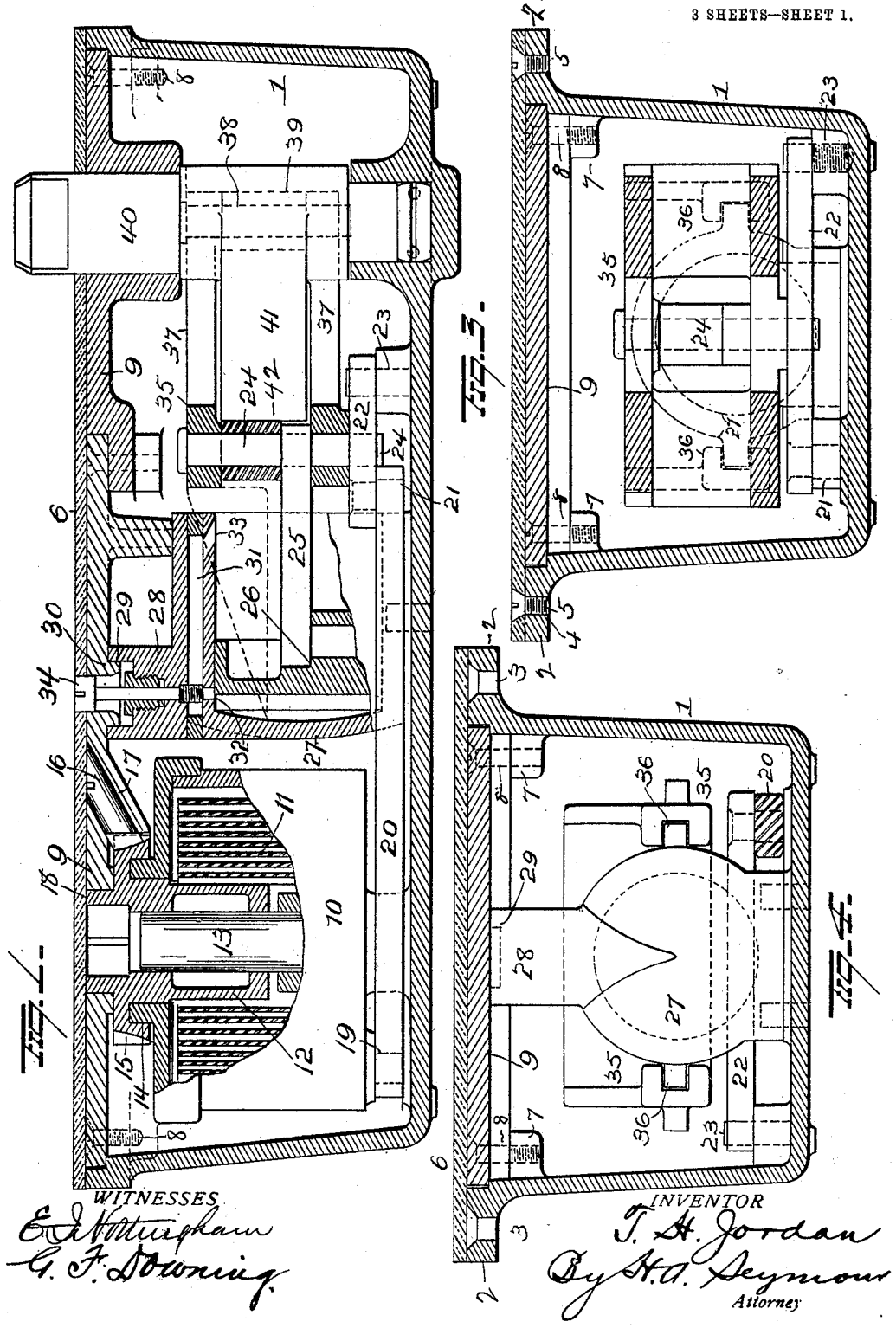
No. 799,342. PATENTED SEPT. 12, 1905.

T. H. JORDAN.

COMBINED FLOOR HINGE, DOOR CHECK, AND CLOSER.

APPLICATION FILED AUG. 6, 1904.

