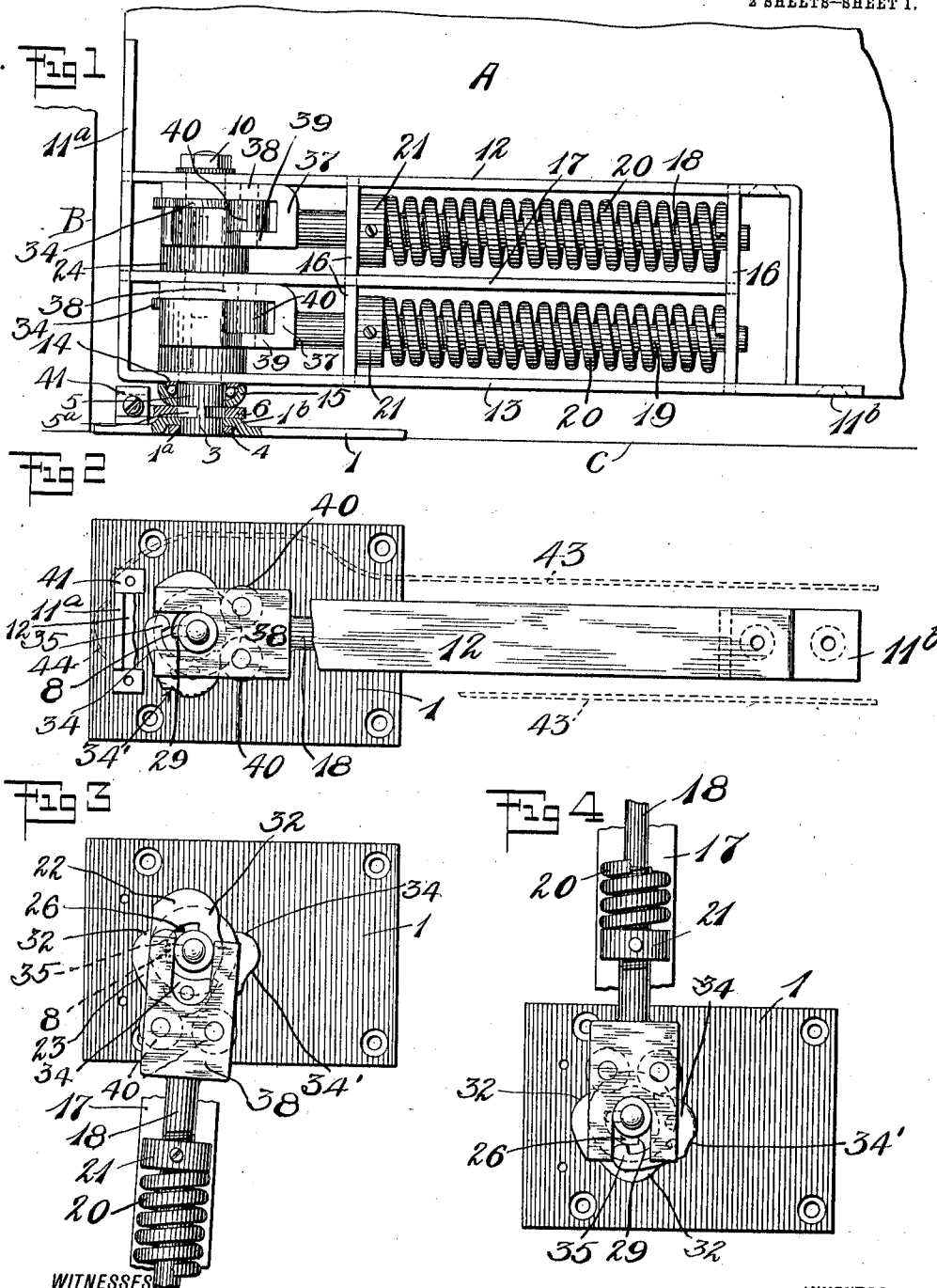
