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FIRE RESCUE APPARATUS

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2 Sheets-Sheet 2

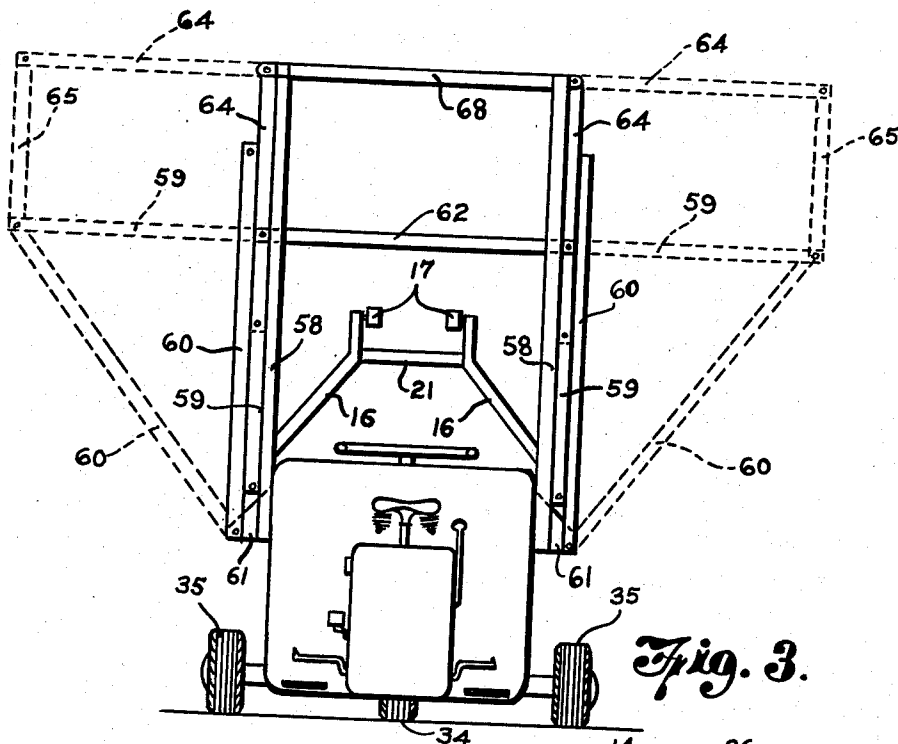


Fig. 3.

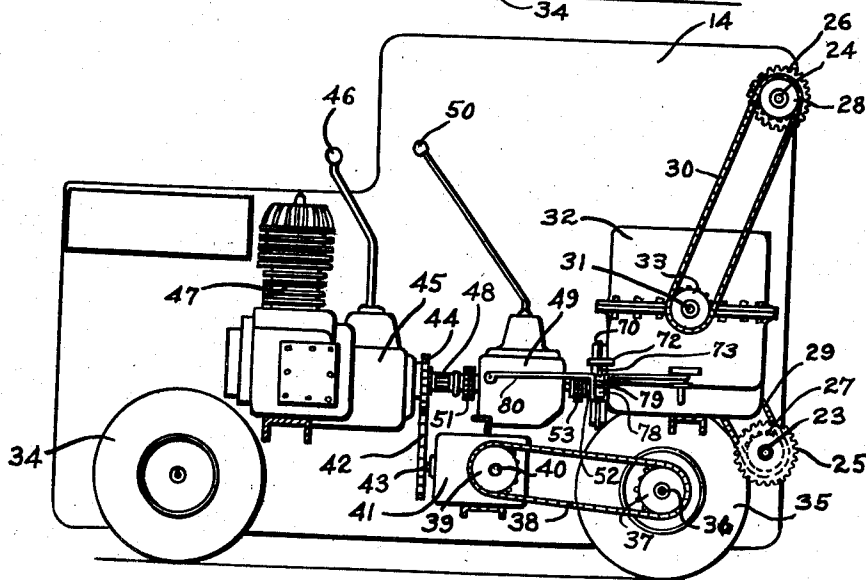


Fig. 4.

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FIRE RESCUE APPARATUS

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My invention relates to fire rescue apparatus, and more particularly to a device that is adapted to be transported to a fire and travel up and down the sides of a building to rescue persons therefrom.

More particularly my invention comprises a vehicle that has ground wheels for transporting the same to the point of use thereof, and has means for moving the vehicle up and down a building wall, comprising means on the building and driven means on the vehicle cooperating therewith, preferably, in the form of a rack on the building and pinions on the vehicle meshing with the rack to carry the vehicle up and down the side or wall of the building.

