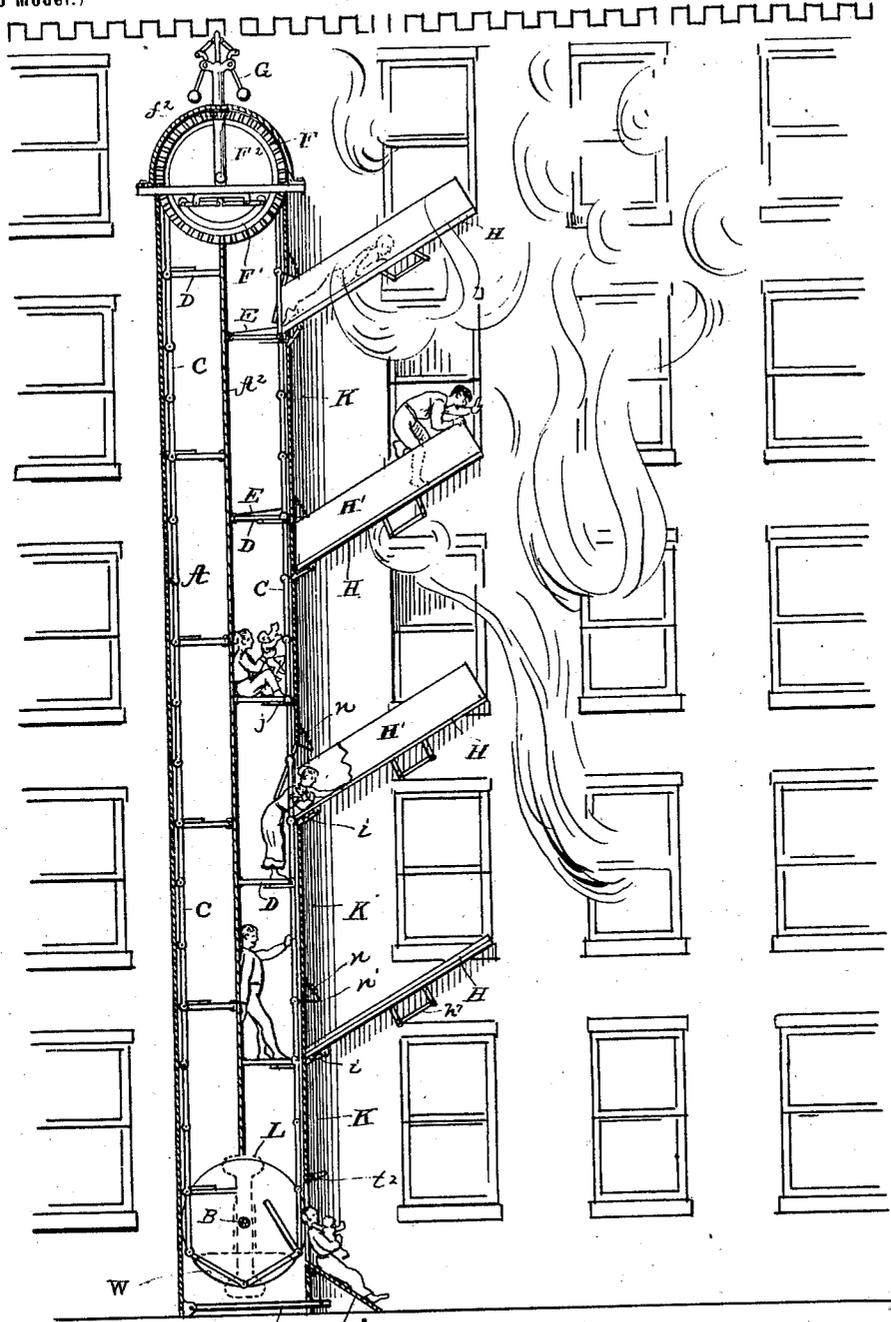


J. W. HULL, SR.
FIRE ESCAPE.

(Application filed May 12, 1900.)