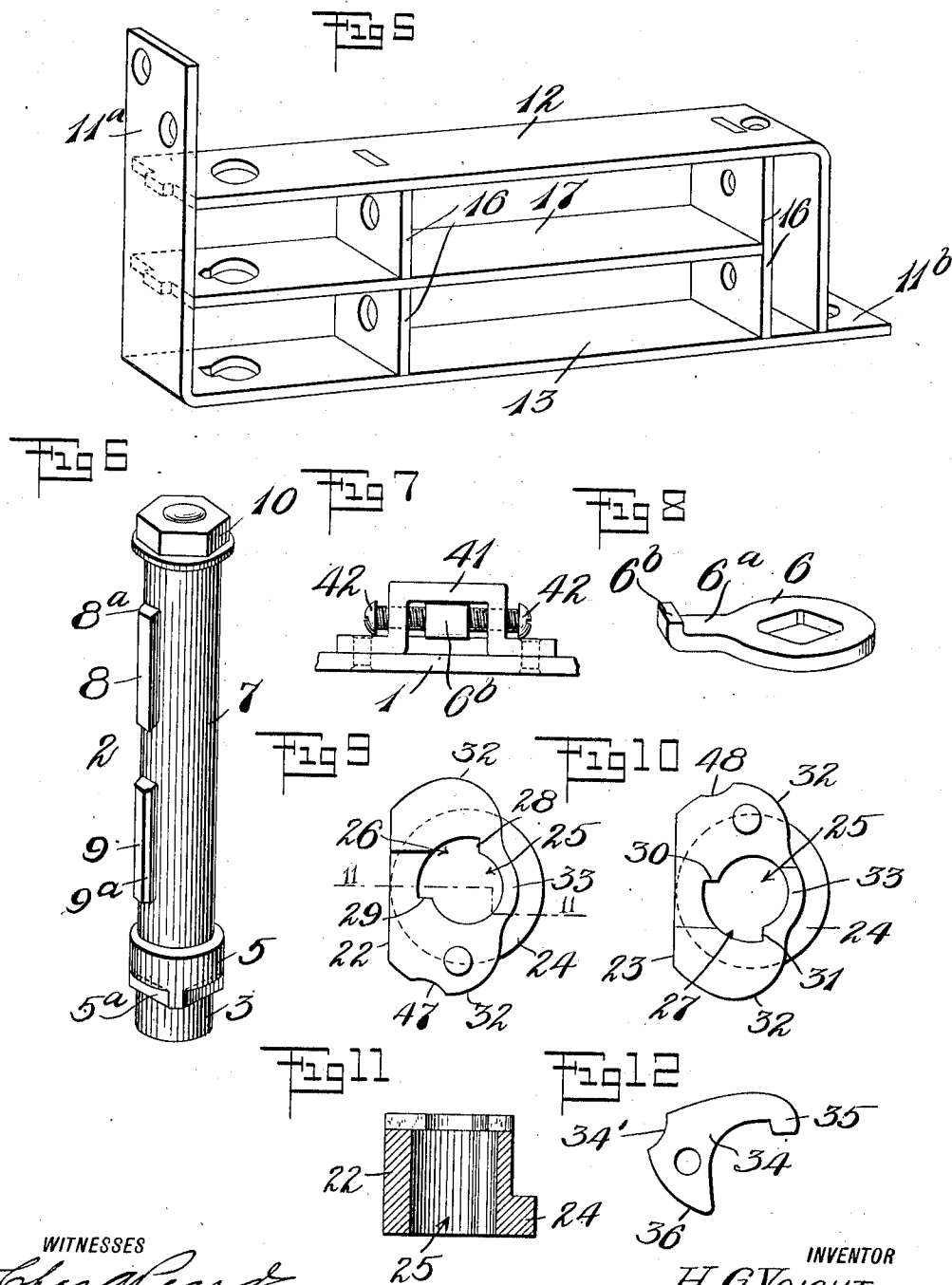




