

No. 826,713.

PATENTED JULY 24, 1906.

T. F. DOWLING.
FIRE SHUTTER FOR DOORS AND WINDOWS.

APPLICATION FILED MAY 18, 1906.

2 SHEETS—SHEET 1.

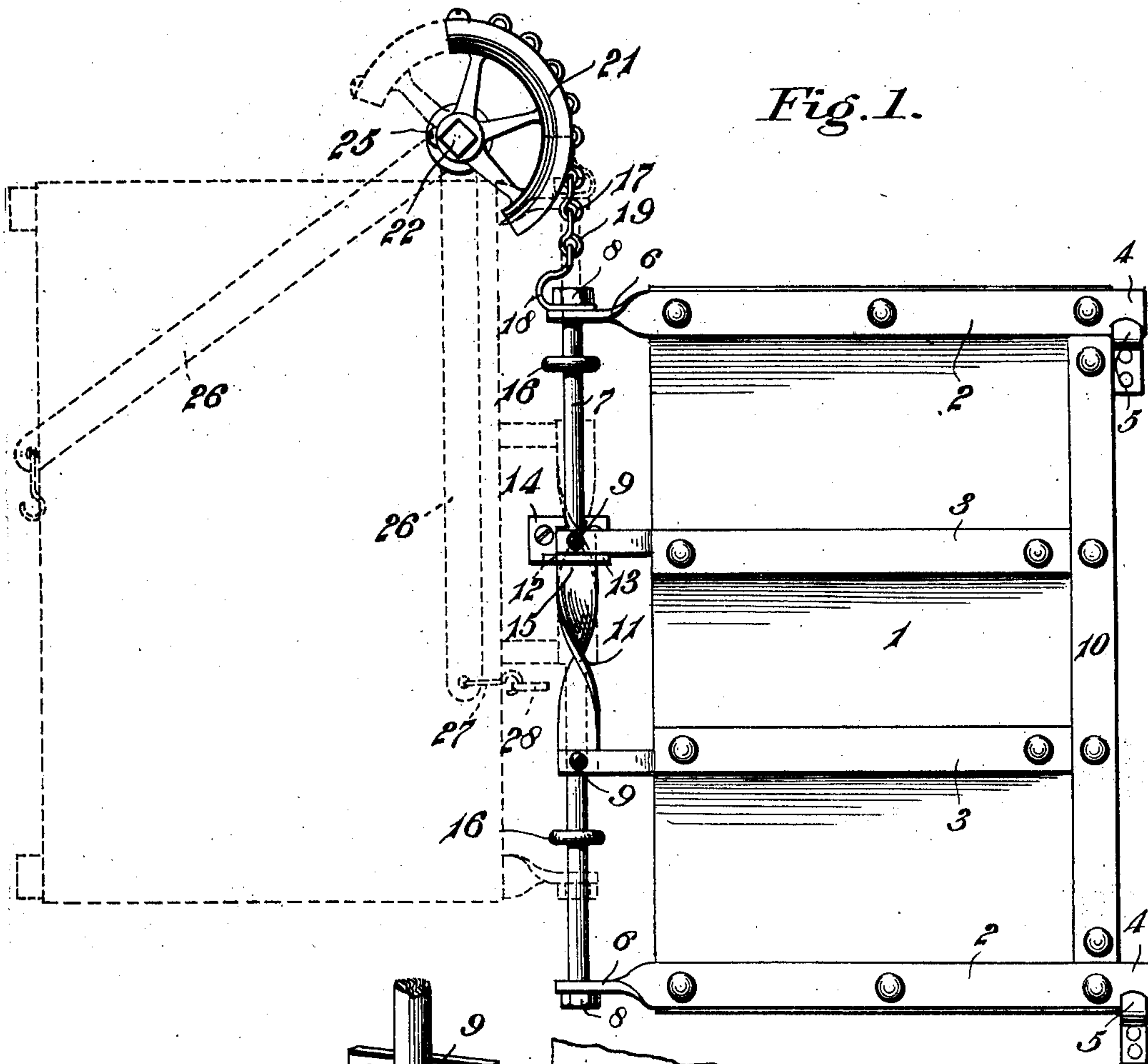
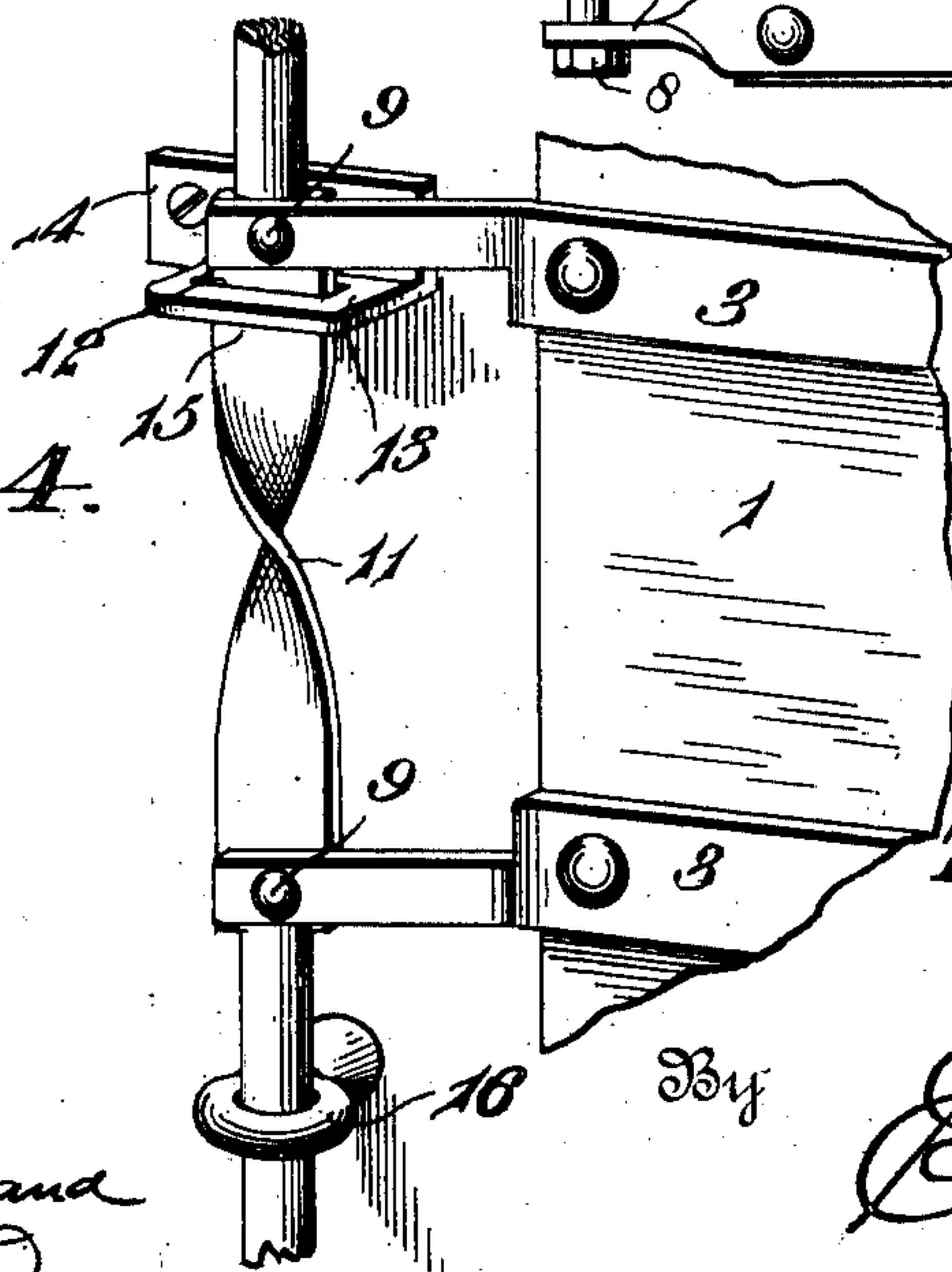