3 Sheets—Sheet 1.

(No Model.)



Witnesses, *Fig. 1.*
 Anderson Bunn
 J. Mahler Unger.

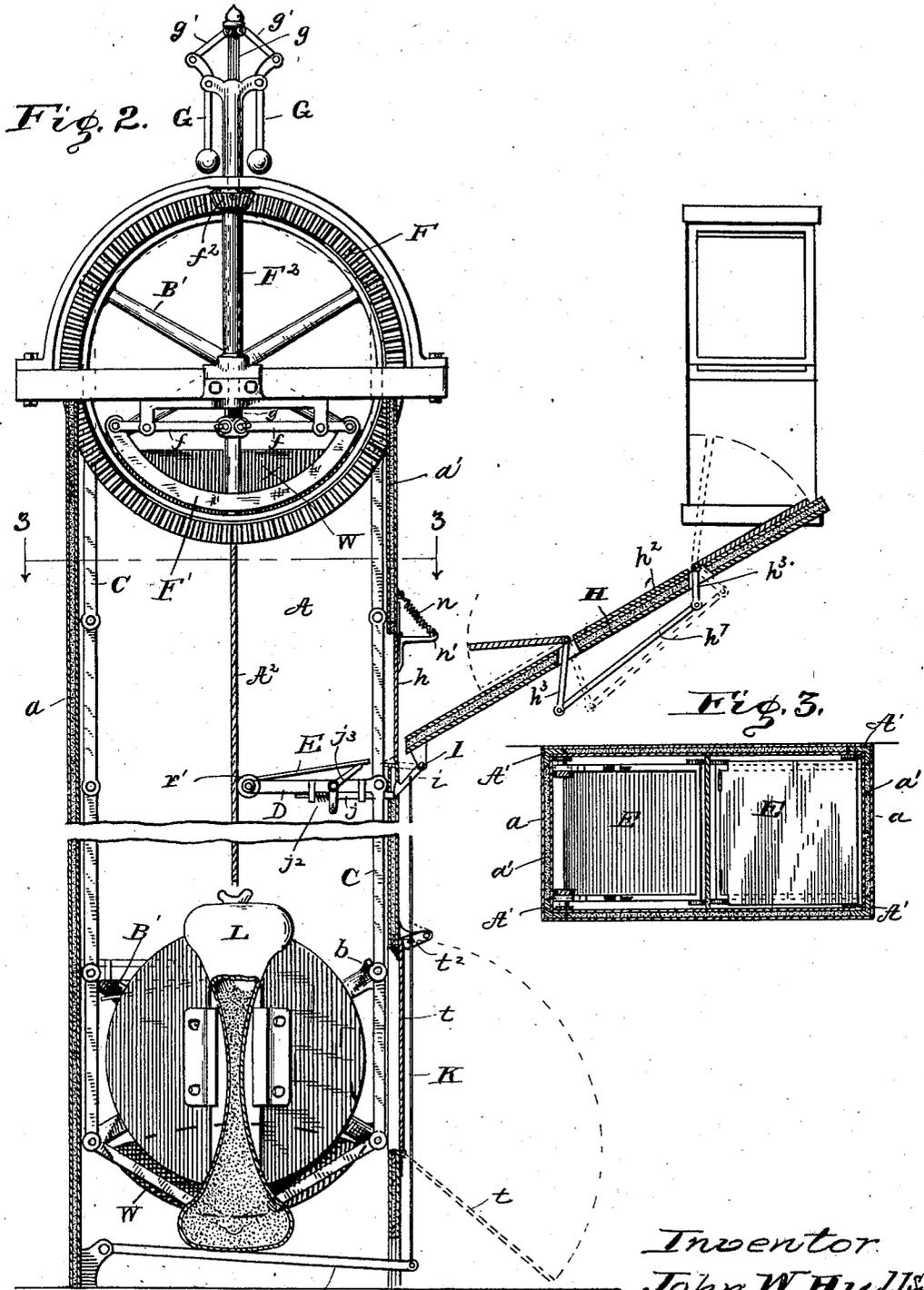
Inventor
 John W. Hull, Sr.
 By Joseph A. Minturn
 Attorney.

