

(No Model.)

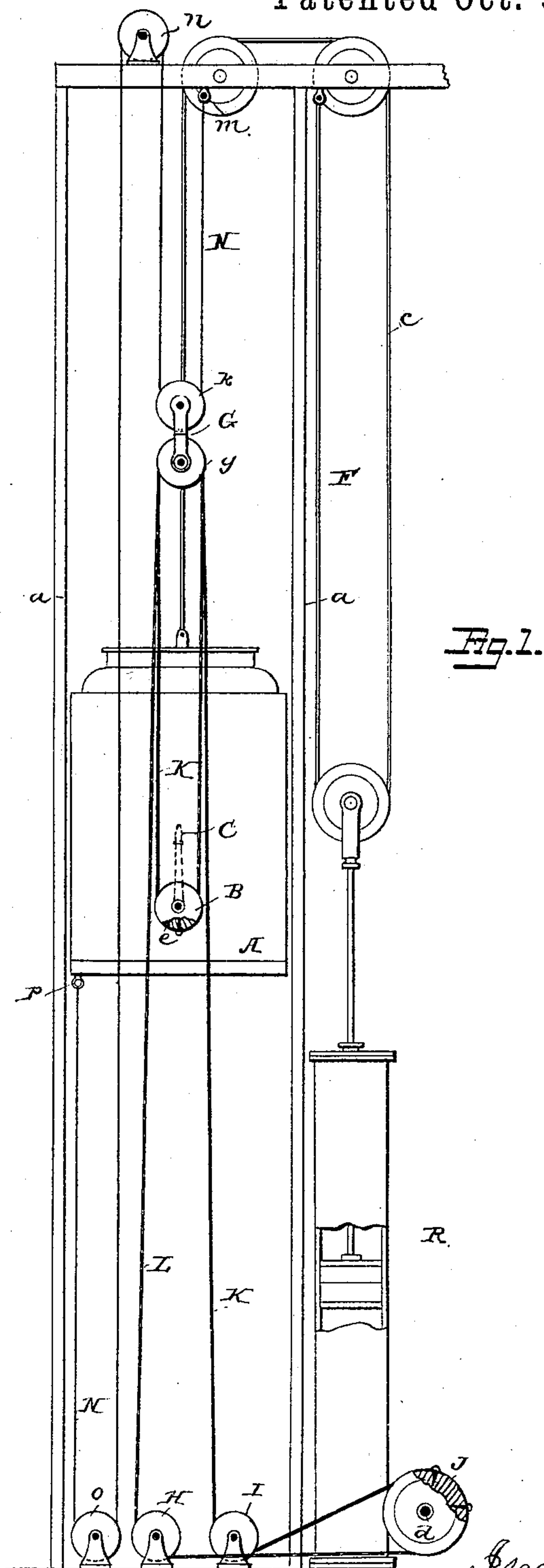
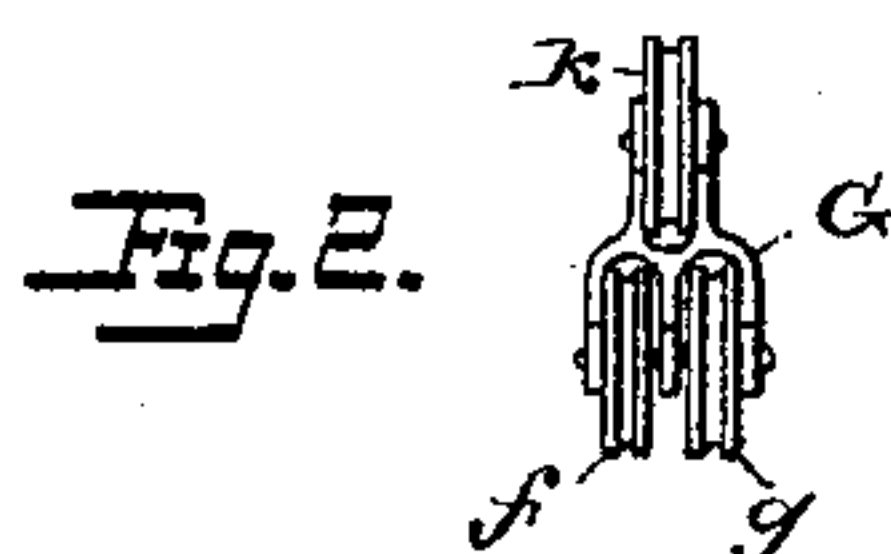
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I. H. VENN.

