Sept. 7, 1965 C. A. SOMMER 3,205,007

SWING-AWAY FOOT REST FOR INVALID WHEEL CHAIRS

Filed March 26, 1964

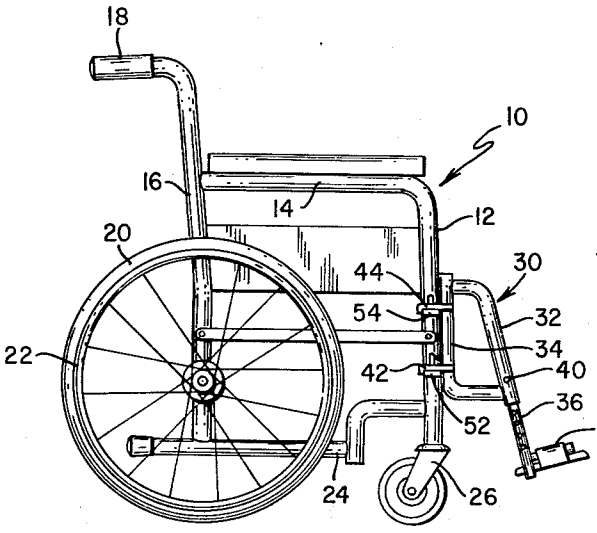


Fig. 1

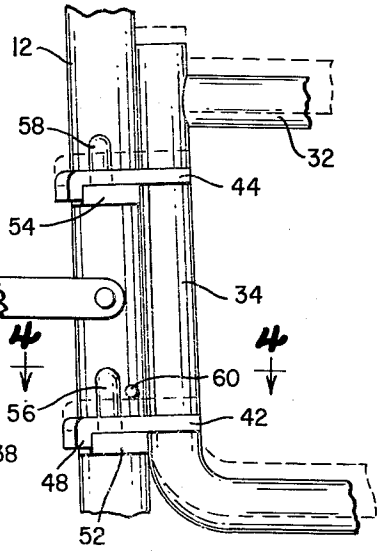


Fig. 2

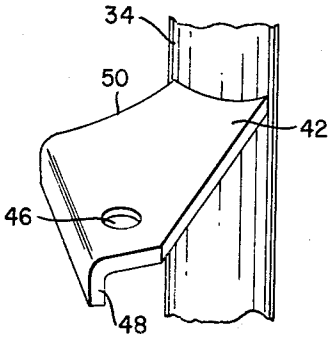


Fig. 3

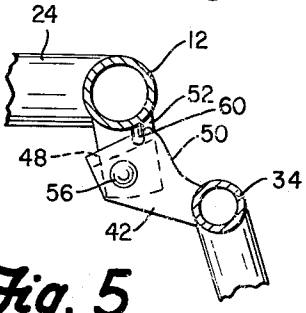


Fig. 5

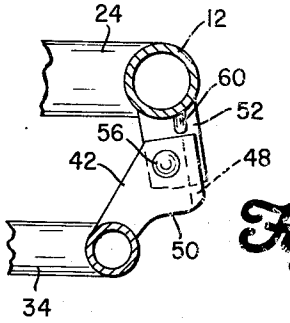


Fig. 6

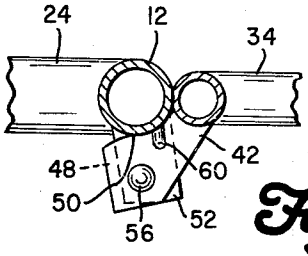


Fig. 4

INVENTOR.
CLYDE A. SOMMER
BY Fraser & Fraser
ATTORNEYS

United States Patent Office 3,205,007 Patented Sept. 7, 1965

3,205,007

SWING-AWAY FOOT REST FOR INVALID WHEEL CHAIRS

Clyde A. Sommer, Archbold, Ohio, assignor, by mesne assignments, to Gendron Wheel Company, Toledo, Ohio, a corporation of Delaware

Filed Mar. 26, 1964, Ser. No. 355,032
3 Claims. (Cl. 297—429)

The present invention relates to invalid wheel chairs and more particularly to a swing-away foot rest assembly for such wheel chairs.

