United States Patent

[11] **3,604,721**

[72] Inventor **Adrian F. Hulverson**
Grosse Point Woods, Mich.

[21] Appl. No. **832,391**
[22] Filed **June 11, 1969**
[45] Patented **Sept. 14, 1971**
[73] Assignee **Fruehauf Corporation**
Detroit, Mich.

---

[54] **TWO-POSITION FRAME COUPLER**
6 Claims, 4 Drawing Figs.

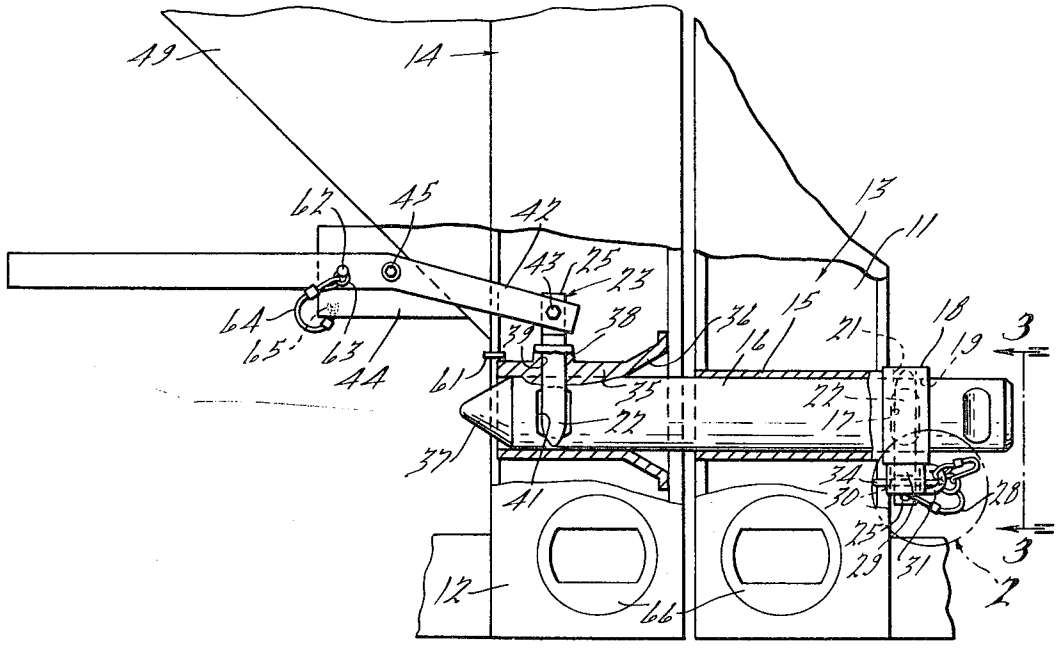
[52] **U.S. Cl.** ..... **280/34 A,** 85/5 CP, 85/8.6, 213/182, 280/415 B
[51] **Int. Cl.** **B62d 21/12**
[50] **Field of Search** ..... 280/415, 34, 34 A, 515, 106 T; 213/78, 182, 187, 208; 287/2; 52/637; 85/5 CP; 220/1.5

[56] **References Cited**
UNITED STATES PATENTS

896,773	8/1908	Tessier	213/78
3,004,772	10/1961	Bohlen et al.	280/415.3
3,102,738	9/1963	De Roshia	280/415
3,413,016	11/1968	Bertolini	280/415

Primary Examiner—Leo Friaglia
Assistant Examiner—John A. Pekar
Attorney—Harness, Dickey & Pierce

