

No. 709,127.

Patented Sept. 16, 1902.

M. WACHTER.

FIRE ESCAPE.

(Application filed Jan. 3, 1902.)

(No Model.)

2 Sheets—Sheet 1.

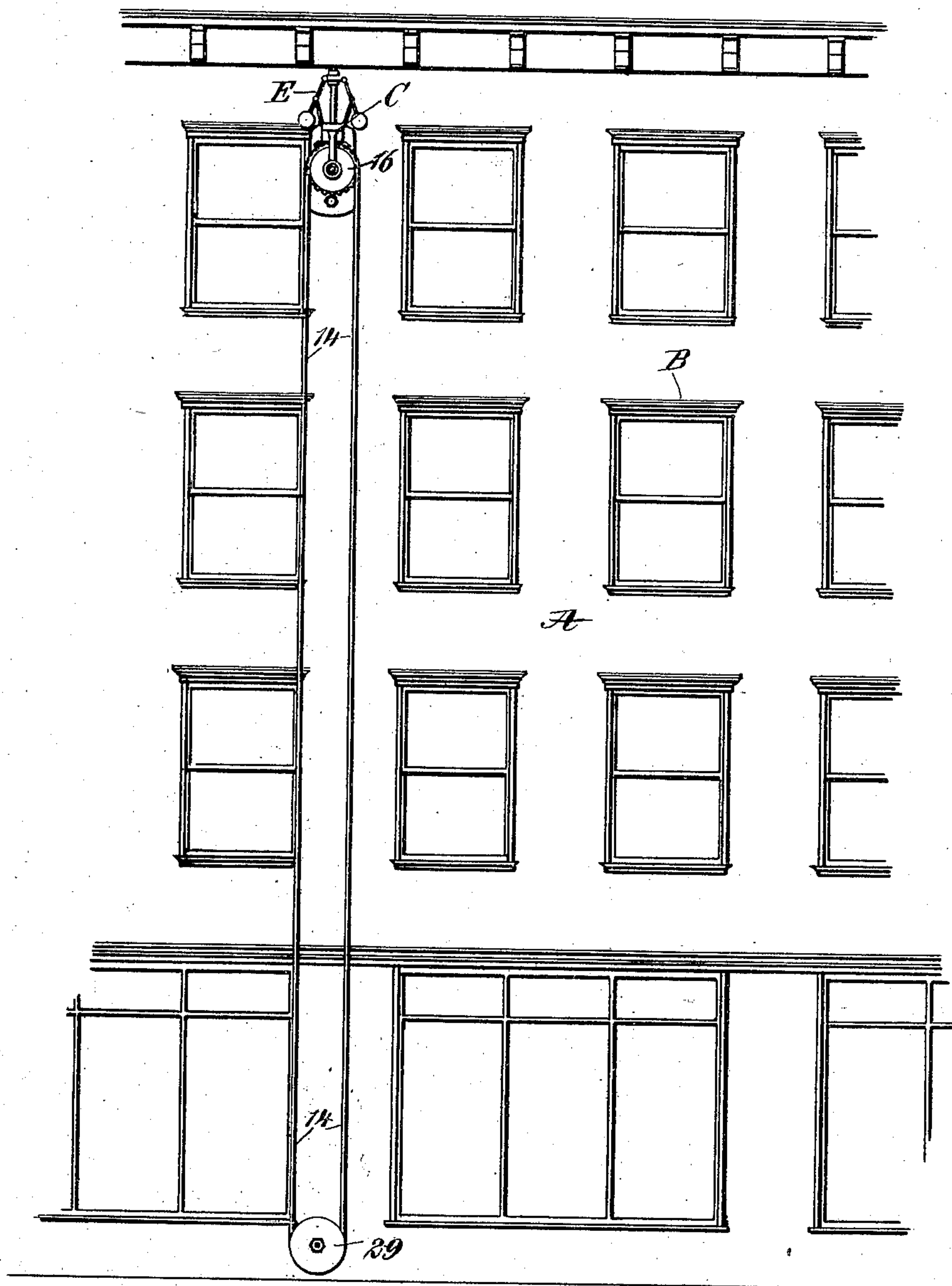


Fig. 1.

