Nov. 26, 1957 S. P. DOMENICO 2,814,262

VAULT DOORSILL CONSTRUCTION

Filed Sept. 7, 1956 3 Sheets-Sheet 1

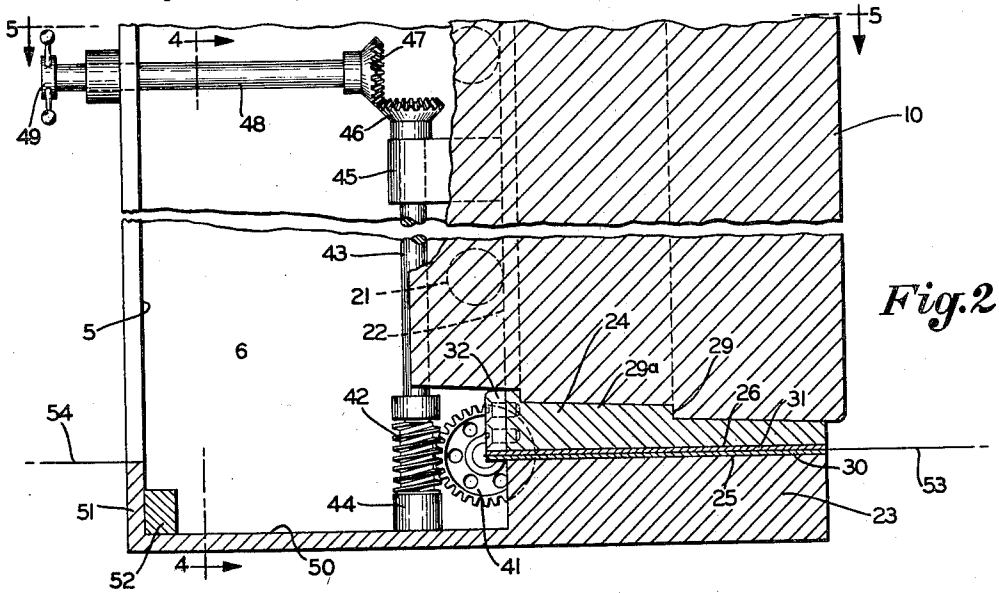


Fig. 2