3 SHEETS—SHEET 1.



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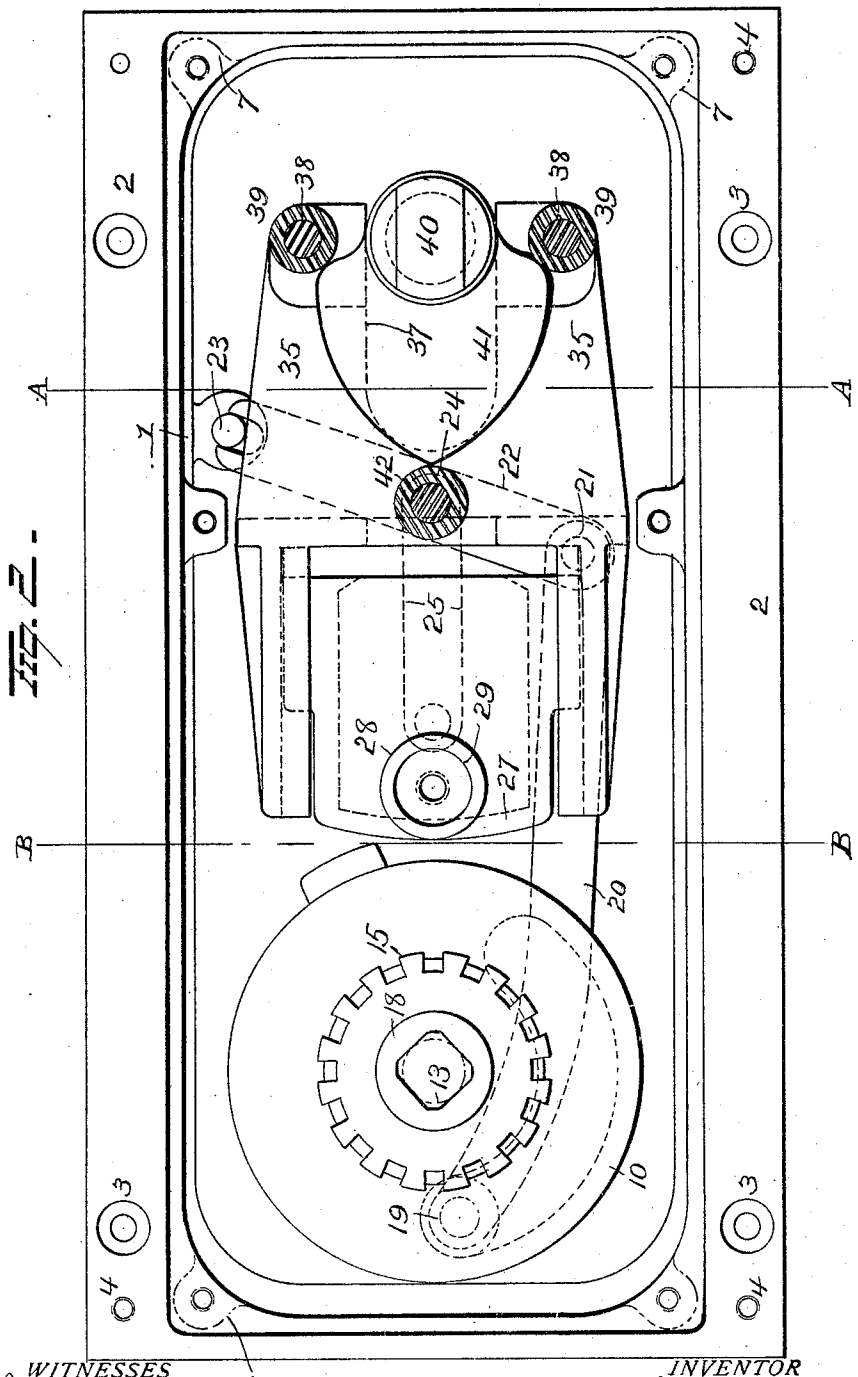


Fig. 2.

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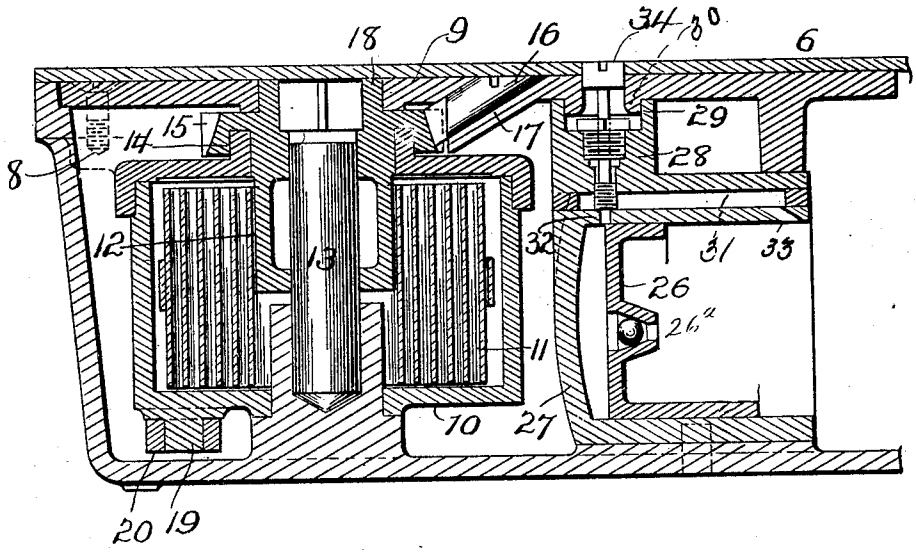
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3 SHEETS—SHEET 3.

