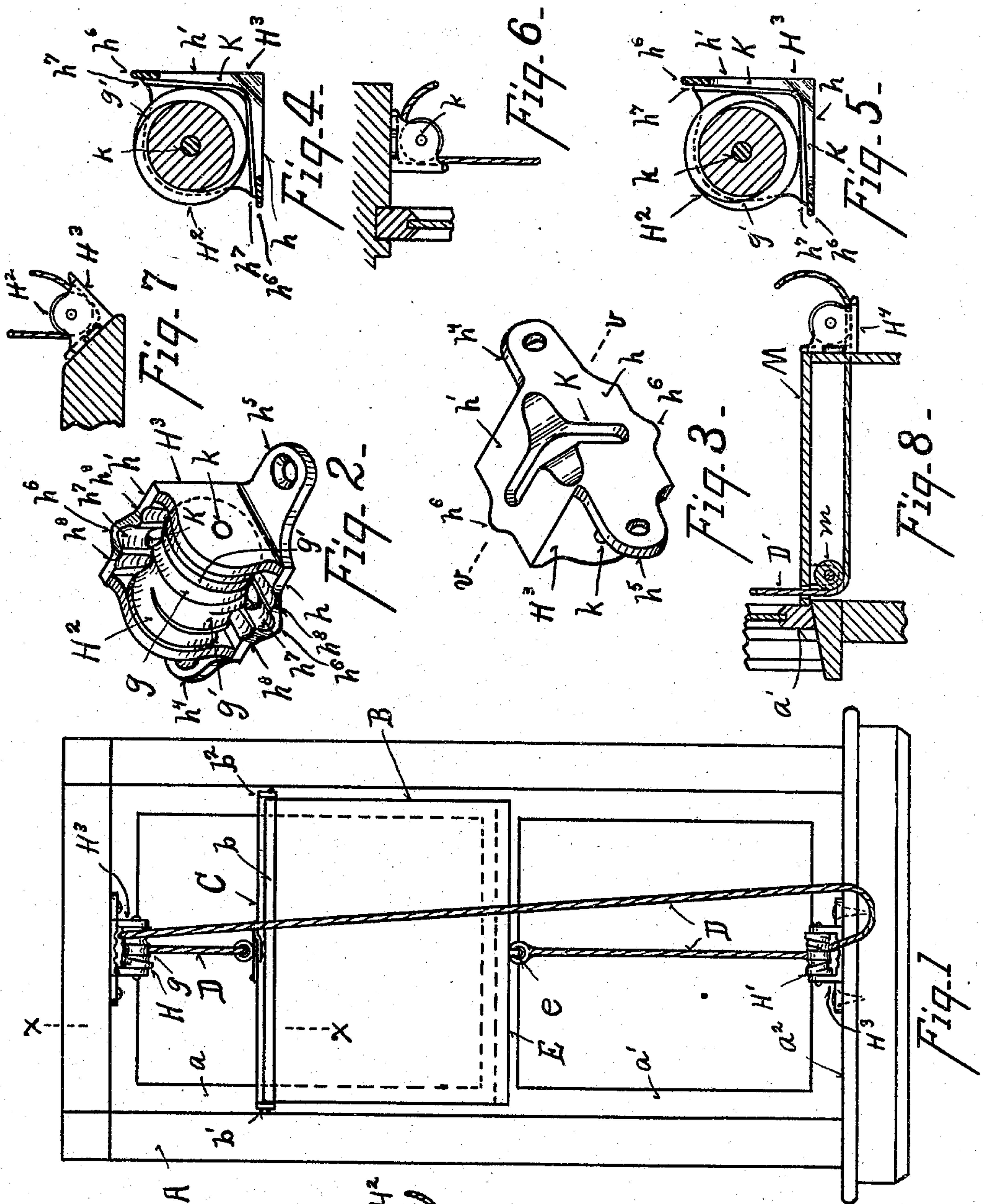


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WINDOW SHADE CATCH PULLEY.
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WINDOW-SHADE CATCH-PULLEY.

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To all whom it may concern:

Be it known that we, ALBERT H. HOVER and ALBERT N. FRIES, citizens of the United States, residing at Cincinnati, in the county of Hamilton and State of Ohio, have invented certain new and useful Improvements in Window-Shade Catch-Pulleys, of which the following is a specification.

Our invention relates to improvements in catch pulleys for window shades and similar purposes.

One of its objects is to provide such a pulley mounted in a supporting frame capable of being attached to its support in any of the various positions in which circumstances may require the catch pulley to be located, and also in such positions to receive and guide the cord.

Another object is to provide a catch pulley supporting frame adapted to be employed without change either as a support for right or left hand pulleys.

Another object is to provide a catch pulley supporting frame having improved means to guide the cord.

It further consists in certain details of form, combination, and arrangement, all of which will be more fully set forth in the description of the accompanying drawings, in which,

Figure 1 is a front elevation of a window frame, curtain and fixtures, illustrating one method of application of our invention. Fig. 2 is an enlarged perspective view of one of our improved catch pulleys. Fig. 3 is an enlarged perspective view of the reverse side of the catch pulley. Fig. 4 is a central vertical section through the same, on line $v-v$ of Fig. 3, and provided with a right hand pulley. Fig. 5 is a similar view, with a left hand pulley. Fig. 6 is a sectional detail on line $x-x$ of Fig. 1. Figs. 7 and 9 are sectional details of lower catch pulleys attached at an angle. Fig. 8 is a sectional detail of the lower portion of a show window and catch pulley attached thereto.

