No. 823,720. PATENTED JUNE 19, 1906.

# McCLELLAN FULLENLOVE.

## ELEVATOR BRAKE.

APPLICATION FILED JAN. 13, 1905.

Fig. 1.

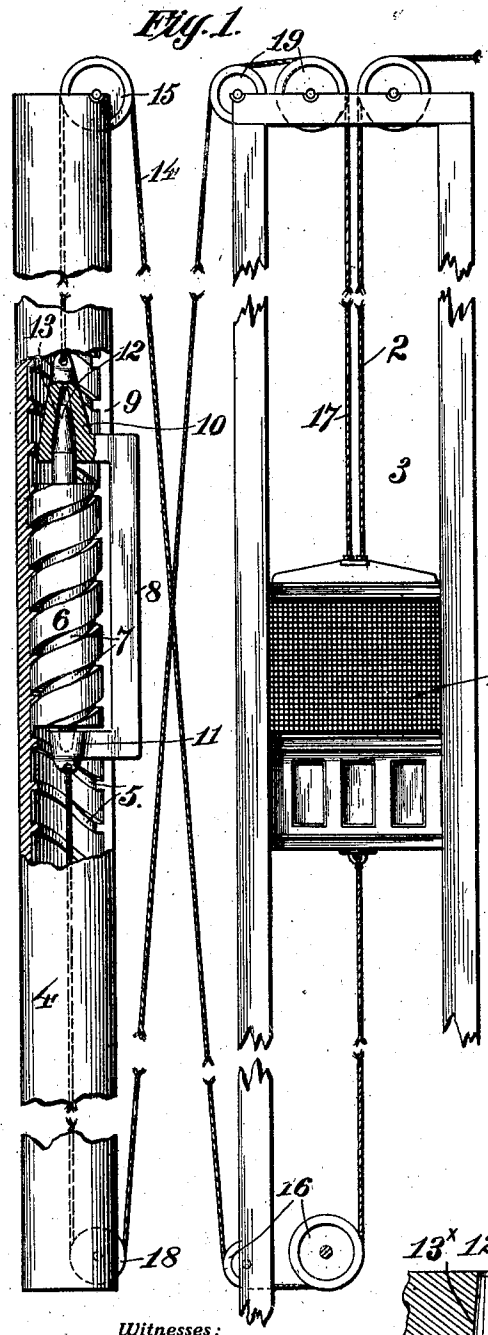



Fig. 2.

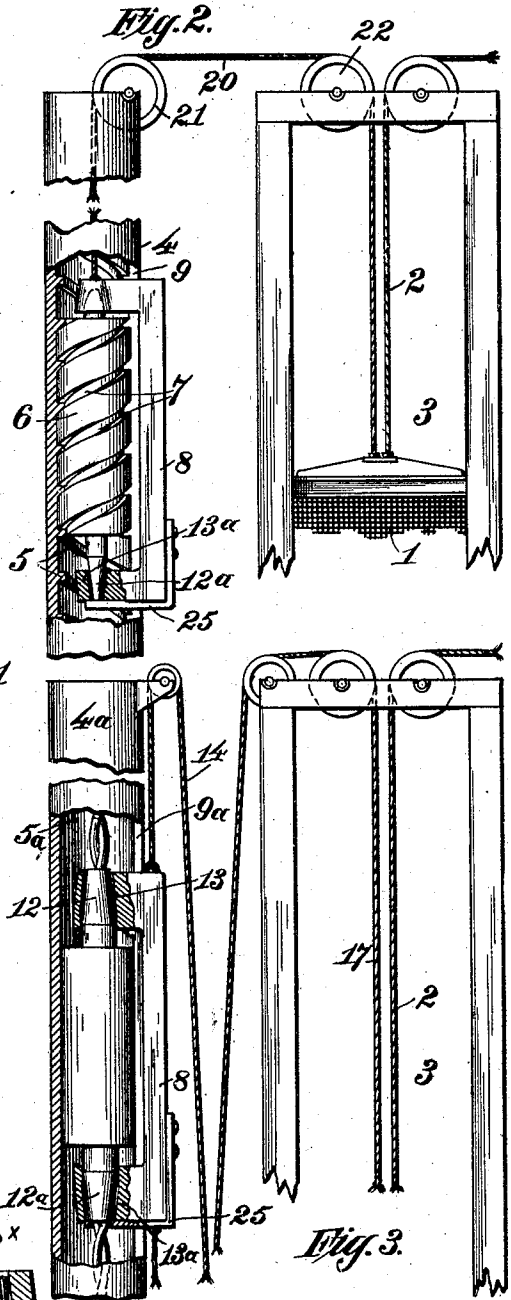
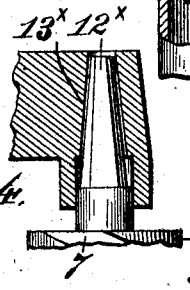



