

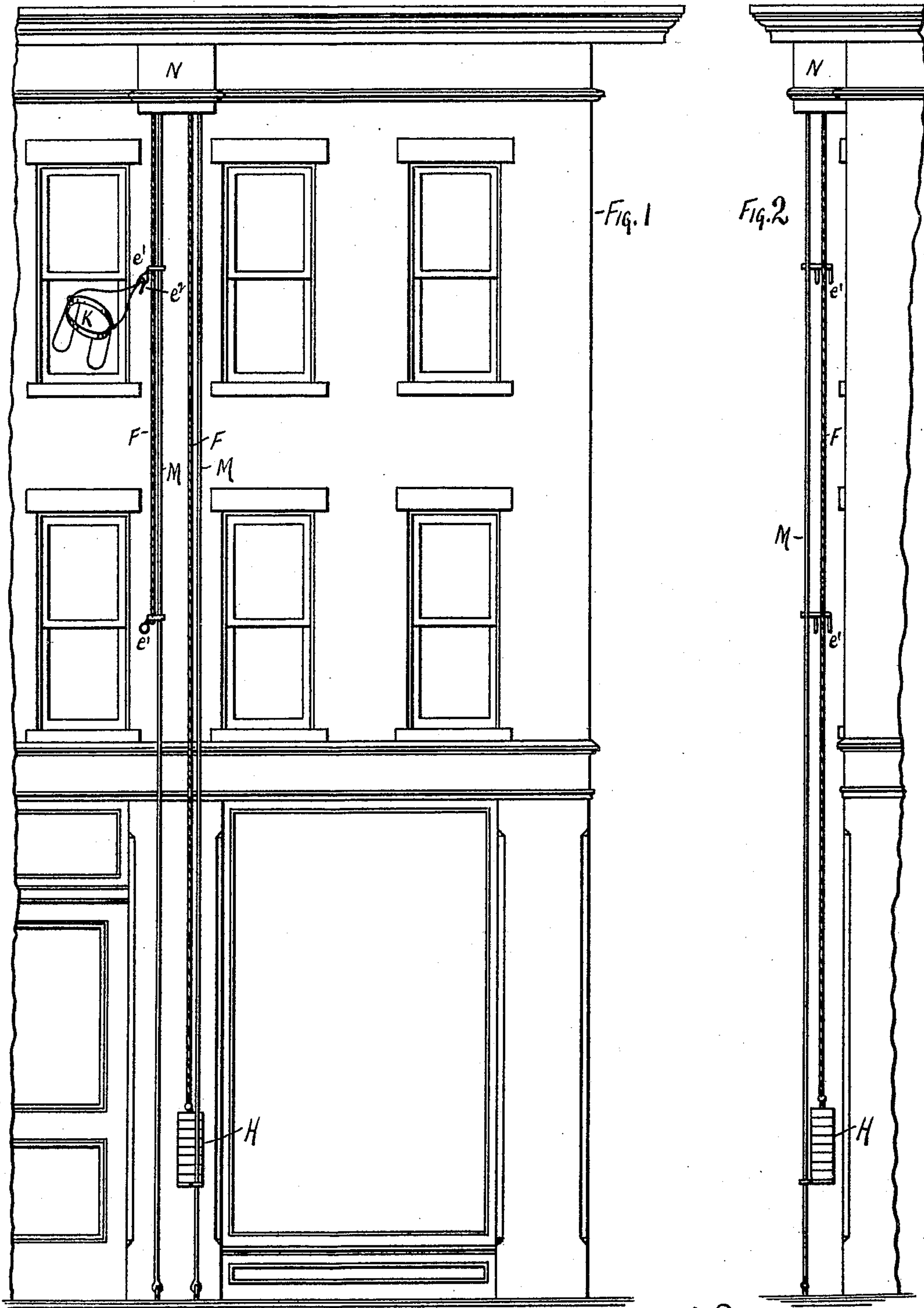
(No Model.)

2 Sheets—Sheet 1.

J. D. BRAINARD.
FIRE ESCAPE.

No. 481,252.

