

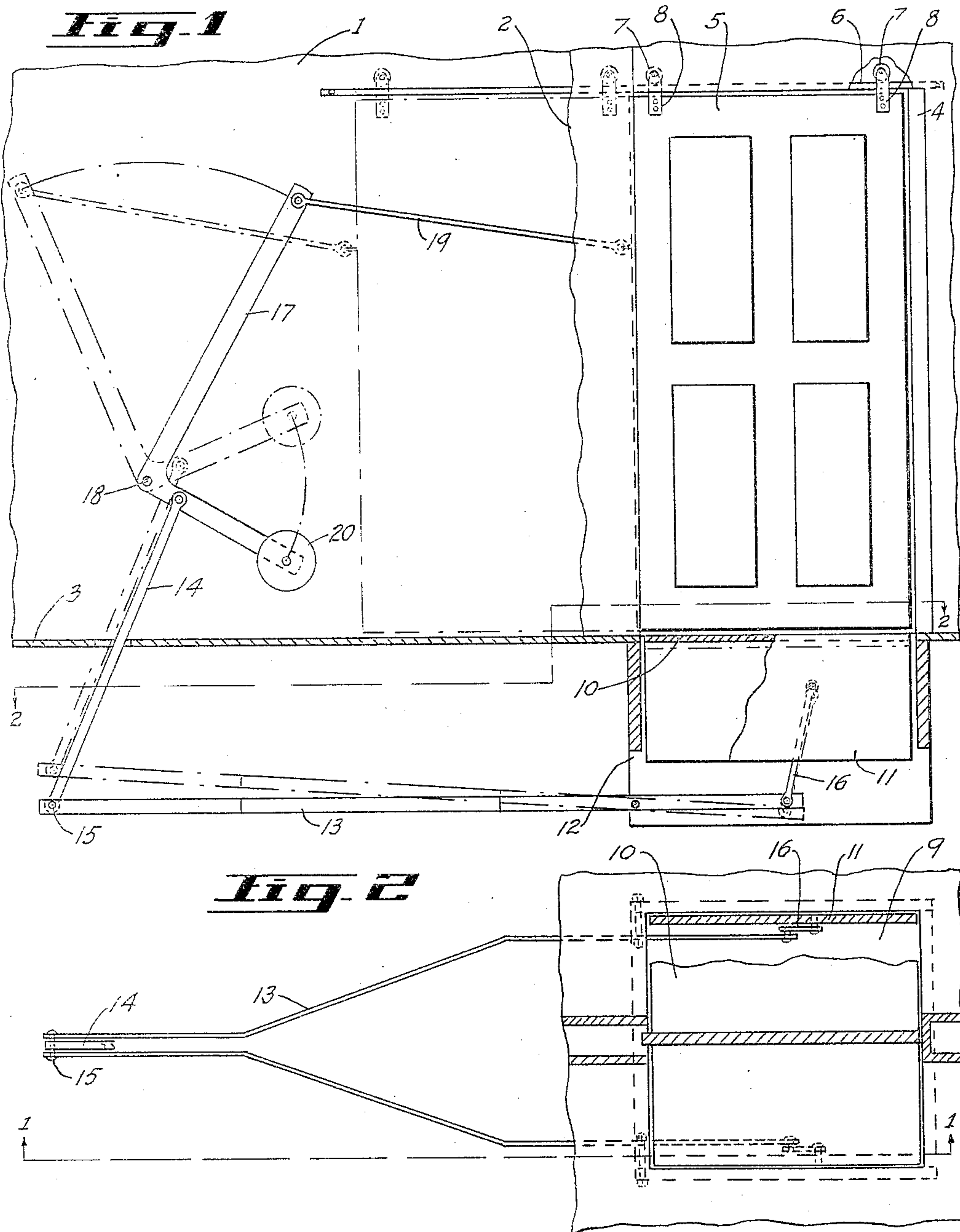
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AUTOMATIC DOOR

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AUTOMATIC DOOR

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My invention relates to door opening and closing devices one of the objects of my invention being to provide mechanism of a semi-automatic character for opening and closing doors and the like, operable by the application of pressure through utilization of the weight of the user.

A further object of my invention is to provide a door opening and closing device that can be operated with equal facility from either side of the door combining a manual operation of a semi-automatic character for opening the door with an automatic closing operation and further to carry out the opening and closing action without use of the hands providing a convenient arrangement for use where necessary conditions make such use of the hands inconvenient.

A still further object of my invention is to provide a door opening and closing device of such a character that can be installed without interference with the regular wall and floor construction to the extent of encroaching on available space and without utilization of visible mechanism out of harmony with surroundings.

With the above and other objects in view my invention resides in the combination of parts hereinafter more particularly described and claimed reference also being had to the accompanying drawing, wherein like characters of reference are used to indicate like parts throughout the different views and wherein:—

Fig. 1 is a side elevation of a door suspended in a wall structure illustrated with my opening and closing mechanism installed and attached thereto, part of the wall structure being for convenience of illustration shown broken away.

