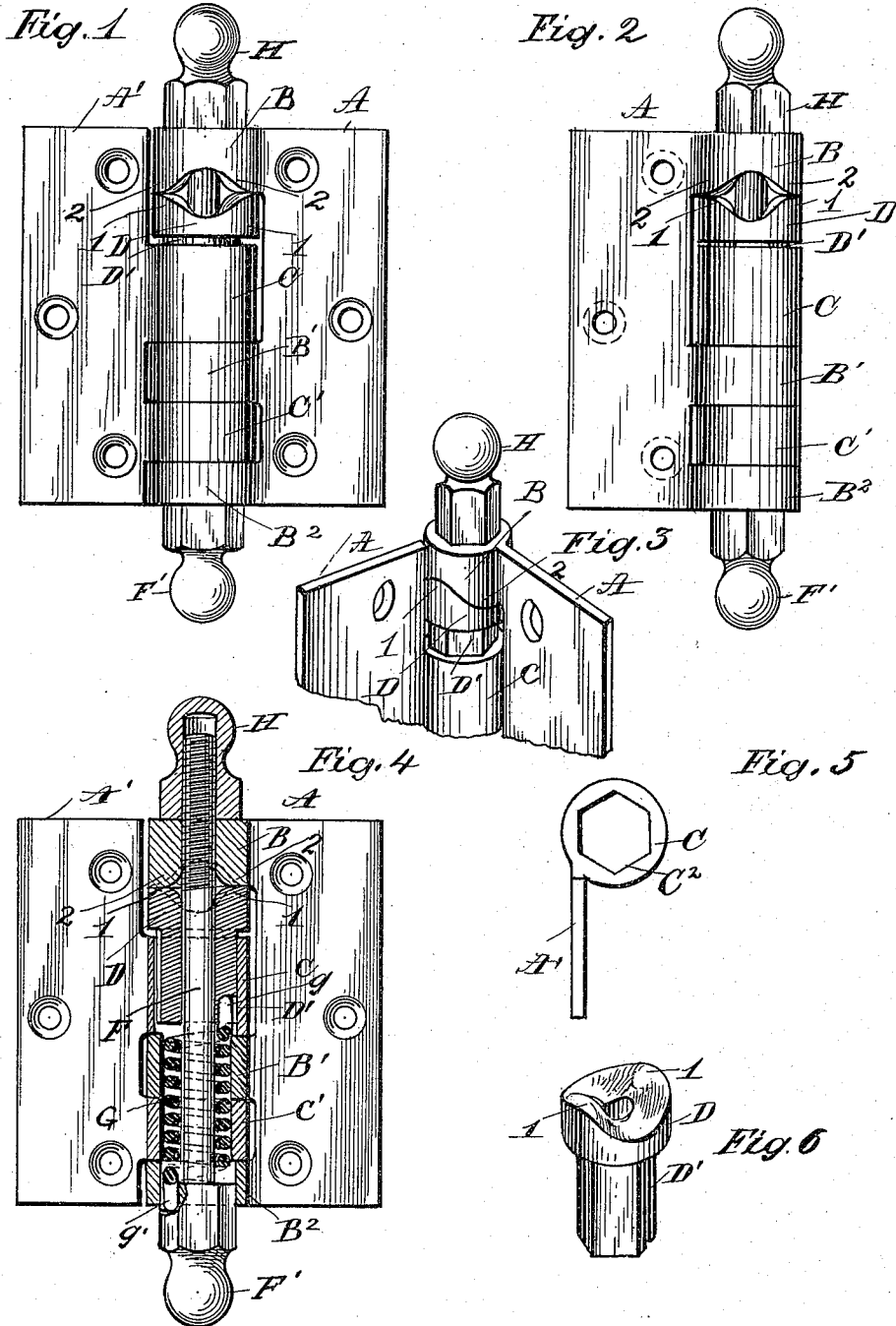


A. ALLGIER.
 COMBINED SPRING HINGE AND CHECK.
 APPLICATION FILED MAY 24, 1913.

1,155,867.

