April 2, 1968 H. E. KERNES 3,376,065

REMOVABLE ARMREST ASSEMBLY FOR INVALID WHEELCHAIRS

Filed Oct. 31, 1966

FIG. 5

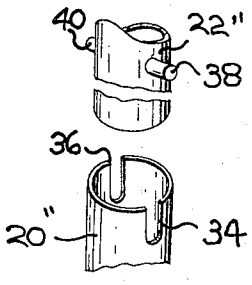
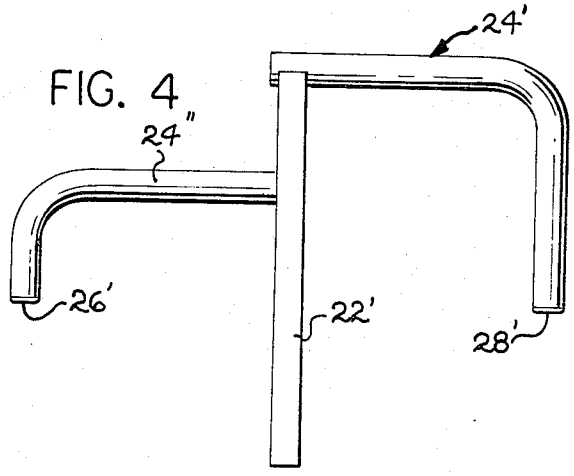


FIG. 4



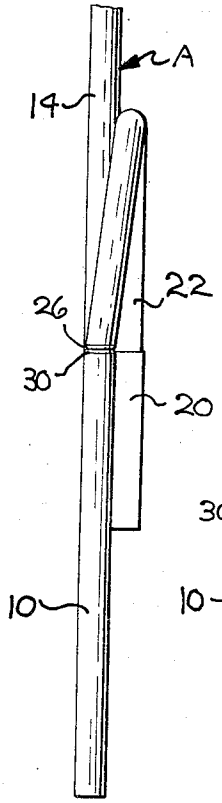


FIG. 2

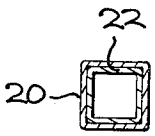


FIG. 3

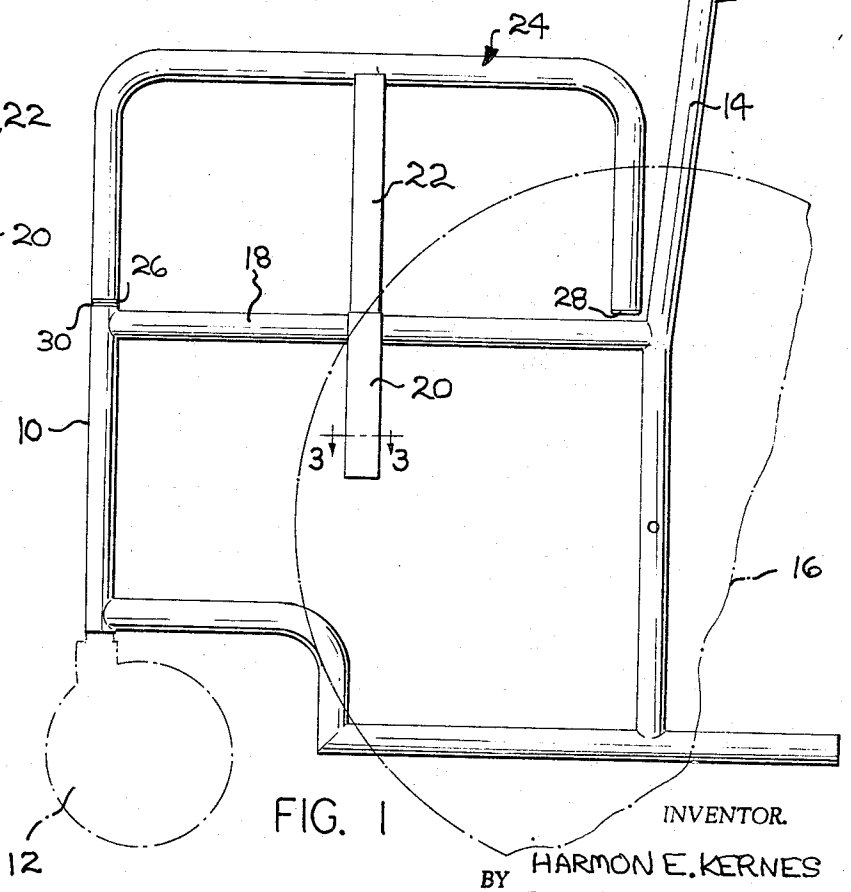


FIG. 1

INVENTOR.
HARMON E. KERNES
BY Pierce & Pierce
ATTORNEYS

United States Patent Office 3,376,065
Patented Apr. 2, 1968

3,376,065

REMOVABLE ARMREST ASSEMBLY FOR INVALID WHEELCHAIRS

Harmon E. Kernes, Toledo, Ohio, assignor to Howmet Corporation, Archbold, Ohio, a corporation of Delaware