Fig. 3.




Fig. 4.




Witnesses:

M. B. Hayes.

N. W. Simms.

Inventor

McClellan Fullenlove

By

Knight Bros

Attorneys

# UNITED STATES PATENT OFFICE.

McCLELLAN FULLENLOVE, OF LOUISVILLE, KENTUCKY, ASSIGNOR TO FULLENLOVE ELEVATOR COMPANY, OF LOUISVILLE, KENTUCKY, A CORPORATION OF KENTUCKY.

## ELEVATOR-BRAKE.

No. 823,720. Specification of Letters Patent. Patented June 19, 1906.

Application filed January 13, 1905. Serial No. 240,943.

*To all whom it may concern:*

Be it known that I, McCLELLAN FULLENLOVE, a citizen of the United States, residing at 2904 West Kentucky street, Louisville, Kentucky, have invented certain new and useful Improvements in Elevator-Brakes, of which the following is a specification.

This invention relates to elevator-brakes; and it has for an object to provide an improvement in that type of brakes which employs a traveling spiral working on a fixed rack or spiral.

A further object is to provide a brake which operates whenever the speed of the cage becomes excessive in either direction.

Other objects and advantages will appear in the following description and will be more particularly pointed out in the claims.

In the drawings, Figure 1 is a view showing one embodiment of my brake, partially in vertical section and connected to an elevator-cage. Fig. 2 is a like view of another embodiment. Fig. 3 is a like view of still another embodiment, and Fig. 4 is another embodiment of the braking-surfaces.

Referring more particularly to the drawings, 1 indicates the cage, 2 the hoisting-cable, and 3 the elevator-well.

Mounted to one side of the well is a tube 4, provided with an internal rack or spiral 5, on which travels a spiral 6, provided with external threads 7. This spiral is mounted in a U-shaped frame 8, working through a slot 9 in the tube 4 and is capable of a longitudinal axial movement in its bearings 10 and 11. The upper end of the spiral is provided with a conical or tapering braking-surface 12, that engages with a like braking-surface 13 on the U-shaped frame when the spiral moves axially.

The upper part of the U-shaped frame 8 is connected with the bottom of the elevator-cage by a cable 14, that passes over a pulley 15 at the upper end of the tube 4 and around pulleys 16 at the lower end of the elevator-well 3, while the lower part of the U-shaped frame is connected to the top of the cage by a cable 17, which passes around a pulley 18 at the lower end of the tube 4 and over pulleys 19 at the upper end of the well. In this embodiment if the hoisting-rope 2 should break, the cage in dropping would cause the U-shaped frame 8, through the medium of cable 17, to descend quicker than the spiral 6, and thereby move the spiral axially into engagement with conical braking-surface 15 and hold the cage against a further fall. This same action will take place when the cage descends too rapidly, even if the cable does not break.