Typically, invalid wheel chair structures comprise a frame including a pair of generally vertically extending spaced apart side frames, each having a forwardly disposed leg member and a foot rest assembly rigidly secured to each of the leg members. The foot rest assemblies commonly extend forwardly of the leg member and provide support for the feet of the invalid occupying the chair. Normally, these foot rest assemblies do not interfere with the invalid's operation and enjoyment of the mobile wheel chair. However, there are instances when it is the desire of the operator of the chair to move into close proximity to a desk, table, bed, or the like and in such instances the forwardly extending foot rest assemblies prevent the chair from moving to the desired relatively close position.

In addition to the above disadvantage, the permanent forwardly extending foot rest assemblies also increase the amount of space needed to store the wheel chair during periods of non-use or while being shipped.

Certain attempts have been made to develop removable or swing-away foot rest assemblies for invalid wheel chairs requiring auxiliary pins or similar means for locking the foot rest assemblies in position of use. In such structures, the locking pins had to be physically or bodily removed to enable the foot rest assembly to be swung away from a locked position to a position of non-use or completely removed from the wheel chair. Manifestly, in the event the pin means were lost or otherwise unavailable, the foot rest assemblies could not be locked in place and thus adversely affecting the safety of the wheel chair and causing considerable inconvenience to the invalid.

It is an object of the invention to produce a foot rest assembly for an invalid wheel chair which is sturdily mounted to project forwardly of the chair frame and which may be readily swung away by the operator of the chair to a position of non-use.

It is another object of the invention to produce a foot rest assembly for an invalid wheel chair which assembly may be releasably locked in a position of use and readily swung away to a position of non-use and removed from the chair.

These and other objects of the invention may be achieved by an invalid wheel chair having vertically extending parallel spaced apart front leg members, a pair of vertically spaced laterally outwardly extending relatively flat brackets on each of the leg members, each of the brackets including an upwardly extending pin member, a foot rest assembly for each of said leg members, a pair of vertically spaced apart outwardly extending plate members secured to each of said foot rest assemblies, the plate members being spaced vertically an amount substantially equal to the vertical spacing of the flat brackets of the leg members, each of the plate members provided with aperture means for receiving the pin members of the brackets, and means integral with and extending downwardly from each of the plate members for engaging the respective flat bracket when the foot rest assembly is in its applied position.

Other objects and advantages of the invention will become apparent from reading the following detailed description of an embodiment of the invention when considered in the light of the accompanying drawings in which:

FIGURE 1 is a side elevational view of an invalid wheel chair embodying the foot rest assembly structure of the invention;

FIGURE 2 is an enlarged fragmentary view of the swing-away support means for the foot rest assembly of the invention;

FIGURE 3 is an enlarged fragmentary perspective view of a plate member provided with an aperture therein and secured to the swing-away foot rest assembly of the invention;

FIGURE 4 is a fragmentary sectional view of the foot rest assembly shown in its position of use;

FIGURE 5 is a fragmentary sectional view similar to FIGURE 4 showing the leg rest assembly during its swing-away movement; and

FIGURE 6 is a fragmentary sectional view of the foot rest assembly similar to FIGURES 4 and 5 showing the foot rest assembly in its rearmost position ready for removal from the wheel chair.

Referring to the accompanying drawings wherein similar reference numerals designate similar parts throughout, the invalid wheel chair illustrated therein typically comprises two opposed side frame members which are typically of the type which are capable of being collapsed toward one another for purposes of storage. Each of the side frames, generally indicated by reference numeral **10**, is typically formed from tubular metal stock which contributes great strength and light weight to the construction. As shown in the drawings, each side frame **10** has a front generally vertically extending tubular member **12**, the upper portion of which is bent rearwardly into a horizontal portion **14** constituting an arm rest. The tubular member **12** is typically inclined rearwardly to form a small angle with the vertical. It has been found that an angular disposition of approximately three degrees has effected advantageous results, as will be explained in more detail hereinafter. Fixed to the rear end of each arm rest is a vertically disposed rear tubular member **16**, portions of which project above and below the arm rest portion **14**. The upper end of each of the vertical tubular members **16** is bent rearwardly and provided with a hand grip member **18**.

