

(No Model.)

3 Sheets—Sheet 1.

J. ROSE.
ELEVATOR BRAKE.

No. 486,168.

Patented Nov. 15, 1892.

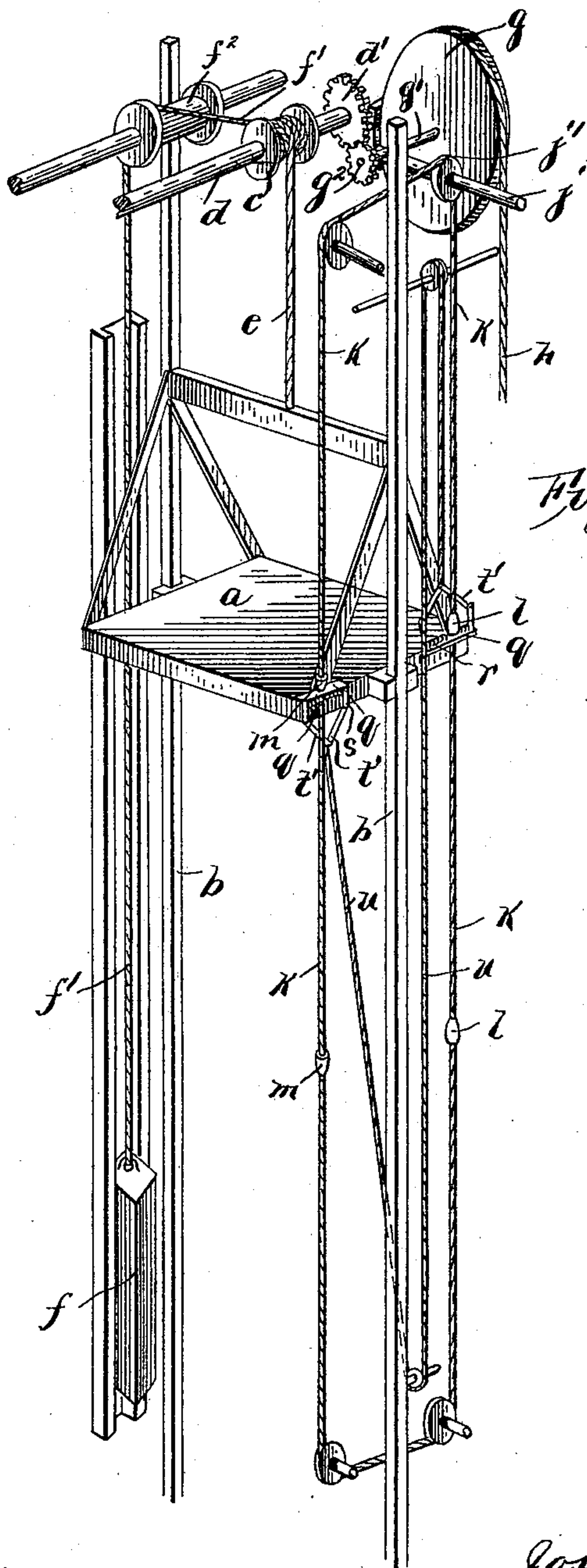


Fig. 1.

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BY C. C. Duffy

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Fig. 2.

