

No. 638,718.

Patented Dec. 12, 1899.

J. HUGHES.

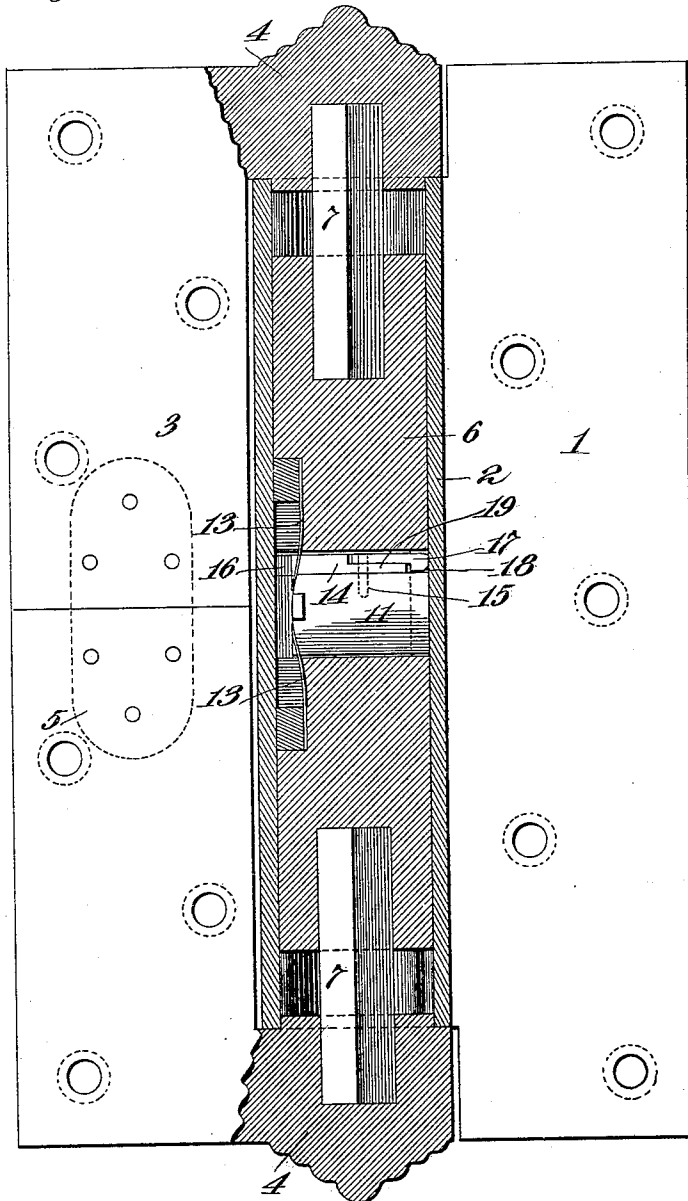
COMBINED DOOR HINGE AND CHECK.

(Application filed Mar. 6, 1899.)

(No Model.)

2 Sheets—Sheet 1.

Fig. 1



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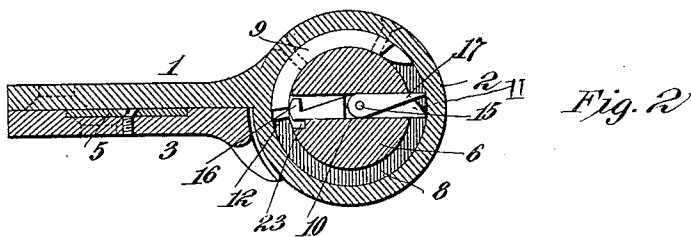


