R. F. DAVIS.

SIGNAL FOR DOORS.

APPLICATION FILED MAR. 17, 1910.

984,124.

Patented Feb. 14, 1911.

2 SHEETS—SHEET 1.

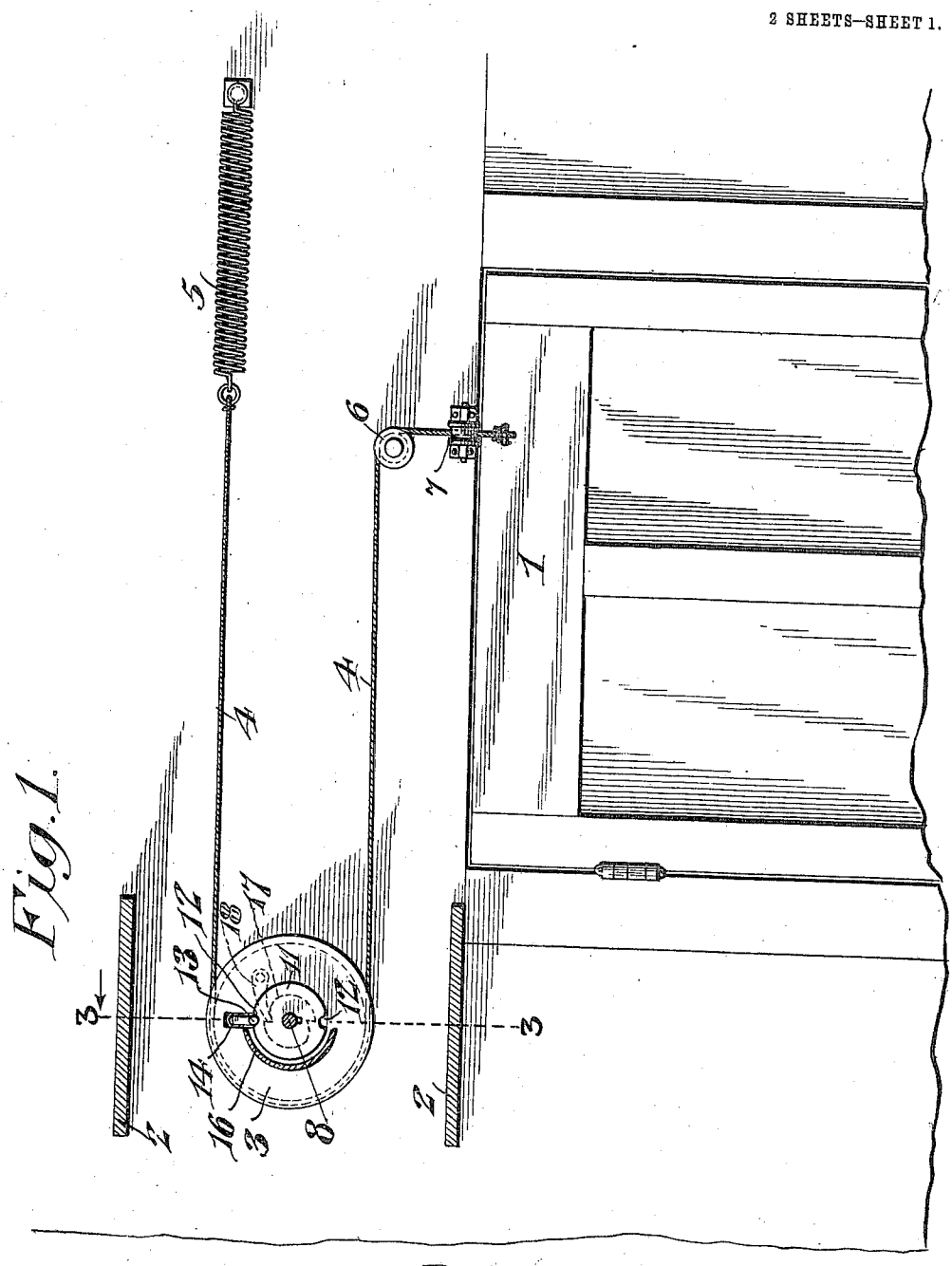

Fig. 1.