J. W. HULL, SR.
FIRE ESCAPE.

(Application filed May 12, 1900.)

(No Model.)

3 Sheets—Sheet 2.



witnesses
 Anderson Bruner
 S. Mahlon Unger.

Inventor
 John W. Hull, Sr.
 By Joseph A. Muntz,
 Attorney.

UNITED STATES PATENT OFFICE.

JOHN W. HULL, SR., OF INDIANAPOLIS, INDIANA, ASSIGNOR OF ONE-HALF
TO ANDERSON BRUNER, OF SAME PLACE.

FIRE-ESCAPE.

SPECIFICATION forming part of Letters Patent No. 670,050, dated March 19, 1901.

Application filed May 12, 1900. Serial No. 16,513. (No model.)

To all whom it may concern:

Be it known that I, JOHN W. HULL, Sr., a citizen of the United States, residing at Indianapolis, in the county of Marion and State of Indiana, 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 for high buildings, and has reference to mechanism which will be automatic in its action and safe and durable and which will be hereinafter fully described and claimed, reference being had to the accompanying drawings, which form a part of this specification, and in which—

Figure 1 is a view in elevation of a building with my invention, partially in vertical section, applied thereto and representing same in process of use; Fig. 2, a detail in vertical section, on a larger scale than in Fig. 1, of the top and bottom portions of my invention, the middle part not being shown; Fig. 3, a horizontal section on the dotted line 3 3 of Fig. 2 looking in the direction of the arrows; Fig. 4, a detail in side elevation of one of the spiders over which the link carrier-chain operates; Fig. 5, a vertical section on the dotted line 5 5 of Fig. 4 looking in the direction of the arrows; and Fig. 6, a detail in perspective of the movable platform-frame, door leading into the well, and lateral chute leading up to the door.

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

A is the well, preferably rectangular in cross-section, with vertical angle-iron corner-posts A' , sheeted inside and out with metal plates a and filled between the plates of each wall with asbestos or other non-conducting material a' , as shown in Figs. 3 and 2. This well will have the central longitudinal partition A^2 , dividing it into two compartments. The well will extend from the ground to the top-most story of the building and will terminate at top and bottom with transverse shafts $B B$, revolvably mounted in suitable boxes. Mounted on and turning with each of these shafts are the two spiders $B' B'$, the same being sprocket-wheels consisting of skeletons of radiating spokes, the ends of which have seats

b for hubs on the links of endless chains $C C$. These hubs are shown at c' in Figs. 5 and 6. The hubs are preferably formed integral with links of the chain—that is, at one end of each link—the hub being on both inner and outer sides and the other end of the link from the hub end having an eye which fits over the inside hub of the adjacent link to which it is fastened. At suitable intervals, here shown (Fig. 1,) as every fourth link, the corresponding links of the inner and outer chains are connected by the frame D , as is clearly shown in Fig. 6, which forms the support for a platform E . (Shown in dotted lines in Fig. 6, but in full lines in Figs. 2 and 3.) This platform is hinged to the inner bar of the frame for purposes which will be hereinafter fully explained.

It will be observed that the platforms travel down one side of the well and up the other in continuous circuit, and upon these the people to be liberated from the burning building take their positions and are carried down by gravity and are discharged automatically at the bottom. To prevent too rapid travel of this elevator, which will be weighted all on one side, I provide a brake actuated by a centrifugal governor. This construction is shown in Fig. 1, but plainer and better in Fig. 2. F is a ring having side cogs and secured to the outer top spider. F' is a brake-shoe supported by levers f and adapted when the inner ends of the levers f are raised to be lowered into contact with the inner edge of the ring F . The levers f are pivotally secured to the lower end of the vertical rod g , and the upper end of the rod is connected by the links $g' g'$ with the weighted governor-arms G , whereby by the outward movement of the weights or balls the rod will be longitudinally elevated. The arms G are pivotally secured to the hollow shaft F^2 , and the latter has the beveled pinion f^2 , which engages the teeth of the ring F . The action of the governor-brake thus described will be fully understood without further explanation.