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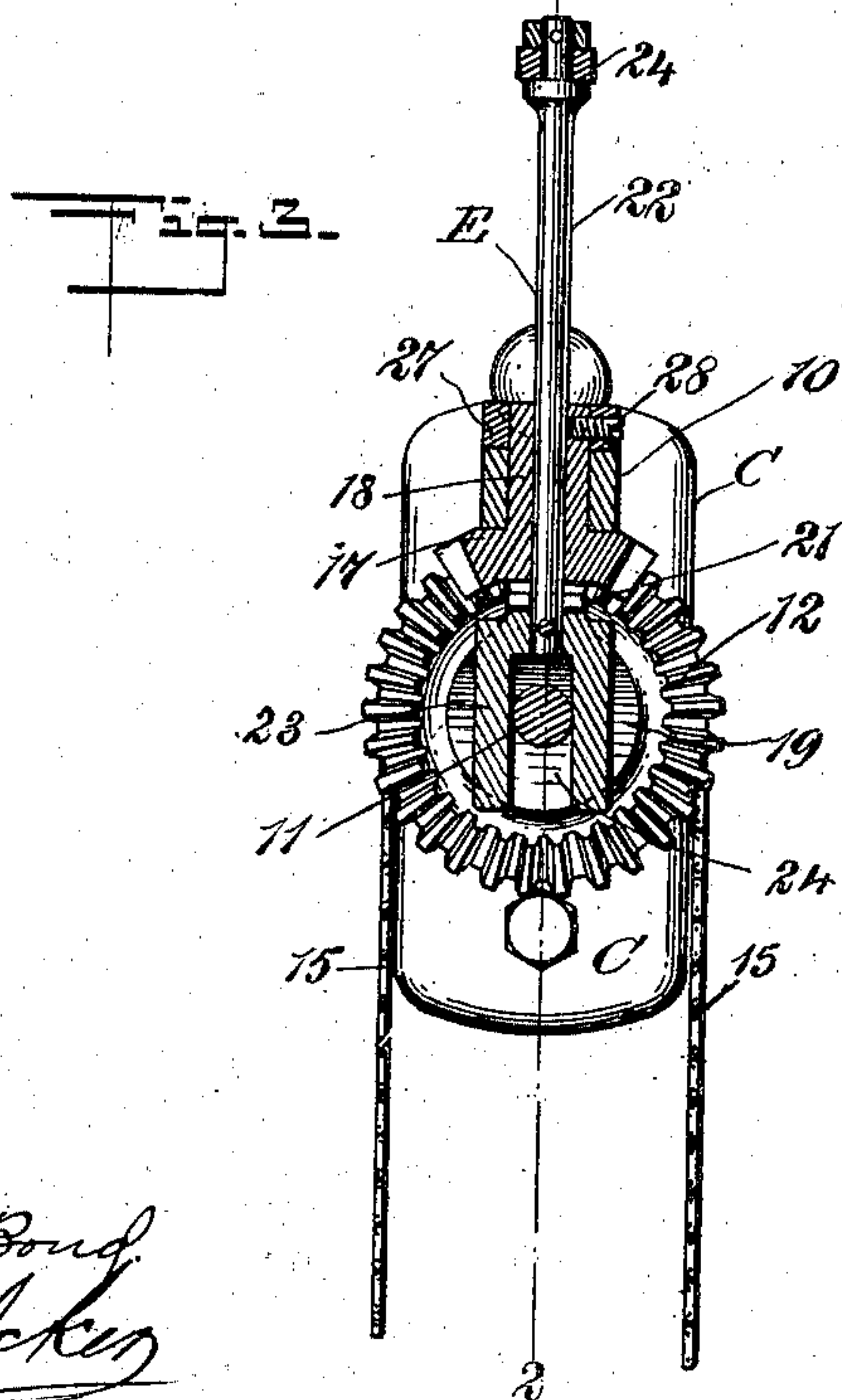
