

(No Model.)

2 Sheets—Sheet 1.

H. A. SMITH.  
DUMB WAITER.

No. 445,824.

Patented Feb. 3, 1891.

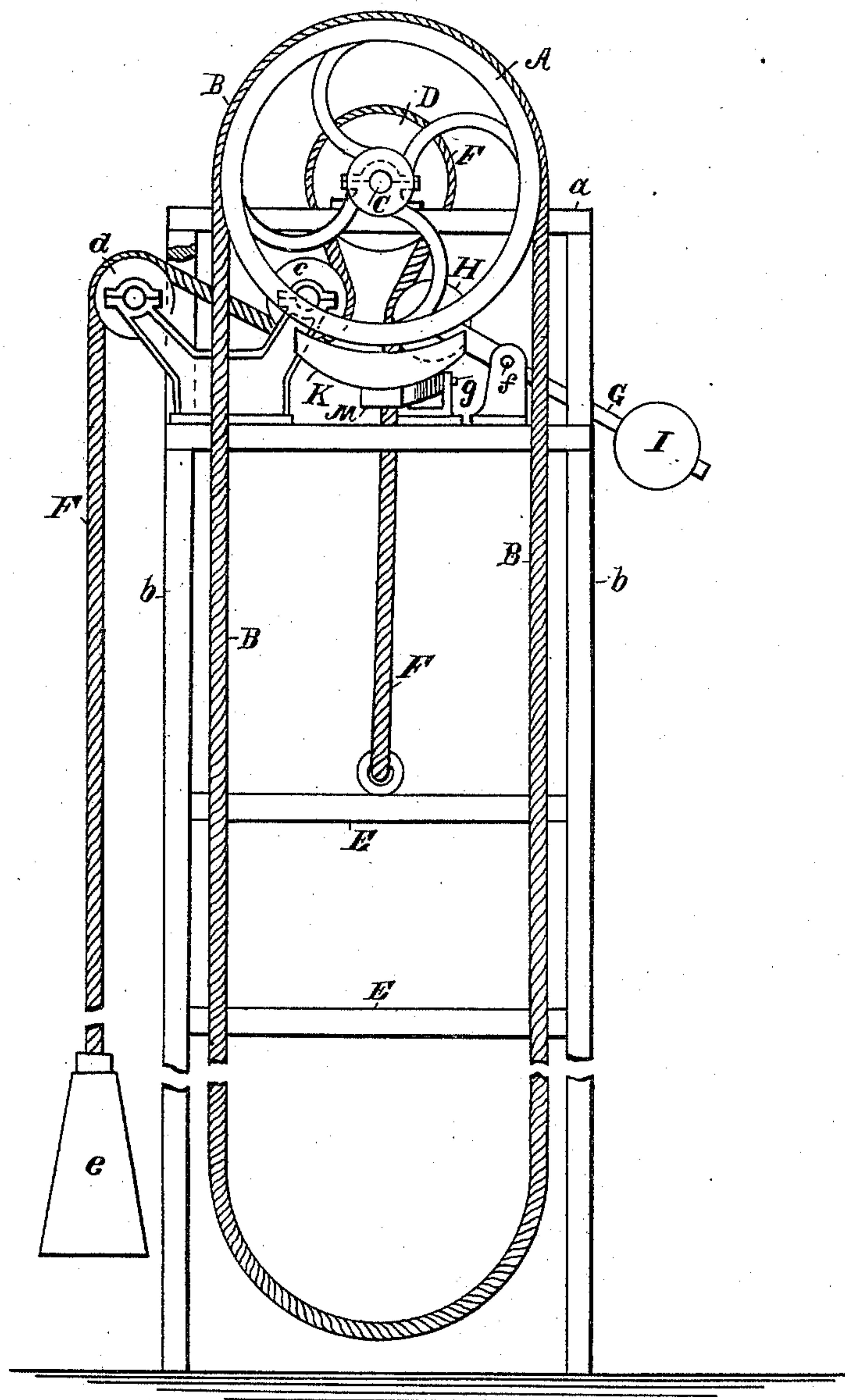


Fig. 1.

