W. P. WHITE.

DOOR OPENING APPLIANCE.

APPLICATION FILED DEC. 9, 1920.

1,413,642.

Patented Apr. 25, 1922.

2 SHEETS—SHEET 1.

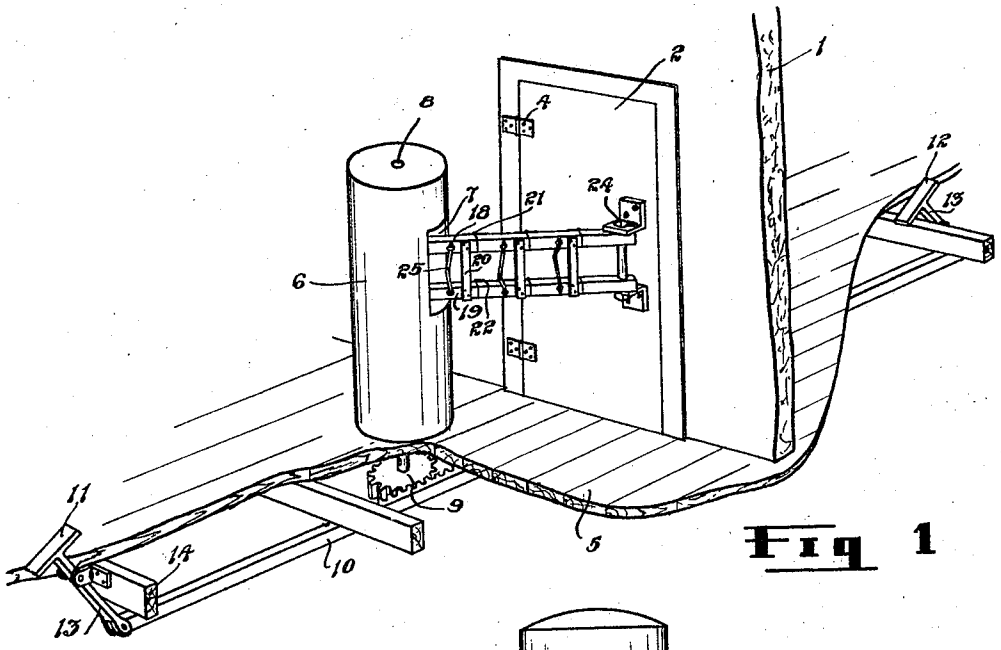


Fig 1

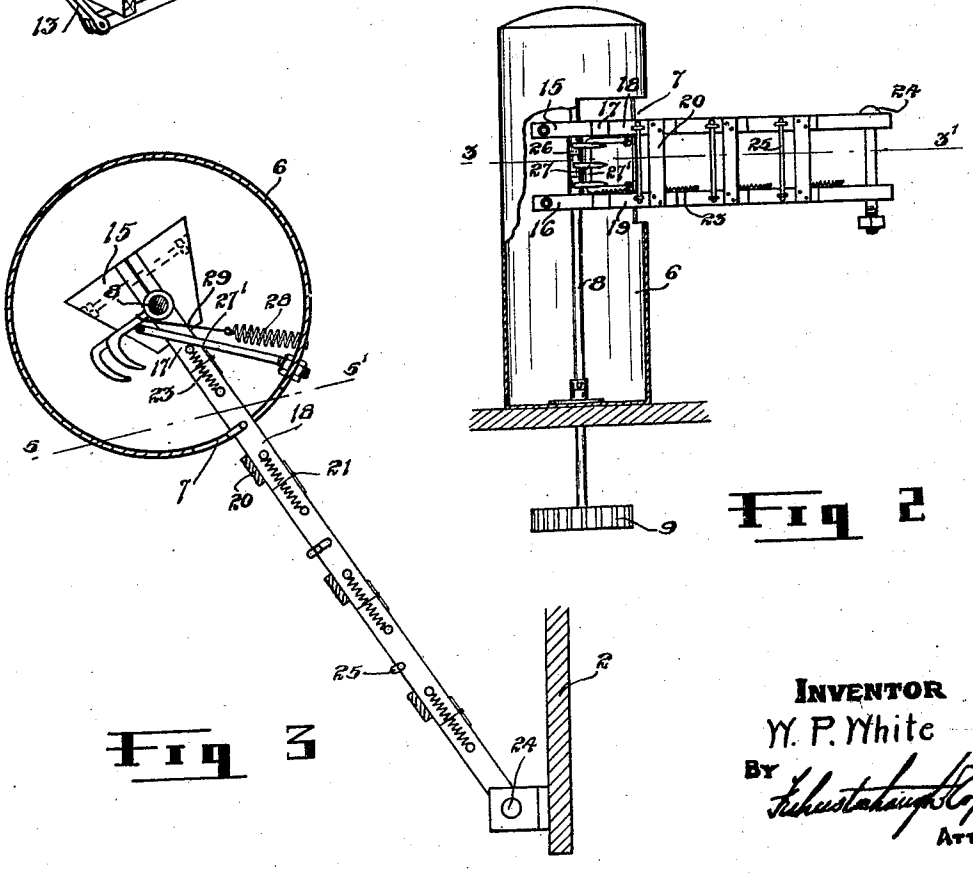


Fig 2

Fig 3

INVENTOR

W. P. White

BY Fehnstrauch & Co.

ATTYS

W. P. WHITE.

DOOR OPENING APPLIANCE.

APPLICATION FILED DEC. 9, 1920.

1,413,642.

Patented Apr. 25, 1922.

2 SHEETS—SHEET 2.

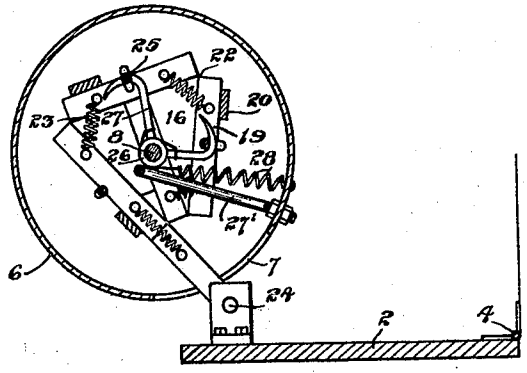


Fig 4

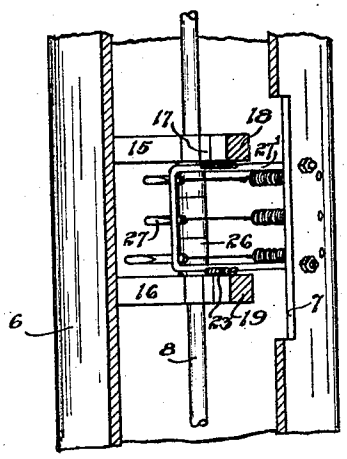


Fig 5

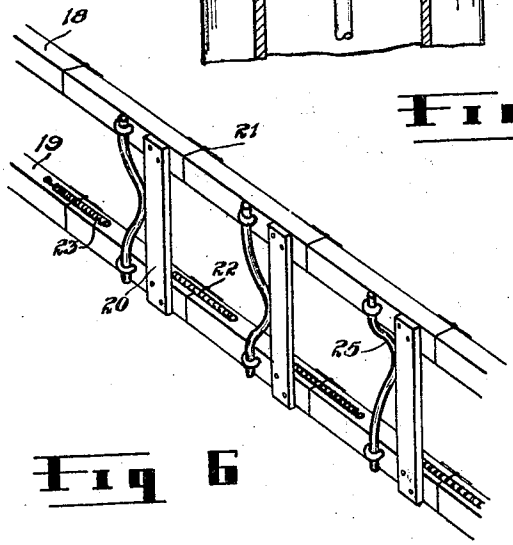


Fig 6

INVENTOR

W. P. White

BY Fishburn, Haughton & Co.

ATTYS

UNITED STATES PATENT OFFICE.

WILLIAM P. WHITE, OF BUFFALO GAP, SASKATCHEWAN, CANADA.

DOOR-OPENING APPLIANCE.

1,413,642. Specification of Letters Patent. Patented Apr. 25, 1922.

Application filed December 9, 1920. Serial No. 429,496.

To all whom it may concern:

Be it known that I, WILLIAM P. WHITE, of the town of Buffalo Gap, in the Province of Saskatchewan, Canada, have invented certain new and useful Improvements in Door-Opening Appliances, of which the following is the specification.

The invention relates to improvements in appliances for opening doors and such like and the general object of the invention is to provide a device by which one can open the door prior to reaching it and close it after he has passed and to arrange the device so that it will hold the door either positively opened or closed or partially open as wished.

