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STAY MECHANISMS

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FIG.1

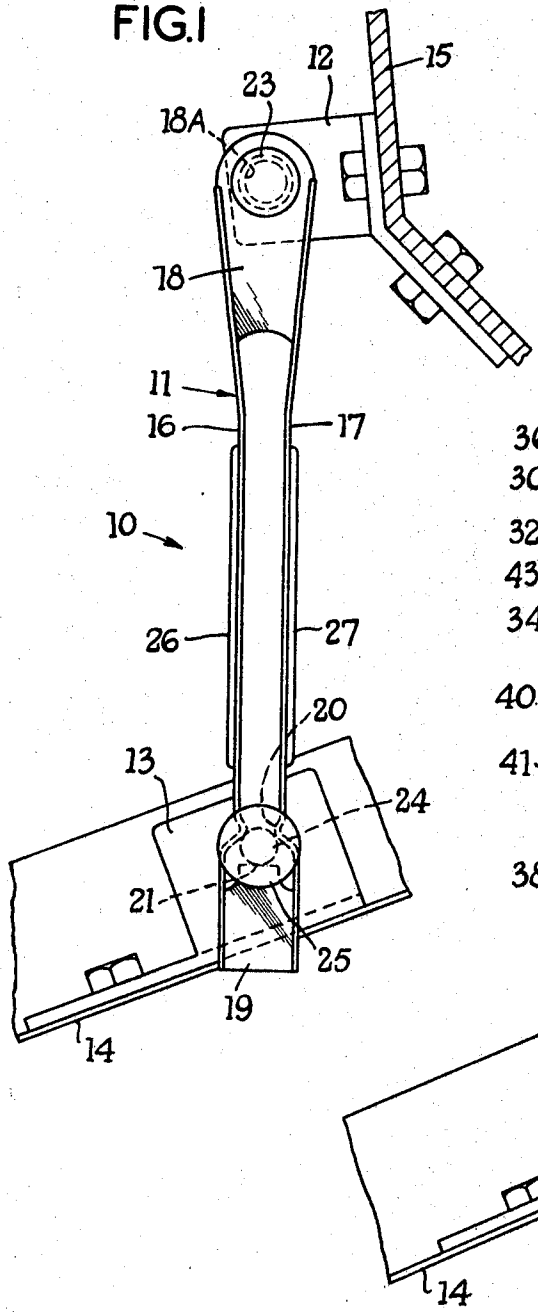
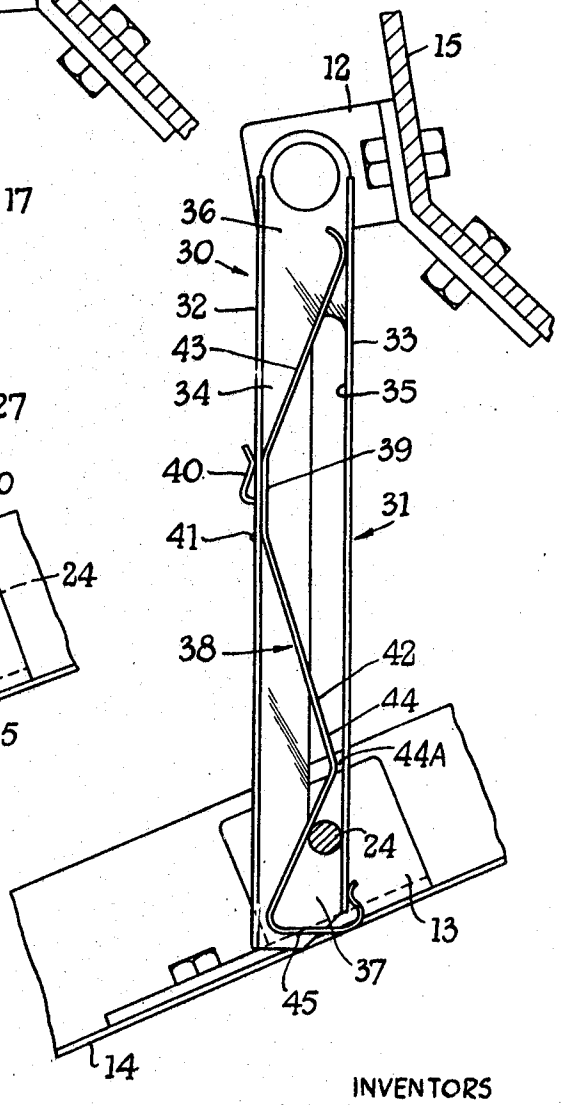


