

**No. 619,879.**

**Patented Feb. 21, 1899.**

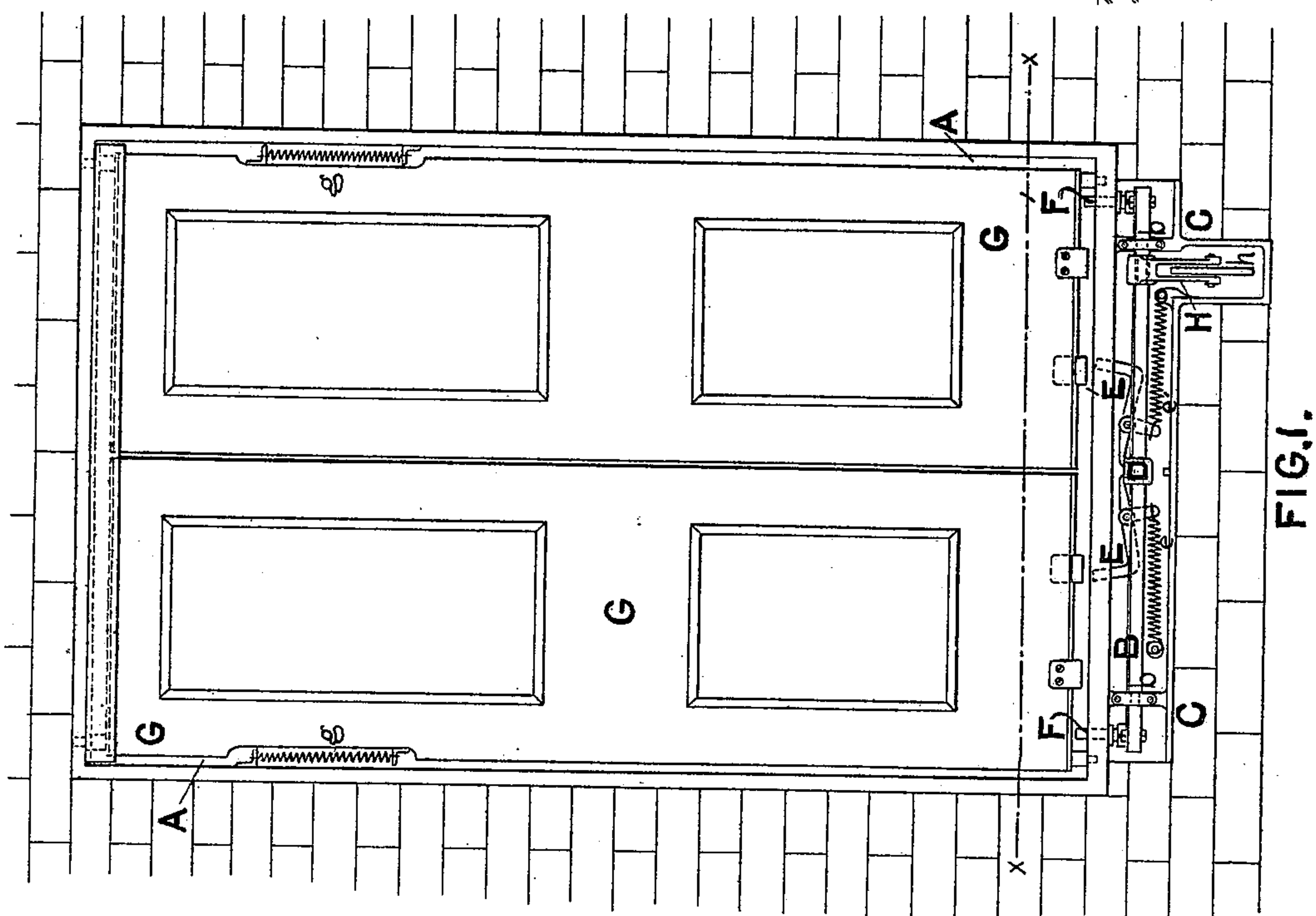
