

E. BOMMER.
SPRING HINGE.

APPLICATION FILED MAY 20, 1911.

1,062,217.

Patented May 20, 1913.

2 SHEETS—SHEET 1.

Fig. 1.

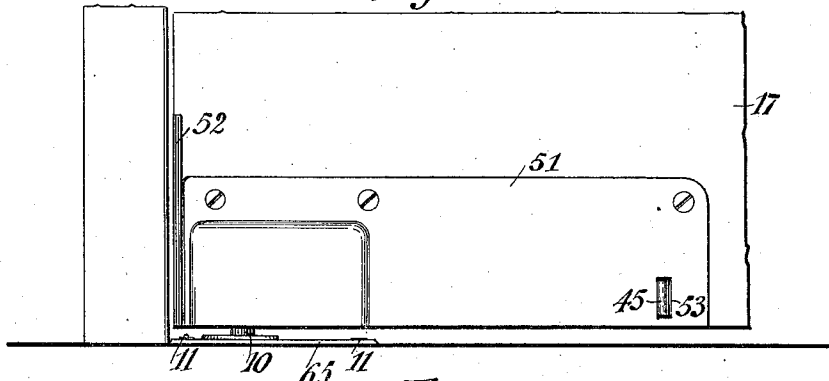


Fig. 2.

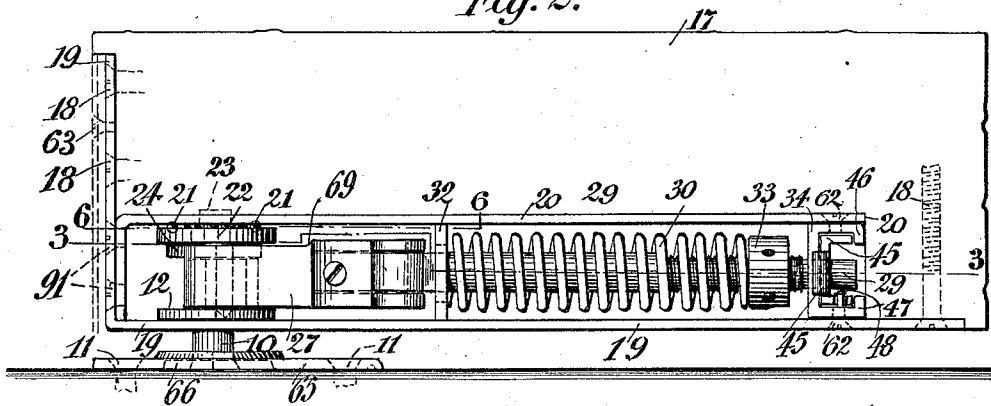


Fig. 3.

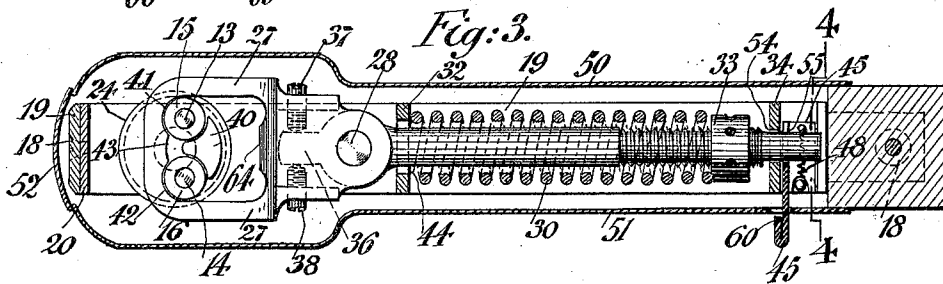
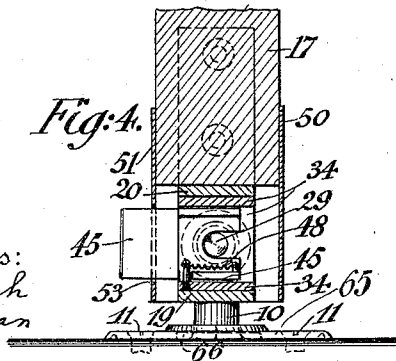


Fig. 4.



Witnesses:
John Murtagh
L. M. Dorman

Inventor
Emil Bommer
By his Attorneys
Heller & Heller

E. BOMMER.
SPRING HINGE.

APPLICATION FILED MAY 20, 1911.

1,062,217.

Patented May 20, 1913.

2 SHEETS-SHEET 2.

Fig: 5.

