

A. MOLLENHAUER.
TRAP DOOR.
APPLICATION FILED JUNE 1, 1912.

1,055,939.

Patented Mar. 11, 1913.

Fig. 1

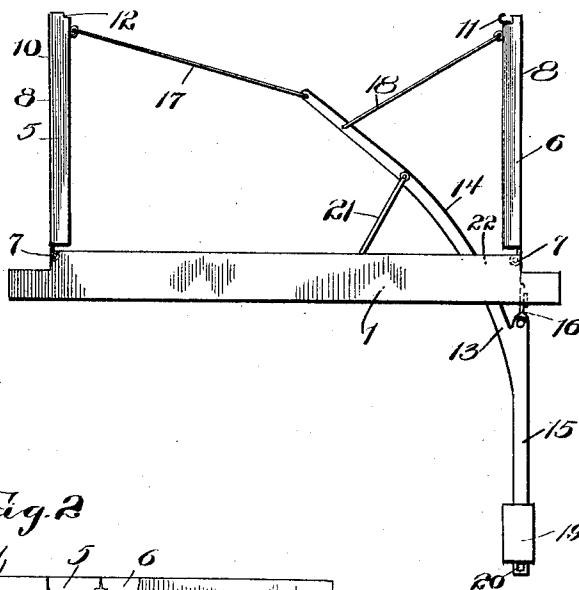


Fig. 2

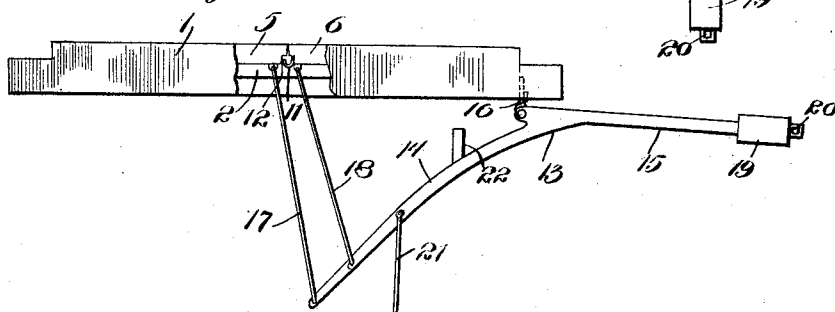
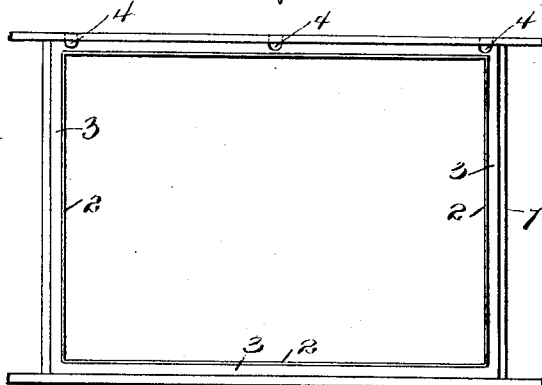


Fig. 3



Witnesses

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TRAP-DOOR.

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To all whom it may concern:

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

This invention relates to improvements in trap doors and has particular application to doors of this type which are utilized for closing cellars, hatchways and the like.

In carrying out the present invention, it is my purpose to provide a trap door wherein the doors may be opened and closed with ease and facility, a counter-balancing mechanism being employed and connected to the doors in such manner as to assist in the opening and closing of the same and acting to maintain the doors in open and closed positions.

A further purpose of this invention is the provision of a trap door and frame therefor constructed in such manner as to prevent leakage of water or the like beneath the doors and designed to carry such water away from the doors so as to prevent water and the like from entering a cellar or other place during inclement weather.

Furthermore, I aim to provide a trap door wherein by means of a counter-balancing mechanism the doors may be opened and closed easily and wherein the connections between the counter-balancing mechanism and the doors will serve as a guard to prevent accidents incident to open cellar doors.

With the above and other objects in view, the invention consists in the construction, combination and arrangement of parts hereinafter set forth in and falling within the scope of the claims.

In the accompanying drawing; Figure 1 is an end elevation of the trap doors and frame constructed in accordance with the present invention, the doors being shown in open position, the counter-balancing mechanism operative to hold the doors open. Fig. 2 is a similar view showing the doors in closed position, parts being broken away. Fig. 3 is a top plan view of a door frame, the doors and counter-balancing mechanism being removed, and Fig. 4 is a central sectional view through the doors and frame.

Similar reference characters designate like parts throughout the several views.

Referring now to the accompanying draw-

ing in detail, the frame of the doors is indicated at 1 and is of substantially rectangular contour and preferably constructed of metal, and each side of the frame 1 on the interior thereof is equipped with an inwardly projecting flange 2 located approximately centrally of the width of the respective side and formed with a longitudinally extending groove 3 having open communication with the grooves of adjacent flanges, all of said grooves forming a drainage trough adapted to discharge its contents from the frame by way of apertures 4 formed in one of the sides of the casing.

