Oct. 11, 1966 C. A. STINE 3,278,225

ADJUSTABLE TRAY AND MOUNTING THEREFOR

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Fig. 1

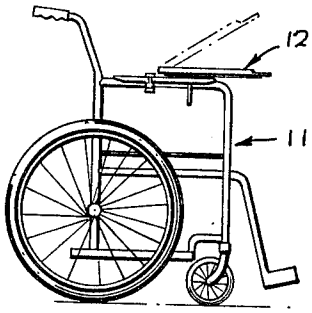


Fig. 2

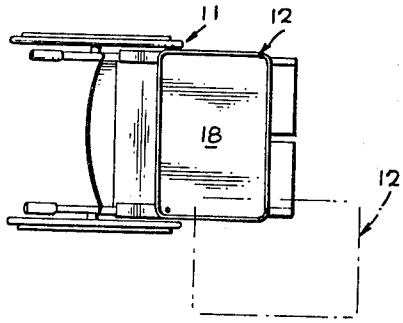


Fig. 3

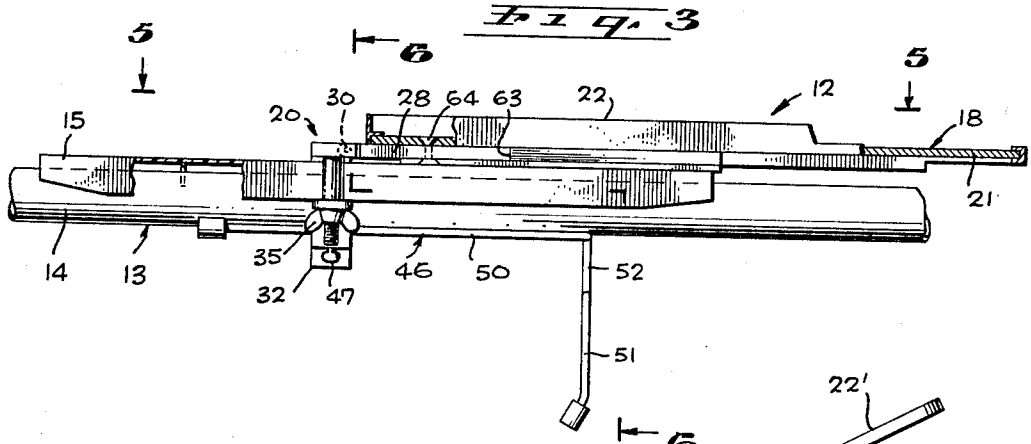
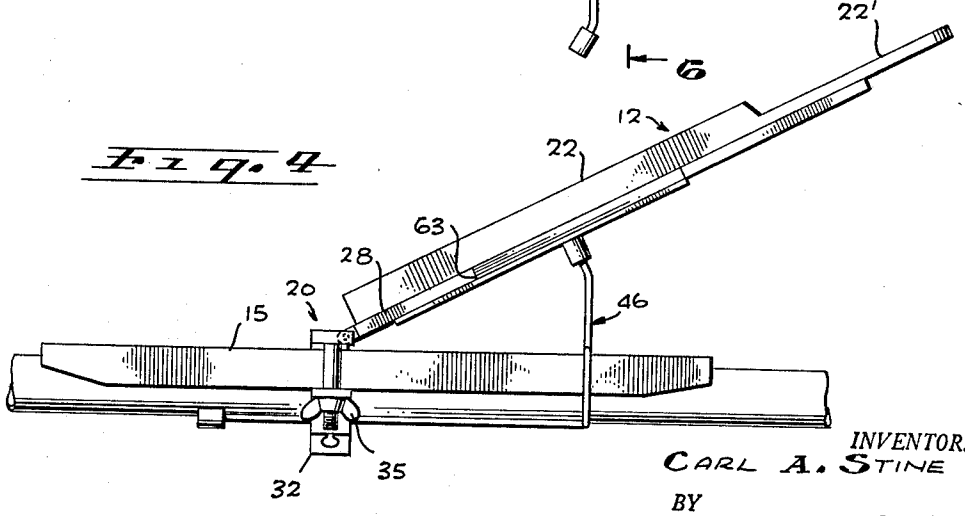