Fig. 4.



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Inventor.

Witnesses

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J. F. Riley

By

E. G. Siggers

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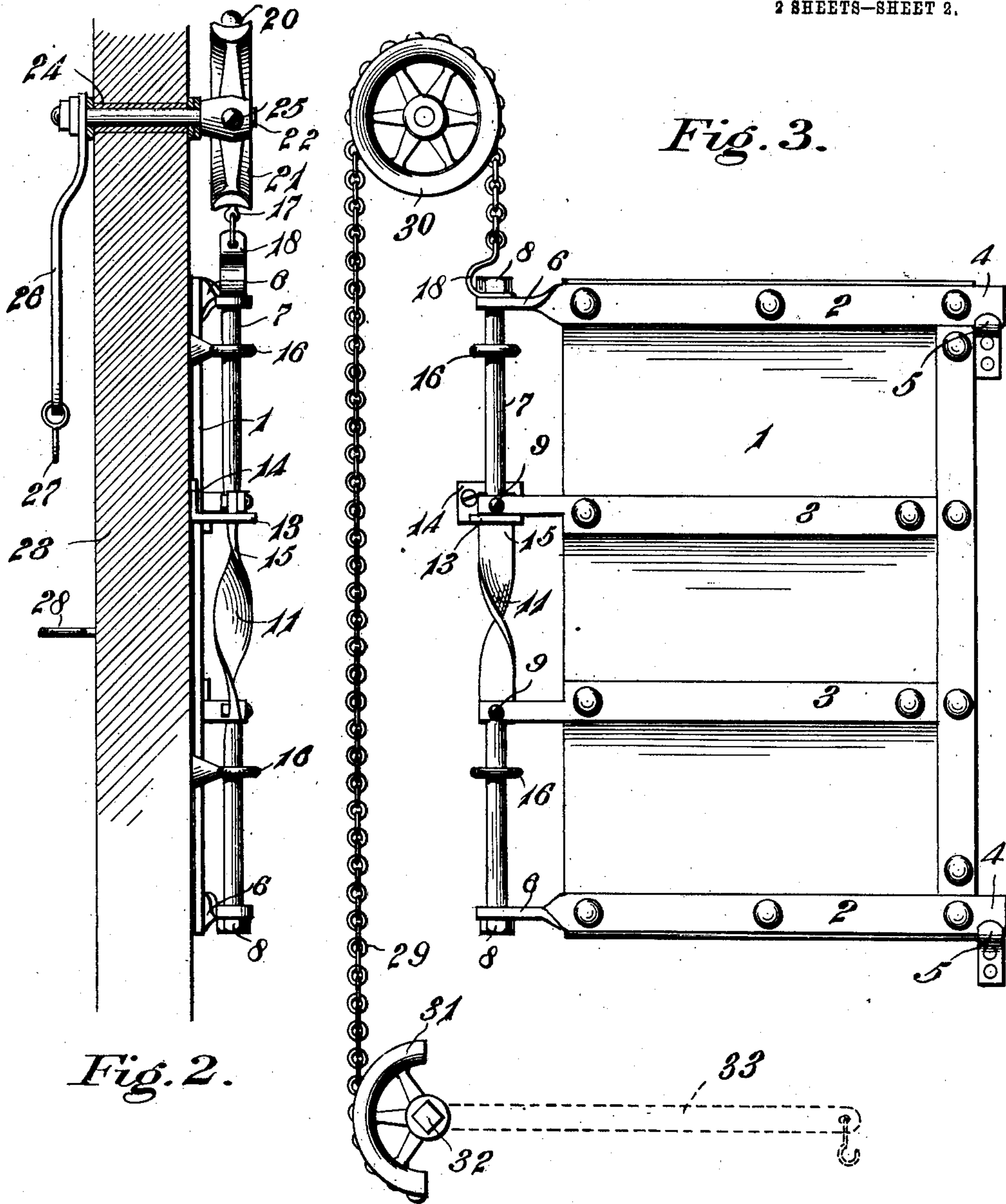


Fig. 2.

Fig. 3.

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UNITED STATES PATENT OFFICE.

THOMAS F. DOWLING, OF LINCOLN, NEBRASKA.

FIRE-SHUTTER FOR DOORS AND WINDOWS.

No. 826,713.

Specification of Letters Patent.

Patented July 24, 1906.

Application filed May 18, 1906. Serial No. 317,531.

To all whom it may concern:

Be it known that I, THOMAS F. DOWLING, a citizen of the United States, residing at Lincoln, in the county of Lancaster and State of Nebraska, have invented a new and useful Fire-Shutter for Doors and Windows, of which the following is a specification.

The invention relates to improvements in fire-shutters for doors and windows.

