June 21, 1960 R. E. MATTESON 2,941,693

VERTICAL CHUTE HOLDING DEVICE

Filed Feb. 4, 1959 2 Sheets-Sheet 1

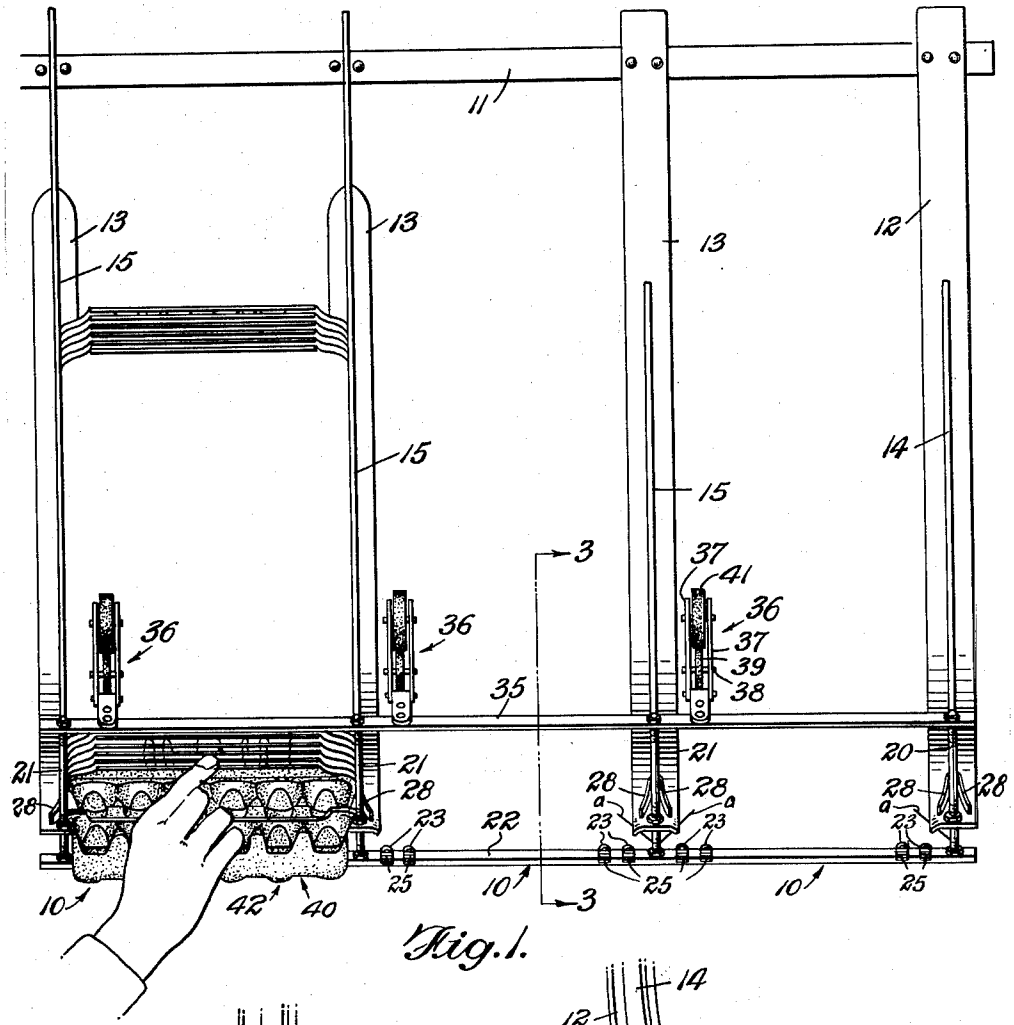


Fig. 1.

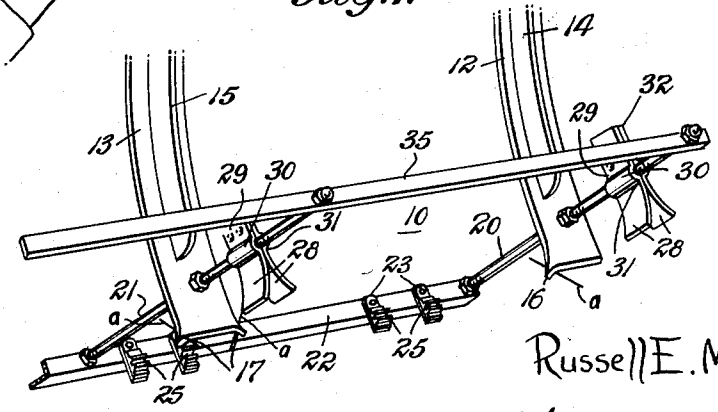


Fig. 2.

