May 25, 1926.

1,586,037

B. F. GREENFIELD

GARAGE DOOR OPERATOR

Filed Feb. 13, 1924

2 Sheets-Sheet 1

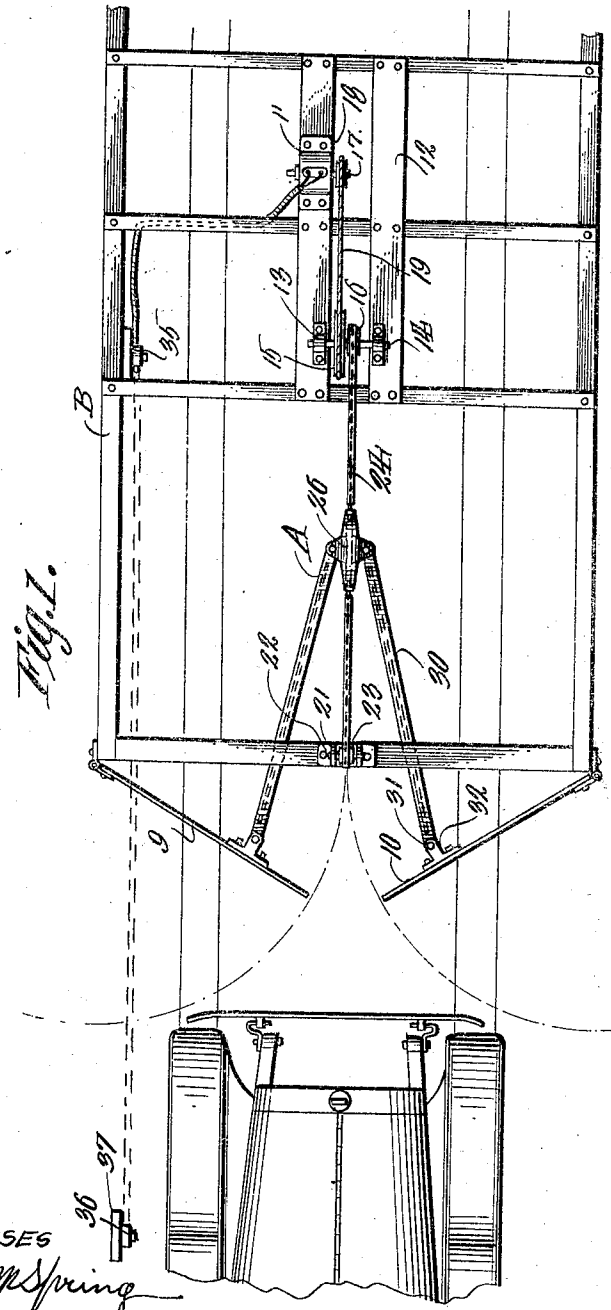


Fig. 1.

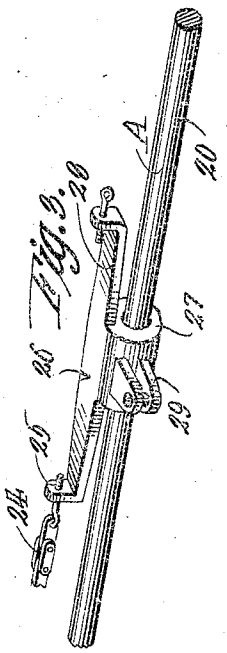


Fig. 3.

WITNESSES

Guy M. Spring

Inventor

B. F. GREENFIELD

By Richard B. Owen

Attorney

May 25, 1926.