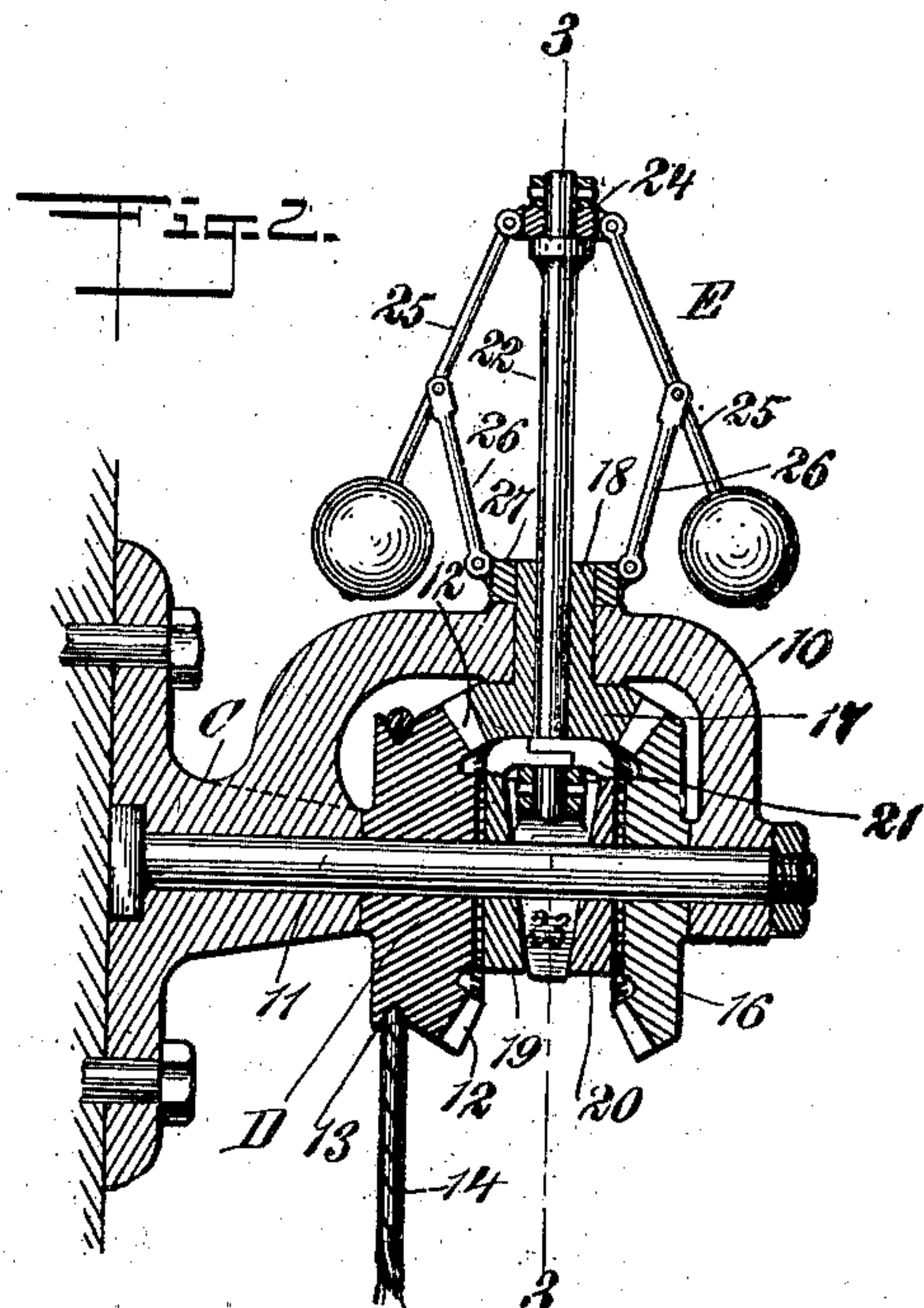
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(No Model.)