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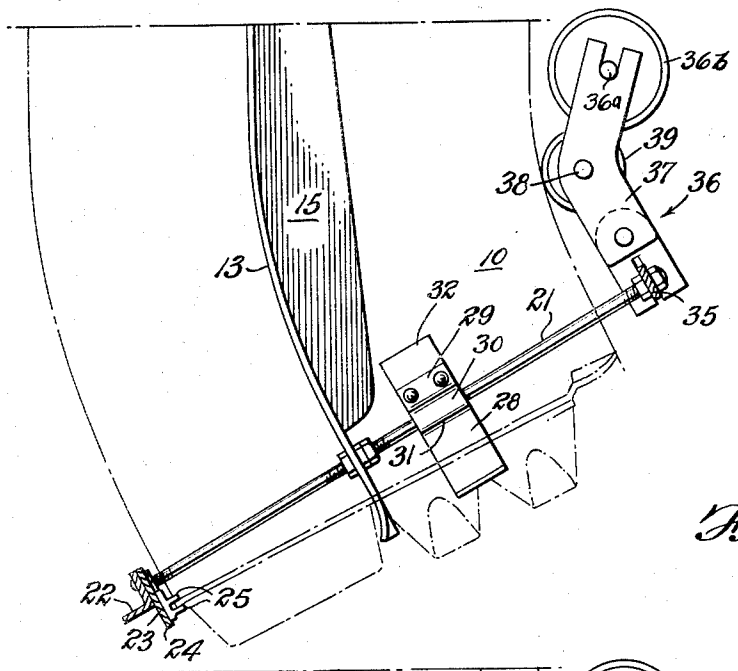


Fig. 3.

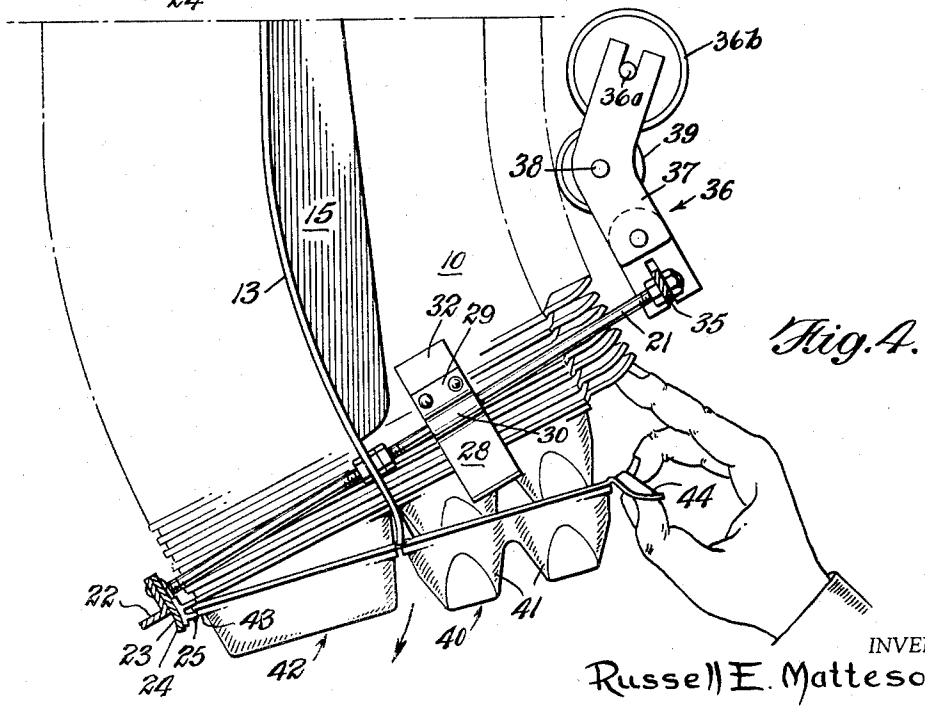


Fig. 4.