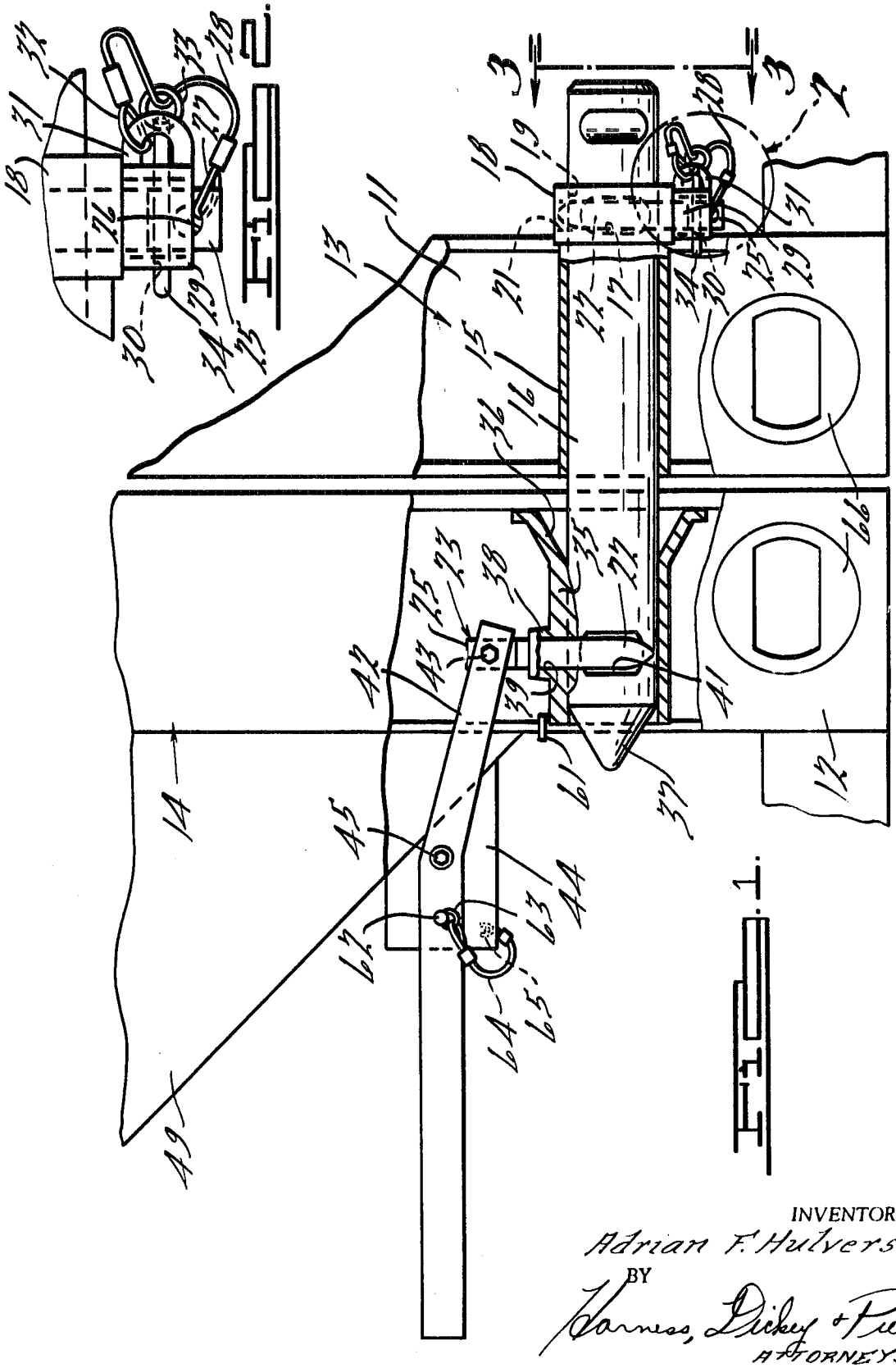
ABSTRACT: The coupler joins two chassis frames to form an elongated unit which can be transported by a tractor. The rear end of the frame has a pin in each corner which may be adjusted to extend different amounts therefrom. The front end of the frame has two apertures to receive the pins which are locked therein to couple the one end of one frame to the other end of a second frame.



PATENTED SEP 14 1971

3,604,721

SHEET 1 OF 2



INVENTOR.
Adrian F. Hulverson
BY
Harness, Dickey & Pierce
ATTORNEYS.