Patented Oct. 5, 1915.



Witnesses
 P. Bredel
 E. M. Luter

Inventor
 Andreu Allgier
 by Wm. W. Monroe Attorney

UNITED STATES PATENT OFFICE.

ANDREW ALLGIER, OF GRAND RAPIDS, MICHIGAN, ASSIGNOR TO RALPH O. RUDOLPH,
OF BELLEVUE, OHIO.

COMBINED SPRING HINGE AND CHECK.

1,155,867.

Specification of Letters Patent.

Patented Oct. 5, 1915.

Application filed May 24, 1913. Serial No. 769,644.

To all whom it may concern:

Be it known that I, ANDREW ALLGIER, a citizen of the United States, and resident of Grand Rapids, in the county of Kent and State of Michigan, have invented certain new and useful Improvements in Combined Spring Hinges and Checks, of which I hereby declare the following to be a full, clear, and exact description, such as will enable others skilled in the art to which it appertains to make and use the same.

The objects of the invention are to provide a combined spring hinge and check, the checking device serving also to permit the closing of the door but arranged to apply gradually increasing resistance to the movement of the door, which prevents slamming, followed by a gradual diminishing of the resistance which permits shutting the door gently, so that the door cannot be slammed violently. This provision also includes means for adjusting the pressure applying device so as to act upon the door at any predetermined point, as when half open or it may open at any angle at which it may be desired to leave the door, and which will retain the door in this position against the action of a gust of wind, but will yield to the pressure of the person operating the same.

The invention also includes a combined closing spring and steadying device for the hinge joints.

The invention further comprises the combination and arrangement of parts hereinafter described, shown in the accompanying drawings and specifically pointed out in the claims.

In the accompanying drawings Figure 1 is a face view of the hinge supplied with my improved checking device; Fig. 2 is a view of the same in the closed position; Fig. 3 is a perspective view of a portion of the hinge showing the leaves in a half open position; Fig. 4 is a longitudinal central section of the device; Fig. 5 is a plan view of the socket in which the checking member is adjustably mounted; Fig. 6 is a perspective view of the checking member.

In these views A, A', are the leaves of the hinge.

B, B' and B² are the eye sockets of one wing A which intermesh with the eye sockets C and C' of the opposite wing A'.

The upper eye socket B is spaced above

the socket C of the other wing and intermediate between these sockets is inserted the cam sleeve D upon the upper surface of which are formed the duplicate cams 1, 1, which engage and intermesh with corresponding cams 2, 2, upon the lower surface of the eye socket B above. The cam sleeve D is provided with a hexagonal extension D' which enters the hexagonal opening C² in the eye C below.

The eyes B' and C' and B² are provided with central openings and axially through the eyes and cam sleeve passes a pintle pin F on which the leaves swing. The openings in the eyes B', C', and B² are of larger diameter than the pintle pin and receive a coiled spring G which encircles the pintle pin and fills the annular space between the pin and eyes. The ends g and g' of this spring are inserted in the extremity of the cam sleeve D' and the head F' of the pin F, which engage eye sockets in the opposite leaves. The pin is provided with a head F' which is preferably hexagonal and the opening in the lower eye B² is correspondingly formed to receive this head and prevent it from turning around. This head presses against the spring which in turn provides pressure against the cam sleeve D and forces the cam members 1 into close engagement with the cam members 2, 2 on the eye B above. The pin F is secured in place by means of a detachable screw threaded head H which engages the screw threaded extremity of the pintle pin F, and hence by turning this head the pressure upon the spring and cam members can be adjusted at will. Since the head F' and the cam D are located in the eyes of opposite leaves, the spring exerts a constant torsion upon these leaves to close the door.

An important feature of this invention lies in the action of the cam members which are so shaped as to interlock in one position of the hinge as shown in Fig. 3, and in other positions, to exert a gradually increasing amount of resistance until their points of greatest elevation coincide where the greatest amount of resistance is imparted, as shown in Figs. 1, 2, and 4.