FIG. 5.



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UNITED STATES PATENT OFFICE.

THOMAS H. JORDAN, OF STAMFORD, CONNECTICUT, ASSIGNOR TO THE YALE & TOWNE MANUFACTURING COMPANY, OF STAMFORD, CONNECTICUT.

COMBINED FLOOR-HINGE, DOOR CHECK AND CLOSER.

No. 799,342. Specification of Letters Patent. Patented Sept. 12, 1905.

Application filed August 6, 1904. Serial No 219,758.

To all whom it may concern:

Be it known that I, THOMAS H. JORDAN, of Stamford, in the county of Fairfield and State of Connecticut, have invented certain new and useful Improvements in a Combined Floor-Hinge, Door Check and Closer; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to an improvement in a combined floor-hinge, door check and closer, and is especially designed for use in connection with a swinging door which is mounted at its lower end upon an actuating spindle or pivot and held at its upper end by a stud projecting downwardly into a socket carried by the upper edge of the door or by any other approved means.

The object of this invention is to provide a construction whereby greater pressure is required to start the opening movement of the door than is required to continue the movement when once started; and my invention consists in the parts and combinations of parts, as will be more fully explained, and pointed out in the claims.

In the accompanying drawings, Figure 1 is a view in longitudinal vertical section of my improvement. Fig. 2 is a view in plan, partly in section, the top plates of the casing being removed. Fig. 3 is a view in transverse section on the line A A of Fig. 2. Fig. 4 is a similar view on the line B B of Fig. 2; and Fig. 5 is a longitudinal sectional view taken through the casing, spring box or chamber, and end of piston.

1 represents a rectangular inclosing casing designed to be seated in the floor beneath the door with its upper surface flush with the sill. This casing is preferably made of a single integral casting open at its top and provided at its sides with horizontal flanges 2, adapted to rest in recessed seats in the floor or sill. These flanges are provided with countersunk openings 3 for the passage of screws which secure the casing to the floor and also with threaded openings 4 for the engagement of screws 5, which secure the cap or face plate 6 in place. This casing is also provided with a series of internal shoulders 7, having threaded openings therein for the engagement of the screws 8, which secure the inner sectional cover 9 in place.

Located within the casing 1 and near one end of the latter is the circular box 10, forming a spring-chamber carrying the coiled spring 11, the inner coil of which is connected to the sleeve 12, located centrally within the box 10, while the outer end of the spring is connected to the inner face of the box 10. The sleeve 12 is mounted on the stud 13 and also on the annular flange 14, projecting upwardly from the cover of said box, and is provided at its upper end outside of the box 10 with a ratchet-wheel 15, the teeth of which are engaged by the sliding pawl 16, mounted in the inclined seat 17, formed in the sectional cover 9. The sleeve 12 is also provided with an upwardly-projecting annular flange 18, which rests within a seat or opening formed in the sectional cover 9, the recess embraced or formed by this flange being angular, as shown in Fig. 2, to receive a key or other instrument by which when the cap or face plate 6 is removed the ratchet-wheel can be turned or rotated to adjust the tension of the spring. When, however, the cap or face plate is in place, this angular recess and the pawl 16 are covered, thus locking the sleeve 12 against any movement. Stud 13, on which the lower end of spring-chamber 10 is rotatably mounted, is seated in a bearing formed in the floor of the casing. With this construction it will be seen that the box 10, to which one end of the spring is attached, is free to turn on its axis, while the sleeve 12, which is connected to the inner end of the spring, is normally locked against any movement.

Depending from the bottom of the spring box or chamber 10 and eccentric to the axis of said box is a stud 19, to which one end of pitman 20 is connected, the end of the pitman connected to said stud being slightly curved, as shown in Fig. 2, to permit the stud 19 to normally rest nearly on a dead-center or nearly on a line with the center of the combined hinge and check. The opposite end of pitman 20 is pivotally connected to the stud 21 on lever 22. This lever is fulcrumed on the stud 23, carried by the casing 1, and is connected by pin 24 and rod 25 with piston 26. This piston 26 is mounted in the checking-cylinder 27, which is secured in any suit-

able manner within the casing 1, with its closed end adjacent to the box 10. The checking-cylinder is provided with an upward extension 28, having a circular flange 29, embracing a corresponding flange 30, depending from the inner sectional cover 9. The upper wall of the cylinder is bored out, as at 31, to form a by-pass, and two ports 32 and 33 lead from this by-pass into the cylinder on opposite sides of the piston, the port 32 being located near the closed end of the cylinder, while port 33 is near the open end of the latter. 34 is a screw-valve mounted in the extension 28 of the cylinder and projecting up and through the inner sectional cover and cap or face-plate 6, so as to be accessible at all times. This screw-valve is for regulating and controlling the passage of the liquid into and out of the cylinder in front of the piston, the rear end of the cylinder being open.