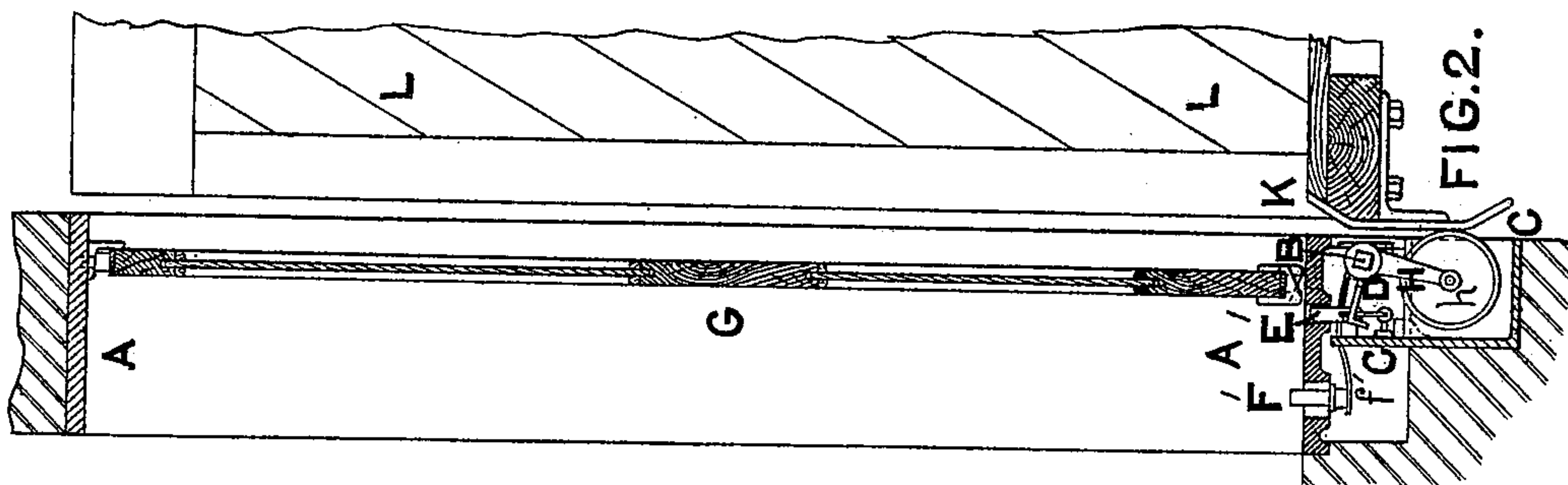
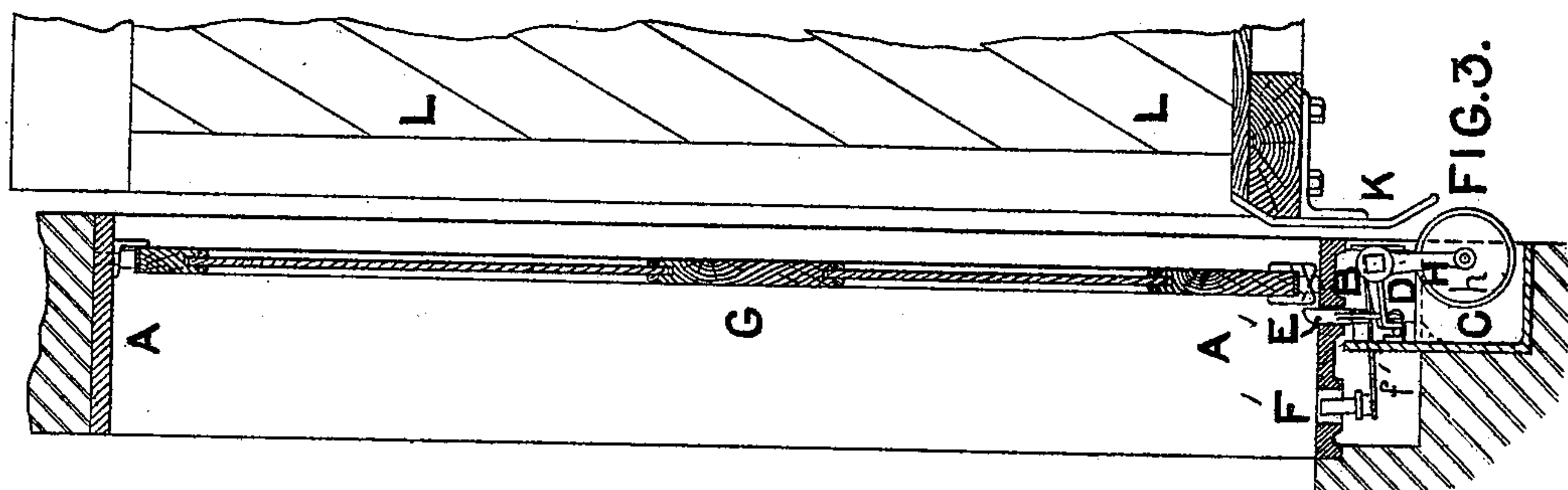
**J. C. ETCHELLS.**

