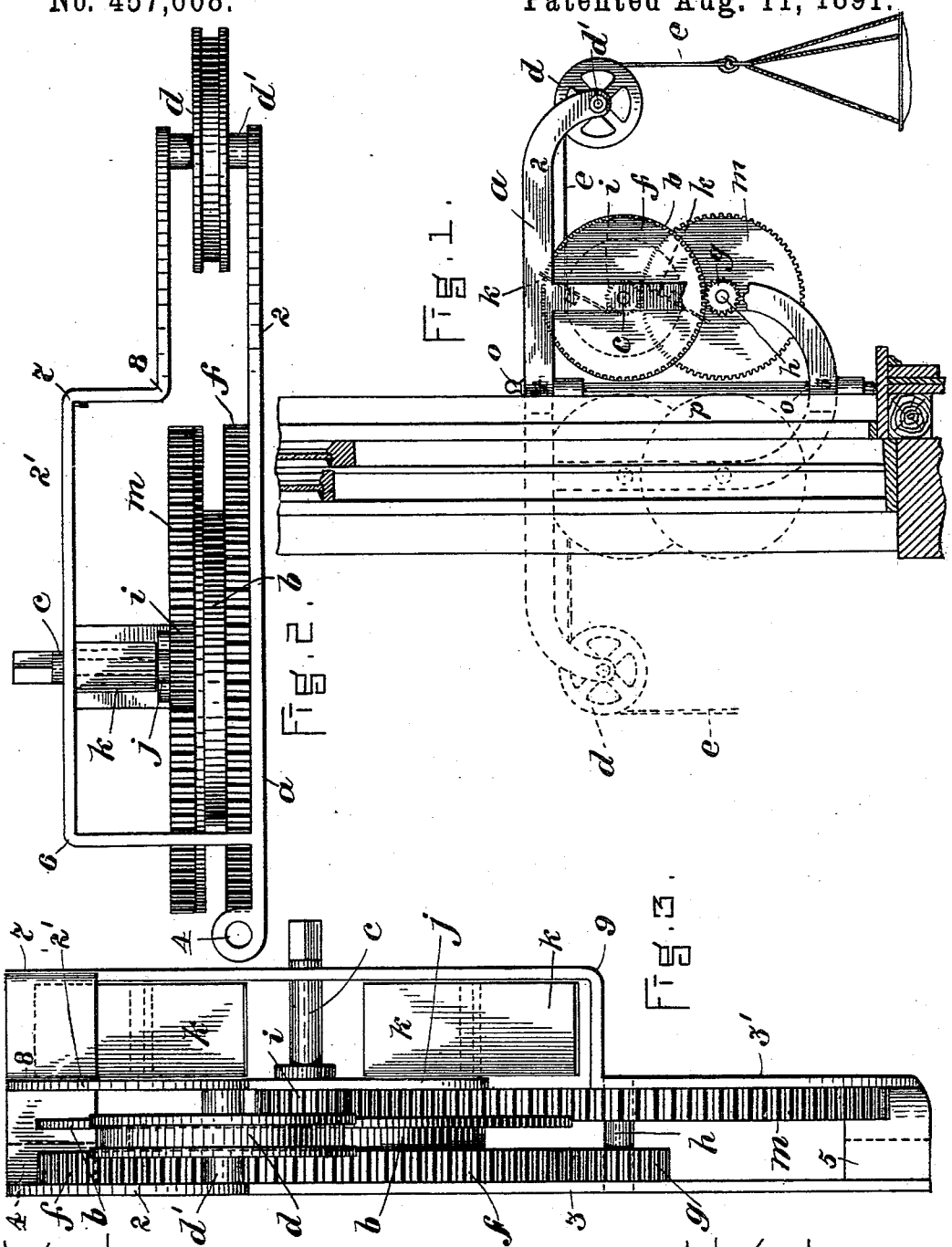
(No Model.) 2 Sheets—Sheet 1.

C. C. ROGERS.

FIRE ESCAPE.