Fig. 4



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ADJUSTABLE TRAY AND MOUNTING THEREFOR

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Fig. 5

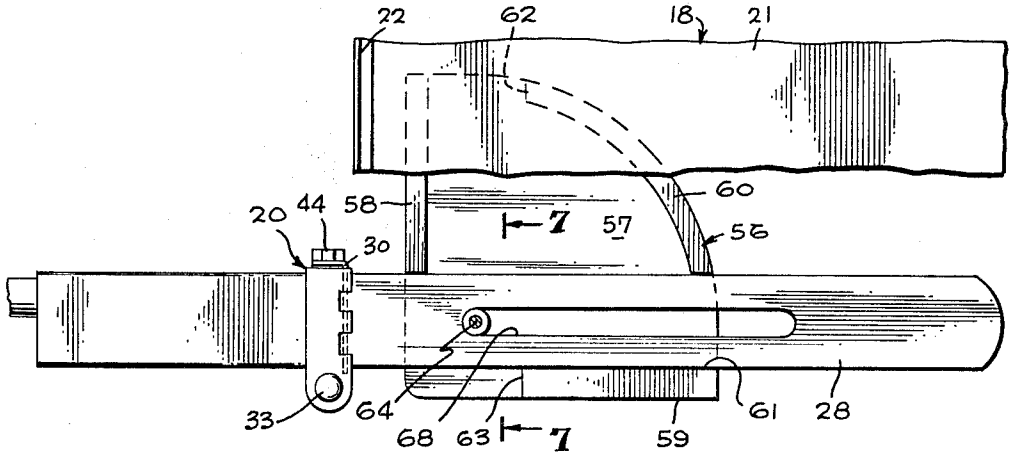


Fig. 6

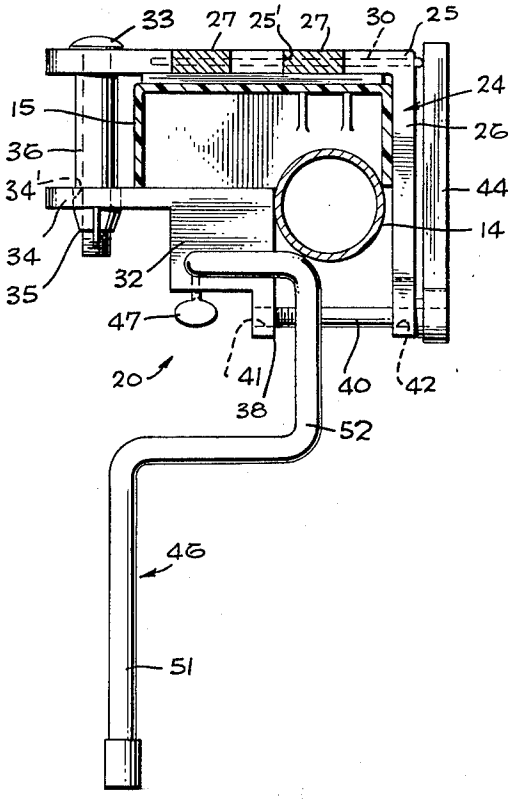


Fig. 7

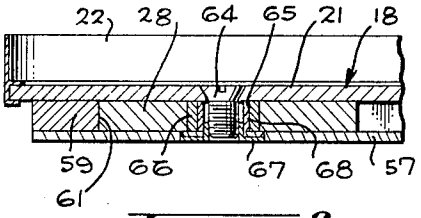
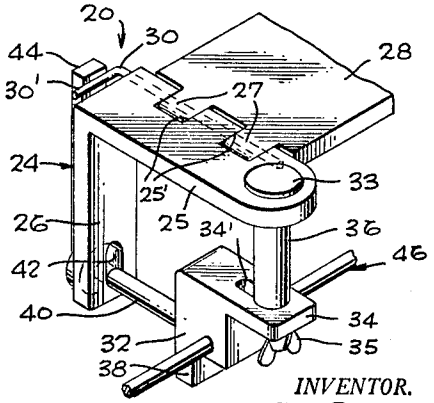


Fig. 8



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ADJUSTABLE TRAY AND MOUNTING THEREFOR