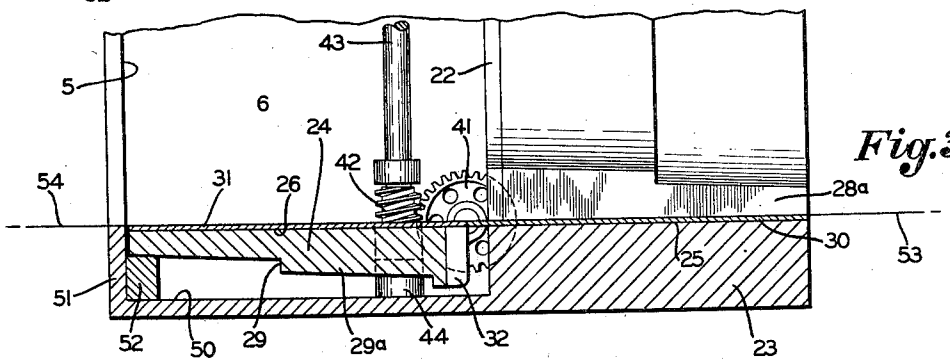


Fig. 3

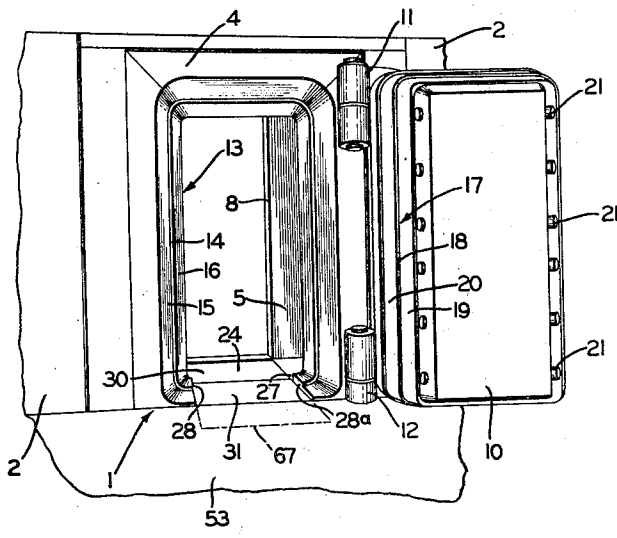


Fig. 1

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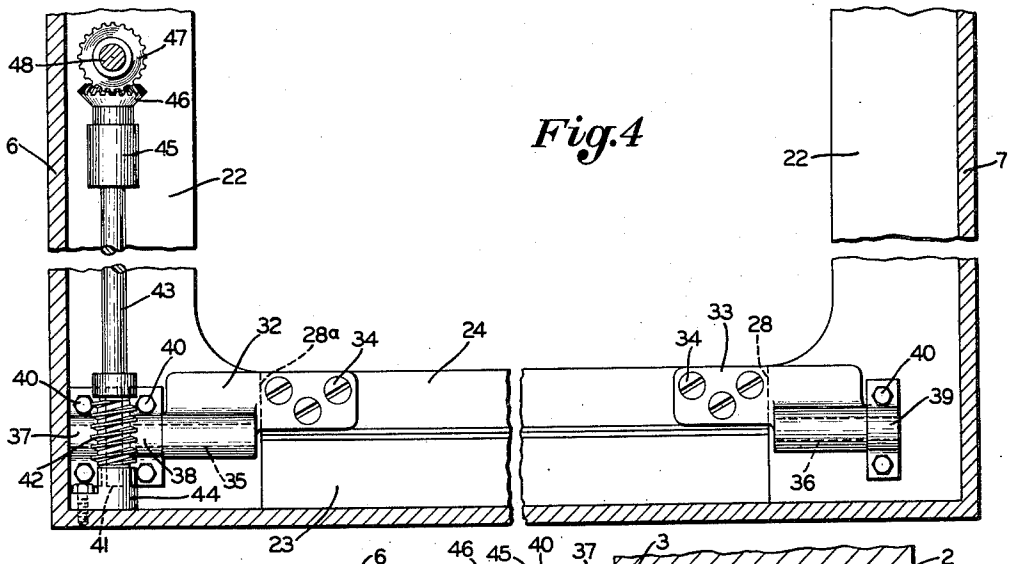