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Charles A. Herbert.

INVENTOR

Horace A. Smith

BY

James A. Whitney

ATTORNEY

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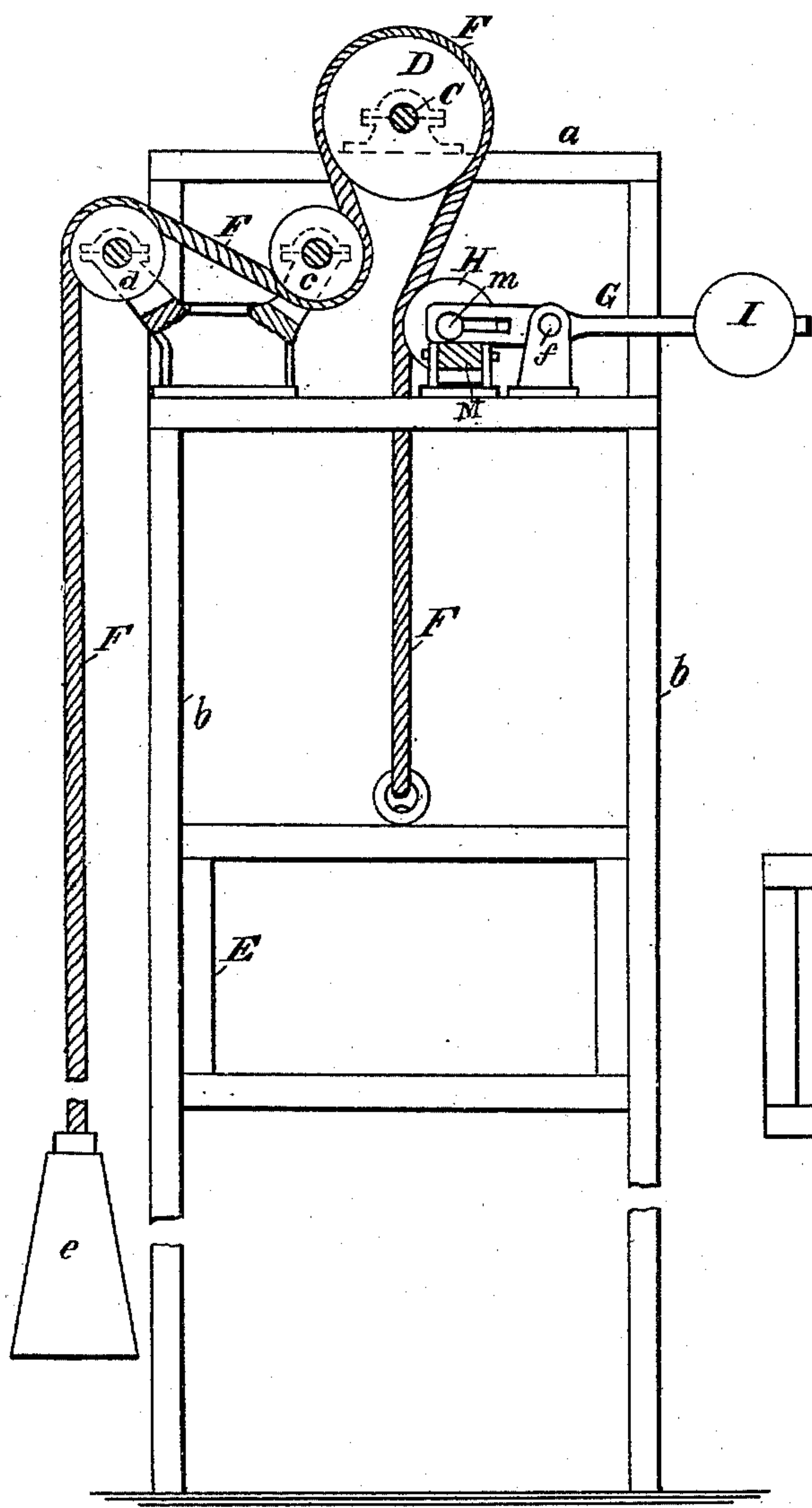


Fig. 2.

