

No. 882,499.

PATENTED MAR. 17, 1908.

J. W. HULL, SR.

FIRE ESCAPE.

APPLICATION FILED JUNE 4, 1906.

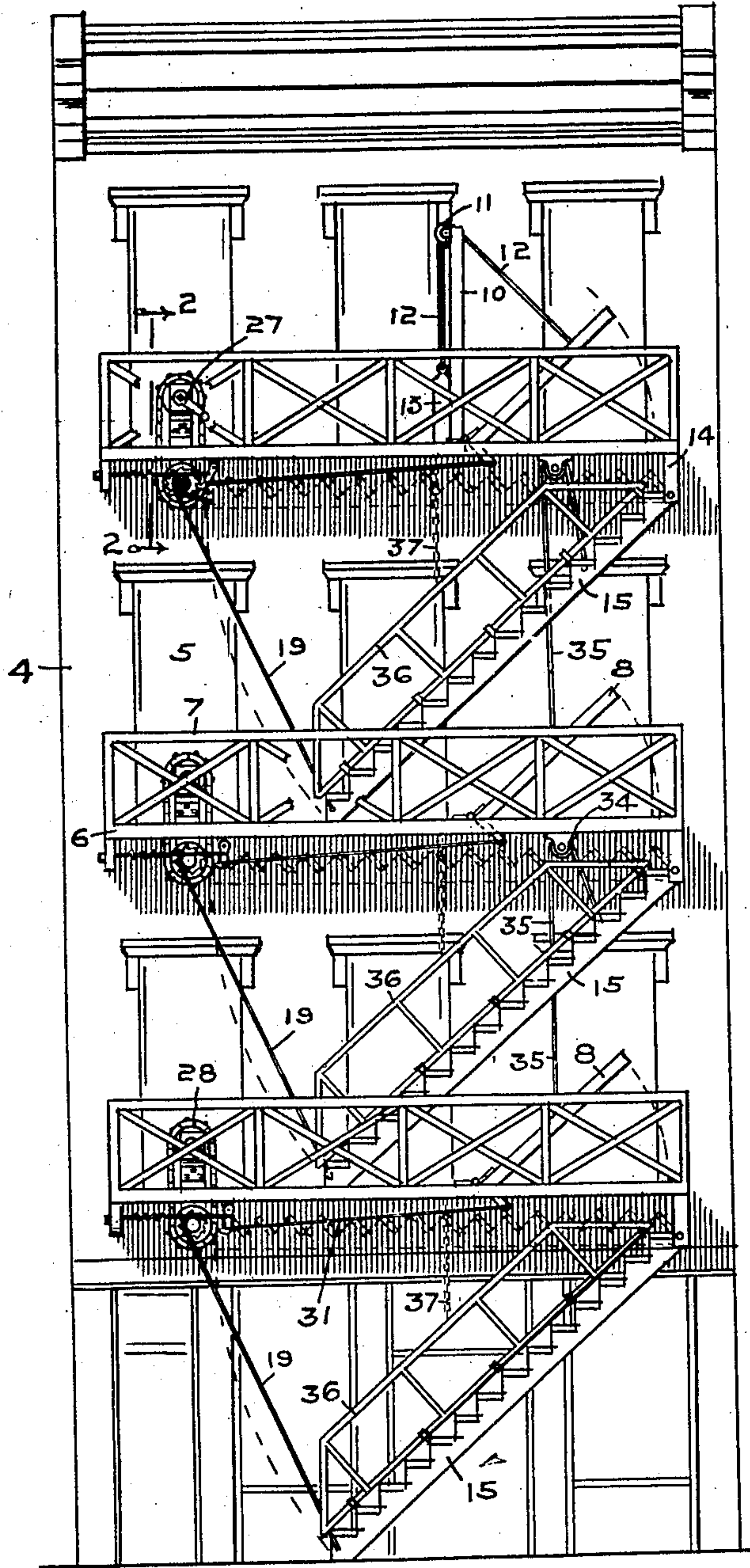


Fig. 1.

