May 1, 1928. 1,668,337

G. D. ROSS ET AL

GARAGE MECHANISM

Filed Aug. 2. 1926 3 Sheets-Sheet 1

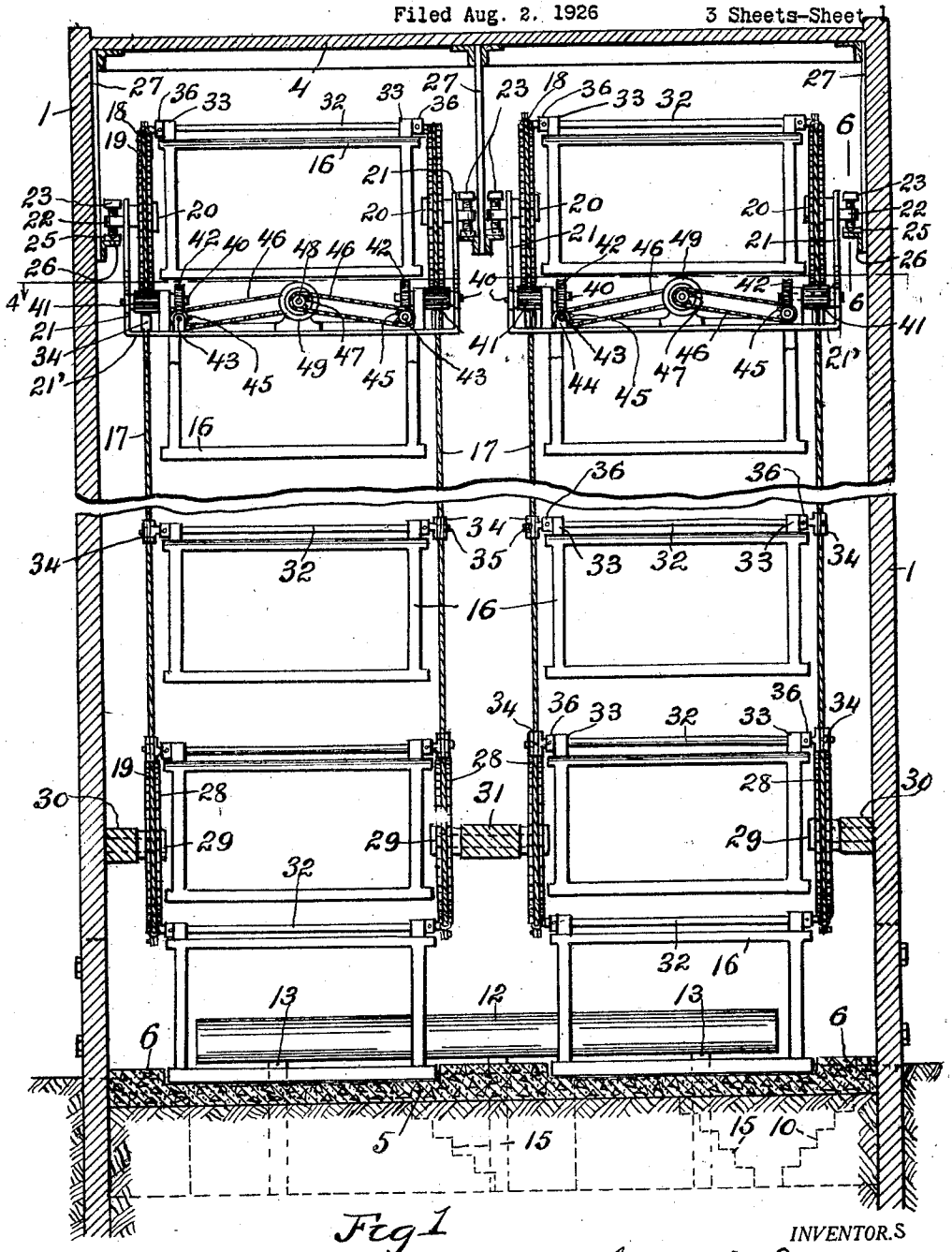


Fig 1

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Witness:

R. E. Hamilton

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GARAGE MECHANISM

Filed Aug. 2, 1926 3 Sheets-Sheet 2

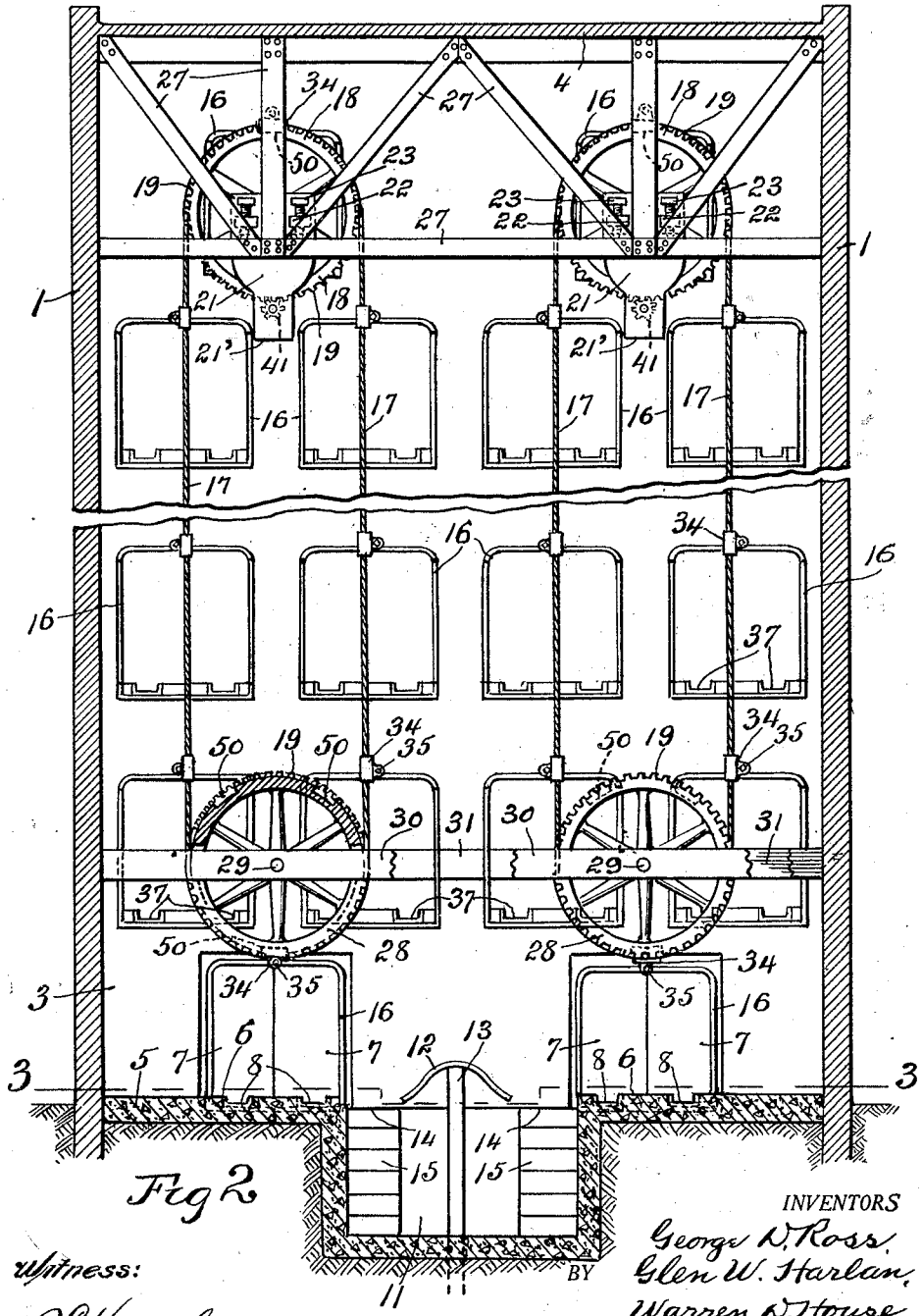


Fig 2

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GARAGE MECHANISM

Filed Aug. 2. 1926 3 Sheets-Sheet 3

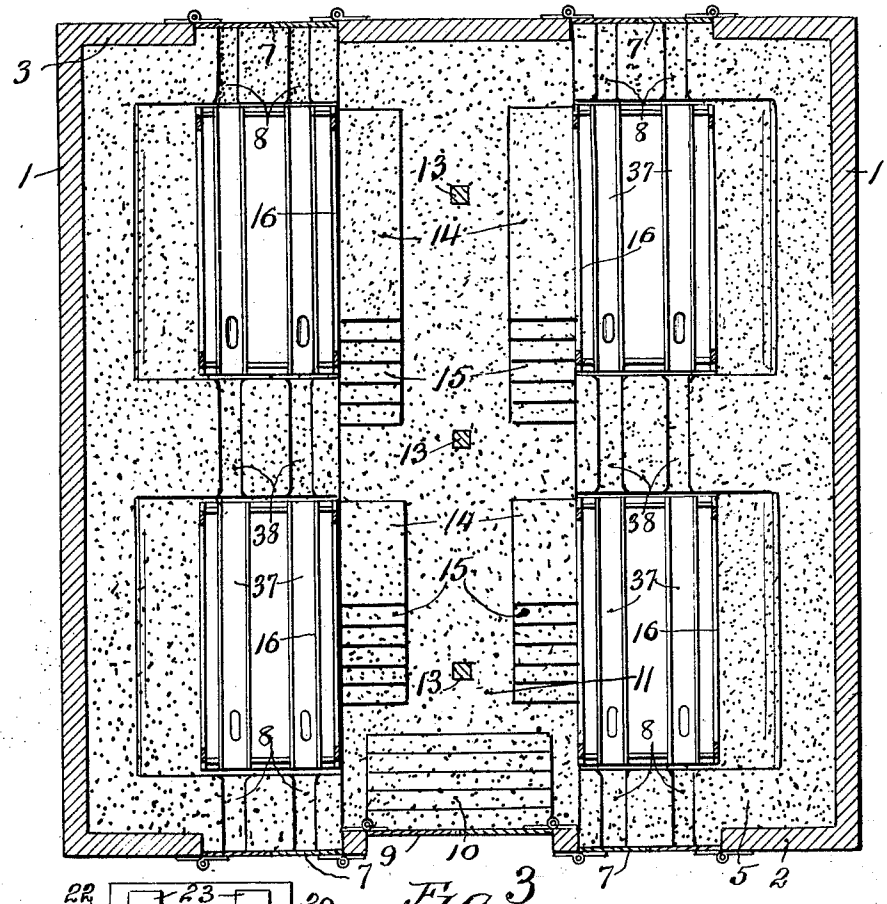