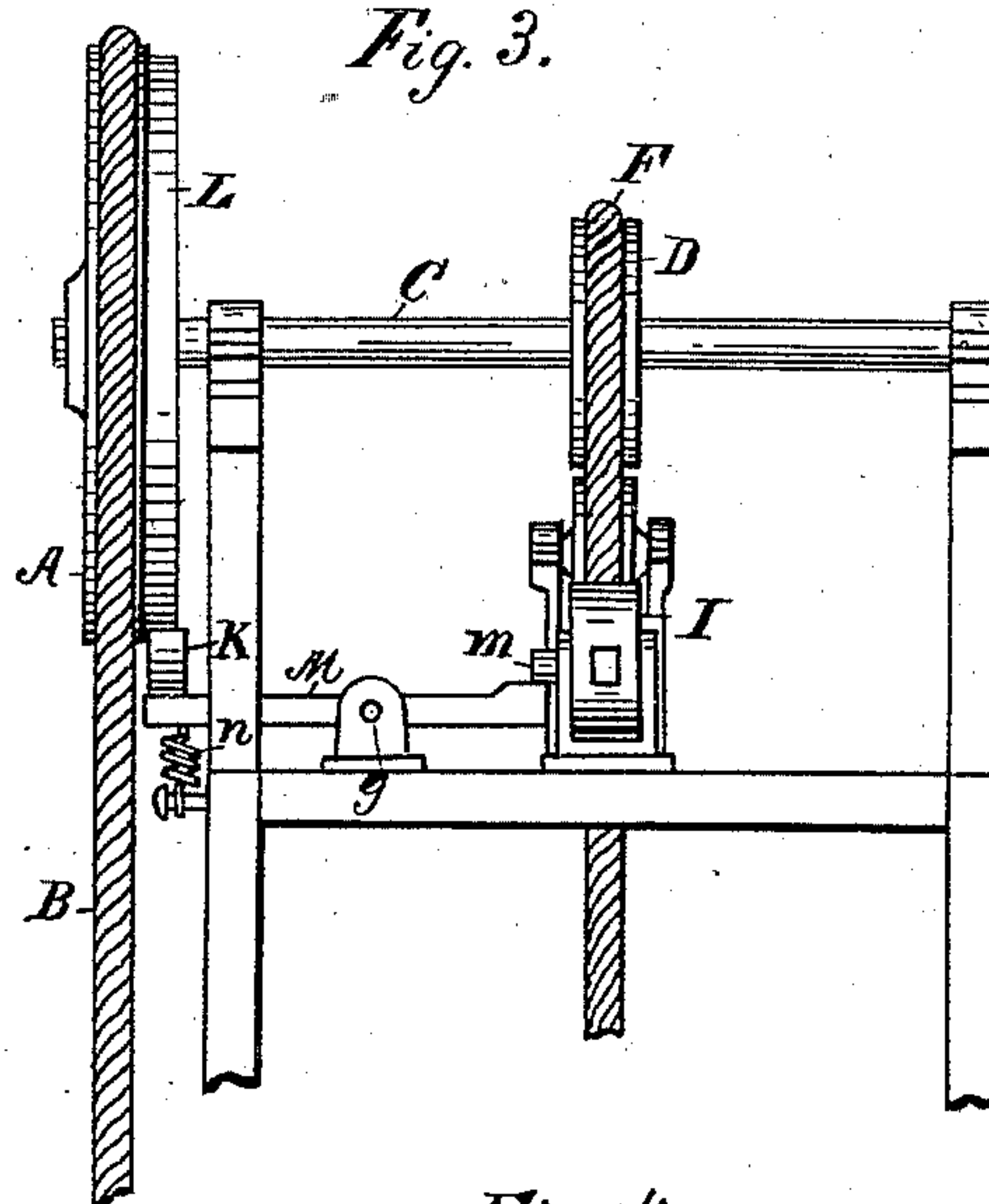


Fig. 3.