## LOCKING APPARATUS FOR DOORS OF HOISTS OR LIFTS.

(Application filed Aug. 1, 1898.)

(No Model.)

**3 Sheets—Sheet 1.**



**WITNESSES.**

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INVENTOR

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3 Sheets—Sheet 2.

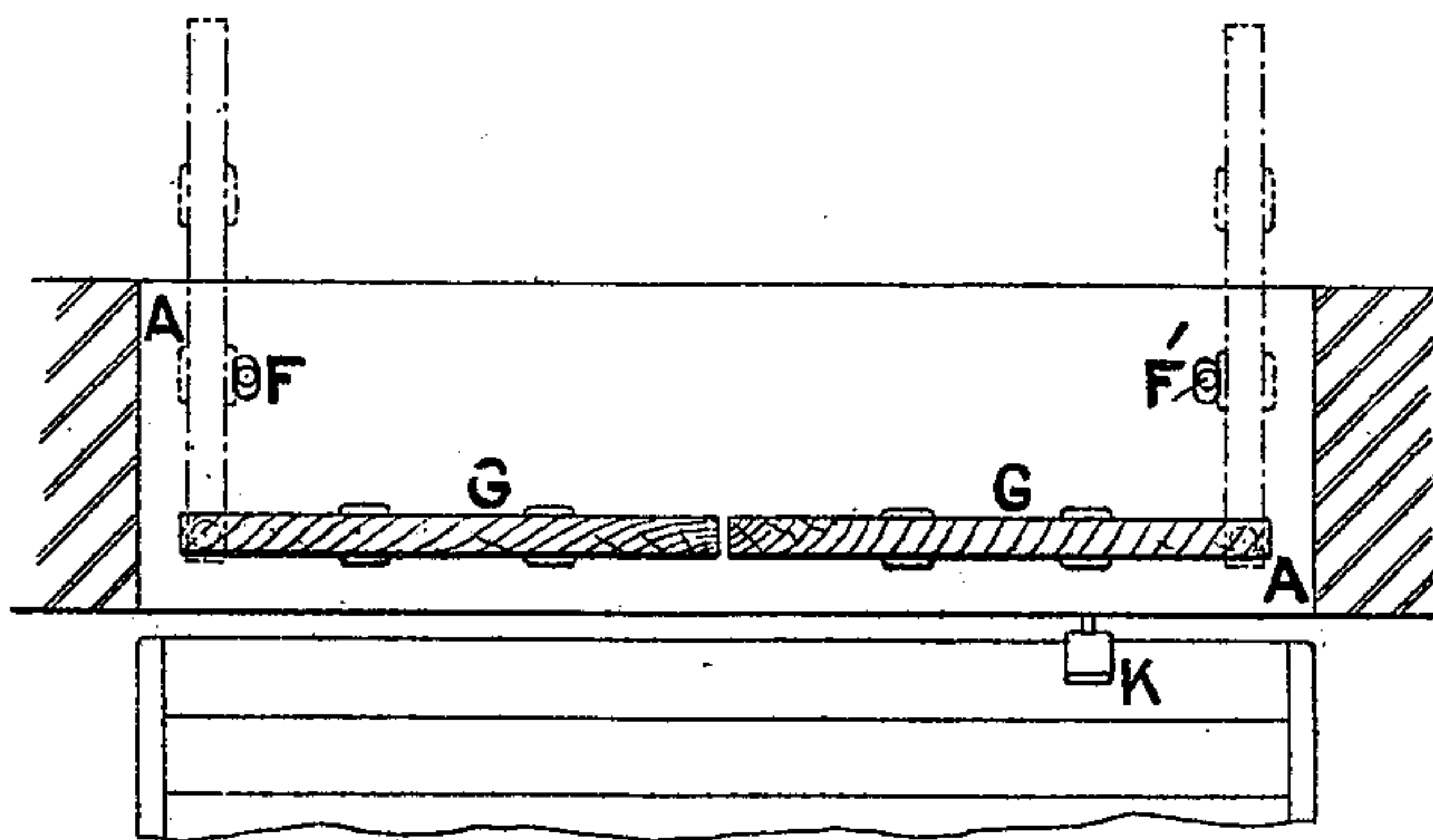


FIG. 4a

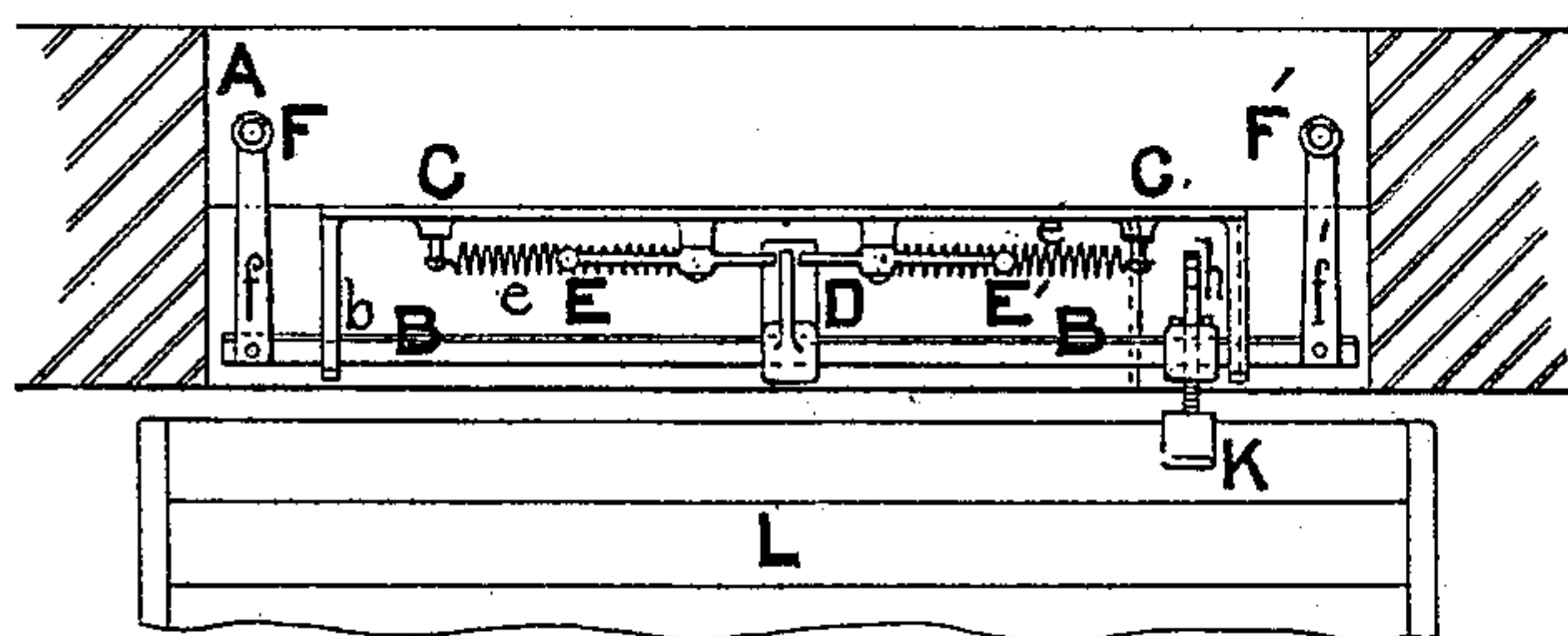


FIG. 4.

