

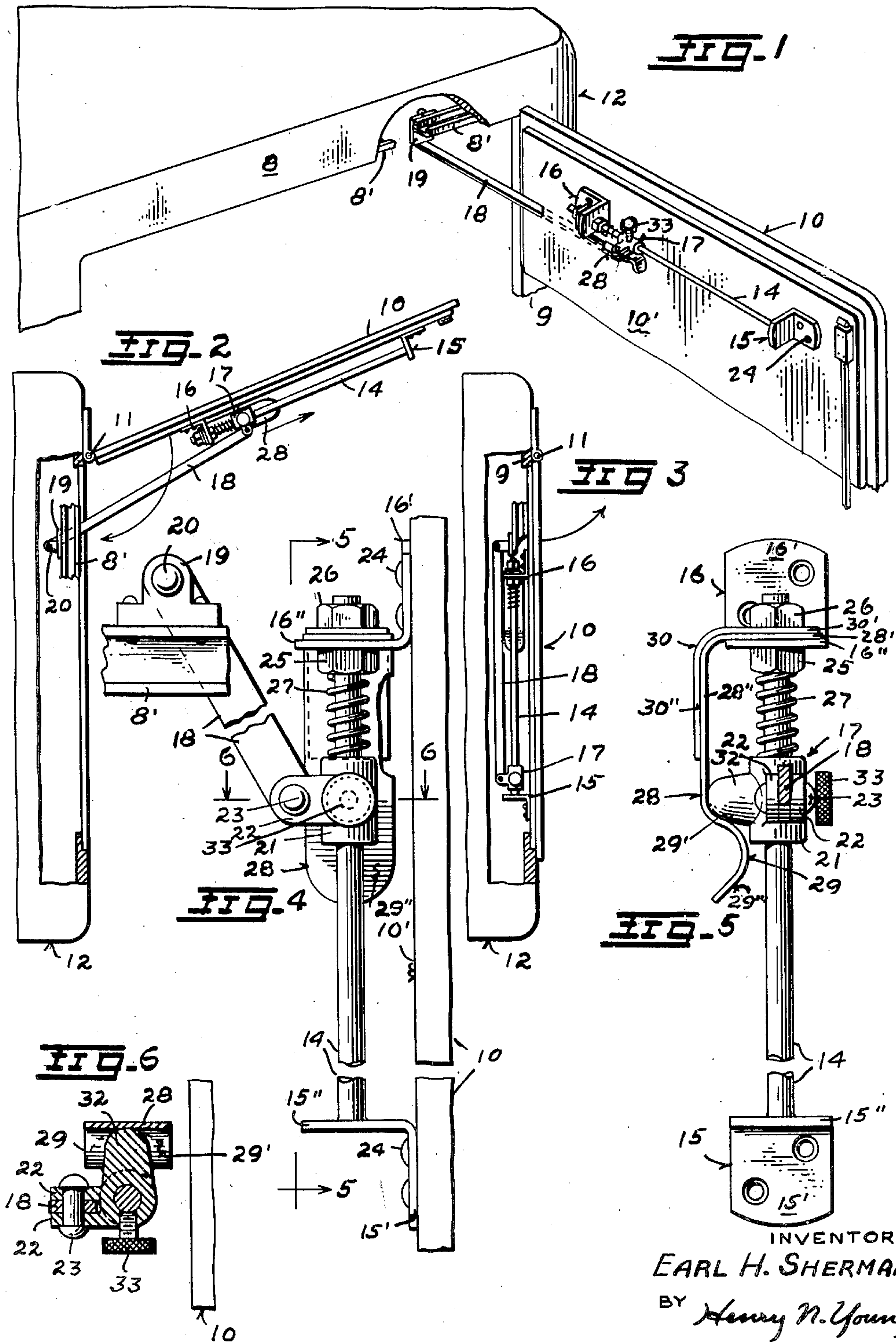
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DOOR HOLDER

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DOOR HOLDER

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The invention relates to a device for releasably securing a swinging door in open position.

An object of the invention is to provide a door holder which is particularly applicable to side-hinged doors for the load-carrying compartments of delivery vehicles for releasably holding such doors open against an unintended closing thereof.

Another object is to provide a door-holding device of the character described which may be operative solely between the door and a vehicle part without obstructing the doorway.

A further object is to provide a door holder which is optionally usable to releasably secure a door in a predetermined limiting open position thereof or in a selected intermediate open position thereof.