A further object is to construct the device in a simple manner so that the working parts when collapsed will be contained within an enclosing casing, thereby rendering the appliance compact for shipping or storage purposes.

A further object is to arrange the appliance so that it can be readily set up and attached to the door.

With the above more important objects in view the invention consists essentially in the arrangement and construction of parts hereinafter more particularly described and later pointed out in the appended claims, reference being had to the accompanying drawings, in which:—

Fig. 1 is a perspective view of the appliance as it appears installed and attached to the door and with the door closed.

Fig. 2 is a side view of the appliance as it appears extended and with part of the casing broken away to expose construction.

Fig. 3 is an enlarged detailed horizontal sectional view at 3—3′ Figure 2.

Fig. 4 is a view similar to Figure 3 with the appliance as it appears when the door is open.

Fig. 5 is a sectional view at 5—5′ Fig. 3.

Fig. 6 is a perspective view of the pairs of winding strips and associated parts.

In the drawings like characters of reference indicate corresponding parts in the several figures.

1 represents a wall or partition containing the door 2 which is hinged in the ordinary way to the door frame as indicated at 4. My appliance is installed at a short distance from the door and in a location more or less directly opposite the hinged side thereof. On the floor 5 I mount a stationary casing 6 which in the present instance is cylindrical in form and is fitted with a side opening 7. 8 is a vertical shaft extending lengthwise through the cylinder and the floor and fitted in a location beneath the floor with a pinion 9 operating on a rack bar 10. 11 and 12 are foot pedals located at some distance from the door and at opposite sides of the partition, the said foot pedals being provided with shanks 13 extending downwardly through the floor and pivotally supported from the floor joists 14. The ends of the rack bar are connected to the lower ends of the pedal shanks, the arrangement being such that when either pedal is pressed by the foot the rack bar will be shifted and the shaft 8 rotated. To the shaft I secure a pair of triangular shaped winding blocks 15 and 16 and each of the blocks is fitted with an extending arm 17 to which I attach pairs of winding strips. In actual practice I employ a number of pairs of winding strips 18 and 19, the said strips being all of equal length and connected by cross strips 20. The pairs of strips are hinged together by hinges 21 and 22 located at the sides of the strips. Pairs of coiled springs 23 are connected to the adjacent ends of butted strips and these springs serve to hold the strips normally in an extended position as best shown in Figure 6 where it will be observed that the springs are to the sides of the hinges. Actually the springs normally tend to prevent the breaking of the joint between the strips at the hinges and the pairs of strips form a flexible winding arm which is utilized to connect the winding blocks to the door. One end of this flexible arm is connected by hinges similar to those 21 to the ends of the arms 17 and the other end of the flexible arm is connected by a pin 24 to the swinging edge of the door.

According to the above arrangement it will be apparent that when the shaft is turned the pairs of strips 18 and 19 will be wound around the three sides of the blocks and at the same time the door will be pulled open.

In order to positively hold the wound pairs of strips to the blocks when the door is being closed I have provided the following parts:—

Each pair of strips 18 and 19 carries a

cross rod 25 forming a catch and on the shaft I mount pivotally a number of sleeves 26, each sleeve being provided with an extending hook 27. The hooks are held normally in a set position against the stop rod 27′ carried by the casing by the action of coiled springs 28 attached to the casing and connected one to each hook by a cord or flexible cable 29.

The action of these latter parts will be best understood by referring to Figures 3 and 4.

In the opening of the door the pairs of strips 18 and 19 wind on the blocks and as they wind the cross rods or catches 25 catch the hooks and carry the hooks with them, the hooks turning on the shaft and moving against the action of the springs 28, it being here understood that the cables turn around the sleeves. In the open position of the door the springs 23 which are comparatively strong ones are tending to hold the pairs of strips tightly wrapped around the blocks and although the springs 28 are extended the door remains open as they cannot turn the hooks back against the locking effect of the springs 23 which are much stronger than they are. The hooks however, act in conjunction with the catches and retain the pairs of sections tightly nested around the blocks as otherwise they might have a tendency to shift.

In the reverse movement of the shaft 8 or that required to open the door the pairs of strips wind off the blocks and stiffen out as they are projected through the opening 7 and under the action of the springs 23. The door is accordingly closed as the pairs of strips are extended.