ELEVATOR OPERATING DEVICE.

No. 390,825.

Patented Oct. 9, 1888.



WITNESSES:

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Charles Morris, Jr.

INVENTOR.

Isaac H. Venn

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(No Model.)

3 Sheets—Sheet 2.

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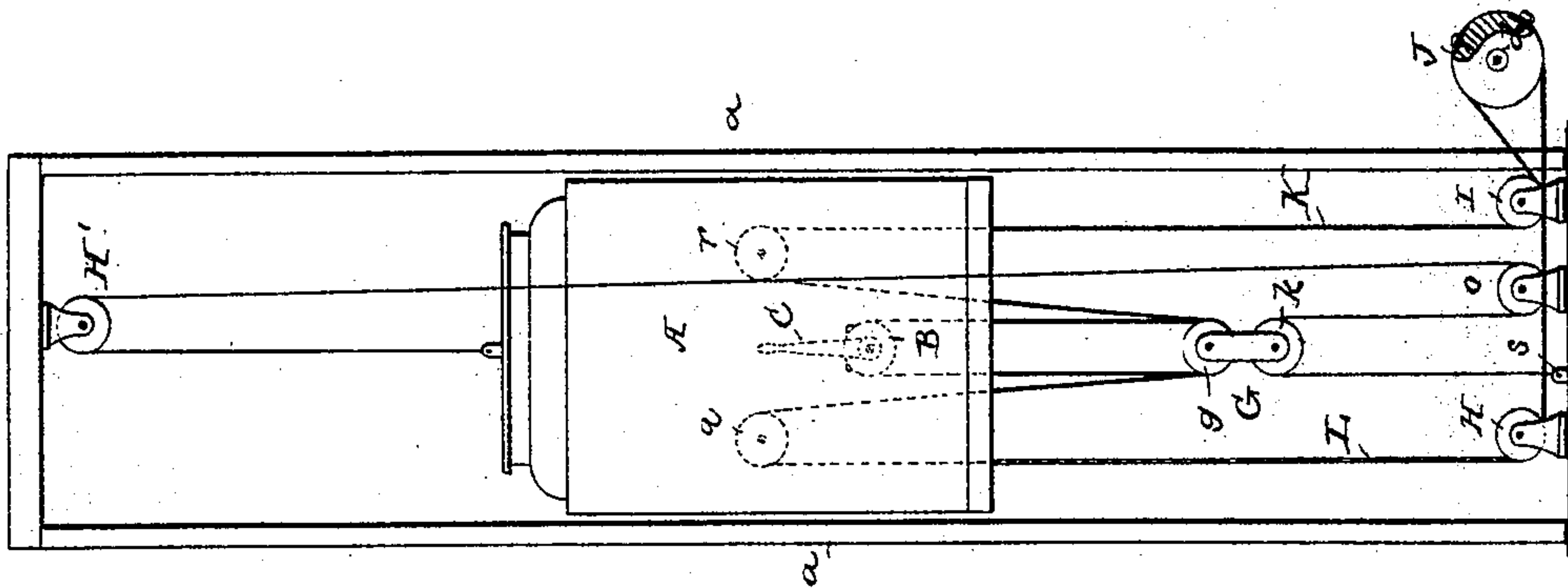
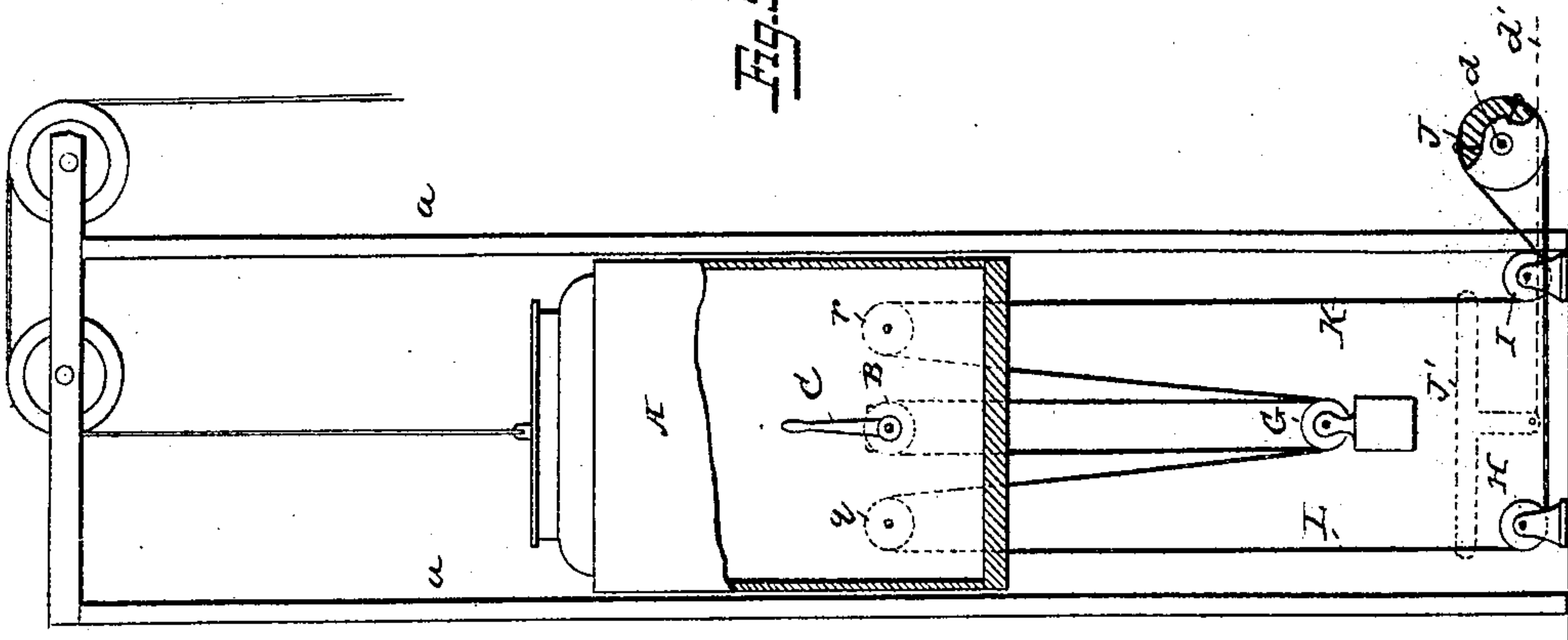