Witnesses

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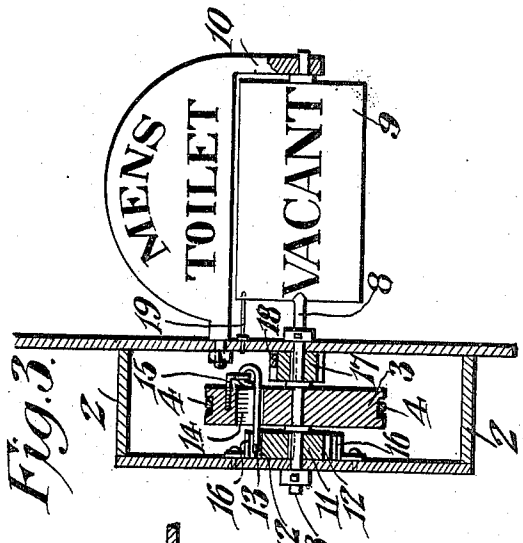

Fig. 3.

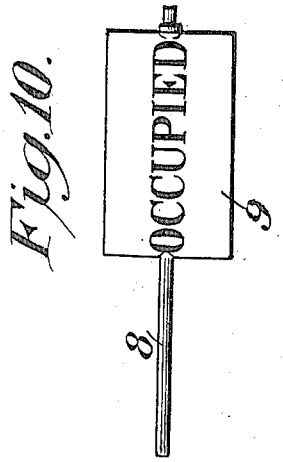

Fig. 10.

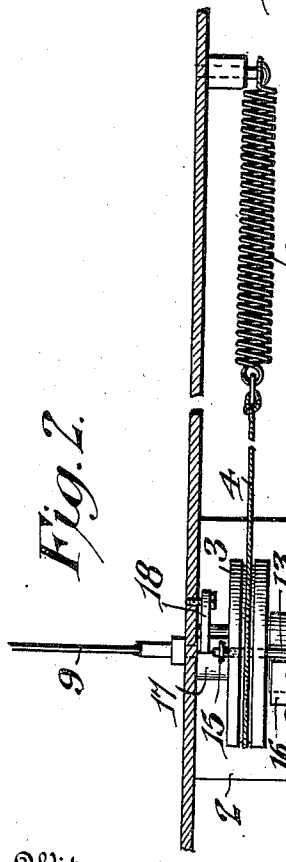

Fig. 2.

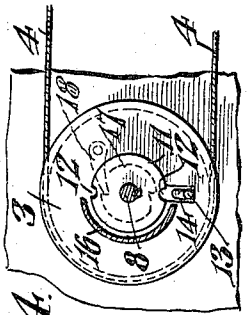

Fig. 4.

Fig. 8.

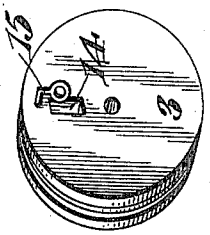

Fig. 7.

Fig. 9.

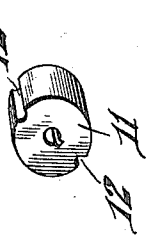

Fig. 6.

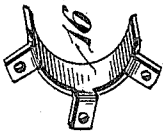

Fig. 5.

Witnesses

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UNITED STATES PATENT OFFICE.

R FRED DAVIS, OF ALBION, MICHIGAN, ASSIGNOR OF ONE-HALF TO ROMONDO DAVIS, OF ALBION, MICHIGAN.

SIGNAL FOR DOORS.

984,124. Specification of Letters Patent. Patented Feb. 14, 1911.

Application filed March 17, 1910. Serial No. 550,078.

To all whom it may concern:

Be it known that I, R FRED DAVIS, a citizen of the United States, residing at Albion, in the county of Calhoun and State of Michigan, have invented a new and useful Signal for Doors, of which the following is a specification.

This invention relates to improvements in signals or indicators for doors, and the object of the invention is the provision of means which shall be entirely automatic in operation, so that the entrance of and the presence of a person in the room or compartment will be indicated clearly and unmistakably.