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SPRING FLOOR-HINGE.

1,040,968.

Specification of Letters Patent.

Patented Oct. 8, 1912.

Application filed April 25, 1912. Serial No. 693,045.

To all whom it may concern:

Be it known that I, HENRY G. VOIGHT, a citizen of the United States, residing at New Britain, Hartford county, State of Connecticut, have invented certain new and useful Improvements in Spring Floor-Hinges, of which the following is a full, clear, and exact description.

This invention relates to spring floor hinges and particularly to a hinge of this character for use in connection with swinging doors moving in either direction (such, for instance, as the entrance doors to so-called "butler's pantries").

The hinge of this invention is adapted to releasably lock the door open in either direction of its swing—that is, when extended outwardly at substantially right angles to its central line of closure and on either side thereof; to automatically swing the door closed when released from locked position or when only partially swung open; to check the closing movement of the door beyond central closed position and minimize the to and fro oscillation after first reaching such position. In addition, two other important results are attained. One of these is in the provision of means for accurately centering the door in compensation of inaccurate initial mounting, and a second advantage is in the provision of means for varying the resistance of the door to draft thereagainst from either side. These and other advantages appear from the detailed description following and from the accompanying drawings forming part thereof and illustrating a preferable embodiment of the invention.

In the drawings, Figure 1 is a view in elevation, with parts in section, of a floor hinge embodying my invention, the relative positions of the door, casing and floor being diagrammatically illustrated. Fig. 2 is a top plan view of the assembled parts shown in Fig. 1, the door and casing being omitted and parts of the frame being broken away. Fig. 3 is a top plan view of parts shown in Fig. 2 with the upper frame bar omitted and with the door swung open in one direction and locked. Fig. 4 is a similar view with the door swung open in the opposite direction. Fig. 5 is a detail perspective view of a frame carrying parts of the hinge and adapted to be mounted in the lower inner end of the door. Fig. 6 is a detail perspective view of the floor pivot. Fig. 7 is an end elevation of a door adjustment means. Fig. 8 is

a perspective view of a detail of such adjustment means. Figs. 9 and 10 are top plan views of two cam guides. Fig. 11 is a vertical section on the line 11—11, Fig. 9. Fig. 12 is a plan view of a locking pawl.

In the use of this particular type, the door is pivotally mounted in the door casing and floor or threshold at two points in vertical alinement, one pivot point being usually in the form of a pivot pin at the top and inner end of the door engaging in a suitable socket formed in the top of the door casing, and the other pivot point being at the lower and inner edge of the door, and the hinging means forming the subject-matter of the present invention.

Referring to the drawings by numerals: A designates a door, B a door casing and C the floor or threshold. Secured to the floor at a point adjacent where the inner end of the door is to be located, is a floor plate 1 provided with a socket 1^a and an upset seat 1^b formed about said socket. 2 designates a floor pivot forming the pintle of the hinging means and having its lower end at 3 formed with a bearing spindle inserted in the socket 1^a of the floor plate and engaged at its lower end and centered therein by a bearing washer 4 seated over the end of the spindle portion within the upset bearing seat 1^b and resting on the floor. The floor pivot, adjacent its lower end and above the spindle portion 3 thereof, is provided with an enlargement or hub 5 resting on the bearing seat 1^b of the floor plate and having a squared lower portion 5^a over which is seated a wrench member 6 shaped to engage the squared portion of the hub and provided with an outwardly extending adjusting arm 6^a having its end upturned as at 6^b for adjustment purposes, as will be hereinafter pointed out. From the hub portion 5, the pivot 2 extends upwardly as a main stem 7 of uniform diameter, and is provided with a threaded reduced end engaged by a nut washer 10. In the main stem portion of the pivot 2 and spaced from each other and from the hub portion 5 and washer 10, are keys 8 and 9 which I will term locking keys, the key 8 having an edge 8^a beveled, and the key 9 having its opposite edge 9^a formed with a similar bevel, and the keys themselves being in vertical alinement.

Upon the main stem portion of the floor pivot 2, a rectangular hinge frame is adapted to be mounted, this frame being fitted to the lower inner end of the door, which is cut

away at such points to permit the hinge frame being secured thereto with its outer edges flush with the outer edges of the door. This frame comprises upper and lower bars 12 and 13 respectively having their ends inter-connected and having extensions 11^a and 11^b located at the upper and outer ends of the frame, these extensions being adapted to be secured to the outer edges of the door. The upper bar 12 of the frame may likewise be secured to the cutaway portion of the door in a similar manner, if desired. These bars of this frame at their inner ends are provided with vertically alined apertures so that the frame as a whole may be seated over the stem 7 on the floor pivot, the lower bar 13 resting upon a bearing washer 14, which, in turn, is supported by a ball-race 15. This ball-race itself is seated upon the wrench member 6 so that the weight of the door is practically carried by the floor plate and also all severe strain taken from the floor pivot.

The upper and lower bars 12 and 13 of the frame are preferably inter-connected between their ends by vertical web bars 16. A partition bar 17 also preferably extends longitudinally of the frame and engages these web bars and the inner end of the frame, serving to divide the frame into two compartments. Within the frame and on either side of the partition bar thereof are upper and lower plungers 18 and 19 respectively, suitably guided in the vertical web bars 16 and normally moved inwardly toward the inner and pivoted end of the frame by means of coiled springs 20 encircling the plungers and bearing against the outermost vertical web bar 16 at one end. The other and inner ends of these springs abut against adjusting nuts 21 having a threaded engagement with the inner ends of the plungers. By adjusting one of these nuts relative to the other, more spring pressure can be given one plunger than the other. This adjustment can be utilized to offer more resistance to movement of the door in one direction of swing than in the other in compensation of the force of draft against an adjusted side, as will be more fully hereinafter explained.

