March 3, 1959 D. W. GILL 2,875,815

TRAY CONSTRUCTION AND LATCHING MEANS THEREFOR

Filed June 24, 1957

Fig. 1

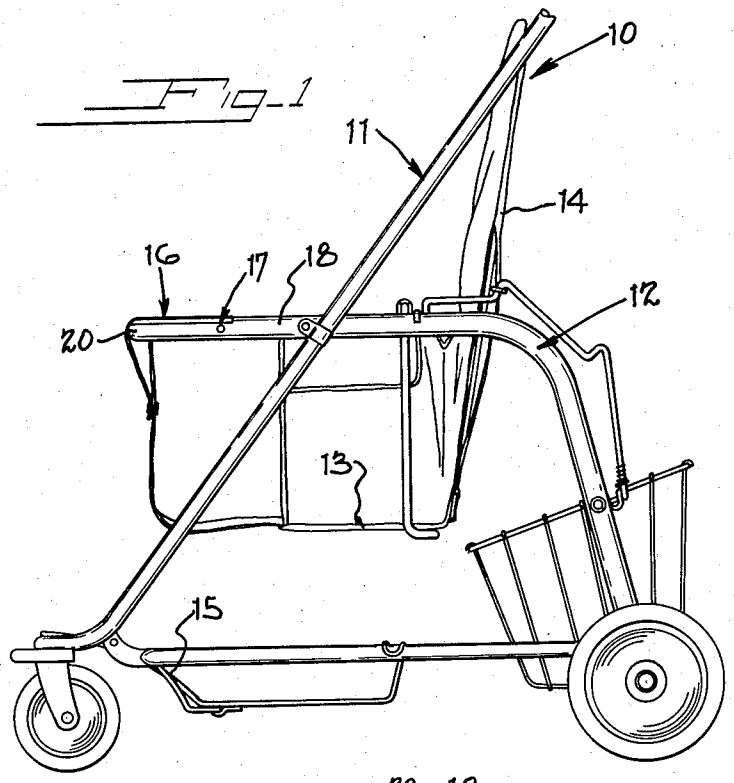


Fig. 2

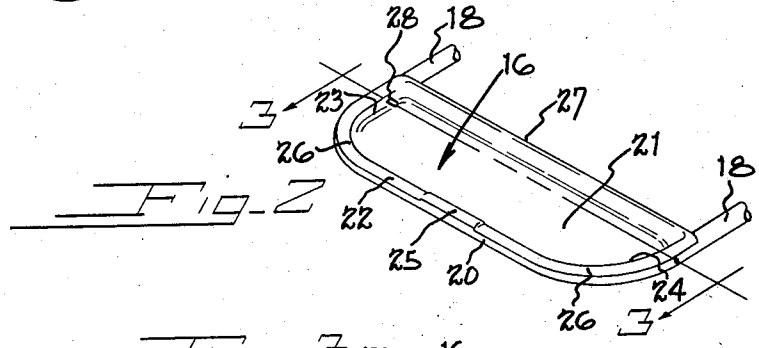
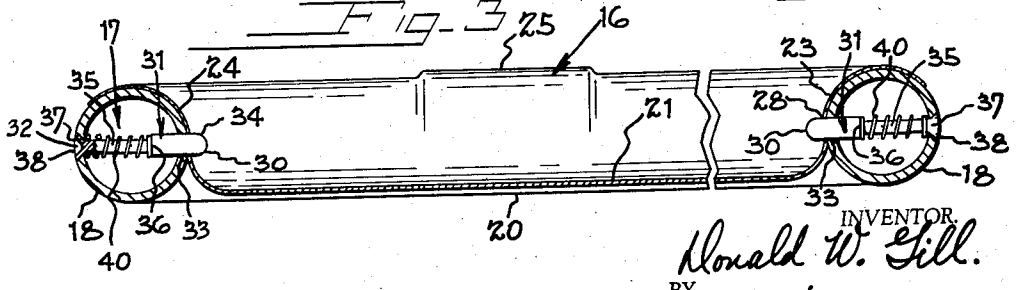


Fig. 3



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TRAY CONSTRUCTION AND LATCHING MEANS THEREFOR

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Application June 24, 1957, Serial No. 667,422

1 Claim. (Cl. 155—127)

This invention relates to children's vehicles such as walker-strollers and is particularly directed to a tray and latch construction for use in such vehicles.

The present tray and latch are particularly adapted for use with collapsible walker-strollers of the type shown in my copending United States patent application Serial No. 667,421, dated June 24, 1957 for "Collapsible Stroller." It is contemplated, however, that the tray can also be used advantageously with other types of devices; and that the latch construction can be employed for securing members other than trays.

The principal object of the present invention is to provide a tray and latch construction by means of which a tray can readily be mounted upon a tubular frame and can be quickly and easily removed when desired.

