July 9, 1935. E. H. McCLOUD 2,007,688

OVERHEAD DOOR

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Fig. 1.

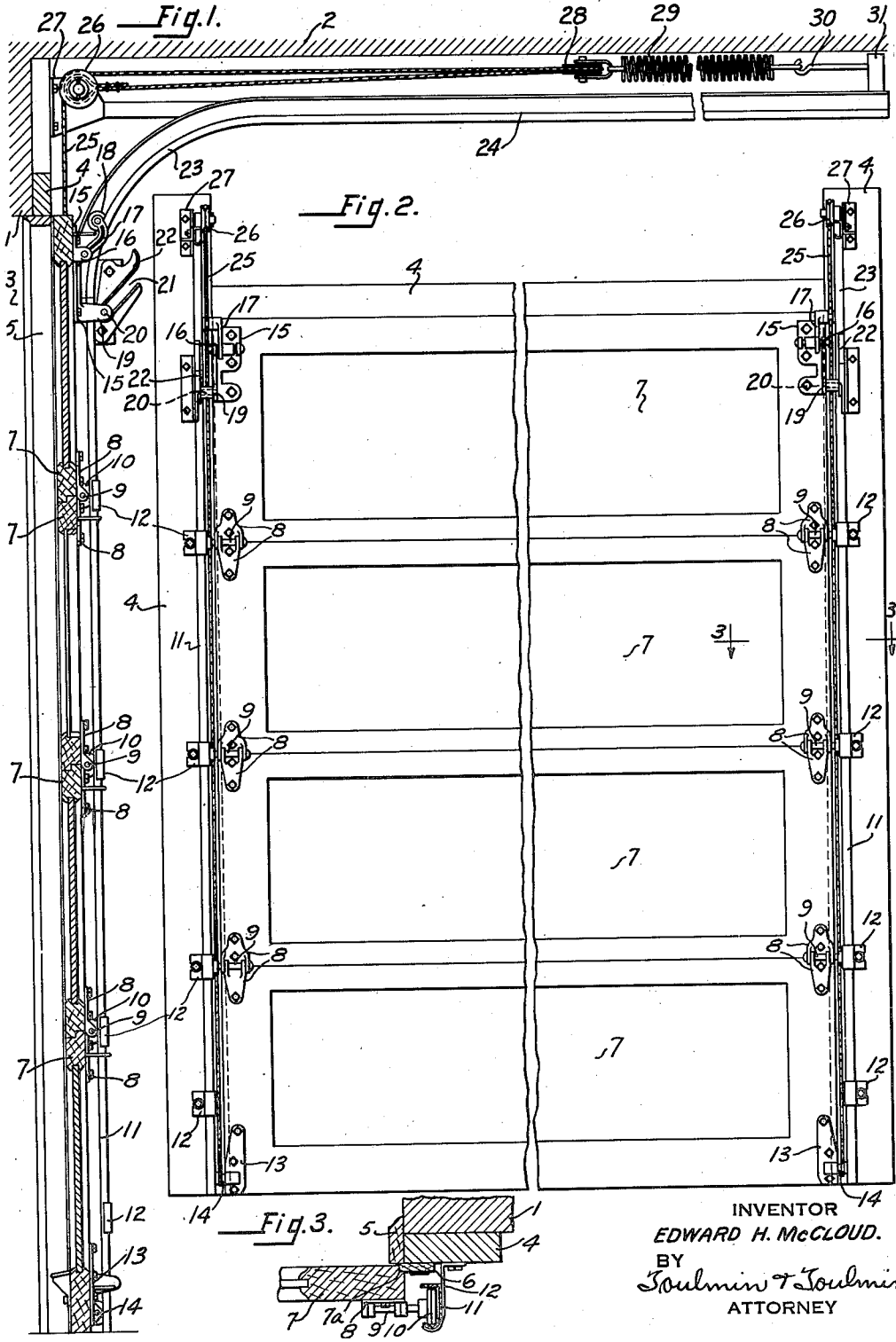

Fig. 2.

Fig. 3.

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Fig. 4.