No. 457,608. Patented Aug. 11, 1891.



WITNESSES:

C. Henry Marsh

A. D. Harrison

INVENTOR.

C. C. Rogers

by Wright Brown Quinby & Atty's

(No Model.) 2 Sheets—Sheet 2.

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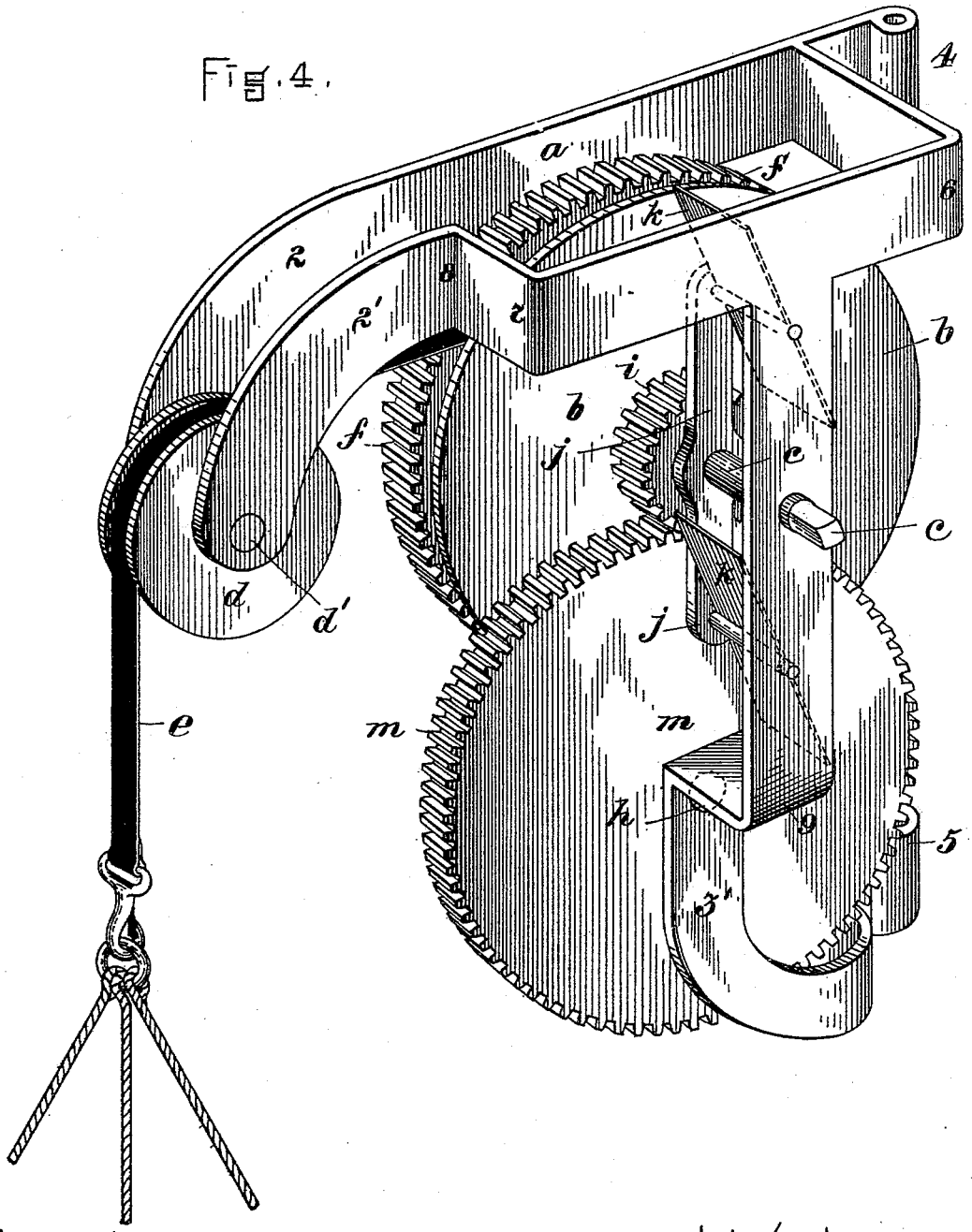
Fig. 4.