Fig. 2

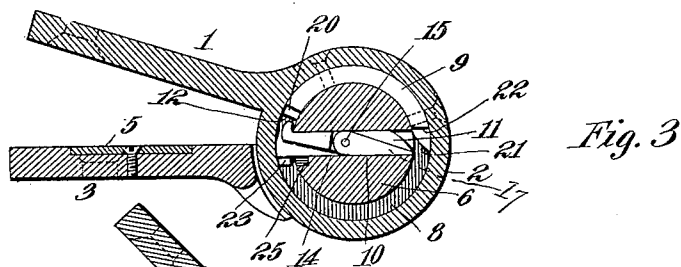


Fig. 3

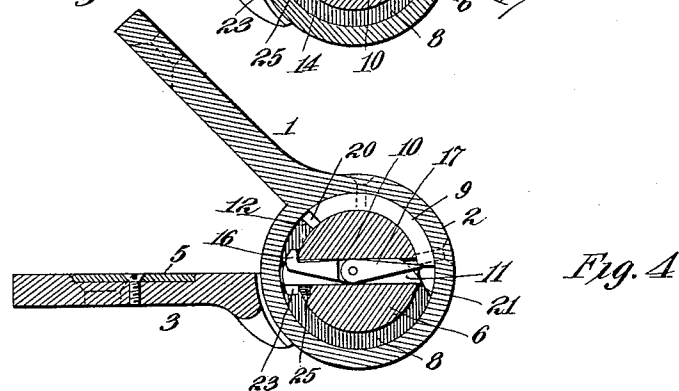


Fig. 4

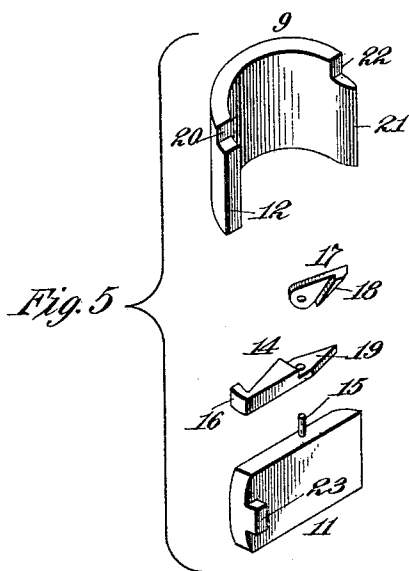


Fig. 5

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COMBINED DOOR HINGE AND CHECK.

SPECIFICATION forming part of Letters Patent No. 638,718, dated December 12, 1899.

Application filed March 6, 1899. Serial No. 707,834. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH HUGHES, a citizen of the United States, residing in the borough of Manhattan, city, county, and State of New York, have invented certain new and useful Improvements in a Combined Door Hinge and Check, of which the following is a specification.

My invention relates to various new and useful improvements in combined door hinges and checks of the type wherein two mechanical parts connected to the different elements of the hinge are caused to engage together near the end of the closing movement of the door to check such movement, the said engaging elements being removed from interference upon the rebound, so as to allow the door to close.

The objects of the invention are to provide and produce a combined door hinge and check which will be simple in construction, of great strength, wherein all the parts are effectively concealed, which effects a checking operation of the door whether the latter is closed slowly or not, and wherein the elastic cushioning effect necessary is secured in any approved way.

To effect these objects, the invention consists in the employment of a hinge comprising the two usual leaves, one carrying the barrel and the other the pintle, upon which the barrel turns. Usually the leaf which carries the barrel is secured to the door, and is therefore known as the "movable" leaf. I shall adopt this term in describing my device, because it is conventional; but it will be understood, of course, that the leaf which carries the barrel may be attached to the door-casing, in which case it will be stationary. The pintle is preferably enlarged within the barrel, so as to afford a firm and substantial bearing, the portions of the pintle bearing in the lugs of the stationary leaf being reduced in diameter. Preferably, the pintle comprises three parts—a simple cylindrical portion filling, substantially, the barrel, and two smaller end portions angular in cross-section bearing in the lugs of the stationary leaf and made of any suitable material to afford an elastic checking action, (preferably spring-steel.) Normally the barrel turns freely with respect to the pintle to permit the opening and closing of

the door; but when the door reaches an almost-closed position projections engage together to lock the pintle to the barrel. When this engagement takes place, an elastic checking effect will be produced by reason of the yielding reduced portions of the pintle which are held in the lugs of the stationary leaf. One of the engaging projections is carried on the inside of the barrel, and comprises a lug in the form, essentially, of a half-sleeve located in an annular groove in the pintle. Mounted in the pintle is the other projection, which comprises, essentially, a sliding abutment working in a groove or way cut diametrically in the pintle. This abutment is adapted to be locked against the tension of an operating spring or springs by means of a catch carried with it, whereby the end of the abutment will be arranged in the path of movement of the lug carried on the barrel, so that these elements will engage together to check the door. During this engagement the latch which holds the abutment normally in position will be tripped; but the friction between the engaging surfaces will be sufficient to prevent the abutment from being moved out of the path of the movable interfering element. Upon the rebound the operating-springs come into play to move the abutment out of the path of the half-sleeve, thus permitting the door to close. Upon the opening movement of the door a cam carried by the barrel restores the abutment to its former position. The device also contemplates improvements in the stationary leaf by which the parts may be more easily assembled together, such improvements consisting in dividing the leaf into two sections, each section carrying one of the ears in which the pintle is pivoted. This permits the pintle to be made in three sections, as explained, and does away with the necessity of open bearings in the lugs.