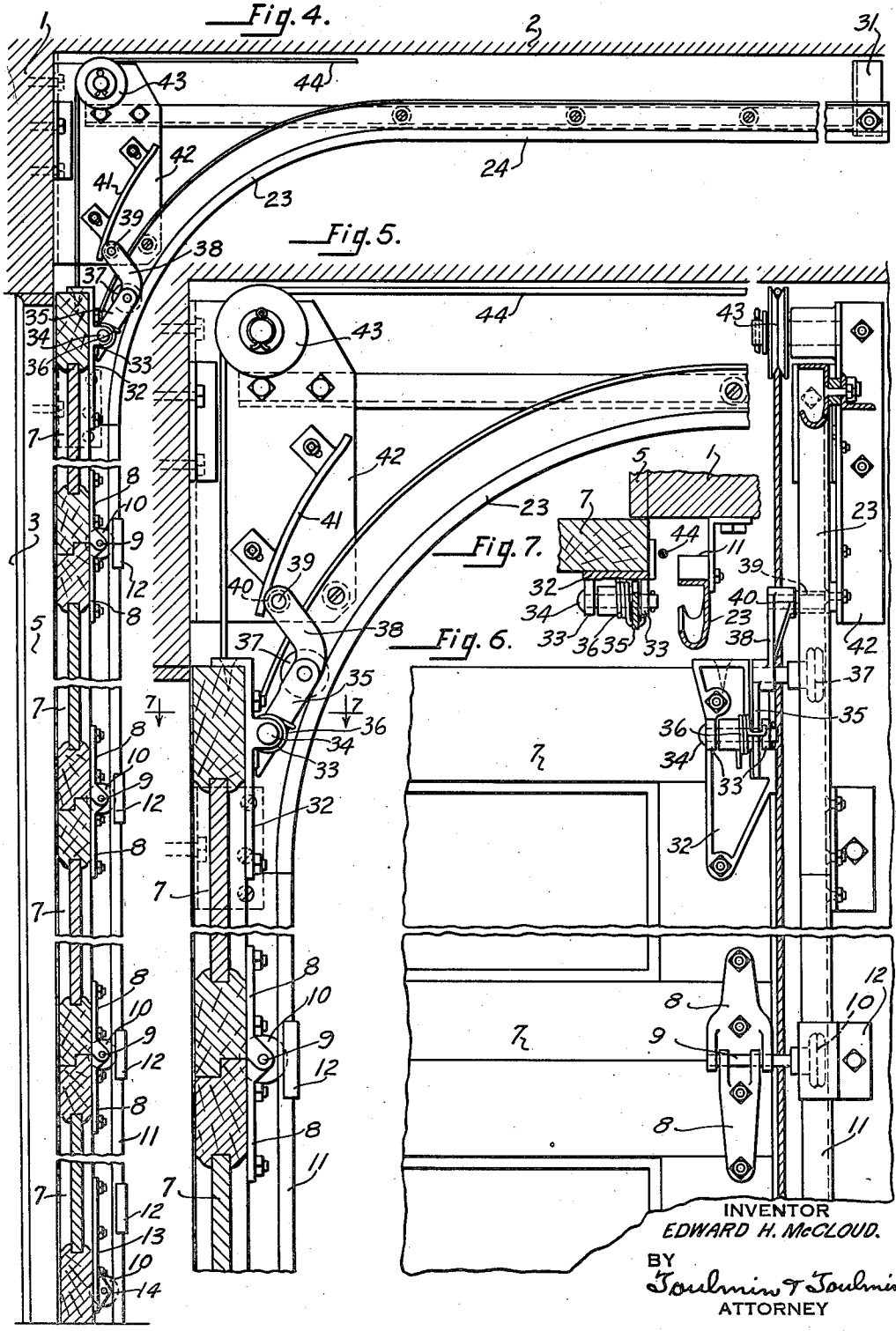

Fig. 5.

Fig. 7.

Fig. 6.

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OVERHEAD DOOR

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Application September 6, 1932, Serial No. 631,854

9 Claims. (Cl. 20—20)

This invention relates to improvements in overhead doors of the articulated type, and has for its object to provide means, in connection with the door, for forcing it into close engagement with the walls surrounding the doorway closed thereby.

It is an object of this invention to provide, in connection with an articulated door, means to guide the door from an open to a closed position, and means adapted to act upon the door as it reaches a closed position to securely force the door into contact with the walls of the building surrounding the doorway closed by the door.

It is particularly the object of this invention to provide means on an articulated door to guide the door as it moves to and from a closed position and to force the door against the door jamb as it moves to a closed position.

It is also an object of this invention to provide a spring-operated means which tends to retard the door as it nears either a closed position or an open position.