Journalled in bearings on the lower portion of each of the tubular members **16** is a relatively large wheel **20** typically provided with an annular hand engaging rim **22** enabling hand propulsion of the chair by the occupant. Welded to the lower end of the front tubular member **12** and the rear tubular member **16** of each of the side frame members **10** is a horizontally disposed tubular section **24**, which in effect produces a rigid lower horizontal rail member between the fore and aft vertical tubular members. Pivotally mounted in the bottom portion of each of the vertically extending tubular members **12** is a caster assembly **26** for effecting support of the front portion of the invalid wheel chair.

The individual side frame members **10** may be connected one to the other by means of the conventional diagonal cross brace structure which typically consists of a pair of X-braces, each formed by two diagonal rods. The rods may be connected together intermediate the ends thereof to satisfactorily enable the side frames to be folded one toward the other for purposes of storage.

In accordance with the present invention, forwardly extending foot rest assemblies **30** are swingably supported on the vertically extending tubular member **12** to project forwardly of the wheel chair frame. Each of the foot rest assemblies **30** consists of a tubular member **32**, the upper portion of which extends horizontally and is then bent to extend downwardly and outwardly therefrom.

The end of the horizontally extending portion of the tubular members 32 is welded to a tubular member 34 which extends generally vertically in one portion and is bent at right angles to extend generally horizontally and having its end welded to the lowermost end of the tubular member 32. The lowermost end of the tubular member 32 receives in telescoping relation one end of a tubular member 36, the other end of which is provided with a treadle or foot rest 38 which is hingedly or swingably mounted thereto between limits. The vertical disposition of the foot rest 38 may be varied by removing a pin 40 which extends through a pair of aligned apertures in the tubular member 32 and selectively through pairs of aligned apertures in the tubular member 36 The raising or lowering of the tubular member 36 and its associated treadle 38 is effected by withdrawing the pin 40, moving the tubular member 36, and reinserting the pin 40 at the desired level.

A pair of spaced apart plate-like arm members 42 and 44 are mounted on the vertically extending portion of the tubular member 34 to project outwardly and rearwardly thereof. Since each of the members 42 and 44 are identical, only a single one will be described in detail herein. The plate member 42 is provided with an aperture 46 (illustrated in FIGURE 3). The aperture 46 is disposed radially outwardly from the tubular member 34. The end of the member 42 opposite the end which is secured to the tubular member 34 is turned downwardly as at 48. The side of the plate member 42 disposed most adjacent the wheel chair side frame member 12 is curved as at 50, and as will be more clearly apparent hereinafter, is provided to enable the foot rest assembly to be positioned closely adjacent the generally vertically extending tubular member 12 of the side frame.

A pair of outwardly extending bracket members 52 and 54 are secured by welding to extend outwardly from the generally vertically extending tubular member 12 of the side frame. The bracket members 52 and 54 are spaced apart an amount substantially equal to the spacing between the associated plate members 42 and 44 of the foot rest assemblies. The brackets 52 and 54 are each provided with an upwardly extending pin member 56 and 58, respectively. Preferably, the lower pin 56 is somewhat longer than the upper pin 58, so that in applying the foot rest assembly 30 to the leg member 12 the lower pin 56 may be caused to enter its associated aperture 46 in the member 42 before the upper pin 58 enters its associated aperture in the member 44. Thus, with the entry of the lower pin into the aperture 46 in the lower plate member 42, the upper pin member 58 can be easily guided into its associated aperture in the plate 44 and the entire foot rest assembly allowed to drop into place during assembly when the elements are in the position shown in FIGURE 6 until the downward movement is limited by the engagement of the lowermost edges of the downwardly turned end portions 48 on the members 42 and 44 onto the upper surfaces of the respective bracket members 52 and 54 as illustrated in FIGURE 6. Then the foot rest assembly 30 is swung forwardly to swing about the pins 56 and 58 to the position illustrated in FIGURE 4. During the forwardly swinging movement of the assembly 30, the lowermost edges of the downwardly turned end portions 48 slides along the upper surfaces of the respective members 42 and 44 until the downwardly turned end portions clear the rearmost edge of the bracket members 52 and 54, whereupon the entire assembly 30 drops downwardly from the position illustrated in dotted lines in FIGURE 2 to the full line position therein. In this final position, the curved surface 50 of the member 42 approaches close engagement with the outer surface of the tubular member 12 and it will be appreciated that the foot rest assembly 30 is thereby locked and prevented from any pivotal movement relative to the associated side frame 10.

