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Patented Aug. 2, 1898.

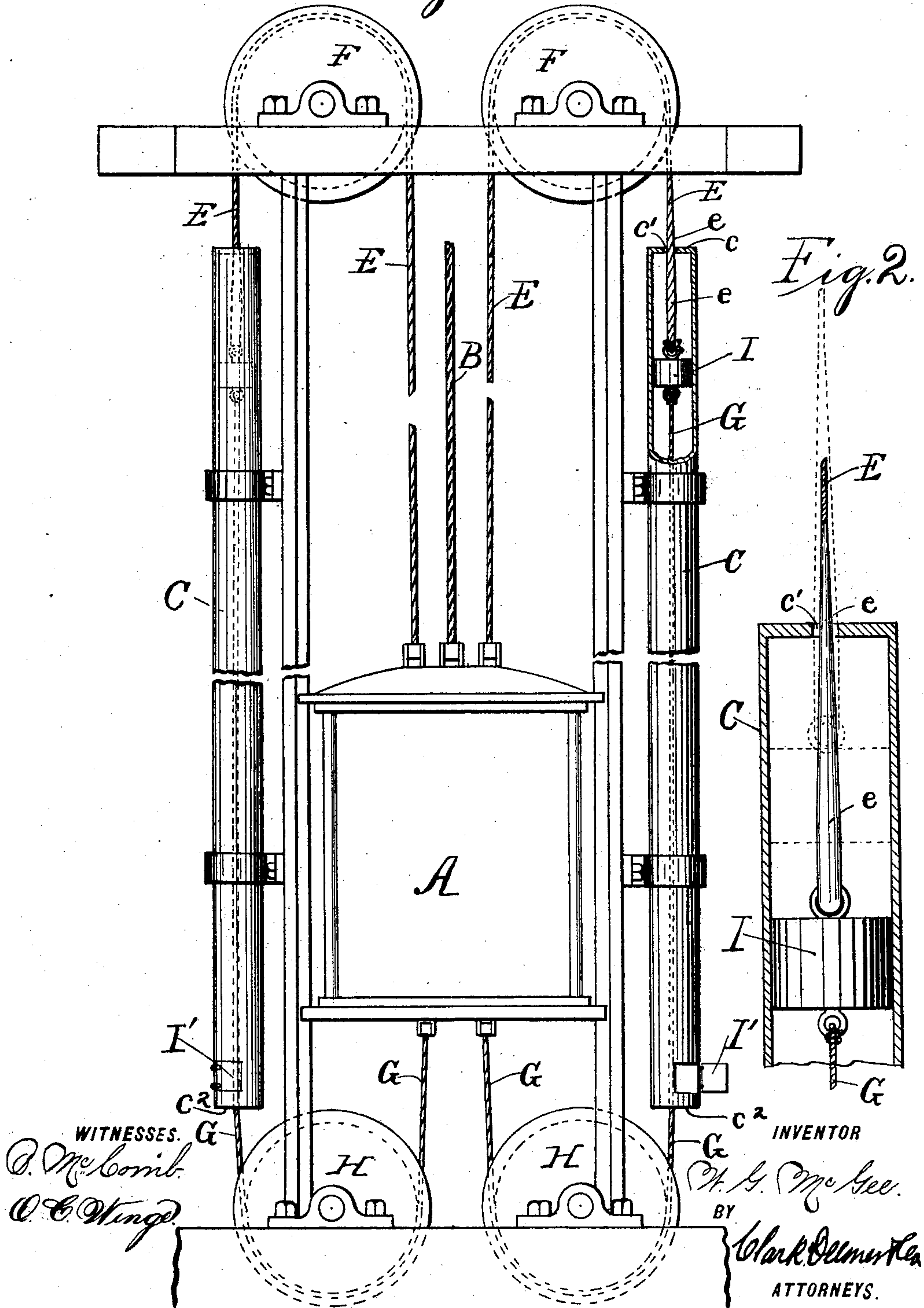
W. G. McGEE.

SAFETY STOP OR BRAKE FOR ELEVATORS.

(Application filed Sept. 16, 1897.)

(No Model.)

Fig. 1



UNITED STATES PATENT OFFICE.

WILLIAM GLENN MCGEE, OF WILMINGTON, DELAWARE.

SAFETY STOP OR BRAKE FOR ELEVATORS.

SPECIFICATION forming part of Letters Patent No. 608,297, dated August 2, 1898.

Application filed September 16, 1897. Serial No. 651,914. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM GLENN MCGEE, a citizen of the United States, and a resident of Wilmington, county of New Castle, and State of Delaware, have invented certain new and useful Improvements in Safety Stops or Brakes for Elevators, of which the following is a specification, reference being had to the accompanying drawings, forming a part thereof, in which similar letters of reference indicate corresponding parts.