Fig 3

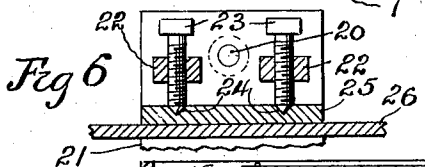


Fig 6

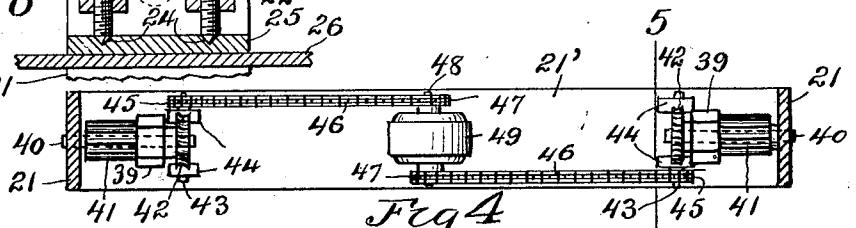


Fig 4

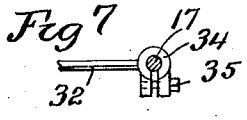


Fig 7

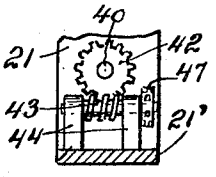


Fig 5

Witness:
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Patented May 1, 1928. 1,668,337

