

E. A. BACHMANN.
 AUTOMATIC DOOR OPERATING MECHANISM.
 APPLICATION FILED MAY 17, 1912.

1,058,286.

Patented Apr. 8, 1913.

3 SHEETS—SHEET 1.

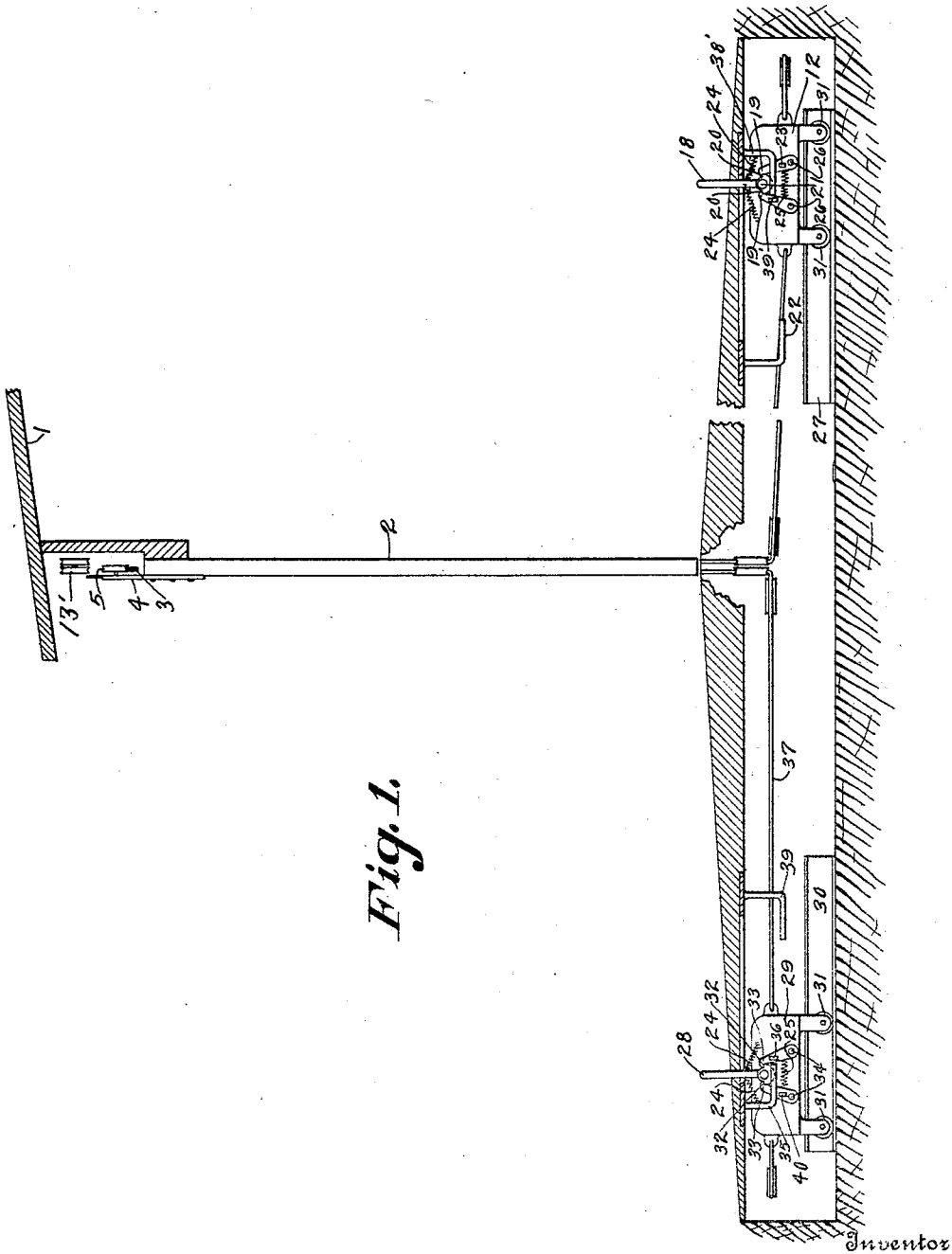


Fig. 1.

