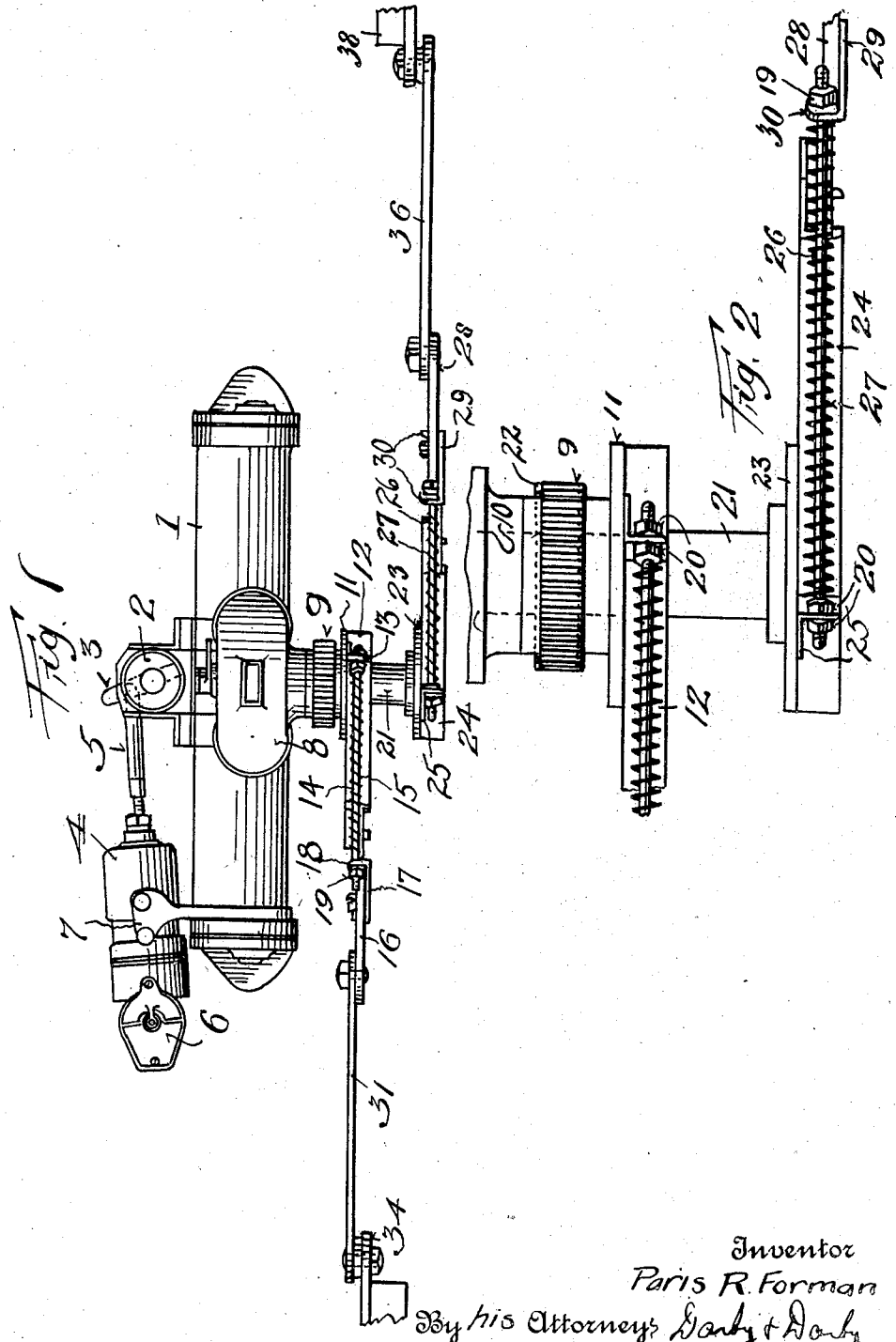
Jan. 14, 1930. P. R. FORMAN 1,743,812

DEVICE FOR OPERATING DOUBLE SLIDING DOORS

Filed May 3, 1928 2 Sheets-Sheet 1



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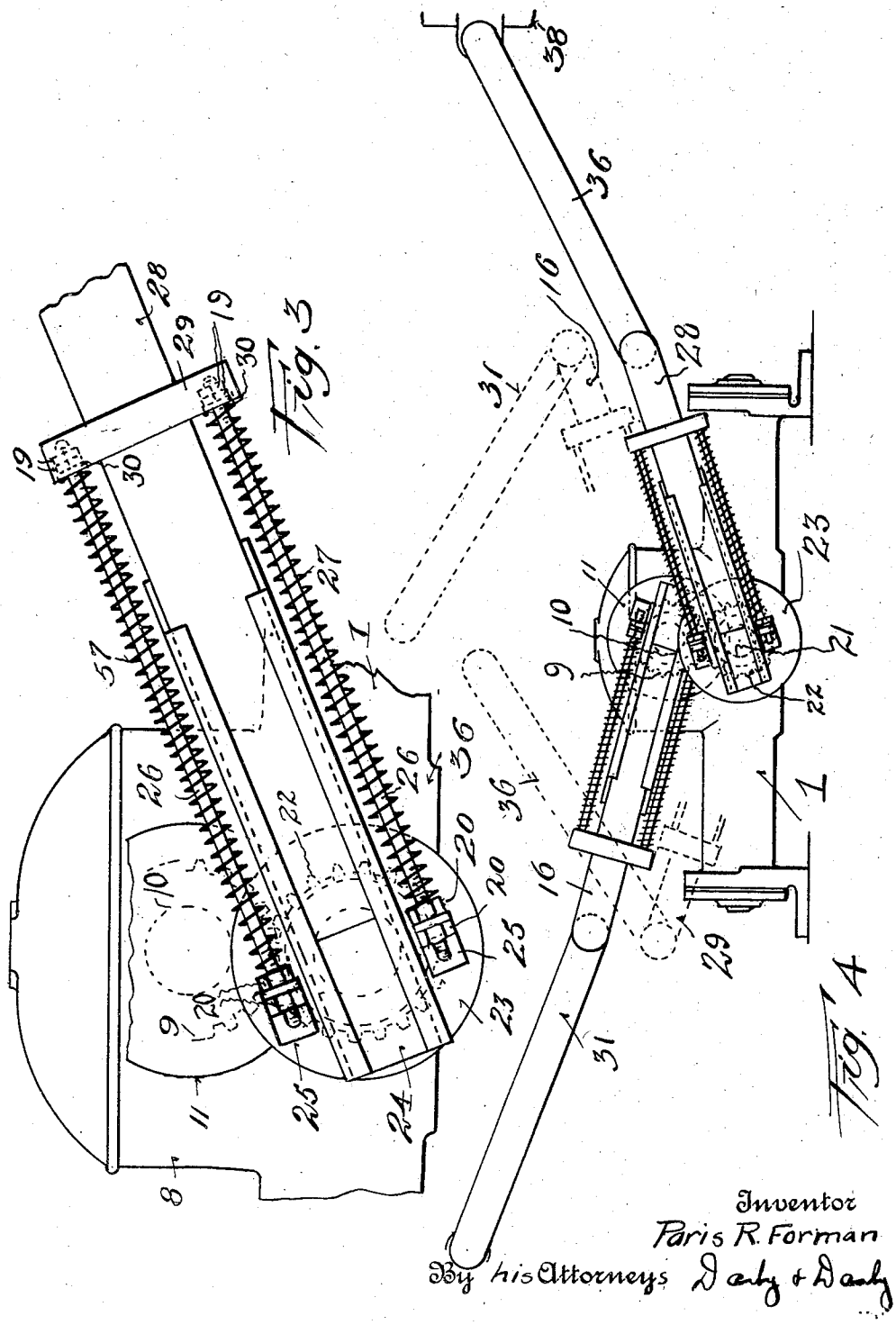


Fig. 3

Fig. 4

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UNITED STATES PATENT OFFICE

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DEVICE FOR OPERATING DOUBLE SLIDING DOORS

Application filed May 3, 1928. Serial No. 274,802.

This invention relates in general to connections by means of which a single motive device may operate double sliding doors.

One of the objects of this invention is the provision of connections between a single motive device and double sliding doors which will move them in opposite directions.

A further object of this invention is the provision of a device of the above type in which the connections are constructed so as to provide resilient connection between the motive device and the doors.

A still further object of this invention is the provision of a device of the above type which is simple in construction and adapted for rapid assemblage.

These and other objects, as will appear from the following disclosure, are secured by means of this invention.

This invention resides substantially in the combination, construction, arrangement and relative location of parts all as will more fully be set forth below:

Referring to the drawings—

Figure 1 is a top plan view of the elements of this invention showing the connections between the motive device and the doors;

Fig. 2 is an enlarged plan view of a detail with many parts broken away;

Fig. 3 is an enlarged side elevational view of one of the connections of a portion of the motive device; and

Fig. 4 is a side elevational view of the complete device.

In the operation of doors and the like by means of motive devices, and especially pneumatic motors, it is often desirable to operate more than one door by means of one motor. It is the purpose of this invention to provide a device which is relatively simple for effecting the sliding movement of two doors which are intended to move in opposite directions toward each other. In the device of this invention it is possible to mount all of the elements of the connections directly upon the side of the motor.

For a clear understanding of the invention reference is now made to the drawings in which 1 represents the pneumatic motor which is given for purposes of illustration and may be one of the many types, which are now well known in the art. Mounted on the side of the engine and forming part thereof is a valve 2 having a lever 3 for operating it. By means of this valve, as is also well known, the various connections are made for operating the pistons of the motor in either direction. Mounted on one end of the motor by means of a bracket 7 is a valve puller 4 which is connected by means of the link 5 to the lever 3 of the valve. Mounted on the end of the valve puller 4 is an electro-magnetically operated valve 6 which, when energized, permits the application of fluid pressure to the valve puller 4 which in turn operates the valve so as to supply fluid pressure to the motor to cause it to operate. Both the valve puller and the electro-magnetic valve are well known in this art.