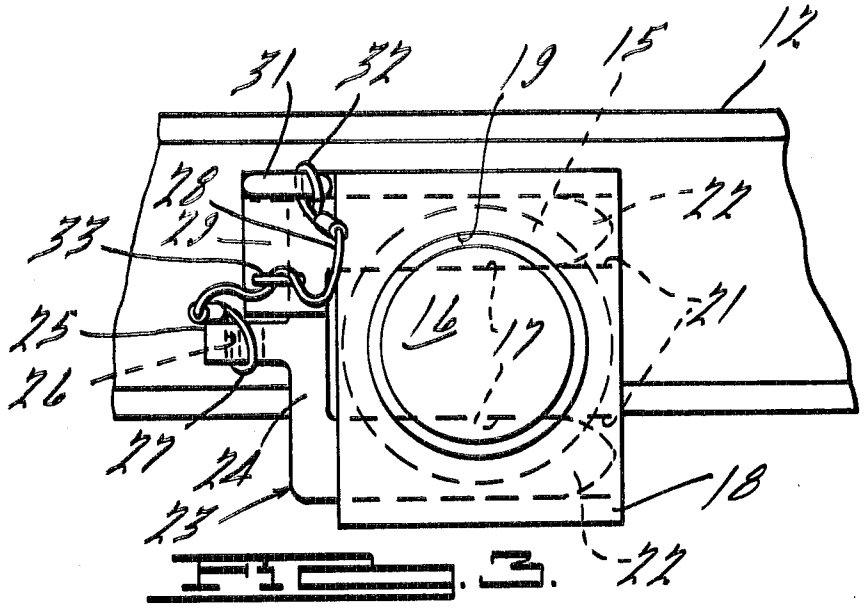


FIG. 3.

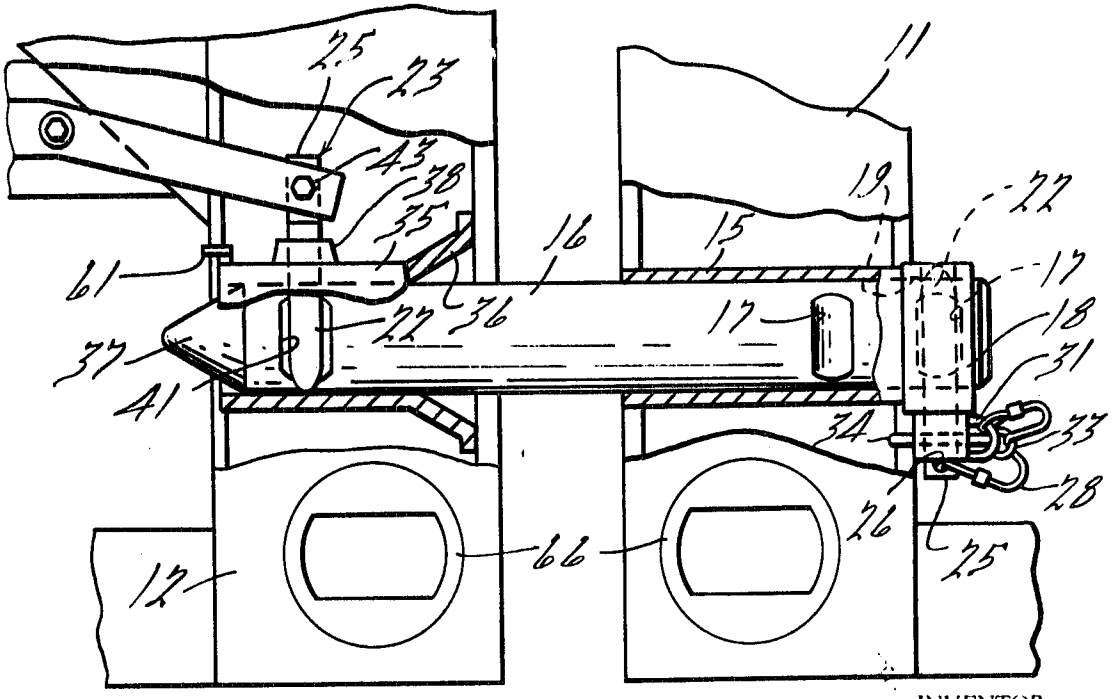


FIG. 4.

