

W. D. PAYNTER.
HINGE.
APPLICATION FILED APR. 4, 1910.

976,392.

Patented Nov. 22, 1910.

Fig. 1.

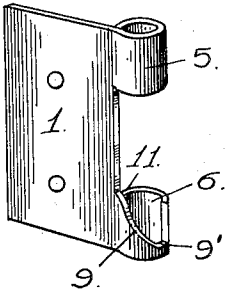


Fig. 2.

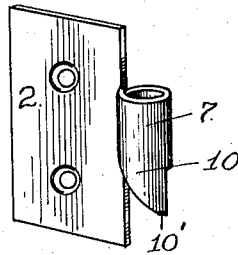


Fig. 3.

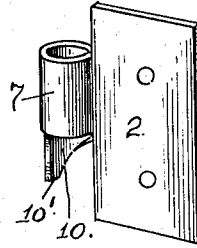


Fig. 4.

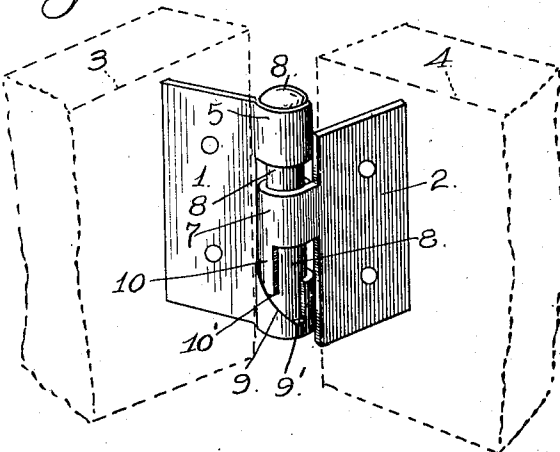


Fig. 5.

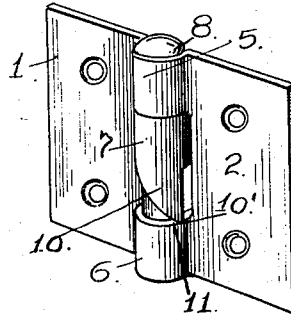
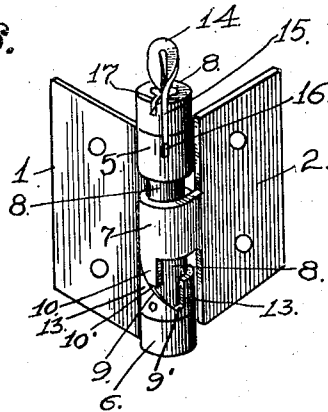


Fig. 6.



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UNITED STATES PATENT OFFICE.

WILLIAM D. PAYNTER, OF GRASS VALLEY, CALIFORNIA.

HINGE.

976,392.

Specification of Letters Patent. Patented Nov. 22, 1910.

Application filed April 4, 1910. Serial No. 553,207.

To all whom it may concern:

Be it known that I, WILLIAM D. PAYNTER, a citizen of the United States, residing at Grass Valley, in the county of Nevada and State of California, have invented certain new and useful Improvements in Hinges, of which the following is a specification.

My invention relates to the general class of hinges and particularly to that type commonly known as "self-closing" or "rising" hinges having for their object the closing of the swinging part by gravity, and the lifting of said part in opening to clear any bottom obstructions, as, for example, the clearing of a carpet or rug by a door.

The object of my invention is to provide a simple and effective hinge of this nature which is especially applicable to vertically hung structures, particularly doors and gates, with the result that the door or gate may close by gravity, or may be swung to and remain in a wide open position, or the hinge may be readily converted, when desired, into a common hinge.