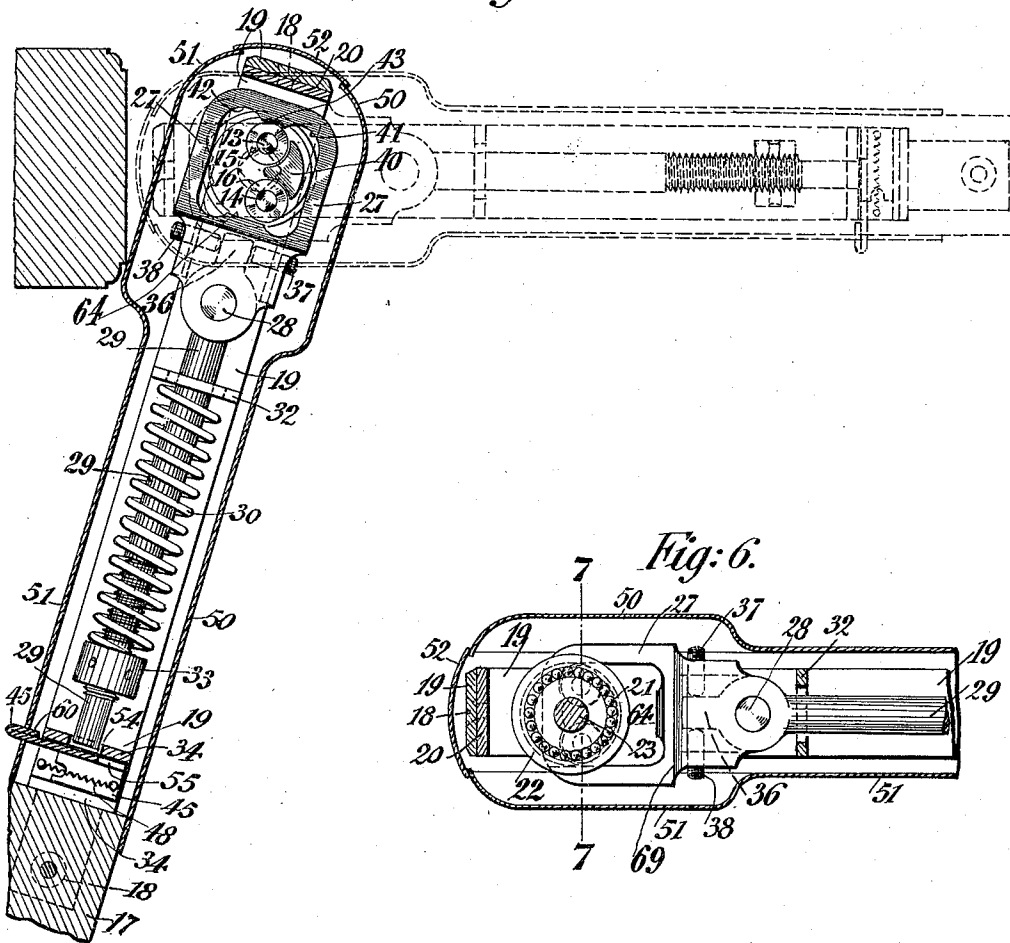


Fig: 6.

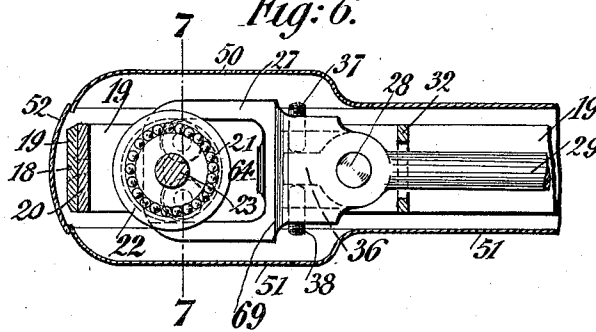
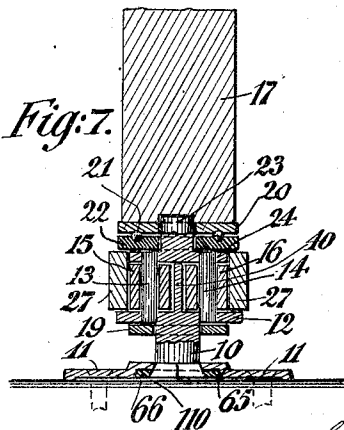


Fig: 7.



Witnesses:
John Murtagh
L. M. Dorman

Inventor
Emil Bommer
By his Attorneys
Hepner, Cooper & Co.

UNITED STATES PATENT OFFICE.

EMIL BOMMER, OF NEW YORK, N. Y.

SPRING-HINGE.