In order that my invention may be better understood, attention is directed to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a vertical sectional view showing the hinged leaves open one hundred and eighty degrees; Fig. 2, a cross-sectional view showing the leaves fully closed; Fig. 3, a view corresponding to Fig. 2, illustrating the position of the parts during the checking operation.

tion; Fig. 4, a corresponding view illustrating the position of the parts during the operation of restoring the abutment; and Fig. 5, a perspective view showing the detached abutment, the latch therefor, and the half-sleeve.

In all of the above views corresponding parts are represented by the same numerals of reference.

1 is the movable leaf, carrying the barrel 2, and 3 the stationary leaf, having the lugs 4 4, the leaf 3, shown as being made in two parts, secured together by a plate 5, whereby the assembling of the device will be facilitated. The pintle comprises the main portion 6, filling, substantially, the barrel 2, and the reduced end portions 7 7, bearing in the lugs 4. The extensions 7 are preferably angular in cross-section, as shown, and are made of steel or some other suitable metal by which an elastic checking action may be secured. The main portion 6 of the pintle is provided with a channel or groove 8, cut entirely around it, and working in said groove is a lug 9 in the form of a half-sleeve, as shown, said lug being secured to the barrel in any suitable way. Extending through the portion 6 of the pintle is a diametrical passage-way or channel 10, in which is located an abutment 11, with which the hammer-face 12 of the lug 9 is adapted to cooperate. The abutment 11 is normally moved out of the path of the hammer-face of the lug by means of one or more springs 13, but may be locked in position to be engaged by the lug 9 by a latch 14, mounted on a pin 15 on said abutment. The latch 14 is provided with a head 16, which engages over the edge of the channel 10, as shown in Fig. 4. Preferably the latch 14 is provided with a pivoted dog 17, having a shoulder 18 engaging the surface 19 of the latch 14 and mounted on a pin 15 for said latch. The hammer-face 12 of the lug 9 is so proportioned relative to the abutment 11 that a shoulder 20 on the lug 9 will engage the head 16 of the latch 14 to almost trip the latch when the hammer-face 12 engages the abutment 11. The slight yielding of the abutment 11 under the play of the hammer 12 will cause the latch 16 to be tripped; but the friction between the engaging surfaces will prevent the springs 13 from moving the abutment 11 out of the path of the hammer-face 12 until the rebound takes place. The rear end of the half-sleeve or lug 9 is provided with a cam-surface 21, which engages the beveled end of the abutment 11 to restore it upon the opening movement of the door, as shown in Fig. 4. The said portion is also provided with a shoulder 22, which engages the free end of the dog 17 after the abutment has been shifted to again engage the latch-head 16 with the edge of the channel 10 to hold the abutment in position to effect a subsequent checking operation. By employing a pivoted dog 17 for engaging latch 14 it will be observed that when the door starts on its closing movement the dog 17 can be moved on the pivot 15 without tripping the latch. The abutment 11

is provided with a projection 23, which fits into a recess 25 in the pintle and by which movement of the abutment under the action of the operating spring or springs 13 will be properly limited.

The operation will be as follows: When the two leaves are closed, the parts will be in the position shown in Fig. 2. Upon opening the door the barrel will be moved relatively to the pintle, the cam 21 moving the abutment in the groove 10 against the tension of the spring or springs 13 and the shoulder 22 then engaging the dog 17 to swing the latch 14 over upon the edge of the groove 10 to lock the abutment in place, as shown in Fig. 4. Upon the closing movement the turning of the barrel relative to the pintle will engage the hammer-face 12 of the lug 9 with the projecting edge of the abutment, this engagement taking place immediately before the final closing movement, and an elastic checking action being thus secured at the yielding sections 7 of the pintle. The shoulder 20 engages the head 16 of the latch to disengage the same, whereby when the rebound takes place and friction between the engaging surfaces is reduced the spring or springs 13 will force the abutment to the position shown in Fig. 2, thereby allowing the door to close.

Having now described my invention, what I claim as new, and desire to secure by Letters Patent, is as follows:

1. A combined door hinge and check having in combination, two leaves, one of said leaves carrying a barrel, an elastically-yielding pintle carried by the other leaf, and with respect to which the barrel normally turns, and means for locking the barrel to the pintle near the closing movement of the door, whereby the checking strains will be imposed upon the pintle, substantially as set forth.