The object of the present invention is to improve the construction of fire-shutters for doors and windows and to provide a simple and comparatively inexpensive one adapted to close automatically in event of a fire should the same become heated either interiorly or exteriorly of the house or building to which the shutter is applied.

A further object of the invention is to provide a fire-shutter of this character adapted to be readily opened and set for automatic operation from the interior of a house or building.

With these and other objects in view the invention consists in the construction and novel combination of parts hereinafter fully described, illustrated in the accompanying drawings, and pointed out in the claims hereto appended, it being understood that various changes in the form, proportion, size, and minor details of construction within the scope of the claims may be resorted to without departing from the spirit or sacrificing any of the advantages of the invention.

In the drawings, Figure 1 is an elevation of a fire-shutter constructed in accordance with this invention and shown closed in full lines and open in dotted lines. Fig. 2 is a vertical sectional view of the same. Fig. 3 is an elevation illustrating a slight modification of the operating mechanism. Fig. 4 is a detail perspective view illustrating the construction of the spirally-twisted portion of the pintle-rod and the means for rotating the latter.

Like numerals of reference designate corresponding parts in all the figures of the drawings.

1 designates a swinging fire-shutter constructed of heavy sheet metal or other suitable material and adapted to be arranged at windows and doors and provided with horizontal bars or cleats 2 and 3, which are extended beyond the inner or hinged edge of the shutter. The bars or cleats 2, which are arranged at the top and bottom of the shut-

ter, are also extended from the free edge thereof to provide projections or lugs 4 for engaging hook-shaped catches or keepers 5. The hook-shaped catches or keepers, which are arranged to be engaged by the lugs 4 in the closing movement of the shutter, have lower attachment portions, and the shutter in its closing movement closes quickly and then drops into engagement with the catches or keepers, as hereinafter more fully explained.

The inner extended ends 6 of the upper and lower bars 2 of the shutter are given a quarter bend or turn to arrange them horizontally, and they are provided with eyes or openings for the reception of a pintle-rod 7, which is vertically movable with the shutter. The ends of the pintle-rod are threaded for the reception of nuts 8, and the intermediate horizontal bars or cleats 3 are secured to the pintle-rod 7 by means of screws 9 or other suitable fastening devices. The front ends of the intermediate bars terminate short of the free edge of the shutter, which is preferably reinforced by a vertical bar or cleat 10.

The intermediate bars or cleats 3 are located above and below the center of the shutter, and the pintle-rod 7 is provided between the extended ends of the said bars or cleats 3 with a flat spirally-twisted portion 11, which is arranged in an oblong opening 12 of a horizontal flange or portion 13 of a member or bracket 14, fixed to the wall in line with eyes 16. When the pintle-rod is moved upwardly by the operating mechanism hereinafter described, the flat intermediate portion of the pintle-rod is drawn through the opening of the fixed member or bracket 14. The upper end 15 of the flat portion 11 of the pintle-rod is straight and is arranged in the same plane as the shutter and is of sufficient length to permit the shutter to be lifted out of engagement with the catches or keepers before the pintle-rod is rotated to open the shutter. A further upward movement of the pintle-rod causes the spirally-twisted portion 11 to engage the fixed member 14, whereby the pintle-rod is rotated and the shutter opened. When the shutter is free to close, its weight causes the pintle-rod to move downwardly through the member or bracket, and the said shutter is thereby rapidly closed by the spirally-twisted portion of the pintle-rod, which carries the projections or lugs 4 of the shutter above the keepers or catches 5 be-

fore the straight portion 15 is permitted to drop through the opening of the bracket or fixed member.

The pintle-rod is provided with round upper and lower portions, which are arranged in the eyes 16, whereby the shutter is hingedly mounted adjacent to a window or door. The eyes 16 may be of any desired construction and are mounted on the wall to which the shutter is hinged. The upper end of the pintle-rod is connected with a chain 17 or other flexible connection by means of a plate or piece 18, which is bent into substantially L shape to arrange its terminals vertically and horizontally. The horizontal portion of the plate 18 is perforated to receive the inner end of the pintle-rod and is secured to the same by the upper nut 8. The upwardly-extending portion of the plate or piece 18 is bent inwardly, and the upper terminal is arranged directly above the pintle-rod and is provided with a perforation into which the lower end of the chain is linked. The lower link 19 of the chain is preferably made of fusible metal which is adapted to melt at a low temperature and which will release the shutter should the heat exteriorly of the building become dangerous.