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VERTICAL CHUTE HOLDING DEVICE

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12 Claims. (Cl. 221—92)

The present invention relates to a chute device for holding a plurality of nested articles, and more particularly to such a device of a skeletal framework, the members of which are peculiarly shaped at their lower ends.

Eggs are commonly marketed by being delivered to an "egg room" by the egg producer. In the egg room, the eggs are candled and graded, and are then placed into cartons which hold one dozen eggs each. As the candling and grading of the eggs takes place at a very rapid rate, it is desirable to have a large supply of cartons available to the egg candler so that she may withdraw a carton from the supply of cartons she has and quickly place it into position to be filled. Also, the cartons should be removable one at a time and without danger of a large number of cartons escaping from the holding device.

Prior art devices are known, in which nested articles, such as cups, are withdrawn from the lower end of a holder, and such devices are entirely satisfactory where the article held is of such size that it may be readily grasped by the fingers encircling a lower part of the article, whereby a direct downward pull will free the article from the holding device. Another prior art holding device is known in which detents were provided to hold the article in the holding device, and these detents were manually retracted in order to free the article from the holding device. Such a device is subject to the drawback, however, that the detents, being of spring metal, may be easily overstressed if too light in construction, or require an excessive force to withdraw them if so heavy that they are not easily overstressed.

An object of the present invention is to provide an article holding device that may be readily and economically fabricated principally from common stock materials.

Another object of the present invention is the provision of a device for holding a large number of nested articles in a minimal space.

A further object of the present invention is to provide an article holding device from which articles may be readily removed one at a time, and which may be loaded from a point remote from the lower end thereof.

Still another object of the present invention is the provision of an article holding device for holding nested articles that are too large for one hand to encompass.

Yet another object of the present invention is to provide an article holding device that does not require the manual withdrawal of a detent in order to remove an article therefrom.

Other objects and the nature and advantages of the instant invention will be apparent from the following description taken in conjunction with the accompanying drawings, wherein:

Fig. 1 is an elevational view of a bank of three article holding devices in accordance with the present invention.

Fig. 2 is a perspective view of the lower end of one of the article holding devices shown in Fig. 1.

Fig. 3 is a cross-sectional view taken on the line 3—3 of Fig. 1.

Fig. 4 is a view similar to Fig. 3, and showing an egg carton being removed from the holding device.

Referring now to the drawings, wherein like reference numerals are used to designate like or corresponding parts throughout the several views, there is shown in Fig. 1 a group of three article holding devices **10** which may be seen to be mounted upon a support **11**, by any conventional means and to comprise a pair of flat, generally vertically extending strips **12** and **13**. The strips **12** and **13** are conveniently made of metal, and as will be apparent from a consideration of Fig. 1, such strips as strip **13** may serve as an operative member of two of the holding devices **10**.

As may best be seen in Figs. 2, 3 and 4, the upper portions of the strips **12** and **13** are substantially straight and lie in the same plane, while the lower ends of the strips **12** and **13** are curved outwardly from, and, as viewed in Fig. 2, forwardly of this plane. In Fig. 2, the axis about which the strips **12** and **13** are curved will be understood to be somewhat closer to the viewer than are the strips **12** and **13**. Secured in a perpendicular fashion to the strips **12** and **13** are the braces **14** and **15**, respectively. The braces may be secured to the strips by welding or any equivalent means, and serve the purpose of retaining the strips **12** and **13** against bending. In addition, the braces **14** and **15** generally provide rigidity to the overall structure.

The inner terminal triangular portion **16** of the strip **12** and the inner terminal triangular portion **17** of the strip **13** are curved rearwardly about an axis *a*, and as viewed in Fig. 2, this axis is further from the observer than the lower curved ends of strips **12** and **13** and is oblique with respect to the length of the strips.

A rod **20** extends through the lower curved end of the strip **12**, and is generally perpendicular to the strip **12** at the point through which it extends. Similarly, a rod **21** extends through the lower curved end of the strip **13**. The rods **20** and **21** are tilted, as may be seen from Figs. 2, 3 and 4, relative to the horizontal plane. Thus, the rods **20** and **21** have lower ends, and a spacer bar **22** is attached to the lower ends of the rods **20** and **21**. A plurality of gripper members **23**, made of rubber or similar resilient material, are secured to the spacer bar **22**. As may be seen in Fig. 3, the gripper members **23** each comprises a base **24** that is secured flat against the spacer bar **22** and a pair of generally vertically spaced fingers **25** that extend inwardly towards the interior of the holding device **10**.