The floor pintle is so seated within the hinge frame that its locking keys 8 and 9 are located on either side of the longitudinally extending partition bar 17. On these portions of the pintle stem are mounted pivot guides in the form of upper and lower cam plates 22 and 23 respectively, these cam plates being each provided with base flanges 24 resting respectively upon the partition bar 17 and the lower bar 13 of the hinge frame, and the cam plates being longitudinally and centrally apertured as at 25 to fit over the stem of the floor pivot. The apertured portion of the upper cam plate 22 is

formed with an annular extension 26 to accommodate the locking key 8, the extension forming with the body of the cam plate, shoulders 28 and 29 forming abutments. The lower cam plate 23 is likewise formed with an annular extension 27 likewise forming shoulders or abutments 30 and 31 with the adjacent face of the cam plate. These cam plates, therefore, on account of these annular extensions of their apertures, have a limited rotary movement relative to the floor pivot 2. The cam plates themselves are mounted on the pivot in vertical alinement, but the annular extensions of their recesses are not so arranged, but, in the matter of annular vertical alinement, one forms practically an extension annularly of the other, for their ends overlap vertically to some slight extent. The locking key 8 abuts against the shoulder 29 of the upper cam plate 22, (see Fig. 2) and the vertically alined key 9 abuts against the shoulder 30 of the lower cam plate 23, these alined keys engaging the shoulders at opposite ends of the annular extensions of the cam plates. Movement of these cam plates in the direction of their locking keys is therefore prevented, and these plates are held stationary against movement in opposite directions, in which positions they are operative to lock the door open or to automatically close it, as will appear later. They may be moved about the floor pivot 2, however, in a direction which moves their shoulders 31 and 28 respectively away from the locking keys 8 and 9, such movements of the cam plates being in relatively opposite directions and being permitted by the annular extensions 26 and 27.

The outer edges of the cam plates 22 and 23 are each formed with complemental cam faces 32 located on either side of a central positioning protuberance 33. On top of the cam plates and at opposed ends thereof are pivotally mounted locking pawls 34 having shouldered toes 35 adapted to be positioned to overlies the shoulders 29 and 30 respectively of the cam plates, and adapted to engage over the beveled edges 8^a and 9^a of the locking keys 8 and 9, when these keys are positioned against the shoulders 31 and 28 respectively. These pawls lie flush with the upper surface of the guide plates, which are suitably cut away to receive them and have their heels 36 adjacent their pivotal points, formed to extend slightly out beyond the edge of the adjacent cam faces 32. Each pawl is provided with a locking recess 34'. The upper cam 22 at one end is formed with a locking recess 47 corresponding with the pawl recess and the lower cam plate 23 at its opposite end is formed with a similar locking recess 48.

The inner ends of the spring-pressed plungers 18 and 19 extend inwardly beyond

plate 23 upon the movement of the door in the opposite direction. The upper cam is provided at its end with the locking recess 47 opposite the similar recess 48 formed in the lower cam, and as the door swings to fully open position, an anti-friction roller 40 will snap into this recess and releasably lock the door open as in the case of the lower cam plate 23. I find, however, when the door is locked in its open position in either direction of swing, that as the spring-pressed anti-friction rollers 40 have strong frictional engagement with the cam plates, there is a tendency on the part of the brackets and their anti-friction rollers, upon the return movement of the door to closed position from open locked position, to carry their cooperating cam plates with them, this movement being possible by reason of the fact that it carries the locking shoulders 31 and 28 respectively away from the locking keys 8 and 9 during such movement. To prevent this, I, therefore, employ the locking pawls 34. When a cam plate is held stationary and its cooperating anti-friction rollers and bracket move outwardly with the door to open position, the projecting heel portion of the pawl adjacent its pivotal point is engaged by an anti-friction roller and the locking toe 35 of the pawl moved inwardly over the beveled edge of its cooperating locking key. This occurs as the door reaches fully open position and is releasably locked therein by the snapping of an anti-friction roller into the locking recesses of the cam and pawl. When the door is released from locking engagement and is moved toward central closed position by the cam and spring action hereinbefore referred to, movement on the part of the cam plate is prevented by reason of the fact that the locking toe of the pawl 34 carried thereby engages over the far edge of the locking key of its cam. As the outermost anti-friction roller of the bracket passes beyond the locking end of the cam and reaches a point where its frictional engagement is not sufficiently strong to move its cam plate relative to the floor pivot and locking key, it engages the projecting heel portion of the locking pawl and retracts the shouldered locking toe 35 thereof from engagement with its locking key. The action in the case of each cam is the same, and it is believed that the description of the operation in one case will suffice for both.