Leading into the well from a nearby window of each floor of the building is an inclined chute H , into which the person desiring to escape through the window from the

burning building places him or her self, preferably assuming a prone position face down. The chute will stand at such an angle with relation to the horizontal as will cause the
 5 body to slide freely by gravity into the well, entrance into which will be through doors h , hinged at their tops, so as to swing inwardly at their bottoms by the pressure against them of the person's feet in the chute outside.
 10 The bottom of the chutes H will preferably be double and filled with asbestos to protect the occupant from the flames and heat from below, and each chute will have a hinged cover H' , which is lifted up and out to form an
 15 outer side to protect and guide the person in the chute; also, to prevent overcrowding the chute I provide a false bottom h^2 in three sections, the outer section of which I hinge at its inner end, so it will swing upwardly, and
 20 provide downwardly-projected arms h^3 , connected by the link bar h^4 , whereby when the person using the chute has reached the lower half of same the depression of the lower section of the false bottom will elevate the upper
 25 section thereof into the position shown in dotted lines in Fig. 2, which prevents entrance into the chute until the occupant below leaves by passing on into the well.

To prevent crowding by the delivery of a
 30 person upon a platform already occupied in the well, I provide means for automatically locking all of the side doors as soon as the elevators start running and to keep them locked until an empty platform comes opposite.
 35 This I accomplish in a simple manner by fixing the latches $i i$ to the rod I , mounted transversely under the outside chute, as shown in Fig. 6, and by means of spring i^2 , pressing the latches upwardly to engage the lower edge
 40 of the door h . Then I place the bolts j on the side members of the platform-frames, with their ends projecting out, so as to strike the latches $i i$ and unlock the door. These bolts are forced out by springs j^2 and are drawn in
 45 by the action of the hinged platform E , previously referred to, acting on the bolts through the bent levers j^3 . The levers j^3 are pivotally secured to the side frame of the platform. Their lower ends are slotted longitudinally to receive a pin from the bolt near
 50 each and the upper ends support the free front edge of the platform E . The platform E is depressed by the weight of a person standing on it and when so depressed the bolts
 55 are drawn in, so as to pass the latches without unlocking the door, and a person in the well must wait until an unoccupied platform comes opposite his position.

In order to bring the spiders in position to
 60 leave the platforms opposite the chutes outside, down any one of which the first person to enter the elevator and start it to going may come, I provide the weights W on said spider, and these will swing the spiders by
 65 gravity into positions to bring the platforms in right relation to the outside chutes.

As the first person to enter the elevator may come from a window at any one of the floors of the building, it is also necessary that all of the doors leading into the well shall be
 70 primarily unlocked. This I accomplish by connecting all of the latches by a wire K and by fastening this wire to the lever k' at the bottom of the well. By lowering the end of the lever to which the wire is fastened all of
 75 the latches will be opened. To automatically lower this lever, I provide the hollow sliding body L , filled with shot or sand. The body L is fastened to the lower spider and is slidable upon it. This is placed so as to be
 80 in vertical position when the spiders are brought into final position by their weights and will slide down by the weight of the sand or shot upon the lever, thereby lowering the latter. The doors thus unlocked are pressed
 85 open by the occupant of the outside chute and are held normally closed by the spring n , connecting the arm n' on the door with the side of the well.

The platforms have bearing-rollers r on the
 90 outer ends of their hubs to bear against the inner wall of the well and lessen the friction. They also act as guards to keep the hubs from slipping off of the sprocket-spokes. The platform-frame also has roller r' to bear
 95 against the inside partition of the well.