Fig.4

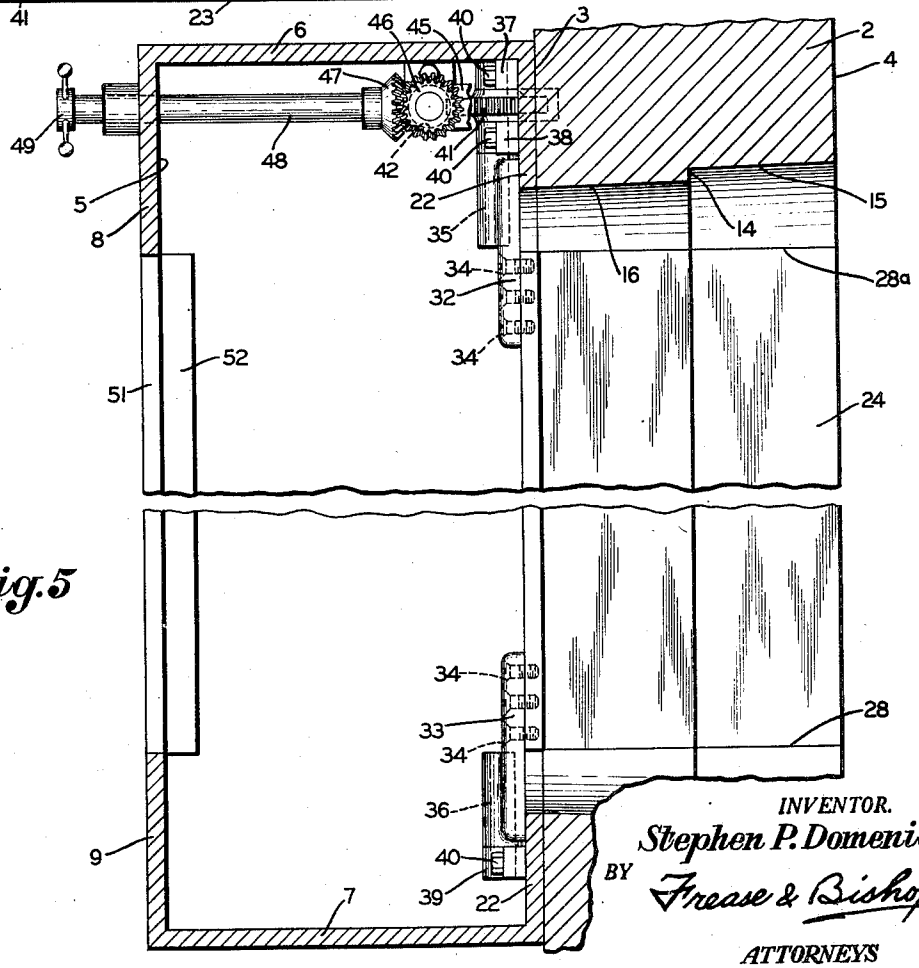


Fig.5

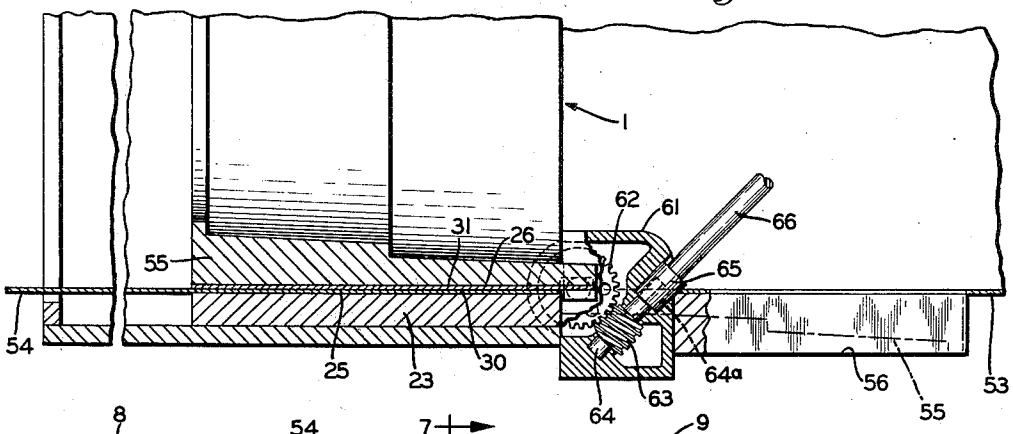
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VAULT DOORSILL CONSTRUCTION