1,586,037

B. F. GREENFIELD

GARAGE DOOR OPERATOR

Filed Feb. 13, 1924

2 Sheets-Sheet 2

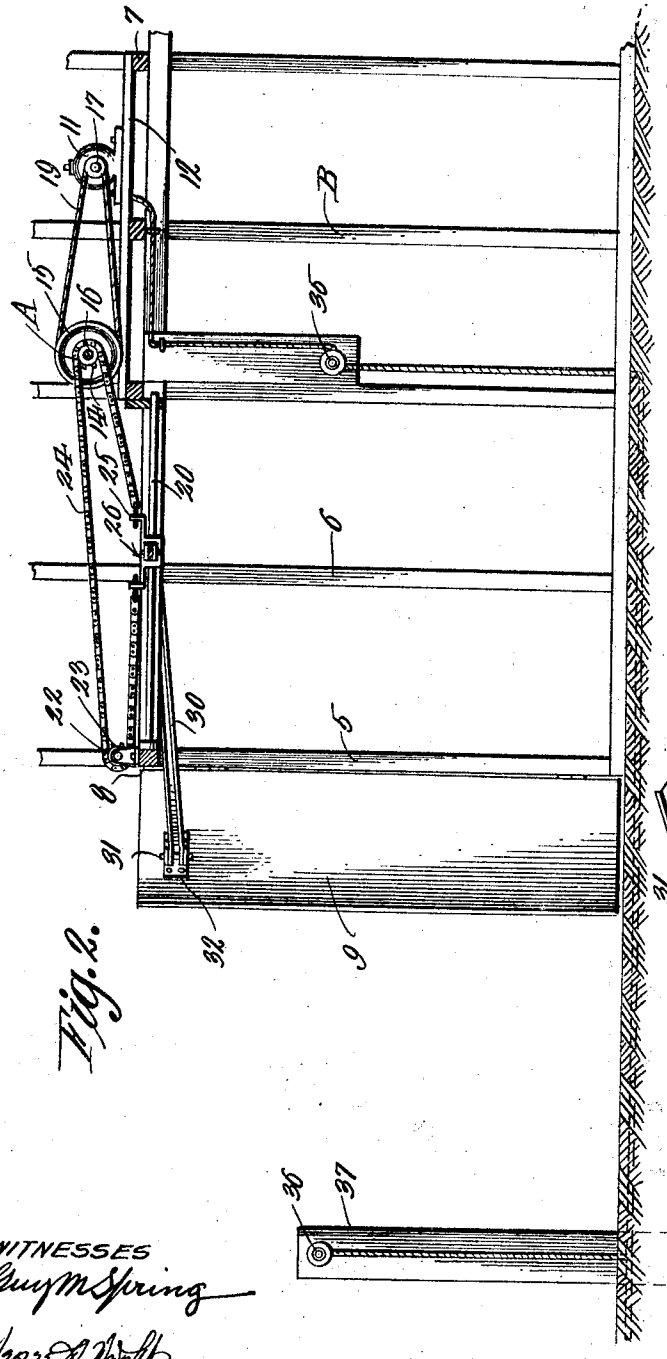


Fig. 2.

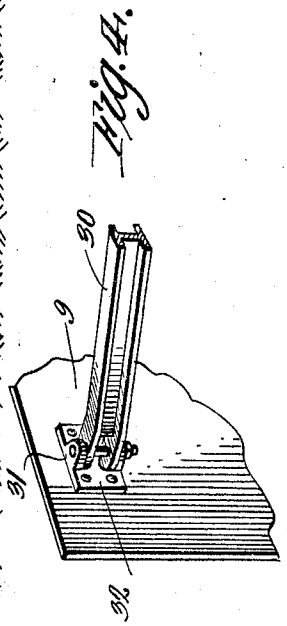


Fig. 4.

WITNESSES

Guy M. Spring

Inventor

B. F. GREENFIELD

By Richard B. Owen Attorney

Patented May 25, 1926. 1,586,037

UNITED STATES PATENT OFFICE.

BENJAMIN F. GREENFIELD, OF MINATARE, NEBRASKA.

GARAGE DOOR OPERATOR.

Application filed February 13, 1924. Serial No. 692,565.

This invention appertains to novel means for opening and closing doors and the primary object of the invention is to provide means for permitting the opening and closing of the doors of a garage, without necessitating the operator of the automobile getting out of his machine for opening and closing the said doors.

Another object of the invention is the provision of an electrically operated door opening and closing mechanism embodying a reversible motor having controlling switches arranged interiorly and exteriorly of the garage, adjacent to the path of the automobile, whereby the switcher can be conveniently operated by the driver of the automobile from the interior thereof, thereby permitting the expeditious opening and closing of the doors of the garage both from the interior and exterior of the garage without necessitating the driver getting out of the automobile.

A further object of the invention is to provide a door opening mechanism for garages and the like embodying a guide, a cross head slidably mounted upon the guide having pivoted links connected with the garage doors and a reversible electric motor for operating the sliding cross head.

A still further object of the invention is to provide an improved device of the above character, which will be durable and efficient in use, one that will be simple and easy to manufacture and one which can be incorporated with a garage at a small cost.

With these and other objects in view, the invention consists in the novel construction, arrangement and formation of parts, as will be hereinafter more specifically described, claimed, and illustrated in the accompanying drawings, in which drawings:

Figure 1 is a plan view of the door opener showing the same incorporated with a garage, the frame of the garage only being shown.