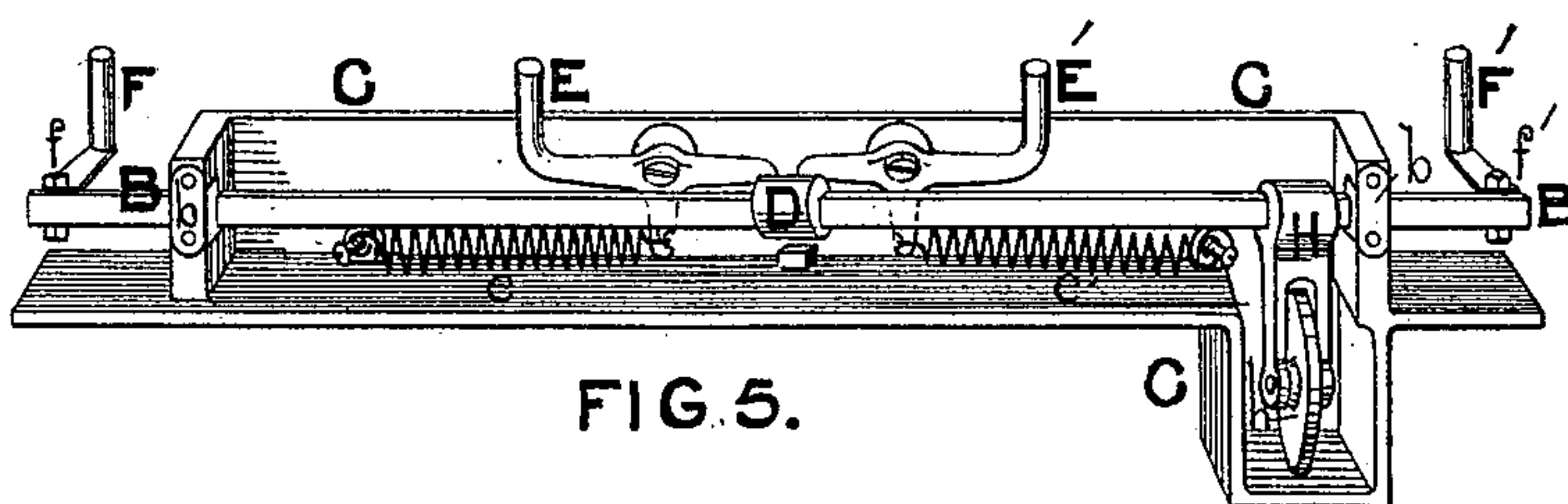


FIG. 5.

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3 Sheets—Sheet 3.

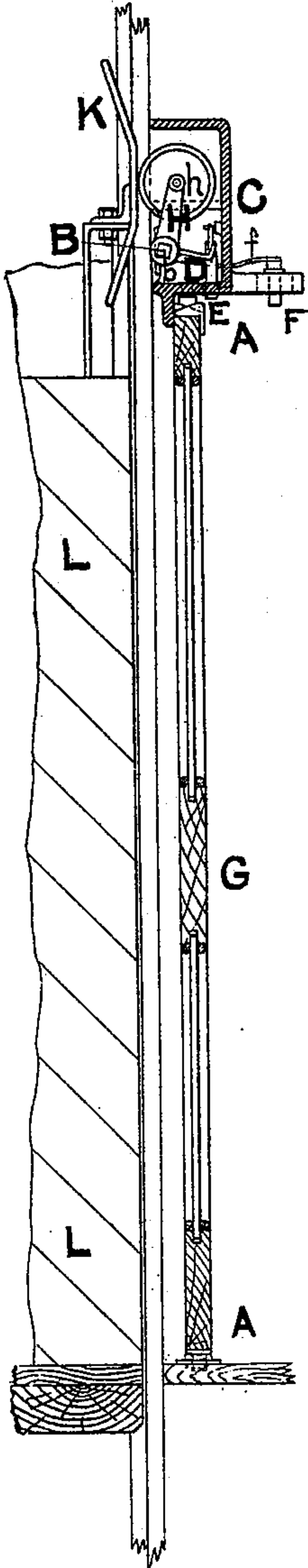


FIG. 7.