This invention relates to that class of safety stops or brakes for elevators which are designed to operate in the event of the breakage of the suspending ropes or cables; and it has for its object to provide a simple and improved pneumatic safety elevator-stop of this character which will possess advantages in point of simplicity, positive action, safety, effectiveness, and general efficiency.

In the drawings, Figure 1 is an elevation, partly in section, showing my improved safety mechanism in connection with the elevator. Fig. 2 is a detail vertical sectional view taken through the top of one of the cylinders.

Referring to the drawings, A designates an elevator-car which may be suspended by ropes or cables B and operate in any suitable or desired manner.

At the sides of the elevator-shaft and co-extensive with the length of travel of the elevator-car are arranged vertical cylinders C, preferably one at each side, in each of which is arranged an air-tight piston D. From the top of the piston extends a rope or cable E up over wheels or pulleys F, arranged at the top of the elevator-shaft, and downwardly to the top of the elevator-car. From the bottom of the piston extends a similar rope or cable G downwardly under similar wheels or pulleys H, arranged at the bottom of the elevator-shaft, and up to the bottom of the car.

The top of the cylinder C is closed by a cap c, having an opening c', through which the cable E passes, this opening being large enough in relation to the diameter of the cable to permit the escape of a sufficient quantity of air from the cylinder during the normal descent of the elevator-car.

The bottom end c² of the cylinders C is opened, and a door I may be provided in the side wall of the cylinder at the bottom or at

any other suitable point, which will permit inspection of the piston when desired.

The end of the upper ropes or cables E which is connected to the top of the piston is gradually tapered or enlarged to its point of connection with the piston, as shown at e. This tapering or enlarged portion is preferably exteriorly smooth and corresponds in its greatest enlargement to the diameter of the opening c', so that it will operate to effectively close the latter.

The operation and advantages of my invention will be readily understood. As the elevator ascends the lower ropes or cables G operate to draw the pistons in the cylinders, there being no compressed-air resistance in this operation by reason of the fact that the bottom of the cylinder is open. As the elevator-car descends the upper ropes or cables E operate to draw the piston up in the cylinder against the air resistance and the compressed air will normally escape through the top opening c' of the cylinder in sufficient quantity so that the ordinary speed of the elevator-car in its descent will not be retarded; but should the suspending rope or cable B break or the elevator-car for any reason be released from its supporting mechanism the action of the piston against the compressed air in the cylinder and the escape of the air through the opening c' will simply result in a slight increase in the speed of the car in its descent by gravity until the end enlargement e registers with the opening c', when the enlargement operates to gradually close the opening and shut off the escape of the compressed air and finally and entirely closes the opening and forms a complete cushion, which will sustain the elevator-car against further descent.

By reason of the improved construction and arrangement comprised in my invention as above described the automatic speed of the elevator-car is gradually accomplished without shock or jar.

I preferably employ two cylinders, with their connected stop mechanism, one at each side the elevator-shaft, so that in the event of one of the cylinder mechanisms becoming inoperative the other would still effectively operate to sustain and stop the descent of the elevator-car.

It will also be understood that my improved

automatic safety elevator-stop serves at all times to prevent excess speed of the car in its descent, the desired speed being readily adjusted by the relative size of the air-escape opening *c'* with relation to the diameter of the upper ropes or cables *E*.

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

10 1. In an improved pneumatic safety elevator-stop mechanism, comprising a compressed-air cylinder having an opening in its head and carrying a piston, the combination therewith of a rope or cable having a tapered end
15 and extending from said piston through the opening and to the elevator-car, the size of the escape-opening with relation to the diameter of the end of said cable operating to regulate the escape of the compressed air in
20 the cylinder with respect to the speed of the car, substantially as and for the purpose set forth.

25 2. The herein-described improved pneumatic safety elevator-stop mechanism, comprising the vertical compressed-air cylinders

arranged at the sides of the elevator-shaft and having an open bottom and a closed top in which is formed an air-escape opening, pistons operating said cylinders, the guide wheels or pulleys at the top of the elevator-shaft, the guide wheels or pulleys at the bottom of the elevator-shaft, weights or cables extending from the pistons around the bottom pulleys and to the elevator-car, and the upper ropes or cables extending from the pistons through the top air-escape openings over the top pulleys and to the top of the elevator-car, said upper ropes or cables being in their main portion of less diameter than said escape-openings and having a tapering enlargement adapted to gradually close the latter, substantially as and for the purpose set forth.

In testimony that I claim the foregoing as my invention I have signed my name, in presence of two witnesses, this 13th day of September, 1897.

WILLIAM GLENN MCGEE.

Witnesses:

C. WM. K. BRADFORD,
CHARLES H. SCOTT.