On each of the rods **20** and **21**, on the opposite sides of the strips **12** and **13** from the spacer bar **22**, there is provided a resilient, inwardly curved retaining member **28**. Each retaining member **28** has a generally flat area **29** above the rod to which it is attached, a semicircular area **30** to embrace the rods and an inwardly curved retention area **31**, below the rod. Two such retaining members **28** may conveniently be secured together on opposite sides of a rod, as shown, as by rivets or the like. In the case of the end retaining member (see the right-hand retaining member in Fig. 2) there is an extension **32** that rises upwardly above the area **29**, the extension **32** serving to stabilize the two retaining members **28** on the ends of a bank or group of the holding devices **10**.

On the upper ends of the rods **20** and **21** there is mounted a support bar **35**, and this support bar **35** gives added rigidity to the structure as well as serving as a support for the marking device **36** that may conveniently be placed on each of the holding devices **10**. The marking device **36** comprises a pair of frame members **37** between

which extend an axle 38 for a printing wheel 39 and an axle 36*a* for an inking wheel 36*b*.

In operation, it is contemplated that a gang or group of the holding devices 10 will be provided at each handling station. They will be mounted in a generally vertically extending manner, on a suitable support, such as the support 11, and the lower ends of the holding devices 10 will be at approximately the level of the head of the egg candler. It is further contemplated that the chutes formed by the various strips 12, 13 will extend upwardly some ten feet, and a holding device of that size will accommodate approximately five hundred of the nested cartons.

The cartons which the holding device 10 of the present invention are particularly adapted to handle are generally of the type shown in J. W. Cox Patent No. 2,771,233, issued November 20, 1956. As may be seen from Fig. 4, these cartons comprise an egg tray 40 having a dozen egg cells 41 arranged in two rows of six eggs each. Integrally hinged to the egg tray 40 is a cover 42 having an extending lip 43 at the edge thereof opposite to the edge that is joined to the tray 40. At the front of the tray 40 there is provided a locking flap 44, also integrally hinged thereto. In the opened-up state, illustrated in the figures, the carton has an indentation in each of the lateral ends thereof, this indentation appearing between the egg tray 40 and the cover 42. Hence, when the cartons are loaded into the holding devices 10, the inner edges of the strips 12 and 13 are used as holding guides, and the indentations of the cartons are placed in registry therewith. Groups of the cartons are therefore placed in the various holding devices until they are filled, it being understood that the filling operation takes place from the upper end of the holding devices 10. Thus, the withdrawal of cartons from the holding devices 10 by the egg candler proceeds in uninterrupted fashion while the holding devices 10 are being loaded from the upper ends thereof.

It will be understood that a plurality of the holding devices 10 are provided at each candling station because of the fact that each candler will have presented to her eggs of varying sizes and grades, and so she must have at her disposal corresponding egg cartons. Hence, the egg cartons in the several holding devices 10 may be generally of the same size and shape, but have been printed differently in order to indicate the different grades and sizes of eggs.

Referring now to Fig. 3, it may be seen that the extending lip or flange 43 of the cover 42 of the carton which is the lowermost carton in the stack will lodge between the pair of fingers 25 of the resilient gripper members 23. Thus, the rear part of the unfolded carton will be held and retained in a resilient manner. In addition, the downwardly curved terminal triangular portions 16 and 17 serve as detents to retain the cartons in the holding device 10, since these portions engage with parts of the carton. Finally, the retaining members 28 exert an inward force upon the carton sides, and further serves to impede the cartons. The extensions 32 on the ends of a group of holding devices 10 will lodge against the sides of the cartons upwardly of the lowermost carton, thus to prevent the retaining member 28 on the end from being swung into an ineffective position by the weight of the cartons.

To remove the lowermost carton from the device 10, the egg candler places her thumb on the under side of the locking flap 44, as shown in Fig. 4, and her index and ring finger on the upper side of the locking flap 44. At the same time, the forefinger is placed against the under side of the locking flap of the second carton, and thus the cartons may be spread apart and the lowermost carton removed. The removal action of the lowermost carton involves roughly a pivoting movement of the carton about the lip or flange 43, held between the fingers 25 of the several gripping members 23. The carton is rotated with the triangular portions 16 and 17 serving

generally as guides for the rotary movement, it being understood also that the bases 24 of the resilient gripping members 23 may yield, as may be seen from a comparison of Figs. 3 and 4, in order to accommodate the rotational movement of the carton during the removal operation. This is readily accomplished because of the fact that the depending portion of the base 24 of the gripper members 23 extends below the lower edge of spacer bar 22.