Figure 2 is a longitudinal section through the improved door opening and closing mechanism showing the same applied to a garage, the frame of the garage only being shown.

Figure 3 is a detail perspective view of the sliding cross head showing the same mounted upon the guide, and

Figure 4 is a detail perspective view illustrating the connection of one of the links with one of the garage doors.

Referring to the drawings in detail, wherein similar reference characters designate corresponding parts throughout the several views, the letter A generally indicates the improved door opening and closing mechanism and B a garage with which the same is associated.

The garage B can be of any preferred character or type, and as shown includes the door posts 5, the standards or supporting beams 6 and the ceiling joists 7. The door posts 5 have their upper ends connected by the usual front cross beam 8.

Hingedly connected to the door posts 5 are the garage doors 9 and 10, which as shown, are adapted to open outward.

The improved door mechanism A embodies a reversible electric motor 11 of any preferred character and this motor 11 is mounted on a suitable bed, which as shown embodies plates 12 which are secured to the upper surface of the ceiling joists 7. The bed 12 also supports bearings 13 for receiving the transversely extending counter shaft 14, to which is keyed or otherwise secured a pulley 15 and a drive sprocket wheel 16. The armature shaft 17 of the motor 11 is also provided with a pulley 18 which is in alignment with the pulley 15 and the pulleys 15 and 18 are connected by a suitable belt 19.

Arranged in advance of the counter shaft 14 is a longitudinally extending centrally disposed guide bar 20 which can have its forward end secured to the front cross beam 8 and its rear end secured to one of the ceiling joists 7. This guide bar 20 terminates directly below a pair of bearings 21 which are utilized for rotatably supporting a driven shaft 22 on which is mounted a guide sprocket 23. This guide sprocket 23 is in direct alignment with the sprocket 16 mounted upon the counter shaft 14. The sprocket wheels 23 and 16 have trained about the same a drive sprocket chain 24, the terminals of which are secured to upstanding lugs 25 formed on the ends of the cross head 26, which is slidably mounted upon the guide bar 20. This cross head 26 includes a sleeve 27 which receives the guide rod 20 and the longitudinally extending body portion 27 on which the lugs 25 are formed. The opposite sides of the sleeves are provided with pairs of laterally extending pivot ears 29 between which are pivotally secured the operating links 30. These

links are shown of an eye beam construction but of course the same can be made from other material. The forward ends of the operating beams 30 are pivotally connected as at 31 to suitable brackets 32 which are secured to the inner faces of the garage doors 9 and 10.

From this construction it is obvious when the motor 11 is rotating in one direction, say in a clockwise direction (referring to Figure 2 of the drawings), the cross head 26 will be pulled toward the front cross beam 8 and thus push outward on the operating links 30 which will open the garage doors 9 and 10. If the motor 11 is being operated in the reverse direction the cross head 26 will be pulled inwardly, which will close the doors. If the door 9 and 10 are closed before the motor is shut off, it is obvious that the belt 19 will simply slip, and thus prevent breakage of any operating parts of the door opening and closing mechanism.

In order to permit the motor to be operated both from the inside and outside of the garage an inside switch 35 and an outside switch 36 is provided. The inside switch 35 is arranged at one side of the garage as clearly shown, while the outside switch 36 can be supported by a suitable post or the like 37 arranged outside of the garage in spaced relation thereto.

The switches 35 and 36 can be of the four point type, so as to control the direction of flow of the current to the motor for causing the reversing thereof.

From the foregoing description it can be seen that I have provided a novel door opening and closing mechanism, which is particularly adapted for garage use, and which is of a durable and efficient character.

Changes in details may be made without departing from the spirit or the scope of this invention.

What I claim as new is:

The combination with a pair of hingedly mounted doors arranged to open away from each other, a pair of divergent links connected to the doors adjacent their free ends, and a guide rod arranged rearwardly of the doors and supported in a horizontal plane, or a cross head comprising an elongated sleeve slidably mounted on the guide rod and provided with laterally extending spaced ears adapted to have secured therebetween the opposite ends of the links, said sleeve being further provided with an elongated body extending longitudinally thereof and provided with terminal upstanding lugs, sprocket wheels at the opposite sides of the cross head, a sprocket chain trained about the sprocket wheels and having its ends connected to the said terminal lugs, and means for rotating one of the sprocket wheels whereby to move the cross head in a forward or a rearward direction to open or close the doors.

In testimony whereof I affix my signature.

BENJAMIN F. GREENFIELD.