2. In a combined door hinge and check, the combination with two leaves, one of which carries a barrel, an elastically-yielding pintle carried by the other leaf and with respect to which the barrel normally turns, interfering projections carried by the pintle and barrel respectively, adapted to be engaged together near the closing movement of the door whereby the checking strains will be imposed upon the pintle, and means to withdraw the projections from their interfering relations upon the rebound, to permit the door to close, substantially as set forth.

3. In a combined door hinge and check, the combination with two leaves, one of which carries the barrel, a pintle having an enlarged section mounted in said barrel and with respect to which the barrel normally turns, reduced pintle-sections rigidly connected to the other leaf, and means for locking the pintle and barrel temporarily together near the closing movement of the door, whereby checking strains will be imposed upon the reduced sections of the pintle, substantially as set forth.

4. In a combined door hinge and check, the

combination with two leaves, one of which carries a barrel, a pintle carried by the other leaf, and with respect to which the barrel normally turns, an abutment mounted in said
 5 pintle and movable diametrically therein, and an interfering hammer on the barrel adapted to engage said abutment near the closing movement of the door, substantially as set forth.

10 5. In a combined door hinge and check, the combination with two leaves, one of which carries a barrel, a pintle carried by the other leaf, and with respect to which the barrel normally turns, an abutment mounted in said
 15 pintle and movable diametrically therein, an interfering hammer on the barrel adapted to engage said abutment near the closing movement of the door, said hammer having a cam formed thereon for restoring the abutment
 20 upon the opening of the door, substantially as set forth.

6. In a combined door hinge and check, the combination with two leaves, one of which carries a barrel, a pintle carried by the other
 25 leaf, and with respect to which the barrel normally turns, an abutment mounted in said pintle and movable diametrically therein, an interfering hammer on the barrel adapted to engage said abutment near the closing move-
 30 ment of the door, and a latch for maintaining the abutment in its normal position, substantially as set forth.

7. In a combined door hinge and check, the combination with two leaves, one of which carries a barrel, a pintle carried by the other
 35 leaf, and with respect to which the barrel normally turns, an abutment mounted in said pintle and movable diametrically therein, an interfering hammer on the barrel adapted to
 40 engage said abutment near the closing movement of the door, said hammer carrying a cam for resetting said abutment, and carrying a shoulder for resetting the latch after the restoration of the abutment, substantially
 45 as set forth.

8. In a combined door hinge and check, the combination with two leaves, one of which carries the barrel, an enlarged pintle carried

by the other leaf and with respect to which the barrel moves, the pintle having an annu- 50
 lar groove therein, a half-sleeve carried by the barrel and mounted in said groove, and an abutment movable diametrically in the
 pintle and with which said half-sleeve engages near the closing movement of the door, 55
 substantially as set forth.

9. In a combined door hinge and check, the combination with two leaves, one of which carries the barrel, an enlarged pintle carried
 by the other leaf and with respect to which 60
 the barrel moves, the pintle having an annular groove therein, a half-sleeve carried by the barrel and mounted in said groove, an
 abutment movable diametrically in the pin- 65
 tle and with which said half-sleeve engages near the closing movement of the door, and a cam carried by the half-sleeve for restoring
 the abutment, substantially as set forth.

10. In a combined door hinge and check, the combination with two leaves, one of which carries the barrel, an enlarged pintle carried
 by the other leaf and with respect to which 70
 the barrel moves, the pintle having an annular groove therein, a half-sleeve carried by the barrel and mounted in said groove, an 75
 abutment movable diametrically in the pintle and with which said half-sleeve engages near the closing movement of the door, a latch
 for locking the abutment in its normal posi- 80
 tion, said half-sleeve having shoulders formed thereon for disengaging said latch during the
 checking operation and for resetting the latch during the opening movement of the door, sub-
 stantially as set forth.

11. In a combined door hinge and check, the 85
 combination with a hinged leaf carrying a barrel, a second leaf made in two sections, each carrying a bearing-lug, and a pintle supported
 by said lugs, with respect to which the barrel is movable, substantially as set forth. 90

This specification signed and witnessed this 28th day of February, 1899.

JOSEPH HUGHES.

Witnesses:

FRANK L. DYER,
 JNO. R. TAYLOR.