Fig. 2 is a sectional view illustrated as taken on a line 2—2 of Fig. 1, showing the construction of the platform and connection lever.

Referring to the drawing 1 indicates the rear facing of a wall structure, 2 the front facing and 3 the floor, the whole being merely indicative of any usual wall construction inclusive of an intervening air space. Formed in the wall structure is a door open-

ing of the usual kind to which the intervening space in the wall communicates throughout the vertical length of the door opening forming a pocket for reception of the door which may be framed and finished similar to a simple studded partition and the door opening finished as desired, the outer side of the opening being closed by the frame 4.

Suspended in the door opening is a door 5 operating on a guide rail 6 which extends into the pocket formed in the wall structure. Suspension of the door is secured by provision of rollers 7—7 attaching to the top rail of the door by straps 8—8 permitting sliding actuation of the door on the guide rail.

Below the door 5 set in a suitable opening 9 provided in the floor 3 in horizontal alignment with the door opening is an inverted box forming a treadle structure comprising a floor section or platform 10 loosely fitting in the opening 9 and provided with side walls 11—11 braced as desired, the said structure being designed to operate as a treadle for actuation of the operating mechanism.

The opening in the floor 3 is provided with a depending casing generally indicated at 12 enclosing the area below the opening 9 and designed to receive the treadle structure and act as a guideway and lateral support therefor the said casing 12 forming a part of the floor construction and being extended if desired to enclose the whole of the operating mechanism below the floor level.

Pivotal attaching to the side walls 11—11 of the treadle by means of suitable connecting pins is a forked lever comprising a pair of spaced apart arms 13—13 convergingly inclining at their outer extremities to receive an interposed link 14 pivotally attaching thereto by a connecting pin 15. The inner extremities of the arms 13—13 of the forked lever are arranged in a loose pivotal attachment to the side walls 11—11 of the treadle structure through the medium of links 16—16 attached to said arms and side walls by suitable connecting pins or the like. The said forked lever is arranged when in horizontal position to support the floor section 10 of the treadle structure level with the main flooring 3.

Between the facings 1 and 2 of the wall structure is pivoted an angled lever 17 by means of a fixed pin 18 imbedded in the said wall facings and transversely disposed there-
 5 between. The said lever 17 is preferably formed right angular in shape with legs of unequal length the longer of such being approximately vertically disposed and the shorter relatively horizontally disposed. To
 10 the horizontal leg of the lever 17 adjacent the angle thereof is attached the link 14 forming an operating connection with the forked lever. To the upper extremity of the vertical leg of the lever 17 is pivotally attached a link 19
 15 which attaches to the inner margin of the door 5 by means of an eye bolt or the like.

Further attached to the horizontal leg of the lever 17 is a counterweight 20 of suitable weight to counterbalance the force required
 20 for the opening operation of the door. The said weight is adjusted to exercise sufficient counter action to normally retain the door closed and the forked lever in a normal horizontal position or to automatically restore
 25 the door, when open, to its normal closed position.

In the operation of the device a person stepping and imposing their weight on the floor section 10 of the treadle structure depresses
 30 the said structure and through connection of the links 16—16 forces the inner end of the forked lever downward elevating the outer extremity of the said lever which through connection of the link 14 actuates the lever 17
 35 in opposition to the counterweight 20 and through the link 19 draws back on the door 5 sliding the said door on the guide rail 6 into the wall pocket provided therefor.

Release of the pressure on the platform 10
 40 allows the counterweight 20 to come into play forcing downward on the horizontal leg of the lever 17 and through the connection of the link 19 with the vertical leg of the said lever forcing the door closed again. Opera-
 45 tion of the lever 17 serves through its connecting link 14 to restore the forked lever to its normal horizontal position and elevate the platform 10 to its normal position on a level with the main flooring.

Through the relative unequal balance of the forked lever only a very slight depression of the platform 10 is required for the operation of the mechanism the weight so applied ultimately through provision of the counter-
 55 weight 20 serving the dual purpose of opening and closing the door 5.

In its conception the structure as herein designed is applicable to a variety of purposes where an easily operable door structure of
 60 this character is advantageous. The structure can also be adapted to be utilized in connection with a pair of sliding doors closing into contact at a common center by provision of a double leverage system such for instance as
 65 for garage purposes and the like, in which re-

spect relative extension of the platform area could be included in the structure.

Having thus described my invention what I claim is:—

The combination with a spaced apart wall 70 provided with a door opening, a horizontally reciprocating door mounted to close the opening having an angled lever pivotally mounted connected for actuation of the door and hav-
 75 ing a counterweight automatically operable to move the door into a normal closed position, and a floor structure in conjunction with the wall formed with an opening below the door opening, of a treadle structure for open-
 80 ing the door comprising a forked lever intermediately suspended in the floor structure with the forked end of the lever aligned with the floor opening, an open box structure de-
 85 pending from the floor surrounding the opening therein, a platform pivotally supported on the forked arms of the lever and mounted vertically slidable in the box structure, and a link connecting the other end of the forked lever to the angled lever.

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