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UNITED STATES PATENT OFFICE.

CHARLES C. ROGERS, OF BROCKTON, MASSACHUSETTS, ASSIGNOR, BY DIRECT AND MESNE ASSIGNMENTS, OF TWO-THIRDS TO CHARLES E. McELROY AND CHARLES C. MERRITT, OF SAME PLACE.

FIRE-ESCAPE.

SPECIFICATION forming part of Letters Patent No. 457,608, dated August 11, 1891.

Application filed November 15, 1890. Serial No. 371,511. (No model.)

To all whom it may concern:

Be it known that I, CHARLES C. ROGERS, of Brockton, in the county of Plymouth and State of Massachusetts, have invented certain new and useful Improvements in Fire-Escapes, of which the following is a specification.

This invention has for its object to provide a simple and efficient fire-escape adapted to permit the gradual descent of a person from an elevated point without any dangerous acceleration of speed during the descent; and it consists in the improvements which I will now proceed to describe and claim.

In the accompanying drawings, forming a part of this specification, Figure 1 represents a side elevation of my improved fire-escape attached to a window-casing, and shown by full lines in its inoperative position, or swung into the room, and by dotted lines in its operative position, swung out through the window. Fig. 2 represents a top view on a larger scale, and Fig. 3 represents a front view. Fig. 4 represents a perspective view.

The same letters of reference indicate the same parts in all the figures.

In carrying out my invention I provide a swinging crane or derrick *a*, preferably composed of the substantially horizontal arms 2 2′, curved downward at their outer ends, the inner end of the arm 2 having a vertical socket 4 formed upon it, and the vertical arms 3 3′, extending downwardly from the arms 2 2′ and curved inwardly at the lower ends, the lower end of the arm 3 being provided with a vertical socket 5 in line with the socket 4. The arms 2 2′ and 3 3′ are suitably connected, so as to form a rigid frame which supports the shafts of the several wheels and pinions presently described, the arm 2′ being affixed at its inner end to the arm 2 and bent at 6, 7, and 8, as shown in Fig. 2, for a purpose presently described.

b represents a drum or pulley affixed to a shaft *c*, which is journaled in bearings in the arms 3 3′. To the periphery of said drum or pulley is affixed one end of a steel ribbon or strip *e*, which extends from the drum *b* over a flanged pulley *d*, which is mounted on a shaft *d*′ journaled in bearings in the outer ends of the arms 2 2′. The end of the strip *e* that depends from the pulley *d* will be provided with suitable means for connection with the body of a person who is to use the fire-escape. Such means may be a chair or a system of straps, or any other suitable device or devices whereby a human body may be securely connected with the free end of the strip *e*.

f represents a gear-wheel of considerable diameter affixed rigidly to the drum *b*, said gear preferably forming one of the flanges of said drum, as shown in Fig. 2.

g represents a pinion of much smaller diameter than gear *f*, said pinion being affixed to a shaft *h*, journaled in bearings in the arms 3 3′ below the shaft *c*.

m represents a gear-wheel, which is preferably about the same diameter as the gear *f*, and is rigidly affixed to the shaft *h*.

i represents a pinion, preferably of about the same diameter as the pinion *g*. Said pinion *i* meshes with the gear *m*, and is mounted to rotate loosely on the shaft *c* beside the drum *b*.

To the pinion *i* are affixed arms *j*, carrying fans or blades *k*. There may be any suitable number of these arms and blades, two being shown in the drawings, but it is obvious that a greater number may be employed, if desired. Said arms and blades constitute a fan-governor which rotates with the pinion *i*, and by the resistance it affords to the atmosphere retards the rotation of said pinion, and through the described gearing retards the downward movement of a body attached to the strip *e* sufficiently to prevent any dangerous acceleration of speed of said body in passing from an elevated point on a building to the ground, the said system of gearing, comprising the pinion *i*, gear *m*, pinion *g*, and gear *f*, being so proportioned that the governor-blades *k*, when made of any area that is practicable in view of the dimensions of the apparatus, can readily control the descent of a body or load of the weight of one human being.