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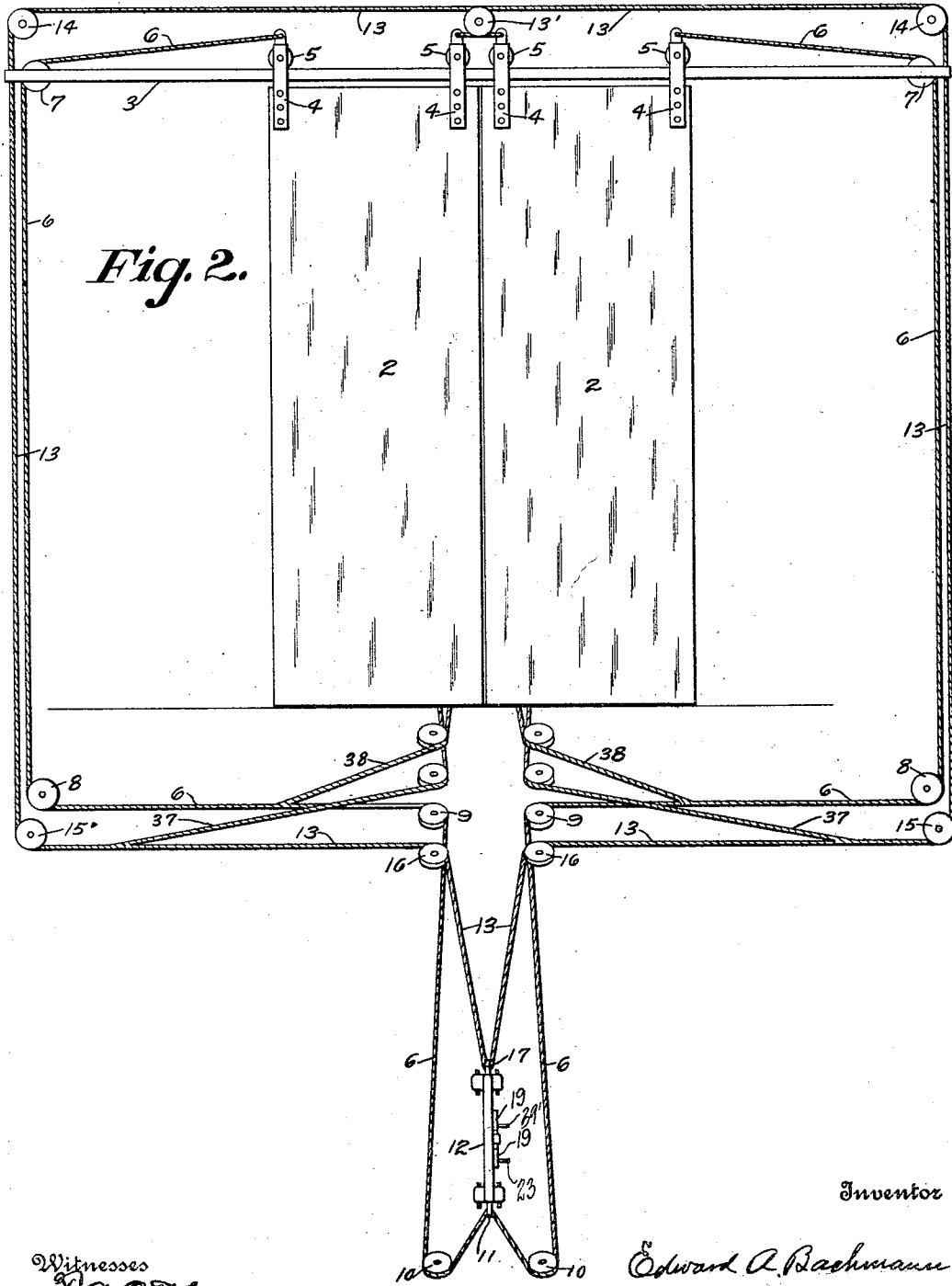
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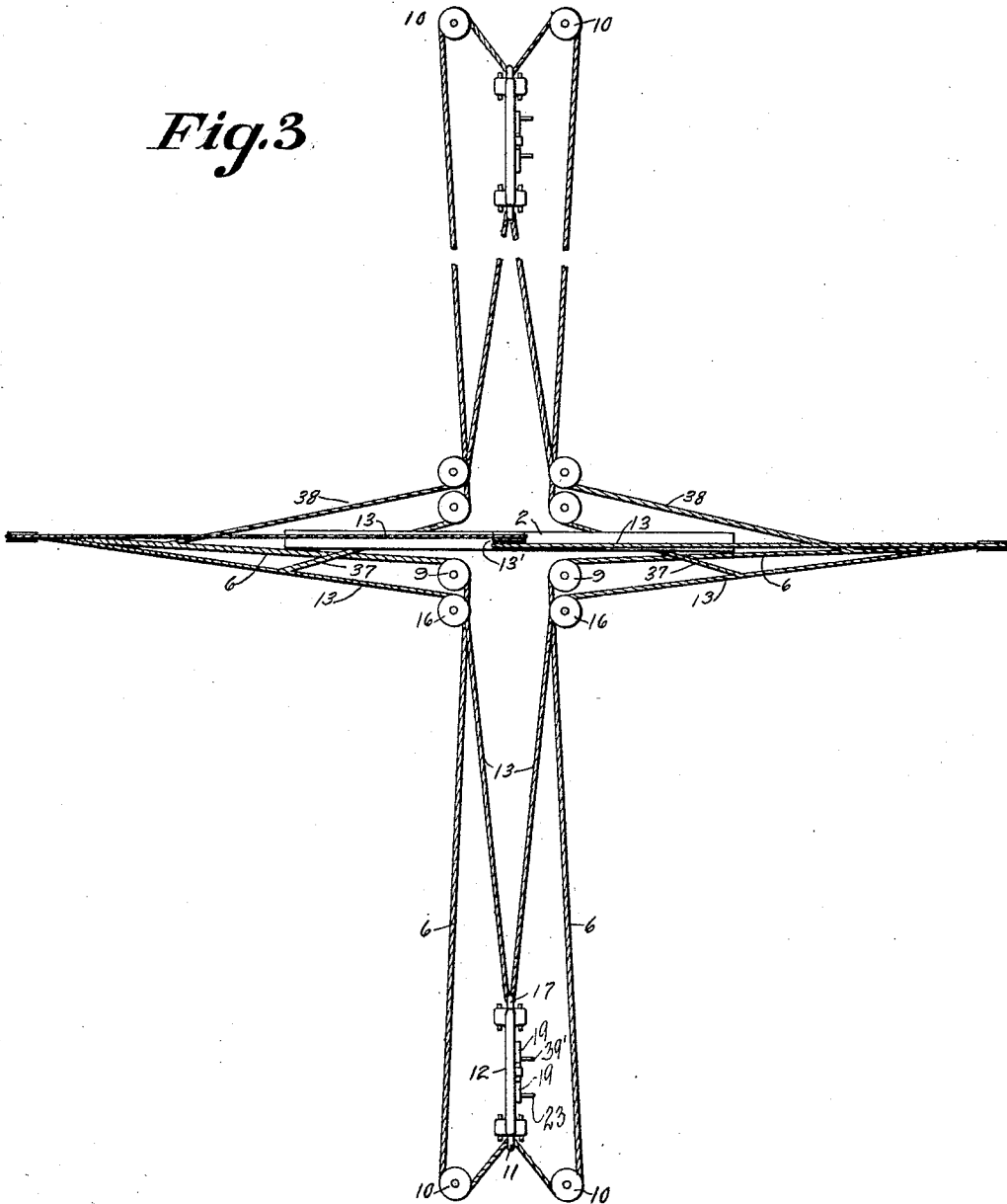
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3 SHEETS—SHEET 3.

