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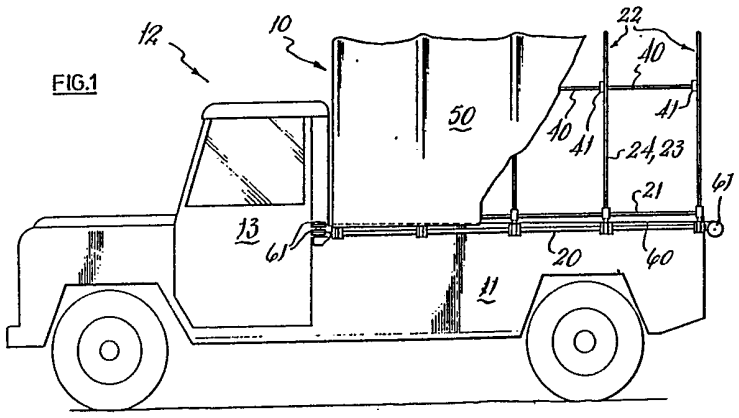
# (54) Stowable cover

(57) A cover for an open part of a truck comprises rails (20,21) along opposite sides of the part slidably supporting inverted U-shaped frame members (22) which carry a canvas or similar sheet (50) to form, when the frame members are spaced along the rails, a tunnel-like enclosure. Endless hauling means is provided for connecting opposite limbs of an end frame member whereby movement of one of said limbs forwardly or rearwardly along the rails operates through the hauling means to move the other limb in like fashion.

FIG.1

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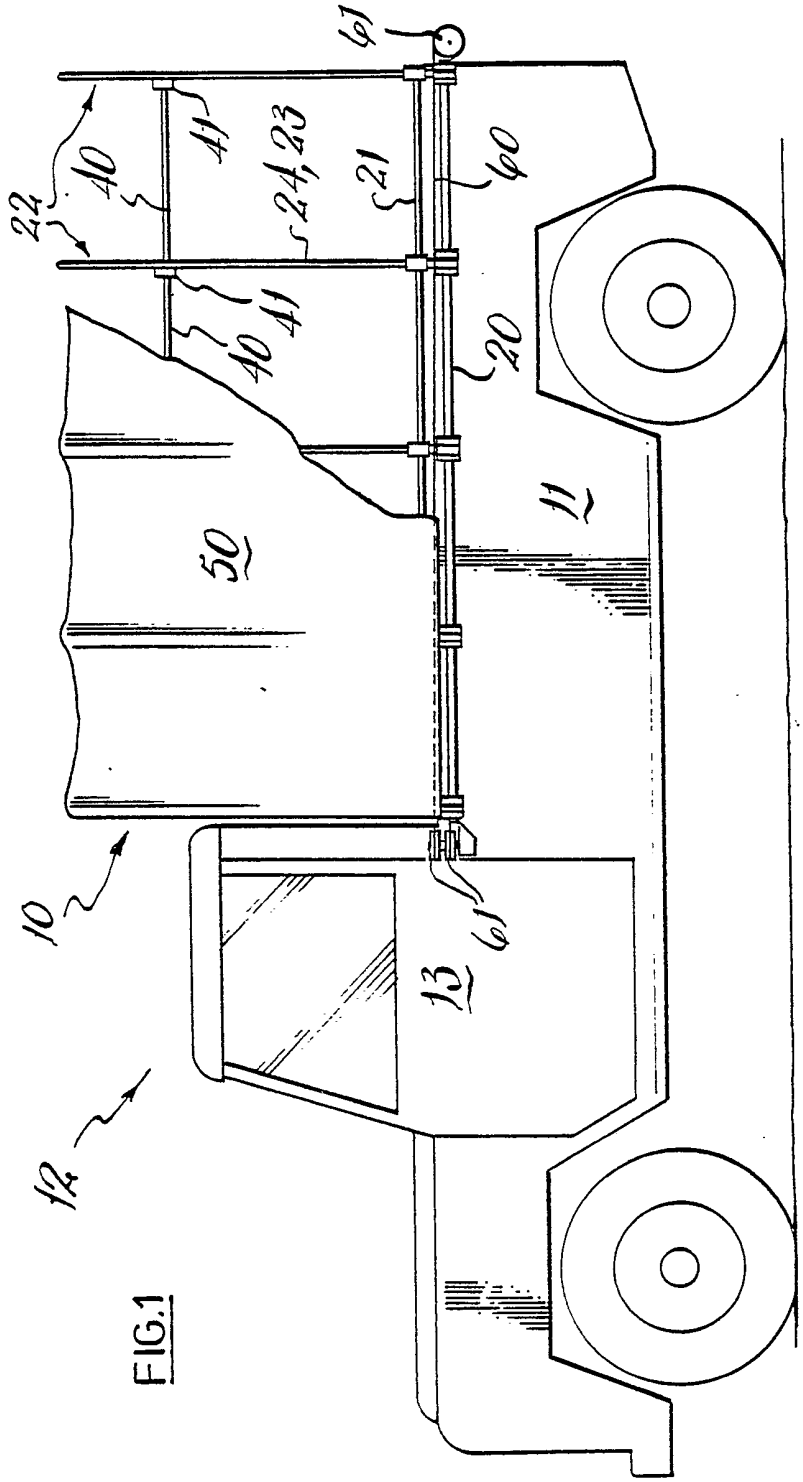