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Fig. 9

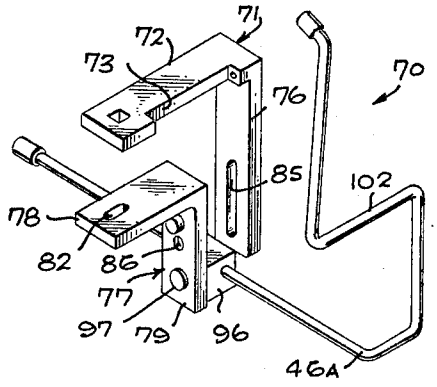


Fig. 11

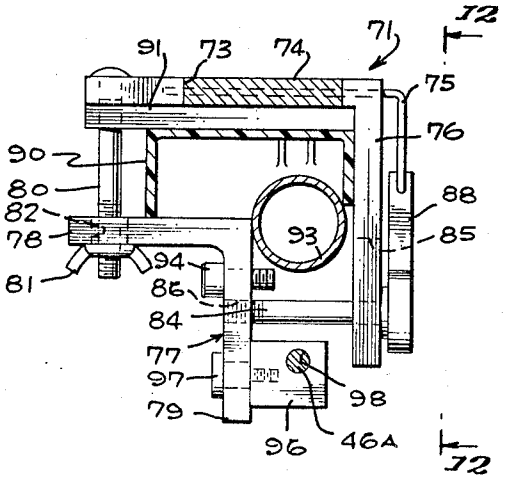


Fig. 12

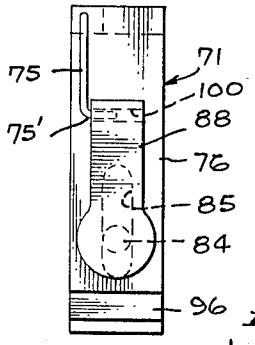


Fig. 10

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United States Patent Office 3,278,225 Patented Oct. 11, 1966

3,278,225

ADJUSTABLE TRAY AND MOUNTING THEREFOR

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Filed Mar. 17, 1965, Ser. No. 440,369
11 Claims. (Cl. 297—148)

This invention has to with trays adapted for mounting on wheelchairs and the like and particularly with mounting means therefor. A tray of this general type is disclosed in my United States Letters Patent No. 2,980,165.

An object of the invention is to provide a new and improved adjustable tray adapted to be detachably mounted on the arm of a wheelchair or the like and embodying novel mounting means whereby the tray can be tilted at a desired angle, caused to lie flat, or be swung aside to an out-of-the-way position.

Another object of the invention is to provide a novel mounting means for a tray or the like which can be readily attached to and detached from the arm of a wheelchair or the like, and a novel mounting means whereby the tray and a portion of the mounting means can be detached if desired.

Another object is to provide a novel mounting for a tray portion which enables the tray to be swung aside to a position at 90° with respect to its normal position thereby permitting a person to enter or leave the wheelchair without removing the tray.

These and other objects will be apparent from the drawings and the following description. Referring to the drawings:

FIG. 1 is a side elevational view of a wheelchair showing a device embodying the invention mounted thereon;

FIG. 2 is a plan view of the chair and device of FIG. 1;

FIG. 3 is a fragmentary side elevational view of a portion of the chair arm and the adjustable tray and mounting therefor on a larger scale, parts being broken away and shown in section;

FIG. 4 is a view generally similar to FIG. 3, but showing the tray in an inclined position;

FIG. 5 is a fragmentary plan view on line **5—5** of FIG. 3, with a portion of the tray broken away;

FIG. 6 is a sectional view on line **6—6** of FIG. 3, but on a larger scale;

FIG. 7 is a fragmentary sectional view on line **7—7** of FIG. 5, but on a larger scale;

FIG. 8 is a fragmentary isometric view of the main portion of the mounting means;

FIG. 9 is an isometric exploded view of a portion of a modified form of mounting means;

FIG. 10 is a fragmentary side elevational view of the modified mounting means and a portion of the tray assembly shown mounted on the arm of a wheelchair;

FIG. 11 is a cross sectional view on line **11—11** of FIG. 10; and

FIG. 12 is an elevational view on line **12—12** of FIG. 11.

