United States Patent [19]

Bulin

[11] **3,740,791**

[45] **June 26, 1973**

[54] **CONTROL ARM ASSEMBLY FOR HINGED MEMBERS**

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[22] Filed: **Apr. 24, 1972**

[21] Appl. No.: **246,707**

[52] **U.S. Cl.** **16/139**, 16/140, 297/376, 292/263

[51] **Int. Cl.** **E05d 11/10**

[58] **Field of Search** 108/1, 6, 9; 297/374, 376, 375; 292/263, 276, 275; 16/138, 171, 139, 140, 182, 191, 166, 178, 179, 137, 82

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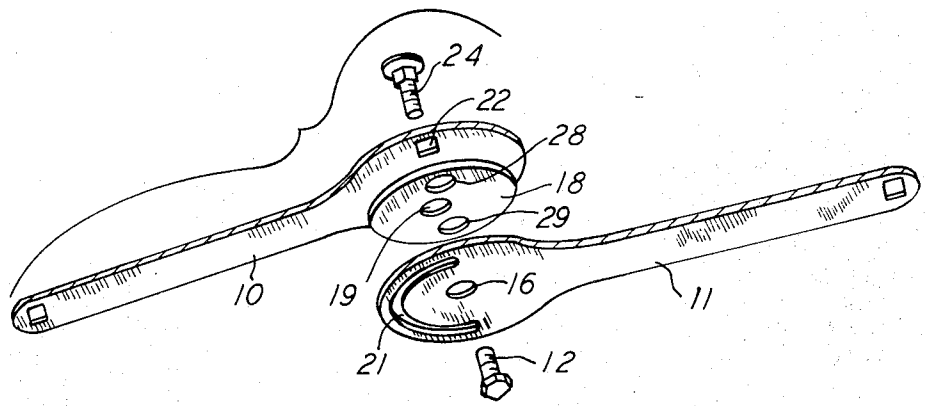
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Assistant Examiner—Peter A. Aschenbrenner
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[57] **ABSTRACT**

A control arm assembly for hinged members, and including a pair of arms pivotally connected together and with the free ends of the arms being attachable to a hinged member and an anchor point, and with the arms limiting the extent of pivot of the hinged member. The arms serve as either left-hand or right-hand assembly, depending upon arrangement of parts, and one of the arms includes an arcuate slot and the other of the arms has two spaced-apart openings for alternately receiving a bolt which also goes through the slot, and, depending upon which of the two holes the bolt is received in, the arms are either left-hand or right-hand in assembly. The arms may also be fastened together, by means of a threaded knob, so that they can be retained in a selected pivoted position to hold the hinged member in a certain pivoted position.