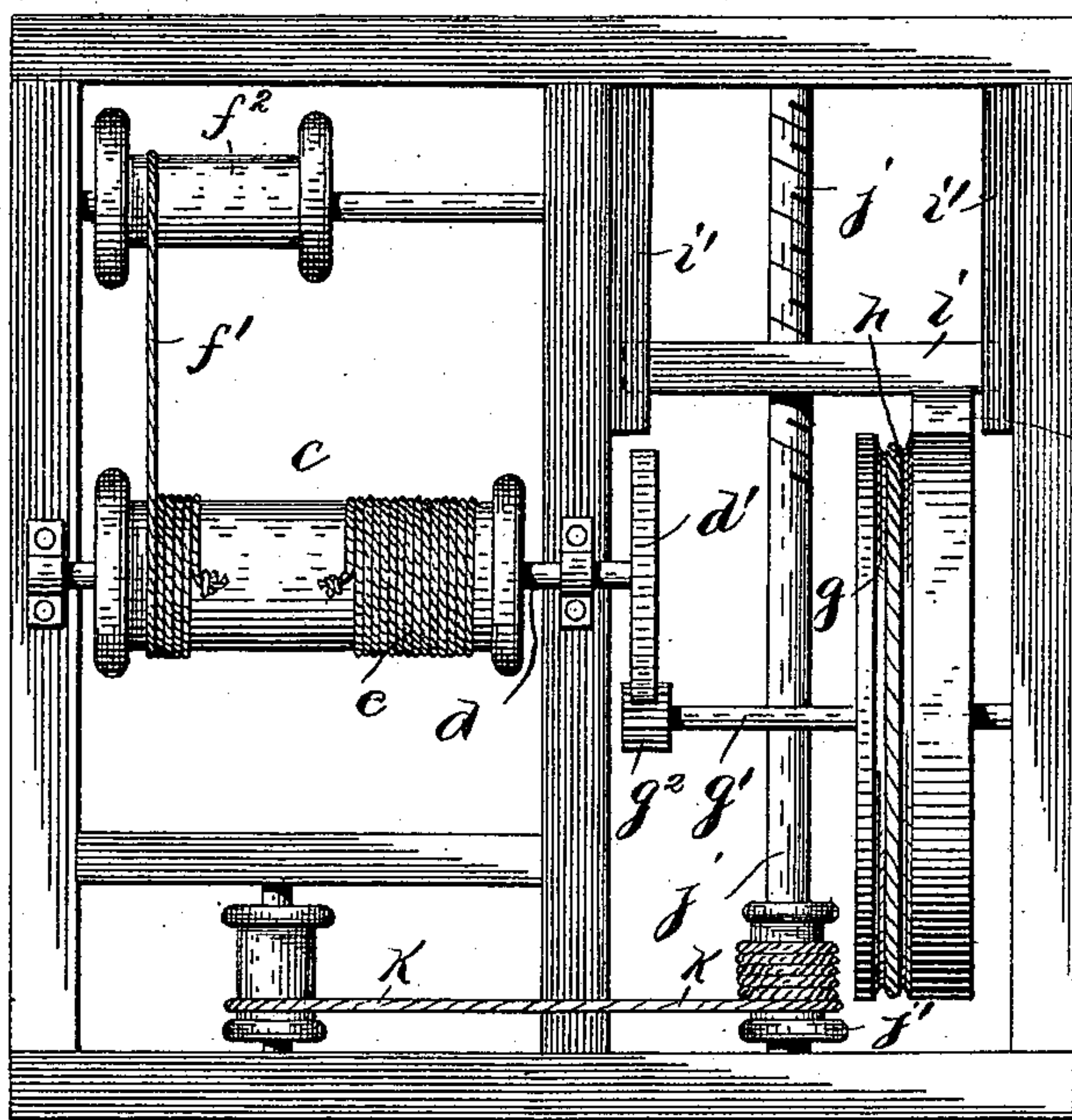