UNITED STATES PATENT OFFICE.

GEORGE D. ROSS AND GLEN W. HARLAN, OF KANSAS CITY, MISSOURI.

GARAGE MECHANISM.

Application filed August 2, 1926. Serial No. 126,519.

Our invention relates to improvements in garage mechanisms.

One of the objects of our invention is to provide a novel means by which a large number of automobile or other vehicles may be stored, so as to be readily accessible, in a relatively small space and with the utilization of a relatively small area of ground, and without liability of damage to the vehicles by fire, action of the elements, or from collision with each other while being handled.

A further object of our invention is to provide a building with novel means for receiving, storing and discharging vehicles, which is relatively simple and cheap to construct and operate, which is strong, durable, not liable to get out of order, which enables a vehicle to be quickly stored and as quickly removed from the building, and which is efficient in operation.

The novel features of our invention are hereinafter fully described and claimed.

In the accompanying drawings, which illustrate the preferred embodiment of our invention,

Fig. 1 is a front view, partly in elevation, partly in vertical section and partly broken away of our improved garage mechanism.

Fig. 2 is a similar side view of the same.

Fig. 3 is a section on the line 3—3 of Fig. 1.

Fig. 4 is a section, enlarged, on the line 4—4 of Fig. 1.

Fig. 5 is a section on the line 5—5 of Fig. 4.

Fig. 6 is a section, enlarged, on the line 6—6 of Fig. 1.

Fig. 7 is an enlarged end view of one of the cable clamps, and parts connected therewith.

Similar reference characters designate similar parts in the different views.

1 designates the side walls of a building adapted for the employment of our invention, 2 and 3 the front and rear walls respectively thereof and 4 the roof of the building.

The building may be of any suitable material, preferably fire proof, and it may have a concrete floor 5 provided with landing places 6 for vehicles, at the inner side of and respectively adjacent to and alining with doors 7 in the front and rear walls 2 and 3, Fig. 3. Each landing place 6 may be provided with a pair of parallel longitudinal grooves 8 adapted to serve as runways for the wheels of vehicles to be stored.

The front wall 2 may have a pair of doors 9 centrally disposed in front of stairs 10 which lead downwardly to a central longitudinal passage 11, Figs. 2 and 3, along which may pass the passengers of the vehicles which are being stored. A longitudinal shed having a roof 12 supported by posts 13 extends rearwardly from the stairs 10 centrally in the passage 11, to protect passengers in the passage from oil that might drip from above.

In the passage 11 at opposite sides thereof respectively are passenger landings 14, elevated above the floor of said passage and provided each at one end with stairs 15.

The vehicles to be stored are run into the building in the runway grooves 8 and into storing cars which are brought into alinement with said grooves. The storing cars 16 are arranged in sets, each set being mounted so as to be pivotally suspended between a pair of upright parallel, endless belts comprising cables 17. There are as many pairs of belts 17 as there are sets of cars 16, four pairs being shown in the drawing. As each pair of belts 17 are supported and driven like each of the other pairs, a description with reference to one pair of belts and the mechanism which supports and drives the pair, and of the means for suspending one set of cars, will suffice for each set.