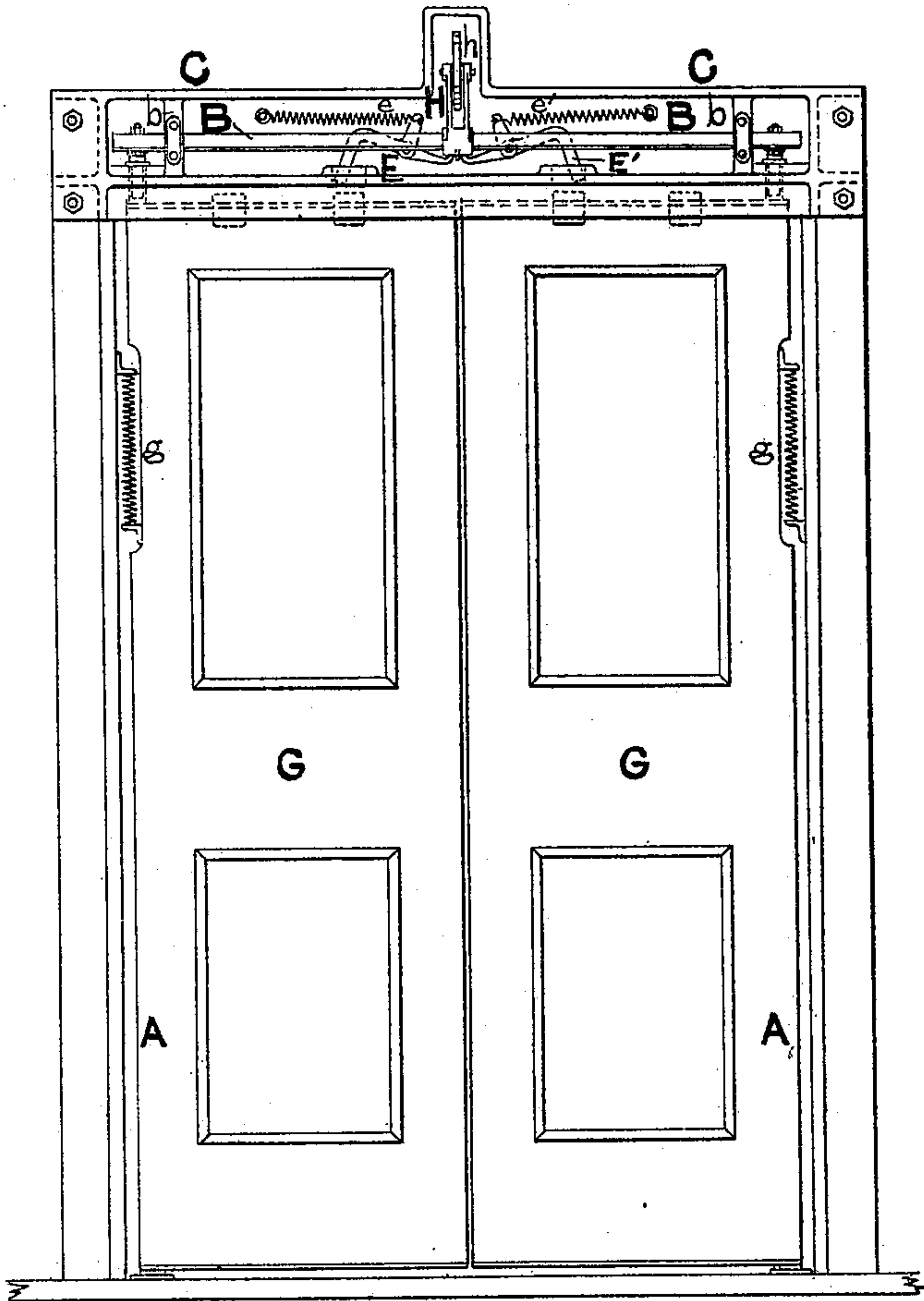


FIG. 6.