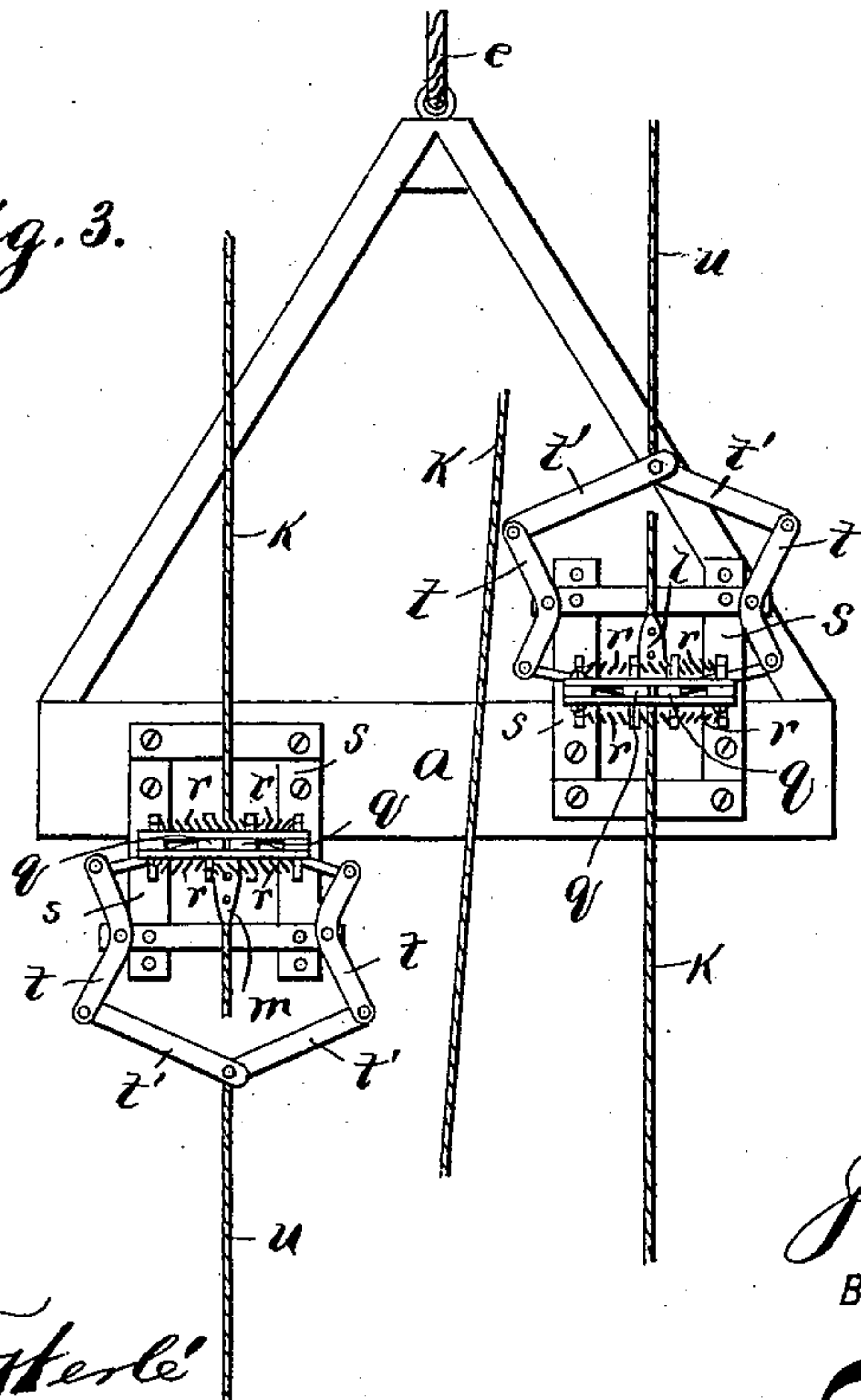