1,062,217.

Specification of Letters Patent.

Patented May 20, 1913.

Application filed May 20, 1911. Serial No. 628,384.

To all whom it may concern:

Be it known that I, EMIL BOMMER, a citizen of the United States of America, residing in New York, in the borough of Brooklyn, county of Kings, and State of New York, have invented certain new and useful Improvements in Spring-Hinges, of which the following is a specification.

This invention relates to spring-hinges.

The object of my invention is to provide improvements therein, and more particularly, the object of the invention is to provide a spring-hinge which will hold the door in fixed open position.

A further object of the invention is to enable the door to be properly adjusted after it is hung for the purpose of taking up any irregularity in the hanging.

A further object of the invention is to provide a simple means of throwing the spring out of operation, which means require positive movement of a part obstructing the movement of the spring carrying member, but which member automatically assumes its normal position and thereby permits the restoration of the spring and its normal operation.

In the accompanying drawings, Figure 1 is a side-elevation of my improved spring-hinge applied to a door, Fig. 2 is a side-elevation on a larger scale with the exterior plate removed to disclose the mechanism, Fig. 3 is a horizontal section on line 3, 3, Fig. 2, Fig. 4 is a vertical section on line 4, 4, Fig. 3, Fig. 5 is a horizontal section showing the parts in two positions, Fig. 6 is a horizontal section on line 6, 6, Fig. 2, and Fig. 7 is a horizontal section on line 7, 7, Fig. 6.

Similar letters of reference indicate corresponding parts.

The hinge is composed of two parts, a spring-carrying portion adapted to be affixed to the door, and a floor-plate carrying a fixed post serving as the pivot of the door. After assembling the hinge, the floor plate 65 is secured to the floor by screws 11 or other suitable means. To the door 17 is attached by screws 18 or other suitable means a lower hinge-frame member 19 having an opening by which it is pivoted to the lower end 10 of a crank-shaped pivot-post. An upper hinge-frame member 20 is provided, having an opening by which it is pivoted to the upper end 23 of the crank-shaped pivot-post, which member 20 is attached by any

suitable means as screws 91 to the lower hinge-frame member 19. The lower end 10 of the crank-shaped pivot-post is squared. The floor-plate 65 is provided at its under side with an auxiliary plate or head 66 preferably of square or oblong shape inserted in a corresponding recess of the floor plate 65, said parts 65 and 66 being firmly held together by the upsetting at 110 of the lower square or oblong shaped end 10 of the crank-shaped pivot post. By this arrangement, the resistance of the floor plate against the turning strain of the lower end of the crank-shaped pivot post is greatly increased. The crank-shaped pivot-post is provided with a circumferential lower flange 12 and a circumferential upper flange 24, which flanges are connected by an intermediate connecting-block or cam-member 40. The pin heads 10 and 23 flanges 12 and 24 and connecting block 40 are preferably made integral and from one piece of metal. This is however not essential, and the pin is not so shown in the drawings. The block 40 is offset from the axis of the heads 10, 23, thus giving the pin its crank shape.

Between the flanges 12 and 24 and adjacent to the connecting block 40 two vertical pins or studs 13, 14 provided with anti-friction rollers 15, 16, are arranged, which form complementary cam-members that are separated from each other and located forward of a plane passing transversely of the hinge through the axis of the post. Anti-friction balls 21 may be located between said upper frame-member 20 and the washer 22, a suitable raceway for said balls being provided. Between the flanges 12 and 24 of the post are slidably held the side members of a yoke 27. Said yoke is pivoted at its forward end by a vertical pin 28 to a rod 29 carrying a helical closer-spring 30 which is compressed between a transverse stop 32 secured between the frame members, and a nut 33 screw-threaded on the outer portion of the rod. At its outer portion beyond the nut said rod 29 passes through an opening 54 in an end-brace or stop 34 secured between said frame-members. Said rod is provided rearwardly of its pivot 28 with a projecting finger or lug 36 in a recess of the yoke. Adjusting screws 37, 38 seated in the yoke bear at their inner ends against said finger whereby the position of the yoke either in alignment with or at any desired angle to the said rod 29 may be obtained. At its rear portion the

said yoke is provided with interior centering recesses 41 and 42 for receiving the anti-friction rollers 15 and 16 which are normally seated in the same as indicated in Fig. 3.