More particularly my invention comprises an apparatus of the above mentioned character, which is adapted to travel along on the ground under its own power and to utilize the power plant that propels the vehicle along on the ground for raising the vehicle up and lowering the vehicle down the side of a building, and means for stopping the same at a desired point.

More specifically my invention comprises a vehicle that is provided with means for driving the same along the ground and with means for driving the same up the side of a building, which means is operated by the same power plant, and means for selectively connecting the power plant with either the ground wheels or the means for moving the vehicle up the side of the building, as may be found desirable or necessary.

Furthermore my invention specifically comprises means connected with the above referred to pinions so as to control rotation of the same through a reduction gearing and braking means which are located on the high speed side of the reduction gearing so that the application of the braking means will positively stop and hold the pinions against rotation when it is desired to hold the vehicle in a fixed position or to halt the travel thereof as said vehicle is moving either up or down the side of the building.

It is another purpose of my invention to provide a device of the above mentioned character with means for positively securing the vehicle to a track that is mounted vertically on the side of a building so that the interengaging pinions and rack can not come out of engagement with each other, which means is detachable so that the vehicle can be detached from the building and moved along the ground.

It is a further purpose of my invention to provide in a device of the above mentioned character a platform mounted thereon in such a way that said platform will overlap exit openings that

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are to the side of the track that is provided on the building, such as windows, which platform is adapted to be folded into a position so as to not project unduly from the sides of the vehicle when the vehicle is traveling along the ground.

Other objects and advantages of my invention will appear as the description of the drawings proceeds. I desire to have it understood, however, that I do not intend to limit myself to the particular details shown or described, except as defined in the claims.

In the drawings:

Fig. 1 is a view in side elevation of my improved rescue apparatus, showing the same in position on the side of a building, a fragment of which is shown.

Fig. 2 is a fragmentary sectional view on a somewhat enlarged scale taken substantially on the line 2-2 of Fig. 1.

Fig. 3 is a rear elevational view of the rescue apparatus when in position to move along on the ground.

Fig. 4 is a view partly in elevation and partly in section of the rescue apparatus, certain parts being omitted, but showing the driving means for the vehicle both on the ground and for elevating the same along the side of a building.

Fig. 5 is a rear fragmentary elevational view of the rescue apparatus in position on a building, showing the platform in unfolded position, and

Fig. 6 is a fragmentary detail view of the brake mechanism.

Referring in detail to the drawings, my improved rescue apparatus is shown as being applied to a building 10, which is provided with a structural member 11, such as an I-beam, which is shown as being built into the wall 10 and which may be part of the building structure, or may be added to the building as may be found desirable. The important thing is that the member 11 is firmly fixed in position in the building structure or on the building, and has provided thereon a pair of flanges 12 and a rack 13 mounted centrally thereof. The rack 13 may be made as a part of the structural member, such as the I-beam 11 shown in Fig. 2, but preferably, is made as a separate member, which is welded or otherwise fixedly secured to the outer face of the one flange of the I-beam.

The laterally extending flange portions 12 are spaced from the building 10 and serve as means for holding the rescue vehicle 14 to the building in the position shown in Fig. 1. The vehicle is provided with a pair of arms 15 and 16, each pair of arms 15 and 16 being detachably mounted on the vehicle 14, as by bolts, or similar detachable

securing means. The pair of members 15 extends downwardly from the body 14 at an oblique angle and the pair of arms 16 extends upwardly therefrom at an oblique angle. Each of the arms 15 and 16 is provided with a pair of rollers 17 engaging opposite faces of the flanges 12, said rollers being mounted to rotate on suitable shafts 18 provided on the arms 15 or 16, the mounting on the arms 15 only being illustrated in detail, but the mounting on the arms 16 being the same as on the arms 15. As shown, brackets 19 provided on the arms carry the shafts 18. Extending forwardly from the body 14 is a bracket 20 that carries pairs of rollers 17 engaged with the flanges 12, which bracket is also suitably detachably mounted on the body 14. In order to hold the rollers 17 in proper engagement with the flanges 12, a transverse connecting member 21 is provided between each pair of arms, which is detachably connected with one of said arms, as by means of the bolt 22, and may be fixed in position on the other arm of the pair.

