April 20, 1965 H. M. WHITING 3,178,762

HINGE STOP

Filed Dec. 2, 1963

Fig. 1

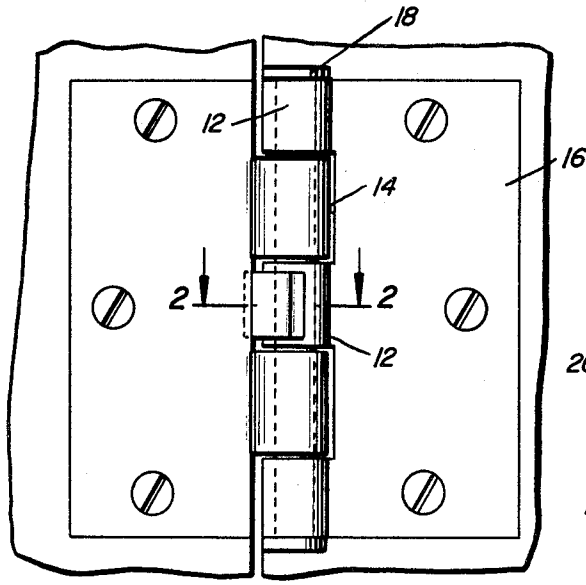


Fig. 5

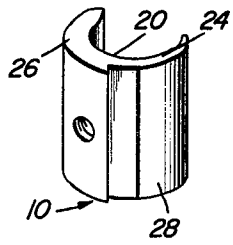


Fig. 2

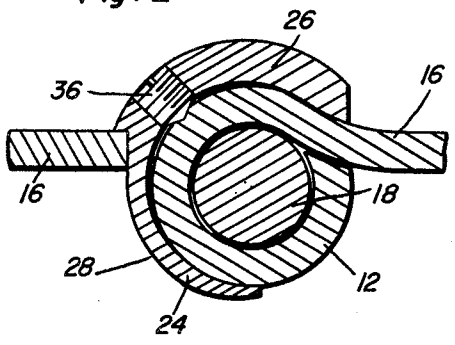


Fig. 3

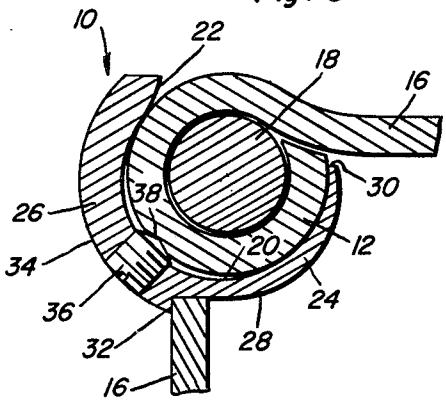
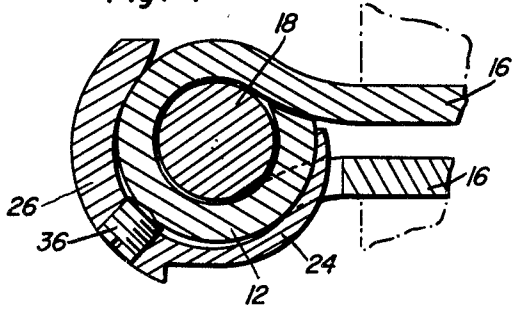


Fig. 4



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United States Patent Office 3,178,762 Patented Apr. 20, 1965

3,178,762

HINGE STOP

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Filed Dec. 2, 1963, Ser. No. 327,294
1 Claim. (Cl. 16—191)

The instant invention is generally concerned with hinge stops, and is more particularly directed toward a hinge stop of the type mounted, in an adjustable manner, directly upon one of the sleeve or barrel portions through which the hinge pin is extended.

It is a primary object of the instant invention to provide a sleeve portion mounted hinge stop which incorporates several significant features productive of highly desirable results not obtainable in the more conventional type hinge stop.

In conjunction with the above object, it is an object of the instant invention to provide a hinge stop which is infinitely variable between a hinge opening of approximately 90° and a hinge opening of approximately 180°.

Also in conjunction with the first-mentioned object, it is an intention of the instant invention to provide a hinge stop wherein a gradual stopping of the hinge, as well as the door upon which it is mounted, is effected so as to avoid any sudden jarring.

Further, it is an object of the instant invention to provide a hinge stop wherein an adjustable means is incorporated so as to vary the degree of frictional engagement of the movable hinge leaf relative to the fixed hinge leaf thus adjusting the aforementioned gradual slowing down of the door prior to its engagement with the abutment provided so as to limit the opening of the door.

Likewise, it is an object of the instant invention to provide a device which is simple in construction, highly durable, and easily adapted to most conventional hinges.