More particularly describing the invention, reference numeral **11** generally designates a wheelchair having a tubular framework and **12** designates the adjustable tray of the invention. The tray is shown mounted upon one of the arms **13** of the wheelchair, the arm including a tubular frame member **14** which extends generally horizontally and a sheet metal, plastic or other suitable armrest **15** which is shown (FIG. 6) as generally channel-shaped in cross section.

The adjustable tray includes a tray member **18** and a mounting means **20**. The tray itself may be of any desired shape and construction. It has been illustrated as being generally rectangular in plan with rounded corners and being formed of a plate **21** which may be made

of metal or plastics or other suitable material. This has a marginal decorative and article-retaining strip **22** attached thereto, the strip being of reduced height in the region **22'**. The mounting means **20** includes a mounting bracket **24** which is preferably metal and this includes two legs, **25** and **26**, disposed normal or at right angles to each other. The upper leg **25** is recessed at **25'** to receive tongues **27** of a tray carrier arm **28** which is hingedly secured thereto by means of a pintle or hinge pin **30** which extends through the adjacent portions of the members. As will later appear, the tray **18** is mounted on the arm.

The upper leg **25** of the mounting bracket rests upon the top of the arm of the chair, while the other leg **26** extends down the innerside of the chair arm. A clamping block **32** adapted to engage the outerside of the tubular frame member **14** is attached to the two legs of the mounting bracket in the following manner. A bolt **33**, carried by the upper leg **25**, is received in a slot **34'** in an ear portion **34** of the block and passes therethrough to receive a wingnut **35**. A sleeve **36** on the screw serves to limit or control the spacing of the parts.

Between the leg **26** of the bracket and a second ear **38** of the block I provide a threaded pin **40** which is received in a threaded opening **41** in the block. The pin is slidably and rotatably received in a slot **42** in leg **26**. Fixed to the outer end of the screw is a handle or lever **44** and the parts **40, 44** form what may be termed a lever lock. The lever lock serves to tighten the parts against and clamp the tubular frame and arm of the chair. The lever lock also serves to retain the outer end portion **30'** of the hinge pin **30** which is disposed parallel to the outer surface of the leg **26** of the bracket.

The block **32** is drilled to receive a tray supporting rod **46** which may be adjustably anchored by a thumbscrew-type setscrew **47**. The rod includes a long, straight main section **50** and an end section **51** normal thereto but laterally offset by an intermediate semi-U-shaped portion **52**. With this construction the portion **52** of the rod fits around and partially receives the arm of the chair and any undue weight imposed on the rod will be borne by the chair when the rod is adjusted to the position of FIG. 4 to support the tray.

The tray is mounted upon the aforementioned arm **28** and for this purpose is provided with an arm housing **56** having, generally, the shape of a quarter sector of a circle when viewed in plan. This housing includes a main wall **57** which is spaced below the wall **21** of the tray by marginal spacer strips **58**, **59**, and **60**. These define two slots **61** and **62**, disposed at right angles to each other and a larger opening or slot **63** in which the arm is constantly received. The arm may be selectively positioned to extend through either of the two slots and thus the tray can be adjusted to either of the positions shown in FIG. 2. The tray itself is mounted for movement slideably with reference to the arm by means of a screw **64**, a spacer tube **65**, a bearing sleeve **66** therearound and a nut post **67**. The sleeve and screw extend through a slot **68** provided in the arm.

In the operation of the device it will be apparent that by removing the lever lock, **40**, **44** and loosening thumbscrew **35** the entire assembly can be removed from the chair arm. With the lever lock and thumbscrew loosened, the mounting can be adjustably positioned on the chair arm to accommodate the individual. Also, if desired, the lever **44** can be turned to permit release of the hinge pin which in turn enables removal of the tray carrier arm and the tray attached thereto.

It is also apparent that the tray can be readily adjusted to either of the two positions shown in FIG. 2 merely by moving it longitudinally along the arm so as to position the end of the arm within the housing **56** and allow

the tray to be turned. Another feature is the fact that the tray holding rod **46** can be moved to an out-of-the-way position shown in FIG. 6 when not in use and also that it can be readily swung up to position and then adjusted to support the tray at any desired angle.