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Fig. 7



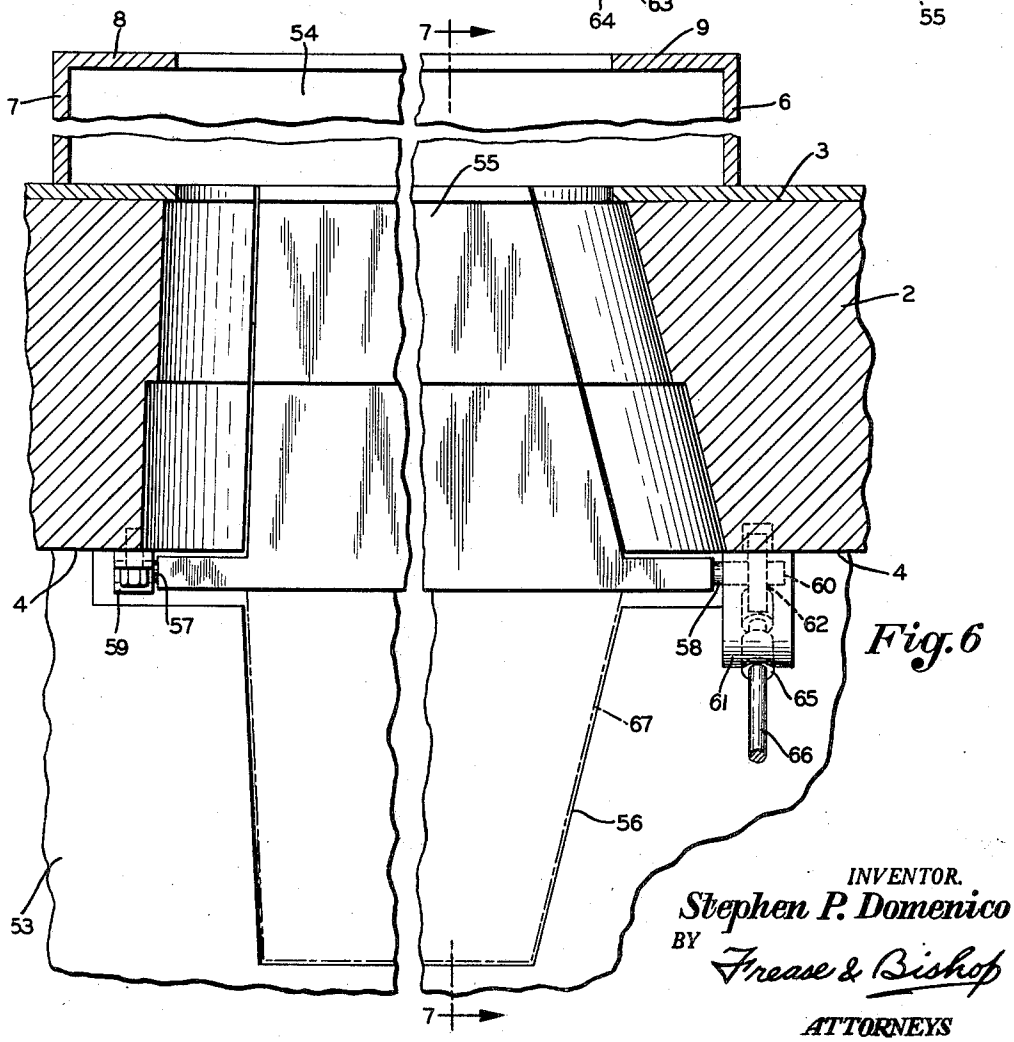


Fig. 6

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VAULT DOORSILL CONSTRUCTION

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Application September 7, 1956, Serial No. 608,616

4 Claims. (Cl. 109—87)

This invention relates to vault doors and the like and more particularly it pertains to sill construction therefor.

Most doors for safes and vaults are ordinarily provided with flanges forming a stepped surface around the periphery of the door. Likewise, corresponding flanges are provided on the door frames to form burglar-proof joints between the door frame and the door. Such flanges provide obstructions or an uneven or stepped surface over which one walks during ingress and egress to and from the vault. For this reason the flanges are objectionable.

Moreover, a doorsill becomes abused and unsightly when it is walked over frequently.

Various devices have been proposed for overcoming these problems. One device includes an inclined ramp placed over the flanged doorsill when the door is open. Such ramp usually extends from a slightly lower floor level outside of the vault to a higher floor level within the vault in order to clear the flanges. This arrangement is undesirable to the extent that walking over an inclined surface is less convenient than walking over a level surface.

Other devices have provided a lowering platform or false floor with a flange formation located outside of the vault, which false floor is lowered to swing the vault door open and closed. Such platforms are objectionable because they consume considerable floor area and involve bulky operating mechanisms including counterweights, levers and the like for raising and lowering the platform.

Other prior devices include movable doorsills having tongues and grooves interfitting with complementing tongues and grooves in the door. Such movable doorsills are subject to the objection that they usually include counterweights, levers and the like to manipulate the sill in and out of place when the door is opened and closed.

In addition to the movable doorsills most vault door frames include a permanent sill section having tongues and grooves that interfit with complementary tongues and grooves in the movable sill. The primary disadvantage of such construction is the extensive mill work necessary to provide the tongues and grooves in the movable sill, the door and the permanent sill. Another disadvantage is the weight of the movable sill due to the bulky structure necessary to reinforce the tongue and groove structure. This in turn calls for greater space, such as a comparatively deep pit, in which to manipulate the movable sill into and out of engagement with the door and permanent sill. Finally, there is the added disadvantage of providing a separate footbridge across the tongues and grooves in the permanent sill section and the adjacent pit.