FIG.1

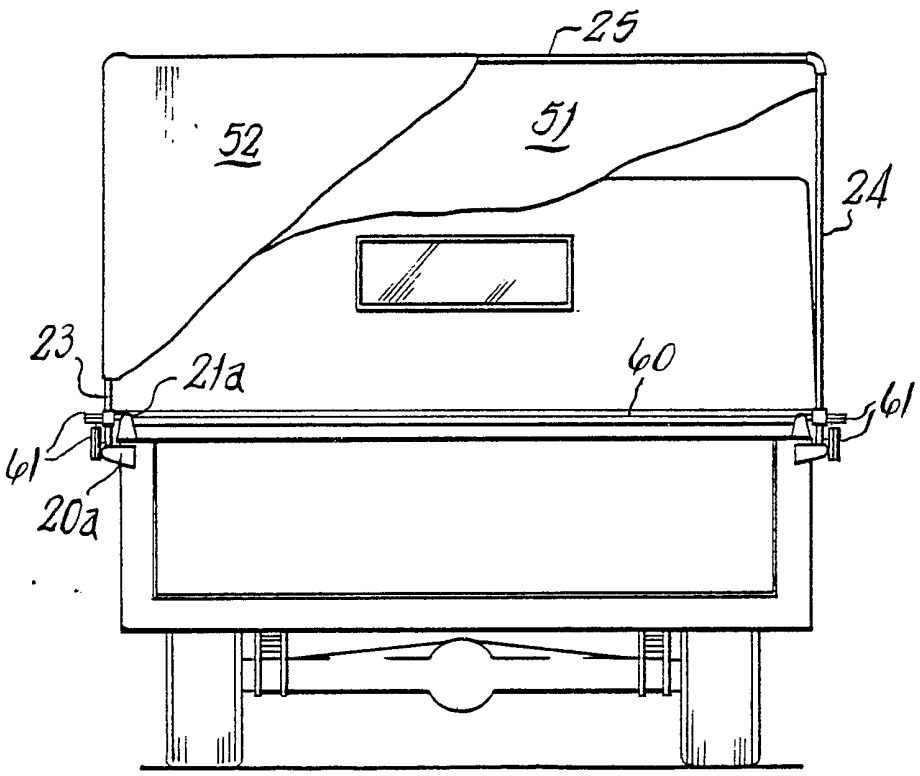



FIG. 2

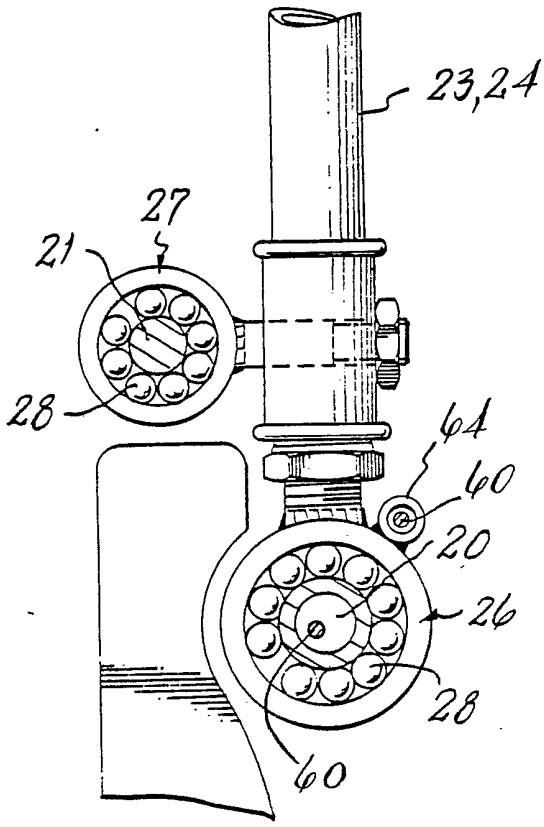