Fig. 3.



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UNITED STATES PATENT OFFICE.

EDWARD A. BACHMANN, OF FORT ATKINSON, WISCONSIN.

AUTOMATIC DOOR-OPERATING MECHANISM.

1,058,286.

Specification of Letters Patent.

Patented Apr. 8, 1913.

Application filed May 17, 1912. Serial No. 697,850.

To all whom it may concern:

Be it known that I, EDWARD A. BACHMANN, a citizen of the United States, residing at Fort Atkinson, county of Jefferson, and State of Wisconsin, have invented new and useful Improvements in Automatic Door-Operating Mechanism, of which the following is a specification.

The object of my invention is to provide a device for automatically opening and closing the doors of a building by the movement of a vehicle as the latter moves toward and from such building.

My invention pertains more especially, among other things, to the device for forming a temporary connection between a moving vehicle and the operating cables which are connected directly with the doors for operating the same.

My invention is further explained by reference to the accompanying drawings, in which—

Figure 1 represents a vertical section of a portion of a garage, showing a side view of the mechanism through which motion is communicated from a moving vehicle to the doors of the building. Fig. 2 is a front view of a garage, showing the doors closed in connection with the door operating device, which device is diagrammatically shown, and Fig. 3 is a plan view of the device also shown in part diagrammatically.