Filed Oct. 31, 1966, Ser. No. 590,630
4 Claims. (Cl. 297—414)

ABSTRACT OF THE DISCLOSURE

A removable armrest assembly for an invalid wheelchair employing a single socket attachment for easy removal and replacement of the armrest assembly.

One of the desirable features of invalid wheelchairs is the ability to completely remove the armrest assemblies so that the invalid may be moved from the chair with the greatest of ease. It is clearly apparent that by completely removing the armrest assemblies the invalid may be easily transported laterally to a bed, stationary chair, or the like without the necessity of negotiating a transverse obstruction.

A typical wheelchair provided with a removable armrest assembly is illustrated in United States Patent 3,244,453 entitled "Support for Removable Wheel Chair Arms" issued Apr. 5, 1966. In such construction, two socket members are affixed in spaced relation on an associated side frame of the wheelchair. The armrest frame is generally formed of a tubular metal stock and is in the shape of an inverted U. The downwardly extending free ends of the armrest frame are received within respective ones of the spaced sockets. In this manner the armrest assembly may be satisfactorily positioned with respect to the side frame. However, it will be appreciated that such structure, although basically rather simple, requires considerable care during the manufacturing operations to make certain that the sockets are spaced a correct distance apart to adequately and properly receive the downwardly extending arms of the armrest frame.

It is an object of the invention to produce a wheelchair assembly having a removable armrest assembly which may be more readily and economically manufactured than the conventional types.

It is a further object of the invention to produce an invalid wheelchair having removable armrest assemblies which are interchangeable.

The above and other objects of the invention may be typically achieved by a removable armrest assembly for an invalid wheelchair which is comprised of a socket secured to the frame of the wheelchair; a generally horizontally extending armrest; a vertically extending column having the upper end thereof fixedly secured to the armrest and the lower end thereof detachably telescopingly fitted in the socket; and stop means limiting the relative axial movement between the column and the socket.

Other objects and advantages of the invention will become readily 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 wheelchair having a removable armrest assembly in accordance with the invention;

FIGURE 2 is a fragmentary elevational view of the apparatus illustrated in FIGURE 1;

FIGURE 3 is a sectional view taken along line 3—3 of FIGURE 1;

FIGURE 4 is an elevational view of an armrest assembly illustrating the desk type arm arrangement; and

FIGURE 5 is a fragmentary exploded view of a modified form of the invention.

Referring to the accompanying drawings wherein similar reference numerals designate similar parts throughout the description, there is illustrated an invalid wheelchair consisting primarily of two laterally spaced side frame elements A, only a single one being shown herein, preferably formed of a metal tubing. Each of the side frames A includes a front vertically disposed rail or tube **10** on the lower end of which is mounted a front caster wheel **12**. At the rear of each of the side frames A is a vertically disposed pusher rail or tube **14** on which a large or drive wheel **16** may be mounted. If desired, the positions of the drive wheels and the caster wheels may be reversed, whereby the drive wheels may be mounted on the front tubes **10** and the caster wheels mounted at the bottom of the rear tubes **14**. A frame tie bar or tube **18** is provided to extend between and has its ends suitably affixed to the front tube **10** and the rear tube **14**, respectively.

The upper portions of the rear vertically disposed pusher tube **14** are typically connected together by a flexible back rest, not shown.

A socket member **20** is welded or otherwise suitably secured to the frame tie bar **18** and is adapted to extend downwardly therefrom. It will be obvious that the socket member **20** could be welded or brazed into the frame tie bar **18** to be insubstantially a common plane therewith. The socket **20** is adapted to receive the vertically extending column member **22** of an armrest assembly **24** which has opposite ends thereof extending downwardly. The free ends of the armrest assembly **24** are provided with inserts **26** and **28**, respectively. The uppermost portion of the front tube **10** is provided with an insert **30** which is adapted to cooperate with the insert of the armrest assembly **24** positioned within the frontmost downwardly extending end of the armrest. In the arrangement illustrated in FIGURES 1 and 2, the insert **26** of the armrest assembly **24** abuts against and is supported by the insert **30** of the front tube **10** of the side frame A. It has been found that satisfactory results may be achieved by forming the inserts **26**, **28**, and **30** from a plastic material such as, for example, nylon.