INVENTOR.
Adrian F. Hulverson
BY
Harness, Dickey & Pierce
ATTORNEYS

TWO-POSITION FRAME COUPLER

RELATED APPLICATION

In the copending application of K. W. Tantlinger et al., Ser. No. 654,603, filed July 19, 1967, now U.S. Pat. No. 3,537,727 for "Coupled Chassis," a somewhat similar connecting means is illustrated, described and claimed over which the present invention is an improvement.

SUMMARY OF THE INVENTION

The invention pertains to a coupling device for joining the front and rear chassis frames together in planar unit relation to each other. The front crossmember of the frames has sleeves therethrough near the ends in which elongated cylindrical pins are insertable and secured in fixed position by spaced fingers extending from a yoke which passes through diametrically disposed vertically aligned notches in the pin and through transverse apertures provided through the sleeve wall. Additional pairs of notches are provided in the pin to permit the opposite end to extend a greater distance from the front face of the frame. The rear crossmembers of the frames have cylindrical sleeves with bell ends secured near the ends of the crossmembers in alignment with the sleeves at the front end, the pins in which will extend thereinto when a front and rear crossmember of a pair of frames are moved into abutted or substantially abutted relationship. Vertically spaced fingers of a yoke extend through the sleeves and into oppositely disposed notches provided on the top and bottom of the pin. The notches on the inserted end of the pin are wider than the other notches to make certain that the finger of the yoke will extend therethrough when securing the frames together.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a broken plan view with parts in section, of joined rear and front cross members of a pair of chassis frames, embodying features of the present invention;

FIG. 2 is an enlarged broken view of the structure illustrated in FIG. 1, as viewed within the circle 2 thereof;

FIG. 3 is a broken view of the structure illustrated in FIG. 1, as viewed from the line 3—3 thereof, and

FIG. 4 is an enlarged broken view of structure, similar to that illustrated in FIG. 1, showing the crossmember in spaced-apart relation when the frames are secured together.

DESCRIPTION OF THE PREFERRED EMBODIMENT

In FIG. 1, a front crossmember 11 on a chassis frame 13 is disposed adjacent to a rear crossmember 12 of a chassis frame 14 of like construction. The rear wheels employed on the chassis frames are shifted into tandem relation when the frames are connected together. Sleeves 15 extend through the crossmember 11 located near each end thereof for supporting cylindrical pins 16 therein. The pins 16 have at least a pair of diametrically disposed top and bottom transverse notches 17 at the rear end by which the pins are secured against longitudinal movement when in different positions. A boss 18 is secured to the rear face of the crossmember 11 having an aperture 19 aligned with that of the sleeve 15 through which the pin 16 extends. A pair of apertures 21 through the boss 18 receive a pair of fingers 22 of a yoke 23 which extend into the notches 17 aligned therewith for securing the pins 16 to the ends of the crossmember 11. A web 24 which supports the fingers 22 has a centrally extending boss 25 containing an aperture 26 in which a looped end 27 of a cable 28 is secured. The boss 18 has a channel section 29 secured in extension thereof with a U-shaped member 31 thereon forming an eye for receiving a loop 32 on the opposite end of the cable 28. The cable extends through a ring 33 on the end of a pin 34 which passes through apertures 30 in the walls of the channel element 29 located rearwardly of the yoke to prevent the fingers 22 thereof from moving outwardly of the apertures 21. When the pin 34 and fingers 22 of the yoke 23 are removed from the apertures 30 and 21, respectively, the cable 28 retains them secured to the eye 31 to have them available for insertion in the apertures to secure the pin 16 within the sleeve 15.

