Feb. 14, 1961 J. M. WEBER 2,971,475

SKI TOW APPARATUS

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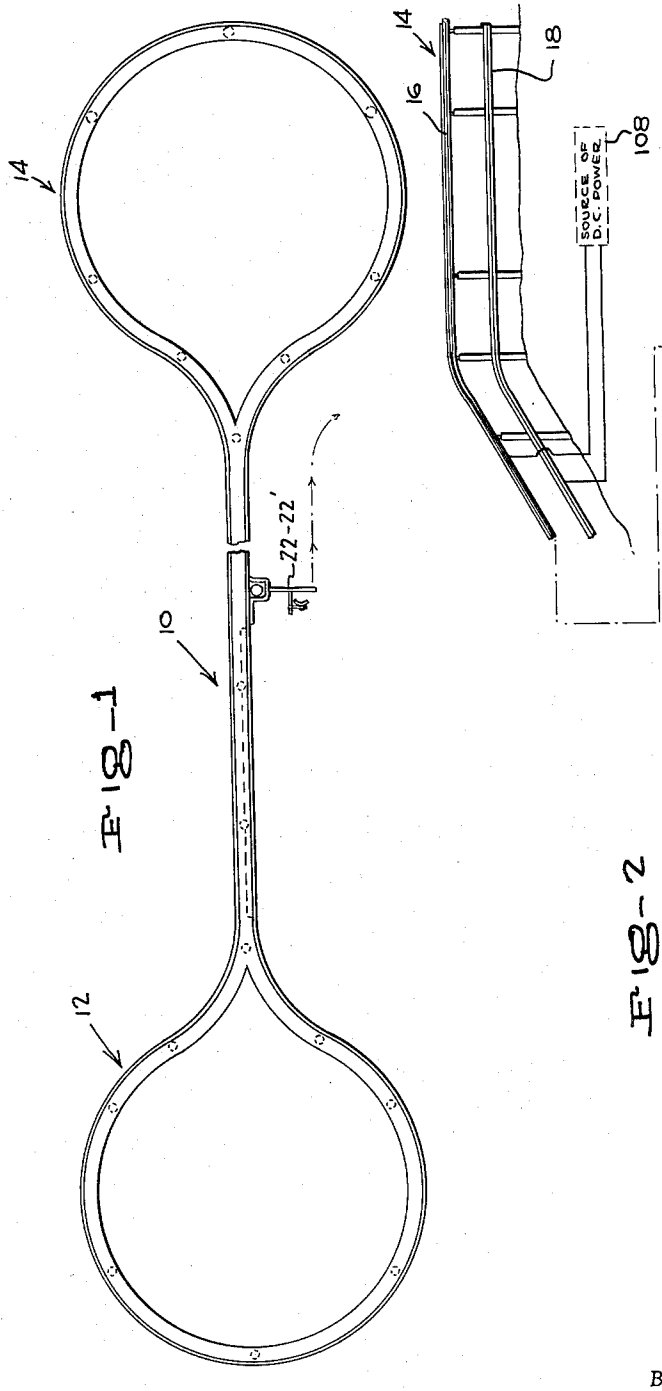