FIG.4



INVENTORS
Paul Carl Roger Fernberg
Clifford Alexander Seckerson
by Philip E. Parker,
Attorney

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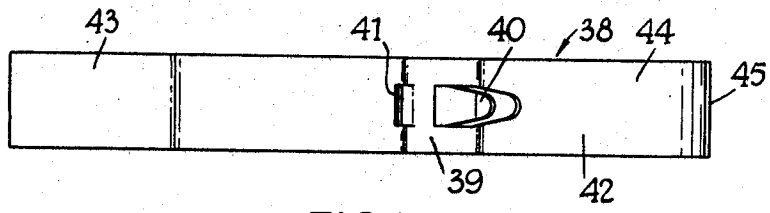


FIG.5

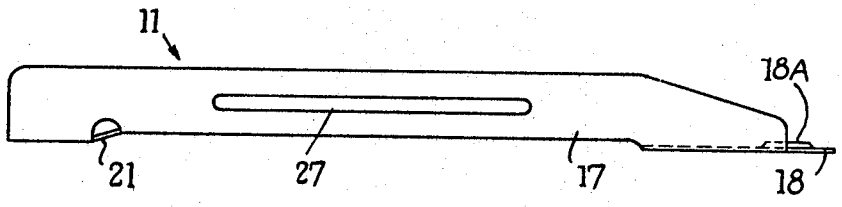
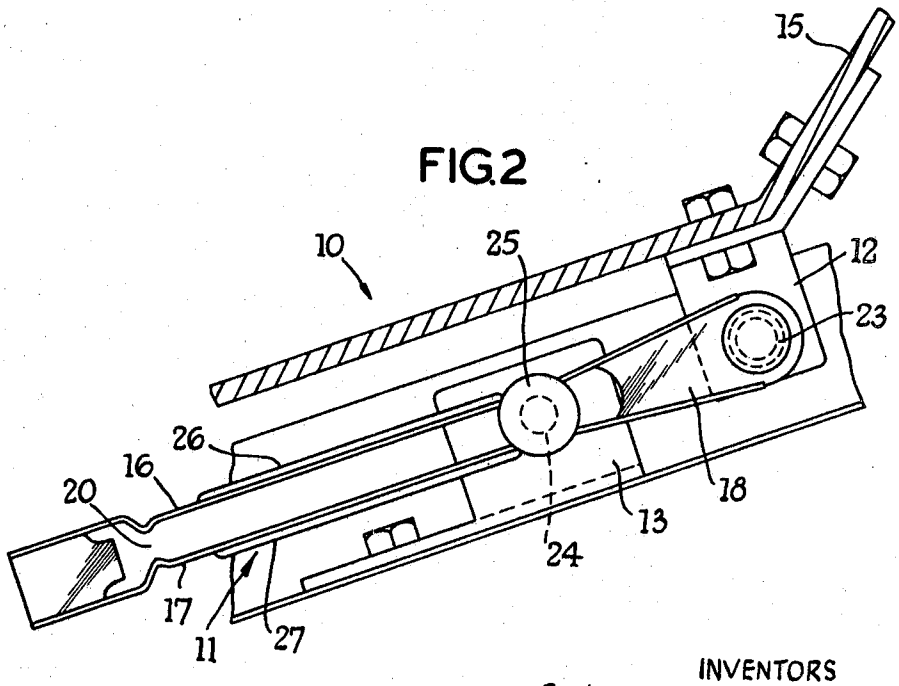