7 Claims, 3 Drawing Figures



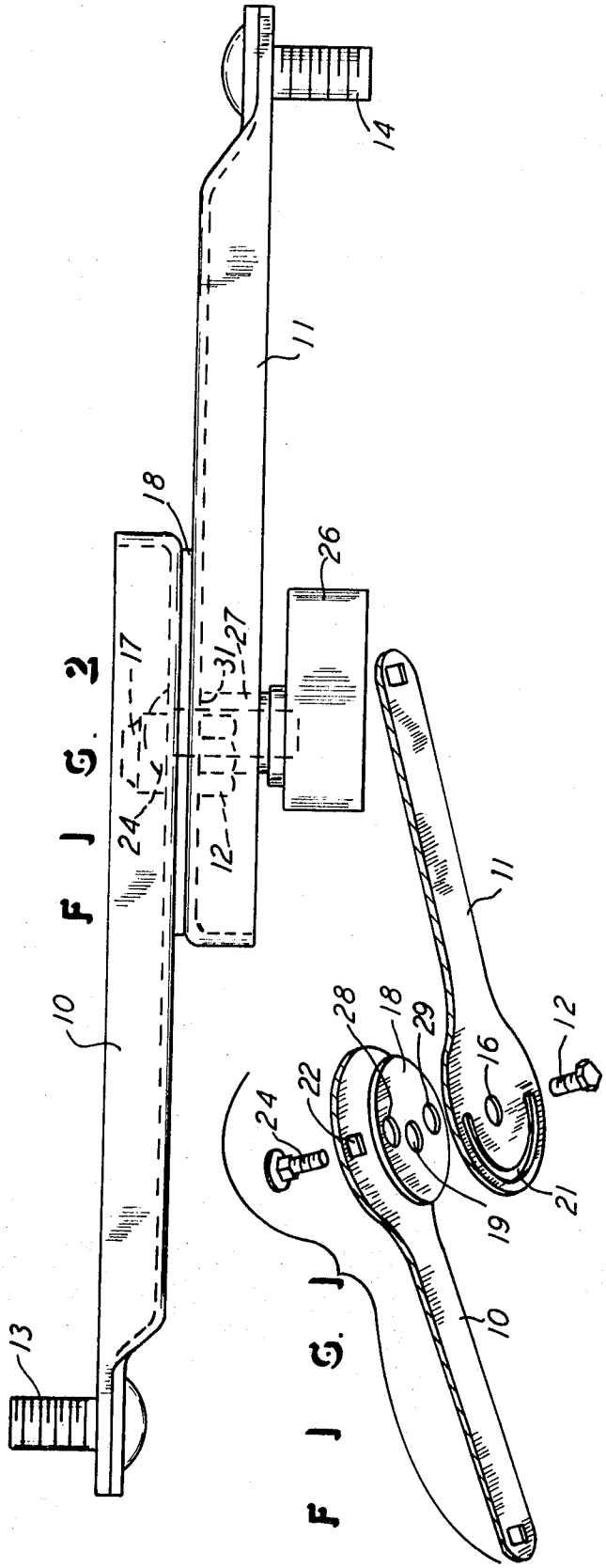


FIG. 2

FIG. 1

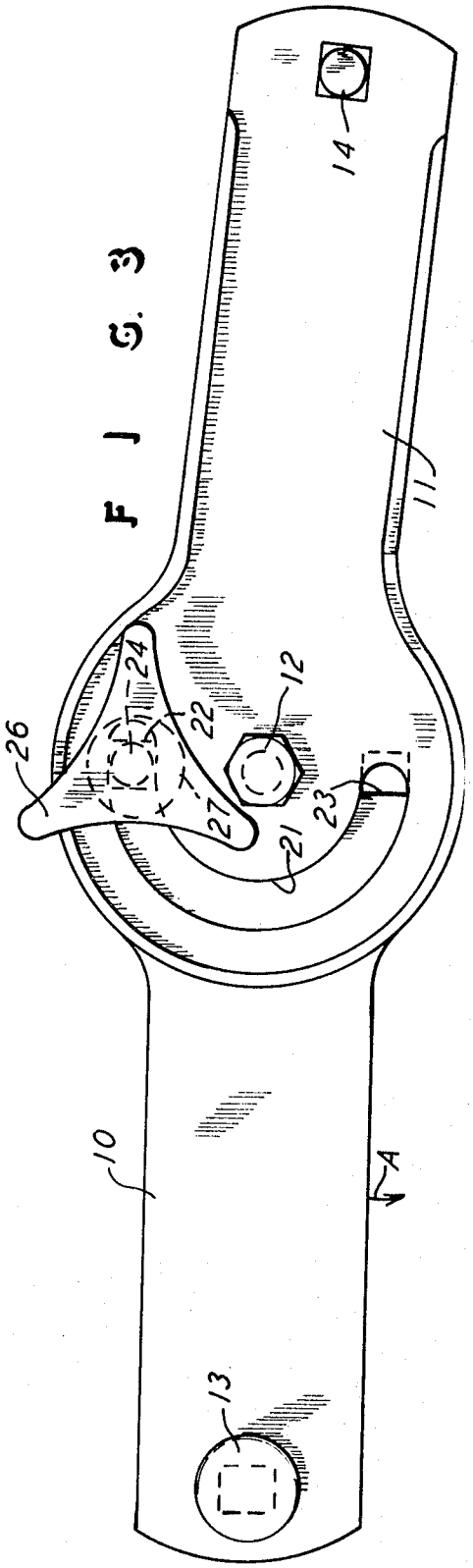


FIG. 3

CONTROL ARM ASSEMBLY FOR HINGED MEMBERS

This invention relates to a control arm assembly for hinged members, and, more particularly, it relates to an assembly of a pair of pivotal arms which limit the pivot of the hinged member and which can be secured to hold the hinged member in a set pivoted position.