The present tray and latch construction will be described in connection with a walker-stroller of the type shown in my above-identified copending application; it being understood however that the utility of the tray and latch is not limited to walker-strollers of that type. A walker-stroller comprises front and rear frame members which support a rigid seat, an adjustable foot rest, and a pivotally mounted adjustable back rest. By selectively positioning the foot rest and back rest, the device may be used as a walker in which an infant is supported in an erect position and propels himself along the ground, as a stroller in which the infant is seated with his feet off the ground and is pushed by his mother or nurse, and as a sleeper, or carriage, in which the infant is supported in a reclining position.

The frame members of the stroller are formed from lengths of tube steel bent into the desired shape. The rear frame member is of generally U shaped configuration, and includes arms extending forwardly above each edge of the seat and a cross member extending transversely in front of the seat. It has been found desirable to mount a play tray upon this cross member for supporting toys and the like within easy reach of the infant. However, when the device is converted to a sleeper by raising the foot rest and lowering the back rest, it is often desirable to remove the tray to permit adjustment of the baby's clothing, covers or the like.

One preferred form of tray and latch construction embodying the principles of the present invention comprises a metal tray having a depressed central section and a curved upstanding rim adapted to overlie the forward portion of the tubular frame. An enlarged opening is formed in each side of the tray rim for receiving the plunger of a spring latch mechanism carried by the tubular frame.

Each latch includes a plunger, or detent, which extends diametrically across the tubular member and extends outwardly through two opposed openings formed in the member. These openings are formed in opposite wall portions and are of substantially different diameters. The plunger comprises a bullet-shaped nose which projects through the larger opening and an elongated shank of

reduced diameter which extends outwardly through the smaller opening. The outer end of the shank is enlarged to form a head disposed externally of the tube for holding the plunger and tube in assembled relationship. A coiled compresson spring surrounds the shank and bears against the shoulder formed at the juncture of the nose and shank and the inner-wall of the tube. This spring is effective to force the plunger outwardly through the opening in the tube, advancement of the plunger in this direction being limited to a fraction of an inch by the engagement of the plunger head with the opposite wall of the tubular frame member. The plunger nose is of substantially the same diameter as the opening in the tray rim so that when the tray is in place on the frame the nose enters the tray opening to firmly clamp the tray in place.

One of the principal advantages of the present latch and tray construction is that the tray is easily inserted and removed and yet is firmly held in place once it has been installed. In order to mount a tray upon the frame member, it is only necessary to align the curved rim of the tray with the forward position of the frame and to press the tray downwardly. The bullet-shaped noses of the plungers are automatically forced to their retracted position within the tubular frame to accommodate downward movement of the tray. However, when the tray is positioned so that the openings in the rim are in registry with the noses of the plungers, the plungers snap outwardly under the force of the compression springs so that the noses engage the tray openings, and firmly secure the tray in place. The tray is held in position and cannot become accidentally dislodged even if the tray is severely jarred. However, when it is desired to remove the tray this can easily be accomplished by merely pressing one or both of the noses inwardly while simultaneously lifting the tray from engagement with the frame.

Another advantage of the present tray and latch construction is that it is extremely economical to manufacture. The tray is merely a simple sheet metal stamping; while the plunger can be cast or otherwise formed as a unitary member having a nose and cylindrical shank of smaller diameter than the nose. The only operation required on the tubular frame is the drilling of two opposed openings of unequal diameters. To assemble the latch, a coiled spring is placed over the shank of the plunger and the larger bore until the shank extends outwardly through the smaller bore in the opposite wall. Thereafter, the end of the shank is upset to form a head of larger diameter than the smaller bore so that the plunger and spring are held in assembled relationship with the tubular frame.

These and other objects and advantages of the present invention will be more readily apparent from a further consideration of the following detailed description of the drawings illustrating a preferred embodiment of the invention.

In the drawings:

Figure 1 is a side view of a walker-stroller fitted with a tray and latch of the present invention;

Figure 2 is a perspective view showing the manner in which a tray is mounted upon a U shaped tubular frame; and

Figure 3 is a cross sectional view taken along line 3—3 of Figure 2.

As shown in Figure 1, a typical walker-stroller 10 provided with a tray and latch construction of the present invention comprises a front frame indicated generally at 11, a rear frame indicated generally at 12, a seat 13, a back rest 14, a foot rest 15, a tray 16, and latching mechanisms 17 for releasably holding the tray. The details of construction of the walker-stroller other than

the tray and latching means constitute no part of the present invention, these details being described and claimed in my above identified copending application.

As best shown in Figures 1 and 2, rear frame **12** is formed of tubular material bent in a U shaped configuration. The rear frame includes two side arms **18**, extending horizontally above the seat, and a cross member **20**, joining the forward ends of the side arms. Tray **16** is adapted to be mounted between the forward portions of arms **18** adjacent to cross member **20**. The tray is thus disposed in front of an infant seated in the stroller, at a convenient height for supporting toys, bottles and the like.