5 The connecting block or cam-member 40 is located between the anti-friction rollers or complementary cam-members 15, 16 at the side of the same opposite the said recesses of the yoke, the object of said connecting

10 block 40 being to make a strong integral connection between the flanges 12 and 24 of the pin. Between the said recesses 41, 42 of the yoke is an intermediate recess 43 adapted to receive one of said rollers 15, 16. Opposite the recess 43 of the yoke is another recess 64 to limit the movement of the yoke

15 when the door is in open position. The pins 13, 14, and their rollers 15, 16, constitute bearing-members on the post, past which the face, that is to say, the recesses, of the yoke

20 27 of the reciprocating-member 27, 29, are movable to determine the position of the door by engagement of said recesses with said rollers.

25 It will be noticed that the spring-rod 29 and the yoke 27 are together longitudinally movable, the said rod sliding in the bearings afforded by the stops 32 and 34 and the yoke at 43 sliding between the flanges 12 and 24

30 of the crank-shaped post as shown in Fig. 6, while the sides of the yoke slide upon the edge of the flange 24. The washer 22 slides on the flange 24 and yoke; the yoke being depressed at 69 for this purpose. The opening

35 44 in the stop block 32 is horizontally elongated whereby to provide for the lateral movement of said rod by the set screws 37 and 38. At the outer end of the rod 29 is provided a slide or bolt catch 45 slidably

40 movable horizontally between the body of the stop 34 and guide flanges 46, 47 turned up from said stop. Said slide or bolt catch is provided with an opening 55 in such position as to register with the opening 54 of

45 said stop 34 when said catch is in outward normal inoperative position in which position it is held by a suitable tension spring 48. When pushed into inner position the said

50 opening 55 of the catch passes out of alignment with the stop opening 54 and thereby the catch closes the opening 54 in said stop. This movement of the catch can of course

only be made when the outer portion of the rod 29 which normally projects beyond the

55 said stop 34 is withdrawn. A casing composed of side plates 50 and 51 secured by screws or any other suitable means to the door 17 and an end-plate 52 secured by a screw 63 or in any other suitable manner to

60 the lower hinge-frame-member 19, serve to inclose the parts of the spring-hinge and protect the same. An opening 53 in the plate 51 is provided for the catch 45 so that the same may be operated from the outside of

65 the door.

The operation of the spring-hinge is as follows: When in normal position the yoke 27 is seated at its rear portion at the centering recesses 41 and 42 against the two anti-friction rollers 15, 16, as indicated in Fig. 3, in which position it is held by the compression of the closer-spring 30 which constantly tends to draw said yoke forward

70 against the said rollers whereby the door is held in closed position. When the door is swung into open position in one direction as indicated in full lines in Fig. 5, the yoke

75 is caused to move with the other parts of the hinge about the axis of the crank-shaped pivot-post 10, 40, 23, and thereby the intermediate recess 43 of the rear portion of said yoke is brought into contact with one

80 of the anti-friction rollers, the recess 41 of said yoke passing out of contact with the anti-friction roller 15 and the anti-friction roller entering the intermediate recess 43 of

85 said yoke. When the door is swung to open position in the other direction, the anti-friction roller 16 similarly enters the intermediate recess 43. When the said recess 43

90 arrives at either of the anti-friction rollers 15 or 16 the engagement of either roller in the recess 43 under the compression action of the spring 30 retains the parts in such

95 position, the door then being held open. By the operation described the outer end of the rod 29 has been withdrawn sufficiently to permit the catch 45 to be operated. If

the catch now be pressed inwardly by the foot or any convenient means and retained

100 in inward position until the door is started on its return movement and the rod 29 has under the action of the spring been again returned outwardly until its end is in contact with the said catch 45, the catch will

105 be held frictionally by the action of the spring 30 upon said rod, and movement of the yoke will be prevented, the parts being held in the position indicated in dotted lines

110 in Fig. 5. A lug 60 on the catch abuts with the stop 34 and limits its inward movement. The yoke being by the rod 29 retained in rearward inoperative position

115 with its recesses 41, 42 out of engagement with the rollers 15, 16, the door is free to swing without any spring action. For withdrawing the catch 45 the door is again widely opened until the rod 29 is withdrawn out of contact with the catch. The

120 latter is operated by its spring 48 so that its opening 55 is again placed in register with the opening 54 of the stop 34. The door swings from open to closed position by the action of the closer-spring 30 and the

125 yoke 27 is realigned so that its recesses 41, 42 are engaged by the anti-friction rollers 15, 16 respectively in the position shown in Fig. 3. The set-screws 37 and 38 provide

means for adjusting the hinge relatively to the door so as to cause the door to stand at 130

any desired position within the range of said screws, this being effected by varying the angle of the yoke to the rod 29 and to the pins 13, 14. As the pins 13, 14 are fixed in position to the floor and the yoke 27 is secured to the door and bears normally against the anti-friction rollers of said pins, a change in the angle of the yoke produces a corresponding change in the normal position of rest of the door. This change is brought about by moving one of the pins 37 or 38 outwardly away from the projecting finger 36 of the rod 29 and moving the other pin correspondingly inwardly so as to move the lug 36 in one or the other direction relatively to the yoke. The direction of strain of the hinge is thereby changed.