The belts 17 of a pair are respectively mounted on and driven by two driving pulley gear wheels 18, of like diameter and having the same horizontal axis, which is also the upper axis of the belts 17. The said pulley gear wheels are each provided with an annular peripheral groove disposed between two annular peripheral rows of gear teeth 19. The wheels 18 are respectively rotatable on two axial studs 20 respectively mounted on the inner sides of the upwardly extending arms 21 of a U shaped supporting member 21', Fig. 1, the outer sides of said arms having lugs 22 each provided with a vertical threaded hole. In said holes are respectively fitted vertical screws 23, the lower ends of which are respectively seated in recesses 24 provided in the upper sides of two plates 25, at the outer sides respectively of the arms 21, which are supported on

horizontal angle irons 26 of a suitable truss frame 27, which is fastened to and is supported by the walls and the roof of the building, Figs. 1 and 2, and Fig. 6.

By adjusting the screws 23, the wheels 18 may be raised or lowered for the purpose of tightening the belts 17 or loosening the same, or to adjust the lower limit of travel of the cars 16.

The belts 17 are mounted respectively upon two driven pulleys 28, which may be exactly like the wheels 18, and which are respectively rotatable on two alined horizontal studs 29, one of which is mounted on a transverse beam 30 secured to the adjacent wall, and the other being mounted on a transverse beam 31 having its ends fastened to the side walls 1.

The cars 16 are pivotally suspended from the belts 17 by means of horizontal bars 32 respectively pivotally mounted in lugs 33, two of which are provided centrally on the upper side of each car 16 respectively adjacent to the ends thereof. The bars 32 are each provided at each end with a split clamp 34, Fig. 7, the arms of which embrace the adjacent belt 17, a clamping screw 35 being mounted rotatably in one arm of the clamp, and being fitted in a threaded hole in the other arm of the clamp. The clamps 34 may be welded to the bars 32, or may be forged portions thereof. Collars 36 on each bar 32 at the outer sides of the lugs 33 and fastened to the bar, hold the car from movement lengthwise of its supporting bar. The cars 16 freely swing on the bars 32 so that they always retain an upright position irrespective of the position of the belts 17.

Each car 16 is, preferably, provided with a closed pan shaped bottom, which catches oil which may drip from automobiles carried on the car. The screws 23 are adjusted, and the studs 29 are so disposed that each car 16, when the belts 17 are driven, will have its open ends aline with the landings 6, and each car has on its floor two longitudinal channels 37, which, when the car is at its lowermost position, shown in Fig. 1, will respectively be on the same level and will aline with the runway grooves 8. Intermediate runway channels 38 alining with the grooves 8 may be provided, Fig. 3, so that a vehicle may be run clear through the building from the front to the rear, or into the adjacent car from either a front or a back door 7, or from a lowered car out of either door 7, which is in alinement with the car.

For driving the belts of each pair at the same speed and in a like direction, on each supporting member 21′, on the transverse portion thereof are provided two upwardly extending bearings 39, Figs. 1 and 4 in which are rotatably mounted two horizontal shafts 40, which are also respectively rotatably mounted in the arms 21. Respectively fastened to and rotatable with the shafts 40 are two pinions 41 which respectively mesh with the teeth 19 of the pulley gear wheels 18, Fig. 1. Respectively secured to the shafts 40 are two worm wheels 42, which respectively mesh with two worm shafts 43, Figs. 1, 4 and 5, which are respectively mounted in two pairs of bearings 44 on the upper side of the horizontal portion of the supporting member 21′. Respectively secured to the worm shafts 43 are two sprocket wheels 45 which are respectively connected by chain belts 46 with two sprocket wheels 47 secured to the armature shaft 48 of a motor 49, which is mounted on the transverse portion of the supporting member 21′. When the motor 49 is operated, the pulley gear wheels 18 will be rotated at the same speed in like direction by means of the sprocket wheels 47, chain belts 46, sprocket wheels 45, worm shafts 43, worm wheels 42, shafts 40 and pinions 41.

Any suitable electrical connections, not shown, may be made to the motors 49 for the starting and stopping thereof.