FIG-1

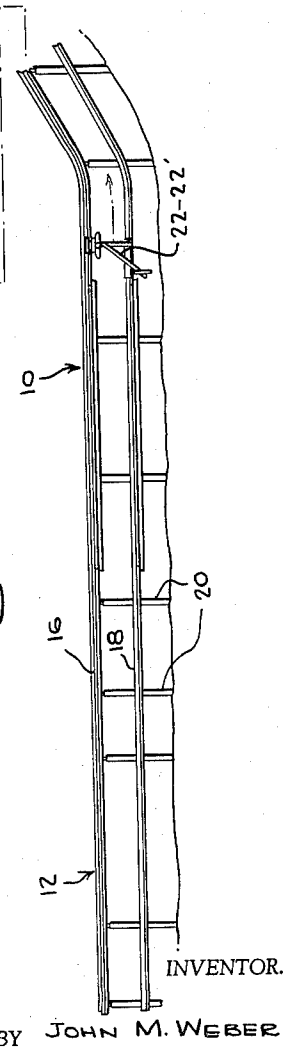


FIG-2

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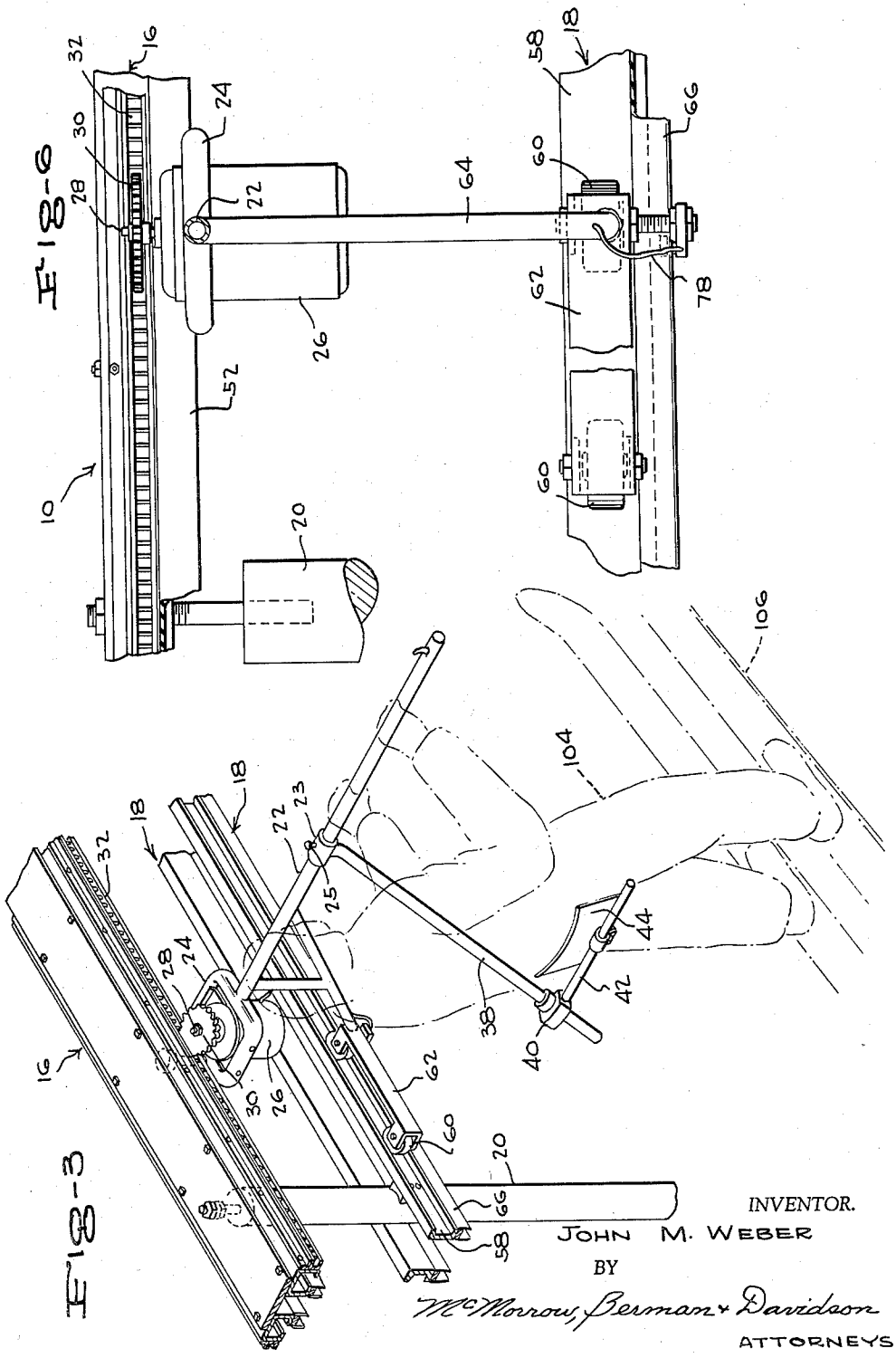
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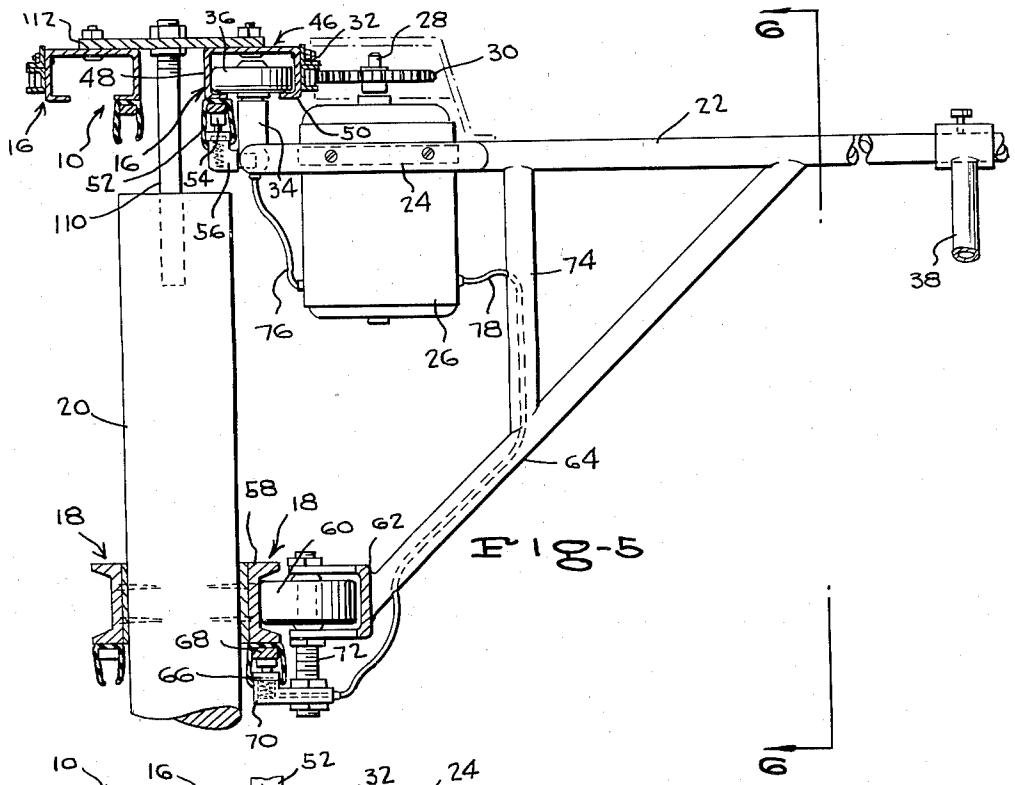