Also mounted on the body 14 on suitable shafts 23 and 24 are the pinions 25 and 26, which mesh with the rack 13. Said pinions are fixed on said shafts to rotate therewith and said shafts have sprocket wheels 27 and 28 fixed thereon to rotate therewith, which are driven by the sprocket chains 29 and 30. Said sprocket chains are also in engagement with sprockets that are mounted on the low speed or output shaft 31 of the reduction gear 32, only the sprocket 33 driving the sprocket chain 30 being shown, the other sprocket being on the opposite end of the shaft and driving the chain 29.

The arms 16 may be carried by the vehicle when it is traveling along on the ground, as shown in Fig. 3, as these are in a position where the same will not interfere with the progress of the vehicle over the ground, but the arms 15 have to be removed and stored in a position on the vehicle that the same will not interfere with the operation of the vehicle over the ground. The vehicle is provided with a single rear wheel 34 and a pair of front wheels 35, which are mounted on the axle 36 to rotate therewith, said axle having a sprocket wheel 37 thereon that is fixed on the axle 36 and which is driven by means of a sprocket chain 38 operating over the same, said sprocket chain 38 also operating over a sprocket 39 fixed on the shaft 40 to rotate therewith. Said shaft 40 is the output shaft on a gear box 41, which contains suitable gearing to change the axis of rotation from one transversely of the vehicle to one longitudinally thereof, the gears in the gear box 41 being driven by means of a sprocket chain 42 operating over a sprocket on the shaft 43 and over a sprocket 44 on the tubular output shaft provided on a transmission 45 provided on the vehicle, the transmission being of a standard character, such as used on motor-cycles or similar vehicles, having a gear shift lever 46 thereon of the ordinary character.

The power plant for the vehicle comprises an engine 47, which, in the form of the invention shown, is provided with the transmission 45 as a unit therewith. The engine is started by means of a starter gear 48, which is operated by the usual kick starter provided on small motor vehicles of the character of motor scooters and motor-cycles, the details of which are not shown, as the same are of a standard character. Said gear is mounted on a starter shaft having a positive driving connection with the engine shaft and extending through the tubular output shaft

of the transmission, as is common practice in such vehicles. A second transmission 49 is provided, which is provided with a gear shift lever 50 and which is connected with the starter shaft by means of a suitable flexible coupling 51, and with a shaft 52 constituting the input shaft of the reduction gearing 32 by means of a flexible coupling 53. A brake drum 54 is fixed on the shaft 52.

It will accordingly be seen that by operation of either the gear shift lever 46 or the gear shift lever 50 either the ground wheels 45 or the pinions 25 and 26 can be driven by the power plant 47 to either move the vehicle along the ground or to rotate the pinions 25 and 26. The transmission 49, is preferably, of such a character that the pinions 25 and 26 are either disconnected from the power plant or are rotated in the proper direction at either a low or a higher speed to cause the vehicle to travel upwardly or downwardly along the rack 13. Suitable braking means provided for the brake drum is utilized to halt the vehicle and hold it at any desired point along the rack 13. Said braking means comprises a pair of brake shoes 70 pivoted on the bracket 71 mounted on the frame of the vehicle and moved into position to grip the brake drum by means of the foot pedal 72. Said pedal is fixed on the end of a lever 73 pivoted at 74 to one of said brake shoes 70 and connected with the other brake shoe 70 by means of a short link 75 pivoted to said other brake shoe and a longer link 76 pivotally connected with the lever 73 at a point spaced from the end thereof, said links being pivotally connected together. Said brake shoes have suitable lings 77. The lever 73 operates in a slot 78 formed by the portions of a U-shaped offset 79 in the road wheel brake lever 80.

The vehicle is provided with a suitable starter pedal 55 for operating the starter gear 48 in a suitable manner, and with suitable steering mechanism operated by the steering arms or handle bars 56 and is provided with a seat 57 for the operator thereof. Suitable braking means are provided for controlling the operation of the vehicle while on the ground, of a standard character operated by means of the lever 80.