It will be obvious from the description of the spring-pressed plungers 18 and 19 that the pressure of the coiled spring 20 of one plunger may be adjusted to impart more pressure to its plunger than does the other spring. This will give the bracket carried by said plunger a stronger frictional engagement with its cooperating cam plate and will thereby require the application of

more force to open the door in the direction in which the cam plate is held stationary. This feature is especially efficacious when it is desired to offset the influence of a strong draft against one side of a door of this character, which ordinarily would force the door beyond central closed position.

It requires some care in mounting a door of this character so that in closed position it will exactly center. A miscalculation of a fraction of an inch at the pivot end will swing the outer end of the door some little distance from the line of central closure.

My invention provides means for centering the outer end of the door in compensation of inaccurate initial mounting. This is accomplished by means of the adjusting screws 42 which engage either side of the adjusting arms 6^a of the wrench member 6, the engagement of these adjusting screws with this arm being normally such that the floor pivot 2 is held stationary with respect to the floor plate, but by withdrawing the end of one screw the required distance, the floor pivot 2 and the door with its anti-friction rollers and brackets, may be moved as a unitary structure to the required distance of adjustment without disturbing the relative positions of the cooperating parts. The opposite adjusting screw can then be tightened up against the adjusting arm and the floor pivot is held stationary with the door properly centered. This unitary movement of the door with its parts and of the floor pivot is permitted by reason of the strong frictional engagement of the brackets with the cams and by reason of the fact that the locking keys 8 and 9 rest between and engage the locking abutment shoulders 29 and 30 of the upper and lower cams, so that these shoulders combine to prevent any relative movement between the cams and their locking keys.

It will be further noted that as the plungers 18—19 are moved longitudinally by the engagement of their rollers 40 with a stationary cam face 32, they are maintained in perfect longitudinal alinement with the door during such movement by the arms 38 of the brackets engaging and guiding upon the stem of the pivot stud. This prevents the plungers being moved transversely by the cams to bind against the sides of the vertical webs 16, within which they are guided.

While I have described and shown a preferable embodiment of my invention, the same is susceptible of modification within the spirit of the invention and of the appended claims.

What I claim is:

1. In a device of the character described, in combination, a floor pivot, two guide members mounted thereon, a door journaled on said pivot and swinging in either direction, two bearing members carried by said

the inner guiding web bar 16 and are bifurcated to form bearing brackets 37 whose upper arms 38 are forked at their inner ends to embrace the stem of the floor pivot, the upper surfaces of these arms resting respectively against the partition bar 17 and the upper bar 12 of the frame. The lower arms 39 of the bifurcated brackets terminate adjacent the cam faces 32 of the cam plate. Between these arms of the brackets adjacent their point of junction are pivotally mounted anti-friction rollers 40 spaced apart to span the central protuberance 33 of the cam plates and pressed against the cam faces 32 thereof by the coiled spring 20. The protuberance 33, formed centrally of the bearing edges of the cam plates, serves to position the rollers on either side thereof and thereby center the door with reference to the cam plates. In addition, these protuberances act as abutments to check, but not prevent, the closing movement of the door. The upper end of the floor pivot 2 extends through the upper bar 12 of the hinge frame and is held therein by means of the nut washer 10 engaging its threaded upper end and bearing against the upper face of bar 12 of the frame.

Upon the inner end of the floor plate 1 is mounted a bracket 41 overstanding the adjusting arms 6^b of the wrench member 6 and having adjusting screws 42 inserted through its opposite sides and bearing against either side of the upturned end of this adjusting arm 6^b. The parts comprising the floor hinge, that are mounted upon the door proper, are preferably concealed from view and the door given an ornamental finish by a casing of sheet metal or other suitable material, such casing being indicated in dotted lines, Fig. 2, and comprising side plates 43 secured to the sides of the door and extending around the inner end thereof, and an end plate 44 overlapping the ends of the side plates, and itself secured to the inner end of the hinge frame. These plates can easily be removed in case it is desired to effect adjustment of the door, and serve to hide the hinge parts from view and give the door a highly ornamental finish.