The frame or derrick *a* is supported by the

engagement of hinged members or pintles *o o* with the sockets 4 5, said members *o o* being affixed in any suitable way to the casing *p* of a window close to the window-opening, so that the derrick and the mechanism carried thereby can be swung into the room for safe keeping, as shown by full lines in Fig. 1, and out of the room through the window, as shown in dotted lines in Fig. 1, the pulley *d* being projected outside of the wall of the building when the crane is in the last-named position.

When the device is to be used, it is swung out through the window, and the person desiring to descend engages himself with the free end of the strip *e* and emerges from the window. His weight on the strip will immediately cause the strip to unwind from the drum *b*, but the rotation of said drum will be so retarded by the fan-governor through the intermediate gearing that the descent will be gradual and safe.

It will be seen that the described device is extremely simple, and that it is therefore capable of being made very strong, reliable, and durable. The bent form of the arm 2′, (shown in Fig. 2,) creates a space between the arms 2 and 2′ for the revolution of the fan-governor between said arms. The arm 3′ is bent at 9, Figs. 3 and 4, for the same purpose.

The loose pinion carrying the fan-governor located on the same shaft with the drum makes the construction of the machine compact, and the train of gearing connecting said pinion with the drum gives the governor sufficient power to control the drum without requiring the fan-blades to be made inconveniently large. Hence a fan that is small enough to be contained between the side pieces of the frame will be found sufficient. It is obvious that a wire or other cord may be substituted for the flat strip wound on the drum. The drum may be rotated backwardly to wind up the cord by crank or key applied to the squared end of the shaft to which said drum is affixed.

The drum, the fan-governor affixed to a pinion mounted loosely on the same shaft with the drum, and the system of gearing connecting the loose pinion with the drum may be mounted on a frame or supported in any suitable way, and the invention is not limited to a swinging frame or derrick, although I much prefer the same for obvious reasons.

I claim—

1. In a fire-escape, the combination of a supporting-frame adapted to be connected to a fixed support, a shaft journaled in bearings in said frame, a winding drum or pulley and a loose pinion both mounted on said shaft, a fan-governor affixed to said pinion, and a train of gearing connecting the loose pinion with the drum or pulley, as set forth.

2. In a fire-escape, the combination of the frame or derrick having hinged members adapted to co-operate with fixed hinge members, the shaft *c*, journaled in bearings in said frame, the drum or pulley *b*, affixed to the shaft *c* and provided with flanges to guide a band or cord *e*, a gear *f*, also affixed to the shaft *c*, a shaft *h*, journaled in bearings in the frame and provided with a pinion *g*, meshing with the gear *f*, a gear *m*, affixed to the shaft *h*, a pinion *i*, mounted loosely on the shaft *c* and meshing with the gear *m*, and a fan-governor affixed to said loose pinion, all arranged and operated substantially as set forth.

3. In a fire-escape, the combination of the frame or derrick having hinge members adapted to co-operate with fixed hinge members, the shaft *c*, journaled in bearings in said frame, the drum or pulley *b*, affixed to the shaft *c* and provided with flanges to guide a band or cord *e*, a gear *f*, also affixed to the shaft *c*, a shaft *h*, journaled in bearings in the frame and provided with a pinion *g*, meshing with the gear *f*, a gear *m*, affixed to the shaft *h*, a pinion *i*, mounted loosely on the shaft *c* and meshing with the gear *m*, a fan-governor affixed to said loose pinion, and a loose band or cord-guiding pulley *d*, journaled in said frame in position to guide the band *e* from the drum or pulley *b*, as set forth.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, this 8th day of November, A. D. 1890.

CHARLES C. ROGERS.

Witnesses:

CHARLES E. MCELROY,

C. F. BROWN.