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# UNITED STATES PATENT OFFICE.

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## FIRE-ESCAPE.

SPECIFICATION forming part of Letters Patent No. 709,127, dated September 16, 1902.

Application filed January 3, 1902. Serial No. 88,276. (No model.)

*To all whom it may concern:*

Be it known that I, MICHAEL WACHTER, a citizen of the United States, and a resident of Trenton, in the county of Mercer and State of New Jersey, have invented a new and Improved Fire-Escape, of which the following is a full, clear, and exact description.

The purpose of this invention is to provide a simple and economic form of fire-escape comprising a pulley or drum, a support for the same, an endless rope or chain carried by the pulley or drum, and a brake arranged to automatically control the speed of the pulley or drum, thus causing the rope or chain to travel at a slow and safe speed irrespective of the weight applied to the rope or chain.

A further purpose of the invention is to so construct the fire-escape that it will provide for the safe carriage of a maximum number of people in a minimum of time and which when applied to a building will not detract appreciably from its appearance.

The invention consists in the novel construction and combination of the several parts, as will be hereinafter fully set forth, and pointed out in the claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the figures.

Figure 1 is a front elevation of a building and the improved escape applied thereto. Fig. 2 is an enlarged vertical section through the upper drum or carrying-pulley and its support and likewise a vertical section through a governor and brake, which automatically act upon the drum or carrying-pulley, the section being taken practically on the line 2 2 of Fig. 3; and Fig. 3 is a vertical section taken substantially on the line 3 3 of Fig. 2.

The escape is adapted to be placed in a vertical position at the outer face of the building A and convenient to one or more vertical series of windows B, extending from a point below the roof to a point near the ground, as is shown in Fig. 1. A bracket C is securely fastened to the building at or near the top, which bracket under the construction shown in Fig. 2 is provided with an arched section 10. A fixed shaft 11 extends horizontally through the bottom portions of the members

of the arched section 10, and a carrying-pulley or drum D is loosely mounted upon the shaft. A bevel-gear is attached to the outer face of the drum or pulley D, or preferably the same result is attained by producing bevel-teeth at the periphery of the outer face of the drum or pulley, forming a bevel-gear section 12. The carrying-drum or pulley D is also provided with a peripheral groove 13, preferably V-shaped in cross-section, when an endless rope 14 is used in connection with said pulley, as is shown in Fig. 2; but when an endless chain 15 is employed in connection with the carrying-pulley D, as shown in Fig. 3, sprocket-teeth are formed at the periphery of the pulley and the groove is dispensed with. A bevel-gear 16 is also loosely mounted upon the shaft 11, which bevel-gear is of a diameter equal to that of the bevel-gear section of the carrying-pulley or drum D, both of these parts being within the arched section 10 of the bracket C. A bevel-pinion 17 engages the teeth of the carrying-pulley D and the teeth of the bevel-gear 16, as is shown in Figs. 2 and 3. This pinion 17 under the construction shown in said Figs. 2 and 3 is provided with a tubular hub 18, mounted to loosely turn in the arched section 10 of the bracket C, and said pinion has a central bore therein registering with the bore of the hub.

The opposing central faces of the carrying-pulley D and the bevel-gear 16 are straight, and brake-shoes 19 and 20 bear against said straight faces of the pulley and gear, as is shown in Fig. 2. These brake-shoes preferably consist of metal disks, as shown in Fig. 2, having outer flat or straight faces for engagement with the corresponding faces of the carrying-pulley and bevel-gear, the inner faces of the disks being inclined downward from the top of the disks in direction of the center of the space between the shoes. Therefore such space is widest at the upper portion of the shoes and is wedge-shaped, as is clearly shown in Fig. 2. The brake-shoes 19 and 20 are provided with openings, which loosely receive the shaft 11, so that the shoes may slide on the shaft, and at the top portion of each brake-shoe an inwardly-curved arm 21 is formed, the opposing ends of which arms are recessed and overlap, as shown in Fig. 2. The overlapping connection between the



brake-shoes is such that the shoes may move to and from each other, but are prevented from turning when they are brought in frictional engagement with the carrying-pulley