The operation of the parts forming the hinge is as follows: Primarily the cam plates 22 and 23 are only operative to co-operate with their spring-pressed brackets to lock the door open and to return it to closed position from such open position, when said cams are held stationary with respect to the floor pivot 2 and locking keys 8 and 9. Each cam plate and its coöperating spring-pressed bracket is, therefore, only operative in one direction of swing, one pair being inactive while the other is operating in one direction of swing, and vice versa. This operation is accomplished in the following manner: When the door swings from the

position shown in Fig. 2 of the drawings to that shown in Fig. 4, the upper cam plate 22 with its coöperating anti-friction rollers and spring-pressed bracket move together and relative to the floor pivot, this being permitted by reason of the fact that the cam plate is frictionally engaged by its spring bracket and swings therewith around the floor pivot 2 with the swinging movement of the door, this movement of the cam plate 22 being permitted inasmuch as the locking shoulder 29 moves away from the locking key 8, the annular extension 26 outstanding and riding around this locking key. The lower cam plate 23, however, is held stationary by the engagement of its shoulder 28 with the locking key 29, and its anti-friction rollers and their bracket move around this cam plate with the swinging movement of the door, the rollers being pressed against the cam faces by the coiled spring on the bracket plunger. These complementary cam faces are so figured that the spring-pressed brackets are forced inwardly thereby as the door swings open in the direction indicated, thereby compressing the coiled spring of the bracket plunger. If the door is swung entirely open in the direction indicated, its outermost anti-friction roller 40 will be snapped into engagement with the locking recess 48 to thereby releasably lock the door open upon that side. These cam faces are so figured that when the door is only partially open or is released from open locked position, the pressure of these anti-friction rollers against the cam faces will be unequal, the least resistance being offered by the cam face to the roller nearest the center of the cam. The outermost roller will, therefore, act as a fulcrum and the plunger spring, being compressed, will exert its pressure in the direction of least resistance and will return the door to closed position. The central protuberance 33 intermediate the cam faces 32 will not offer sufficient resistance to prevent the closing movement of the door, but will act as a check to such closing movement and tends to prevent oscillation of the door on its pivot after initially reaching closed position in addition to centrally positioning the anti-friction rollers 40 and the door.

When the door is swung in the opposite direction or from the position shown in Fig. 2 to that shown in Fig. 3, the opposite operation takes place, the lower cam 23 being engaged by the spring-pressed anti-friction rollers and their bracket and moving with them as the door swings, while the upper cam 22 is held stationary by the engagement of its shoulder 29 with the locking key 8, whereupon the cam plate 22 and its coöperating anti-friction rollers and bracket co-operate in the same manner as hereinbefore described with reference to the lower cam

door engaging said guide members, locking means carried by said guide members adapted to engage said bearing members and releasably lock said door open in its opposite directions of swing, means whereby said guide members cooperate with said bearing members to automatically return said door to central closed position when released from open locked position or when partly opened, and means whereby said guide members are each only operative to lock said door open or close said door in opposite directions of swing thereof.

2. In a device of the character described, in combination, a normally stationary floor pivot adapted for rotation, two guide members mounted thereon, a door journaled on said pivot and swinging in either direction, two bearing members carried by said door engaging said guide members, locking means carried by said guide members adapted to engage said bearing members and releasably lock said door open in its opposite directions of swing, means whereby said guide members cooperate with said bearing members to automatically return said door to central closed position when released from open locked position or when partly opened, means whereby said guide members are each only operative to lock said door open or close said door in opposite directions of swing thereof, and means for rotating said floor pivot and door in unison and for retaining said pivot in adjusted position whereby compensating adjustment of the door relative to its line of central closure is effected.

3. In a device of the character described, in combination, a floor pivot, two guide members mounted thereon, a door journaled on said pivot and swinging in either direction, two spring-pressed bearing members carried by said door engaging said guide members, means whereby the spring pressure of one bearing member may be varied relative to the other, locking means carried by said guide members adapted to engage said bearing members and releasably lock said door open in its opposite directions of swing, means whereby said guide members cooperate with said bearing members to automatically return said door to central closed position when released from open locked position or when partly opened, and means whereby said guide members are each only operative to lock said door open or close said door in opposite directions of swing thereof.

4. In a device of the character described, in combination, a floor pivot, two guide members mounted thereon adapted for movement relative thereto and provided with cam surfaces, a door journaled on said pivot and swinging in either direction, two spring-pressed bearing members mounted in said door and frictionally engaging the cam sur-

faces of said pivot guides, means whereby the spring pressure of one bearing member may be varied relative to that of the other, locking means carried by said guide members at opposed ends of their bearing faces and adapted to engage said bearing members when said door is swung relative to said guide members and releasably lock said door open in its opposed directions of swing, means whereby said guide members are alternately held stationary and operate to lock the door open in opposed directions of swing only, and means whereby said cam surfaces cooperate with said bearing members to automatically return said door to central closed position when released from open locked position or when partly opened.

