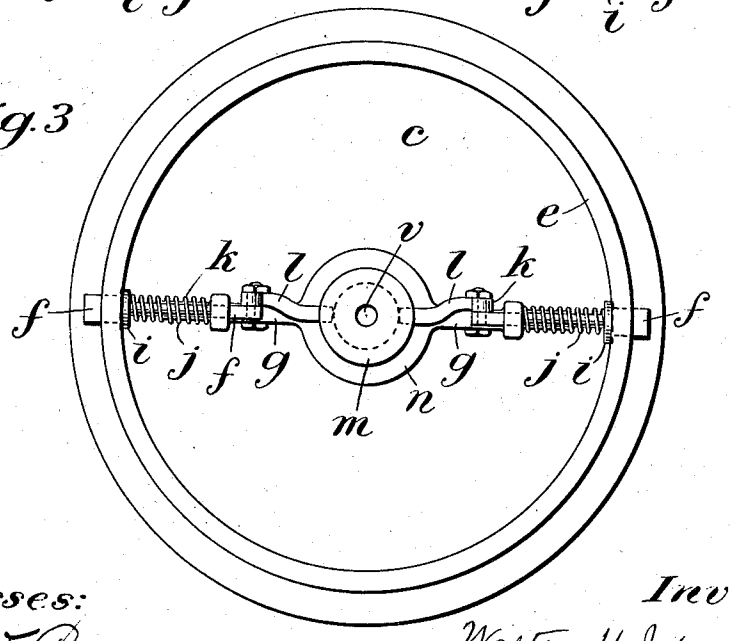


Fig. 3



Witnesses:

Bernard Cowen

Henry Barnes

Inventor:

Walter St. John Benedict

by Henry D. Williams

Atty.

UNITED STATES PATENT OFFICE.

WALTER ST. JOHN BENEDICT, OF NEW YORK, N. Y.

LOCK FOR VAULT-COVERS.

No. 858,781. Specification of Letters Patent. Patented July 2, 1907.

Application filed December 16, 1905. Serial No. 291,990.

To all whom it may concern:

Be it known that I, WALTER ST. JOHN BENEDICT, a citizen of the United States, residing at the borough of Brooklyn, city of New York, in the county of Kings and State of New York, have invented certain new and useful Improvements in Locks for Vault-Covers, of which the following is a specification, reference being had therein to the accompanying drawing, forming a part thereof.

My invention relates to locks for vault-covers, more particularly those employed for covering coal-holes or house-vaults, and has for its objects security, simplicity of construction and operation, and capability of being operated from the inside of the vault without special appliances.

The security of the device is assured by positive and tight locking and by the requirement of a specially shaped key to unlock and lift the cover from the outside of the vault. This is associated with ready operation from the inside of the vault either directly by hand or by any suitable means for transmitting a thrust to a lock-operating block. The operations of unlocking and lifting the vault-cover are effected successively by continuous upward movement, whether the actuation is from the outside by a key, or from the inside, by hand or by any thrusting appliance. The locking operation is effected automatically as soon as the cover has been restored to proper position, and this also is of considerable importance as to the security of the device, assuring that a cover which has been replaced in position will be locked in such position without reliance upon the operator to perform any other operation than that of replacing the cover.

I will now describe the construction embodying my invention illustrated in the accompanying drawings, and will thereafter point out my invention in claims.

Figure 1 is a longitudinal central vertical section of the vault-cover locked in position at the vault opening and showing the key in position to be inserted in the key-hole of the cover. Fig. 2 is a plan view of part of the cover and of the rim of the vault opening. Fig. 3 is an underneath plan view of the cover. Fig. 4 is a sectional detail taken on the line 4—4, Fig. 1.

A supporting rim for the cover is shown as comprising a flanged metallic bushing *a* which is fitted into the comparatively rough edges of the pavestone *b* and is secured thereto by cementing material *b'* filling an annular space between the flanges of the rim. Obviously, where a concrete sidewalk is employed, the plastic concrete may be introduced directly into the annular space between the flanges of the rim.

The cover comprises a somewhat dome-shaped body portion *c* which overlaps the supporting rim *a* and rests upon the same at its outer periphery and has a downwardly projecting cylindrical portion or ring *e* which fits within the inner circumferential surface of the supporting rim *a*.

The locking device for the cover comprises locking means or bolts *f* which are fitted to slide, in proximity to their outer ends, through openings in the cover-ring *e* and, in proximity to their inner ends, through openings in brackets *g*, these brackets *g* extending downward from the cover and being shown as integral therewith. As shown, two of these bolts are provided arranged in diametral alinement. These bolts *f* have downwardly and inwardly inclined outer faces so that they will be pushed inward by contact with the rim *a* when the cover is inserted in the rim to close the vault opening, and have horizontal upper faces so that when projected below the rim *a* they will lock against the lower face of the rim. They are spring actuated so as to be projected or closed automatically, by means of helical springs *j*, which encircle the bolts and bear against collars or shoulders *i*, these collars or shoulders being arranged so as to contact with the inner periphery of the cover-ring *e* when the bolts have been fully projected. The inner ends of the bolts are connected by pins and slots with arms *k* of bolt-actuating bell-crank levers, and these bell-crank levers are pivoted upon pins *h* projecting from the brackets *g* and have inwardly extending arms *l* engaging at their inner ends in circumferential grooves in a bolt-actuating block *m*. A boss *n* projecting downward from the cover has a cylindrical pocket formed therein in which the bolt-actuating block *m* is fitted to move vertically. Upward movement of the bolt-actuating block *m* raises the inner ends of the arms *l* of the bell-crank levers and moves inward the lower arms *k* of these levers and by this movement actuates and withdraws the bolts, but the weight of the bolt-actuating block *m* and the tension of the bolt-springs *j* tend to hold the bolts in projected and locking positions.