In the operation of the mechanism, a person may drive through one of the entrances across the adjacent landing 6 and onto the adjacent lower car 16 through the open end thereof. He may then, with the other passengers of the vehicle, alight onto the passenger landing 14 at the side of the car, and pass down the stairs 15 into the passage 11, thence up the stairs 10 and out of the building through the doors 9.

The attendant may then operate the adjacent motor 49 to drive the belts 17 carrying the car holding the vehicle just deposited thereon. When the next car arrives at the landing place adjacent thereto, the attendant stops the motor, and another vehicle may be driven onto the then lowermost car 16. This operation may be repeated until all the cars 16 of all the sets are loaded with vehicles.

When a person desires to remove his vehicle from the building, he will enter the building through the doors 9, pass down the stairs 10 and go upon the landing 14 which is adjacent to the set of cars containing the car 16 on which his vehicle was deposited. The attendant will then operate the proper motor 49 to bring the desired car 16 to the passenger landing 14 on which the owner of the vehicle is standing. The owner can then get into his vehicle and drive it from the car through the adjacent doorway and out of the building.

It will be obvious that our improvement is adapted for most any desired number of cars, and that the building may be built as high as desired to suit the number of cars to be used and the ground space occupied by the building. While we have

shown four sets of cars in the drawings, this number may be increased or diminished as may be desired.

Each wheel 18 and 29 may be provided with peripheral recesses 50, Fig. 1, to receive the clamps 34 of the bars 32, and the teeth 19 may be so spaced as to receive the bars 32.

We do not limit our invention to the structure shown and described, as many modifications, within the scope of the appended claims, may be made, without departing from the spirit of our invention.

What we claim is:—

1. In a garage mechanism, a U shaped supporting member, supporting means therefor, two driving pulleys rotatable respectively on the arms of said supporting member, two driven pulleys rotatable on said supporting means respectively below said driving pulleys, two cables respectively mounted on and driven by said driving pulleys and respectively mounted on said driven pulleys, means on said supporting member for driving said driving pulleys in a like direction and at the same speed, cars adapted to respectively receive and support vehicles, and means attached to and adapted for travel with said cables for pivotally suspending said cars between said cables.

2. In a garage mechanism, a U shaped supporting member, supporting means therefor, two driving pulley gear wheels respectively rotatable on the arms of said member, two driven pulleys rotatable on said supporting means, two cables respectively mounted on and driven by said driving pulleys and respectively mounted on said driven pulleys, two pinions respectively meshing with said pulley gear wheels and rotatable on said supporting member, means for rotating said pinions in a like direction and at the same speed, cars adapted to receive and support vehicles, and means attached to said cables and adapted for travel therewith for pivotally suspending said cars between said cables.

3. In a garage mechanism, a U shaped supporting member, supporting means therefor, two driving pulley gear wheels respectively rotatable on the arms of said supporting member, two driven pulleys rotatable on said supporting means respectively below said driving pulley gear wheels, two cables respectively mounted on and driven by said driving gear wheels and respectively mounted on said driven pulleys, two pinions rotatable on said supporting member and respectively meshing with said pulley gear wheels, a motor on said supporting member, means actuated by said motor for rotating said pinions in a like direction at the same speed, cars adapted to receive and support vehicles, and means attached to said cables and adapted for travel therewith for pivotally suspending said cars between said cables.

4. In a garage mechanism, two pulleys having the same axis and of like diameter, two endless belts respectively mounted on and driven by said pulleys, means for simultaneously rotating said pulleys in a like direction at the same speed, cars disposed between said belts and adapted to receive and support vehicles, means attached to said belts and adapted for travel therewith and pivotally suspending said cars, a support on which said pulleys are rotatable, and means including vertical rotary screws having threaded connection with said support for vertically adjustably supporting said support.

In testimony whereof we have signed our names to this specification.

GEORGE D. ROSS.
GLEN W. HARLAN.