FIG.3

FIG.2



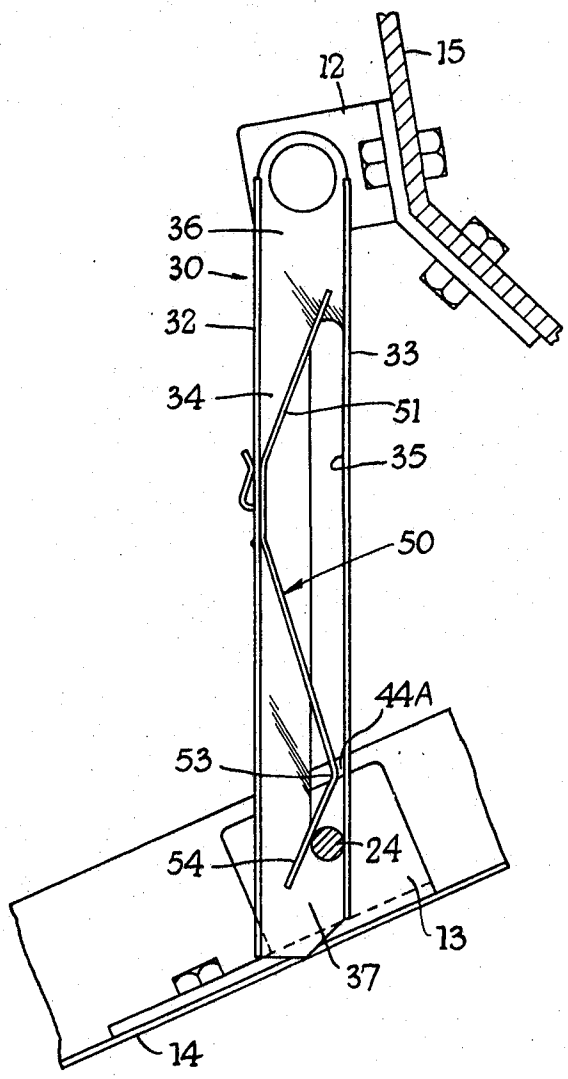
INVENTORS
Paul Carl Roger Fernberg
Clifford Alexander Seckerson
by Philip E. Parker,
Attorney

July 16, 1968 C. A. SECKERSON ET AL 3,392,997

STAY MECHANISMS

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FIG.6



INVENTORS
Paul Carl Roger Fernberg
Clifford Alexander Seckerson
by Philip E. Parker, Attorney

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STAY MECHANISMS

Clifford Alexander Seckerson, Iver Heath, and Paul Carl Roger Fernberg, Farnham Common, England, assignors to United-Carr Incorporated, Boston, Mass., a corporation of Delaware

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6 Claims. (Cl. 292—268)

ABSTRACT OF THE DISCLOSURE

A stay arm for holding two relatively movable members apart. Two spaced, generally parallel limbs act as a guideway for a pin extending therebetween. The limbs are joined at one end by an end plate pivotally connected to one of the members. Means are provided between the limbs for snap engagement with a pin attached to the other of the members whereby the pin is snappingly held in a position to positively hold the two members apart. The pin is releasable by application of a manual force to one of the members in a direction tending to move said one member toward the other member.

The present invention relates to a stay arm for holding two relatively movable members apart and which is particularly, but not exclusively, suitable for use in holding the bonnet of a rear-engined vehicle in the open position.

According to the invention there is provided a stay arm for holding two relatively movable members apart and comprising two spaced generally parallel limbs adapted to act as a guideway for a pin extending therebetween, the limbs being joined at one end by a substantially flat end plate provided with means for attaching the stay arm pivotally to one of the members and being joined at their other ends by a substantially flat web formed with a stop, the distance between the limbs being reduced adjacent the stop to form a neck in the guideway and one or both of the limbs being sufficiently resilient to allow a pin attached to the other of the said members and of diameter approximately equal to the spacing between the limbs to snap through the neck into engagement with the stop.

According to a further aspect of the invention there is provided a stay arm for holding two relatively movable members apart, one of which has a rigidly attached projecting pin, the stay arm being substantially channel shaped to provide two parallel limbs joined by a flat base, the base being slotted adjacent one limb to form a guideway for the said pin and provided at one end with means for attachment to the other of said members and the other of the said limbs carrying a resilient member having a projecting finger formed with an elbow overlying the guideway for the said pin and providing a resiliently movable interference in the guideway to movement of the pin therealong.