Patented Aug. 23, 1892.



WITNESSES.
Richard Bow,
H. R. Duckworth

Julius D. Brainard
INVENTOR, BY
Charles H. Woodward, Att'y.

(No Model.)

2 Sheets—Sheet 2.

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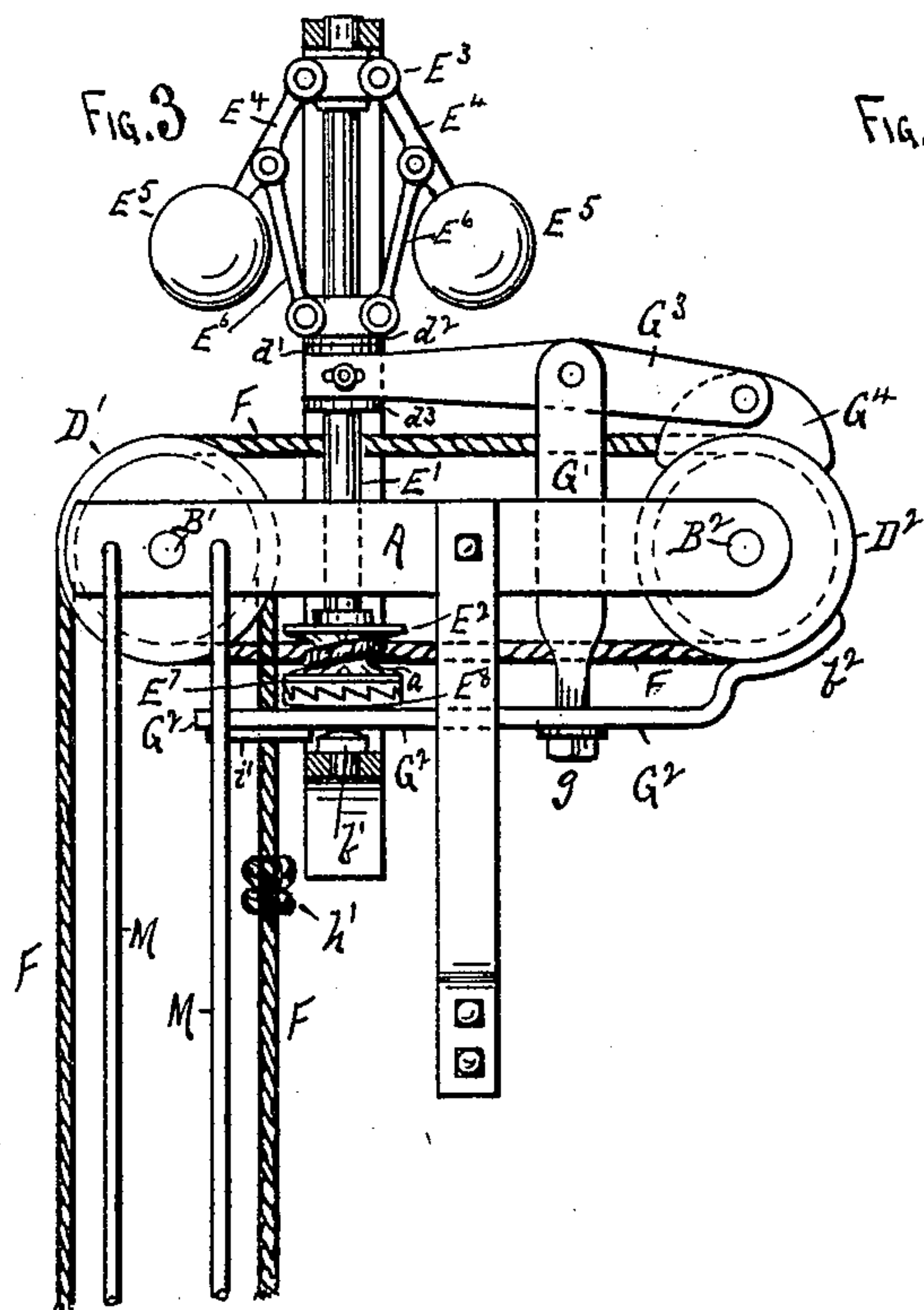