These and other objects and advantages will appear from the following description taken in connection with the drawings.

Referring to the drawings:

Figure 1 is a vertical section through an articulate door and the adjacent part of the building to which the door is attached, showing the guideway for the door and the means for holding the door in closed position.

Figure 2 is an inside view of the door in closed position.

Figure 3 is a section on the line 3—3 of Figure 2.

Figure 4 is a section similar to Figure 3, showing a slightly modified form of apparatus for forcing the door against the door jamb.

Figure 5 is an enlarged view showing the structure found in the upper lefthand corner of Figure 4.

Figure 6 is an enlarged view showing one side of the door and the manner in which it is supported and operated.

Figure 7 is a section on the line 7—7 of Figure 5.

The wall of the building to which this door structure is attached is indicated by the numeral 1 and has the usual overhead ceiling 2 and doorway 3, adapted to be closed by the door. Around the doorway and on the inside of the building is a strip 4, which constitutes the jamb part of the wall structure. Fitted within the doorway and attached to the wall of the building and also to the strips 4 are strips 5, against which the door is adapted to engage when in closed position.

There is also provided on one side of the strip 4 a wedge strip 6 which extends beyond the strip 4 towards the doorway and slightly over the strip 5 to engage the door for close seating engagement to prevent rattling and the passage of air and moisture between the door and the jamb. In order to accommodate these wedge strips, one on each side of the doorway, the door is provided with notches 7a. The door itself is divided into a plurality of articulated sections 7 connected by means of hinges which are composed of straps 8 united by pins or pintles 9.

These pins extend beyond the sides of the door, and each has on its projecting end a roller 10 which engages and travels along a trackway 11 suitably attached to the strip 4, as is clearly shown in Figure 3. These trackways, one on each side of the door, are supported on the strips 4 by means of brackets 12, as clearly shown in Figure 3. The lower section of the door has on its lower end a strap 13 which takes the place of the strap 8 and carries a spindle 14 with a roller thereon for engaging in the trackway.

On the upper edge of the upper section of the door, at each side thereof, is a plate 15 which has adjacent its upper end an upper bracket 16 to which one end of a link 17 is attached. The other end of this link has thereon a roller 18 which fits in and is guided by the trackway during the operations of closing and opening the door. Beneath the upper bracket 16 is a lower bracket 19 which extends further inwardly than the upper bracket, and has thereon a pin 20 with a roller thereon adapted to engage in a slot 21 formed in a bracket 22 located on the upper end of the strip 4.

The purpose of this bracket with the slot 21 is to cause the upper end of the door to firmly engage the jamb to form a close fit and prevent rattling of the door and any opening thereof for the admission of air into the building closed by the door. For this purpose the slot slopes downwardly from its open end toward the jamb of the door so that as the door moves downwardly its upper end is forced toward the jamb.

The main part of the trackway is vertical and has extending upwardly therefrom an arcuate part 23 which extends into a horizontal overhead part 24 for supporting the door in elevated or open position. Suitably attached to each side of the door is a cable 25, which extends upwardly along one side of the doorway and over a pulley 26 which is supported by means of a bracket 27. After passing over the pulley 26 the cable passes around a pulley 28 and back to the pulley 26, where one end of it is permanently attached. To the pulley 28 is attached one end of a spring 29, which has its other end attached by means of a hook 30 to a bracket or projection 31 attached to the free end of the horizontal part of the trackway.

The form shown in Figures 4, 5 and 6 differs from the form shown in Figures 1 and 2 in the guide means for the upper end of the door. In this form each side of the door has at its upper end a plate 32, suitably attached to the door by means of bolts or screws. Each plate has a pair

of ears 33 which has extending therethrough a pintle 34, to which one end of an arm 35 is attached. Around each pintle is formed a coil spring 36, one end of which engages the plate 32 while the other end engages the arm 35 and tends to hold the arm more or less in an extended position parallel with the door.

The arm 35 is in the shape of a bellcrank and has adjacent its elbow a roller 37 which engages the trackway that guides the door in its movement to and from a closed position. The part of the arm projecting laterally from the main body of the arm is indicated by the numeral 38, and has on its end a shaft 39 which supports a roller 40 adapted to engage a closure shoe 41 attached in any suitable manner to a bracket 42. In the present instance each shoe is attached to the bracket by means of slots and bolts so that the shoe may be adjusted to take up wear and lost motion. The bracket 42 is similar in all respects to the bracket 27 and is attached to some part of the building in any suitable manner and carries a pulley similar to the pulley 26.