Preferred forms of the invention will now be described with reference to the accompanying diagrammatic drawings, in which:

FIGURE 1 is a side elevation showing a stay mechanism according to the invention holding the bonnet of a vehicle in the open position;

FIGURE 2 is an elevation similar to FIGURE 1, but showing the bonnet in the closed position;

FIGURE 3 is a front elevation of the stay arm of FIGURES 1 and 2;

FIGURE 4 is a side elevation similar to FIGURE 1, but showing a stay mechanism incorporating a modification of the stay arm of FIGURE 3,

FIGURE 5 is a front elevation of the spring forming a part of the stay arm of FIGURE 4, and

FIGURE 6 is a side elevation similar to FIGURE 4 but showing a modified spring.

FIGURES 1 and 2 illustrate a stay mechanism, which is indicated at **10**, comprising a stay arm **11** and two flanges **12** and **13**.

The stay mechanism **10** is attached between a vehicle frame **14** and bonnet **15** which is hinged to the frame **14** and movable relative to the frame **14** from the closed position of FIGURE 2 to the open position of FIGURE 1 where it is held against return by the stay mechanism **10**.

The stay arm **11** is manufactured from a single strip of material, such as steel by shearing an elongate slot from the strip, stamping a rib in the strip across and adjacent to one end of the slot and then bending the sides of the strip including all the material on either side of the slot upwardly at right angles to the strip and on the same side of the strip as the rib. The arm **11** is then rendered resilient and rustproof in any convenient manner.

The finished arm comprises two spaced resilient limbs **16** and **17** joined at one end by a substantially flat plate **18** and at the other end by a substantially flat web **19**. The limbs **16** and **17**, which comprise the material lying on each side of the slot sheared in the blank strip, extend approximately in parallel and at right angles to the plate **18** and web **19**.

Adjacent the web **19** the limbs **16** and **17** are crimped inwardly to form a neck **20** the crimping being formed by the rib stamped in the strip during manufacture.

The web **19** is formed with an extension directed towards the neck **20** and acting as a stop **21**.

The plate **18** is pivotally attached to the flange **12** by means of an aperture **18A** which receives and acts as a bearing for a pivot pin **23** rigidly attached to the flange **12** which is bolted to the bonnet **15**.

The other flange **13** is bolted to the vehicle frame **14** and carries a cylindrical pin **24** which extends through the limbs **16** and **17** of the arm **11** and is retained therethrough by a circular flange **25**.

The diameter of the pin **24** and the dimensions of the arm **11** are such that the pin **24** is lightly held between the limbs **16** and **17** and can be snap-engaged past the neck **20** into abutment with the stop **21**, in which position it is held under tension so that it cannot rattle or vibrate.

In use, the bonnet **15** is lifted from the position shown in FIGURE 2 drawing the limbs of the arm over the pin **24** until the pin meets the neck **20**. A sharp jerk on the bonnet is sufficient to snap-engage the neck **20** over the pin and into abutment with the stop **21**. The bonnet is now held in the raised position by the arm **11** and any play or movement between the arm **11** and the pin **24** is prevented by the pinching action of the limbs **16**, **17** and the stop **21** on the pin.

In order to close the bonnet a sharp downward pull is given to the bonnet to snap-engage the neck **20** over the pin **24** and the bonnet is then lowered easily into the closed position.

The limbs **16** and **17** provide a guideway for the pin **24** over the whole of its travel along the arm and both limbs are strengthened by lengthwise extending external ribs **26** and **27**, respectively. If desired, the ribs **26** and **27** may be formed on the inside of the limbs, in which event the pin **24** rides on the ribs.

FIGURE 4 illustrated at **30** a modification of the stay mechanism **10** of FIGURES 1 and 2. The stay mechanism **30** is similar in its manner of operation to the stay mechanism **10** but differs in that it includes a stay arm **31** which

is substantially channel shaped and comprises two relatively rigid limbs **32** and **33** joined by a base **34**.

A slot **35** is formed in the base **34** adjacent the limb **33** and the material at the ends of the base **34** forms an end plate **36** and a web **37**.

The end plate **36** is pivoted to the flange **12** in the same manner as the stay arm **11** and the pin **24** projects through the slot **35**, which acts as the guideway for the pin.