5. In a device of the character described, in combination, a normally stationary floor pivot, two guide members mounted thereon adapted for movement relative thereto and provided with cam surfaces, a door journaled on said pivot and swinging in either direction, two spring-pressed bearing members mounted in said door and frictionally engaging the cam surfaces of said pivot guides, means whereby the spring pressure of one bearing member may be varied relative to that of the other, locking means carried by said guide members at opposed ends of their bearing faces and adapted to engage said bearing members and releasably lock said door open in its opposed directions of swing, means whereby said guide members are alternately held stationary and operate to lock the door open in opposed directions of swing only, means whereby said cam surfaces, when stationary, cooperate with said bearing members to automatically return said door to central closed position when released from open locked position or when partly opened, means for rotating said floor pivot, guides, bearing members and door as a unitary structure without disturbing the relative positions of their cooperating parts, to thereby effect compensating adjustment of the door relative to its central line of closure, and means for retaining said floor pivot in its adjusted position.

6. In a device of the character described, in combination, a floor pivot, two guide members mounted thereon for alternate movement relative thereto in opposite directions and adapted to be held against relative movement in reverse directions, cam surfaces carried by said guide members, a door journaled on said floor pivot and swinging in either direction, two spring-pressed bearing members carried by said door and frictionally engaging the cam surfaces of said guide members, means for varying the relative spring pressures of said bearing members, a locking means carried by each of said guide members at opposed ends thereof, means whereby said guide

members are alternately held stationary and move relative to the floor pivot and with the door in its opposite directions of swing, said guide members being each positioned for similar action only on opposite swinging movements of the door, and means whereby the cam surface and locking means of a stationary guide member coöperates with a spring pressed bearing member during one direction of swing only to releasably lock the door open and automatically return it to central closed position when released from open locked position or when partly opened.

7. In a device of the character described, in combination, a normally stationary floor pivot, two guide members mounted thereon for alternate movement relative thereto in opposite directions and adapted to be held against relative movement in reverse directions, cam surfaces carried by said guide members, a door journaled on said floor pivot and swinging in either direction, two spring-pressed bearing members carried by said door and frictionally engaging the cam surfaces of said guide members, means for varying the relative spring pressures of said bearing members, a locking means carried by each of said guide members at opposed ends thereof, means whereby said guide members are alternately held stationary and move relative to the floor pivot and with the door in its opposite directions of swing, said guide members being each positioned for similar action only on opposite swinging movements of the door, means whereby the cam surfaces and locking means of a stationary guide member coöperate with a spring-pressed bearing member during one direction of swing only to releasably lock the door open and automatically return it to central closed position when released from open locked position or when partly opened, and means for effecting compensating swinging movement of said pivot and door as a unitary structure without disturbing the relative positions of the coöperating parts.

8. In a device of the character described, in combination, a floor pivot, a door journaled thereon and swinging in either direction, two guide members mounted on said pivot for movement thereabout, cam surfaces carried by said guide members, door locking means carried by said members at opposed ends, spring-pressed bearing members carried by the door frictionally engaging the cam surfaces of said guide members and adapted to move alternate guide members about their pivot in opposed directions of swing of the door, means whereby alternate guide members are held stationary with respect to their pivot and bearing members during reverse opposed directions of door swing, and means whereby the stationarily held guide member coöperates with its door

carried bearing member to releasably lock the door open and whereby its cam surface coöperates with said bearing member to automatically return the door to central closed position when released from open locked position or when partly opened.

9. In a device of the character described, in combination, a floor pivot, a door journaled thereon and swinging in either direction, two guide members mounted on said pivot for movement thereabout, cam surfaces carried by said guide members, door locking means carried by said members at opposed ends, spring-pressed bearing members carried by the door frictionally engaging the cam surfaces of said guide members and adapted to move alternate guide members about their pivot in opposed directions of swing of the door, means for varying the relative spring pressures of said bearing members, means whereby alternate guide members are held stationary with respect to their pivot and bearing members during reverse opposed directions of door swing, and means whereby the stationarily held guide member coöperates with its door carried bearing member to releasably lock the door open and whereby its cam surface coöperates with said bearing member to automatically return the door to central closed position when released from open locked position or when partly opened.

10. In a device of the character described, in combination, a normally stationary floor pivot, a door journaled thereon and swinging in either direction, two guide members mounted on said pivot for movement thereabout, cam surfaces carried by said guide members, door locking means carried by said members at opposed ends, longitudinally movable spring-pressed bearing members guided in and carried by the door frictionally engaging the cam surfaces of said guide members and adapted to move alternate guide members about their pivot in opposed directions of swing of the door, means whereby alternate guide members are held stationary with respect to their pivot and bearing members during reverse opposed directions of door swing, means whereby the stationarily held guide member coöperates with its door carried bearing member to releasably lock the door open and whereby its cam surface coöperates with said bearing member to automatically return the door to central closed position when released from open locked position or when partly opened, and means for effecting compensating swinging movement of said pivot and door as a unitary structure without disturbing the relative positions of the coöperating parts.