The foot rest assemblies 30 may be readily moved to the locked position by the operator of the chair. The pivotal movement of the foot rest assembly 30 toward the locked position of use is assisted by the angular disposition of the tubular members 12. As the foot rest assembly 30 is swung to a position where the vertical portion of the tubular member 34 closely approaches its associated tubular member 12 of the side frame, the weight of the foot rest assembly will aid in causing it to complete its pivotal movement and assume a locked position.

To move the foot rest assembly 30 to a position of non-use or to remove it from the side frame 10, the assembly is lifted from the position illustrated in full lines in FIGURE 2 and the position illustrated in FIGure 4 to the dotted line position illustrated in FIGURE 2. The upward movement of the foot rest assembly is limited by the outwardly projecting pins 60. The assembly is then swung through the position illustrated in FIGURE 5 to the position illustrated in FIGURE 6. The foot rest assembly will remain in this latter position due in part to the angular disposition of the tubular member 12; and also due to the frictional engagement between the lower surface of the downwardly turned end 48 of the bracket 42 and the upper surface of the plate-like member 52, and the frictional engagement between the inner surface of the apertures 46 and their associated pins 56 and 58.

If at any time it is desired to entirely remove the foot rest assemblies 30 from the side frames 10, the assemblies may be moved upwardly when in the rearmost position (FIGURE 6) until the members 42 and 44 are each above their respective pin members 56 and 58. This upward movement is possible because the member 42 can move upwardly without contacting the pin 60 only in the rearmost position, thereby assuring that the foot rest assembly 30 will never inadvertently be disengaged from the wheel chair frame while in a position of use.

In accordance with the provisions of the patent statutes, I have explained the principles and mode of operation of my invention, and have illustrated and described what I now consider to represent its best embodiment. However, I desire to have it understood that, within the scope of the appended claims, the invention may be practiced otherwise than as specifically illustrated and described.

What I claim is:

1. In an invalid wheel chair having vertically extending parallel spaced-apart front leg members:
   - a pair of vertically spaced laterally outwardly extending relatively flat brackets on each of said leg members, each of said brackets including an upwardly extending pin member;
   - a foot rest assembly for each of said leg members;
   - a pair of vertically spaced apart outwardly extending plate members secured to each of said foot rest assemblies, said plate members being spaced vertically an amount substantially equal to the vertical spacing of said flat brackets of said leg members, each of said plate members provided with aperture means for receiving respective pin members of said brackets, and flange means integral with and extending downwardly from each of said plate members for engaging the respective flat brackets when said foot rest assembly is in its applied position.

2. In an invalid wheel chair having vertically extending parallel spaced-apart front leg members:
   - a pair of vertically spaced laterally outwardly extending bracket members on each of said leg members, each of said bracket members including an upwardly extending pin member;
   - a foot rest assembly for each of said leg members;
   - a pair of vertically spaced laterally outwardly extending apertured members secured to each of said foot rest assemblies, said aperture members being spaced

vertically an amount substantially equal to the vertical spacing of said bracket members of said leg members, each of said apertured members adapted to receive the upwardly extending pin members of said bracket members, and flange means integral with and extending downwardly from each of said plate members for engaging an edge portion of the respective one of said bracket members when said foot rest assembly is in its applied position.

3. In an invalid wheel chair having vertically extending parallel spaced-apart front leg members:

at least one laterally outwardly extending relatively flat bracket member on each of said leg members, each of said bracket members including an upwardly extending pin member;

a foot rest assembly for each of said leg members;

at least one outwardly extending plate-like member

secured to each of said foot rest assemblies, each of said plate members provided with aperture means for receiving the respective pin members of said bracket members, and flange means integral with and extending downwardly from each of said plate members for engaging the respective flat bracket member when said foot rest assembly is in its applied position.

References Cited by the Examiner

UNITED STATES PATENTS

1,200,879	10/16	Harrison	16—174
1,474,411	11/23	Dodd	297—429
2,592,449	4/52	Miller	297—429

FRANK B. SHERRY, *Primary Examiner.*