If the door is a heavy one it will naturally resist closing to a certain extent and this resisting action of the door will have a tendency to force the strips wound on the blocks back or out towards the casing. This movement of the said strips is prevented by the hooks and catches at this time. However, as each pair of strips comes around and is ready to wind off the blocks through the opening 7 and in the extended position, the hooks are stopped by the rod 27′ and the catches or rods 25 pass away from the hooks in the same manner as they passed behind them.

After the appliance has been set up and attached to the door one can press say the pedal 11 and open the door. Then after having gone through the doorway if he presses the pedal 12 and reverses the movement of the rack he will close the door.

If it is desired at any time to leave the door partially open to a greater or less extent this can be done by pressing the foot pedal to wind one or more of the pairs of strips in the cylinder. The door will remain partially open in any selected position for the reason that if only one or two of the pairs of strips are wound off the blocks the other sections are in the extended position, the joints at the hinges being held closed by the springs 23.

What I claim as my invention is:—

1. The combination with a pivoted door, of a winding shaft located opposite the door and opposing the pivoted side, a jointed arm having one end pivotally attached to the free edge of the door and the other end connected to the shaft, means located at some distance from the door and connected to the shaft and adapted when manipulated to turn the shaft in either direction and thereby extend or wind the jointed arm and spring means for releasably locking the joints of the arm closed as the arm is extended.

2. The combination with a pivoted door, of a winding shaft opposing the pivoted side of the door, a jointed arm pivotally connected to the free edge of the door and to the winding shaft, said jointed arm being formed from a number of similar strips hinged together, means located at some distance from the door and attached to the shaft and adapted when manipulated to rotate the shaft in either direction, to extend or wind the strips and spring means associated with the strips adapted to normally maintain a closed joint between the strips as they are extended from the shaft.

3. The combination with a pivoted door, of a winding shaft opposing the pivoted side of the door, an equi-sided winding block secured to the shaft, a jointed arm having one end attached to the winding block and the other end pivotally attached to the free edge of the door, said jointed arm being formed from a number of similar strips hinged together and of a length such that they will wind around the block, means located at some distance from the door for rotating the shaft in either direction and springs associated with the joints of the sections and adapted to maintain the joints closed as the strips are unwound from the block.

4. The combination with a pivoted door, of a winding shaft opposing the pivoted side of the door, an equi-sided winding block secured to the shaft, a jointed arm having one end attached to the winding block and the other end pivotally attached to the free edge of the door, said jointed arm being formed from a number of similar strips hinged together and of a length such that they will wind around the block, means located at some distance from the door for rotating the shaft in either direction, springs associated with the joints of the sections and adapted to maintain the joints closed as the strips are unwound from the shaft and a casing mounted on the floor and enclosing the shaft and provided with an opening through which the sections are projected and withdrawn.

5. The combination with a pivoted door,

of a winding shaft opposing the pivoted side of the door, an equi-sided winding block secured to the shaft, a jointed arm having one end attached to the winding block and the other end pivotally attached to the free edge of the door, said jointed arm being formed from a number of similar strips hinged together and of a length such that they will wind around the block, means located at some distance from the door for rotating the shaft in either direction, springs associated with the joints of the sections and adapted to maintain the joints closed as the strips are unwound from the shaft and engaging means carried by the shaft and strips and adapted to catch the strips and hold them to the shaft as they are wound thereabout.

6. The combination with a pivoted door, of a winding shaft opposing the pivoted side of the door, an equi-sided winding block secured to the shaft, a jointed arm having one end attached to the winding block and the other end pivotally attached to the free edge of the door, said jointed arm being formed from a number of similar strips hinged together and of a length such that they will wind around the block, means located at some distance from the door for rotating the shaft in either direction, springs associated with the joints of the sections and adapted to maintain the joints closed as the strips are unwound from the shaft, catches carried by the strips, spring pressed hooks pivotally mounted on the shaft, a stop normally engaging the hooks and limiting the turning movement in one direction under the action of the attached springs, said hooks being adapted to engage the catches in the winding of the strips and hold the strips to the block.

Signed at Bengough, this 30th day of Oct. 1920.

WILLIAM P. WHITE.

In the presence of—
ELMER J. KELLER,
ARTHUR L. DOVE.