FIG. 4

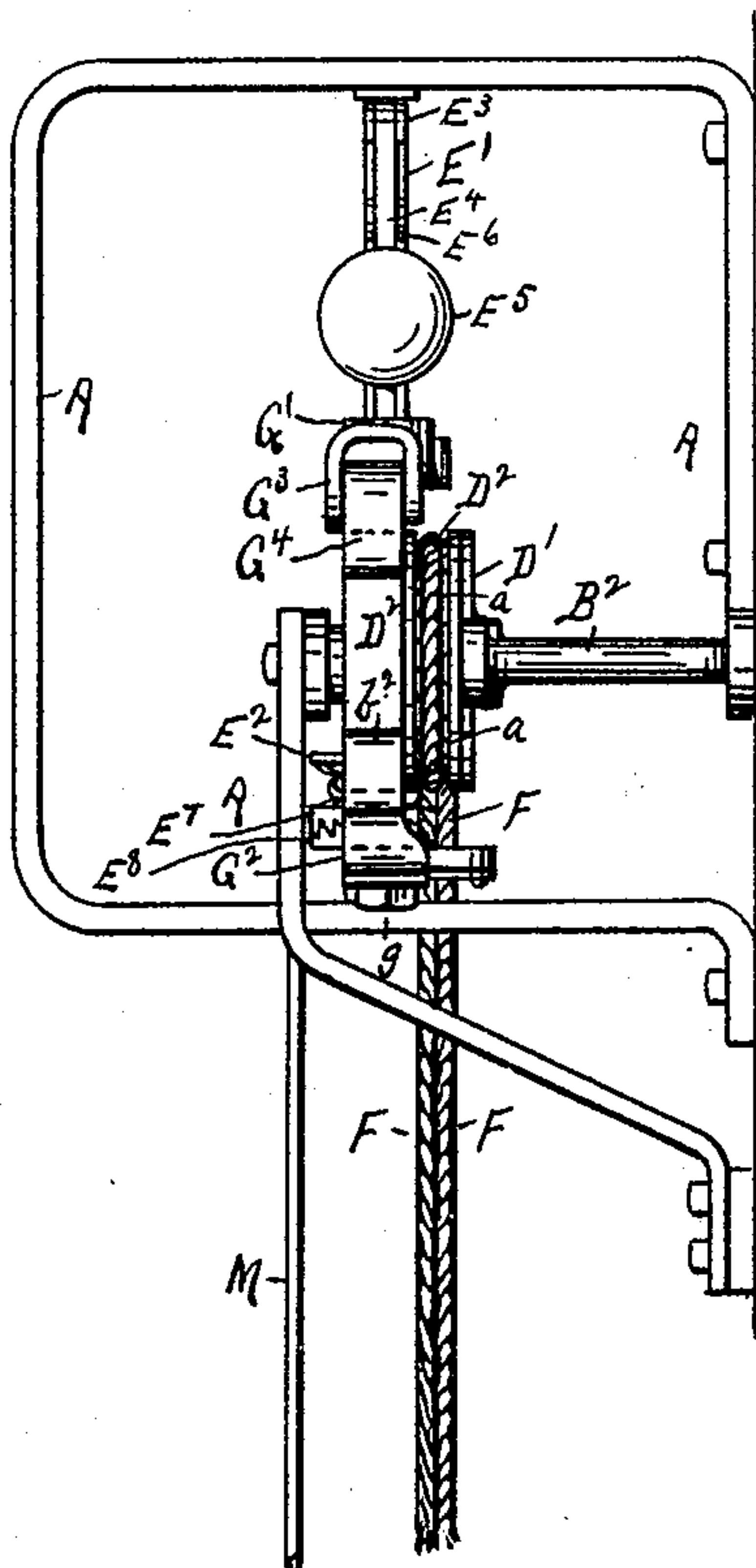