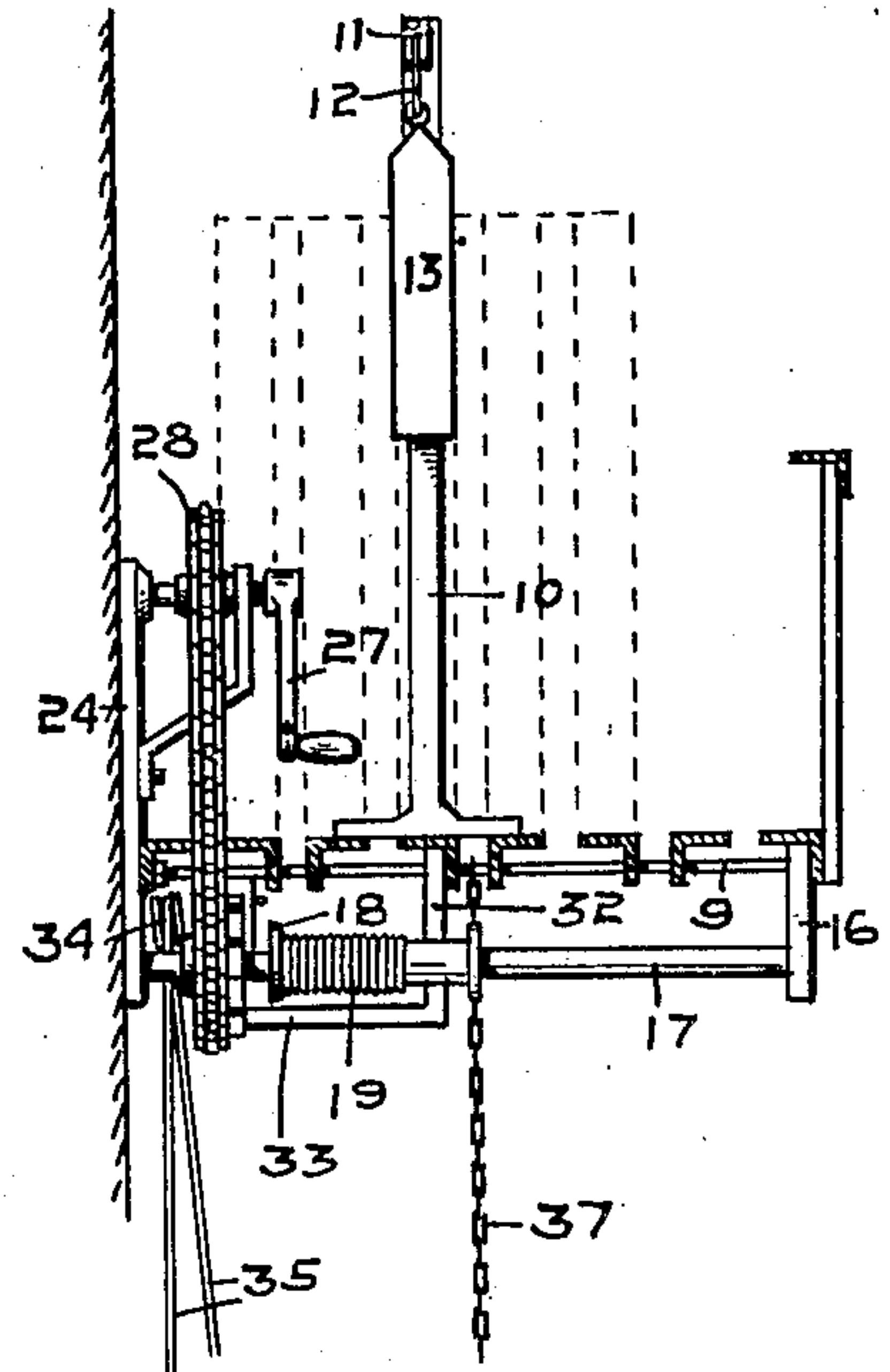


Fig. 2.