When the first person to descend in the above-described fire-escape reaches the bottom, the platform turns around the lower spiders in a manner to deliver the occupant
 100 toward the outer wall of the well in the manner as shown in Fig. 1, and through the wall of the well, near the bottom, is a door t , hinged at the bottom, so as to swing down, as shown in full lines in Fig. 1 and in dotted lines in
 105 Fig. 2. The door is fastened by a catch t^2 , Fig. 2, at its top, and this catch is attached to the wire K ; but when the lever k' is released and rises the catch t^2 is raised to unlock the door t , allowing the latter to drop
 110 down by its own weight; or if it does not so drop it will be easily and quickly pushed open by the first person coming down on the elevator. The door when open forms a slide
 115 for the safe discharge of the people.

Having thus fully described my invention, what I claim as new, and wish to secure by Letters Patent of the United States, is—

1. A tubular inclosure or well, platforms, endless chains, frames D integral with links
 120 of the chain and projected laterally and inwardly from what are the upper ends of the links when the latter are descending, and inclined lateral slideways or chutes leading into the well, substantially as and for the pur-
 125 poses specified.

2. A vertical tubular inclosure or well, platforms, endless chains located adjacent to and bearing against the outer side wall of the well and carrying said platforms, spring-closed
 130 trap-doors in the sides of the well locked and unlocked from the inside of said well and lat-

eral inclined slideways or chutes leading into the vertical well through said doors, substantially as described and shown.

3. In a fire-escape located against the outside of a building, a vertical tubular inclosure or well, spiders at top and bottom thereof, platforms, endless chains working over the spiders, frame D integral with and connecting some of the corresponding inner and outer links of the chains and carrying said platforms inside of the well, a brake, a centrifugal governor actuated by connection with one of the spiders and adapted to set the brake, spring-closed trap-doors in the sides of the well, and lateral inclined slideways or chutes leading into the vertical well through said doors, substantially as described and shown.

4. In a fire-escape located against the outside of a building, a vertical tubular inclosure or well, spiders at top and bottom weighted heavier on one side than the other, endless chains working over the spiders and on the inside of the well, platforms attached to and carried by the chains, a brake, a centrifugal governor connected with the brake to set it and actuated from one of the revolving spiders, spring-closed trap-doors in the sides of the well, a lock to hold the doors closed, means on the platforms when empty for unlocking the doors, and lateral inclined slideways or chutes leading into the vertical well through said doors, as and for the purposes specified.

5. In a fire-escape located against the outside of a building, a vertical tubular inclosure or well, spiders at top and bottom thereof, endless chains working over the spiders and carrying platforms inside of the well, said platforms, doors in the sides of the well, lateral inclined slideways or chutes leading into the vertical well through said doors and means when all of the platforms are empty for bringing them in position opposite the

discharge end of the lateral chutes to receive a person safely from any of said lateral chutes, substantially as specified.

6. In a fire-escape, a tubular inclosure or well located vertically outside of the building, trap-doors in the side of said vertical well, diagonal slideways leading from adjacent windows of the building into the well through said trap-doors, spring-catches to lock the doors, spiders mounted at top and bottom of the vertical well, endless chains passing over the spiders, platforms supported by the chains, bolts on the platform-frames projecting out to contact with the door-catches and unlock the doors, the floors of said platforms being hinged and connected by a lever with the bolt whereby when the hinged platform is lowered by the weight of an occupant the bolt will be drawn in to miss the door-latches, as and for the purposes specified.

7. In a fire-escape, a vertical well, a plurality of platforms traveling longitudinally thereof, doors in the sides of the well, oblique slideways leading into the well through said doors, catches to lock the doors, means actuated by the empty platforms as they pass, for unlocking the doors and means for unlocking all of the doors automatically after the platforms are all at rest.

8. In a fire-escape, the combination with a vertical well of diagonal chutes leading into it, said diagonal chute having a false bottom which is raised automatically by the weight of the occupant to block the entrance to the well, substantially as shown.

In witness whereof I have hereunto set my hand and seal, at Indianapolis, Indiana, this 7th day of May, A. D. 1900.

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

Witnesses:

ANDERSON BRUNER,
JOSEPH A. MINTURN.