These difficulties and objections inherent in the prior devices are overcome by the device of the present invention. It provides a movable doorsill which is pivotally mounted for easy manipulation and which lacks bulky counterweights, etc. One side of the improved sill includes a flange for engaging a complementary flange on the door when the door is closed. The other side of the

sill has a flat surface which is used when the vault door is open to provide an unobstructed, flat, level walkway between the inside and outside floors of the vault. The device of the present invention serves as a footbridge in the vestibule of the vault when the door is open and serves as a doorsill when the vault door is closed, providing the desirable flanged joint with the lower end of the door.

Generally, it is an object of the present invention to provide a vault door construction which enables the inside vault floor to have the same level as the floor on the outside of the vault.

It is another object of this invention to provide a horizontal flat walkway between the inside and outside floors of a vault.

It is another object of this invention to provide level inside and outside floors for a vault without using a lowering platform on the outside of the vault.

It is another object of this invention to provide a doorsill construction for a vault door having a flanged surface to engage a similar flanged formation on the door when closed and having a flat surface for a walkway at the door frame between inside and outside floor surfaces.

It is another object of this invention to provide a movable doorsill having a flanged surface which may be moved to a protected position when the vault door is open to protect the flanged sill surface from abuse.

Finally, it is an object of this invention to provide an improved sill construction for a vault door which incorporates the foregoing desiderata in an inexpensive manner and with simplified maintenance and operation.

These and other objects and advantages apparent to those skilled in the art from the following description and claims may be obtained, the stated results achieved and described difficulties overcome by the discoveries, principles, apparatus, parts, combinations, subcombinations and elements which comprise the present invention, the nature of which is set forth in the following statement, preferred embodiments of which, illustrative of the best modes in which applicant has contemplated applying the principles, are set forth in the following description, and which are particularly and distinctly pointed out and set forth in the appended claims forming part hereof.

The vault doorsill construction of the present invention may be stated generally as including in a vault, a door having flanged edge surfaces, a door frame having a corresponding flange formation, a door frame having a permanent sill section with a flat surface level with the inner and outer floor surfaces of the vault, the door frame also having a movable sill section provided with a flanged surface corresponding to the flanged edge surface on the door, the movable sill section also having a flat surface opposite the flanged surface, the movable sill section being hinged to the permanent sill section along one edge thereof for movement from a closed position of engagement with the door and the permanent sill section when the door is closed to a walkway position, the flat surface of the movable sill section thereby providing with the flat surface of the permanent sill section a continuous level walkway between the inside and outside floors of the vault.

By way of example, the improved sill construction for vault doors is shown in the accompanying drawings in which:

Fig. 1 is a perspective view of the vestibule of a vault with the vault door open showing a movable doorsill section removed;

Fig. 2 is a fragmentary vertical sectional view through the lower portion of a vault door and door frame, showing the door frame segment or doorsill in place and providing stepped joints with the door;

Fig. 3 is a fragmentary, vertical, sectional view taken through the vault vestibule with the door open showing the sill in the open position;

Fig. 4 is an elevational view of the vault vestibule taken on the line 4—4 of Fig. 2;

Fig. 5 is a horizontal, sectional view taken on the line 5—5 of Fig. 2;

Fig. 6 is a fragmentary plan view of another embodiment of the vault doorsill; and

Fig. 7 is a fragmentary, vertical, sectional view taken on the line 7—7 of Fig. 6, with part of the gear housing broken away.

Similar numerals refer to similar parts throughout the various views of the drawings.

In Fig. 1 a vault door frame of substantially rectangular configuration is generally indicated at **1**. The door frame **1** is mounted in a wall **2** and has inner surface **3** and an outer surface **4** as shown more particularly in Fig. 5. A rectangular vestibule **5** is provided adjacent the inner surface **3** of the frame which is generally enclosed by opposite walls **6** and **7** (Fig. 5) as well as partition walls **8** and **9** respectively. A vault door **10** is mounted on top and bottom hinges **11** and **12** in the outer surface **4** of the frame **1**.

The vault door frame **1** has a flanged edge surface generally indicated at **13** that includes a shoulder **14** facing the exterior of the vault frame and formed by a frame portion **15** and a flange **16**. The frame portion **15** is inclined inwardly between the outer surface **4** and the shoulder **14**. The flange **16** is also inclined inwardly between the shoulder **14** and the inner surface **3**. Likewise, the door **10** has a flanged edge generally indicated at **17** which includes a shoulder **18** between a door portion **19** and a flange **20**. The size and shape of the shoulder **18**, the door portion **19**, and the flange **20** correspond to and complement those of the shoulder **14**, the frame portion **15**, and the door flange **16**. When the door is closed, those parts abut each other.