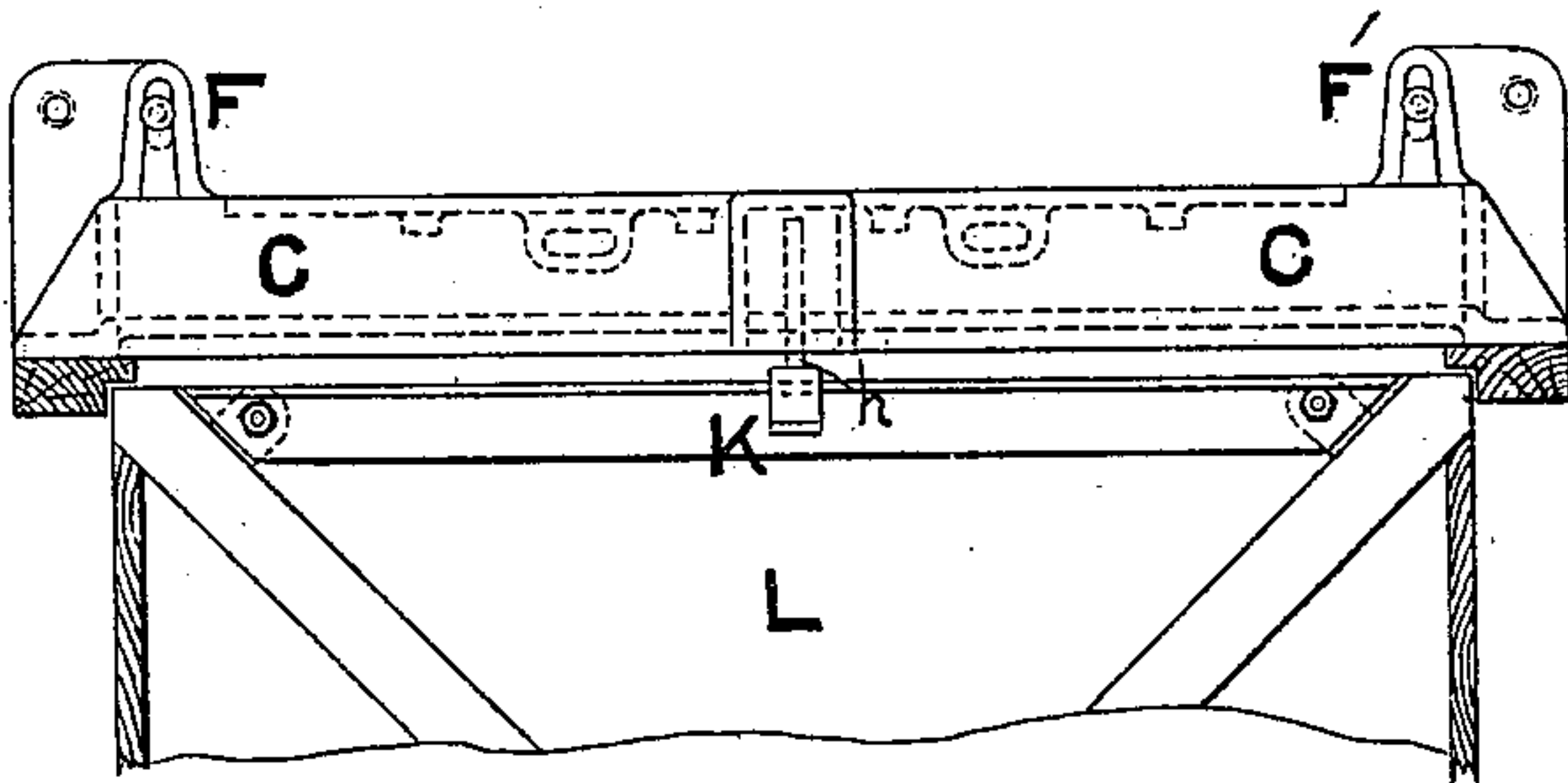


FIG. 8. INVENTOR

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# UNITED STATES PATENT OFFICE.

JOHN CHARLES ETCHHELLS, OF HEATON CHAPEL, ENGLAND.

## LOCKING APPARATUS FOR DOORS OF HOISTS OR LIFTS.

SPECIFICATION forming part of Letters Patent No. 619,879, dated February 21, 1899.

Application filed August 1, 1898. Serial No. 687,470. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN CHARLES ETCHHELLS, of Heaton Chapel, near Stockport, in the county of Lancaster, England, have invented certain new and useful Improvements in Locking Apparatus for the Doors of Hoists or Lifts, of which the following is a specification.