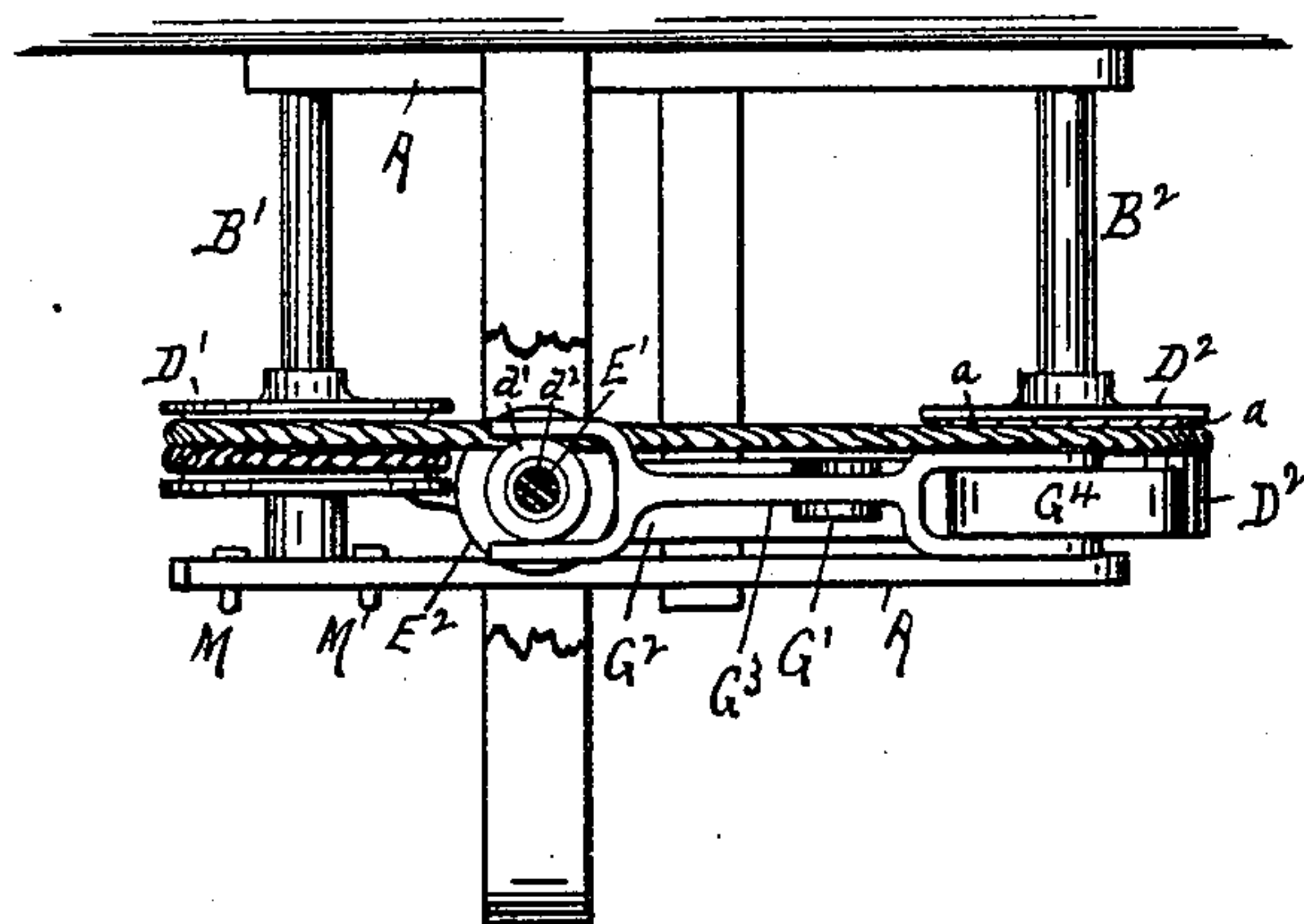