These together with other objects and advantages which will become subsequently apparent reside in the details of construction and operation as more fully hereinafter described and claimed, reference being had to the accompanying drawings forming a part hereof, wherein like numerals refer to like parts throughout, and in which:

FIGURE 1 is an elevational view of an open hinge with the stop of the instant invention mounted thereon;

FIGURE 2 is an enlarged partial cross-sectional view taken substantially on a plane passing along line 2—2 in FIGURE 1 illustrating the mounting of the stop so as to enable an opening of the hinge to approximately 180°;

FIGURE 3 is a cross-sectional view similar to FIGURE 2, however illustrating the stop mounted so as to limit the opening to approximately 90°;

FIGURE 4 is a cross-sectional view similar to FIGURE 3 wherein the hinge is closed; and

FIGURE 5 is a perspective view of the stop member itself.

Referring now more specifically to the drawings, the reference numeral **10** is used to generally designate the stop or stop member comprising the instant invention. This stop member **10** is to be adjustably mounted on one of the cylindrical sleeve or barrel portions **12** fixed along the inner edge **14**, and in fact in most cases integral therewith, of a hinge leaf **16**, these sleeve portions **12** being intermeshed, in the manner illustrated in FIGURE 1, for the reception of an elongated hinge pin **18** therethrough.

The stop member **10** is preferably of a length slightly less than the length of the sleeve portion **12** upon which it is to be mounted, and it is generally arcuate in cross section, the arcuity being greater than 180°, and preferably on the order of 245° thereby requiring that the stop **10** be slid longitudinally on the sleeve portion **12** with lateral removal of the stop **10** being impossible.

The inner surface **20** of the stop member **10** conforms closely in shape to the outer surface of the sleeve portion **12**, that is, this surface **20** is substantially cylindrical except for a slight outward bend, indicated by reference numeral **22**, so as to conform to the transistion point between the sleeve portion **12** and the leaf **16** when the stop is orientated so as to stop the hinge at approximately 180° as illustrated in FIGURE 2.

The stop member **10** is divided into two portions, a relatively narrow front or approach portion **24** and a wider rear or mounting portion **26**. The outer surface **28** of the approach portion **24**, while also generally arcuate in shape, diverges from the inner surface **20** from the extreme forward end **30** to an outwardly projecting shoulder or abutment **32** located at approximately midpoint along the outer surface of the stop **10**, the outer surface of the rear portion **34** continuing from the outer extremity of the abutment **32** parallel to the inner surface. It is through this enlarged rear portion **26** that the mounting screw **36** is threaded, this mounting screw **36** having a case hardened point **38** for biting engagement into the subjacent sleeve portion so as to fixedly position the stop **10**.

As will be appreciated from a comparison of FIGURE 4 with FIGURE 3, because of the diverging outer surface **28** of the approach portion **24**, as the movable hinge **16** is swung, the inner edge **14** gradually engages with this outer surface **28** with the friction generated between the outer surface **28** and the inner edge **14** resulting in a slowing of this opening movement so as to prevent an abrupt or hard stop as the hinge **16** engages against the shoulder or abutment **32** thus eliminating any tendency for the stop **10** to become jarred loose as well as eliminating those other undesirable features normally associated with a door being abruptly brought to a hard stop.

In regard to this frictional engagement of the inner edge **14** of the movable leaf **16**, it will be noted that this diverging outer surface **28** can be spaced closer to or further away from the sleeve portion **12** through the use of the locking screw **36** inasmuch as a slight additional tightening of the screw **36** after the point **38** is engaged, will result in a raising or flexing of the stop outwardly away from the sleeve portion **12**, this clearly being shown in FIGURES 2, 3 and 4. This ability to vary the degree of frictional engagement will, as will be appreciated, greatly extend the useful life of the stop member **10**.

The foregoing is considered as illustrative only of the principles of the invention. Further, since numerous modifications and changes will readily occur to those skilled in the art, it is not desired to limit the invention to the exact construction and operation shown and described, and accordingly all suitable modifications and equivalents may be resorted to, falling within the scope of the invention as claimed.

What is claimed as new is as follows:

In combination with a door hinge including a pair of leaves, each leaf including at least one sleeve portion on a first edge thereof, said sleeve portions being alignable for the reception of a hinge pin therethrough so as to pivotally mount the leaves for movement between a closed and open position, a stop member, said stop member being arcuate in shape and extending through an arc greater than 180°, the inner surface of said member conforming to and being received about the sleeve portion on a first one of the leaves, a shoulder projecting outwardly from the outer surface of said member at an intermediate point thereon so as to provide an abutment against which the second of said leaves is to engage upon movement toward the aforementioned opened position, that section of the outer surface between the approach edge of the stop member and the shoulder being arcuate and gradually diverging from the inner surface so as to form a means for effecting a gradual engaging of the first edge of the second leaf and a frictional restraining of the opening movement of the second leaf, and means for

varying the degree of frictional engagement prior to contact of the second leaf with the abutment, said last-mentioned means also being utilized for maintaining the stop member in a predetermined rotated position on its sleeve portion in accordance with the maximum degree of opening desired, said last-mentioned means consisting of a setscrew threaded through the stop member and into butting engagement with the sleeve portion upon which the stop member is mounted.

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