In the embodiment shown in Fig. 2 the cage 1 is mounted in a well 3, as in Fig. 1, the slotted tube 4 being likewise provided and the U-shaped frame 8, carrying the spiral 6, being of the same construction; but the U-shaped frame is connected at its upper end to the upper end of the cage 1 by a cable 20 instead of to the lower end of said cage. This cable 20 passes over a pulley 21 at the upper end of the tube and pulleys 22 at the upper end of the well. In this embodiment the U-shaped frame and the spiral 6 are provided at their lower portions with a braking-surface $13^a$ and $12^a$, respectively, the braking-surface $12^a$ on the spiral being held off the braking-surface $13^a$ by means of a spring 25, which bears against the lower end of the spiral. This construction operates under the same conditions as those set forth relative to Fig. 1.

In the embodiment shown in Fig. 3 there is provided a tube $4^a$, having a smooth interior and a slot $9^a$. The fixed rack or spiral $5^a$ is in this embodiment in the form of a pair of intertwined cables, and the traveling spiral $6^a$ has a central spiral opening through which the spiral $5^a$ works. The traveling spiral $6^a$ is carried by a U-shaped frame 8, like that shown in Figs. 1 and 2 and carries braking-surfaces 12 and $12^a$, respectively, at its upper and lower ends, which surfaces are adapted for contact with surfaces 13 and $13^a$ on the upper and lower portions of the U-shaped frame 8, the surface $12^a$ being held away from the surface $13^a$ by means of spring 25. The frame 8 is connected with the top and the bottom of the cage 1 by cables 17 and 14, respectively, in the same manner as in Fig. 1. This embodiment operates under the conditions set forth relative to Fig. 1 and in addition, when the car is ascending too rapidly, the braking-surfaces $12^a$ and $13^a$ are brought into action to retard its movement.

In all embodiments the braking-surfaces may be either of the shape of a cone of revolution, as shown in Figs. 1 to 3, or of a polygonal tapering shape, as shown at $12^\times$ and

13× in Fig. 4, or of any other form. The conical surfaces shown in Figs. 1 to 3, however, have a tendency to bind and for this reason those shown in Fig. 4 are at present preferred.

The embodiments herein shown are for the purpose of illustration only, and I therefore desire it to be understood that within the scope of the appended claims I may make various changes without departing from the spirit or sacrificing any of the advantages of my invention.

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

1. In an elevator-brake, the combination with the cage, of a fixed rack, a spiral traveling on the rack, and cable connections between the spiral and the cage.

2. In an elevator-brake, the combination with a cage, of a fixed rack, a spiral traveling on the rack, a frame in which the spiral is axially movable, and cable connections between the frame and the rack.

3. In an elevator-brake, the combination with the cage, of a brake traveling with the cage, and cable connections between the cage and the brake to cause them to move together.

4. In an elevator-brake, the combination with the cage of a traveling spiral, means for braking the spiral, and a cable connection between the cage and the spiral.

5. In an elevator-brake, the combination with a cage, of a spiral traveling with the cage and movable axially downwardly to cause a braking action, and a spring normally preventing the braking action.

6. In an elevator-brake, the combination with the cage, of a spiral traveling with the cage and movable axially downwardly to cause a braking action.

7. In an elevator-brake, the combination with the cage, of a spiral traveling with the cage and movable axially upwardly and downwardly to cause a braking action in either direction.

8. In an elevator-brake, the combination with the cage, of a spiral movable with the cage and upward and downward axially to cause a braking action, and a spring normally preventing the downward axial movement.

9. In an elevator-brake, the combination with the cage of a fixed slotted tube mounted to one side of the cage, a rack mounted within the tube, a spiral for travel on the rack, a frame carrying the spiral and extending through the slot in the tube, means for braking the traveling spiral and a cable connection between the cage and the frame.

The foregoing specification signed at Louisville, Kentucky, this 26th day of November, 1904.

McCLELLAN FULLENLOVE.

In presence of—
F. H. KAPPA,
STELLA C. NORRIS.