BACKGROUND OF THE INVENTION

Control arms or regulator arms for hinged members are commonly known and used in many different types of installations. For instance, they are used on hinged doors to control the limit to which the door can swing open. Also, these regulator arms have fasteners, which are in the form of threaded knobs, for securing the regulator arms in a set pivoted position and thereby hold the hinged member in a set pivoted or hinged position.

However, the prior art arm assemblies commonly require three pieces in order to have a selected two of the pieces form a right-hand assembly or a left-hand assembly. That is, one of the three pieces is a common arm piece while the other two pieces form the left-hand arm and the right-hand arm, only one of which is used in the final two-piece assembly. However, to selectively provide right-hand and left-hand arm assemblies, th prior art requires the three pieces mentioned.

That is, the majority of door regulator arms are composed of two pieces, one arm is a common piece and the other arm is a right-hand arm or a left-hand arm. The right-hand arm can be used only in a right-hand assembly, and the left-hand arm can be used only in the left-hand assembly. Therefore, three distinct pieces must be provided in order to selectively form the right-hand assembly and a left-hand assembly. Further, the prior art assemblies commonly have the pivot point for the arms used as the locking point when it is desired to set the arms in a fixed position to hold the hinged member fixedly. In using the pivot point as the locking point, there is no mechanical advantage so the operator must exert a high locking torque to secure the arms in that fixed position.

It is a general object of this invention to provide an improved control arm assembly, compared to the prior art assemblies mentioned above, and to do so by providing only two arms which fully serve the purpose of selectively assembling either a right-hand or a left-hand assembly, rather than requiring a selection of two arms from three pieces.

Another object of this invention is to provide a control arm assembly which can be locked in a set pivoted position to hold a hinged member in a set hinged position, and to do so with a locking arrangement which has a mechanical advantage so that the control arms are stable in their selected position and so that the operator can achieve the set position with a minimum of effort.

Still further, it is an object of this invention to provide a control arm assembly which combines the features of the aforementioned two objectives, namely, having an assembly which can be arranged from only two pieces and made to either a right-hand or left-hand assembly and which has a mechanical advantage in securing the assembly in a set position. In accomplishing this object, the parts utilized in this assembly are relatively simple parts, and it is a simple procedure for the alteration of the parts to convert them from either a left or right-hand assembly and into the opposite type of assembly.

Other objects and advantages will become apparent upon reading the following description.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is an exploded view, partly in section, of certain of the parts forming an embodiment of this invention.

FIG. 2 is a side elevational view of a preferred embodiment of this invention.

FIG. 3 is a bottom plan view of FIG. 2.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

The drawings show a control arm assembly which may be used on hinged members, such as the doors of the vehicles, including tractor cabs, to limit the degree to which the door can swing open, and to also hold the door in any degree of open position. Thus, two arms **10** and **11** are pivoted together by means of a pivot bolt **12** extending through aligned holes in the arms **10** and **11** at the inner ends of the arms **10** and **11**. The outer ends of the arms **10** and **11** have pins or bolts **13** and **14**, respectively, and these bolts **13** and **14** attach to the hinged member or door and to the frame relative to which the hinged member is movable. See for instance the general application shown in U.S. Pat. No. 3,141,694 where two arms are pivoted together for controlling the hinge movement of a hingedly mounted member.

Thus, the members **10** and **11** have central openings **16**, such as the shown opening in the lower member **11** in FIG. **1**, and they receive the pivot bolt **12** which is secured with a locking nut **17** shown in FIG. **2**. Also, FIG. **1** shows the arms **10** and **11** with their ridges removed, and thus the sectioning is shown in FIG. **1** for better clarity in that type of showing. A friction disc **18** is disposed between the arms **10** and **11** and has a center opening **19** for also receiving the pivot boet **12**. The disc **18** of course serves the purpose of increasing the frictional forces between the members **10** and **11** so that they can be more readily secured in a fixed pivoted position, by means described later.

FIGS. **1** and **3** show that the lower arm **11** has an arcuate slot **21** extending therethrough and centered about the pivot axis which is the axis of the bolt **12**. Further, the slot **21** is semicircular.

