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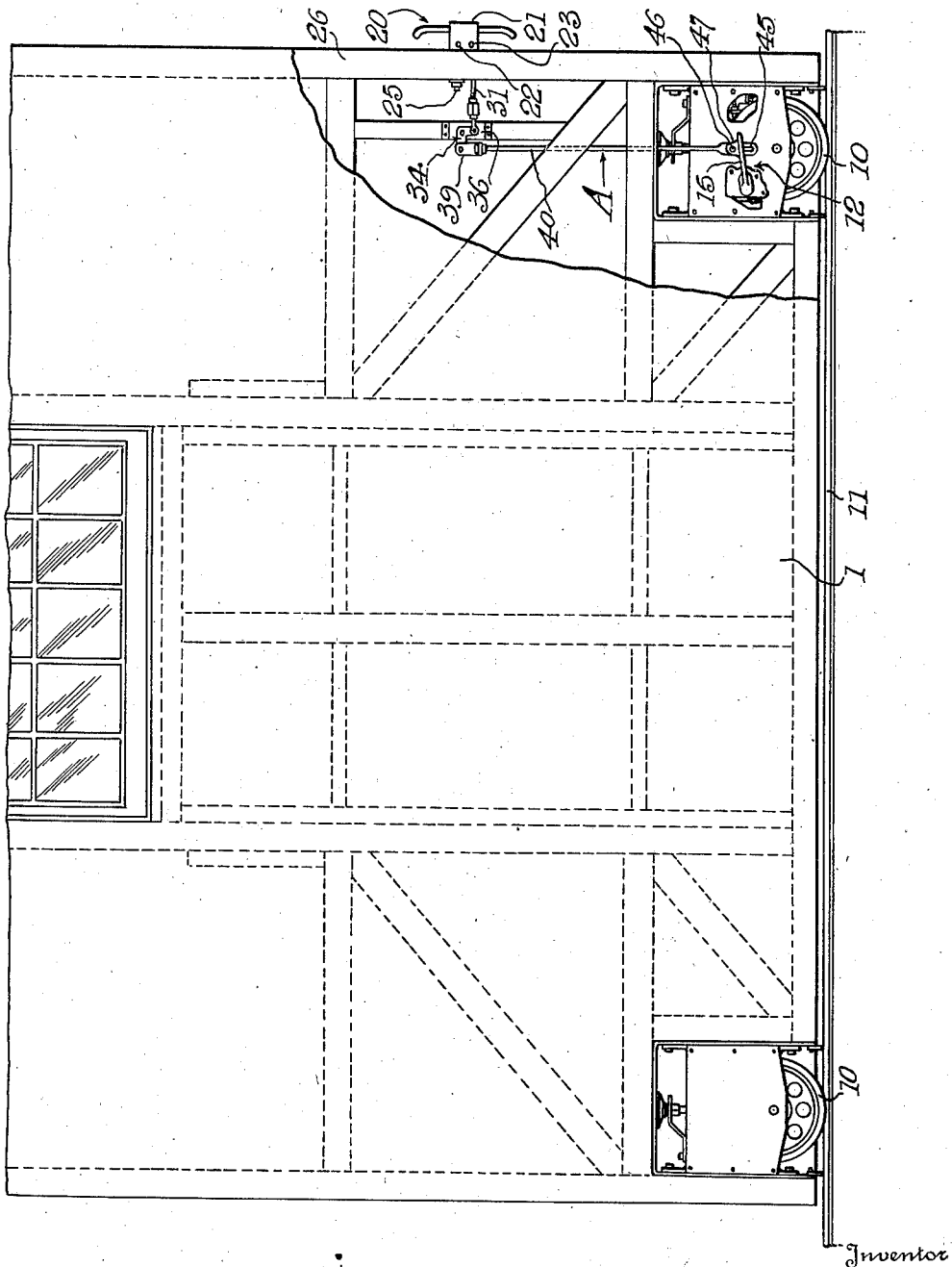
H. B. TOBIAS

2,423,129

CHECKING DEVICE FOR ROLLER SUPPORTED DOORS

Filed July 27, 1944

3 Sheets-Sheet 1



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July 1, 1947.