FIG. 3

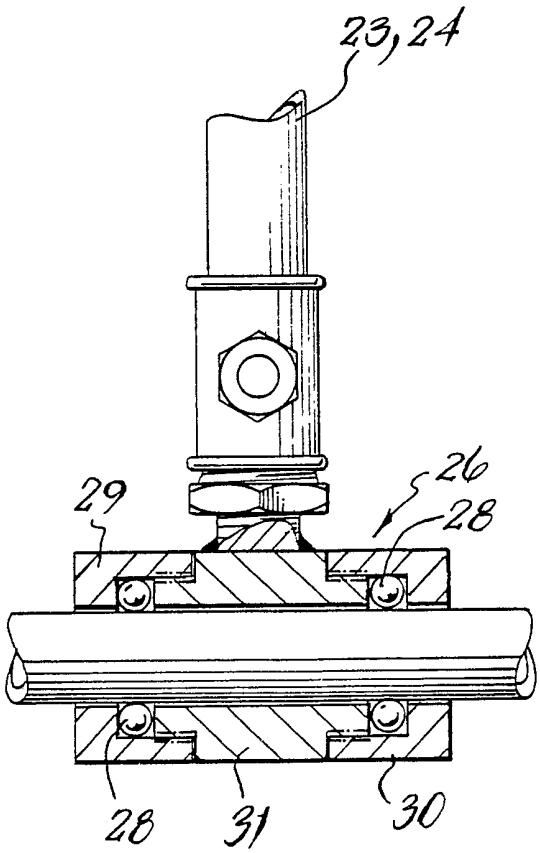
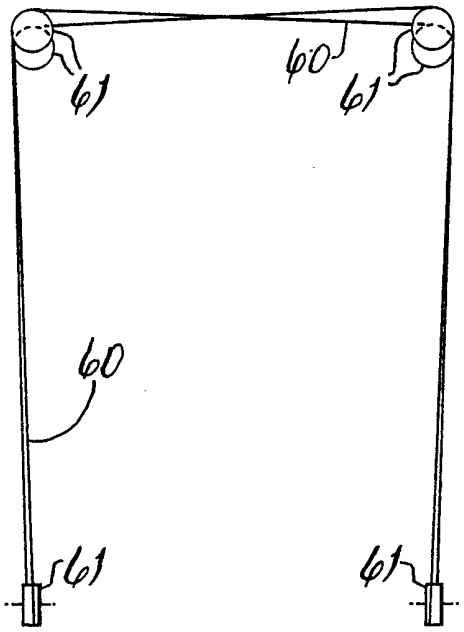