Fig. 5.



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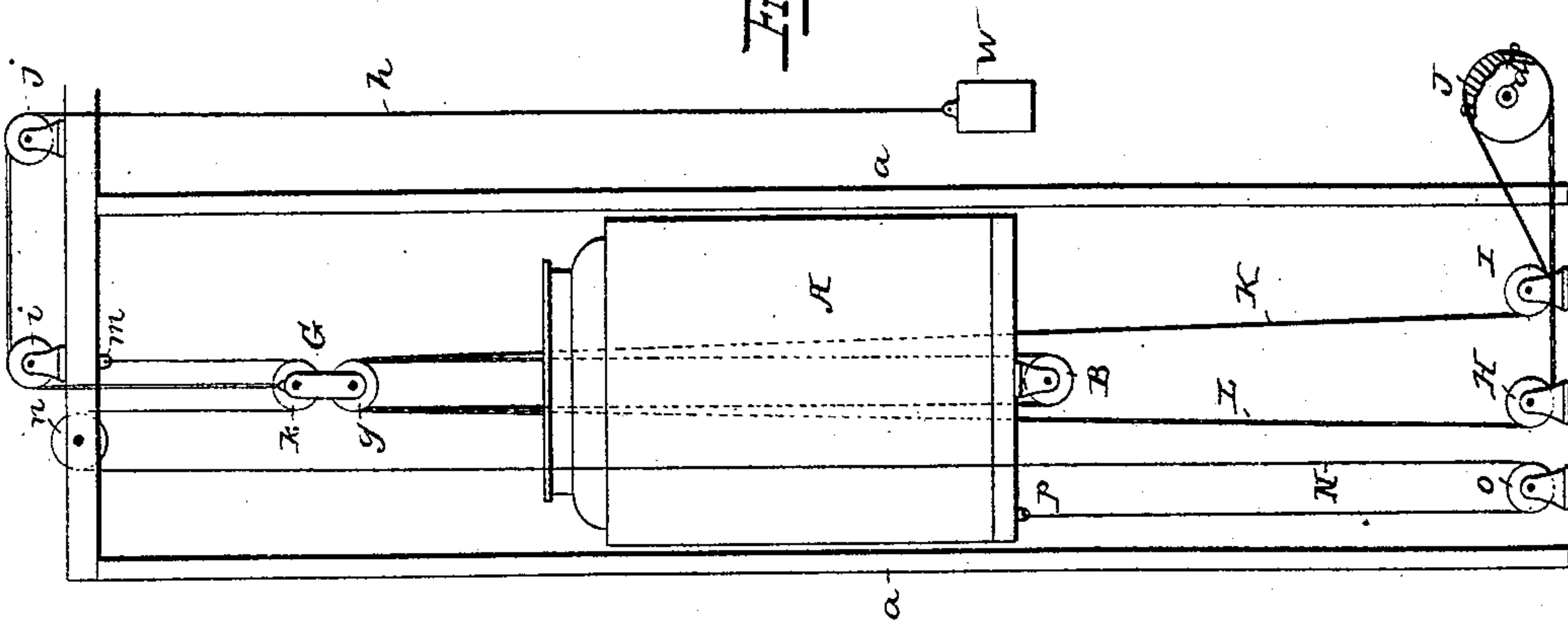