To these ends my invention consists in the novel construction and coaction of the interengaging knuckles and the pintle of the hinge, all as I shall hereinafter fully describe by reference to the accompanying drawings in which—

Figure 1 is a perspective view of one of the leaves of my hinge, showing the inclined-plane track of the lower knuckle. Fig. 2 is a perspective view of the other leaf from the obverse face, showing the inclined-plane tongue of its knuckle. Fig. 3 is a perspective view of the leaf of Fig. 2 from its reverse face. Fig. 4 is a view of the assembled hinge showing the tongue of one knuckle rising on track of the other. Fig. 5 is a view from the other side of the hinge showing the tongue at rest on the level portion of the lower knuckle beyond its inclined track. Fig. 6 is a perspective view of my hinge in a rising position, showing the inclined track formed on a collar fast to the pintle, and showing the pintle locked against movement on its axis.

1 and 2 are the complementary leaves of the hinge. The former is secured to the stationary part and the latter to the swinging part of the structure to be hinged together. Speaking in terms of door hanging, for example, the leaf 1 is secured to the stile 3 of the door casing and the leaf 2 is secured to the door 4, as indicated in Fig. 4.

The leaf 1, as seen in Fig. 1, is provided with an upper knuckle 5 and a lower knuckle 6. The leaf 2, as seen in Figs. 2 and 3 is provided with a knuckle 7 which, when the parts are assembled as shown in Fig. 4 and connected by the pintle 8, lies between the knuckles of the leaf 1. The lower knuckle 6 of the leaf 1 is notched or cut out from its top downward toward but stopping short of its base to form an inclined-plane track 9, as in Fig. 1; and the knuckle 7 of the leaf 2 is complementally cut out to form an inclined-plane tongue 10, as seen in Figs. 2 and 3. The relative positions of these inclined-planes are such that when the door is closed and the two leaves lie in juxtaposition substantially parallel with each other, the tongue 10 of the knuckle 7 fits down upon the track 9 of the lower knuckle 6 and fills the space formed by the notch of which said track is one wall. But as the door is opened, the tongue 10 travels up on the inclined-track 9, as seen in Fig. 4, which has the effect of bodily lifting said door so that if the door be now released, it will, by gravity, close again, as the tongue 10 travels down upon the track 9 to its initial position when the door is fully closed. This is the self-closing feature of the hinge. But, further, in order to provide for a termination of this self-closing action, so that, if desired, the door when more fully opened may be relieved of this closing action of gravity, and remains open, it is to be noted that the inclined-plane track 9 is not carried in length to a point at which the door is swung clear back (at which time the hinge leaves are alined as seen in Fig. 5) but stops short of this point, and the upper surface of the knuckle 6, as indicated at 11 is level and horizontal. Therefore, when the door is swung full back, the tongue 10 has passed beyond the inclined-plane track 9 and now rests upon the level portion 11, as seen in Fig. 5, in sufficiently stable equilibrium to remain there. In practice, it is best to make the extremity of the tongue 10 somewhat flat as shown at 10' so that it may find a more stable bearing on the level portion 11; and as will be observed the beginning of the inclined-track 9 is correspondingly flattened at 9', to receive the tongue extremity. It will thus be seen that unless the door be swung to an approximately full-back position, it will close by gravity, but, when the full open position be desired, it will remain

open. These conditions provide in general for all the necessary usual requirements in the use of a door. In addition, however, to these conditions my invention contemplates a third object, namely one in which the hinge may be converted from a self closing or rising hinge to an ordinary hinge and vice-versa. For this purpose, as seen in Fig. 6, the inclined-plane track 9 and the level terminal 11, though the same as before in point of shape and relative location, are not formed on or with the lower knuckle 6 of the leaf 1, but are formed on or with a separate collar 13 which is made fast to and rotates with the pintle 8. A suitable locking device, such as the forked key 14 in the head of the pintle is adapted to lock said pintle to the upper knuckle 5 of the leaf 2, so that it cannot turn on its axis; or to release said pintle in order that it may freely turn. This key removably fits one of its legs down into a hole in the head of the pintle, while its other leg passes down in a key-way 15 in the periphery of the pintle head, and into a key-way 16 in the upper knuckle 5 of the leaf 1. When thus seated the pintle is locked to the leaf 1, and cannot turn on its axis, and when thus connected the collar 13 being fast on the pintle is also held against movement and the knuckle 7 of the leaf 2 will act in conjunction therewith as heretofore described, that, is to say, the door can be made to close by gravity or to remain wide open. But upon slipping the key 14 up from its key-ways 15 and 16 and turning it on its inner leg as an axis and dropping its outer leg in a seat 17 in the pintle head, the pintle is freed from leaf 1, and may turn on its axis. Then when the door is opened the pintle itself will turn freely and form the hinge axis, while by the weight of parts the knuckle 7 and the collar 13 remain relatively interlocked and one will not rise on the other. The hinge is thus an ordinary one, but may readily be converted back again to a self-closing or rising hinge, by resetting the key.

