

J. R. FLOOD.
VAULT DOOR.
APPLICATION FILED APR. 1, 1911.

1,010,246.

Patented Nov. 28, 1911.

2 SHEETS—SHEET 1.

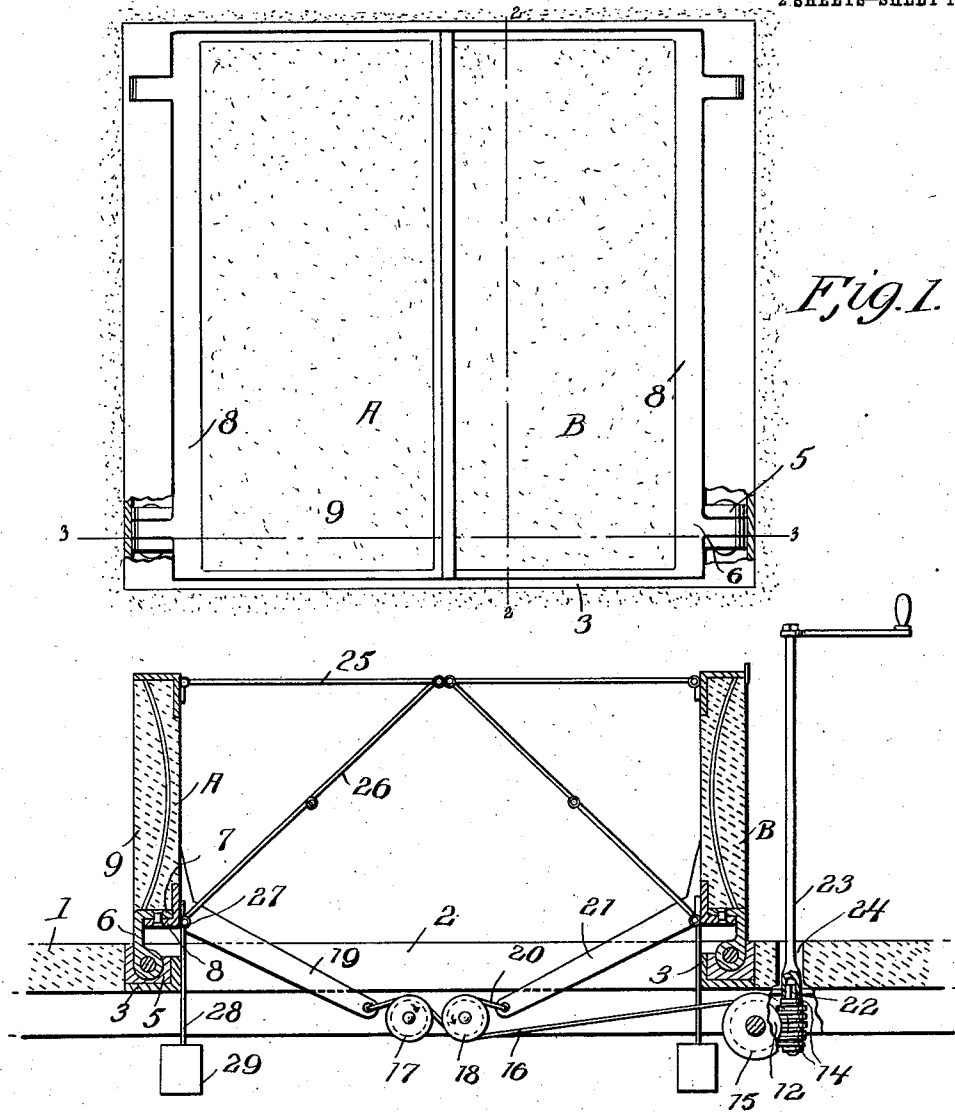


Fig. 3.

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John R. Flood.