5 D and bevel-gear 16.

The vertical shaft 22 of the governor E, preferably of the ball type, is loosely passed through the hub 18 of the pinion 17 and through an elongated opening in the interlocking arms 21 of the brake-shoes. An operating wedge-block 23 for the brake-shoes is placed between the two shoes, having a slot 24 extending up from its bottom, so that the wedge-block may straddle the fixed shaft 11, as is illustrated in Fig. 3. The sides of the brake-block presented to the brake-shoes are beveled from the top downward in direction of each other, as is shown in Fig. 2. Thus when the wedge-block is pushed downward it forces the brake-shoes to braking and frictional engagement with the carrying-pulley D and bevel-gear 16, restraining the movement of the carrying-pulley, and when the wedge-block is raised the carrying-pulley and bevel-gear will be freed from the restraint of the brake-shoes. These movements of the wedge-block are automatically brought about by the governor E, the wedge-block 23 being secured to the lower end of the governor-shaft 22, and at the upper end of the governor-shaft a sleeve 24 turns freely between two collars on the shaft. The governor-arms 25 are pivoted to the sleeve 24 at one end and carry balls at their opposite ends, and links 26 are pivoted to the governor-arms 25 and to a collar 27, secured by a screw 28 or otherwise to the upper end of the hub of the pinion 17. Thus it will be observed that when great weight is borne by the rope 14 or chain 15 and the carrying-wheel is inclined to turn very fast the arms of the governor will be carried outward and the shaft of the governor will be carried downward, taking with it the wedge-block 23 and causing the brake-shoes to be forced apart to frictional locking engagement with the carrying-pulley D and the bevel-gear 16, thereby forcing the rope or chain even when heavily weighted to travel at a slow speed. The rope or chain may be provided with projections to be grasped by the hand or may be fitted with loops to which a belt may be attached, worn by the person making his escape.

When an endless rope is employed in connection with the automatic brake, a lower guide-pulley 29 is mounted upon the building near the ground, intended to keep the rope tight and prevent it slipping from the upper or carrying pulley; but this guide-pulley may be omitted when a chain is used instead of a rope.

In operation a person need only take hold of the rope to let himself or herself down, and the speed at which the rope travels is to be slow enough so that one can conveniently take hold of it while it is in motion.

The advantages of this form of fire-escape are many. It is simple and economic, is al-

ways ready for use, and will accommodate many persons, automatically regulating the speed of the carrying rope or chain, thus enabling a number of persons to safely descend at the same time, and when the parts are painted the color of the walls of the building the device will hardly be noticed from the street. It is, furthermore, not possible for a burglar to use the improved fire-escape to reach any window from the street, as the rope or chain would be set in downward motion by the weight of any person attempting to climb up on it.

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

1. In a fire-escape the combination of a loosely-mounted drum or pulley, a loosely-mounted member spaced from the drum, brake-shoes adapted to engage the opposing faces of the drum and member, a wedge working between the brake-shoes, and a governor connected with and operating said wedge, as set forth.

2. In a fire-escape, the combination of spaced gear-wheels, a drum or pulley carried by one gear-wheel, a pinion meshing with the gear-wheels, brake-shoes for engaging the opposing faces of the gear-wheels, a wedge working between the brake-shoes, and a governor having its stem connected with the wedge, as set forth.

3. In a fire-escape, the combination of spaced gear-wheels, a drum or pulley carried by one of the gear-wheels, a pinion having a hollow hub and meshing with the gear-wheels, brake-shoes having inclined inner faces and arranged between the gear-wheels, said brake-shoes being adapted to engage the inner faces of the gear-wheels, a wedge working between the brake-shoes, and a governor having its stem extending through the pinion and connected with the wedge, as set forth.

4. In a fire-escape, the combination with an endless rope or chain adapted to sustain persons while making a descent, and a carrying-pulley therefor, of a loosely-mounted gear facing the carrying-pulley, a pinion driven from the carrying-pulley and in driving connection with the gear, supports for the carrying-pulley, the pinion and the gear, a ball-governor in operative connection with the pinion, the shaft of the governor sliding loosely in said pinion, opposing brake-shoes adapted for sliding movement relative to each other and having straight outer faces arranged for contact with the inner faces of the carrying-pulley and gear, and inclined inner or opposing faces, and a wedge-block carried by the governor-shaft, operating when forced downward to carry the brake-shoes in frictional contact with the carrying-pulley and gear, as and for the purpose described.

5. In a fire-escape, the combination with an arched bracket, a shaft mounted in the bracket, a drum or pulley loosely mounted on the shaft, and provided with a gear-wheel



on its inner face, a loosely-mounted gear-wheel on the shaft and spaced from the gear-wheel of the drum or pulley, brake-shoes mounted on the shaft between the gear-wheels  
5 and having inclined inner faces, the brake-shoes having overlapping upper ends, a wedge straddling the shaft, a pinion mounted in the bracket and meshing with the said gear-wheels, and a ball-governor having its stem  
10 extending through the pinion, the overlap-

ping ends of the brake-shoes, and connected with the wedge, as set forth.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

MICHAEL WACHTER.

Witnesses:

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