Referring now to FIGS. 9–12 wherein there is disclosed a modified form of mounting means generally designated by numeral **70**, this comprises a mounting bracket **71** which is substantially the same as bracket **24** previously described. It includes an upper leg **72** which is recessed at **73** to receive a tongue portion **74** of the tray carrier arm **28A**, the latter being hingedly mounted on pin **75**. The bracket also has a lower leg **76**.

The mounting means includes a clamping bracket **77**, having the two legs **78** and **79** disposed at right angles. This is detachably secured to the upper bracket by a bolt **80** and thumbnut **81**, the bracket being slotted at **82** to accommodate the bolt.

The clamping bracket is also secured to the stationary bracket by means of a threaded pin **84** which extends through a slot **85** in leg **76** and is threadedly received in a hole **86** in leg **79**. This pin has a handle **88** fixed to its outer end. It will be apparent that, by tightening the thumbnut **81** and pin **84** the mounting means is firmly secured to the arm **90** of the chair. A spacer **91** is shown in FIG. 11. In some cases where the arm of the chair comprises only a tubular member **93** without a covering armrest portion, the frame member is nevertheless firmly engaged and to assist and properly locate the clamping bracket I provide a screw **94** in the lower leg of the bracket.

A feature of the invention is that I mount a rod mounting block **96** on the leg **79** of the clamping bracket as by means of a screw **97** so that the same may pivot relative to the bracket. This member is provided with a bore **98** to receive the tray supporting rod **46A** which is generally similar to the rod **46** except that it is offset oppositely thereto so that it extends around the innerside of the chair arm.

As another feature I provide a hole **100** in the handle **88** for the purpose of receiving the end portion **75'** of pin **75** which serves to detachably secure the arm **28A**. Thus with the parts in the position shown the pin is held in place.

With the construction described the tray-supporting rod **46A** may pivot about its axis in the mounting block and thereby enable the portion **102** of the rod to rest upon the upper surface of the armrest irrespective of the height thereof which varies in different makes of chairs. Thus the rod **46A** and its mounting member **96** are self-adjusting to the thickness or height of the arm of the chair.

Although I have illustrated and described preferred forms of my invention, I contemplate that various changes and modifications can be made therein without departing from the invention, the scope of which is indicated by the following claims.

I claim:

1. In an adjustable tray and mounting therefor, a mounting bracket adapted to be attached to an arm portion of a wheel chair or other support, an arm, a tray carried by said arm, hinge means detachably securing said arm to said bracket and including a removable hinge pin, and a lever lock member on said bracket serving to tighten said bracket against the support on which it is mounted and normally serving as a guard to engage and cover an outer end of said hinge pin and prevent removal thereof, said lever lock member being movable to release said hinge pin for removal.

2. In an adjustable tray, a mounting bracket adapted to be secured to a support, an arm extending from said bracket, a tray, a pin-and-slot-type connection between said tray and said arm, and an arm housing beneath the tray at one corner thereof, said arm housing providing a plate beneath said tray and providing a main slot at one

side through which the arm is received, said housing defining two other slots disposed beyond said main slot and facing in different directions with respect to each other whereby said arm can be positioned to extend selectively through either of said two other slots.

3. In an adjustable tray and mounting therefor, a mounting bracket means adapted to be secured to a chair arm of a wheelchair or the like, an arm hingedly attached to said mounting bracket means, a tray carried on said arm, and a tray-supporting rod mounted in said mounting bracket means and adjustable to a position to engage the underside of the tray and support the tray in an inclined position, said tray-supporting rod including a long straight main section carried by the mounting bracket means below the top thereof, a tray-supporting end portion disposed at a substantial angle thereto, and a semi-U-shaped section therebetween, said main section being adjustable longitudinally and rotatively in the bracket means, said semi-U-shaped section being adapted to extend partially around the chair arm with one side leg of the portion adapted to rest upon the upper surface of the chair arm.

4. The tray and mounting set forth in claim **3** in which said tray-supporting rod is mounted on the mounting bracket means for limited pivotal movement about a horizontal axis normal to the chair arm.

5. In a mounting for a tray, a mounting bracket means comprising a bracket having a first and a second leg disposed at right angles to each other and adapted to fit against a chair arm of a wheelchair or the like with the first leg over the chair arm and the second leg depending therefrom along one side of the chair arm, a clamping block beneath said one leg and against a portion of the chair arm, means detachably securing said block to said first leg in spaced relation thereto, and means carried in part by said second leg for drawing said block toward said second leg to clamp a portion of the chair arm between said block and said second leg.