Witnesses
William Smith
E. Edwards

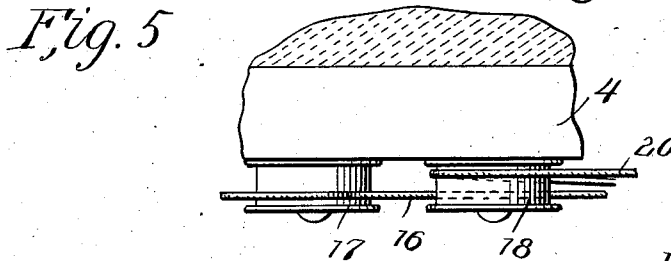
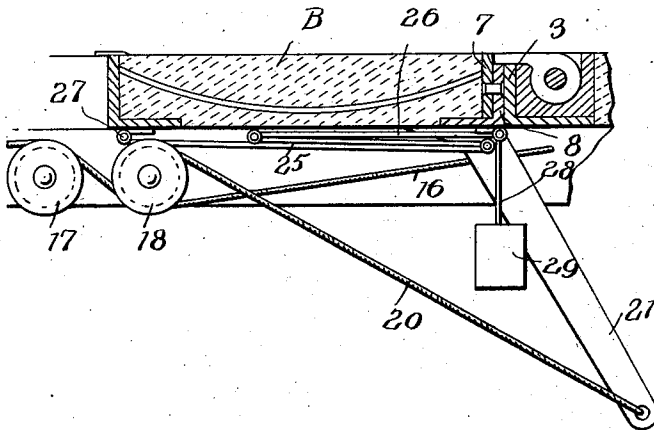
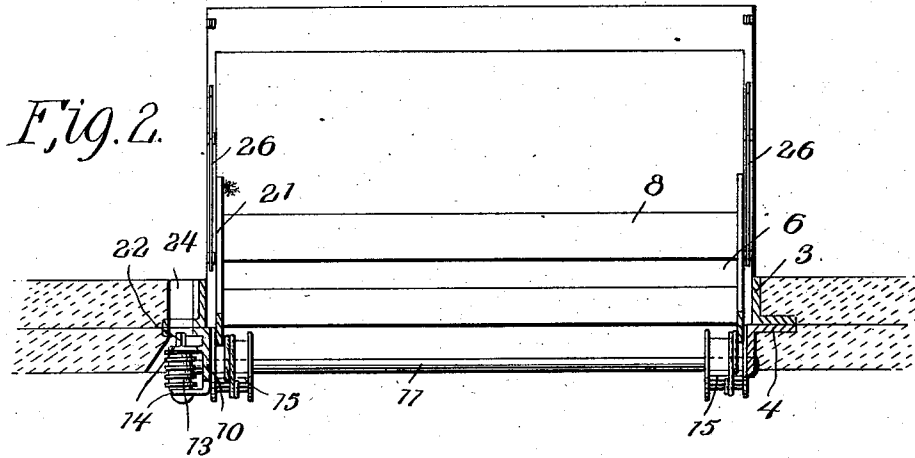
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UNITED STATES PATENT OFFICE.

JOHN R. FLOOD, OF SPOKANE, WASHINGTON.

VAULT-DOOR.

1,010,246.

Specification of Letters Patent.

Patented Nov. 28, 1911.

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To all whom it may concern:

Be it known that I, JOHN R. FLOOD, a citizen of the United States, residing at Spokane, in the county of Spokane and State of Washington, have invented new and useful Improvements in Vault-Doors, of which the following is a specification.

This invention relates to vault closures and more particularly to mechanism for operating the same so that they may be conveniently raised or lowered without going down into the basement or vault.

One of the principal objects of the invention is the provision of means whereby the vault covers may be conveniently raised and lowered simultaneously from the outside of the vault by the manipulation of a single lever or crank.

A further object of the invention is the provision of a novel form of guard or gate which is thrown to open position when the doors are opened and is returned to closed position when the doors are closed.