FIG 4

FIG.5



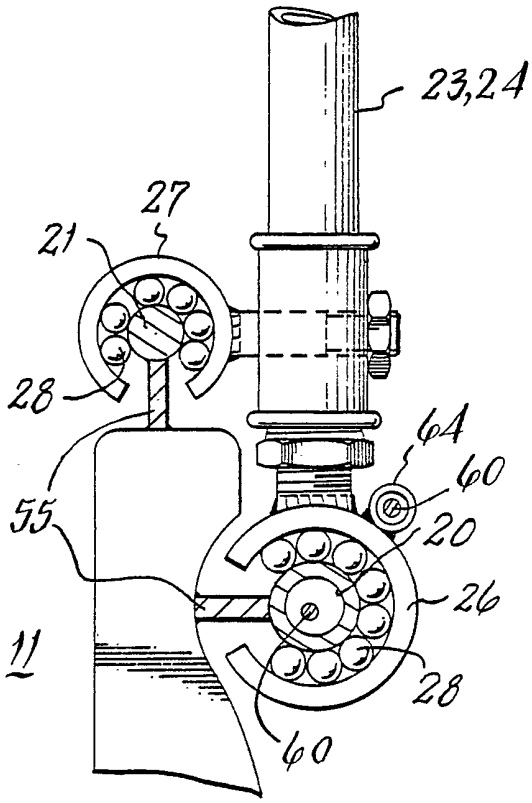




FIG.6

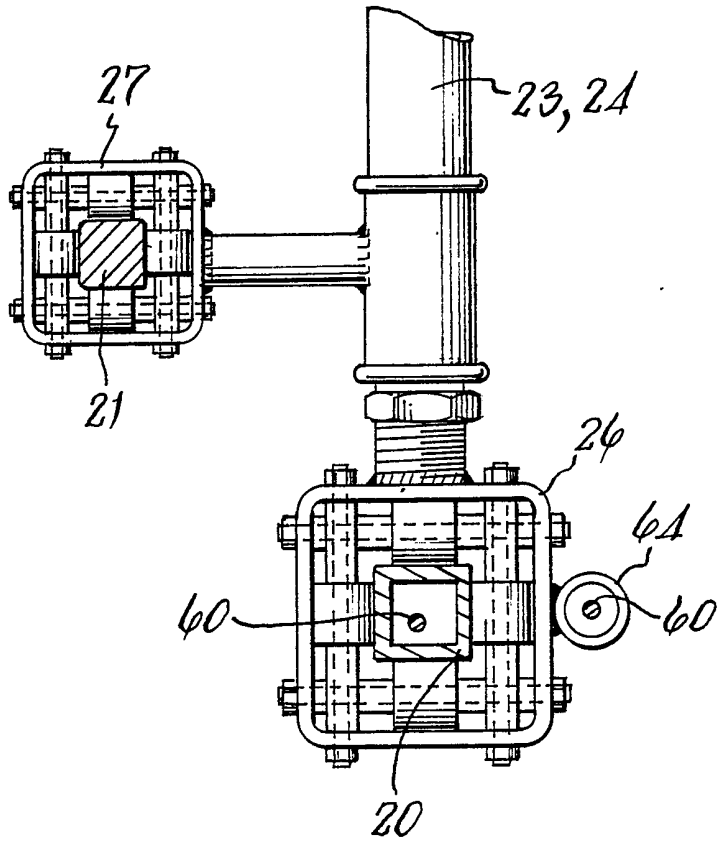



FIG.7

SPECIFICATION

**Stowable cover**

This invention concerns a stowable cover adapted to be fitted over the normally unenclosed part of a wheeled vehicle such as a pick-up truck or lorry or the open top of a trailer, for example. Such unenclosed parts or open tops will be referred to hereinafter simply as open parts of the kind referred to.

Many kinds of cover for open parts of the kind referred to are known, including enclosures of canvas or similar sheet material adapted to be supported by a framework which may be either removable or fixed and more elaborate prefabricated enclosures, such as fibre-glass reinforced resin mouldings for example, which need to be lifted into and out of position, often by more than one person.

Generally these prior known covers are time-consuming to erect and dismantle, somewhat costly and in many cases difficult and bulky to store when not in use. This is especially true of those kinds of cover which cannot be stowed on the vehicle when they are not in use.

More popular, therefore, are various known covers for an open part of the kind referred to comprising a plurality of inverted U-shaped hoops secured beneath a cover of flexible weatherproof material. The lower ends of the opposed limbs of each hoop connect with means which support them for sliding movement over the open part, whereby they may be moved between a first position wherein they are spaced apart with the cover forming a tunnel-like enclosure and a second position wherein they are packed together leaving the open part substantially unenclosed.

These arrangements, particularly those of larger size, can be difficult to operate single-handed, since attempts to slide a hoop from one side tends to cause the hoop to twist and bind against the supporting means.

It is an object of the present invention to provide an improved cover for open parts of the kind referred to which is particularly convenient and readily moved between its erected and stowed conditions without the problem aforesaid.

