(No Model.)

E. RANK.

FIRE ESCAPE.

No. 485,656. Patented Nov. 8, 1892.

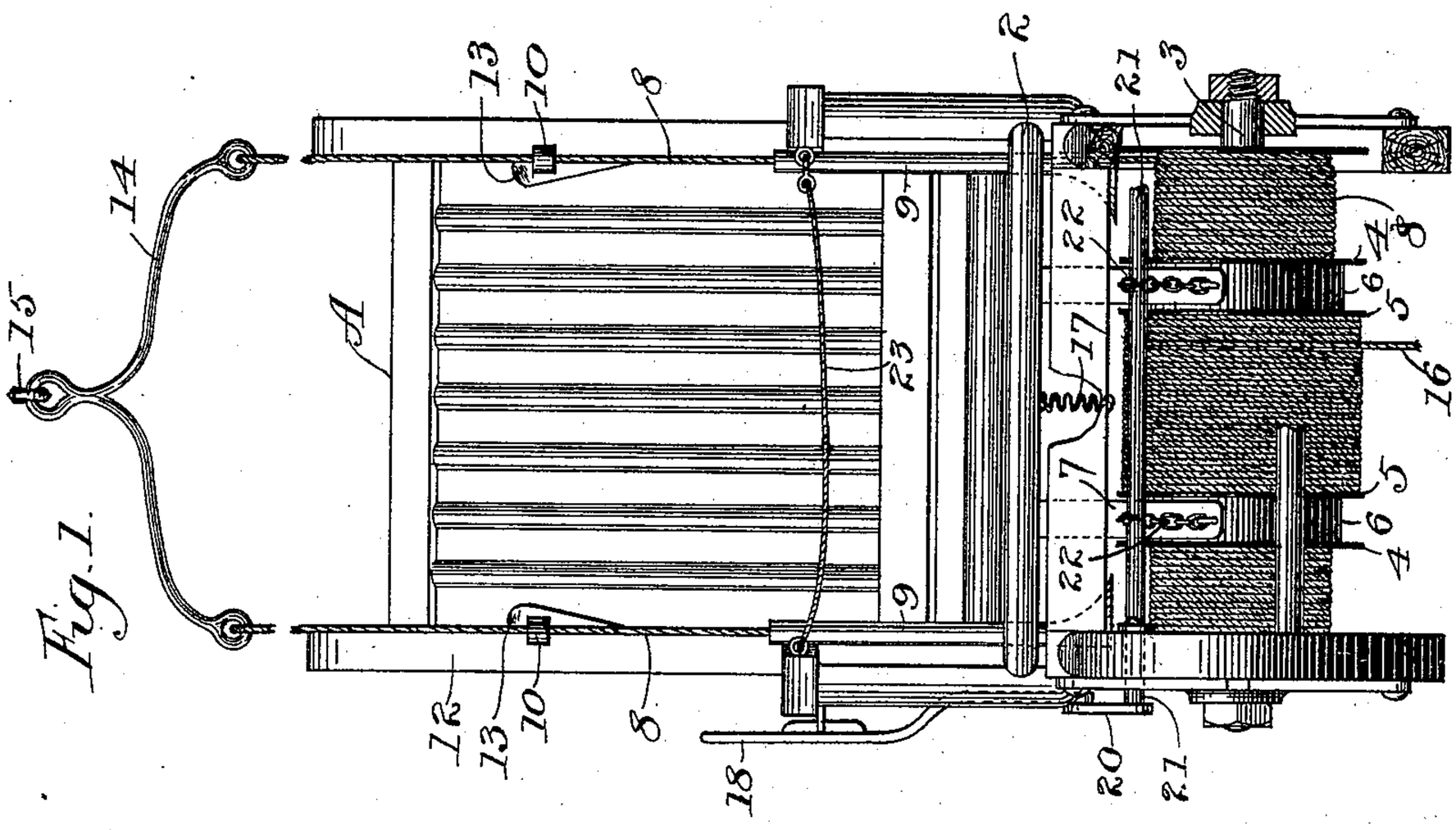

Fig. 1.