Connected to the piston 26 and to lever 22 by pin 24 is the sliding frame 35, which latter is mounted at its sides on the flanges or guides 36, formed on opposite sides of the cylinder 27. This frame 35 is provided at its rear end with an open slot 37 and on opposite sides of the slot with the studs 38, carrying antifriction-rollers 39.

Mounted in bearings formed in the floor of the casing and in the inner sectional cover 9 is the spindle 40. This spindle passes through the slot 37 in frame 35 and projects up above the top of the casing. Its upper end is made angular to engage a corresponding socket set into the lower edge of a door, and it is provided at a point in line with the rollers 39 with the heart-shaped cam 41, which latter is rigidly secured to the spindle and engages and is engaged by said antifriction-rollers and also by the antifriction-roller 42 on pin 24.

With the above construction it will be seen that when the door is pushed in a direction to open it the spindle 40 will be turned, thus causing cam 41 to engage one of the antifriction-rollers on sliding frame 35. This engagement of the cam with the roller slides the frame 35 rearwardly, which movement of the frame draws piston 26 toward the open end of its cylinder and, through pitman 20, turns the spring box or chamber 10 on its axis. As the piston is moved rearwardly the liquid contained in the casing passes into the cylinder in front of the piston through the valved port 26^a in the piston-head, as shown in Fig. 5, and the turning movement of the box 10 winds up the spring. Hence when the door is released the spring acting through box 10, pitman 20, lever 22, antifriction-rollers 39, cam 41, and spindle 40 immediately closes the door, the closing movement, however, being checked by the liquid in front of the piston 26 in the usual and well-known manner. When, however, the door is in its closed position, the end of the pitman attached to the box rests nearly on a dead-center or in line with the center of the combined closer hinge and check. Hence the power of the spring is multiplied through the levers and exerts a greater force upon the door when in its closed position than at any other point. After the door has been started in its opening movement the leverage increases, thus requiring less power or pressure to complete the opening movement.

It is evident that many slight changes might be resorted to in the relative arrangement of parts herein shown and described without departing from the spirit and scope of my invention. Hence I would have it understood that I do not wish to confine myself to the exact construction of parts shown and described; but,

Having fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The combination with a casing, and a spindle carried thereby and adapted for connection with a door, of a spring box or chamber located within the casing and mounted to turn, a liquid-check also located within said casing, and means also located within said casing and operatively connecting the spring-chamber liquid-check and spindle.

2. The combination with a casing and a spindle carried thereby, of a spring-chamber mounted to turn, a pitman connected to said chamber, the connection between the pitman and spring-chamber normally resting near a dead-center, whereby greater pressure is required to start the turning movement of the chamber than is required to continue said movement, and means operatively connecting the pitman and spindle.

3. The combination with a casing and a spindle carried thereby, of a spring-chamber mounted to turn, a pitman connected to said chamber, the connection between the pitman and spring-chamber normally resting near its dead-center whereby greater pressure is required to start the turning movement of the chamber than is required to continue said movement, a check and means operatively connecting said pitman, check and spindle.

4. The combination with a casing and spindle, of a spring-chamber mounted to turn, a spring within and connected to said chamber, a pitman connected to said chamber, the end of said pitman connected to the chamber normally resting near the vertical longitudinal center of the combined check and hinge, and means connecting the opposite end of said pitman with the spindle.

5. The combination with a casing and spindle, of a spring-actuated chamber mounted to turn, a pitman connected to said chamber near the dead-center of the spring-chamber or near the line passing longitudinally through the center of the device, a check and means oper-

atively connecting said pitman and check with the spindle.

6. The combination with a casing and spindle, of a spring-actuated chamber rotatively mounted on a stud or spindle, a pivoted lever, a liquid-check, the piston of which is connected to said lever, a pitman connected to the spring-chamber and also to said lever and means operatively connecting the lever and spindle.

7. The combination with a casing and a spindle mounted therein, of a lever pivoted within the casing, a liquid-check comprising a cylinder and piston the latter being connected to said lever, a spring-chamber mounted to turn, a pitman connecting the said spring-chamber and lever, and means operatively connecting the lever and spindle.

8. The combination with a casing a spindle, a liquid-check and a spring-chamber in said casing, of a lever fulcrumed at one end and connected intermediate its ends to the check, a pitman operatively connecting the spring-chamber and free end of the lever, and means connecting the lever and spindle.

In testimony whereof I have signed this specification in the presence of two subscribing witnesses.

THOS. H. JORDAN.

Witnesses:
CHAS. E. VAIL,
W. H. TAYLOR.