The doors are indicated at 5 and 6 and are pivoted to the sides of the frame 1 on horizontal pivots 7 and movable about such pivots in relatively opposite directions to open and closed positions. Each door 5, 6 preferably consists of a metallic frame 8 and a body of reinforced plastic material 9, such as cement or the like in which is loosely mounted a ring 10 by means of which the doors may be opened, the ring having a certain amount of play relatively to the doors as usual to facilitate the lifting of the doors to open position. The free longitudinal edge of one of the doors, for instance the door 6, that is the edge opposite from the pivoted edge of the door, is equipped on its under surface with a trough 11 while the adjacent edge of the opposite door is cut out or rabbeted as at 12 to accommodate the trough when the doors are in closed position. This trough, as will be readily seen, is common to the meeting edges of the doors when the same are closed and has open communication with the trough formed by the grooved flanges 2 and discharges its contents thereinto, thus preventing leakage between the proximate edges of the doors when closed.

In order to assist in the opening of the doors so as to relieve the operator or attendant of the weight thereof, and to maintain the doors in open position, I make use of a counter-balancing mechanism which has connections with both doors, the connections serving as a fender or guard when the doors are open to prevent accidents incident to the open position of the doors. This counter-balancing mechanism preferably consists of a lever 13 composed of relatively angular arms 14 and 15 and pivoted at the juncture of such arms to a bracket 16 depending from one side of the frame 1 of the doors. The

arm 14, is pivotally connected to the doors 5 and 6 through the medium of connecting rods 17 and 18 respectively, the former being connected to the arm 15 above the pivotal connection of the latter. Upon the arm 15 of the lever 13 is a counter-balancing weight 19 slidably disposed upon the arm and adjustable thereon so as to facilitate the application of the counter-balancing mechanism to doors of various weights, a set screw 20 being employed to hold or maintain the weight in the desired adjusted position. This weight is approximately equal in weight to the combined weight of the doors and by adjusting the same outwardly or inwardly of the lever relatively to the frame the effect of the weight upon the doors may be decreased and increased respectively. The arm 14 has pivotally connected thereto a stay 21 adapted, when the doors are in open position, to be disposed within the proximate grooved flange 2 so as to prevent accidental closing of the doors and this arm is also equipped with a stop finger 22 designed to abut one of the sides of the casing 1 when the doors are open so as to limit the movement of the lever under the action of the weight to open position.

From the foregoing description taken in connection with the accompanying drawing, the construction, mode of operation and manner of employing my invention will be readily apparent. To open the doors the finger ring 10 is grasped and a pull exerted thereon to swing the doors about their horizontal pivots, both doors opening simultaneously owing to the connections between the same. As the weight 19 nears the lowermost point, the operator is relieved of the weight of the doors and the latter under the action of the weight are thrown to an open position and held in such position incident to the weight reaching the lowermost point of its path of movement. On the contrary, in the closing movement of the doors, the weight is forced away from the center of gravity and as the doors near their center of gravity the action of the weight is overcome and the doors maintained in a closed position, when such position is reached.

While I have herein shown and described

one particular form of my invention by way of illustration, it is to be understood that I do not limit or confine myself to the exact details of construction herein set forth, as modification and variation may be made within the scope of the claims and without departing from the spirit of the invention.

I claim:

1. The combination with a pair of doors, of a mechanism for counter-balancing the weight of said doors, said mechanism comprising a lever composed of a pair of arms formed integral with each other and disposed at angles to each other, said lever being pivoted at the meeting ends of the arms thereof, a weight upon one of said arms, and connections between the doors and the other arm of said lever.

2. The combination with a pair of doors, of a mechanism for counter-balancing the weight of said doors, said mechanism comprising a lever consisting of a pair of arms formed integral with each other and disposed at angles to each other, said lever being pivoted at the meeting ends of the arms thereof, a weight upon one of said arms and adjustable thereon, and connecting rods between the doors and the other arm of said lever, one of said rods having connections with the arm above that of the other.

3. The combination with a pair of doors, of a mechanism for counter-balancing the weight of said doors, said mechanism comprising a lever formed of a pair of arms formed integral with each other and disposed in angular relation, said lever being pivoted at the meeting ends of the arms thereof, a weight upon one of said arms and adjustable thereon, connections between the doors and the other arm of said lever, a stay connected to the last-mentioned arm and adapted to maintain the doors open, and a stop for limiting the action of the lever under the movement of the weight.

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

AUGUST MOLLENHAUER.

Witnesses:

A. C. HUELSIEP,
F. N. LA VELL.