Fig. 3.

Rest.

n. y. leamfahll.
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(No Model.)

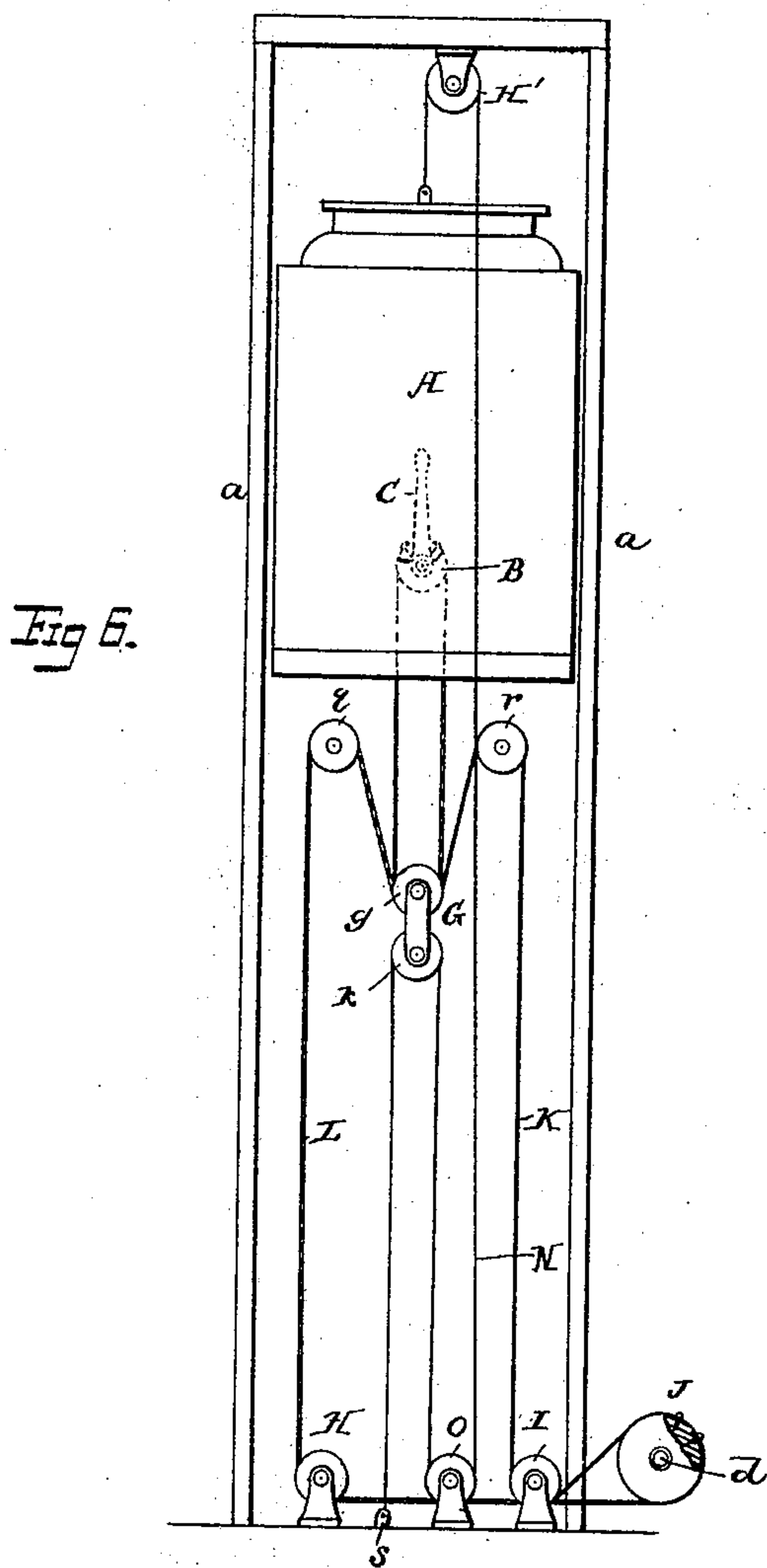
3 Sheets—Sheet 3.