The arm **10** has two openings **22** and **23**, and these openings align with the respective ends of the slot **21** when the arms are in the fully extended position, which is the position shown in the drawings. A bolt **24** extends into one of the holes or openings **22** or **23**, such as the hole **22** in which it is shown in the drawings, and the bolt **24** also then extends into the end of the slot **21**. Finally, a fastener, in the form of a knob **26** is threadedly connected with the bolt **24** through the shank **27** of the fastener **26**. Further, the bolt **24** extends through an opening **28** in the friction disc **18**.

With the assembly as shown and described, it will be understood that the arms **10** and **11** can pivot from their extended positions shown and into the direction of the arrow designated A in FIG. **3**, and this is termed a left-hand assembly. Where it is desired that the arms **10** and **11** pivot in the other direction, then the bolt **24** would be removed from the hole **22** and would be placed into the hole **23**, and the arms would then pivot in the direction opposite to the one mentioned and described and this would be a right-hand assembly.

It will be further noticed that the bolt **24** is a carriage type bolt having a square head for fitting into the square openings **22** and **23**, and also the disc **18** has another opening **29** which would receive the bolt **24** in the last assembly described.

With the assembly described, there need be only two arms **10** and **11**, and the positioning of the bolt **24** determines whether the arms are in right-hand or left-hand assembly. The slotted arm **11** can be the bottom arm and can be secured to the frame on which the door is hinged. Also, the knob type fastener **26** is arranged with its shank **27** to abut the arm **11**, at the shoulder **31**, and thereby secure the arms **10** and **11** in a fixed pivoted position, as desired. With the axis of the bolt **24** and its attached fastener **26** offset from the pivot axis defined by the bolt **12**, there is a mechanical advantage in tightening the knob **26** as it is offset from the pivot axis and thus the arms can be easily and efficiently secured in a set and selected pivoted position, compared to locking the bolt **12** on the pivot axis for securing the two arms in fixed pivoted position. In this arrangement, the bolt **12** is the pivot member, and the bolt **24** is a projecting member and it has the releasable fastener **26**, for the purpose mentioned. Of course FIG. **3** shows the arms in their maximum position for the left-hand assembly shown, and they do not want to extend in an over-center position. Therefore, while the holes **22** and **23** align with the ends of the slot **21**, the holes **22** and **23** cannot both align with the slot **21** at the same time since the holes **22** and **23** are slightly over-centered or off-set relative to the pivot axis defined by the bolt **12**, and as seen in FIG. **3**.

What is claimed is:

1. A control arm assembly for hinged members, comprising a pair of arms pivotally connected together at the ends thereof and extending into free ends for pivotally connecting to a hinged member to be controlled in hinged position, one of said arms having an arcuate slot therein spaced from and centered with the pivot axis, the other of said arms having two openings aligned with said slot and being on opposite sides of the pivot axis of said arms for alternately receiving said fastener and thereby alternately forming a left-hand and a right-hand assembly, and a fastener extending through said arcuate slot and a selected one of said openings for releasably tightening said arms together and thereby releasably secure said arms in a set pivoted position.

2. The control arm assembly as claimed in claim **1**, wherein said fastener includes a knob for hand gripping in tightening and loosening said fastener on said arms.

3. The control arm assembly as claimed in claim **1**, wherein when said arms are pivoted to an extended position away from each other, said openings are located to be aligned with the respective ends of said slot.

4. The control arm assembly as claimed in claim **1**, including a pivot member connected with said arms and forming the pivot axis therebetween, a friction disc disposed between said arms and having openings for said pivot member and said fastener.

5. A control arm assembly for hinged members, comprising a pair of arms, a pivot member extending through said arms for pivotally connecting said arms together, one of said arms having an arcuate slot spaced from and centered with the pivot axis, the other of said arms having two openings therein aligned with respective opposite ends of said slot when said arms are in a pivoted position away from each other, and a projecting member extending through a selected one of said openings and said slot for selectively forming a right-hand and a left-hand assembly.

6. The control arm assembly as claimed in claim **5**, including a releasable fastener on said projecting member for selectively tightening on said arms and retaining them in a pivoted position.

7. The control arm assembly as claimed in claim **6**, wherein said fastener and said projecting member are threaded together and said fastener is a knob for hand-tightening on said arms.

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