The flexible connection 17 is arranged in a groove 20 of a segment 21, which is fixed to the outer end of a horizontal shaft 22, and the latter extends through the wall 23 of the building and is journaled in a suitable pipe or tube 24, as clearly illustrated in Fig. 2 of the drawings. The segment is secured by a set-screw 25 to the outer end of the shaft 22, which is squared to fit a rectangular opening of the segment.

The inner end of the shaft is reduced and squared to fit a rectangular opening or an operating-lever 26, which is located within the building and which is adapted to be swung downward from the inclined position shown in dotted lines in Fig. 1 to the vertical position illustrated in the same figure. The lower end of the lever is provided with a fusible link 27, having a hook for engaging an eye 28 and adapted when subjected to interior heat to release the lever and permit the shutter to close.

The shaft 22 is located above the plane of the upper edge of the shutter, and when there is insufficient space above a door or window to arrange the shaft and lever, as shown in Figs. 1 and 2, the operating mechanism may be located below the shutter, as illustrated in Fig. 3. When the operating mechanism is arranged below the shutter, an extended flexible connection 29 and a pulley 30 are employed. The pulley 30 is located exteriorly of the building at a point above the plane of the upper edge of the shutter, and the segment 31 is located below the shutter and receives the lower end of the flexible connection 29, which is secured to the segment, at the

bottom thereof. The segment is mounted on a shaft 32 and is operated by a lever 33, which is swung upwardly from the position shown in Fig. 3 to raise the pintle-rod for opening the shutter.

The shutters may be arranged in pairs at a door or window, and as this arrangement involves a mere duplication of that shown and described illustration thereof is deemed unnecessary.

The shutter-operating mechanism may be applied directly to a metallic door or other swinging closure, both for opening and closing the same and for automatically operating the closure in event of a fire.

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

1. In a device of the class described, the combination with a swinging closure, of a vertically-movable pintle carrying the closure and provided with a spiral portion, and a fixed member arranged to engage the spiral portion of the pintle, whereby the said pintle will be rotated when moved vertically.

2. In a device of the class described, the combination with a swinging closure, of a vertically-movable pintle-rod carrying the closure and provided with a spiral portion and having a straight portion, a fixed member arranged to engage the spiral portion for rotating the pintle-rod, the said straight portion being adapted to permit the pintle-rod to be moved vertically a limited distance without rotating, and a keeper with which the closure is engaged and from which the closure is disengaged by the said limited vertical movement.

3. In a device of the class described, the combination with a closure having upper and lower projecting portions, fixed keepers arranged to engage the projecting portions of the closure, a vertically-movable pintle carrying the closure and having a spiral portion and provided at the upper end thereof with a straight portion, and a fixed member arranged to engage the straight and spiral portions of the pintle-rod to permit a limited direct vertical movement for carrying the projecting portions into and out of engagement with the keepers and to rotate the pintle-rod for swinging the closure.

4. In a device of the class described, the combination with a swinging closure, of a vertically-movable pintle, means for rotating the pintle when the same is moved vertically, a flexible connection connected at one end with the pintle, a segment secured to the other end of the flexible connection, means for operating the segment to raise the pintle, and fusible means for releasing the closure.

5. In a device of the class described, the combination with a swinging closure, a vertically-movable pintle carrying the closure, means for rotating the pintle when the same

is moved vertically, a shaft designed to extend through a wall, a segment mounted on the outer end of the shaft, a flexible connection extending from the segment to the pin-
5 tle, an operating-lever connected with the inner end of the shaft, means for securing the operating-lever for holding the closure in its open position, and fusible means for releasing the closure.

10 6. In a device of the class described, the combination with a swinging closure, a vertically-movable pintle carrying the closure, means for rotating the pintle when the same is moved vertically, a shaft designed to extend through a wall, a segment mounted on
15

the outer end of the shaft, a flexible connection extending from the segment to the pintle, an operating-lever connected with the inner end of the shaft, means for securing the operating-lever for holding the closure in its
20 open position, and interiorly and exteriorly arranged fusible means for releasing the closure.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in
25 the presence of two witnesses.

THOMAS F. DOWLING.

Witnesses:

E. G. BOHANAN,

A. E. HATHAWAY.