The door **10** includes a plurality of locking bolts **21** which extend outwardly for locking engagement with a bolt plate **22** adjacent the inner surface **3** of the wall **2**.

The lower portion of the frame **1** includes an integral permanent sill segment **23** and a movable doorsill segment **24**. The segments **23** and **24** have flat surfaces **25** and **26**, respectively, which abut each other when the door **10** is closed (Fig. 2) and which provide a flat walkaway across the threshold of the vault when the door is open (Fig. 3).

When the flat surfaces **25** and **26** are in abutment for the closed door position (Fig. 2), the permanent sill segment **23** and the movable doorsill **24** provide a sill unit across the bottom of the door. Moreover, when the movable doorsill **24** is in the closed door position, it is mounted in an opening **27** extending between opposite end walls **28** and **28***a* at the lower ends of the vertical portions of the door frame **1**. In addition, the surface of the movable door sill **24** opposite the flat surface **26** has a flange formation similar to those of the door frame **1** and the door **10** and includes a shoulder **29** adjacent a flange **29***a*, which shoulder is turned outwardly when the doorsill **24** is in the closed door position as shown in Fig. 2. Finally, the flat surfaces **25** and **26** of the sill segments **23** and **24** are provided with tread plates **30** and **31**, respectively, which are permanently fixed in place for alignment with each other as shown in Fig. 3 when the doorsill **24** is in the walkaway position. The tread plates **30** and **31** form the top flat surfaces of the sill segments **23** and **24** when the sill segment **24** is in the walkaway position.

As shown more particularly in Figs. 4 and 5, a pair of pintle hinges **32** and **33** are attached by bolts **34** on the inner side of the doorsill **24**. The hinges **32** and **33** include stud shafts or pintles **35** and **36**, respectively, which extend in opposite directions. The shaft **35** is mouned in a pair of similar spaced journals **37** and **38** and the shaft **36** is seated in a journal **39**. The journals **37**, **38** and **39** are secured to the lower end of the bolt plates

22 or the permanent sill section **23** by similar bolts **40**. The axis of the pintles **35** and **36** is located in the plane and at the edge of the flat top surfaces of the sill segments **23** and **24** so that the tread plates **30** and **31** provide an uninterrupted and continuous walking surface as shown in Fig. 3.

As shown in Fig. 5, a worm gear **41** is mounted on the stud shaft **35** between the journals **37** and **38**. The worm gear **41** engages a worm **42** (Fig. 4) which is mounted on an elongated shaft **43** extending vertically between a journal **44** at its lower end and a journal **45** near its upper end, the journal **45** being secured to the bolt plate **22**. At the upper end of the shaft **43** is a bevel gear **46** which engages a bevel gear **47** (Fig. 2) mounted on the end of a horizontal shaft **48** extending across the vestibule and through the partition wall **8** where it is journaled. The other end of the shaft **48** is provided with a handwheel **49**.

The foregoing construction, including the handwheel **49**, the shafts **43** and **48** and other interconnecting parts, provides a means by which the movable doorsill **24** may be moved between the closed door position (Fig. 2) and the walkaway position (Fig. 3). Thus the sill **24** is rotated mechanically about a line extending through the axes of the stud shafts **35** and **36** of the pintle hinges **32** and **33**. In the closed door position (Fig. 2) the sill **24** is positioned for abutment with the lower end of the door **10** when the door is closed, thereby providing a burglar-proof joint across the lower end of the door **10**.

In the walkaway position, as shown in Fig. 3, the doorsill **24** extends vertically into a pit **50** between the inner surface **3** of the door frame **1** and a lower edge **51** of the partition walls forming the vestibule **5**. A block **52** is provided in the pit **50** on which the outer edge of the doorsill **24** rests when the sill is in the walkaway position. Accordingly, when the sill **24** is in the walkaway position, it is entirely below the plane extending between a floor **53** outside the vault and a floor **54** inside the vault and presents the tread plate **30** in contiguous alignment with the tread plate **31** as well as the floors **53** and **54**. Thus a level walkaway is provided between the inner and outer floors **53** and **54**.