More particularly, tray **16** is formed from any suitable material such as sheet metal and includes a depressed central section **21** surrounded by an upstanding rim **22**. Rim **22** includes side sections **23** and **24** and a front section **25**; each of the sections includes an outwardly extending curved flange **26** adapted to overlie the adjacent portions of side arms **18** and cross member **20**. The rear portion of the tray is preferably provided with a rolled, or beaded rim **27** for preventing the infant from contacting any sharp edges or corners. Side sections **23** and **24** of the rim are drilled to form openings **28** adapted to receive noses **30** of detent members **31**.

The details of latching mechanisms **17** are best shown in Figure 3. These latching mechanisms are identical with one another and each is carried by tubular frame member **18**. Each latching mechanism **17** comprises a plunger or detent **31** which extends diametrically across the tubular member and projects outwardly through opposed openings **32** and **33** formed in opposite wall sections of the tubular member. Opening **33** formed in the inner wall is of substantially the same size as opening **28** in the tray and is of appreciably greater diameter than opening **32** formed in the outer wall.

Plunger **31** includes a generally bullet shaped nose having a rounded end, and a cylindrical shank portion **35** of a substantially smaller diameter than the nose, the shank and nose being joined together at shoulder **36**. The outer end of the shank extends outwardly through opening **32** which is substantially the same diameter as the shank and is preferably counterbored as shown in Figure 3. The outer end of shank **35** is preferably hollow and is upset or flared outwardly to form a head **37** adapted for engagement with the walls of opening **32** to prevent disengagement of the plunger and tubular frame. Preferably the outer edge **38** of the plunger lies flush with the outer surface of tube wall **18**.

A coil spring **40** surrounds shank **35** and is compressed between the inner surface of tubular wall **18** and shoulder **36** formed on the inner face of nose **30**. This spring normally forces plunger **31** inwardly so that nose **30** extends through opening **33** and projects beyond the wall for a fraction of an inch; for example three-eights of an inch. Movement of the plunger in this direction is limited by the abutment of head **37** and the wall surrounding opening **32**.

As best shown in Figures 2 and 3, when tray **16** is installed in place, arcuate flange **26** overlies cross section **20** and the adjacent forward portions of walls **18** of the rear frame member **12**. Side openings **28** formed in rim sections **23** and **24** of the tray are aligned with openings **32** in tubular arms **18** and receive noses **30** of plungers **31**. The tray is firmly held in this position and cannot become accidentally dislodged even if the stroller is jarred or bumped, or if the infant should pound upon the tray.

However, the tray can readily be removed if desired by merely pressing inwardly upon one or both of the plungers **30**, while simultaneously lifting the adjacent portion of the tray to disengage it from the latch mechanism and tubular frame member. To replace the tray, it is placed over a forward portion of the frame with the tray rim overlying cross piece **20** and the forward sections of arms **18**. The tray is then pressed downwardly to bring openings **28** into registry with plunger noses **30**. As the tray is forced downwardly, the upstanding wall sections of the tray engage curved end **34** of the plunger noses forcing the plungers inwardly to a retracted position against the force of compression springs **40**. When the tray is fully inserted, noses **30** of the plungers **31** snap outwardly through openings **28** in the tray rim to hold the tray firmly in place as explained above.

In producing a latching mechanism of the present invention, tubular frame member **18** is drilled to form opposed openings **33** and **32** of different diameters. Plunger **31** is cast or machined to form a nose **30** and a shank portion **35** of reduced diameter. A spring **40** is placed over shank portion **35** and the assembled spring and shank are inserted through the larger opening in the frame until the end of the shank projects outwardly through smaller opening **32**. This end of the shank is then upset or flared in any suitable manner to hold the plunger and spring in assembled relationship with the tubular frame.

From the foregoing disclosure of the general principles of the present invention and the above detailed description of a preferred embodiment, those skilled in the art will readily comprehend various modifications to which the invention is susceptible. For example, the present tray and latch can be used in conjunction with other types of vehicles than the walker-stroller shown. Moreover, the present latch construction can be used to secure members other than a tray in assembled relationship with a tubular frame.

Having described my invention, I claim:

A tray and latch construction for use with walker-strollers and the like including a generally U shaped tubular frame member having two spaced arms and a connecting segment joining said arms, said trays comprising a depressed center section, an upstanding rim surrounding said center section, said rim having a curved flange adapted to overlie the arms and connecting segment of said tubular frame member, openings formed in opposed walls of said rim, each arm of the tubular member having two aligned openings formed in opposite walls thereof, one of said openings being disposed adjacent to said tray and being of larger diameter than the other of said openings, a detent member associated with each arm, each of said detent members extending across said tubular member and including a bullet-shaped nose projecting outwardly through said larger opening, said nose being adapted for reception within one of the openings in said tray rim, a shank portion connected to said nose and extending outwardly through the smaller of said openings, a head formed on the end of said shank, and a coil spring carried by said shank, said spring being adapted to be compressed between the tubular wall adjacent to said smaller opening and said nose, and being effective to urge said nose outwardly through the larger opening.

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