Aug. 3, 1926. 1,594,840

E. KEYWORTH

LIFTING AND SUPPORTING RACK FOR AUTOMOBILES

Filed Oct. 8, 1925 2 Sheets-Sheet 1

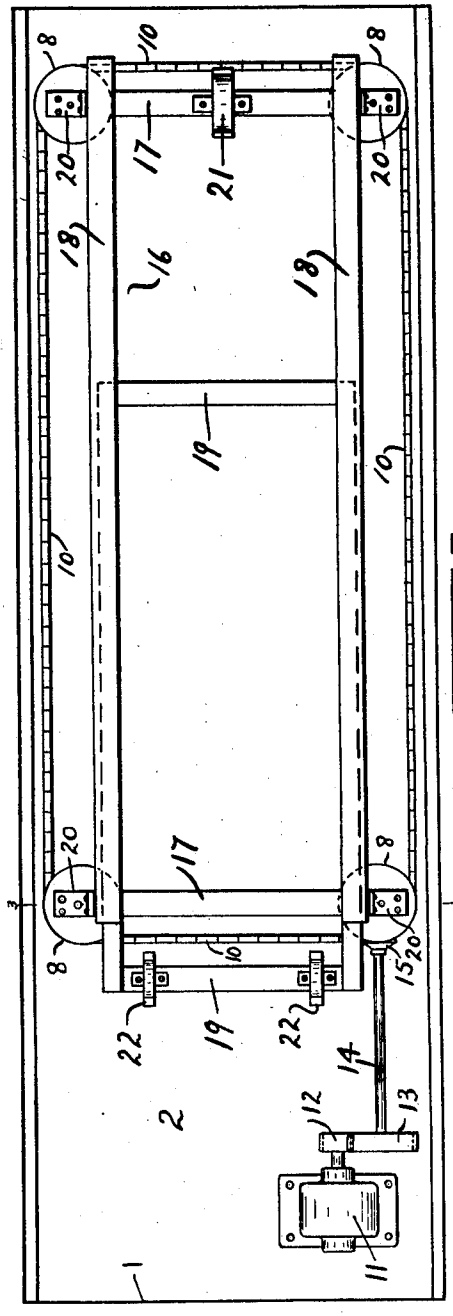


Fig. 1.

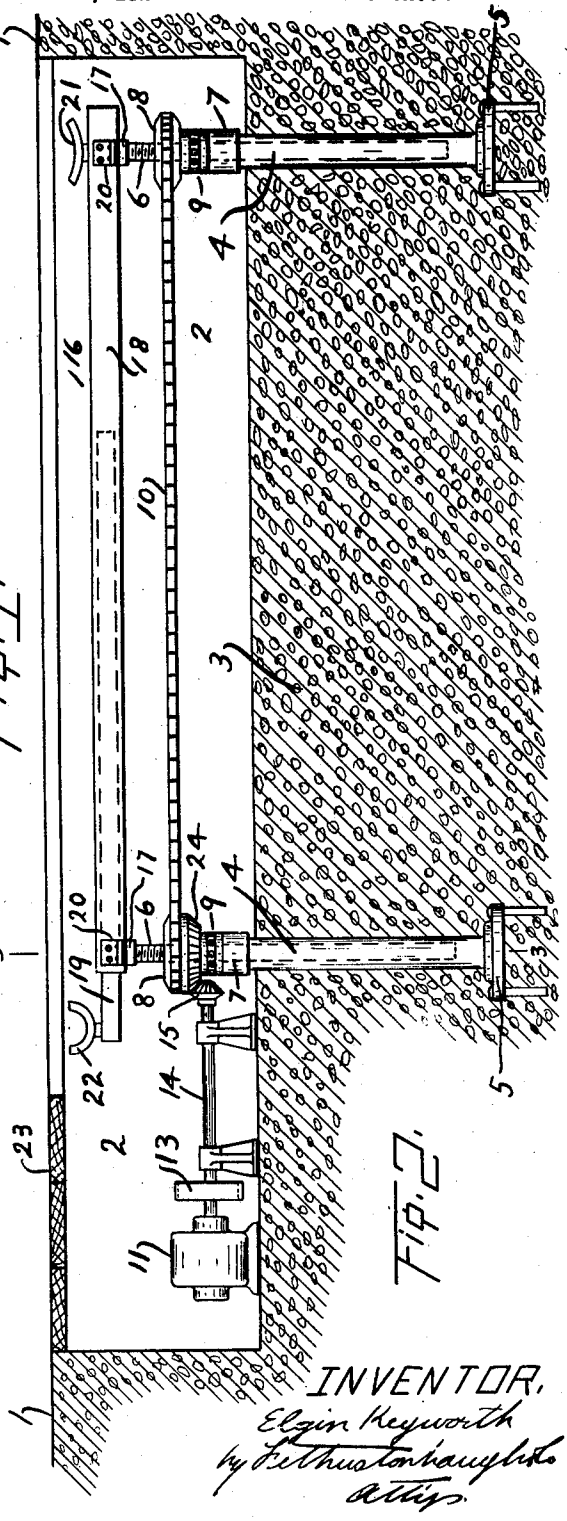


Fig. 2.