As the cartons are removed from the holding devices 10, each of them in turn will come into contact with the coating wheel 39 of the marking device 36, and due to the position and/or coloring of the various marking devices 36, it will be possible to identify the candler who has loaded a particular carton of eggs.

There has been provided a holding device for cartons and the like that may be readily and economically fabricated from common stock materials, such as strip metal, and which may hold a large number of articles. The holding device of the present invention can be refilled without interrupting the withdrawal of cartons therefrom. In addition, cartons are held firmly, and without danger of damage thereto, and may be withdrawn individually as needed.

It will be obvious to those skilled in the art that various changes may be made without departing from the spirit of the invention and therefore the invention is not limited to what is shown in the drawings and described in the specification but only as indicated in the appended claims.

What is claimed is:

1. A device for holding a plurality of nested tray-like articles having indentations in opposite lateral margins comprising a pair of flat, generally vertically extending strips in spaced apart relationship, said strips having substantially straight upper portions which lie in the same plane and lower ends which curve forwardly of said plane, a generally vertically extending brace secured perpendicularly to each of said strips, an inner terminal triangular portion of each said strip being curved rearwardly about an axis which is oblique with respect to the length of said strip, each of said strips having a rod extending perpendicularly through the lower curved end thereof and secured thereto, whereby said rods are tilted, a spacer bar supported on the lower ends of said rods, a plurality of resilient gripper members on said bar each comprising a base secured to said bar and a pair of generally vertically spaced inwardly extending fingers on said base at a level below the lower edge of said spacer bar, a resilient inwardly curved retaining member on each of said rods on the opposite side of said strips from said spacer bar, and a support bar mounted on the upper ends of said rods.

2. A device as in claim 1, there being a second such device adjacent thereto, said two devices having a strip in common and a single rod extending therethrough.

3. The structure of claim 2, there being two retaining members on the rod extending through said common strip, each said retaining member having a flat area above the rod to which it is attached, a semicircular area embracing said rod and an inwardly curved retention area below said rod, and means securing said two retaining members in embracing relationship on said rod.

4. The structure of claim 1, there being two retaining members on one of said rods, each said retaining member having a flat area above the rod to which it is attached, a semicircular area embracing said rod and an inwardly curved retention area below said rod, one of said retaining members having an extension above the flat area thereof and substantially in the plane thereof, and means securing said two retaining members in embracing relationship on said rod.

5. A device for holding a plurality of nested tray-like articles having indentations in opposite lateral margins comprising a pair of flat, generally vertically extending

strips in spaced apart relationship, said strips having substantially straight upper portions which lie in the same plane and lower ends which curve forwardly of said plane, a generally vertically extending brace secured perpendicularly to each of said strips, an inner terminal triangular portion of each said strip being curved rearwardly about an axis which is oblique with respect to the length of said strip, each of said strips having a rod extending perpendicularly through the lower curved end thereof and secured thereto, whereby said rods are tilted, a spacer bar supported on the lower ends of said rods, a plurality of resilient gripper members on said bar each comprising a base secured to said bar and a pair of generally vertically spaced inwardly extending fingers on said base at a level below the lower edge of said spacer bar, and a resilient inwardly curved retaining member on each of said rods on the opposite side of said strips from said spacer bar.

6. A device for holding a plurality of nested tray-like articles having indentations in opposite lateral margins comprising a pair of flat, generally vertically extending strips in spaced apart relationship, said strips having substantially straight upper portions which lie in the same plane and lower ends which curve forwardly of said plane, an inner terminal triangular portion of each said strip being curved rearwardly about an axis which is oblique with respect to the length of said strip, each of said strips having a rod extending perpendicularly through the lower curved end thereof and secured thereto, whereby said rods are tilted, a spacer bar supported on the lower ends of said rods, a plurality of resilient gripper members on said bar each comprising a base secured to said bar and a pair of generally vertically spaced inwardly extending fingers on said base at a level below the lower edge of said spacer bar, and a resilient inwardly curved retaining member on each of said rods on the opposite side of said strips from said spacer bar.