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Witnesses.

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UNITED STATES PATENT OFFICE.

ISAAC H. VENN, OF YONKERS, NEW YORK.

ELEVATOR-OPERATING DEVICE.

SPECIFICATION forming part of Letters Patent No. 390,825, dated October 9, 1888.

Application filed March 3, 1888. Serial No. 266,068. (No model.)

To all whom it may concern:

Be it known that I, ISAAC H. VENN, a citizen of the United States, residing at Yonkers, county of Westchester, State of New York, have invented certain new and useful Improvements in Elevator-Operating Devices, of which the following is a full, clear, and exact specification.

My invention relates to elevators; and it consists of certain means, fully set forth hereinafter, whereby to operate the stopping and starting device from the cage through the medium of connecting-cables without the objections incident to the usual hand rope or cable.

In the accompanying drawings, Figure 1 is an elevation in part section of sufficient of an elevator to illustrate my improvement. Fig. 2 is an edge view of the traveling block. Figs. 3, 4, and 5 are elevations illustrating different modes of supporting and actuating the traveling block. Fig. 6 is a view showing the devices illustrated in Fig. 5, with the elevator-cage in a different position from that shown in said figure.

For the purpose of illustrating the application of my improved device for actuating the stopping and starting means of elevators, I have shown the same in connection with a passenger-cage, A, moving in a well between guides *a a*, and actuated by a hydraulic engine, R, through the medium of the usual flexible suspensories, *c*, the said engine being provided with a valve and valve-operating shaft, *d*, to which is connected a pulley, J. The operating-engine may be, however, of any desired character, and the stopping and starting device may be a steam or water valve, a switch or belt-shifter, as is common in various kinds of elevating mechanisms.

It is common to employ what are termed "hand-ropes" passing over suitable pulleys and extending through the cage to the stopping and starting device for adjusting the latter; but an objection to this class of actuating appliances results from the fact that the hand-rope is stationary while the cage travels past it and it is difficult to operate it uniformly with the proper degree of speed or impart the required extent of motion, especially when the cage is moving quite rapidly. To obviate these objections and at the same time secure the advantages resulting from the use of operating

ropes or cables connected directly to and moving with the cage, while stationary as regards the stopping and starting mechanism and the operating appliances upon the cage (except when they are moved to stop or start the cage) I make use of two cables connected with the stopping and starting mechanism and with the actuating device upon the cage, and I extend the said cables beyond the cage, either above or below the same, and around the sheaves of a traveling block, which is counterbalanced or operated directly in any suitable manner to take up the slack or yield to the draft of the cables as the bights of the cables are increased or shortened as the cage moves from or toward the block. By this means the cables are maintained taut and can be operated from the cage to adjust the stopping and starting devices without their action being in any way interfered with by the movements of the cage.

My invention may be embodied in different arrangements, some of which are illustrated in the accompanying drawings, and depending to a greater or less extent upon the direction in which the bights of the cables were carried and the mode of imparting movement to the traveling block.

In the arrangement shown in Fig. 1 the cage carries a drum, B, upon a shaft, *e*, extending through the cage and provided within the latter with an operating-handle, C, these features constituting the cable-operating device. The valve-operating device consists of the shaft *d* and pulley J thereon. One of the cables, K, is attached at its lower end to the pulley J, passes under a guide-pulley, I, at the bottom of the wheel, over one of the sheaves *f* of the traveling block G and downward to the drum B, to the periphery of which it is attached. The other cable, L, is connected to the periphery of the pulley J on the side opposite to that to which the cable K is attached, passes beneath a guide-pulley, H, at the bottom of the well, up and over one of the sheaves *g* of the block G and downward to the drum B, and is attached thereto at the side opposite to that to which the cable K is attached.