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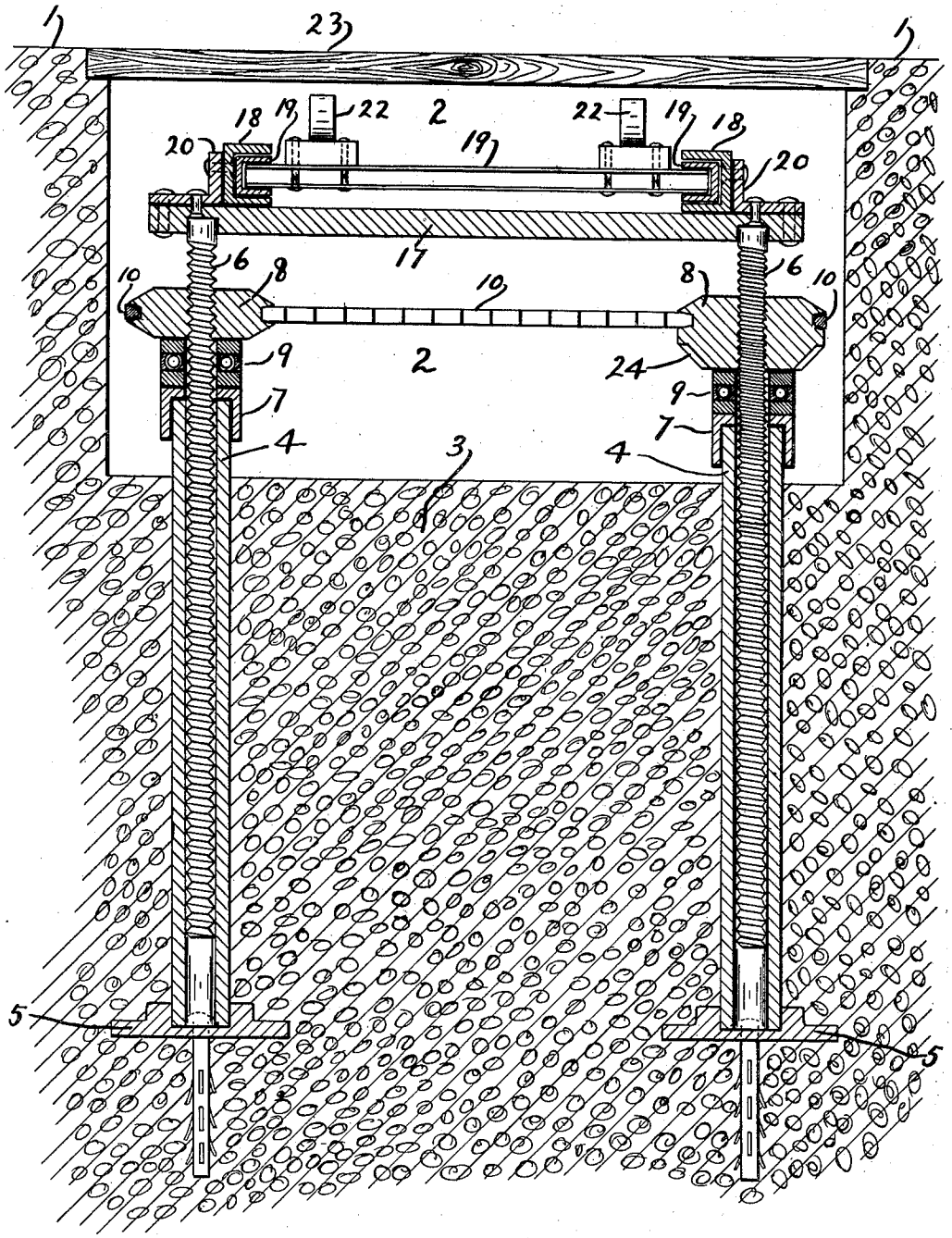


Fig. 3.

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Patented Aug. 3, 1926. 1,594,840

UNITED STATES PATENT OFFICE.

ELGIN KEYWORTH, OF HAMILTON, ONTARIO, CANADA.

LIFTING AND SUPPORTING RACK FOR AUTOMOBILES.

Application filed October 8, 1925. Serial No. 61,333.

My invention relates to improvements in lifting and supporting racks or tables for automobiles and the object of the invention is to provide an improved lifting and supporting rack for use in garages and repair shops whereby automobiles may be very conveniently and rapidly raised and lowered and supported at any desired height so as to enable workmen to have ready and convenient access to the under portions of the car for cleaning, inspection and repairing; a further object is to provide such a rack which will be below the floor level when fully lowered.

My invention consists in the construction and arrangement of parts, all as hereinafter more particularly described and illustrated in the accompanying drawings in which:—

Fig. 1 is a top plan view of my improved rack, the covering floor boards being removed.

Fig. 2 is a side elevation of my improved rack in the lowered position, the floor and concrete foundation together with the pit into which the rack decends, being shown in section and most of the floor boards being removed.

Fig. 3 is a transverse section to an enlarged scale taken on the lines 3—3 of Figs. 1 and 2, the covering floor boards being shown in place.