Fig-5

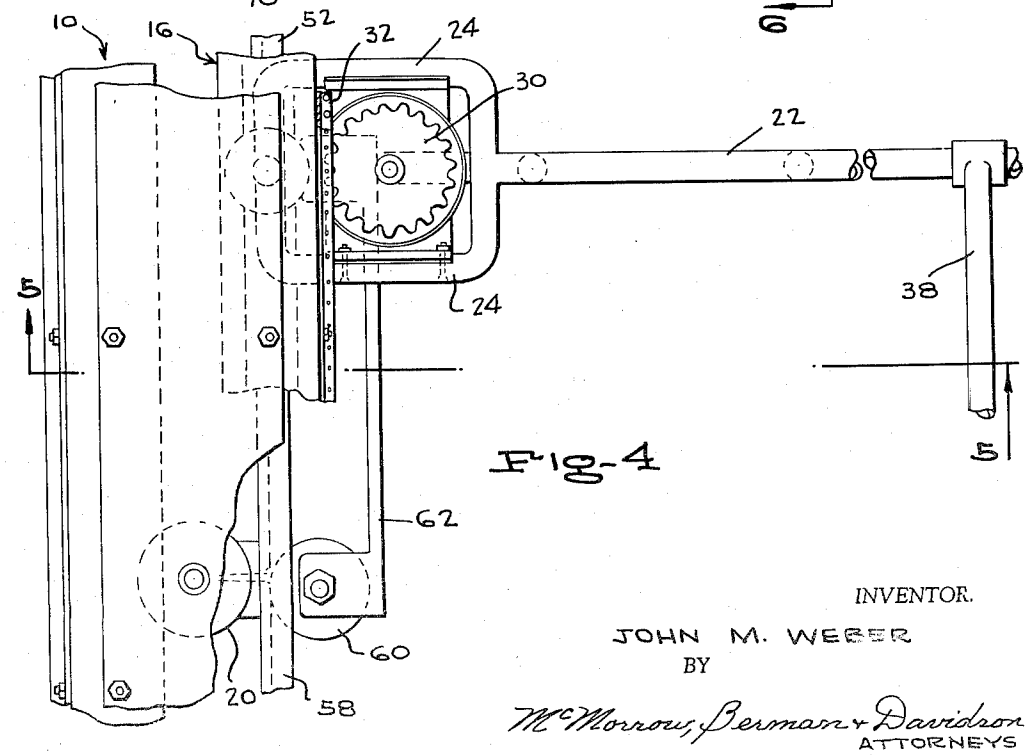


Fig-4

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Feb. 14, 1961 J. M. WEBER 2,971,475

SKI TOW APPARATUS

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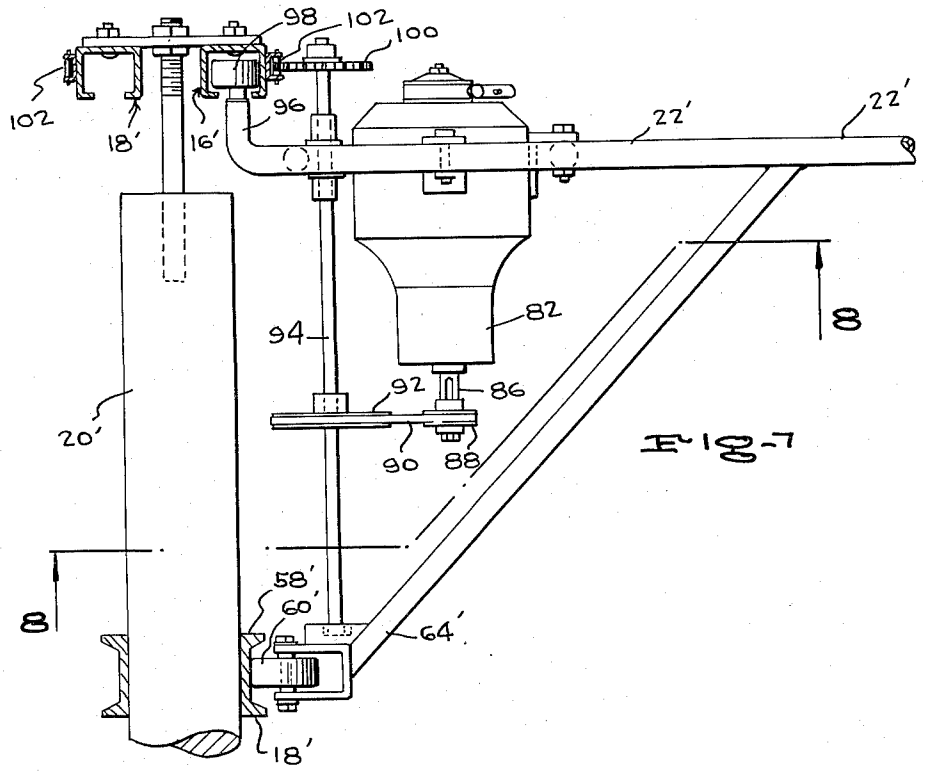