The points of greatest elevation of the cams and of greatest depression are rounded and correspond in shape on the two sets of cam members 1 and 2 and are preferably diagonally opposite to each other in each

set, so as to act simultaneously upon the members of the other set. The rounded portions are connected by inclined surfaces so that in the locking position shown in Fig. 3
 5 no movement can be made in either direction without checking the spring, and the projecting extremities are broad enough to give considerable bearing surface.

The several positions when the cams inter-
 10 lock and when they exert their greatest amount of resistance can be adjusted to suit the position in which the door is desired to rest, by placing the hexagonal sleeve D' in the hexagonal socket C so as to turn the
 15 cams at any desired angle, relative to the hinge; as shown the interlocking position shown in Fig. 3 occurs when the door is half open and the position shown in Figs. 1 and 4 is the wide open position for the door and
 20 it cannot slam since the checking of the cam members gradually increases as the door is being shut until the highest points of the cams bear upon each other. The amount of resistance obtained will depend upon the ad-
 25 justment of the screw threaded pintle head.

The spring G serves the double function of a closing means for the cam members and also as a reinforcing sleeve for the eyes B', C' and B² through which it passes.

30 A hinge provided with a number of eye sockets has greater rigidity than if only two are provided, and the spring has the important function of comprising a sleeve which passes loosely through several joints
 35 and maintains them in perfect alinement so that they cannot wear unevenly.

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

40 1. In a hinge, the combination with a pair of leaves and interlocking eye sockets, of a pintle pin passing through said eye sockets, said pin provided with an enlarged head at one end, said head slidably movable in one
 45 of said sockets, means for preventing the head from turning in said socket, a longitudinally adjustable head for the other end of said pin, a set of cam members upon the inner face of one of said eye sockets, a sleeve
 50 slidably movable in the adjacent socket, and provided with a corresponding set of cam members, said sets of cam members having alternately spaced and curved surfaces of elevation and depression connected
 55 by inclined surfaces, and adapted and arranged to interlock with each other in one position of the hinge, and to exert their

greatest pressure upon each other in other positions, means for adjusting the angular position of said sleeve in its socket, and for
 60 preventing it from turning, and a coiled closing spring encircling said pintle rod, and engaged by said sliding pintle head and said cam sleeve, said spring serving as a
 65 spacing sleeve for said eye sockets, through which it passes, and said pintle rod.

2. In a hinge provided with leaves and interlocking eye sockets a pintle rod, cam members upon one eye socket, a cam sleeve
 70 slidable in the adjacent socket, and angularly adjustable therein, and provided with corresponding cam members, said cam members having a locking position for the hinge and also points of greatest pressure, a closing
 75 spring encircling said pintle rod, and inclosed loosely between the same and some of said eye sockets, and also serving as a spacing sleeve between the eye sockets and pin-
 80 tle rod, and means upon said pintle rod for adjusting the pressure upon said cam sleeve.

3. In a hinge provided with leaves and interlocking eye sockets, a pintle rod, cam members upon one eye socket, a cam sleeve
 85 slidable in the adjacent socket, and angularly adjustable therein, and provided with corresponding cam members, said cam members having a locking position for the hinge and also points of greatest pressure, a spring
 90 encircling said pintle rod, and inclosed in some of said eye sockets, and exerting pressure upon said cam sleeve, the extremities of said spring operatively connected with op-
 95 posite leaves of the hinge, and means upon said pintle rod for adjusting the pressure of said spring upon said cam sleeve.

4. In a hinge provided with leaves and interlocking eye sockets thereon, a pintle rod extending through said eye sockets, a head therefor engaging one socket, an ad-
 100 justable nut upon the other end of said pintle rod, cam members upon one eye socket, a cam sleeve slidable and angularly adjustable in the adjacent socket, and provided with corresponding cam members, a spring
 105 encircling said pintle rod and inclosed in some of the eye sockets and adapted to exert pressure upon said cam sleeve, the extremities of said spring inserted one in said pintle rod, and the other in said cam sleeve.

ANDREW ALLGIER.

Signed in presence of—

I. J. CILLEY,
 JAMES KEENA.