

(No Model.)

2 Sheets—Sheet 1.

J. D. IHLDER.
SAFETY MAGNET BRAKE.

No. 596,514.

Patented Jan. 4, 1898.

Fig. 2.

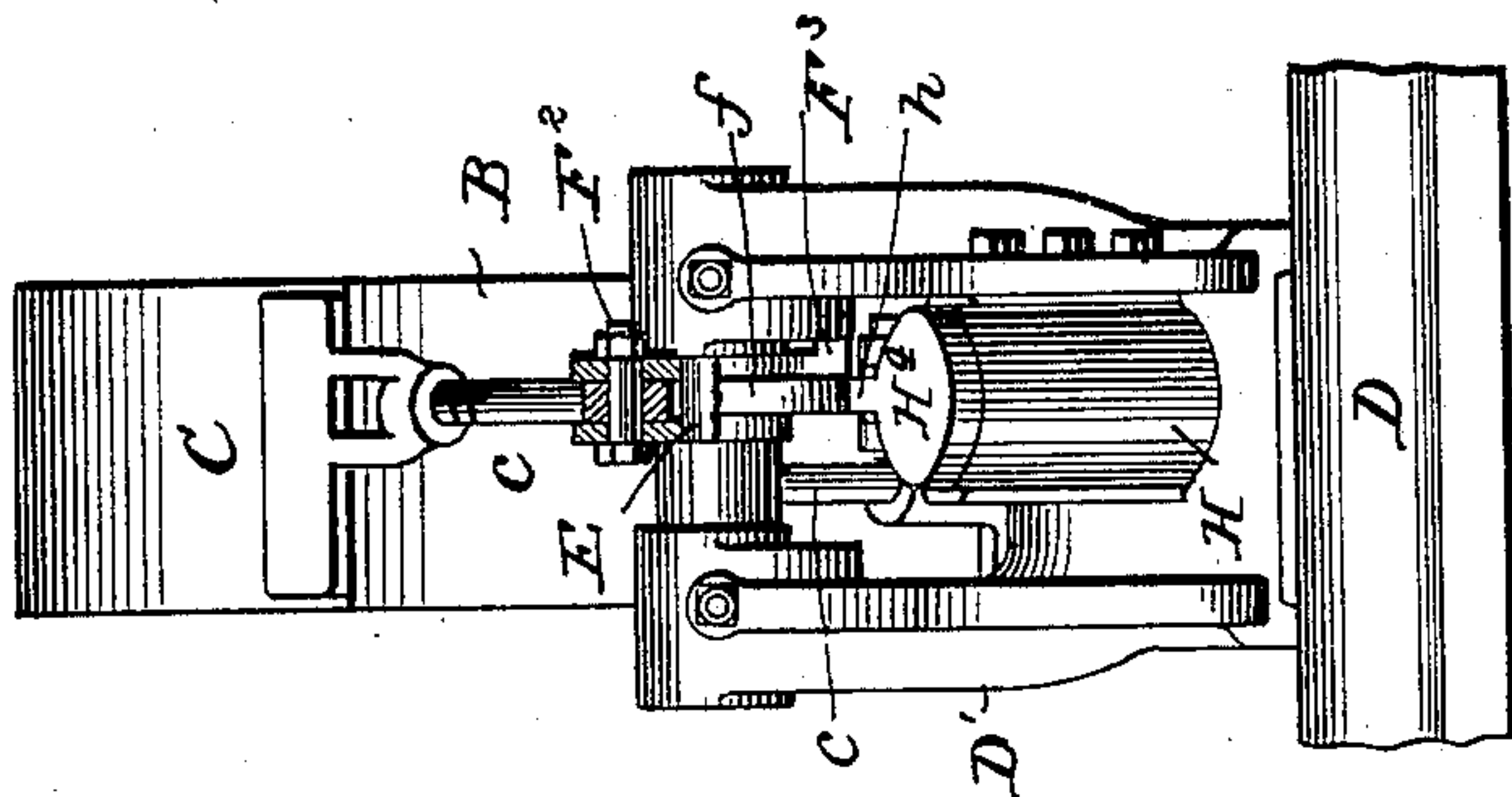
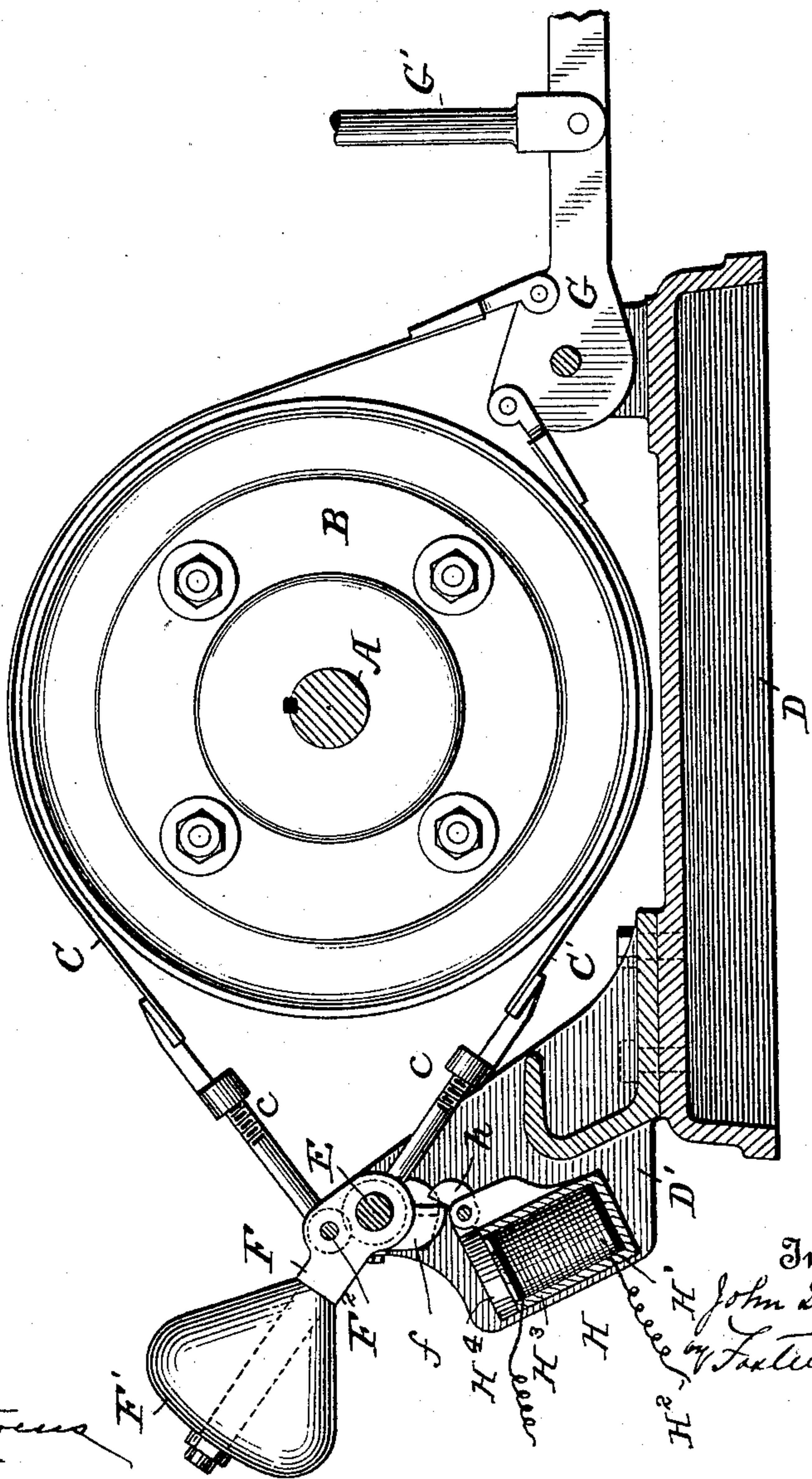


Fig. 1.