Like parts are identified by the same reference numerals throughout the several views.

While my device is adapted to be used in connection with other classes of buildings and operated by the movement of other vehicles, for brevity of description the device is referred to as being adapted to be operated by a moving automobile for opening and closing garage doors.

1 represents a portion of a garage and 2 represents the front doors which are adapted to be automatically opened and closed by the movement of an automobile. The doors 2 are adapted to be suspended from the track 3 by hangers 4 of ordinary construction, which hangers are provided with rollers 5 adapted to run backwardly and forwardly on said track as said doors are opened and closed. The doors 2 are adapted to be drawn open by the cables 6 which are preferably connected with the upper ends of said doors by the hangers 4, and extend

from thence over the pulleys 7, 8, 9 and 10, and are connected at their opposite ends with the front end 11 of the sliding carriage 12, while said doors are adapted to be drawn toward each other in the position shown in Fig. 1 by the action of the cables 13, which cables 13 pass over the pulleys 13', 14, 15 and 16, and are connected at their opposite ends with the opposite end 17 of said carriage 12. Thus it will be obvious that as the carriage 12 is moved toward the garage, said doors 2 will be thrown apart and opened, and while the carriage is moved in the opposite direction, said doors will be closed. The carriage 12 is adapted to be moved forwardly by an approaching automobile, one of the axles of which is adapted to contact with the vertical arm 18 of said carriage, and said vertical arm is retained in a vertical position so as to be brought into contact with the axle of the automobile as the latter approaches the same in either direction, by the engagement of the upper ends of the dogs 19, 19 with the shoulders 20, 20 connected with the lower end of said arm, the lower end of said arm being pivotally connected with the carriage 12 by the bolt 21. When, however, the carriage 12 has been moved forwardly by the automobile far enough to have caused the doors 2 to open, the front end of the bracket 22 is adapted to contact with the lug 23 formed on one side of the rear dog 19, whereby said dog is thrown out of engagement with the opposing shoulder 20 of said arm, when said arm is released and permitted to turn rearwardly upon its supporting pivot 21, whereby the automobile is free to pass over the carriage 12 without further moving the same. When the automobile has passed over the carriage 12, the arm 18 will be drawn back to its vertical position by the spiral springs 24, 24, which springs are connected at one of their ends with said arm, and at their opposite ends to the side of the carriage 12. The dogs 19, 19 are normally retained in place against the shoulders 20 by the spiral spring 25, the respective ends of which spring are connected with said dogs respectively, said spring being adapted by its recoil to bring the upper ends of said dogs toward each other and against the upper sides of said shoulders. The lower ends of said dogs 19 are pivotally connected with the side of the carriage 12 by the

pivotal bolts 26, 26. 27 is a track upon which said carriage 12 is adapted to move toward and from the garage.

It will now be understood that as an automobile approaches the doors 2, said doors will be thrown apart through the mechanism described, whereby the automobile is free to pass said doors 2, when the front axle of the automobile is adapted to contact with the vertical standard 28 of the carriage 29, said carriage being movably supported from the track 30. Both of said carriages 12 and 29 are preferably provided with roller bearings 31, 31 by which the friction of their movement forward and backward upon said track is reduced to the minimum. The vertical standard 28 is also retained in its vertical position by a pair of spiral springs 24, which springs 24 are respectively connected at one of their ends with said standard 28, and at their opposite ends with the sides of said carriage 29, the tension of said springs being substantially uniform, whereby said standard is normally retained, as shown, in a vertical position. The lower end of said standard is provided with a pair of laterally projecting shoulders 32, 32 for engagement with the upper ends of the respective dogs 33, 33, and said dogs are pivotally supported at their lower ends from the sides of said carriage 29 on the pivotal bolts 34, 34. It will now be understood that as the automobile is drawn into the garage and against said vertical standard, as stated, said carriage 29 will be carried forwardly by the movement of the automobile until the stationary bracket 35 is brought in contact with the lug 36 formed on one side of the rear dog 33, whereby the rear dog 33 will be thrown out of engagement with the rear shoulder 32, thereby releasing said vertical standard 28 when the automobile will be free to pass over said carriage 29 without further moving the same. As the carriage 29 is thus drawn rearwardly by the action of the automobile, motion is communicated therefrom through the cables 37 and 13 to the front edge of said doors 2, whereby said doors are drawn together and closed in rear of the automobile, while by the same movement of said cables 37 and 13 by which said doors are drawn together, the carriage 12 will be drawn back to its original position. When the automobile has thus passed over the vertical standard 28 of the carriage 29, said standard will be brought back to its vertical position by the recoil of said spiral springs 24, when it will be retained in such position by the action of the dogs 32, preparatory to being acted upon again by the movement of the automobile as the same is withdrawn from the garage. As the automobile is moved outwardly above the carriage 29, one of its axles is caused to contact with the front side