According to the invention there is provided a cover for an open part of the kind referred to, comprising a pair of parallel transversely spaced rail members adapted to be secured along each of the two longitudinal sides of the said part, a plurality of supporting frame members of generally inverted U-shape extending transversely between said two pairs of rail members, on the free end of each depending limb of each said frame member, two connection members at least partially surrounding said rails respectively for sliding movement therealong, a sheet of material resistant to penetration by water bridging the spaces between said frame members, the frame members being movable from a position wherein they are packed together at one end of the rail members, to leave the open part substantially unenclosed and a position where they are spaced from one another so that said sheet forms a tunnel-like enclosure over the open part and means for winching the frame members between their two positions.

The invention will be further apparent from the following description with reference to and as illustrated by the several figures of the accompanying drawings which show, by way of example only, three forms of stowable cover, fitted to the open part of a motor driven pick-up truck and embodying the invention.

Of the drawings:-

*Figure 1* shows a side view of the truck with the cover in its erected position, but with the sheet partly cut-away to reveal the underlying framework;

*Figure 2* shows a rear view of the truck with the cover in its erected position, again with the sheet partly cut-away;

*Figure 3* shows a cross-sectional view on an enlarged scale, of the connection between the lower end of one of the depending limbs of a supporting frame member and the rail pair at one side of the truck;

*Figure 4* shows a cross-sectional on the line III - III of Figure 3;

*Figure 5* shows a plan view of cable hauling means for the supporting frame members.

*Figure 6* shows a view similar to that of Figure 3 of a modified connection. and

*Figure 7* shows a view similar to that of Figure 3 of a further modified construction.

Referring firstly to Figures 1-4 of the drawings, it will be seen that the stowable cover generally indicated at 10 is fitted to and over an open back part 11, of a pick-up truck 12, having a driver's cab 13, forwardly of the part 11. The cover comprises a pair of parallel transversely spaced rails 20 and 21, secured to each of the opposed longitudinal sides of the part 11, by means of brackets 20*a* and 21*a* at their forward and rearward ends, and a plurality of supporting frame members 22, each of generally inverted U-shape having opposed limbs 23 and 24 depending from a connecting horizontal top portion 25. The frame members 22 extend transversely between the two pairs of rails on the opposite sides of the part 11 and have the free ends of their depending limbs connected to said rails for sliding movement therealong.

Referring now to Figures 3 and 4, it will be seen that the lower end of each of the depending limbs of each frame member 22, carries a pair of annular connecting members 26 and 27 which surroud the rails 20 and 21 respectively. A plurality of ball bearings 28 are provided between the inner periphery of the members 26 and 27 and the outer periphery of the rail 20 and 21. The rail 20 is in the form of a tube whilst the rail 21 is in the form of a rod. In at least one and preferably both of the members 26 and 27 the ball bearings 28 are divided into two sets which are spaced from one another longitudinally of the rails and which are held captive between caps 29 and 30 having inwardly directed flanges and a central barrel 31 onto whose opposed ends the caps 29 and 30 screw.

It will be understood that the frame members 22

can be moved from a first or stowed position wherein they are all packed closely adjacent to one another at the forward end of the part 11, and a second or operative position wherein they are equally spaced along the length of the part 11. Stabiliser bars 40 are provided and hingedly connected to the rearward face of each depending limb of each frame member 22 (except the rearmost) and adapted to be moved manually from depending vertical positions when the frame members are in their stowed position and horizontal positions, wherein they engage catches 41 on the adjacent rearward frame member 22 when the frame members 22 are in their operative positions.

It will be understood that when the frame members are in their second position and the stabiliser bars 40 are erected, the whole assembly described thus far, forms an extremely rigid cage-like structure which is constrained from tilting movement in any direction by virtue of the transverse spacing of the rail members at each side and the longitudinally spaced sets of ball bearing in the connecting members.

The cover 10 includes a sheet 50 of material which is at least resistant to penetration by weather such as canvas or impermeable such as textile reinforced plastics. The sheet 50 has a length equal to that of the part 11 and a width equal to the length of a frame member 22 measured along the limbs 23 and 24 as well as the top portion 25. The sheet 50 is secured over each of the frame members 22 and bridges the space 22 between the adjacent ones thereof. It will be understood that when the frame members 22 are in their second or operative position, the sheet 50 forms a tunnel-like enclosure to the part 11. When the frame members 22 are in their stowed position the sheet 50 is loosely bunched up between them. Front and back flaps 51 and 52 are preferably provided to complete the enclosure. The front flap 51 is secured as by stitching for example to the three forward edges of the sheet 50, whilst the back flap 52 is secured along its upper edge only so that it may be rolled up or pulled aside to give access to the interior of the enclosure.