Yet another object is to provide a door holder of the character described which is of particularly simple and effective structure, and which is arranged for its operative installation with particular readiness.

The invention possesses other objects and features of advantage, some of which, with the foregoing, will be set forth or be apparent in the following description of a typical embodiment thereof, and in the accompanying drawings, in which

Figure 1 is a fragmentary perspective view showing the present door-holder as operatively installed with respect to an opened door adjacent its top.

Figure 2 is a plan view of the installation of Figure 1.

Figure 3 is a plan view of the structural combination of Figure 2 in which the door is in closed position.

Figure 4 is an enlarged fragmentary plan view of the operative door-holder.

Figure 5 is a side view taken at the line 5-5 in Figure 4.

Figure 6 is a sectional view taken at the line 6-6 in Figure 4.

For illustrating a particularly useful application thereof, the present door holder has been shown as operative between a door 10 and the top frame portion 8 of a fragmentarily shown doorway provided by a frame having a side jamb portion 9 at which the door 10 is attached by suitable hinges 11. The present doorway may be that for the access door to the body 12 of a truck

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or merchandise-delivery vehicle, it being noted that doors of such vehicles frequently need to be positively held open against a closing urge such as that of wind pressure or gravity or accidental contact. The door frame and door structures may be of any suitable materials such as wood and/or metal, and may have the fixed parts of a present door-holding unit attached thereto by screws or bolts or welding, as is appropriate to the mounting structure.

The present holder assembly essentially comprises a guide bar 14 fixedly carried on the inner side of the door 10 by and between spaced angle brackets 15 and 16, the bar 14 being of uniform cross-section and being disposed in parallel relation to the opposed door face 10' and in a plane perpendicular to the hinging axis of the door. A head 17 hingedly mounted at one extremity of a link 18 slidably receives the bar 14 therethrough adjacent the hinging axis of the door and has its other end hinged to a bracket member 19 which is fixed behind the door seat of the door frame to provide for a swinging of the link 18 in said plane between its extended position of Figures 1 and 2 and its withdrawn position of Figure 3.

In the present structure, the bracket 19 has a base portion riveted to the metallic top frame member 8' and mounts a depending pintle 20 which has its lower end rotatably and supportingly engaged through the inner end of the link 18 as an anchoring pivot therefor in the plane of swinging of the link. Since, however, the pintle 20 is arranged to provide its anchoring connection with the link 18 at a point which is behind the seat for the door and is relatively close to the door jamb 9 at which the door is hinged, it will be understood that the pintle might be mounted on a suitable support below the top frame member 8', it being primarily desirable that all parts of a present door-holding assembly may be concealed behind the closed door.

It will now be noted that the present head member 17 comprises a one-piece element having a tubular portion 21 which slidably receives the bar 14 in its bore and provides a pair of laterally extending spaced ears 22 receiving the outer link end between them for a hinged connection thereto of the link end by a hinge pin 23 extending through the ears and link end for a relative

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swinging of the door and link in the aforesaid plane. Base arms 15' and 16' of the brackets 15 and 16 respectively are provided with transverse holes for receiving bolts or screws 24 for securing the brackets against the inner face 10' of the door 10, and the bar 14 has one end welded or otherwise fixed to the other arm 15'' of the bracket 15. The outstanding arm 16'' of the bracket 16 receives a threaded end portion of the bar 14 therethrough and is releasably fixed to the bar by and between clamp nuts 25 and 26 threadedly engaging the bar end portion thereat.

A helical compression spring 27 receives the bar 14 through it and extends from the nut 25 whereby it may be engaged by the opposed end of the portion 21 of the head 17 as a yielding stop or bumper to limit and cushion the inward movement of the head toward the bracket 16 resulting from the opening movement of the door. The arrangement is essentially such that the head 17 may be freely moved outwardly along the bar and toward, but not to, the bracket 15 as the door is closed from the limiting open position imposed on it by the stop spring 27. If desired, the end of the helical spring 27 which engages the nut 25 may be secured to this nut for preventing any travel of the spring along the bar 14.

A detent means is preferably provided for preventing an inadvertent closing of the fully opened door; wind pressure or an accidental moderate blow against the outer side of the open door may urge its unwanted closing, or the vehicle may be so disposed on a sloping support surface that gravity urges the closing of the door. As particularly shown, a generally L-shaped leaf-spring detent member 28 has a base arm portion 28' thereof receiving the bar through it and clamped to the arm 16'' of the bracket 16 by the nut 26. The other arm 28'' of the spring 28 extends opposite and along the bar 14 in spaced and generally parallel relation to it, and is formed with a transverse arcuate terminal detent offset 29 extending toward the guide bar 14. The spring 28 is preferably backed by a supplementary leaf spring 30 having a base portion 30' disposed opposite and along the base portion 28' of the spring 28 and secured in place between the nut 26 and the portion 28'. The arm portion 30'' of the spring 30 extends along the arm 28'' of the spring 28 to an intermediate point thereof whereby the spring assembly is relatively stiffer at the supplementary spring 30.