In the drawings, like characters of reference indicate corresponding parts in the various views.

In the form of my invention illustrated, 1 indicates the floor of a garage in which is formed a pit 2, the floor of the pit being in the nature of a comparatively deep concrete foundation.

Four tubular upright standards 4 are anchored in the concrete foundation 3, the lower ends of these standards carrying footings 5 for further securing the standards in position.

The upper ends of these standards project into the pit 2.

Four threaded lifting screws 6 are freely mounted within the tubular standards 4 and are a snug sliding fit therein to prevent any lateral play of these screws, as will be hereinafter referred to.

Surmounting the upper ends of the tubular standards 4 are caps 7.

Having threaded engagement upon each screw 6, is an internally threaded sprocket wheel 8 and mounted between each sprocket wheel and the corresponding cap 7 is any suitable form of thrust bearing 9.

An endless chain 10 operatively connects the four sprocket wheels 8, so that they are constrained to rotate in unison.

One of the sprocket wheels 8 carries, at the bottom thereof, a bevel crown wheel 24.

An electric motor 11 is mounted within the pit 2 and is connected by gears 12 and 13 with a shaft 14, the end of which carries a bevel pinion 15 engaging the crown wheel 24.

Supported upon the upper ends of the four screws 6, is a main frame indicated collectively by the numeral 16.

This main frame comprises two transverse bars 17, which are directly supported upon the screws 6.

Supported upon the cross bars 17 are two parallel side members 18 extending longitudinally of the frame and being formed of two channel or angle bars with the flanges thereof directed inwardly.

Slidably mounted between the side bars 18 is a subsidiary frame 19, which frame is slidable longitudinally of the main frame and is adapted to extend outwardly from one end of the main frame.

This end for purposes of description will be called the front end.

The side bars 18 are secured to the transverse bars 17 by brackets 20.

Mounted upon the main frame at the rear end thereof and centrally of the width of the frame is an upwardly directed seat element 21.

Mounted at the front end of the subsidiary frame and towards each side thereof is an upwardly directed seat element 22.

The covering floor boards for the pit are indicated by the numeral 23.

The construction and operation of my invention is as follows:—

From the foregoing description, it will be evident that when the motor 11 is operated, the four sprocket wheels 8 will be rotated simultaneously through the medium of the pinion 15, crown wheel 24 and endless chain 10 and this rotation may be in either direction as desired.

As the sprockets 8 rotate, the screws 6 which have threaded engagement therein, will be raised or lowered as the case may be depending upon the direction of rotation of these sprockets. When the rack is fully

lowered it lies slightly below the floor level so that the cover boards 23 for the pit may occupy their normal position at the floor level and the entire device will be covered.

When it is desired to raise an automobile, the cover boards 23 are removed from the pit and the automobile placed in position over the pit.

The rack is then raised and the rear seat element 21 engages under the rear axle housing of the automobile, the subsidiary frame 19 having been moved inwardly or outwardly as required so that the forward seat elements 22 will engage the front axle at each side thereof.

The rack is then raised to any desired height by further operation of the motor 11 and it will be evident that the frame must remain horizontal at all times, since all the screws 6 move upwardly or downwardly in unison.

When it desired to again lower the automobile, the motor 11 is merely operated in the reverse direction.

In order to insure that the frame will be perfectly steady and rigid at all times the screws 6 are a snug sliding fit within the tubular standards 4 so that no lateral play is permitted them.

The thrust between the sprockets 8 and the standards 4 is carried by the thrust bearings 9.

By the provision of three seating elements 21 and 22, a three point support is provided for the automobile.

An important feature of my invention is the provision of the longitudinally slidable subsidiary frame 19, whereby the position of the front seat elements 22 with respect to the rear seat element 21 may be varied as desired so that automobiles of any wheel base may be accommodated.

From the foregoing it will be apparent that I have devised an improved lifting and supporting rack for automobiles whereby the objects of my invention have been attained and whereby automobiles may be very rapidly raised or lowered and supported at any desired height.

Various modifications may be made in my invention without departing from the spirit thereof or the scope of the claim and therefore the exact forms shown are to be taken as illustrative only and not in a limiting sense and I desire that only such limitations shall be placed thereon as are imposed by the prior art or are specifically set forth in the appended claim.

For instance while I have shown the use of sprocket wheels connected by an endless chain it will be evident that other well known mechanical equivalents of this might be used.

What I claim as my invention is:

The combination with the floor of a garage provided with a depression therein, of a horizontal frame adapted to be lowered into said depression and to lie below the floor level, upright tubular standards embedded in the floor foundation and projecting upwardly into said depression, threaded lifting screws freely mounted within said standards and projecting from the upper ends thereof, internally threaded sprocket wheels having threaded engagement upon said screws, a thrust bearing operatively mounted between each sprocket wheel and the upper end of the corresponding standard, an endless chain operatively connecting the sprocket wheels, drive means operatively connected to one of the sprocket wheels, said frame supported upon the upper ends of said screws, and a subsidiary frame carried by the aforesaid frame at one end thereof and slidable longitudinally thereof.

ELGIN KEYWORTH.