The limb **32** includes a resilient member, in the form of a spring **38**, which is releasably attached to the limb. The spring **38**, which is shown in detail in FIGURE 5, comprises a base **39** which is attached to the limb **32** and two resilient fingers **42** and **43**.

The base **39** is attached to the limb **32** with the aid of a tongue **40** and lug **41** which snap-engage into an aperture, not shown, in the limb **32** and the two resilient fingers **42** and **43** extend from opposite ends of the base **39**.

The fingers **42** is inclined first towards the limb **33** and then back towards the limb **32** so as to form an elbow **44** which overlies one end of the slot **35** and forms a neck **44A** therein and free end **45** of the resilient finger **42** is then bent over and around the limb **33**. The finger **42** is inclined towards and overlies the other end of the slot **35**.

In use, the arm **31** can move freely over the pin **24** from the position, not shown, in which the bonnet **15** is lowered and the pin **24** is held firmly against the limb **33** by the finger **43**, to prevent any rattle or vibration, to the position in which the bonnet is partially raised and the pin **24** abuts the elbow **44** in the resilient finger **43**.

In order to raise the bonnet fully, it is lifted sharply so as to snap-engaged the pin **24** through the neck **44A** into the position shown in FIGURE 4. The bonnet is then held in the raised position by the spring **58** until a sufficient downward force is applied to the bonnet to snap-engage the pin back through the neck **44A** formed by the elbow **44**.

The engagement of the free end **45** of the resilient finger **42** of the spring **38** behind the limb **33** of the arm **31** is not essential and serves only to increase the resistance which the spring offers to movement of the pin **24**.

In a modification of the arm **31**, which is illustrated in FIGURE 6 a spring **50** is provided which has resilient fingers **51** and **52**, the free end of the finger **51** overlying one end of the slot **35** and the finger **52** having an elbow **53** overlying the other end of the slot and a free end **54** which is free to move and flex resiliently away from the limb **33**.

It will be seen that the stay mechanisms illustrated and described herein provide a convenient and efficient means for holding the bonnet of a vehicle in the open or raised position in the manner described but it will be appreciated that, either mechanism can be used to hold any two relatively movable members apart in a similar manner and that minor modification may be made to the mechanism without departing from the scope of the invention claimed.

What we claim is:

1. A one-piece, stamped, sheet metal stay arm for holding two relatively movable members apart and comprising two spaced, flexible, generally parallel limbs providing a guideway for a pin attached to one of the members and extending between the limbs, the limbs being joined adjacent one end of the guideway by a substantially flat end plate which is pivotally attached to one of the members and being joined adjacent their other ends by a substantially flat web formed with a stop projecting from the web toward the end plate, opposed portions of the limbs adjacent the stop having been pinched inwardly to form a neck in the guideway, the inwardly pinched portions and the stop defining a pin-receiving pocket which is in straight line communication with the remainder of the guideway, the limbs being sufficiently resilient to allow the pin which has a diameter approximately equal to the spacing between the limbs to snap through the neck into the pocket and into engagement with the stop.

2. A stay arm as claimed in claim **1** in which the limbs are generally flat and perpendicular to the end plate and web.

3. A stay arm as claimed in claim **2** in which each limb is formed with a lengthwise extending rib.

4. A stay arm as claimed in claim **1** in which the pin is held under tension between the neck and the stop after snapping through the neck.

5. A stay arm for holding two relatively movable members apart, one of which has a rigidly attached projecting pin, the stay arm being substantially channel shaped to provide two parallel limbs joined by a flat base. the base being slotted adjacent one limb to form a guideway for the said pin and provided at one end with means for attachment to the other of said members and the other of the said limbs carrying a resilient member having a projecting finger formed with an elbow overlying the guideway for the said pin and providing a resiliently movable interference in the guideway to movement of the pin therealong, the resilient member comprising a spring attached to the said other limb and having one finger formed with an elbow overlying one end of the guideway and another finger extending towards the one limb so as to overlie the other end of the guideway.

6. A stay arm as claimed in claim **5**, in which the free end of said one finger of the spring is resiliently engaged behind the said one limb to strengthen resistance of the elbow to movement away from the said one limb.

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MARVIN A. CHAMPION, *Primary Examiner.*

E. J. McCARTHY, *Assistant Examiner.*