The rear crossmember 12 on the chassis frame 14 has a sleeve 35 secured at each end in alignment with the sleeves 15 on the front crossmember. The outer end of the sleeve 35 has a bell end 36 for guiding a pointed end 37 of the pin 16 into centered relation with the sleeve 35. The sleeve 35 has a boss 38 containing an aperture 39 in which the fingers 22 of a yoke 23 extend to intercept diametrically disposed notches 41 on the extending end of the pins 16 which are wider than the notches 17 to assure the entrance of the fingers 22 therein when not exactly aligned on the center of the notches. The boss 25 of the yoke is connected to one end of a lever 42 by a bolt 43, as illustrated more specifically in FIG. 4. The lever is pivoted to a bracket 44 by a bolt 45.

When the chassis frames 13 and 14 are secured together, a pin 62 is passed through an aperture in the extending end 40 of the lever 42 and the bracket 44 to prevent the accidental release of each lever. Each pin 62 has a ring 63 thereon secured in a loop at one end of a cable 64 which has a loop at the other end secured in an eye 65 on the bracket 44 to prevent the pin from being lost when removed from the apertures. Upwardly presenting members 66 at the ends of the crossmembers 11 and 12 have twist locks 67 thereon which releasably secures the bottom corners of a container to the chassis frames.

When the containers overhang at the ends of the crossmembers 11 and 12 or for some other reason it is desired to have the frames separated a greater amount, it will be noted in FIG. 8 that the pins 16 are secured to the front crossmember 11 by having the fingers 22 of the yoke 23 engage the rearmost set of notches 17 to thereby extend the pins 16 a greater distance from the front face of the crossmember 11. The fingers 22 on the yokes 23 on the rear crossmember 12 when engaged in the notches 41 of the pins 16 will lock the crossmembers together in the manner pointed out hereinabove in spaced relation to each other. Several sets of the notches 17 may be provided on the pin 16 so that the pin may extend different amounts from the front face of the crossmember 11 for spacing the frames different amounts from each other. By securing the pins 16 near the ends of the front crossmembers 11 and providing the sleeve 35 near the ends of the rear crossmembers 12 on all of the frames, any number of the frames may be connected to each other by joining the front end of one frame to the rear end of the other, or a third frame to a pair of joined frames. With this arrangement, one of the frames may be employed for transporting a single container or by coupling the frames together a multiple number of containers may be pulled by the same tractor. Reference may be had to the above set forth copending application for the arrangement of the running wheels and other elements of the frame for transportation separately or when coupled together.

I claim:

1. In a pair of connectable frames each frame having side members joined by a front and a rear crossmember, a pin adjustably supported by the front crossmember to project forwardly thereof and having diametrically disposed notches on the projecting end and at least two pairs of said notches on the opposite end, a boss on said crossmember through which said pin extends and having spaced parallel apertures, a yoke having fingers movable in the apertures of said boss into a selected pair of said oppositely disposed notches at the rear of the pin, the rear crossmember of a second frame containing a sleeve aligned with the projecting pin of the front crossmember having a bell-shape outer end for receiving the projecting end of the pin, and a second yoke having fingers projecting through transverse apertures in said sleeve for intercepting the pair of oppositely disposed notches on the projecting end on the pin for locking the frames together.

2. In a pair of connectable frames as recited in claim 1, wherein a pin is carried on each end of the front crossmember and wherein a sleeve is carried on each end of the rear cross-

member aligned with the pins on the front crossmembers for connecting the frames together at the corners.

3. In a pair of connectable frames as recited in claim 2, wherein the oppositely disposed notches on the projecting ends of the pins are of a width greater than the diameter of the yoke fingers to permit the more readily insertion of the fingers within the notches.

4. In a pair of connectable frames as recited in claim 3, wherein the extending portion of the pins have a forward tapered end which produce the alignment of the frames when being inserted in the bell ends of sleeves carried by the rear crossmember.

5. In a pair of connectable frames as recited in claim 4, wherein the yoke securing the pin to the front crossmember has locking means therefor which prevents the separation of the yoke therefrom.

6. In a pair of connectable frames as recited in claim 5, wherein the yoke on the rear crossmember has one end of a pivoted lever secured thereto by which the fingers of the yoke are moved into the oppositely disposed notches on the projecting end of the pin after being inserted within the sleeve.