This object is attained in the use of the mechanism illustrated in the accompanying drawings, in which,

Figure 1 is an elevation of a door equipped with my improvements, showing a part of the inner casing removed and parts in section. Fig. 2 is a plan view with parts shown in horizontal section on a plane just above the spring by which the door is held normally closed. Fig. 3 is a transverse vertical section on the line 3—3 of Fig. 1. Fig. 4 is a detail elevation of the main operating pulley and the parts immediately adjacent thereto. Fig. 5 is a detail perspective view of the guide which coöperates with said main pulley. Fig. 6 is a detail perspective view of a notched disk by which movement of the main pulley is transmitted to the indicator or sign. Fig. 7 is a detail perspective view of the main pulley, looking at the side opposite that shown in Figs. 1 and 4. Fig. 8 is a detail perspective view of a pin carried by the said main pulley. Fig. 9 is a detail perspective view of a disk designed to prevent reverse movement of the shaft carrying the indicator. Fig. 10 is a detail view of the indicator or sign showing that side of the same opposite the side which appears in Fig. 3.

The door 1 may be of any desired form and may open either outward or inward. Upon the door frame above the door opening and on the inner side of the same is arranged a housing or casing 2 within which is arranged a pulley 3, around which passes a cable 4, having one end secured to the door 1 and its opposite end secured to a spring 5 which is shown secured to the door frame above the door opening. This cable 4 and grooved pulley 3 are typical only, and a sprocket wheel and chain may be used in exactly the same relation, and a weight may be substituted for the spring 5, as will be readily understood. It will be also understood that one or more guide rollers or pulleys 6 and 7 may be provided on the door frame so as to hold the cable in its proper position relative to the door and the pulley in all positions of the door. The main operating pulley 3 is loosely mounted on a shaft 8 which extends through the walls of the housing and the door frame and carries a sign or indicator 9 on its outer portion, as clearly shown in Figs. 3 and 10. The outer extremity of the said shaft is journaled in a bracket 10 which extends over the sign and is secured to the door frame and may be used as an advertising sign or as a convenient means of displaying identifying data.

Keyed to the shaft 8, between the pulley 3 and the inner side of the housing 2, is a disk 11 which is provided at diametrically opposite points in its periphery with notches 12 adapted to be engaged by a pin 13 which is loosely mounted within a radial slot 14 of the main pulley 3 and is supported within the said slot by a link or eye 15 secured in the outer side of the pulley and engaging the adjacent end of the pin. The pin projects entirely through the slot 14 and its free end rests normally on the disk 11 so that when either of the notches 12 is at the highest point of the periphery of the pulley, the pin will drop into said notch and thereby lock the pulley and the disk together. If, with the parts in this position, the door be opened, a pull will be exerted on the pulley which will cause the pin to travel toward the left in Fig. 1 and, consequently, rotate the disk 11 and the shaft 8 so as to turn the sign. During this rotation of the disk and the pulley, the pin will be held in engagement with the disk by a guide 16 which may be conveniently in the form of a segmental plate secured to the inner wall of the housing 2 and disposed concentric with and adjacent the periphery of the disk, the said guide terminating at points above and below the disk and describing nearly, but not entirely, a semi-circle. When the pulley and the disk have rotated so far as to bring the pin 13 to the lower end of the guide 16, the pin will drop through gravity away from the guide and will, consequently, be