11. In a device of the character described, in combination, a normally stationary floor pivot, a door journaled thereon and swinging in either direction, two guide members

mounted on said pivot for movement thereabout, cam surfaces carried by said guide members, door locking means carried by said members at opposed ends, longitudinally movable spring pressed plungers carried by and guided in said door and provided with bearing brackets frictionally engaging the cam surfaces of said guide members and adapted to move alternate guide members about their pivot in opposed directions of swing of the door, means whereby alternate guide members are held stationary with respect to their pivot and bearing members during reverse opposed directions of door swing and return to closed position therefrom, means whereby the stationarily held guide member coöperates with its door carried bearing member to releasably lock the door open and whereby its cam surface coöperates with said bearing member to automatically return the door to central closed position when released from open locked position or when partly opened.

12. In a device of the character described, in combination, a normally stationary floor pivot, a door journaled thereon and swinging in either direction, two guide members mounted on said pivot for movement thereabout, cam surfaces carried by said guide members, door locking means carried by said members at opposed ends, longitudinally movable spring pressed plungers provided with bearing brackets frictionally engaging the cam surfaces of said guide members and adapted to move alternate guide members about their pivot in opposed directions of swing of the door, means whereby alternate guide members are held stationary with respect to their pivot and bearing members during reverse opposed directions of door swing and return to closed position therefrom, means whereby the stationarily held guide member coöperates with its door carried bearing member to releasably lock the door open and whereby its cam surface coöperates with said bearing member to automatically return the door to central closed position when released from open locked position or when partly opened, and means for effecting compensating swinging movement of said pivot and door as a unitary structure without disturbing the relative positions of the coöperating parts.

13. In a device of the character described, in combination, a stationary pivot, a door journaled thereon and swinging in opposite directions, two independent parts carried by said pivot, a frame secured to and moving with said door and carrying two independent spring pressed devices engaging said parts, each part coöperating with a spring pressed device in opposed directions of swing only to move said device against the force of its spring and to offer resistance to the movement of the door in such direc-

tion of swing, and means for independently varying the resistance to swing in either direction.

14. In a device of the character described, in combination, a stationary pivot, a door journaled thereon and swinging in opposite directions, two independent cams carried by said pivot, a frame secured to and moving with said door and carrying two independent spring pressed devices movable longitudinally thereof and engaging said cams, each cam coöperating with a spring pressed device in opposed directions of swing only to move said device longitudinally of the door and against the force of its spring to thereby offer resistance to the opening movement of the door in such direction of swing and to automatically return the door to closed position, and means for independently varying the spring pressure of either device to vary the resistance to swing in either direction of opening of the door.

15. In a device of the character described, in combination, a normally stationary floor pivot, a door journaled thereon and swinging in either direction, two independent sets of door closing mechanism carried by said door and floor pivot and operative in opposed directions of door swing only, each set being automatically energized for door closing movement in one direction by the opening movement of the door, means for rotating said floor pivot, closing mechanism and door as a unitary structure without disturbing the relative positions of the coöperating parts to thereby effect compensating adjustment of the door relative to its central line of closure, and for retaining said floor pivot in its adjusted position.

16. In a device of the character described, in combination, a normally stationary floor pivot, a door journaled thereon and swinging in either direction, two independent sets of door closing mechanism carried by said door and floor pivot operative in opposed directions of door swing only to releasably lock said door fully open and to automatically return said door to central closed position when partially open or when released from open locked position, means for rotating said floor pivot, closing mechanism and door as a unitary structure without disturbing the relative positions of the coöperating parts to thereby effect compensating adjustment of the door relative to its central line of closure, and for retaining said floor pivot in its adjusted position.

17. In a device of the character described, in combination, a normally stationary floor pivot, a door journaled thereon and swinging in either direction, two independent sets of door closing mechanism carried by said door and floor pivot and operative in opposed directions of door swing only, each set coöperating to resist the opening of the

door in one direction and to automatically
return said door to central closed position
when so opened, means whereby the resist-
ance to door swing of one set of devices may
5 be varied relative to the other, means for ro-
tating said floor pivot, closing mechanism
and door as a unitary structure without dis-
turbance of the relative positions of the coop-
erating parts to thereby effect compensating
adjustment of the door relative to its central 10
line of closure, and for retaining said floor
pivot in its adjusted position.

HENRY G. VOIGHT.

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