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Fig. 4.

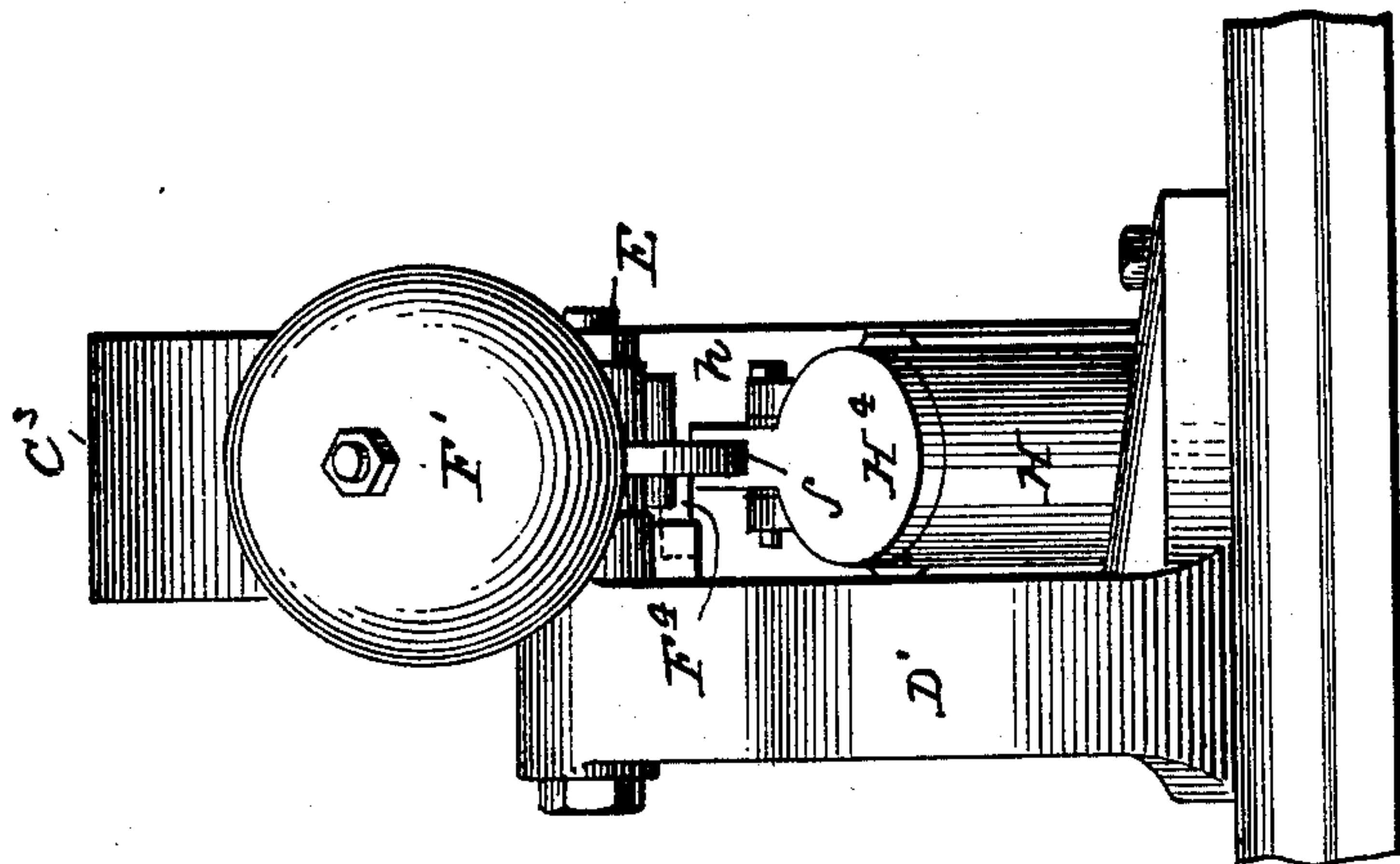
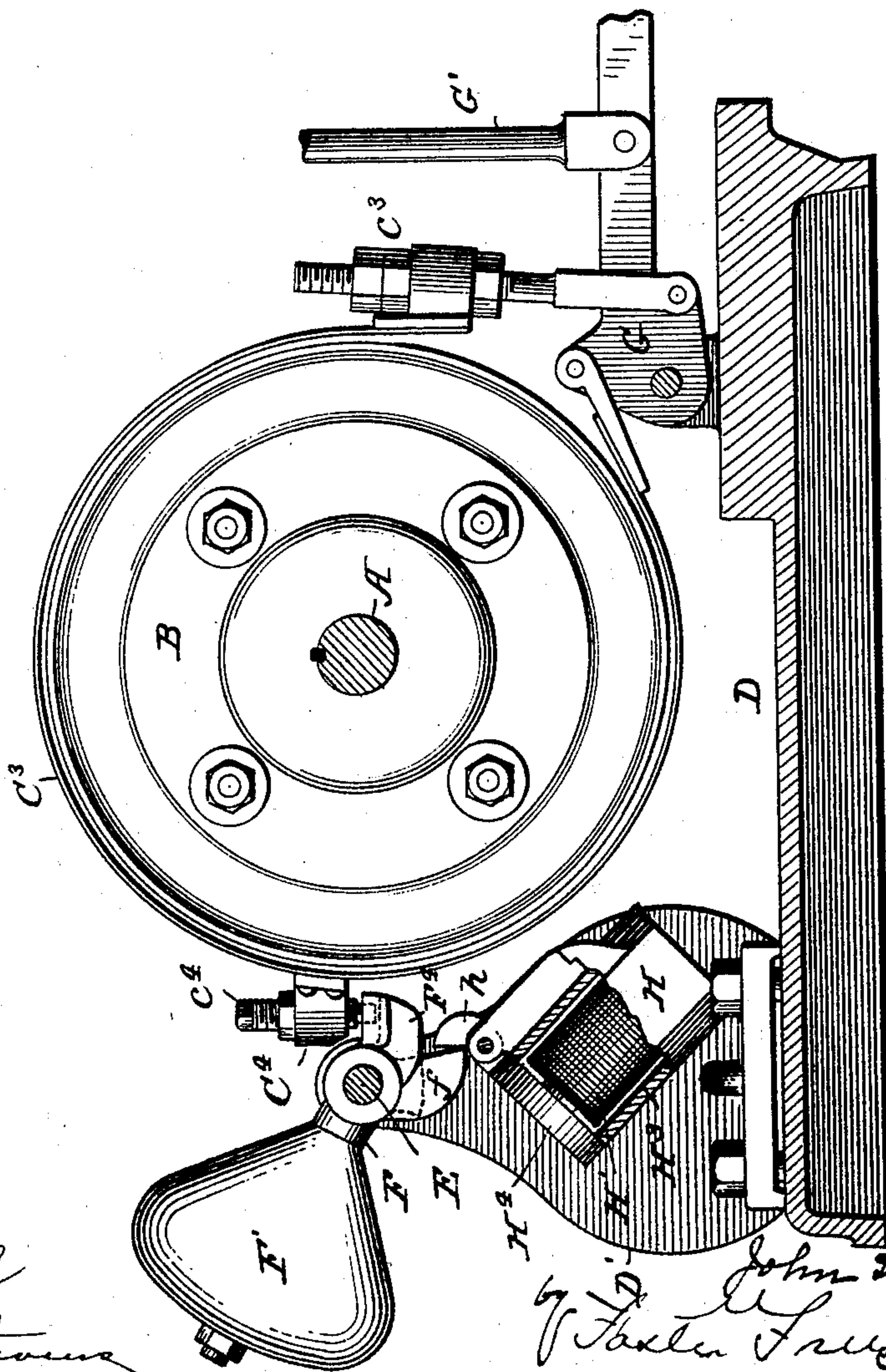


Fig. 3.