In the accompanying drawings Fig. 1 illustrates one of several applications of our invention to use. A, represents an ordinary window frame, a , the upper and a' , the lower window sashes, and a^2 , the window sill. B, represents a window shade which is adapted to be wound upon a roller, b , which is carried in brackets, b' , b^2 , which are carried by a cross bar, C. The cross bar, C, is suspended by a cord, D from a catch pulley, H,

at the top of the window frame. The opposite end of the cord, D, is passed through a catch pulley, H', at the bottom of the window frame, and attached to an eye, e , carried by the lower cross-bar, E, of the shade, B. Thus the cross-bar, C, may be adjusted to any desired height by means of the portion of the cord passing through the catch pulley, H, and the cross bar, E, can be adjusted to any desired height by means of the portion of cord, D, passing through the catch pulley, H'. In order to hold the shade in the desired position, the pulley, H, should be a right hand pulley; that is, should have its spiral grooves arranged to act to lock the cord when turning in a right hand direction, and the pulley, H', should be a left hand pulley adapted to lock the cord when rotating in the opposite direction.

As shades employing catch pulleys are adapted to be applied to transoms, show windows, and in a variety of places where the points of attachment for the catch pulleys are at various angles and where the cord is to lead to or from the catch pulleys at varying angles, we provide a catch pulley and its supporting frame adapted to be conveniently attached in any position or at any desired angle, and to receive the cord from any direction desired, thus obviating the necessity of providing a great variety of catch pulleys each especially adapted for a single position.

Our improved catch pulley comprises a pulley or roller, H^2 , which is journaled upon an axle or pin, k . Pulley, H^2 , is provided with a central encircling groove, g , from which on each side are one or more diverging and gradually diminishing grooves, which diverging grooves are preferably roughened or serrated to assist in gripping the cord. The pulley, H^2 , is supported by means of its axle, k , in a frame or housing, H^3 , which has two faces or plates, h , h' , preferably at right angles to each other and two end plates, h^2 , h^3 , which support the ends of axle, k , and limit the endwise movement of pulley, H^2 , thereon. Two ears, h^4 , h^5 , projecting from plate, h , serve as a means of attaching the frame, H^3 , in position, preferably by means of screws passing through perforations in ears, h^4 , h^5 . The plates, h , h' , are preferably projected at h^6 , to provide sufficient metal to firmly unite the right and left portions of the frame around the ends of a slot, K, which extends from

the junction of plates, h , h' , partly across each plate in line with the central groove of pulley, H^2 . This slot, K , serves as a passage and also as a guide for the cord in some positions, such, for instance, as in Figs. 8 and 9. The plates, h , h' , on their inside, facing the pulley, are preferably each provided with central grooves, h^7 and diminishing grooves, h^8 , on each side. The central grooves, h^7 , and slot K , provide sufficient room for the free passage of the cord in the central groove, g , while the grooves, h^8 , serve in conjunction with the grooves, g' , to catch, wedge, or grasp the cord when the cord is drawn sidewise out of the central groove, g .

During the process of manufacture, part of the pulleys are inserted in the housings to act right-handedly, and the balance are reversed so as to act left-handedly. Fig. 8 shows the manner of attaching the catch pulley to a show window, so that the shade may be operated from the rear of the platform, M , usually projecting backward from the window. The cord from the lower part of the shade is passed down through an opening in platform, M , thence over an idler pulley, m , and thence to lower catch pulley, H^4 , which it reaches through the slot, K . Fig. 6 shows the usual arrangement of the catch pulley and cord at the top of a window frame. Figs. 7 and 9 show the catch pulleys set at different angles on a window sill or similar part.

The catch pulley herein illustrated can be set in any of the several positions frequently required for window shades, and in each position so as to be conveniently operated. The grooves, h^7 , and slot, K , further serve to guide and retain the cord in the groove, g , except at the forward edge of plates, h , h' , where it is designed to be diverted therefrom to lock the cord.

The device herein illustrated and described is capable of considerable modification without departing from the principle of our invention.

What we claim is:

1. In a device of the character indicated, a pulley having an encircling groove and a diverging and diminishing groove, a housing inclosing substantially one half of the face and both ends of said pulley, said housing having diminishing grooves at opposite edges in position to co-act with the diverging groove of said pulley whether set right or left to

catch a cord, an axle for said pulley carried by said housing, and means to attach said housing in position.

2. In a device of the character indicated a pulley having a central encircling groove, and converging and diminishing grooves at opposite sides, a housing inclosing substantially one half of the face and both ends of said pulley, said housing having diminishing grooves at opposite edges in position to co-act with the diverging grooves of said pulley whether set right or left to catch a cord, an axle for said pulley carried by said housing, and means to attach said housing in position.

3. In a device of the character indicated a pulley having a central encircling groove, and diverging grooves at opposite sides, a housing inclosing substantially one half of the face and both ends of said pulley, said housing having central grooves at opposite edges opposite the central groove of the pulley, and an intermediate slot through said housing opposite the central groove of said pulley, and diminishing grooves at opposite edges of said housing opposite the diverging grooves of said pulley, and an axle for said pulley carried by said housing.

4. In a device of the character indicated a pulley having a central encircling groove, and diverging grooves at opposite sides, a housing inclosing substantially one half of the face and both ends of said pulley, a slot in said housing opposite and in line with the central groove of said pulley, and diminishing grooves at opposite edges of said housing opposite the diverging grooves of said pulley, and an axle for said pulley carried by said housing.

5. In combination with a catch pulley having an encircling groove and diverging grooves at opposite sides, a housing comprising two plates formed integral and at substantially right angles to each other with ears at opposite ends to support the journal of said pulley, and a slot crossing the junction of said plates in line with the encircling groove of said pulley to serve as a passage and guide for a cord.

In testimony whereof we have affixed our signatures in presence of two witnesses.

ALBERT H. HOVER.
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