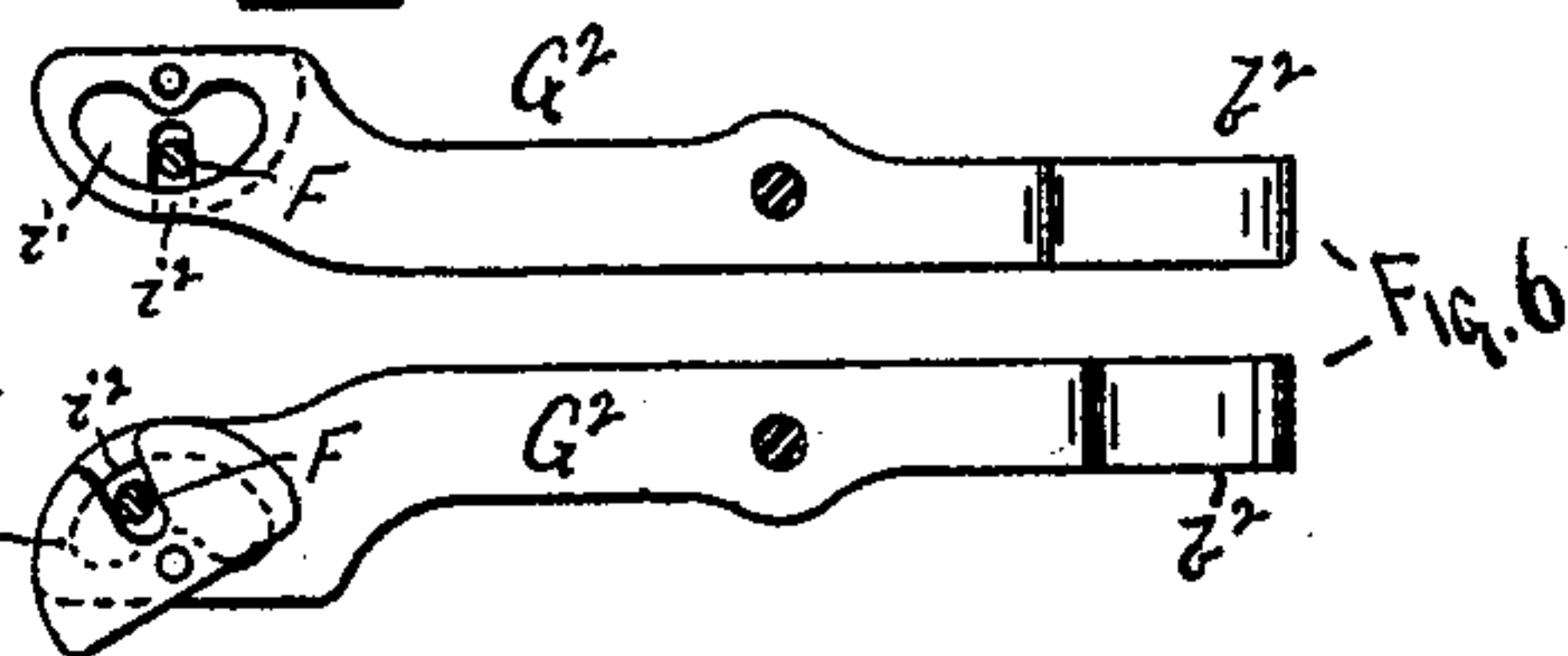