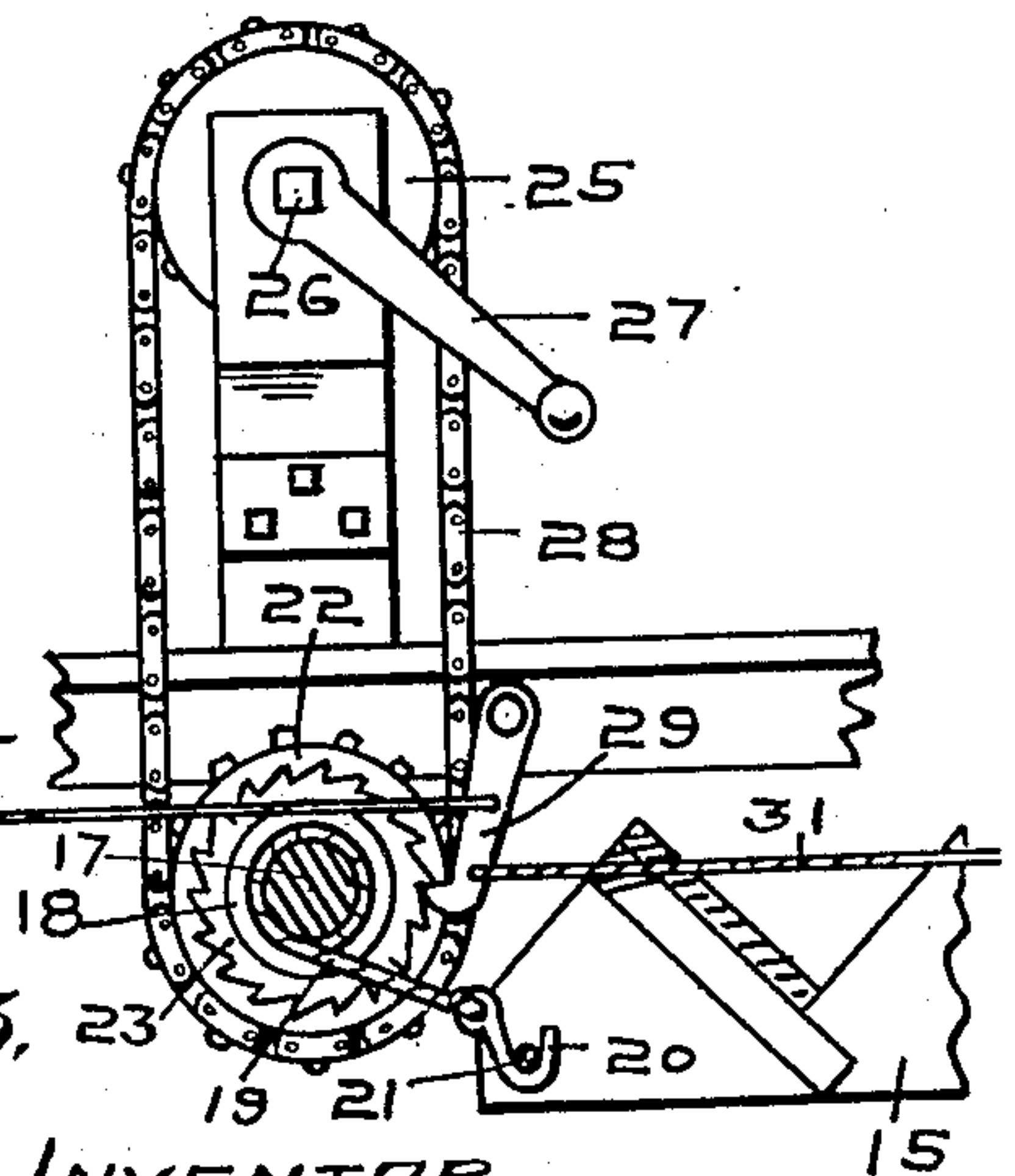


Fig. 3.

WITNESSES:

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UNITED STATES PATENT OFFICE.

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FIRE-ESCAPE.

No. 882,499.

Specification of Letters Patent.

Patented March 17, 1908.

Application filed June 4, 1906. Serial No. 320,200.

To all whom it may concern:

Be it known that I, JOHN W. HULL, Sr., a citizen of the United States, residing at Zion City, in the county of Lake and State of Illinois, have invented certain new and useful Improvements in Fire-Escapes, of which the following is a specification.