A radial projection 32 is provided by the sliding head 17 for its releasably held engagement by the spring detent offset 29 in the general manner of a hook when the door is open to its desired limit. As particularly shown, the projection 32 comprises an integral portion of the head, extends radially of the tubular head portion 21 in a line which is parallel to the hinging axis of the link 13 provided by the pin 23 through the head ears 22, and is conically tapered to a rounded end for its wedging engagement with the inner and outer side faces 29' and 29'' of the hook offset 29 for displacing the offset as it moves along the spring 28 during an open or closing movement of the door.

The present detent arrangement cooperatively provided by the hook-offset 29 and the projection 32 is essentially such that a closing urge on the secured open door exceeding the value determined by the effective resistance of the spring assembly 28—30 may cause the projection 32 to wedgedly force the offset hook portion 29 of the spring 28 outwardly of its point to release the

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door, and a return movement of the door to its fully open position is arranged to wedgedly engage the projection 32 behind the inner face 29'' of the hook offset 29 to provide for an anti-rattling holding engagement of the projection 32 behind said offset by the combined functioning of the offset and the stop spring 27. Alternatively, the head may be released from the hook 29 by manually pulling out on the spring 28 at its free end.

Means are provided whereby the door may be held in other than its limiting open position or be positively held in the latter position against its unintended closing by the action of wind or gravity. As particularly shown, the head member 17 is provided with a suitably headed set screw 33 mounted in its tubular portion 21 and extending radially of its bore and arranged for direct clamping action against the guide bar 14 as may be desired or required. In the present structure, the set screw 33 is provided in diametrically opposite relation to the detent projection 32 of the head, and is particularly shown as extending upwardly from the head while said detent projection extends downwardly from the head to engage the detent projection 29 of the then underlying spring 28.

Noting that a present head 17 is of symmetrical form with respect to a central plane perpendicular to its rod-receiving bore including the hinging axis for the link 13 and the center lines of the projection 32 and of the set-screw 33, an end-to-end reversal of the head on the bar 14 provides for the depending extension of the set-screw 33 for its readier access to a person standing on the ground below the open door, the detent projection 32 then extending upwardly of the guide bar axis. Aside from the question of a preferred disposal of the set-screw 33 or of the detent projection 32, the end-to-end reversibility of a symmetrical head 17 on the bar 14 is also understood to permit an operative installation of the same head on a right-hand door as illustrated, or on a left-hand door, whereby a set of the present door-holder elements may be the same for both right-hand and left-hand doors, as is commercially advantageous.

From the foregoing description taken in connection with the accompanying drawings, the advantages of the present door-holder will be readily understood by those skilled in the art to which the invention appertains. While I have described the structure and use of a form of my invention which I now consider to comprise a preferred embodiment thereof, I desire to have it understood that the showing is primarily illustrative, and that such changes and developments may be made, when desired, as fall within the scope of the following claims.

I claim:

1. In combination with a door mounted for its swinging about an upright axis between closed and open positions with respect to a seat therefor provided by a doorway, a guide bar, mutually spaced inner and outer brackets mounted on the door at its inner face and cooperatively supporting said guide bar in generally radial relation to the swinging axis of the door, a head member providing a bore slidably receiving the guide bar portion between the brackets, a link hinged at one end thereof to said head for swinging in a plane including the guide bar axis and perpendicular to the swinging axis of the door, means pivotally anchoring the other link end at a fixed point with

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respect to the doorway, a conically tapered radial projection on said head extending in a line parallel to the axis of hinging of the link to the head in a plane including said axis, and a spring detent member carried by the inner bracket and providing a detent hook arranged to resiliently and yieldingly engage the outer side of said head projection to normally and releasably retain the head in a limiting inner position thereof.

2. A structure in accordance with claim 1 having a set-screw mounted in the head at the opposite side of the head from the projection and operative against the bar in the line of the projection.

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3. A structure in accordance with claim 1 having the common plane of the head projection and the link-hinging axis at the head equidistant from the head ends.

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