Fig. 3.



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Fig. 4.

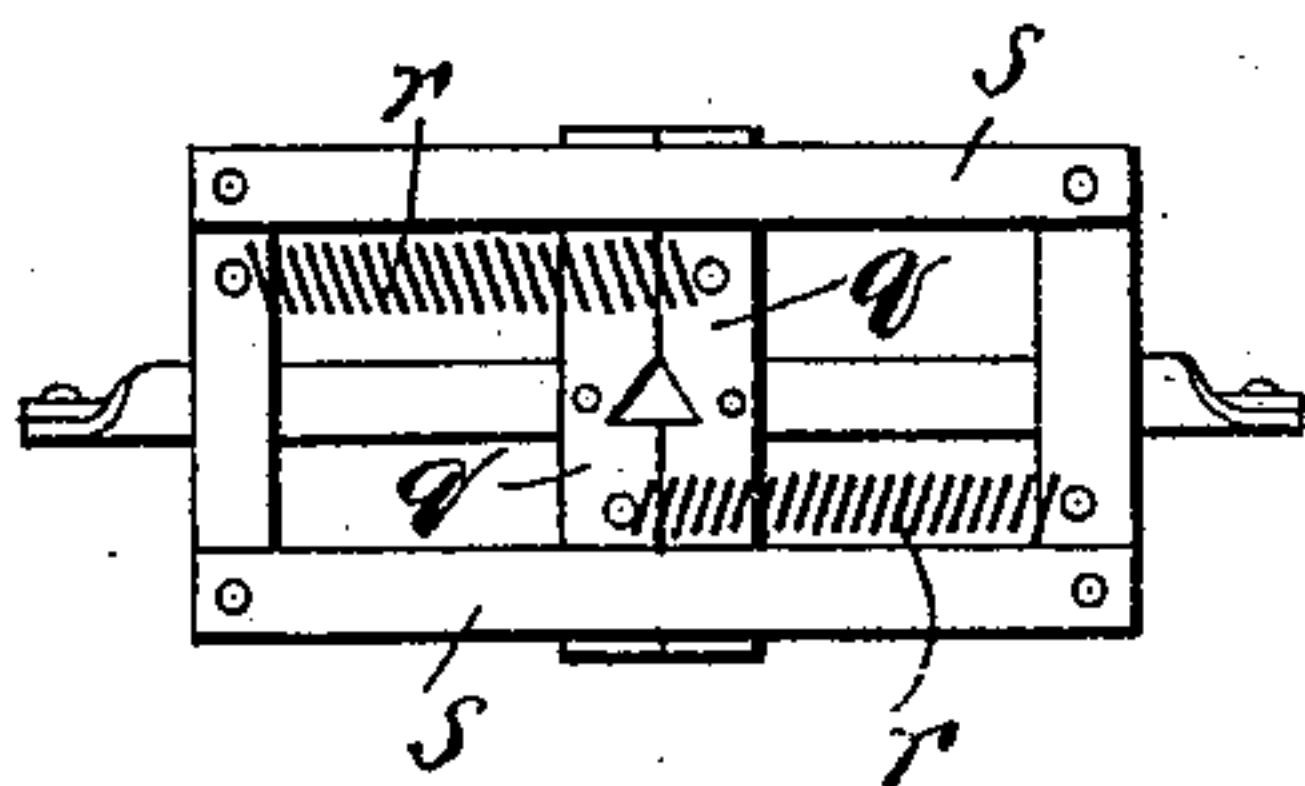


Fig. 5.