FIG-7

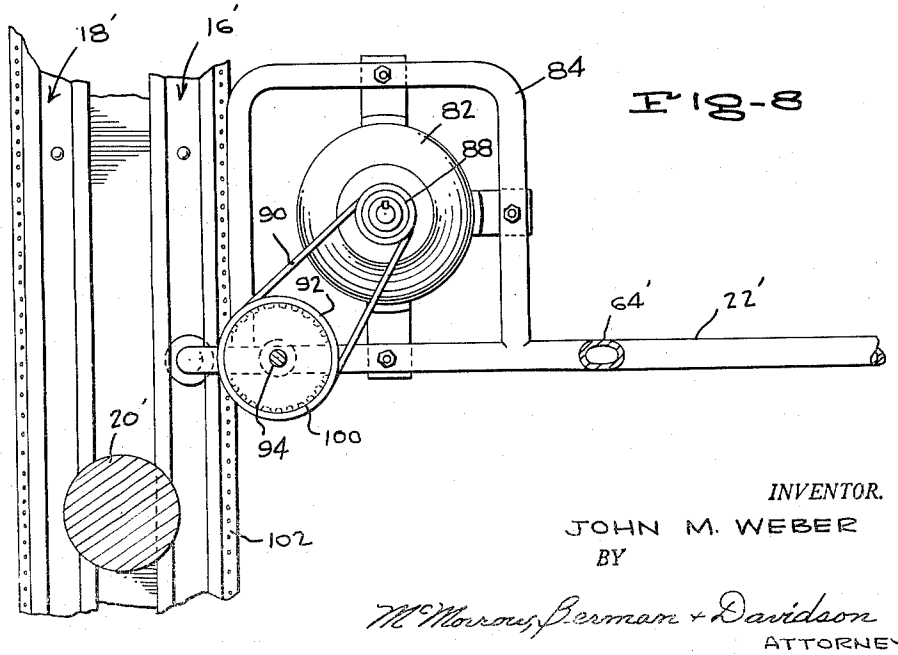


FIG-8

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2,971,475

SKI TOW APPARATUS

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Filed Aug. 29, 1958, Ser. No. 757,991

4 Claims. (Cl. 105—29)

The present invention relates to an apparatus for towing skiers over a ground surface.

An object of the present invention is to provide a ski tow apparatus having self-propelled towing means thereon for the use of skiers when traveling over a prescribed closed path upwardly and downwardly on a ground surface.

Another object of the present invention is to provide an apparatus for towing skiers over a ground surface which has self-propelled units selectively attached to the trackway of the apparatus, and automatic in operation.

A further object of the present invention is to provide a ski tow apparatus which is sturdy in construction, one adaptable for use on land of any contour, one which will accommodate a single skier or a multitude of skiers with ease and facility, and one which is economically feasible.

A still further object of the present invention is to provide a ski tow apparatus which is simple in structure, one sturdy in construction, one which is adaptable to many power supplies, and one which is highly effective in action.

These and other objects and advantages of the present invention will be fully apparent from the following description when taken in conjunction with the annexed drawings, in which:

Figure 1 is a plan view of the closed path ski tow trackway of the present invention with a portion in the center broken away, the dotted lines showing the travel movement of one of the supporting arms carried by the trackway of the apparatus,

Figure 2 is an elevational view with a portion broken away showing the connection to the trackway of a source of electric power,

Figure 3 is an isometric view of a portion of the trackway of the apparatus of the present invention, the dotted line showing indicating the figure of a skier in a position of use being towed by one of the bars of the apparatus,

Figure 4 is a plan view of the assembly shown in Figure 3,

Figure 5 is a view taken on the line 5—5 of Figure 4,

Figure 6 is a view taken on the line 6—6 of Figure 5,

Figure 7 is a view similar to Figure 5 showing a modified form of the driving means of the apparatus of the present invention, and

Figure 8 is a view taken on the line 8—8 of Figure 7.

Referring in greater detail to the drawings in which like numerals indicate like parts throughout the several views, in Figure 1 the reference numeral 10 designates a trackway arranged in a closed path with a portion centrally of the trackway broken away to represent a relatively long distance between end loops 12 and 14. The trackway 10 is adapted to be positioned adjacent to and spaced from a ground surface over which skiers are to be towed from one elevation to a higher elevation and infrequently from the higher elevation to the lower elevation, the loop 12 being here represented as the lower loop and the loop 14 represented as being a loop at a higher elevation, as shown in Figure 2.

The trackway 10 embodies a pair of tracks 16 and 18

arranged in vertical spaced relation, as shown in Figures 2 and 3, and to the bars 16 and 18 is connected a source of D.C. power, the bars 16 and 18 being supported upon a plurality of standards 20 arranged in spaced linear relation along the pathway of the ski tow. A hand grasping bar 22, horizontally disposed, is positioned adjacent to and spaced from the outer side of the trackway 10 and extends transversely with respect to the trackway 10. The inner end of the hand grasping bar 22 is formed with a box frame member 24 (Figure 3), supporting an electric motor 26 having its drive shaft disposed vertically, the drive shaft being designated by the numeral 28. A pinion 30, carried on the upper end of the drive shaft 28, constitutes a driving means on the drive shaft 28 interengaging means, embodying a rack 32, provided on the upper track 16 for propelling the hand grasping bar 22 therealong when the electric motor 26 is energized. The shaft 28 is positioned in the space between the adjacent end of the hand grasping bar 22 and the track 16, as shown in Figure 5. An upwardly projecting arm 34 carried by the frame member 24 has a roller 36 rotatably mounted thereon.