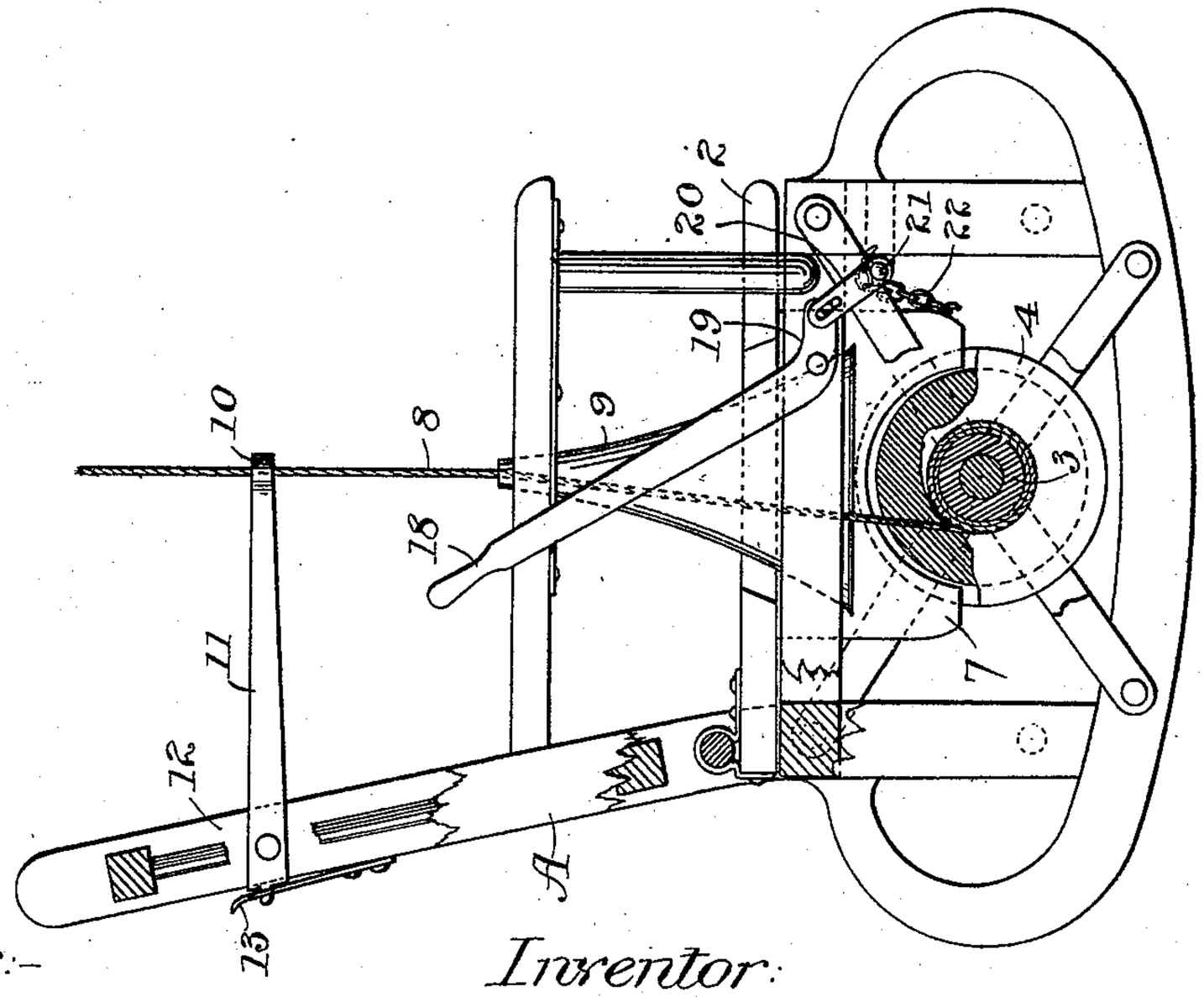

Fig. 2.

Witnesses:-
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UNITED STATES PATENT OFFICE.

ERDMANN RANK, OF ST. PAUL, MINNESOTA.

FIRE-ESCAPE.

SPECIFICATION forming part of Letters Patent No. 485,656, dated November 8, 1892.

Application filed May 31, 1892. Serial No. 434,880. (No model.)

To all whom it may concern:

Be it known that I, ERDMANN RANK, of St. Paul, Ramsey county, Minnesota, have invented certain Improvements in Fire-Escapes, of which the following is a specification.

My invention relates to improvements in devices designed as means for escape from buildings in case of fire, its object being to provide a device which may be employed ordinarily as a chair and which can in a few moments, in case of danger, be attached to a suitable support and utilized as a carrier for conveying a person to the ground.

To this end my invention consists in providing a chair having a strong frame, to which is attached a drum having ropes wound in the same direction thereon near its ends, by which the device is supported, and another rope wound thereon intermediate of the first and in the opposite direction for hoisting the device. The supporting-ropes are carried through suitable guides upward and may be attached by any convenient means to a support on the outside of the building above the window. As the chair descends with its load the ropes gradually unwind, the speed being controlled by means of spring-actuated friction-brakes applied to the drum, aided, also, by the weight of the occupant of the chair, the brakes being released by means of a hand-lever. When the chair has descended to the ground by pulling upon the hoisting-rope, the drum is caused to turn in the reverse direction, winding the supporting-ropes upon it, thereby lifting the chair to the starting-point in readiness to receive another occupant.

My invention further consists in the specific construction and combination hereinafter described, and particularly pointed out in the claims.

In the accompanying drawings, forming part of this specification, Figure 1 is a front elevation of my improved device, some of the parts being broken away to better show the construction; and Fig. 2 is a side elevation and partial section of the said device.