It may be pointed out that the combination of the motor, valve puller, and electro-magnetic valve as shown is old and per se forms no part of this invention. The motor is provided with a chamber 8 in which is a gear (not shown) mounted on the shaft 10, which gear engages with a rack formed on the rod which connects the two pistons, all as is well known in this art. The movement of the pistons rotates the gear and shaft 10. In this invention the shaft 10 is made to extend beyond the casing and is provided with a gear wheel 9 to which is attached in any suitable manner for rotation with it a disc or plate 11 on which is mounted a channel or guide member 12. Also secured to the disc 11 are the two brackets 13 in which are rigidly secured by means of nuts 20 the rods 14 which are encircled by compression springs 15.

An arm 16 is mounted in the guide member 12 so as to slide longitudinally thereof. Secured to the arm 16 is a transverse plate 17 provided with two right angled projections 18 through which the rods 14 extend. The ends of the rods 14 projecting through the brackets 18 are provided with lock nuts 19. It will be apparent then that the compression springs 15 will hold the arm 16 extended, as shown in Fig. 3, at the outward limit of its movement. The arm 16 may be caused to slide longitudinally of the guide member 12 against

the action of springs 15 causing the rods 14 to project beyond the member 17.

Journalled in the casing of the motor 1 below shaft 10 is a short shaft 21 on which is mounted a gear 22 so as to mesh with gear 9. Gears 9 and 22 are of the same size. Secured to gear 22 is a plate 23 similar to plate 11 and has supported thereon the guide or channel member 24 and the brackets 25. As before, rods 26 are secured to the brackets 25 by means of nuts and are encircled by springs 27. The rods 26 project through the right angled portions 30 of the transverse bar 29 secured to the connection 28. This connection 28 is attached to slide in the guide member 24 against the compression springs 27, as explained in connection with an arm 16. It will thus be apparent that as the shaft 10 is rotated in one direction shaft 21 rotates in the opposite direction and causes the arms 16 and 28 to rotate in opposite directions. Pivotally secured to the outer ends of the arms 16 and 28 are the links 31 and 36, respectively. The links 31 and 36 are pivotally attached to the rear edge of the doors 34 and 38, respectively, so that upon their rotation in opposite directions the doors are caused to slide toward each other in the direction of the motor, see Fig. 1. The dotted position of the arms, as shown in Fig. 4, represents the positions which they take when the doors are fully opened.

It will be apparent from the foregoing disclosure that I have provided a simple device by means of which double sliding doors may be operated by means of a single motive device in opposite directions toward each other. Also by means of the simple arrangement disclosed resilient connections are provided between the motive device and the doors so that an arm, foot, body of a person, or any object caught in the door may be removed easily.

I am well aware that those skilled in the art will readily appreciate many changes in the details of construction and relative arrangement of parts without departing from the principles of this invention as they have been set forth in the drawings and specifications for purposes of illustration. Since the principles of this invention can readily be embodied in other physical forms I do not desire to be limited to the exact disclosure given for purposes of illustration but rather to the scope of the invention as defined below.

What I seek to secure by United States Letters Patent is:

1. In door mechanism of the type described, the combination with a fluid pressure operated device comprising two rotatable shafts mounted thereon and geared together to be rotated in opposite directions by means of said motor, of two doors, connections between one of said shafts and one of said doors, and connections between the other of said shafts and the other of said doors whereby said motor may move both doors simultaneously.

2. In door mechanism of the type described, the combination with a fluid pressure operated device comprising two rotatable shafts mounted thereon and geared together to be rotated in opposite directions by means of said motor, of two doors, resilient connections for connecting one of said shafts to one of said doors and the other of said shafts to the other of said doors whereby they may both be operated simultaneously.

3. In a device of the type described, the combination comprising a pneumatic motor having a rotatable shaft, a gear on said shaft, a second shaft journalled on said motor and having a gear meshing with said first mentioned gear, a guide member mounted on each shaft, an arm slidably mounted in each guide member, resilient connections between each guide member and its cooperating arm, double sliding doors, and a link member connecting one arm with one of said doors, and a link member connecting the other arm with the other of said doors whereby both doors may be moved toward each other or away from each other by said members.

4. In a device of the type described, the combination with a single motive device having two rotatable shafts mounted thereon, a supporting member secured to each shaft, link members connecting said doors with said shafts, said link members being mounted on said supporting members for longitudinal movement with respect thereto, and resilient means for resisting the movement of said link members with respect to said supporting members.

5. In a device of the type described for operating doors and the like, the combination with a single motive device and two rotatable shafts operated thereby, of a supporting member secured to each shaft, and link members for connecting the doors with said shafts, said link members being mounted on said supporting members for longitudinal movement with respect thereto, and resilient means for resisting the movement of said link members with respect to said supporting members.

In testimony whereof I have hereunto set my hand on this 27th day of April A. D., 1928.

PARIS R. FORMAN.