A support rod 38 is arranged in an upwardly and forwardly sloping direction and is positioned intermediate the ends of the hand grasping bar 22 with the upper end of the support rod 38 adjustably secured to the hand grasping bar 22 by means of a sleeve 23 on its upper end and a set screw 25 threaded in a hole in the sleeve 23 and having one end bearing against the bar 22. A block 40 is slidably carried on the portion of the support rod 38 intermediate the ends thereof and is adjustable thereon. An arm 42 projects from one side of the block 40 and carries a brackrest 44, also adjustably positioned with respect to the arm 42. The backrest 44 faces in the direction of the hand grasping bar 22.

The track 16 embodies a channel member 46 having an inner flange 48 and an outer flange 50 against which the roller 36 bears due to the out-slung weight of the hand grasping bar 22 and connected apparatus. Dependingly secured to the inner flange 48 is an inverted flexible channel strip 52 protecting a bar conductor 54. A brush assembly 56 is carried on the adjacent portion of the frame member 24 and has one end in electrical contact with the conductor 54.

The lower track 18 constitutes a channel member 58 facing outwardly of the trackway 10 and against which bears the rollers 60 of a carriage 62 carried on the lower end of a brace member 64. The upper end of the brace member 64 is fixedly secured to the hand grasping bar 22 intermediate the point of attachment of the support rod 38 and the frame member 24.

Another inverted U-shaped insulating strip 66 is carried on the lower flange of the channel member 58 and contains or surrounds a bar conductor 68 which is in electrical contact with a brush assembly 70 carried on the lower end portion of the shaft 72 which supports the forward roller 60 of the carriage 62.

A strut 74 extends between the mid-portion of the brace member 64 and the portion of the hand grasping bar 22 adjacent to and exteriorly of the frame member 24, the strut 74 serving to brace the hand grasping bar 22 in its horizontal position.

Wires 76 and 78 connect the brush assemblies 56 and 70 to the electric motor 26 for energization of the latter.

It is to be understood that the portions of the trackway 10 shown in Figures 3, 4 and 5, relate to sections of the trackway 10 intermediate of the loops 12 and 14. Such sections have tracks 16 and 18 on each side of the standard 20. The portions of the trackway 10 associated with the loops 12 and 14 have tracks 16 and 18 on one side of the standards 20 only.

Referring to Figures 7 and 8, a modification of the

power device used with the present invention is shown in which a gasoline engine 82 is mounted within a frame 84 carried by the inner end of a hand grasping bar 22', the engine 82 having a drive shaft 86 projecting from its lower end and carrying a pulley 88 over which runs a belt 90 connecting the pulley 88 to another pulley 92 carried upon a shaft 94 extending vertically and journaled in the lower end portion of a brace member 64' and in the frame 84 outwardly of an arm 96 carrying a roller 98 on the upper end thereof. A pinion 100 is fixedly secured to the upper end of the shaft 94 and is in meshing engagement with a rack 102 mounted on the outer face of the tracks 16' and 18' which are mounted upon a plurality of spaced supports 20'. A roller 60' supports the lower end of the base member 64' in the trackway provided by the channel member 58' on each side of the support 20'.

In use, a skier, shown in dotted lines in Figure 3, and designated by the reference numeral 104, may position himself rearwardly of the hand grasping bar 22, 22', with his hands gripping the hand grasping bar 22, 22', his back or buttocks bearing against the backrest 44 and with his skis 106 resting upon the ground surface. Upon introduction of an electrical current into the conductors 54 and 68 from a source such as is designated in Figure 2 by the reference numeral 108, or upon starting of the engine 82, the motor 26 or engine 84 will effect the rotation of the driving pinion 30, or 100, and the associated bar 22, 22' will be moved along the tracks 16, 16' and 18, 18' towing the skier 104.