In Figs. 6 and 7 another embodiment of the invention is shown. It provides a movable doorsill **55** having a configuration similar to that of the doorsill **24**, but differing therefrom in that the doorsill **55** opens outwardly of the door frame rather than inwardly as shown in Fig. 3. A pit **56** is provided in the outer floor **53** adjacent the lower front end of the frame **1**. As shown in Fig. 6, the front side of the sill **55** is provided with a pair of stud shafts or pintles **57** and **58** extending in opposite directions and journaled in suitable journals **59** and **60**, respectively, secured to the lower permanent doorsill segment **23**. Like the pintles **35** and **36**, the axis of the pintles **57** and **58** is located in the plane of the top surface of the sill segment **23**.

In addition, the journal **60** for the shaft **58** includes an integral gear housing **61** which encloses a worm gear **62** mounted on the shaft **58**. A worm **63** engages the worm gear **62** and is mounted on a stud shaft **64**, the opposite ends of which are suitably journaled in the housing **61**. The upper end **64***a* of the shaft **64** has a square cross section and is adapted to receive a socket member **65** of similar cross section. The member **65** is secured to the lower end of a removable shaft **66** by which the worm gear mechanism may be turned to rotate the doorsill **55** between the closed door position, as shown in solid lines in Figs. 6 and 7, and the walkway position, as shown by dot-dash lines **67** within the pit **56**.

The doorsill construction for vaults of the present invention is an improvement over the prior art in that a continuous level walkway between the inside and outside floors of the vault is provided without the necessity of using a lowering platform for opening and closing the vault door. By providing a movable doorsill having

one side with flanged surfaces and another side level, the doorsill is protected against abuse occasioned by being walked over during ingress and egress from the vault. Rather, another level surface on the sill is provided for walking purposes.

Finally, the doorsill construction is relatively small in size and is easily rotated between the open door and walkway positions in a minimum of space by the provision of pintle hinges along one edge thereof. The doorsill, when moved between the two positions, moves upwardly into available space and occupies in the open door position a relatively small space below the walking surface.

In the foregoing description certain terms have been used for brevity, clearness and understanding, but no unnecessary limitations are to be implied therefrom beyond the requirements of the prior art, because such words are used for descriptive purposes herein and are intended to be broadly construed.

Moreover, the embodiments of the improved construction illustrated and described herein are by way of example, and the scope of the present invention is not limited to the exact details of construction shown.

Having now described the features, constructions and principles of the invention, the characteristics of the new vault doorsill construction, and the advantageous, new and useful results provided; the new and useful discoveries, principles, parts, elements, combinations, subcombinations, structures and arrangements, and mechanical equivalents obvious to those skilled in the art are set forth in the appended claims.

I claim:

1. In vault door and door frame construction for a vault having inside and outside floors at the same level, a vault door having a lower flanged edge surface, a door frame having a sill member provided with a flat upper surface located in the plane of the inside and outside vault floor surfaces and in contiguous continuation of one of said floor surfaces, the lower flanged edge surface of the door when closed being spaced above said flat upper sill surface, a sill segment for the door frame movable between closed and walkway positions, the upper surface of the sill segment when in closed position being provided with a flange formation complementary to the lower door frame flange formation and engaged therewith when the door is closed, the sill segment also having a lower flat surface engaged with and supported on the flat upper sill member surface when in closed position, hinge means between the sill member and segment at one edge of the sill member, the sill segment being movable on said hinge means when the door is open from said closed position to walkway position, the sill segment when in walkway position having its flat surface located in contiguous continuation of the flat sill member surface and the other floor surface, whereby a flat level uninterrupted walkway may be provided through the door frame when the vault door is open.

2. The construction defined in claim 1 in which means is provided for moving the sill segment on its hinge means between closed and walkway positions.

3. The construction defined in claim 1 in which the axis of the hinge means lies in the plane of the flat sill member surface.

4. The construction defined in claim 1 in which pit means is formed in one of the floors adjacent the sill member, and in which the movable sill segment is received in said pit means when moved to walkway position.

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