FIG. 5



WITNESSES.

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UNITED STATES PATENT OFFICE.

JULIUS D. BRAINARD, OF ST. PAUL, MINNESOTA.

FIRE-ESCAPE.

SPECIFICATION forming part of Letters Patent No. 481,252, dated August 23, 1892.

Application filed April 25, 1891. Serial No. 390,476. (No model.)

To all whom it may concern:

Be it known that I, JULIUS D. BRAINARD, a citizen of the United States, residing at St. Paul, in the county of Ramsey and State of Minnesota, have invented certain new and useful Improvements in Fire-Escapes, of which the following is a specification.

This invention relates to fire-escapes; and it consists in the construction, combination, and arrangement of parts, as hereinafter shown and described, and specifically pointed out in the claims.

In the drawings, Figure 1 is a front elevation, and Fig. 2 is a side elevation, of a portion of a building, showing my improved apparatus attached thereto. Fig. 3 is a front elevation. Fig. 4 is a side elevation, and Fig. 5 is a plan view, on an enlarged scale, of the automatic brake and its operating mechanism. Fig. 6 represents the automatic brake-setting lever detached.

A represents a framework of any required form or size, preferably of metal, and sufficiently strong to support the greatest strains to which the apparatus will ever be subjected and attached to the upper part of the building, just beneath the cornice, or in any other suitable location.

B' B² are two horizontal shafts parallel to each other and suitably mounted in the framework A and each carrying a cable or chain drum or sheave D' D², as shown.

E' is an upright shaft supported in the frame A and carrying a small chain or cable sheave E² in line with the sheaves D' D², so that a chain or cable F, in running from the sheave D' to D² will pass around the small sheave E², as shown in Figs. 3 and 5. I have shown a cable or rope upon the sheaves in the drawings for the purpose of illustration, and hereinafter for conciseness of statement I shall refer to this feature as a "cable," although of course it will be understood that a chain or rope may be employed in this location, if preferred. The groove in the sheaves D² and E² will preferably be provided with small ribs or lugs *a*, (see Figs. 3, 4, and 5,) so that the cables will not slip and to secure a more tenacious hold of the cables upon the pulleys. The cable passes upward and entirely around the sheave D', and thence entirely around the small sheave E², and thence around the sheave D², and thence over the sheave D'

again, the face of the latter being wide enough to hold the three parts of the cable. 55

G' is a standard supported in an arm or lever G², pivoted at *b'* in the framework A and having pivoted to its upper end an arm G³, carrying a brake-shoe G⁴ on one end in contact with the wide rim of the sheave D² 60 and with its other end pivoted to a collar *d'* on the shaft E'. Within this collar *d'* is a sleeve *d*², with a shoulder *d*³ on its lower end projecting beneath the collar *d'*, so that when the sleeve is elevated the collar will be elevated with it. 65

Attached rigidly to the shaft E', near its upper end, is a "head" E³, having arms E⁴, pivoted thereto, and carrying balls E⁵ on their lower ends, the arms E⁴ being connected by 70 arms E⁶ to the sleeve *d*², this construction forming a "governor" to regulate the pressure of the brake by the increase or decrease of the motion of the shaft E', as hereinafter more fully described. 75

On the lower part of the sheave E² is formed one portion E⁷ of a clutch, the other portion being formed upon a collar E⁸, fast to the shaft E'. The sheave E² is loose upon the shaft E', so that the latter is turned when the 80 sheave is revolved in one direction, but will remain stationary when the sheave is revolved in the opposite direction. The cable F begins at a point opposite the lowermost of the windows of the building, and thence 85 passes upward around the sheaves D' E² D², as before described, and thence down to a counter-weight H, as shown.

Attached to the cable at suitable intervals, preferably opposite each window, is an eye 90 or eyes *e'*, to which hooks *e*² on a harness K, of any suitable construction, is adapted to be connected, as shown in Fig. 1, the person desiring to use the apparatus first placing the harness or straps upon his person, and after 95 connecting the hooks *e*² into the eyes *e'*, swinging themselves outward and permitting the weight to come upon the cable.

The counter-weight H will be heavy enough to not quite balance the person using the apparatus, so that the weight of the person will 100 cause them to descend slowly. If the weight of the person is greater than ordinary, the increase of speed will correspondingly increase the speed of the shaft E', and thus distend 105 the balls E⁵ and cause the arms E⁴ E⁶ to ele-

vate the sleeve d^2 and collar d' , and thus increase the pressure of the brake-shoe upon the sheave D^2 , and thereby check the speed of the cable and perfectly regulate the speed of the descending person and cause a light or heavy person to descend with equal speed. The governor thereby perfectly controls and regulates the speed, so that every person will descend with equal speed, no matter of what size or weight.