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UNITED STATES PATENT OFFICE.

JOHN D. IHLDER, OF YONKERS, NEW YORK, ASSIGNOR TO THE OTIS BROTHERS & COMPANY, NEW YORK, N. Y.

SAFETY MAGNET-BRAKE.

SPECIFICATION forming part of Letters Patent No. 596,514, dated January 4, 1898.

Application filed September 21, 1896. Serial No. 606,561. (No model.)

To all whom it may concern:

Be it known that I, JOHN D. IHLDER, a citizen of the United States, residing at Yonkers, in the county of Westchester and State of New York, have invented certain new and useful Improvements in Safety Magnet-Brakes, of which the following is a specification.

My invention relates to safety-brakes, and while it is adapted for many and various uses it is designed more especially for use in connection with elevators and particularly with electric elevators; and it has for its object to provide an automatic safety-brake which shall be simple in construction and certain in operation; and to these ends it consists in a brake embodying the various features substantially as hereinafter more particularly set forth.

Referring to the accompanying drawings, Figure 1 is a vertical sectional view of a brake embodying my invention. Fig. 2 is an end view of the same, partly in section. Fig. 3 is a vertical section of a modified form, and Fig. 4 is an end view of the same.

While the general principles of my invention may be applied to many and various forms of brake devices, I have shown it applied to what is ordinarily known as a "band" brake device, and an explanation of its application to this brake will enable those skilled in the art to adapt my invention to the various constructions with which it can be used.

In the drawings, referring more particularly to Figs. 1 and 2, A represents the shaft of the motor of an elevator or other device, on which is rigidly mounted the brake-pulley B of any usual and well-known construction. Arranged to bear on this brake-pulley is a brake-band, shown in the present instance in two parts C C', arranged to bear on opposite sides of the brake-pulley B.

Mounted on a suitable base D, which is preferably a portion of the base of the motor to be controlled by the brake, is a bracket D', and supported in this bracket is a shaft E, to which in the present instance one end of the band C' is secured in the usual way, as by adjustable eyebolts c. Also mounted on this shaft E is a bearing F, having attached thereto a weight F', and pivotally connected to this bearing, as at F², by an adjustable eyebolt c

or otherwise is one end of the band C. This pivot F² is eccentrically arranged with relation to the shaft E, as shown, so that as it moves around said shaft it will tighten or loosen the brake-band C in the manner hereinafter set forth.

The free ends of the brake-bands C and C' are in the present instance attached to a lever G, pivoted to the standard D, which lever may be operated in any suitable way, as through the rod G', to tighten or loosen the bands in a manner well understood, and the brake is ordinarily applied and released through the medium of the lever G in the usual way. I provide some means for normally holding the weight in the position shown in Fig. 1, so that when the weight is in this position the pivot-point F² is in practically fixed relation to the shaft E, and the bearing F is preferably provided with wings or extensions F³, which bear against the bracket in one direction and prevent the weight from moving upward from the position shown, so that both brake-bands C and C' can be equally tightened or applied to the surface of the brake-pulley B. The bearing, however, is free under certain conditions to move in the opposite direction under the influence of the weight, unless controlled by some external power or force, and I provide an automatic device which under normal conditions will hold the weight suspended, but under abnormal conditions will release the weight and allow it to fall and exert tension or force upon the brake-band C to stop the brake-pulley. While various automatic means may be used to accomplish this purpose, I have shown in the present instance an electromagnetic device H, in which there is a magnet H', the coil of which is included in an electric circuit H², which preferably will be connected with a source of power for operating the motor, if it is an electric motor, or with any other electric circuit controlled by any of the operative parts of the elevator or motor to which the brake is applied. This magnet H' is shown as mounted in a housing H³, to which is pivoted the armature H⁴, shown as a covering for the cup-shaped housing, although of course this particular shape and arrangement of the armature are immaterial.