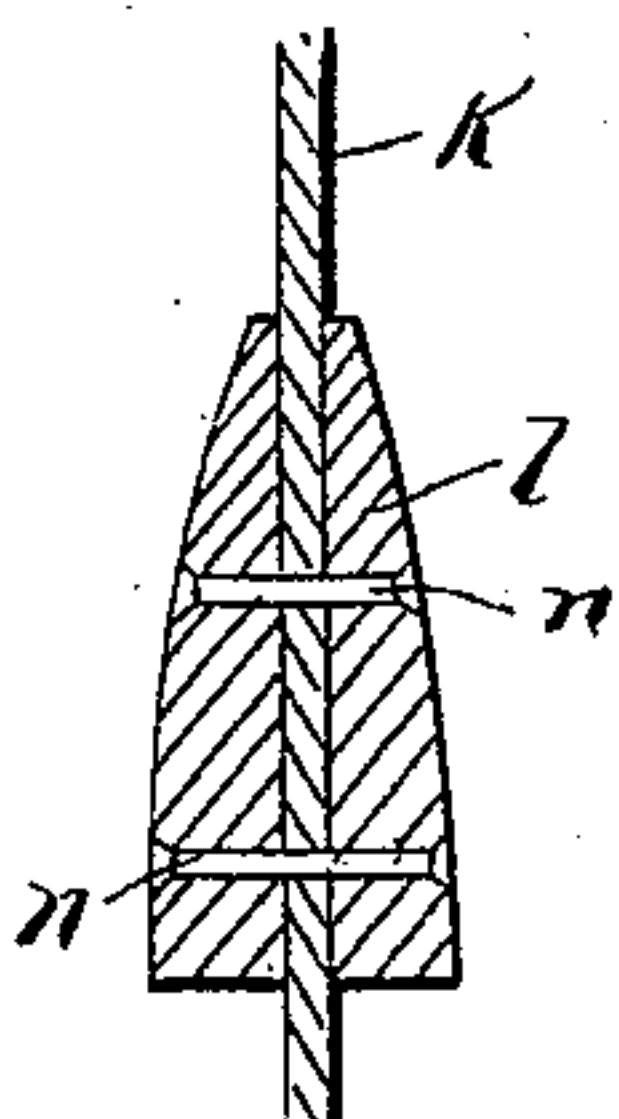
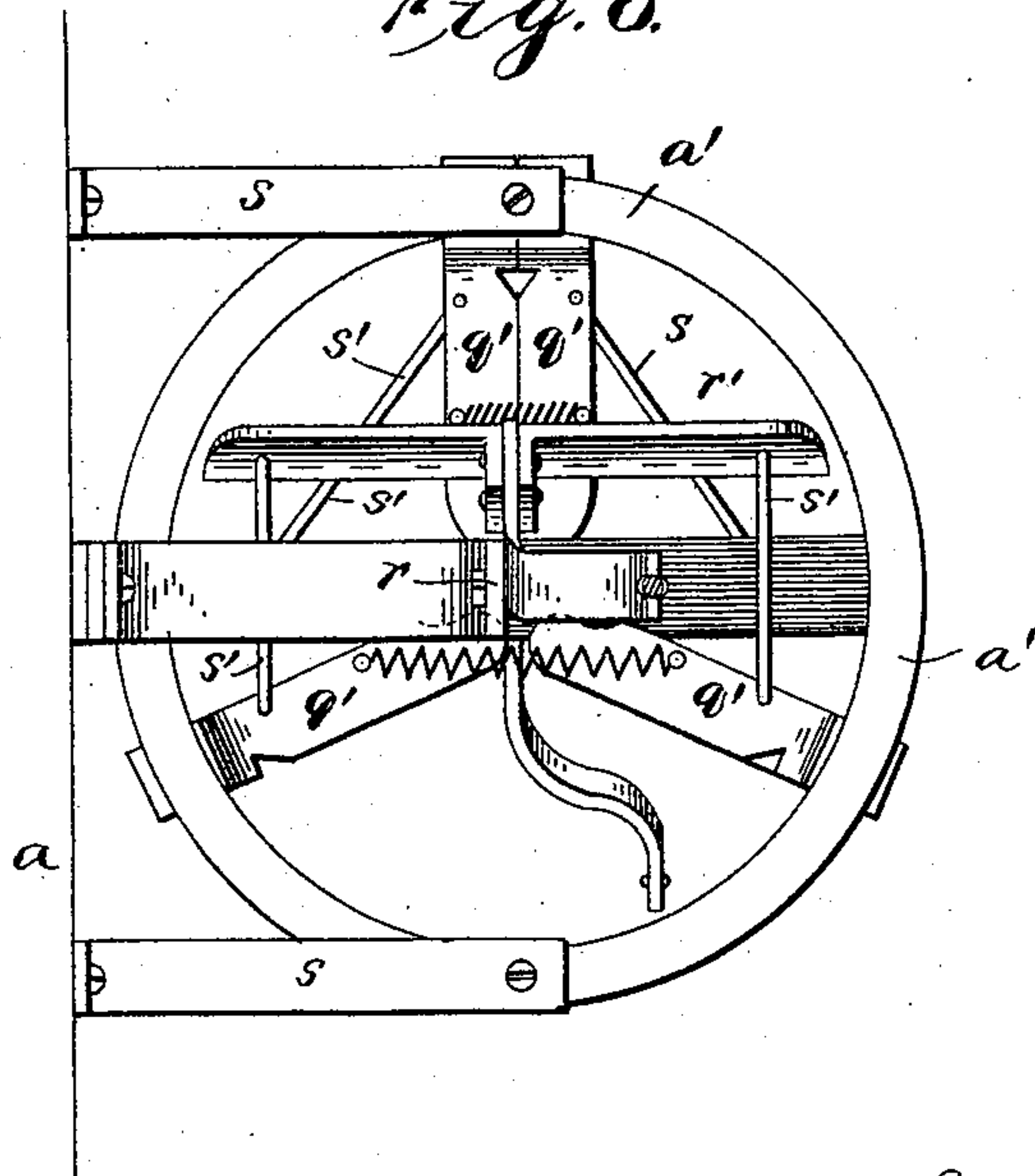