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

1. A hinge comprising complementary leaves having aligned knuckles, a knuckle of one leaf being cut out on one side only to form an inclined-plane track, and an adjacent knuckle of the other leaf being cut out on one side only to form an inclined-plane tongue complementing and fitting the cut out portion of the other knuckle and operatable on the track thereof, to effect the rise of the second leaf relatively to the first when the leaves are turned with respect to each other, and the return of said second leaf by gravity, the inclined-plane track of the first knuckle terminating short of the full opening of the leaves, and said knuckle having at said track terminal a continuing

level portion upon which the tongue of the coacting knuckle may come to rest, said tongue having a flattened extremity for stability when at rest, and said track having a flattened portion at its lower end to receive the flattened extremity of the tongue; and a pintle passing through said knuckles.

2. A hinge comprising complementary leaves having aligned knuckles; a pintle passing freely through said knuckles; a collar fast on the pintle and lying above a knuckle of one of the leaves, said collar being formed with an inclined-plane track on its upper side, and the overlying knuckle of the other leaf being formed with an inclined-plane tongue complementing the track of the collar and operatable thereon to effect the rise of the second leaf relatively to the first when the leaves are turned with respect to each other, and the return of said second leaf by gravity; and means for releasably locking the pintle against movement on its axis.

3. A hinge comprising complementary leaves having aligned knuckles; a pintle passing freely through said knuckles; a collar fast on the pintle and lying above a knuckle of one of the leaves, said collar being formed with an inclined-plane track on its upper side, and the overlying knuckle of the other leaf being formed with an inclined-plane tongue complementing the track of the collar and operatable thereon to effect the rise of the second leaf relatively to the first when the leaves are turned with respect to each other, and the return of said second leaf by gravity; and means for releasably locking the pintle against movement on its axis, consisting of a key removably seated in key ways in the head of the pintle and the adjacent knuckle of one of the leaves.

4. A hinge comprising complementary leaves having aligned knuckles; a pintle passing freely through said knuckles; a collar fast on the pintle and lying above a knuckle of one of the leaves, said collar being formed with an inclined-plane track on its upper side, and the overlying knuckle of the other leaf being formed with an inclined-plane tongue complementing the track of the collar and operatable thereon to effect the rise of the second leaf relatively to the first when the leaves are turned with respect to each other, and the return of said second leaf by gravity, the inclined-plane track of the collar terminating short of the full opening of the leaves, and said collar having at said track terminal a continuing level portion upon which the tongue of the coacting knuckle may come to rest; and means for releasably locking the pintle against movement on its axis.

5. A hinge comprising complementary

leaves having alined knuckles; a pintle passing freely through said knuckles; a collar fast on the pintle and lying above a knuckle of one of the leaves, said collar being formed with an inclined-plane track on its upper side; and the overlying knuckle of the other leaf being formed with an inclined-plane tongue complementing the track of the collar and operatable thereon to effect the rise of the second leaf relatively to the first when the leaves are turned with respect to each other; and the return of said second leaf by gravity, the inclined-plane track of the collar terminating short of the full opening of the leaves, and said collar hav-

ing at said track terminal a continuing level portion upon which the tongue of the coacting knuckle may come to rest; and means for releasably locking the pintle against movement on its axis, consisting of a key removably seated in key ways in the head of the pintle and the adjacent knuckle of one of the leaves.

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

WILLIAM D. PAYNTER.

Witnesses:

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A. F. BRADY.