7. A device for holding a plurality of nested tray-like articles having indentations in opposite lateral margins comprising a pair of flat, generally vertically extending strips in spaced apart relationship, said strips having substantially straight upper portions which lie in the same plane and lower ends which curve forwardly of said plane, an inner terminal triangular portion of each said strip being curved rearwardly about an axis which is oblique with respect to the length of said strip, each of said strips having a rod extending perpendicularly from the lower curved end thereof and secured thereto, whereby said rods are tilted, a spacer bar supported on the lower ends of said rods, a plurality of resilient gripper members on said bar each comprising a base secured to said bar and a pair of generally vertically spaced inwardly extending fingers on said base at a level below the lower edge of said spacer bar and a resilient inwardly curved retaining member on each of said rods on the opposite side of said strips from said spacer bar.

8. A device for holding a plurality of nested tray-like articles having indentations in opposite lateral margins comprising a pair of generally vertically extending guide means in spaced apart relationship, said guide means having substantially straight upper portions which lie in the same plane and lower ends which curve forwardly of said plane, an inner terminal portion of each said guide means being curved rearwardly about an axis which is oblique with respect to the length of said guide means, each of said guide means having a rod extending from the lower curved end thereof and secured thereto in tilted relationship, a spacer bar supported on the lower ends of said rods, a plurality of resilient gripper members on said bar each comprising a base secured to said bar and a pair of generally vertically spaced inwardly extending fingers on said base at a level below the lower edge of said spacer bar, and a resilient inwardly curved retaining member on each of said rods on the opposite side of said guide means from said spacer bar.

9. A device for holding a plurality of nested tray-like articles having indentations in opposite lateral margins comprising a pair of generally vertically extending guide means in spaced apart relationship, said guide means having substantially straight upper portions which lie in the same plane and lower ends which curve forwardly of said plane, an inner terminal portion of each said guide means being curved rearwardly about an axis which is oblique with respect to the length of said guide means, a spacer bar, means supporting said spacer bar on said guide means in a horizontal plane and rearwardly of the plane occupied by said straight upper portions of said guide means, a plurality of resilient gripper members on said bar each comprising a base secured to said bar and a pair of generally vertically spaced inwardly extending fingers on said base at a level below the lower edge of said spacer bar, and means supporting a pair of resilient inwardly curved retaining members on the opposite side of said guide means from said spacer bar.

10. A device for holding a plurality of nested tray-like articles having indentations in opposite lateral margins comprising a pair of generally vertically extending guide means in spaced apart relationship, said guide means having substantially straight upper portions which lie in the same plane and lower ends which curve forwardly of said plane, an inner terminal portion of each said guide means being curved rearwardly about an axis which is oblique with respect to the length of said guide means, a spacer bar, means supporting said spacer bar on said guide means in a horizontal plane and rearwardly of the plane occupied by said straight upper portions of said guide means, and a plurality of resilient gripper members on said bar each comprising a base secured to said bar and a pair of generally vertically spaced inwardly extending fingers on said base at a level below the lower edge of said spacer bar.

11. A device for holding a plurality of nested tray-like articles having indentations in opposite lateral margins comprising a pair of generally vertically extending guide means in spaced apart relationship, said guide means having substantially straight upper portions which lie in the same plane and lower ends which curve forwardly of said plane, an inner terminal portion of each said guide means being curved rearwardly about an axis which is oblique with respect to the length of said guide means, each of said guide means having a rod which passes through the lower curved end of the corresponding guide means and has a rear end spaced rearwardly from said plane, a spacer bar supported on the rear ends of said rods, a pair of generally vertically spaced inwardly extending fingers, and means supporting said fingers on said bar for pivotal movement away from said guide means.

12. A device for holding a plurality of nested tray-like articles having indentations in opposite lateral margins comprising a pair of generally vertically extending guide means in spaced apart relationship, an inner terminal portion of each said guide means being curved rearwardly about an axis located rearwardly of said guide means and oblique with respect to the length of said guide means, a spacer bar, means supporting said spacer bar in a horizontal plane to the rear of said guide means, a pair of generally vertically spaced inwardly extending fingers, and means supporting said fingers on said bar for pivotal movement away from said guide means.

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