Fig. 6.



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UNITED STATES PATENT OFFICE.

JOSEPH ROSE, OF MEMPHIS, TENNESSEE.

ELEVATOR-BRAKE.

SPECIFICATION forming part of Letters Patent No. 486,168, dated November 15, 1892.

Application filed May 21, 1892. Serial No. 433,843. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH ROSE, of Memphis, in the county of Shelby and State of Tennessee, have invented certain new and useful Improvements in Elevator-Brakes; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form part of this specification.

This invention relates to certain improvements in elevator-brakes.

The object of the invention is to provide an improved automatic brake for hand-elevators exceedingly cheap, simple, and durable in construction and very effective in operation, whereby the movement or speed of the elevator can be easily regulated, so that all danger of the elevator racing up or down is avoided.

The invention consists in certain novel features of construction and in combinations of parts more fully described hereinafter, and particularly pointed out in the claims.

Referring to the accompanying drawings, Figure 1 is a diagrammatical view of the elevator. Fig. 2 is a top plan of the gearing, &c., at the upper story of the building. Fig. 3 is an elevation. Figs. 4 and 5 are details, and Fig. 6 shows a modification.

In the drawings, the reference-letter *a* indicates the elevator-car.

b indicates the ways at the sides of the elevator-shaft. At the upper and lower ends of the shaft suitable supports are provided for the shafting.

c indicates the hoisting-drum mounted at the upper end of the elevator-shaft on horizontal shaft *d*. The hoisting-cable *e* is wound on the hoisting-drum and at its lower end is secured to the elevator-car.

f indicates the counter-weight moving in suitable ways in the elevator-shaft and suspended on cable *f'*, passing up over pulley *f*² to and wound on the hoisting-drum, so as to counterbalance the car.

g indicates the main or master pulley or wheel mounted on shaft *g'* at the upper end of the elevator-shaft. This shaft *g'* has a pin-

ion *g*² rigid thereon meshing with gear-wheel *d'* on the hoisting-drum shaft. The hand-operating or controlling cable *h* passes around and depends from said pulley throughout the length of the elevator-shaft and through or under guides at the lower end of the shaft. This hand-cable passes loosely through or in close proximity to the car, so that the operator can grasp the cable, and thereby rotate the main pulley in either direction desired to pull the car up or down. The hand-cable rotates the pulley and its shaft and pinion, which rotates the hoisting-drum through the medium of its shaft and gear to raise or lower the car in a manner well known and understood.