This invention is designed to provide improved mechanism for locking the doors of hoist-wells and insuring them being maintained closed when the cage is at a different level. The cage when level with the floor automatically releases or disengages the locking-gear, permitting the doors to be opened by the attendants.

It consists, essentially, in the application to or combination with the doors of the hoist of a rocking shaft (operated by the passage of the cage) which actuates two sets of bolts or catches which engage the doors, one set to lock or hold the doors closed when the cage is absent and the other set to hold the doors open against the force of a spring or weight when the cage is stopped opposite the doors and release them again when the cage moves away. It will be fully described with reference to the accompanying drawings, in which the invention is shown applied both to the bottom and top of the hoist-doors.

Figure 1 is a front elevation with doors closed, showing the invention placed below the doors unlocked. Fig. 2 is a transverse section with cage at level of floor in position to unlock the doors. Fig. 3 is a transverse section with cage removed from level and doors locked. Fig. 4 is a plan of Fig. 1, showing locking device; Fig. 4<sup>a</sup>, sectional plan on line *x x*, Fig. 1. Fig. 5 is a perspective view of the apparatus as arranged for the bottom of the doors. Fig. 6 is a front elevation showing the invention placed above the doors. Fig. 7 is a transverse section of same. Fig. 8 is a plan of Fig. 6.

Across the bottom or across the top of the doorway A is fitted a rocking shaft B, preferably square in cross-section and mounted in bearings *b* in a suitable framework or casting C, so as to be capable of part of a revolution about its axis—first in one direction and then in the other.

At or near the center of the rocking shaft B is fixed a lever D, which is oscillated or caused to rise and fall at its free end by the rotary movement of the shaft. To the casting or framing C two bolts E E' are pivoted, with the lower ends of which the free end of the oscillating lever D engages. The bolts E E' are preferably of bell-crank or other suitable form. To each bolt is attached a spring *e e'*, by which it is moved in one direction, while it is operated or moved in the opposite direction by the end of the lever D. The bolts E E' hold the doors G when closed. To the rocking shaft B are also connected two additional bolts F F', mounted on a radial arm or spring *f f'*, bolted to the shaft B. These bolts engage the doors when open and hold them against the closing force or pressure of the springs *g*.

A lever H is affixed at one end or other convenient position upon the rocking shaft B, carrying a wheel or runner *h* at the end to engage a cam or striker K on the cage L, by which the shaft is oscillated.

In operation the bolts E E', which engage the doors G to hold them closed, are held by the springs *e e'* in the normal position to lock the doors when the cage L is absent. When the cage comes opposite to the doorway A and level with the floor, the cam or striker K comes in contact with the wheel *h* on the lever H and rotates the shaft B part of a revolution. This movement moves the lever D, which acts upon the inner ends of the bolt-levers E E' and causes them to release the doors G. The same movement of the shaft B projects the bolts F F' to engage the doors when opened and hold them open. The cage when passing a floor-level without stopping simply unlocks the doors and immediately locks them again.

What I claim as my invention, and desire to protect by Letters Patent, is—

1. In apparatus for operating the doors of hoists, the combination with the hoist-doors G and cage L of the rocking shaft B, the lever D extending at one side and oscillated by the rocking shaft, the two locking-bolts pivoted to the frame C engaged by the lever D, the springs *e e'* by which the bolts are actuated in one direction, the lever H having runner *h*

by which the rocking shaft is oscillated, and the cam-piece K affixed to the cage, substantially as described.

2. In apparatus for operating the doors of  
5 hoists, the combination with the doors G and cage L, of the casing C, the rocking shaft B journaled therein, the lever D extending at one side and oscillated with the shaft, the pivoted bolts E E' which hold the doors when  
10 closed engaged at one end by the lever D, the springs *e e'* attached to the bolts for operating the bolts in one direction, the bolts F F' connected to the rocking shaft which

hold the doors open, the lever H having runner *h* and fixed on the rocking shaft and the 15 cam-piece K on the cage L which engages the lever H on the rocking shaft, substantially as described.

In witness whereof I have hereunto signed my name in the presence of two subscribing 20 witnesses.

JOHN CHARLES ETCHELLS.

Witnesses:

J. OWDEN O'BRIEN,  
JOSEPH BATES.