When the skier 104 reaches the elevated loop 14, he may leave the hand grasping bars 22, 22' and the same will return along the trackway 10 to the loop 12 and thence back to the loading section of the trackway 10 which is preferably provided with a break-away section, not shown, permitting removal therefrom of the hand grasping bars 22, 22' for storage and replacement thereon, as demanded by the number of skiers to be towed.

Any suitable means may be used to support the tracks 16, 16' on the upper ends of the standards 20, 20' respectively, such suitable means including upright stud bolts 110 carrying horizontally disposed plates 112 on their upper ends, the plates 112 supporting the tracks 16, 16' in vertical spaced relation with respect to the tracks 18, 18' respectively.

What is claimed is:

1. A ski tow apparatus comprising a trackway arranged in a closed path and adapted to be positioned adjacent to and spaced from a ground surface over which skiers are to be towed, said trackway embodying a pair of tracks arranged in vertical spaced relation, a grasping bar positioned adjacent to and spaced from the outer side of said trackway and extending transversely with respect to said trackway, a support rod arranged in an upwardly and forwardly sloping direction positioned intermediate the ends of said bar and having the upper end fixedly secured to said bar, a back rest positioned on the side of said support rod facing said grasping bar and supported by said support rod adjacent the lower end of the latter, a motor having a vertically disposed drive shaft, said bar encompassing and supporting said motor and extending on opposite sides of said motor, and vertically spaced rollers operatively connected to said grasping bar and rollably engaging the upper and lower tracks, and driving means on said drive shaft interengaging means on said trackway for propelling said bar therealong.

2. A ski tow apparatus comprising a trackway arranged in a closed path and adapted to be positioned adjacent to and spaced from a ground surface over which skiers are to be towed, said trackway embodying a pair of tracks arranged in vertical spaced relation, a grasping bar positioned adjacent to and spaced from the outer side of said trackway and extending transversely with respect to said trackway, a support rod arranged in an upwardly and forwardly sloping direction positioned intermediate the ends of said bar and having the upper end fixedly secured to said bar, a back rest positioned on the side of said support rod facing said grasping bar and supported by said support rod adjacent the lower end of the latter, a motor having a vertically disposed drive shaft, said bar encompassing and supporting said motor and extending on opposite sides of said motor, and vertically spaced rollers operatively connected to said grasping bar and rollably engaging the upper and lower tracks, and a pinion on said drive shaft interengaging a rack provided on said trackway for propelling said bar therealong.

3. A ski tow apparatus comprising a trackway arranged in a closed path and adapted to be positioned adjacent to and spaced from a ground surface over which skiers are to be towed, said trackway embodying a pair of tracks arranged in vertical spaced relation, a grasping bar positioned adjacent to and spaced from the outer side of said trackway and extending transversely with respect to said trackway, a support rod arranged in an upwardly and forwardly sloping direction positioned intermediate the ends of said bar and having the upper end fixedly secured to said bar, a back rest positioned on the side of said support rod facing said grasping bar and supported by said support rod adjacent the lower end of the latter, a motor having a vertically disposed drive shaft, said bar encompassing and supporting said motor and extending on opposite sides of said motor, a carriage adjacent the lower one of said tracks and carried by said bar, and vertically spaced rollers operatively connected to said grasping bar and carriage and rollably engaging the upper and lower tracks, and driving means on said drive shaft interengaging means provided on one of said tracks for propelling said bar therealong.

4. A ski tow apparatus comprising a trackway arranged in a closed path and adapted to be positioned adjacent to and spaced from a ground surface over which skiers are to be towed, said trackway embodying a pair of tracks arranged in vertical spaced relation, a grasping bar positioned adjacent to and spaced from the outer side of said trackway and extending transversely with respect to said trackway, a support rod arranged in an upwardly and forwardly sloping direction positioned intermediate the ends of said bar and having the upper end fixedly secured to said bar, a back rest positioned on the side of said support rod facing said grasping bar and supported by said support rod adjacent the lower end of the latter, a motor having a vertically disposed drive shaft, said bar encompassing and supporting said motor and extending on opposite sides of said motor, a carriage adjacent the lower one of said tracks and carried by said bar, and vertically spaced rollers operatively connected to said grasping bar and carriage and rollably engaging the upper and lower tracks, a pinion on said drive shaft interengaging a rack provided on the upper one of said tracks for propelling the said bar therealong.

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