A suitable brake is provided to operate on some part of the gear controlling the movement of the elevator. This brake is here shown as and preferably operates on the main pulley.

i indicates a sliding block or brake-shoe sliding in ways *i'* toward or from the periphery of the main pulley, which has a wide flange for this purpose.

j indicates a shaft mounted in suitable bearings at the upper end of the elevator-shaft and screw-threaded at one end, which end screws into a nut in the brake-shoe, the shaft *j*, &c., being so arranged that when turned in one direction it will force the brake-shoe against the pulley with great power, and thereby stop rotation thereof and hold the car against up or down movement, and when the shaft rotates in the opposite direction the brake is withdrawn. The screw-shaft is provided with spools *j'*, on which the brake-operating cable *k* is wound or attached. This cable passes under suitable pulleys at the lower end of the shaft. At or near each floor this brake-cable is provided with stops *l m*. Each stop is conical or tapered and formed in two or more longitudinal sections fitted on the cable and secured together and rigidly to the cable by means of screws or rivets *n*, passed through the sections and the cable, whereby exceedingly strong rigid stops are formed on the cable. The stops *l* taper upwardly and form stops against upward movement of the car, while the stops *m* taper downwardly and form stops against the downward movement of the car. These stops are pref-

erably located at or near the different floors or other places where the car is intended to stop. The car is provided with suitable means or attachments—such as gates, jaws, catches, or the like—to engage said stops and operate the brake mechanism to apply the brake and stop the car. Separate jaws or catches or other means are preferably provided to engage said stops and respectively arrest the car against up-and-down movement. These attachments carried by the car preferably consist of a pair of movable jaws q for each side of the brake-cable. The meeting ends of the jaws are V-shaped and beveled, so that when the jaws are held yielding together by springs r an opening will be left through which the brake-cable can freely pass. Suitable frames s are provided for these jaws. These frames are secured to the side of the car and have horizontal ways in which said jaws slide toward and from the brake-cable. A system of levers t is provided for each pair of jaws and is connected with each jaw to separate the same. Controlling-cords u , respectively, for each system of levers extend throughout the length of the elevator-shaft over pulleys at the ends thereof, and each controlling-cord is at one end secured to the car and at the other end to its respective jaw-operating lever or levers, so as to operate said levers to open the jaws when the controlling-cord is pulled in the proper direction, down or up, as the case may be.

The safety attachments or catches just described are arranged to engage the square or shouldered ends of the upwardly and downwardly tapered stops, respectively. Thus when the elevator is going up the jaws of one safety attachment or catch will be separated by the downwardly-tapered stops on the brake-cable to allow the stops to pass through, while the jaws of the other safety attachment, embracing the other side of the brake-cable, will engage the large end of one of the upwardly-tapered stops, and will thereby draw up the brake-cable and rotate the screw-shaft in a direction to force the brake-shoe against the main pulley, and thereby stop the upward movement of the car.

To permit the continuance of the upward movement of the car, the particular catch-controlling cord u is pulled to separate the jaws to allow the same to pass the stop. The brake-cable is then pulled down to rotate the screw to release the brake from the main pulley. The car is now free to move up the next stop having the bottom large end. The operation is the same when the car is going down, only the other set of catches and stops are thrown into play. If desired, the operator in the car can open the various catches as they approach the stops, and thus avoid stopping the car at each floor unless the car attains an undesirable high rate of speed, when the catches can be allowed to engage the stops and immediately stop the car.

Various constructions of catches or stops carried by the car can be employed, and I do not limit myself to any specific construction. In Fig. 6 a double catch is shown; or, in other words, a single frame carries the catches or jaws or gates to arrest the car in both movements, whether upward or downward. This construction is provided with a circular way a' , in which the outer ends of the jaws q' slide, all four jaws being near a common center on a cross-bar. The jaws have the edge notches to receive the brake-cable, and each pair of jaws is held together by a suitable spring, as shown. Each pair of jaws is operated by a lever r' , pivoted to the supporting-frame and connected to the respective jaws by links s' in such a way that the jaws of which pair will be swung open when the lever thereof is swung laterally by the controlling-rope.