6. Mounting means for a tray, comprising a bracket having a first and a second leg disposed at right angles to each other and adapted to fit against a chair arm of a wheelchair or the like with the first leg over the chair arm and the second leg depending therefrom along one side of the arm, a clamping block beneath said one leg and against a portion of the chair arm, a screw dependently mounted in said first leg and extending through said block, a nut on said screw, a spacer sleeve on said screw between said first leg and said block, and means carried in part by said second leg for drawing said block toward said second leg to clamp a portion of the chair arm between said block and said second leg.

7. In an adjustable tray and mounting therefor, a mounting bracket means comprising a bracket having a first and a second leg disposed at right angles to each other and adapted to fit against a chair arm of a wheelchair or the like with the first leg over the chair arm and the second leg depending therefrom along one side of the chair arm, a clamping block beneath said one leg and against a portion of the chair arm, means detachably securing said block to said first leg in spaced relation thereto, means carried in part by said second leg for drawing said block toward said second leg to clamp a portion of the chair arm between said block and said second leg, a tray-supporting arm hingedly carried by said bracket, a tray carried on said tray-supporting arm, and a tray-supporting rod mounted in said clamping block and adjustable to a position to engage the underside of the tray and support the tray in an inclined position.

8. In an adjustable tray and mounting therefor, a mounting bracket adapted to be attached to an arm portion of a wheelchair or other support, an arm, a tray carried by said arm, hinge means detachably securing said arm to said bracket and including a hinge pin removable in one direction and having a projecting outer end portion, and a threaded pin on said bracket serving to tighten

said bracket against the support on which it is mounted and having a handle on one end, said handle being formed to receive the outer end portion of said hinge pin and prevent removal thereof, said handle being movable to release said hinge pin for removal.

9. In a mounting for a tray, a mounting bracket means comprising a main bracket having a first and a second leg disposed at right angles to each other and adapted to fit against a chair arm of a wheelchair or the like with the first leg over the chair arm and the second leg depending therefrom along one side of the chair arm, a clamping bracket having a first and a second leg disposed at right angles disposed beneath said one leg of said main bracket and against a portion of the chair arm, the corresponding legs of said brackets being parallel, means detachably securing said brackets to each other in clamping relation to the chair arm, a mounting block secured to a depending second leg of one of said brackets for pivotal movement on an axis normal to the leg and normal to the chair arm, and a tray-supporting rod carried by said mounting block.

10. In an adjustable tray and mounting therefor, a main bracket having a first and a second leg disposed at right angles to each other and adapted to fit against the upper and inner sides, respectively, of a chair arm of a wheelchair or the like, a clamping bracket having a first and a second leg disposed at right angles to each other and generally parallel, respectively, to the legs of said main bracket, means detachably securing the main and clamping brackets together and in clamping relation to the chair arm, a tray-supporting arm pivotally mounted on said bracket for pivotal movement on an axis normal to the chair arm and in the plane of the first leg of the main bracket, a tray carried on said arm, a mounting block pivotally mounted on a depending second leg of

one of said brackets for pivotal movement on an axis normal to the leg and normal to the chair arm, and a tray-supporting rod carried by said mounting block, said rod having a main part in said block and extending longitudinally in the same direction as the chair arm and having an end portion disposed at a substantial angle to the main portion for engaging the undersurface of the tray when the same is inclined, said rod having an intermediate semi-U-shaped portion extending partially around the chair arm with the upper side of such portion adapted to rest upon the upper surface of the chair arm.

11. In an adjustable tray and mounting, a mounting bracket adapted to clampingly engage the arm of a wheelchair or the like, an arm detachably hingedly mounted on said bracket for swinging movement in a vertical plane, a tray carried on the free end of said arm, said tray being pivotally adjustable on said arm about an axis normal to the hinge axis of said arm, a tray-supporting rod adjustably mounted in said mounting bracket and movable to a position to support said tray in an inclined position, and movable to an out-of-the-way position out of engagement with said tray, and means carried by said bracket for anchoring said rod in an adjusted position.

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