By my improved spring-hinge the door may be set in any desired normal position of rest and having been so set may be swung in either direction against the spring tension in the hinge and is returned by said spring tension to said normal position, or the door may be swung beyond normal open position into locking position, that is to say, in the position in which the recess 43 of the yoke is engaged by the anti-friction roller 15 or 16, and the door is there automatically held in open position, but capable of being released by a slight effort, whereupon it automatically resumes normal position; or, having been opened in either direction, by operation of the catch, the spring of the hinge may be entirely thrown out of operation so that the door is rendered free to swing without spring action in either direction from its normal position. It is obvious that for the purpose of operating the catch it is not necessary that the door be swung into locking position as the opening of the same widely but not into locking position will withdraw the rod 29 sufficiently so that the catch 45 may be returned to normal position by its spring 48.

The stop or end-bracket 34 is secured in place between the upper and lower hinge-members by screws 62 passing through said members, or by any other suitable means, whereby the same may be readily detached and removed to permit inserting a new spring on the rod 29.

The washer 22 keeps the yoke from wobbling over the pins 13, 14. This washer may be made plain, the balls 21 being dispensed with, if desired.

My invention consists therefore of the novel parts hereinabove set forth, as also the combination of these parts with each other and with the members with which they cooperate.

I have shown and described one embodiment of my invention, but it is obvious that changes may be made without departing from the spirit of the same.

Having thus described my invention, I

claim as new and desire to secure by Letters Patent:

1. In a spring-hinge, a post, a frame pivoted thereto, two bearing-members spaced apart on the post, and a jointed reciprocating member carried by the frame and spring-actuated against the bearing-members and having two recesses spaced apart, and a third recess between said two recesses, said third recess being adapted to hold the door in open position.

2. In a spring-hinge, a reciprocating-member comprising a yoke, a spring-actuated rod pivoted thereto, said rod having an end extended beyond the point of pivoting, and located opposite the reciprocating member, and set-screws passing through the side-walls of the yoke and abutting against the extended end of the rod for adjusting the angle of the rod to said yoke.

3. In a spring-hinge, a floor-post having a circular flange, bearing-members on said post above and within the periphery of said flange, and a reciprocating member having recesses engaging said bearing-members and straight sides tangential to said bearing-members.

4. In a spring-hinge, the combination, with the frame of the hinge, of cooperating frame-actuating members, a spring-actuated catch movable in and out of the path of one of said members, and means limiting the movement of said catch.

5. In a spring-hinge, the combination, with the frame of the hinge, of cooperating frame-actuating members, means for retaining said members out of cooperation, and a spring normally actuating said retaining means from retaining to non-retaining position.

6. In a spring-hinge, the combination, with the frame of the hinge, of cooperating frame-actuating members, including a spring-carrying rod, a stop-bracket connected with the frame and having an opening in the path of said rod, and a spring-actuated catch having an opening normally in register with the opening in the stop-bracket and movable into and out of the path of said rod.

7. In a spring-hinge, the combination, with upper and lower members of the frame of the hinge, of a floor-post, cooperating frame-actuating members mounted on said post and frame, a spring-carrying rod in said frame for actuating the cooperating frame-members, a bracket between the upper and lower members of the frame, said bracket engaging said rod, and a spring-actuated catch adapted to hold said rod out of engagement with said bracket.

8. In a device of the character described, a pivot-post, a door cooperating therewith and adapted to swing in opposite directions from closed position, complementary cam-

members rigidly connected with said pivot-
post, a movable yoke inclosing said cam-
members, a closer-spring holding said yoke
in contact with said cam-members, said
5 members and said yoke moving relatively
upon the opening of the door in either direc-
tion, and a cam-member operating to move
said yoke against the force of said closer-
spring upon the opening of the door in
10 either direction, a locking recess formed in
said yoke coöperating with a cam-member
when the door is fully opened in either

direction, to lock said door when opened,
and complemental centering recesses in said
yoke adapted to receive said cam-members 15
to centrally position said door when closed.

In testimony, that I claim the foregoing
as my invention, I have signed my name in
presence of two subscribing witnesses.

EMIL BOMMER.

Witnesses:

L. J. MURPHY,
JOHN MURTAGH.

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