Further objects of the invention will appear as the following specific description is read in connection with the accompanying drawings, which form a part of this application, and in which:—

Figure 1 is a top plan view. Fig. 2 is a section taken on the line 2—2 of Fig. 1. Fig. 3 is a similar view taken on the line 3—3 of Fig. 1. Fig. 4 is a similar view with the parts shown in Fig. 3 in closed position. Fig. 5 is a detail top plan view with the doors raised.

Referring more particularly to the drawings, 1 represents the roof of the vault or basement and also the pavement or sidewalk. This roof is provided with an opening 2 therein whose walls are reinforced by the angle irons 3 and 4, both having one leg thereof embedded in the material of which the roof or sidewalk is formed. Mounted within the angle iron 3, the roof material being cut away for this purpose, are bearing blocks 5 to which are secured the hinge members 6. These hinge members have their outer ends turned at right angles, as shown at 7, so as to engage between the frame 8 of the doors and their reinforced concrete bodies 9 which completely fill the frame. These doors are hinged at opposite sides of the opening and are adapted to meet in the center and, when in lowered or closed position, are supported upon the angle irons 4.

Depending from the angle irons 4 and secured thereto are shaft supports or bearing members 10 in which is journaled a transverse shaft 11 having secured to one end thereof, beyond the adjoining bearing member, a worm wheel 12 which is engaged by a worm 13 journaled in suitable bearings 14 carried by the angle irons 4. Mounted upon the shaft 11 adjacent each bearing member are drums 15 upon which are wound the cables or chains 16. The free ends of the cables are passed over drums or pulleys 17 and under combined drums and pulleys 18 and are connected to the lifting arms 19 secured to the opposite sides of the door A and extend diagonally away therefrom beneath the hinges thereof. Wound around the pulleys of the combined pulleys and drums 18 are cables 20 which are connected to arms 21, similar to the arms 19, secured to the door B.

When the screw is operated to rotate the worm wheel the cable 16 is wound up upon the drums 15 and, as this cable passes under the pulley 18, these pulleys will be rotated in a direction indicated by the arrow to wind up the cables 20. Thus it will be seen that both doors may be raised and lowered simultaneously.

In order to rotate the worm or screw 13 the upper end of the same is provided with a squared boss 22 upon which is mounted a removable crank wrench 23 which passes through an aperture 24 in the roof or pavement 1.

Pivoted to the outer end of each door at opposite sides thereof are gate arms 25 which have connected to their outer free ends the toggle levers 26, whose lower ends are connected to the inner ends of the door at opposite sides thereof, as shown at 27. The inner members of the toggle levers constitute one leg of a bell crank 28 whose lower leg has secured thereon a suitable weight 29 which, when the door is raised, is in parallelism therewith. When the doors are closed, as shown in Fig. 4, the lower arm of the bell crank lever 28 will lie substantially parallel with the arms 19—21 and the toggle levers 26 will be folded up between the door and the arm 25.

Having thus described the invention, what I claim as new is:—

1. In a device of the class described, the combination with a pavement having an aperture therein, of independent doors hinged

to the pavement for closing said aperture, arms carried by said doors, a winding drum, a cable connected to the winding drum and to the arms on one of said doors, a second
5 winding drum operated by the cable, a cable connected to said second winding drum and to the arms of the other door, and means controlled from the outside for operating the first drum, whereby both drums are si-
10 multaneously operated.

2. In a device of the class described, the combination with a pair of doors, means for simultaneously opening and closing the same, arms pivoted to the outer end of said
15 doors, toggle levers pivoted to said arms and to the inner end of said doors, bell crank levers forming a part of said toggle levers, and weights on the end of said bell crank levers adapted to automatically fold the toggle levers when the doors are closed and 20 to automatically open the toggle levers when the doors are open, said toggle levers and arms adapted to act as guarding gates for the opening covered by the doors.

In testimony whereof I affix my signature 25 in presence of two witnesses.

JOHN R. FLOOD.

Witnesses:
F. H. OHM,
FRANK M. DAGGETT.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."