To withdraw or unlock the bolts, it is necessary to raise the bolt-actuating block *m*. This may be readily accomplished from the interior of the vault, as the lower end of the block is freely exposed and may be pushed upward by hand or, if not within reach, may be easily pushed upward by a bar or rod or any readily available contrivance. The upward movement of the bolt-actuating block will unlock the bolts, but the continuance of the pressure and movement in the same direction will lift the vault cover, so that the unlocking and opening movements are continuous, the vault-cover moving upward as soon as the bolts have been sufficiently withdrawn to unlock it. Thus a single continuous movement unlocks the vault-cover and lifts the vault-cover, both unlocking and opening the vault.

To unlock and lift the cover from the outside of the vault, a specially shaped key is required. Such a key

p is shown in Fig. 1 in position to be inserted in the key-hole r of the cover, the bits q of the key having characteristic irregularities, as usual in keys, and the co-operating openings and parts being correspondingly shaped so that the cover cannot be unlocked except by its particular key. The characteristic shape of the key-hole is also reproduced in an inner key-hole s at the top of the bolt-actuating block m and a bit-receiving recess is formed below this key-hole so shaped that when the proper key is entered therein it may be turned so that the bits will engage under the upper wall of the bit-receiving recess. With this construction it is necessary to insert the key and enter the bits thereof first through the outer key-hole r and then through the inner key-hole s and then to turn the key preferably through a right angle. The parts will then be in the position shown in Fig. 4 and the key may then be lifted, and in its initial movement it will elevate the bolt-actuating block m and withdraw the bolts and as soon as the bolts have been withdrawn it will lift the cover, and thus by a continuous movement of the key the cover will be unlocked and lifted up so as to uncover the vault.

To guard against clogging of the key-holes and recesses with dirt, a central opening v extends down through the bolt-actuating block m, through which dirt may be forced or will fall so as to keep the key-holes and recesses sufficiently free from obstructive clogging.

In the operation of closing the vault it is only necessary to drop the cover in place. The bolts will be pushed inward by contact with the supporting rim until the cover has reached its lower position and then will be automatically forced outward by the springs j assisted by the weight of the bolt-actuating block m.

It is obvious that various modifications may be made in the constructions shown and above particularly described within the principle and scope of my invention.

What I claim and desire to secure by Letters Patent is:—

1. A vault-cover comprising locking means and an interiorly exposed upwardly movable part for actuating the locking means, whereby the cover may be unlocked and raised by continuous upward pressure applied to said part from the interior of the vault.

2. A vault-cover comprising locking means and an upwardly movable part for actuating the locking means, the upwardly movable part being exteriorly shielded by the cover and exposed interiorly, and the cover having a key-hole suitably located relatively to the upwardly movable part, and a key adapted to enter the key-hole of the cover and to engage with the upwardly movable part, whereby the cover may be unlocked and raised by a continuous upward movement of such part imparted to it by the key from the exterior of the vault or by a thrust from the interior of the vault.

3. The combination with a vault-cover and a rim for a vault-opening, of a vertically reciprocatable bolt-actuating block guided and exteriorly shielded by the cover and exposed to the interior of the vault, locking bolts carried by the cover and engaging the rim to lock the cover in closed position, and bell-crank levers at diametrically opposite sides of the block and pivoted to the cover and having engagement with the block and with the bolts so as to withdraw the bolts when the block is moved upwardly.

4. The combination with a vault-cover and a rim for a vault-opening, of a vertically reciprocatable bolt-actuating block guided and exteriorly shielded by the cover and exposed to the interior of the vault, locking bolts carried by the cover and engaging the rim to lock the cover in closed position, bell-crank levers at diametrically opposite sides of the block and pivoted to the cover and having engagement with the block and with the bolts so as to withdraw the bolts when the block is moved upwardly, the cover having a key-hole, and a key for entering the key-hole and engaging with the block to move the block upwardly, whereby the bolts may be withdrawn and the cover raised by a continuous upward movement imparted to the block from the outside of the vault by a pull on the key or directly by an upward thrust from the inside of the vault.

5. The combination with a vault-cover and a rim for a vault-opening, of locking means carried by the cover and engageable with the rim in any circumferential position of the cover relatively to the rim, and an interiorly exposed upwardly movable part for unlocking the locking means and raising the cover by continuous upward pressure applied to said part from the interior of the vault.

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

WALTER ST. JOHN BENEDICT.

Witnesses:
HENRY D. WILLIAMS,
BERNARD COWEN.