As illustrated in FIGURE 3, the cross-sectional configuration of the socket **20** and the column **22** is rectangular to thereby militate against any relative rotational movement of the armrest assembly **24** with respect to the socket **20** and the associated side frame when the armrest assembly is in the assembled form.

In the event it is desired to remove the armrest assembly **24** from the wheelchair to eliminate any side obstruction, the armrest assembly **24** is grasped and raised to disengage the column **22** from the socket **20**. To replace the armrest assembly **24**, the column **22** is lowered into the socket **20** until downward movement thereof is limited and stopped by contact between the insert **26** of the armrest assembly and the insert **30** of the front tube **10**.

It will be appreciated that since the column **22** is located substantially midway between the ends of the armrest assembly **24**, the armrest assembly may be properly installed on a wheel chair being turned 180° with respect to the position illustrated in FIGURE 1 wherein the insert **28** is positioned at the front and in contact with the insert **30** of the front tube **10**. This arrangement provides considerable flexibility to the operator of the wheelchair and does not require the stringent manufacturing tolerances which would be required by a double socket insertion type apparatus.

FIGURE 4 illustrates a removable armrest assembly **24'** which is a desk type structure which will enable the associated wheelchair to be moved close to a desk or table wherein the front step down portion **24''** would be

positioned beneath the front edge of a desk or table. In such position, the insert **26'** would cooperate with a similar insert on the front tube of an associated wheelchair and the column **22'** would be adapted to be received within a socket assembly of such wheelchair. Further with respect to the structure illustrated in FIGURE 4, the armrest assembly **24'** could be installed on the associated wheelchair with the step down portion **24''** at the rear, causing the armrest supporting portion to be positioned at the front of the wheelchair wherein the insert **28'** would be in contact with an insert in the front tube of the associated wheelchair.

FIGURE 5 illustrates a modified form of the column and socket arrangement of the invention illustrated and described hereinbefore. In order to militate against any relative rotational movement between the socket and the column of the associated removable armrest assembly, there is provided a socket **20''** which is to be attached to the side frame of a wheelchair, and includes a pair of diametrically opposed longitudinally extending slots **34** and **36** formed in the side wall of the tubular material of the socket. The column **22''** of the associated armrest assembly, not shown, is provided with a pair of diametrically arranged radially extending guide pegs **38** and **40** which are adapted to be received in the slots **34** and **36**, respectively, when the armrest assembly is lowered to a position where the column **22''** is telescopingly fitted within the socket **20'**.

In accordance with the provisions of the patent statutes I have explained the principle 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. A wheelchair having a pair of spaced apart side frame members, each of said side frame members including a vertically disposed front tube, a rearwardly spaced vertically extending pusher tube, and a horizontally disposed frame tie tube extending between said front tube and pusher tube, the improvement comprising:

a socket secured to the frame tie tube of said frame member;

a removable armrest assembly including a generally horizontally extending armrest and at least one downwardly extending end portion terminating in a stop;

a vertically extending column having the upper end thereof fixedly secured to said armrest assembly in spaced relation to said downwardly extending end thereof, the lower end of said column detachably telescopingly fitted into said socket; and

stop means affixed to said side frame for abutment with the stop of the downwardly extending end portion of said armrest for limiting the relative axial movement between said column and said socket.

2. The invention defined in claim **1** wherein said armrest assembly includes a pair of opposed downwardly extending end portions terminating in respective stops, and the upper end of said vertically extending column is affixed to said armrest assembly at a point substantially midway between said end portions.

3. The invention defined in claim **1** wherein the cross-sectional configuration of the outer peripheral wall of said column and the inside peripheral wall of said socket is polygonal.

4. The invention defined in claim **1** wherein said socket includes a pair of diametrically opposed slots extending parallel to the longitudinal axis thereof; and said column includes a pair of radially extending guide pegs to fit within said slots, respectively.

References Cited

UNITED STATES PATENTS

2,733,754	2/1956	Leslie et al.	297—6
3,230,010	1/1966	Mommsen	297—429
3,244,453	4/1966	Fox	297—416
3,292,972	12/1966	Krueger et al.	297—417 X

CASMIR A. NUNBERG, *Primary Examiner.*