This invention relates to improvements in fire escapes, and the object of the invention is to provide platforms with railings, or balconies, opposite window or door exits at each floor to be equipped with means of escape in case of fire, and to provide stairsteps which will be folded or drawn up against the bottom of the platform from which the stairs lead when not required for the escape from fire, and the object is to provide convenient and substantial means for raising the steps into this elevated position and for holding them in that situation.

The object further is to provide automatic means for releasing and lowering the steps by the raising of the trapdoor in the platform leading to said respective stairs and to thereby release and automatically lower all of the stairs for a series of platforms, such as would be required by the several different stories of a high building.

The object further is to provide a strong, durable, safe and inexpensive mechanism which will not mar the appearance of the building to which it is applied by the exposure to view of unsightly stairs leading from platform to platform between the several stories of the building.

I accomplish the objects of the invention by the mechanism illustrated in the accompanying drawings, in which—

Figure 1 is a front elevation of a store building equipped with my invention, the view showing the stairs elevated out of position for use in dotted lines and in lowered position in full lines. Fig. 2 is a detail in vertical section on the line 2—2 of Fig. 1 and Fig. 3 is a detail in side elevation in partial vertical section of the mechanism for elevating and holding the stairs, this view being on a larger scale than same is shown in Fig. 1.

Like characters of reference indicate like parts throughout the several views of the drawings.

4 represents a four story building, 5 the window openings, 6, 6, 6, platforms here shown as made from angle-bars running

longitudinally thereof, and 7 is a hand-rail. These platforms are each provided with a trapdoor 8 hinged thereto by means of the transverse bar 9.

10 is a standard at the hinged end of the trapdoor in the top platform. It has a pulley 11 at its top, and 12 is a cable which is fastened at one end to the trapdoor and extends thence over the pulley 11 and is made fast to the weight 13, whereby the door is balanced so as to be easily elevated.

14 are brackets attached to the platform adjacent to the outer end of the trap door and to said brackets the risers 15 are pivotally secured so as to be capable of folding up close to the underside of the platform, and of being lowered into a diagonal position with the lower ends of the risers resting upon the platform next below. These risers form the supports for a series of stairsteps, as shown. The purpose of the invention is to secure the stairs in horizontal or folded position when not required for passage from one platform or balcony to the other, and to automatically release the stairs and allow them to drop by gravity into position for use. To this end I provide the hangers 16, which form the journals for the shaft 17. Mounted on shaft 17 is the drum 18 on which is wound the cable 19, the loose end of said cable being provided with a hook 20 which is caught under the rod 21 connecting the two risers of the stairs at the lower end of the ladder, as shown in Fig. 3.

The drum 18 is mounted in fixed manner on the shaft 17; also mounted in a fixed manner on said shaft is the sprocket wheel 22 and the ratchet wheel 23, the latter, as shown in the drawings may be an integral portion of the sprocket wheel or it may be separate therefrom. The back hanger 16 is preferably continued above the platform and to it the bracket 24 is bolted. A sprocket wheel 25 is mounted on the shaft 26 between the hanger extension and the bracket. The shaft 26 has the crank 27, by means of which the shaft and top sprocket wheel are rotated. 28 is a link-belt which connects the two sprocket wheels, above mentioned, whereby when the crank is properly moved, the shaft 17 will be rotated thereby causing its drum to wind the cable 19 thereon so as to elevate the end of the stairs. A lever 29 pivotally secured at its upper end has a hooked lower

end which engages the teeth of ratchet wheel 23 and holds the drum against a back or unwinding movement. This lever is drawn in constant engagement with the ratchet wheel by the spring 30. Disengagement of the lever with the ratchet wheel is effected through cable 31, which is attached at one end to the lever 29 and at the other to an arm 32 depending from the underside of the trap-door adjacent to its hinged end. This arm has a lateral extension 33 at its lower end to which the cable is directly fastened in order to cause a straight pull on the lever 29 which is located near the inner side of the platform.

When the stairs is in its lowered position, a little slack in the cable by which it was supported will cause the hook to disengage itself from the stairs.