It will be seen that so long as the block G is maintained in a position to keep the bights of the cables taut the rocking of the drum B will pay out one of the cables and draw upon the other, thereby rocking the pulley J and shaft

and moving the stopping and starting device, and as the operating-handle C is normally in a stationary position the attendant in the cage can always tell the position of the stopping and starting device by the position of the handle and regulate the extent of the movement of one by the movement of the other. As the cage approaches the block G the bights of the cables will of course be shortened, and it is necessary for the block to move from the cage to take up the slack, and when the cage recedes from the block and draws upon the cables to lengthen the bights the block must yield correspondingly; but inasmuch as the cables are doubled around the sheaves and one end only of each travels, the movement of the block will be but one-half of that of the cage in either direction, and this movement could be reduced by increasing the number of sheaves in the block and the use of loose sheaves upon the shaft *e*.

One means of imparting the requisite movement to the traveling block G is illustrated in Fig. 3, and consists in counterbalancing the block by means of a cable, *h*, passing over elevated guide-pulleys *i j*, connected at one end to the block G, and carrying at the other a counter-weight, W, counterbalancing the weight of the block and its connections. I prefer, however, to impart a positive movement to the block, which may be effected by providing it with an additional sheave, *k*, round which is passed a cable, N, connected at the upper end to an eyebolt, *m*, at the top of the well, passing round the sheave *k* over another guide-pulley, *n*, around a lower guide-pulley, *o*, and upward to an eyebolt, *p*, upon the cage, so that as the latter moves upward it will gradually contract the pendent bight of the cable N and raise the block, and as the cage travels downward it will pay out the cable N to accommodate the downward movement of the block G.

The operating device inside the cage may consist of a stationary portion of the operating-cable, as shown in Fig. 3, where the drum B is placed below the cage and one or both of the cables pass upward through the cage. In this case, however, the parts must be so arranged that the block G must always be in position to avoid contact with the cage. In this arrangement, as in that shown in Fig. 1, the operating device is stationary in respect to the cage.

In the construction illustrated in Fig. 4 the operating-cables K L pass through a block, G, suspended below the cage by said cables, which pass over guide-pulleys *q r*, carried by bearings in the well around the sheaves of the

block G and upward to the drum B, the block G being weighted to maintain the cables taut. In Fig. 5 the block is arranged in a similar manner, but is positively operated by means of a cable, N, passing from an eyebolt at the top of the cage over an upper guide-pulley, *H'*, downward beneath a lower guide-pulley, *o*, and thence over a sheave, *k*, of the block and downward to an eyebolt, *s*, at the bottom of the well.

The operating-cables, instead of passing through a pulley, J, as before described, may be connected to the ends of a rocking-lever, J', Fig. 4, provided with an arm to which is attached a connecting-rod, *d'*, for operating the stopping and starting device.

Without limiting myself to the precise construction and arrangement of parts shown, I claim—

1. The combination, with the traveling cage and the stopping and starting device, of a traveling block within the well, and operating-cables connected with the cage and with the stopping and starting device and passing around the sheaves of the traveling block, substantially as described.

2. The combination, in an elevator, of the traveling cage, stopping and starting device, cables connected to the stopping and starting device, and with an operating device carried by the cage, which cables extend beyond the cage in the form of loops or bights, and a traveling block round the sheaves of which the said bights are passed, substantially as set forth.

3. The combination, with the traveling cage and stopping and starting device of an elevator, of a block having sheaves around which pass cables connected with the cage and with the stopping and starting device, and having also a sheave for a cable connected at one end with a stationary eyebolt, at the other end with the cage, and passing around guide-pulleys above and below the cage, substantially as set forth.

4. The combination of an elevator-cage provided with a shaft carrying a drum and an operating-handle, a traveling block, a stopping and starting device, and operating-cables connected to the stopping and starting device and to the said drum and passing over sheaves in the said block, substantially as set forth.

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

ISAAC H. VENN.

Witnesses:

JAMES S. FITCH,
W. B. DAVIDSON.