The brake is self-acting or automatic. Hence it is an impossibility for the car to run away when, either through carelessness or ignorance, the old style of brake is not properly applied, as the present brake automatically stops the car at every floor, thereby preventing the car running into the gearing or through the roof.

The many and great advantages and utility of this invention are obvious without further explanations.

It is evident that various changes might be made in the forms, constructions, and arrangements of the parts herein specifically described without departing from the spirit and scope of my invention. Hence I do not wish to limit myself to the constructions disclosed.

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

1. The combination, with an elevator-car and its hoisting mechanism, of a brake to act on said hoisting mechanism, a brake-controlling cable extending throughout the elevator-shaft and provided with tapered or conical stops at intervals thereon, adjacent stops on the same side of said cable, tapering in the same direction, and spring-catches on the car, constructed and arranged to open and pass said stops when the small ends thereof are engaged, and thereby not move the cable, but to move the cable when engaging the other ends of the stops, and means to open the jaws or catches.

2. In combination, the elevator-car and hoisting mechanism, a brake to stop the car, a controlling-cable for said brake, extending throughout the elevator-shaft and respectively provided with oppositely-tapered stops at intervals thereon, a pair of spring jaws or catches for each controlling-cable to engage the stops and move the cable for the purpose set forth, and means for opening each pair of jaws.

3. In combination, an elevator-car, a hoist-

ing mechanism therefor comprising a hoisting-drum provided with a counter-weight mechanism, a main pulley for operating the hoisting-drum, and a hand-cable passing over
5 said pulley and through the elevator-shaft, a screw-threaded shaft, a brake-shoe on said shaft to move thereby into and out of engagement with said pulley, an operating-cable for said screw-shaft, extending from said shaft
10 throughout the elevator-shaft and provided with stops arranged at intervals thereon, and the spring-jaws on the car arranged to engage said stops to apply the brake, and connections for opening said jaws, substantially as
15 described.

4. In a hand-elevator, the combination of the elevator-car, the hoisting mechanism comprising the main pulley, a screw-threaded shaft, a brake-shoe mounted thereon and
20 moved thereby into or out of engagement with said pulley, an endless controlling-cable extending throughout the elevator-shaft from said screw-threaded shaft to rotate the same and provided with oppositely-tapered stops
25 at intervals on its opposite sides, respectively, and catches arranged substantially as described on the car that engage said stops and move the cable to apply the brakes.

5. The elevator-car provided with a pair of
30 notched jaws or catches, springs yieldingly holding the same together, ways in which said jaws slide, means for opening the jaws, a connection secured to said means for controlling the jaws and extending throughout the ele-
35 vator-shaft, the hoisting mechanism, a brake-controlling cable extending through the shaft

and having stops engaged by said jaws, and a brake controlled by said cable.

6. The combination of an elevator-car and operating mechanism therefor, an endless ca- 40
ble extending throughout the elevator-shaft and controlling the operating mechanism, said cable being provided with oppositely-ar-
ranged stops on its opposite sides, respect- 45
ively, catches on the car through which opposite sides of said cable respectively pass, said catches and stops being so arranged that one
catch will engage the stops and operate the cable when the car is going up and the other
catch when the car is going down, substan- 50
tially as described.

7. In combination, an elevator-car and its operating mechanism, an endless cable controlling said mechanism and extending
throughout the elevator-shaft, the opposite 55
sides of said cable being respectively provided with oppositely-tapered stops, two pairs of swinging spring-controlled jaws on the car, each side of the cable respectively passing
between the jaws of one pair, levers arranged 60
to open said jaws, and a connection extending through the shaft and connected to said levers to open the jaws, substantially as described.

In testimony that I claim the foregoing as 65
my own I affix my signature in presence of two witnesses.

JOSEPH ROSE.

Witnesses:

T. O. VINTON,
T. J. NEALIS.