Guide wires or rods M will be arranged adjacent to the two parts of the cable F , around which the weight H and eyes e' will be looped to prevent the weights or the descending persons from swaying about or coming in contact with projections on the building. The guide-wires M may be conducted off at any desired angle to avoid obstructions or projections, so as to adapt the apparatus to any form of construction of building or to any location. When the person descending has reached the ground, he disconnects himself from the hooks or harness, when the counter-weight H will at once descend again and return the portion of the cable having the eyes attached to its upward position, ready to accommodate the next person desiring to descend, and so on, as long as required. When the cable is ascending for the use of the still-unrescued persons, the sheave E^2 will merely turn upon the shaft E' by slipping over the clutch $E^7 E^8$, as the governor and brake are not required except when persons are descending.

The lever G^2 is extended beneath the rim of the sheave D^2 , as shown at b^2 , to form a support thereto and assist the brake in its operation by increasing the frictional surface. The lever G^2 is pivoted at b' to the frame A and projects backward and clasps the cable F just beneath the sheave D' by one end, while the other end projects forward and is turned upward in contact with the lower surface of the frame A , as before described, the lower end of the standard G' passing downward through this lever and secured thereto by a nut g on the under side.

The cable F is provided with a knot or other projection h' , adapted to strike the lever G^2 as the cable runs upward, and thus elevate it and cause the brake-lever to be depressed when the cable in its upward movement reaches a certain point. This device is intended as an automatic check upon the motion of the sheave D^2 when the counter-weight is descending, so that its sudden stoppage when it reaches its lowermost limit will not render the cable liable to jump out of the groove in the sheave, as there would be danger of its doing if this checking device were not employed.

The whole of the apparatus except the cables and the guide-rods will be "housed," as shown at N in Figs. 1 and 2, so that the mechanism shown in Figs. 4, 5, and 6 is protected from the weather and from other damaging or injurious causes.

The cavity in the lever G^2 for the passage of the cable is made large, and is covered with a pivoted plate i' , having a slot i^2 , just large enough for the cable, so that the cable is free to be moved laterally to a considerable extent without cramping the lever or exerting side strains upon it, as the plate i' will move laterally with the movement of the cable.

While I have shown the cable passing around the sheaves in a certain manner, I do not wish to be limited to the precise arrangement shown, as it may be conducted around the pulleys and sheaves in any desired manner to accomplish the desired result.

The nut g on the lower end of the standard G' is an important feature of the invention, as it enables me to adjust the brake and perfectly control the tension.

Having thus described my invention, what I claim as new is—

1. In a fire-escape apparatus, two sheaves or pulleys $D' D^2$, a cable passing around said sheaves or pulleys and with its ends hanging therefrom, a counter-weight upon one of said pendent ends, means whereby the person desiring to use the apparatus can be attached to the other pendent end, guide rods or wires M , to which said counter-weight and the suspension apparatus of the person using the apparatus is loosely connected, a brake adapted to act upon said sheaves or pulleys, and a governor connected to said brake and adapted to be actuated by said cable, so that the speed of the descent of the person using the apparatus will be regulated and the counter-weight and descending person guided during the trip, substantially as and for the purpose set forth.

2. In a fire-escape apparatus, two sheaves or pulleys $D' D^2$, a cable passing around said sheaves or pulleys and with its ends hanging therefrom, a counter-weight upon one of said pendent ends, means whereby the person desiring to use the apparatus can be attached to the other pendent end, a brake adapted to act upon said sheaves or pulley, and a governor connected to said brake and adapted to be actuated by said cable, so that the speed of the descent of the person using the apparatus will be regulated, in combination with a pivoted lever G^2 , supporting said brake and through which said cable passes, whereby when the weight of the person using the apparatus is removed from the cable an enlargement upon the cable will actuate said lever and set the brake, so as to check the movement of the cable and prevent the cable running off the sheaves, substantially as and for the purpose set forth.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

JULIUS D. BRAINARD.

Witnesses:

C. N. WOODWARD,
H. S. WEBSTER.