34 is a pulley attached to the underside of the platform and 35 is a cable passing over the pulley and having one end attached to the adjacent stairs and the other end attached to the trapdoor in the platform next below. By thus connecting the trapdoors and stairs of all the platforms in series, the raising of the upper trapdoor will release the stairs below and the lowering of that stairs will raise the next trapdoor, and so on through the whole series.

36 is a hand-rail hinged to the top of each stairs in a manner to fold over upon the stairs when the latter is in its elevated position.

37 is a chain attached at one end to the hand-rail 36, and its other end to the next platform above said stairs. The length of the chain is such that when the stairs is lowered the chain will raise the hand-rail in the manner shown.

My invention is capable of various modifications, and I therefore do not desire to limit the invention to the specific form shown, but

What I desire to claim, is—

1. In a fire escape for a building having several stories, a platform for each story, a stairs hinged at one end to each of said platforms, a trap-door in each of said platforms hinged to said platforms, a pulley under each platform and a cable for each pulley passing over the pulley and attached at one end to the next lower stairs and at the other end to the next lower trap-door whereby the lowering of a stairs will automatically raise the trap-door next below it.

2. In a fire escape, a series of platforms arranged one above the other, a trap-door leading through each of said platforms, a stairs hinged at one end to one of said platforms, a cable for elevating the lower or free end of the stairs, means for reeling up the cable to elevate the stairs, means for locking the said elevating means, means operated by the raising of the trap-door for releasing the stairs, a pulley, and a cable passing over the pulley and attached at one end to the

stairs and at its other end to the trap-door of the next lower platform.

3. In a fire escape for a building of several stories, a platform opposite each of said stories, trapdoors in each of said platforms hinged to said platforms, a stairs hinged at one end to each of said platforms, a pulley above each of said platforms and a cable for each pulley passing over said pulley and having one end attached to the next trapdoor below the pulley and the other end attached to the next stairs below the trap door.

4. In a fire escape, a series of platforms arranged one above the other, a trap-door leading through each of said platforms, each trap-door having a depending arm, a stairs hinged at one end to one of said platforms, a pulley, a cable passing over the pulley and attached at one end to the stairs and at the other end to the trap-door of the next lower platform, a shaft mounted above the free end of said stairs, a drum on said shaft, a cable wound upon the drum having one of its ends attached to the free end of said stairs, a ratchet-wheel on said shaft, a pawl-lever, a spring to draw the pawl-lever into engagement with the ratchet-wheel, means for rotating the drum to wind the cable thereon, and a connection between the pawl-lever and the depending arm of the trap-door of the platform to which said stairs is hinged.

5. In a fire escape, a platform, a stairs hinged at one end to the underside of said platform, a trapdoor through the platform over the hinged end of the stairs, said trap-door having a depending arm and said trap-door having a counter-weight, a shaft over the free end of the stairs, a drum on said shaft, a cable wound upon the drum having an end attached to the free end of the stairs, a ratchet wheel on said shaft, a pawl lever, a spring to draw the lever into locking engagement with the ratchet wheel, a sprocket wheel on the drum shaft, a crank shaft above the drum shaft, a crank on said crank shaft, a sprocket wheel also on said crank shaft, a link belt connecting the two sprocket wheels, and a cable connecting the pawl lever with the depending arm of the trap door.

6. In a fire escape, a platform, a stairs hinged at one end to the underside of said platform and adapted to be drawn up under and parallel with the platform when not in use and lowered into a diagonal position for use, a hand-rail hinged to the stairs so as to fold over upon the stairs when not in use and a tie connecting the hand-rail with the platform above to automatically raise the hand-rail when the stairs is lowered.

7. In a fire escape, a platform, a stairs hinged at one end to the underside of said platform and adapted to be drawn up under and parallel with the platform when not in use and lowered in a diagonal position for use, a hand-rail hinged to the stairs so as to fold

over upon the stairs when not in use and a chain connecting the hand-rail with the platform above to automatically raise the hand-rail when the stairs is lowered, the length of
5 said chain being such as to cause the hand-rail to assume substantially a vertical position.

In witness whereof, I have hereunto set my hand and seal at Indianapolis, Indiana.

JOHN W. HULL, SR. [L. S.]

Witnesses:

L. P. BROWN,
F. H. WEST.