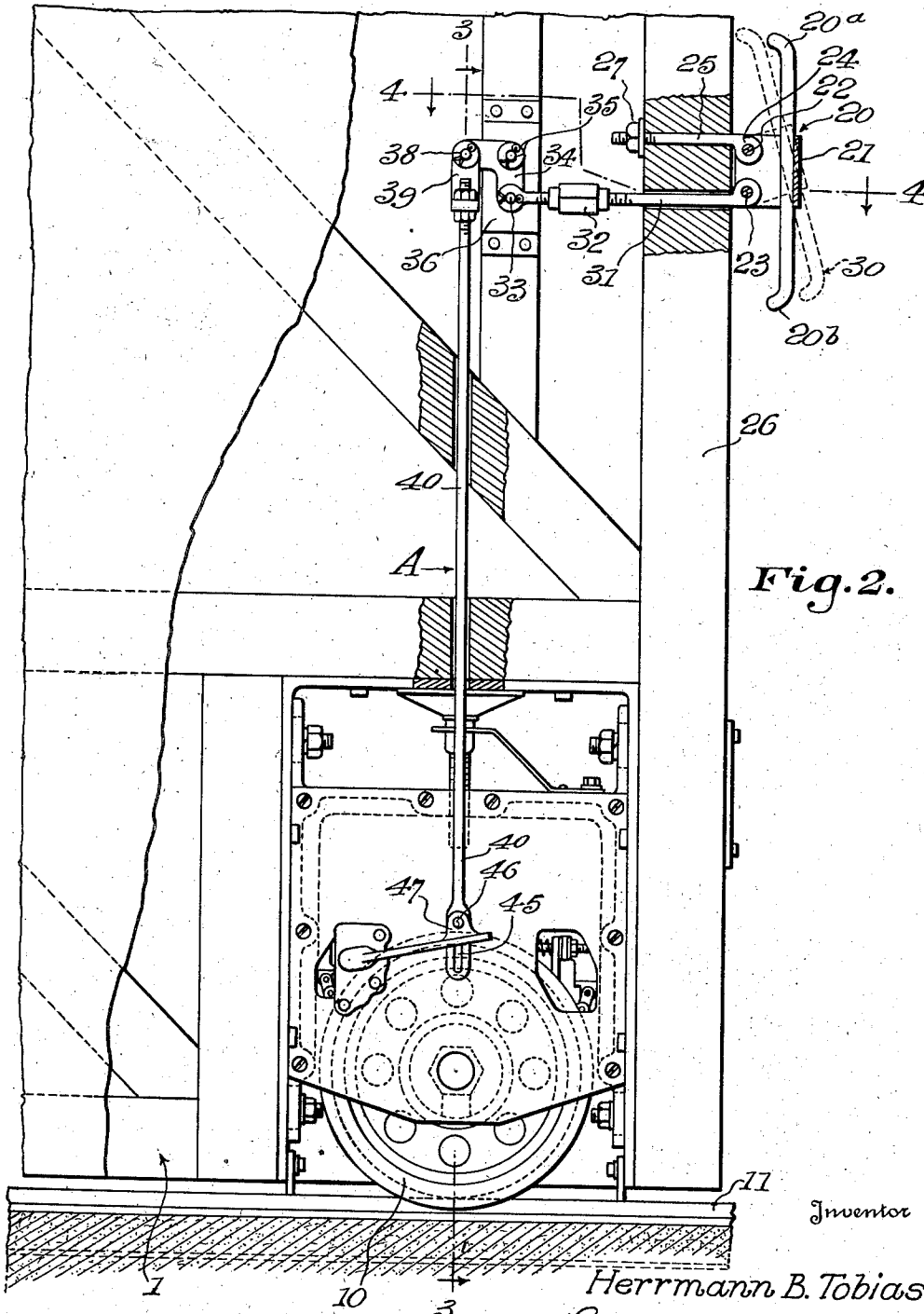
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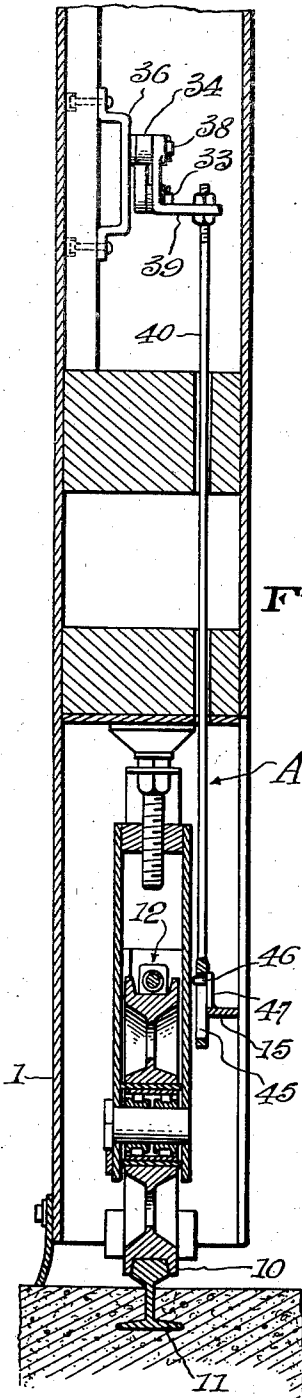