While the counterpoise spring structure is not shown in the present form it may be used with this form as well as the form shown in Figure 1. The cable used in connection with the door of Figures 4 to 6 is indicated by the numeral 44 and passes over a roller 43 supported on the bracket 42.

The spring 36 serves two purposes, one to cooperate with the shoes 41 to force the upper end of the door into close engagement with the wall of the building around the opening closed by the door. It also serves to hold the arm 35 in a substantially parallel position in regard to the door when the door is in an overhead open position. This spring also prevents any rattling or play between the arm and the plate to which the arm is attached.

It will be understood that it is desired to comprehend within this invention such modifications as come within the scope of the claims and the invention.

Having thus fully described the invention, what is claimed as new and desired to be secured by Letters Patent, is:

1. In an overhead door, in combination with a wall having a doorway therein, a trackway on each side of the doorway, each trackway extending up one side of the doorway and horizontally away from the doorway, a door for closing the doorway, a plate at each edge at the upper end of the door, an arm for each plate pivoted at one end to the plate and having at its other end a roller engaging in a trackway, and cooperating means on each arm and on the wall to force the door against the wall, said means comprising a shoe on the wall and a roller engaging the shoe.

2. In an overhead door, in combination with a wall having a doorway therein, a door for closing said doorway, a trackway on the wall on each side of the doorway, an arm at each side of the door pivoted at one end to the door, a roller on each arm intermediate its ends engaging a trackway, a roller on the other end of each arm, and means engaged by the last-named rollers to force the door against the wall as the door approaches a closed position.

3. In an overhead door, in combination with a wall having a doorway therein, a door for closing said doorway, a trackway on the wall on each side of the doorway, an arm at each side of the door pivoted at one end to the door, a roller on each arm intermediate its ends engaging a trackway, a roller on the other end of each arm, and means attached to the wall above the tracks and engaged by the last-named rollers to force the door against the wall as the door approaches a closed position.

4. In an overhead door, in combination with a wall having a doorway therein, a door for closing the doorway, a guide member on each side of the doorway for guiding the door as it opens and closes, an arm for each guide member pivoted at one end to the door adjacent the guide member, means on each arm intermediate its ends for engaging the guide member, a roller on the other end of each arm, and an adjustable shoe member supported on the wall on each side of the doorway and engaging the roller for pressing the door against the wall.

5. In an overhead door, in combination with a wall having a doorway therein, a door for closing the door way, a trackway on each side of the doorway, an arm for each edge of the door pivoted at one end to the edge of the door at its top, means tending to hold the arm in a position substantially parallel to the door, a roller on each arm engaging and guided by a trackway, the other end of each arm being offset, a roller on said other end, and means to engage the roller on the end of the arm to force the door against the wall.

6. In an overhead door, in combination with a wall having a doorway therein, a door for closing the doorway, a trackway on each side of the doorway, an arm for each edge of the door pivoted at one end to the edge of the door at its top, means tending to hold the arm in a position substantially parallel to the door, a roller on each arm engaging and guided by a trackway, the other end of each arm being offset, a roller on said other end, and a closure shoe supported by the wall to engage the roller on the end of the arm to force the door against the wall.

7. In an overhead door, in combination with a wall having a doorway therein, a door for closing the doorway, a trackway on each side of the doorway, an arm for each edge of the door pivoted at one end to the edge of the door at its top, means tending to hold the arm in a position substantially parallel to the door, a roller on each arm engaging and guided by a trackway, the other end of each arm being offset, a roller on said other end, and an adjustable closure shoe supported by the wall, and engaging said last mentioned roller to guide the door to its closed position.

8. In an overhead door, in combination with a wall having a doorway, a door for closing the doorway, a trackway adjacent the doorway, a shoe adjacent the trackway, an arm pivoted at one end to the door, a roller on the arm intermediate its ends engaging the trackway, and a roller on the other end of the arm for engaging the shoe.

9. In an overhead door, in combination with a wall having a doorway therein, a door for closing the doorway, a trackway adjacent the doorway, a plate on the door, an arm pivoted at one end to the plate, a roller on the arm intermediate its ends to engage the trackway to guide the door, the other end of the arm being bent towards the plate a roller on said other end, and a cam shoe adjacent the trackway adapted to be engaged by the last-named roller to force the door against the wall.

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