A platform is provided on the body 14, which is, preferably, of a folding character and which has pairs of upright members 58 fixed to the body and which remain in the position shown in Figs. 3 and 5, both when the vehicle is attached to the building and when traveling along the ground, the platform being omitted in Fig. 4. Said platform also has members 59 pivoted to the members 58, which are adapted to be swung upwardly from the full line position shown in Fig. 3 to the dotted line position shown in said figure, which is the full line position for these parts shown in Fig. 5. Bracing members 60 are also pivoted at their lower ends to brackets 61 on the uprights 58 and are adapted to be swung to the dotted position shown in Fig. 2, which is the full line position shown in Fig. 5, and attached to the members 59 to brace the same. Suitable flooring can be provided on the members 59 and the transversely extending members 62 that connect the members 58 above the top of the body 14, a portion of the floor being shown at 63 in Fig. 1. The members 58 extend above the members 62 and the rail members 64 are suitably pivoted to the upward extensions of the members 58 and are movable to the dotted line position shown in Fig. 3, which is the full

line position thereof shown in Fig. 5. Pivottally connected to the outer ends of the members 59 are upwardly extending posts 65, which fold into a position behind the members 59 and which are detachably connected with the members 64, said members 65 being shown in dotted lines in Fig. 3 and in full lines in Fig. 5 in their operative unfolded position. The rail 66 connects the members 65 at their extremities and a rail 67 connects the members 58 at their upper ends. Thus a platform with a guard rail extending around the same is provided, which projects laterally from the body 14 and is located above the same and above the operator sitting on the seat 57 and can be brought into suitable position in front of windows 69 or other similar escape openings in the building 10 when the vehicle is in position with the pinions 25 and 26 in mesh with the rack 13 on the rail member 11.

In case rescue operations are to be performed by the apparatus described, the vehicle is driven from a suitable location, such as a fire station, to a place of use, such as a burning building, in the usual manner of a motor vehicle, by means of the power plant 47 driving the wheel 35. Upon reaching the building at which rescue operations are to take place the arms 15 and 16 can be quickly secured in position, as well as the bracket 20, to secure the apparatus to the building. Of course, the arms 15 can not be attached in position until the body 14 has been slightly elevated, but the rollers on the bracket 20 and on the arms 16 will serve to temporarily hold the apparatus to the track or rail 11 until this can be done. After the vehicle has been thus placed in position, the operator can immediately put the same in operation up and down the side of the building, by means of the power plane driving the pinions 25 and 26, until all rescue efforts on the particular rail or track to which the same is attached have been completed, whereupon the vehicle can be quickly shifted to another rail or track and the rescue efforts further continued.

What I claim is:

1. A transportable rescue apparatus, comprising a vehicle having ground wheels, means for moving said vehicle up and down a building wall comprising a rack on said building and vertically spaced toothed wheels on said vehicle cooperating therewith, flanges fixed relative to said rack and projecting laterally at opposite sides thereof, rollers engaging opposite sides of said flanges, means on said vehicle carrying said rollers, said rollers holding said toothed wheels in engagement with said rack, and means on said vehicle for positively driving said toothed wheels in unison.

2. A transportable rescue apparatus, compris-

ing a vehicle having ground wheels, means for moving said vehicle up and down a building wall comprising a rack on said building and vertically spaced toothed wheels on said vehicle cooperating therewith, flanges fixed relative to said rack and projecting laterally at opposite sides thereof, rollers engaging opposite sides of said flanges, means on said vehicle carrying said rollers, comprising arms inclined upwardly from said vehicle and arms inclined downwardly from said vehicle, said rollers holding said toothed wheels in engagement with said rack, and means on said vehicle for positively driving said toothed wheels in unison.

3. A transportable rescue apparatus, comprising a body portion having ground wheels, and means for moving said body portion up and down a building wall, comprising a vertical track on said building, a flange on said track, a rack on said flange, a rotatable pinion on said body portion, means on said body portion for holding said pinion in engagement with said rack, a motor on said vehicle, a transmission connecting said motor with said pinion to rotate the same, braking means between said transmission and said pinion for holding said pinion against rotation to hold said body portion at any desired point during its ascent or descent, and a transmission connecting said motor with said ground wheels.

4. A transportable rescue apparatus, comprising a vehicle having ground wheels, means for moving said vehicle up and down a building wall comprising a rack on said building and toothed wheels on said vehicle cooperating therewith, flanges fixed relative to said rack and projecting laterally at opposite sides thereof, rollers engaging opposite sides of said flanges, means on said vehicle carrying said rollers, comprising arms inclined upwardly from said vehicle and arms inclined downwardly from said vehicle, said rollers holding said toothed wheels in engagement with said rack, said downwardly inclined arms being detachably mounted on said vehicle, and means on said vehicle for positively driving said toothed wheels in unison.

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