Fig. 3.

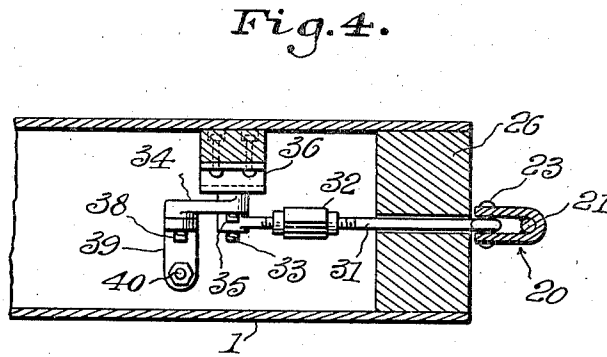


Fig. 4.

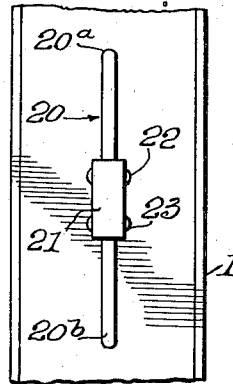


Fig. 5.

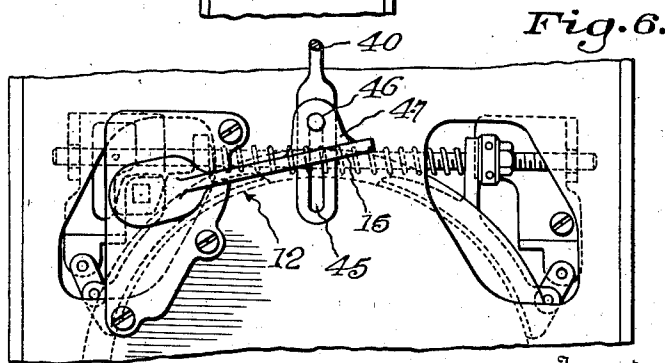


Fig. 6.

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UNITED STATES PATENT OFFICE

2,423,129

CHECKING DEVICE FOR ROLLER
SUPPORTED DOORS

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Application July 27, 1944, Serial No. 546,899

5 Claims. (Cl. 188—33)

(Granted under the act of March 3, 1883, as
amended April 30, 1928; 370 O. G. 757)

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The invention described herein may be manufactured and used by or for the Government for governmental purposes, without payment to me of any royalty thereon.

This invention relates to an improved mechanism for actuating the brake used to lock the bottom rollers employed in supporting large doors and the like.

Large heavy doors for airplane hangars and the like at present in use weigh from twelve to twenty-five thousand pounds and are supported on two large ball bearing bottom rollers for the purpose of facilitating easy and rapid movement of the doors to entrance closing or opening position. These bottom rollers are provided with brake means adapted to be actuated by pressure on a locking lever or pedal to retard or arrest the opening or closing movement of the door. The brake also is intended to act as a lock.