of the vertical standard 28, whereby the carriage 29 is caused to move rearwardly again by the movement of the automobile, and whereby movement is communicated from said carriage 29 to said doors 2 through the cables 38 and 6, which cables are connected with the outer edges of said doors, whereby said doors are separated and opened preparatory to permitting the automobile to pass from the garage. When the carriage 29 has moved forwardly a short distance, the rear end of the bracket 39 is brought in contact with the lug 40 formed upon one side of the rear dog 33, whereby said dog 33 is brought out of engagement with the lugs 32 and whereby said vertical standard 28 is free to be inclined forwardly, thus permitting the automobile to pass over said carriage 29 and from thence out through the doors which have previously been opened. By the forward movement of the carriage 29, last described, motion is communicated therefrom through the cables 38 and 6 to the other carriage 12, whereby said carriage 12 is drawn toward the garage preparatory to being again acted upon by the moving automobile. As the automobile moves outwardly over the carriage 12, the front axle is again brought in contact with the opposite side of said vertical standard 18, said standard being retained in a rigid vertical position in connection with said carriage 12 through the action of said dogs as previously described, whereby said carriage will be caused to move rearwardly with the automobile until the doors 2 have been again closed. When the doors 2 have been thus closed behind the automobile, and the carriage 12 has been thus carried outwardly away from the garage, the bracket 38' is caused to contact with the lug 39' formed upon one side of the front dog 19, whereby said dog is brought out of engagement with the opposite shoulder 20 of said vertical standard, when said standard is released and permitted to be inclined forwardly by the action of the automobile axle, whereby the automobile is free to again pass over said carriage 12. Thus it will be obvious that by the forward and backward movement of said carriages 12 and 29, said doors 2 are automatically opened in front of the approaching automobile and closed in rear of the same as it enters the garage. Also that said doors will be opened in front of the automobile and closed in rear of the same as it passes from the garage.

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

1. In a device of the described class, the combination of a pair of slidable doors, a pair of reciprocating carriages, flexible connections communicating between the respective ends of said reciprocating carriages and

said doors, a pivotally supported standard connected with each of said carriages, means connected with said carriages for normally retaining said standards in a vertical position, a carriage supporting track for each of said carriages, and means connected with said track for automatically releasing said vertical standards as they approach the limit of their movement in either direction.

2. In a device of the described class, the combination of a pair of slidable doors, a pair of reciprocating carriages, a cable connected between one end of said carriages and one side of said doors, adapted as said carriages are moved in one direction to open said doors and as said carriages are moved in the opposite direction to close the same, a standard pivotally connected with each of said carriages, means connected with said carriages for normally retaining said standards in a vertical position, a carriage supporting track for each of said carriages, and means connected with said track for automatically releasing said vertical standards as they approach the limit of their movement in either direction.

3. In a device of the described class, the combination of a pair of slidable doors, a pair of reciprocating carriages, flexible connections communicating between the respective ends of said reciprocating carriages and said doors, whereby said doors are auto-

matically opened and closed as said carriages are moved toward and from the same, a vertical standard pivotally connected with each of said carriages, means for automatically moving said standards to a vertical position, a pair of dogs pivotally connected at their lower ends with each of said carriages and adapted to engage at their upper ends against shoulders formed in connection with said vertical standards, means for yieldingly retaining said dogs in contact with said shoulders, a track for each of said carriages, stationary brackets connected with said tracks, said brackets being respectively adapted as said carriages are moved toward them, to contact with one of said dogs, whereby said standards are automatically released as said carriages reach the limit of their movement in either direction, whereby the vehicle is free to pass over said standards and carriages, and whereby said standards are adapted, when released from contact of said vehicle, to be automatically restored to their vertical position, all substantially as and for the purpose specified.

In testimony whereof I affix my signature in the presence of two witnesses.

EDWARD A. BACHMANN.

Witnesses:

JAS. B. ERWIN,
I. D. BREMER.