In the drawings, A represents the chair, having a strong heavy frame, underneath the hinged seat 2 of which is journaled the drum 3. This drum is subdivided by means of the circumferential ribs 4 and 5 into five spaces. In the end spaces are wound the supporting-ropes 8, the ends of which are carried up through the funnel-shaped guides 9 and the eyes 10 of the arms 11, which are pivoted to the back 12 of the chair and supported in their horizontal position by means of the spring-catches 13, the ends of the ropes being attached to a bail 14, which may be connected to a suitable supporting device 15. In the intermediate space between the ribs 5 is oppositely wound the hoisting-rope 16, the free end of which depends from the device. The narrow spaces 6 between the ribs 4 and 5 receive the brakes 7, which are fixed to the seat 2 and which bear normally upon the cylindrical surface of the drum. Their pressure is increased by means of the spring 17, connected to a fixed portion of the frame and to the chair-seat, as shown in Fig. 1. The pressure of the brakes is also increased by the weight of a person occupying the chair, the parts being so arranged that the spring applies the brakes with sufficient force to support the weight of the chair alone, and the added weight of the occupant increases the pressure upon the brakes sufficiently to prevent the turning of the drum under the increased load, and the chair from descending. The brakes are thrown off the drum wholly or partially by means of the hand-lever 18, the fulcrum end 19 being connected to a crank-arm 20, fixed to the rock-shaft 21. To this shaft is connected the chains 22, the other ends of which are attached to the brakes. By throwing the lever 18 backward, as shown in Fig. 2, the shaft 21 is turned to wind the chains 22 upon it, thereby lifting the brake-blocks and releasing the drum. When the device is not in use as a fire-escape, the ropes 8 and 16 are wound upon the drums, the ends of the ropes 8 being in accessible position. The arms 11 are released from their catches and dropped downward along the back of the chair, and the device is then adapted to be used as an ordinary chair. In case of danger the arms 11 are lifted to a horizontal position and there supported by means of the catches 13. The ropes 8 are then run through the guides 9 and the eyes 10 and connected to the support, as described. The device can then be swung

out of the window, where it is held from descending by the tension of the spring 17 applying the brakes to the drum. A person can then step out of the window and seat himself in the chair, the retaining-strap 23 being fastened in position to prevent danger of falling out of the chair. The lever 18 is then thrown backward by hand and the brakes loosened from the drum, when the chair will descend, as impelled by its own weight and that of the occupant. If for any reason the lever 18 is released, it is thrown forward by the tension of the spring 17 and the brakes are instantly applied, so as to stop the descent of the device. The guides 9 and the arms 11 serve to keep the device at all times in upright position, even if the weight of the occupant of the chair would tend to turn it in either direction. When other persons are to be rescued from the building, after the device has descended the lever 18 is thrown backward to the position shown in Fig. 2, to release the brakes, and secured in any suitable manner. By pulling upon the hoisting-rope 16 the drum is rotated to wind the ropes 8 upon it, thereby quickly raising the device to the point of starting, when the operation can be repeated indefinitely.

I claim—

1. The combination, with the chair having a hinged seat, of a drum journaled underneath said seat, the ropes wound upon said drum and adapted to be carried upward and connected to a supporting device, the hoisting-rope wound oppositely upon said drum, brakes fixed to said chair-seat and bearing upon said drum, the spring for applying said brakes, and means for releasing said brakes at will, substantially as described.

2. The combination, with the chair having a hinged seat, of the drum journaled underneath the same, having circumferential ribs subdividing it into a series of annular spaces, the supporting-ropes wound thereon, the guides for said ropes, means for attaching the same to a suitable support, the hoisting-rope wound oppositely upon said drum, the brake-blocks bearing upon said drum, the spring for holding the brakes normally in contact with said drum, and means for releasing said brakes, substantially as described.

3. The combination, with the chair having a hinged seat, of the drum journaled underneath the same, the supporting-ropes wound upon said drum and carried through suitable guides to support the device, the hoisting-rope wound oppositely upon said drum, the brake-blocks carried by said chair-seat, and means independent of the weight of the seat and occupant for automatically applying the same, the pressure being increased by the weight of the occupant, and means for releasing said brakes, substantially as described.

4. The combination, with the chair A, having the hinged seat, of the drum journaled transversely underneath the seat, the supporting-ropes wound near the ends of said drum, the guides for said ropes, means for securing said ropes to a suitable support, the hoisting-rope wound oppositely upon said drum, the spring-actuated brakes carried by said seat, adapted to bear upon said drum, the hand-lever, and the means interposed between the same and said brakes, whereby the brakes may be released from said drum at will, substantially as described.

5. The combination, with the carrying device, of the suspending and hoisting ropes wound oppositely thereon, the automatic brakes acting independently of the weight of the seat and occupant, and the means for releasing said brakes, substantially as described.

6. The combination, with the carrying device, of the drum journaled thereon, the suspending and hoisting ropes wound oppositely upon said drum, automatic means independent of the weight of the seat and occupant for applying the brakes to said drum, means actuated by the weight of the occupant for increasing proportionately the pressure of the brakes, and means for releasing said brakes, substantially as described.

In testimony whereof I have hereunto set my hand this 25th day of May, 1892.

ERDMANN RANK.

In presence of—

T. D. MERWIN,

H. S. JOHNSON.