Hangar doors are generally pulled out of their closed or open positions by means of a pull handle and the rollers supporting the doors are properly grooved and arranged so that they travel on tracks to permit easy movement of the doors thereby requiring but little effort to roll the doors on the tracks.

One of the objects of the invention is to provide means for retarding or arresting hangar doors against movement.

Another object of the invention is to provide an improved mechanism including a novel pull handle linked to the brake of a bottom roller for a door in such a manner that means are provided for opening or closing the door and applying the brake onto the bottom roller for arresting the movement of said door.

Another object of the invention is to provide an improved mechanism for actuating the brake used to retard or arrest the horizontal movement of a hangar door, which mechanism is simple in construction, efficient in action and may be readily and conveniently operated for the purpose intended.

With the above and other objects and advantages in view the invention consists of certain features of construction and operation of parts which will hereinafter be described and shown in the accompanying drawings in which:

Fig. 1 is a fragmentary side elevation of the lower portion of a hangar door having the invention applied thereto;

Fig. 2 is an enlarged fragmentary view of a corner of the lower portion of the door to which the invention is applied, parts being shown in section;

Fig. 3 is a vertical sectional view taken on line 3—3 of Fig. 2;

Fig. 4 is a fragmentary irregular sectional view taken on line 4—4 of Fig. 2 and showing the pull

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and brake handle and linkage mechanism used in carrying out the invention;

Fig. 5 is an enlarged fragmentary end view of the door style and the pull and brake handle of the invention; and

Fig. 6 is an enlarged fragmentary side elevation of a brake with a pedal for operating the brake and a part of the linkage mechanism connected thereto.

In the present invention the hangar door 1 is supported on two ball bearing bottom rollers 10 properly grooved and adapted to travel on a railway track 11. One of the bottom rollers 10, for purpose of illustration, is provided with a braking mechanism 12 of any suitable design such as shown in Fig. 6, which braking mechanism 12 is actuated by pressure on a locking lever or pedal 15 to retard or arrest the horizontal movement of the door. The braking mechanism 12 is also intended to act as a lock.

By modifying the structural details of the usual lever pedal to facilitate its connection with the linkage mechanism indicated generally in Figs. 2 and 3, any suitable type of bottom roller and brake construction now produced may be employed in carrying out the instant invention. The door 1 is pulled out of its pocket or pushed therein by the pull handle 20 in the form of an elongated bar welded to a U shaped strap 21. The strap 21 is provided with holes to receive pins 22 and 23. Pin 22 acts as a fulcrum for the pull handle 20 and is supported by a bearing member 24 which is provided with a threaded bolt extension 25 passing through the door jamb 26 and is secured in place with the nut and washer 27. With this installation, the pull handle 20 is free to move around the pin 22 to a position indicated by the dotted lines 30. The lower part of the strap 21 engages the pin 23 and is connected to a link rod 31 provided with an adjustable threaded coupling 32. Link rod 31 is secured to the pin 33 which is integral with an oscillating angle lever or bell crank 34 supported by the fulcrum pin 35. The fulcrum pin 35 is welded to a bracket 36, which in turn is secured to the door construction. At the opposite end of the angle lever 34 a pin 38 is provided and supports a link rod bracket 39 to which is bolted by double nut adjustment the link rod 40. The link rod 40 is provided at the lower end with a slotted opening 45 to engage the pin 46 which is an integral part of the modified brake lever pedal 15. The modification of this brake lever pedal 15 consists of providing it with an upstanding flange 47 and the integral pin 46 to which the link rod 40 may be attached.