In accordance with the invention a winching mechanism is provided for moving the frame members 22 between their two positions.

This mechanism comprises an endless cable 60 carried by pulleys 61 and arranged to have two lengths thereof extending over the two longitudinal sides and the forward end of the open part. The cable crosses itself once (or some other odd number of times) at the forward end. The cable 60 passes on each side through eyes 64 secured to the members 26 to return by passage over one of the pulleys 61 at the rear of the part 11 and through the interior of the rail 20. The cable 60 is anchored to the eyes 64 of the rearmost members 26.

It will be understood that forward or rearward movement of the rearmost member 22 from one side operates through the cable 60 to move the rearmost member 22 on the other side in like fashion, making for ease of movement.

It will be appreciated that it is not intended to limit the invention to the above example only, many variations, such as might readily occur to one skilled in the art, being possible, without departing from the scope thereof as defined by the appended claims.

Thus, for example, as shown in Figure 6 the connecting members 26 and 27 may be of part-annular form enabling the rails 20 and 21 to be secured by ties 55 to the sides of the open space at positions intermediate their ends or the use of a rail which has an integral connecting web continuously of its length.

Again, for example, as shown in Figure 7 the rails 20 and 21 may be of square section, the parts 26 and 27 being replaced by rectangular parts slidable over the rails with the aid of interposed roller bearings.

Yet again, for example, the frame members 22 may be relatively shallow and the cover fitted over the open top of a high-sided lorry or bulk carrier to form a removable top replacing, for example, a conventional tarpaulin.

Still again, for example, the cable need not cross itself if the appropriate lengths are secured to the eyes 64 of the rearmost members 26, the other lengths returning to the rear through the rails 20.

## CLAIMS

1. A cover for an open part of the kind referred to, comprising a pair of parallel transversely spaced rail members adapted to be secured along each of the two longitudinal sides of the said part, a plurality of supporting frame members of generally inverted U-shape extending transversely between said two pairs of rail members, on the free end of each depending limb of each said frame member, two connection members at least partially surrounding said rails respectively for sliding movement therealong, a sheet of material resistant to penetration by water bridging the spaces between said frame members, the frame members being movable from a position wherein they are packed together at one end of the rail members, to leave the open part substantially unenclosed and a position where they are spaced from one another so that said sheet forms a tunnel-like enclosure over the open part and means for winching the frame members between their two positions.

2. A cover according to claim 1, wherein said winching means comprises an endless cable having two lengths thereof along each longitudinal side of the open part, the two opposite depending limbs of an end frame member being connected with one of said lengths on each side respectively, the arrangement being such that movement of one of said limbs along its supporting rails in one or other direction operates through the endless cable to move the other said limbs in like direction along its supporting rails.

3. A cover according to claim 2, wherein said winching means includes first and second pulleys at one end of the open part on opposite sides thereof, third and fourth pulleys at the other end of the open part and on the same side thereof as the first pulley, and fifth and sixth pulleys at the other end of the open part and on the same side thereof as the second pulley, the endless cable passing from the

first pulley, around the third pulley, around the fifth pulley, around the second pulley, around the sixth pulley, and around the fourth pulley to return to the first pulley.

4. A cover according to claim 3, wherein the two lengths of cable passing between the third and fourth pulley pair and the fifth and sixth pulley pair cross one another once or some other odd number of times.

5. A cover according to any one of claims 2 to 4, wherein one of the pair of rails on each of the sides of the open part is of tubular construction.

6. A cover according to claim 5, wherein one of the lengths of the endless cable on each side of the open part passes through the rail of tubular construction.

7. A cover according to any one of claims 2 to 6, wherein one of the lengths of the endless cable on each side of the open part passes through eyes provided on the depending limbs of the frame members.

8. A cover according to claim 7, wherein the connections between the endless cable and an end frame member are made at the eyes on the depending limbs of the end frame member.

9. A cover according to any preceding claim wherein ball or roller bearings are provided between said connection members and the rails.

10. A cover substantially as described herein with reference to and as illustrated by Figures 1, 2, 3 and 4, or 6 or 7 of the accompanying drawings.

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