Connected to and operated by the armature is a cam *h*, which is arranged to bear against a projection or cam *f* on the bearing *F*. These cams are arranged so that when they are in the relative positions shown in Fig. 1 the weight *F'* is sustained in its normal condition; but when the current flowing through the magnet falls below a certain predetermined amount the magnet weakens and the armature rises under the influence of the weight, automatically releasing the latter when it falls, exerting a tension or force upon the brake-band *C*, and thereby controlling the brake-pulley *B* and stopping the motor or engine to which it is applied. After the weight has dropped and applied the brake it is automatically raised to its normal position for the magnet to support it by any desirable means—as, for instance, by the operation of the brake-lever *G*, this brake of course being more powerful than the weighted automatic brake, and it will be seen that when the lever *G* is depressed to center the brake-bands *C* and *C'* the band *C* will draw the bearing *F* to its normal position, when the cams *h* *f* will assume their proper positions to hold the weight as long as the current flows through the magnet *H'*.

In Figs. 3 and 4 I have shown a slightly different embodiment of my invention, in which many of the parts are duplicates of those shown in Fig. 1 and are correspondingly lettered and need not be specifically referred to. In this construction, however, instead of two brake-bands *C* *C'* there is a single brake-band *C*³, the free ends of which are attached to the lever *G*, and an adjusting device *c*³ is provided at one end of the band in a manner well understood. At or about the central portion of the band is attached a lug *C*⁴, and this is provided with an adjusting-screw *c*⁴, which rests on a projecting part *F*⁴ of the bearing *F*. The other parts are substantially the same, and in the normal position shown in the drawings the brake-band *C*³ is tightened by drawing its free ends toward each other through the medium of the lever *G*. When, however, the automatic device, as the magnet *H'*, releases the armature *H*⁴, the weight is free to operate and through the medium of the projection *F*⁴ draws the under half of the band tightly against the brake-pulley *B*. The weight will be set again, as in the other case, when the mechanical brake device or lever *G* is operated as it centers the band, forcing the weight to its normal position and causing the cams *f* *h* to engage, as before.

From the above it will be seen that I provide an automatic or safety brake attachment which does not in any way interfere

with the ordinary operations of the mechanical brake, but which can be used as an emergency-brake and be controlled by a magnet or other means connected with some working part of the motor or apparatus connected to and operated thereby.

What I claim is—

1. The combination with a mechanical brake device, of an automatic safety brake device, and means for operating the same to set the brake, the automatic mechanism being arranged to be set by the mechanical brake, substantially as described.

2. The combination with a mechanical brake device, of an automatic safety brake device connected to operate said mechanical brake and comprising a weight, means for holding the weight in its normal position, and automatic means for releasing the weight to apply the brake, substantially as described.

3. The combination with a mechanical brake device comprising a band, and a lever for operating the same, of an automatic safety brake device connected to the band or bands, and means for releasing the automatic brake device, substantially as described.

4. The combination with a mechanical brake device comprising a band applied to a brake-pulley, of a weight, connections between the weight and band or bands, and means for releasing the weight, the parts being arranged substantially as described so that when the weight is released the brake is applied automatically without interference with the mechanical brake.

5. The combination with a mechanical brake device comprising a band bearing on a brake-pulley, of a bearing connected to the band, a weight supported by said bearing, a connection between the bearing and band, an electromagnet, and connections between the electromagnet and bearing for normally supporting the weight and releasing the same, substantially as described.

6. The combination with a mechanical brake device comprising a band bearing on a pulley, of a bearing connected to the band, a weight mounted on the bearing, a cam on the bearing, a magnet the armature of which is provided with a cam engaging the cam on the bearing, whereby the weight may be released and again set to its normal position, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

JOHN D. IHLDER.

Witnesses:

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H. BEATTIE BROWN.