disengaged from the disk so that further rotation of the shaft and the attached sign will cease. The door may now be opened to any extent desired without having any further effect on the sign, and when the opening movement of the door stops, the spring 5 will act on the cable 4 so as to automatically close the door and, consequently, rotate the main operating pulley 3 in a direction reverse to its former rotation. During this reverse movement of the pulley, the pin will ride upon the outer surface of the guide 16 and will be held out of engagement with the disk 11 so that no reverse movement of the said disk and the main shaft will take place. When the pin has been brought to its highest point, it will clear the guide 16 and will thereupon drop into engagement with the uppermost notch 12 of the disk, as will be readily understood. In order to counteract any possible reverse movement of the shaft 8 and the attached sign or indicator when the door is closing, I secure to the said shaft, between the front wall of the casing 2 and the main pulley, a ratchet disk 17 which is adapted to be engaged by a pawl 18 pivoted within the housing adjacent to the said disk, as will be readily understood. As the momentum acquired by the sign or indicator may sometimes tend to carry it beyond its proper display position, I secure to the outer side of the frame a resilient stop 19 which may be in the form of a leaf spring projecting from the frame into the path of the sign, so that the movement of the sign will be arrested when the operating pulley has been disengaged from the disk 11. When the said pulley and the disk are again engaged, the force exerted thereby will be sufficient to overcome the spring and turn the sign into the position which will be necessary to indicate whether the room is occupied or is vacant.

It will be observed from the foregoing description, taken in connection with the accompanying drawings, that the indicator or signal devised by me is operated upon the opening of the door and its condition is never changed by the closing of the door. The shifting of the sign is accomplished entirely automatically and is therefore certain in its results.

The device is capable of use in a large variety of circumstances and conditions, and will be found beneficial in all places where, for any reason, it is desirable to indicate positively whether the premises are or are not occupied.

Having thus described the invention, what I claim as new, and desire to secure by Letters Patent, is:—

1. An indicator mechanism responsive to movements of a door, comprising an indicator mounted for progressive rotative movement, a reverse-movement impelling device for the indicator having means for connecting it to a door for movement in one direction, actuating means for the impelling device for moving it in the other direction, a coupling means for connecting the impelling device to the indicator, said coupling means being responsive to the action of gravity for movement both into and out of coupling position, and a restraining means for the coupling means for holding it in coupling position for a predetermined movement of the door in one direction and for holding it in the inactive position on the movement of the door in the other direction.

2. The combination of a door frame, a door mounted to swing therein, a shaft arranged at one side of the door, a driving pulley loosely mounted on the shaft, intermediate connections between the pulley and the door whereby the movement of the door will rotate the pulley, a pin carried by the pulley, a disk secured on the said shaft and adapted to be engaged by said pin, and a guide arranged adjacent the pulley and the disk and adapted to hold the said pin in engagement with the disk during the opening movement of the door and to hold it out of engagement with the disk during the closing movement of the door.

3. The combination of a door frame, a door mounted to swing therein, a rotary shaft mounted in the frame and carrying an indicator at one end, a disk secured on the said shaft and provided with diametrically-opposite notches in its periphery, a driving pulley loosely mounted on the shaft, intermediate connections between the pulley and the door whereby the movement of the door will rotate the pulley, a pin loosely mounted on the pulley and adapted to engage a notch in the disk, and a guide arranged adjacent the disk and adapted to hold the said pin in engagement with said notch during the opening movement of the door and to hold the pin away from the disk during the return movement.

4. The combination of a door frame, a door mounted to swing therein, a shaft arranged at one side of the door and carrying an indicator at one end, a disk secured on said shaft and having diametrically-opposite notches in its periphery, a pulley loosely mounted on the said shaft and provided with a radial slot, intermediate connections between said pulley and the door whereby the movement of the door will rotate the pulley, and a pin loosely mounted on the pulley and extending through the slot therein to engage a notch in the disk.

5. The combination of a door frame, a door mounted to swing therein, a shaft journaled in the frame and carrying an indicator at one end, a disk secured to said shaft and provided with diametrically-opposite notches

in its edge, a pulley loosely mounted on the shaft and provided with a radial slot, intermediate connections between the pulley and the door, a pin loosely mounted on the pulley passing through the radial slot therein and adapted to engage the notches in the edge of the disk, and a curved guide arranged adjacent the periphery of the disk to hold the pin in engagement with a notch therein during one movement of the pulley and to hold the pin away from the disk on the reverse movement of the pulley.

In testimony, that I claim the foregoing as my own, I have hereto affixed my signature in the presence of two witnesses.

R FRED DAVIS.

Witnesses:
A. F. Cooper,
Romondo Davis.