The operation of the invention is as follows: Assuming the entrance opening of the hangar is to be closed and each of the various doors is in its respective side pockets, to move door 1 to

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entrance closing position the operator grasps portion 20a of the handle 20 and draws the door outwardly from its pocket until the approximate position of the door in the opening has been reached. As the door attains its closed position it has acquired considerable momentum and the reactive tendency of the operator in trying to retard and arrest the movement of the door is to push the portion 20a of the pull handle 20, which oscillates the pull handle about the fulcrum 22 to the position 30, thereby pulling the link rod 31, oscillating the angle lever 34, pushing the link rod 40 against the brake pedal 15 and applying the brake. When the operator desires to open the hangar doors, each of the various doors that are within the entrance opening are moved into their respective side pockets by grasping portion 20b of the handle 20 and pushing the doors away from the operator until their approximate positions in the pockets are reached when the reactive tendency of the operator, in trying to retard and arrest the movement of the doors, is to pull against this portion 20b of the pull handle 20 and thereby oscillate the pull handle about the fulcrum 22 to the position 30, consequently activating the linkage mechanism as above described and applying the brake.

While there has herein been shown and described the invention in connection with a specific embodiment of the same, it is not intended to be limited to the specific details of construction shown and described, but only insofar as defined by the spirit and scope of the appended claims.

Having thus described my invention, what I claim as new and wish to secure by Letters Patent is:

1. A checking device for a hangar door having rollers mounted on the bottom thereof and engaging a track, said checking device comprising a brake including a pedal for controlling the actuation of the rollers on said track, an inwardly and outwardly oscillatable push and pull handle and linkage mechanism including a U-shaped strap pivotally connected at an upper part thereof to an edge of the door, a pivotally connected bell-crank lever, a link rod provided with an adjustable coupling and pivotally connecting one arm of the bell-crank lever to a lower part of the strap, a link rod bracket pivotally connected to the other end of the bell-crank lever, and a link rod pivotally connecting said bracket to said pedal, said handle fixedly mounted on said strap and adapted to actuate said strap about its pivotal connection with said door for applying said brake through said first-mentioned link rod, bell-crank lever, bracket and said second-mentioned link rod to retard or arrest the motion of the door by the pulling or pushing on said handle.

2. A checking device adapted to be used in connection with a door having rollers mounted on the bottom thereof and engaging a track, said door checking device comprising a brake including a pedal for controlling the actuation of the rollers on said track, an outwardly and inwardly

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oscillatable push and pull handle and linkage mechanism including an oscillatable bell-crank angle lever, said handle pivotally mounted on an edge of the door and connected by said linkage mechanism with said pedal for applying the brake to retard or arrest the motion of the door by the pulling or pushing of the handle.

3. A checking device adapted to be used in connection with a door having rollers mounted on the bottom thereof and engaging a track, said door checking device comprising a brake including a pedal for controlling the actuation of the rollers on said track, an inwardly and outwardly oscillatable push and pull handle and linkage mechanism including an oscillatable bell-crank angle lever and rods, said handle pivotally mounted on an edge of the door and connected by said linkage mechanism with said pedal for actuating the brake to retard or arrest the motion of the door by the pulling or pushing of the handle.

4. A checking device adapted to be used in connection with a door having rollers mounted on the bottom thereof and engaging a track, said door checking device comprising a brake including a pedal for controlling the actuation of the rollers on said track, an outwardly and inwardly oscillatable push and pull handle and linkage mechanism, a bearing member mounted on an edge of the door, said handle including a strap pivotally mounted on said bearing member, said linkage mechanism including a bell-crank angle lever, a link rod pivotally connecting said handle strap with said lever, whereby the linkage mechanism is actuated to operate the brake to retard or arrest the motion of the door by the pulling or pushing of the handle.

5. A checking device adapted to be used in connection with a door having rollers mounted on the bottom thereof and engaging a track, said door checking device comprising a brake including a pedal for controlling the actuation of the rollers on said track, an inwardly and outwardly oscillatable push and pull handle including a strap and linkage mechanism, a pair of pins mounted on said strap, a bearing member mounted on an edge of the door, one of said pins engaging said bearing member, a pivoted bell-crank angle lever, a link rod pivotally connected to the other of said pins and one end of said lever, and a link rod connecting another end of the lever to said pedal, whereby upon the actuation of said handle the linkage mechanism is actuated to operate said brake to retard or arrest the motion of the door by the pulling or pushing of the handle.

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