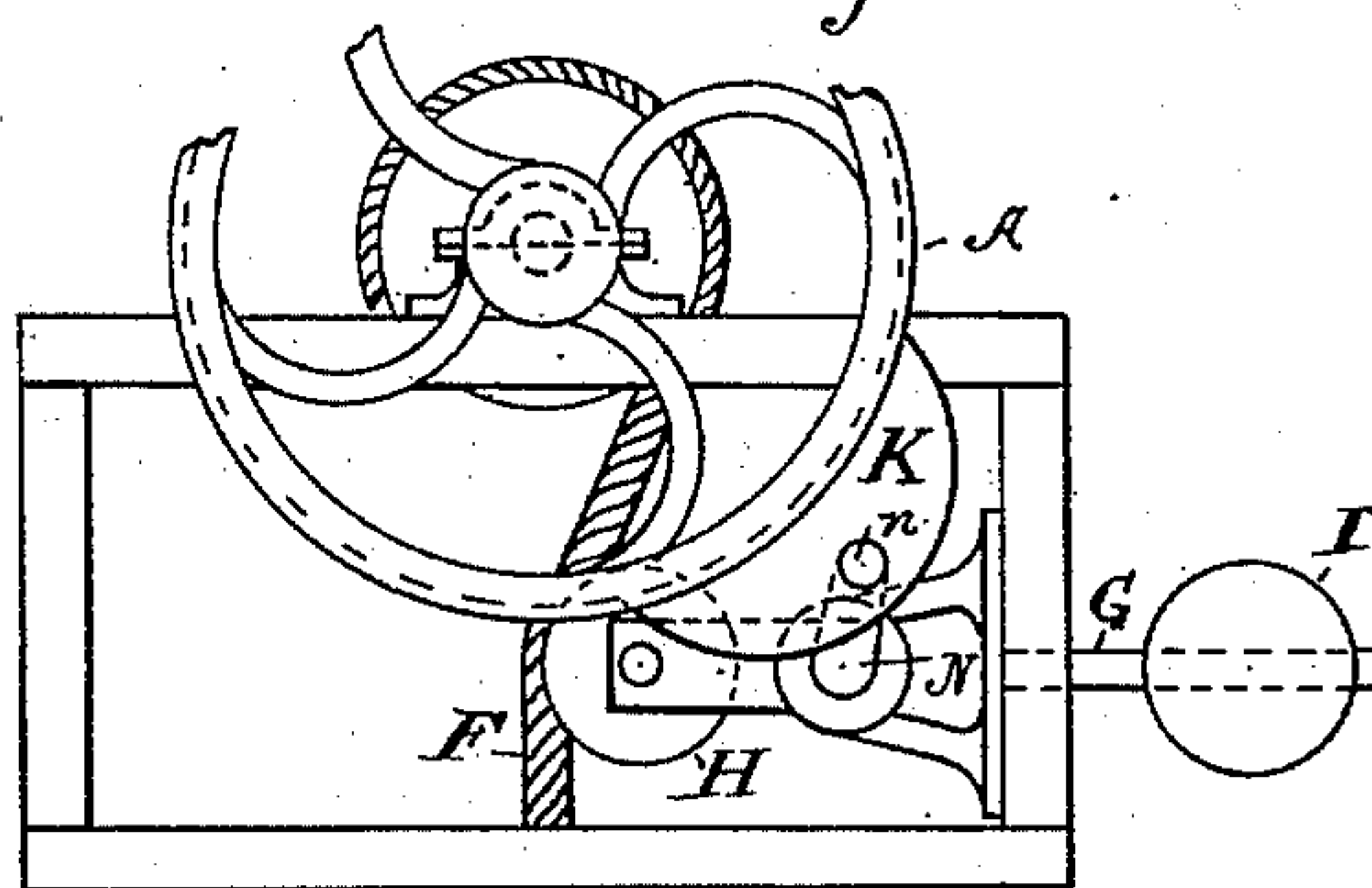


Fig. 4.

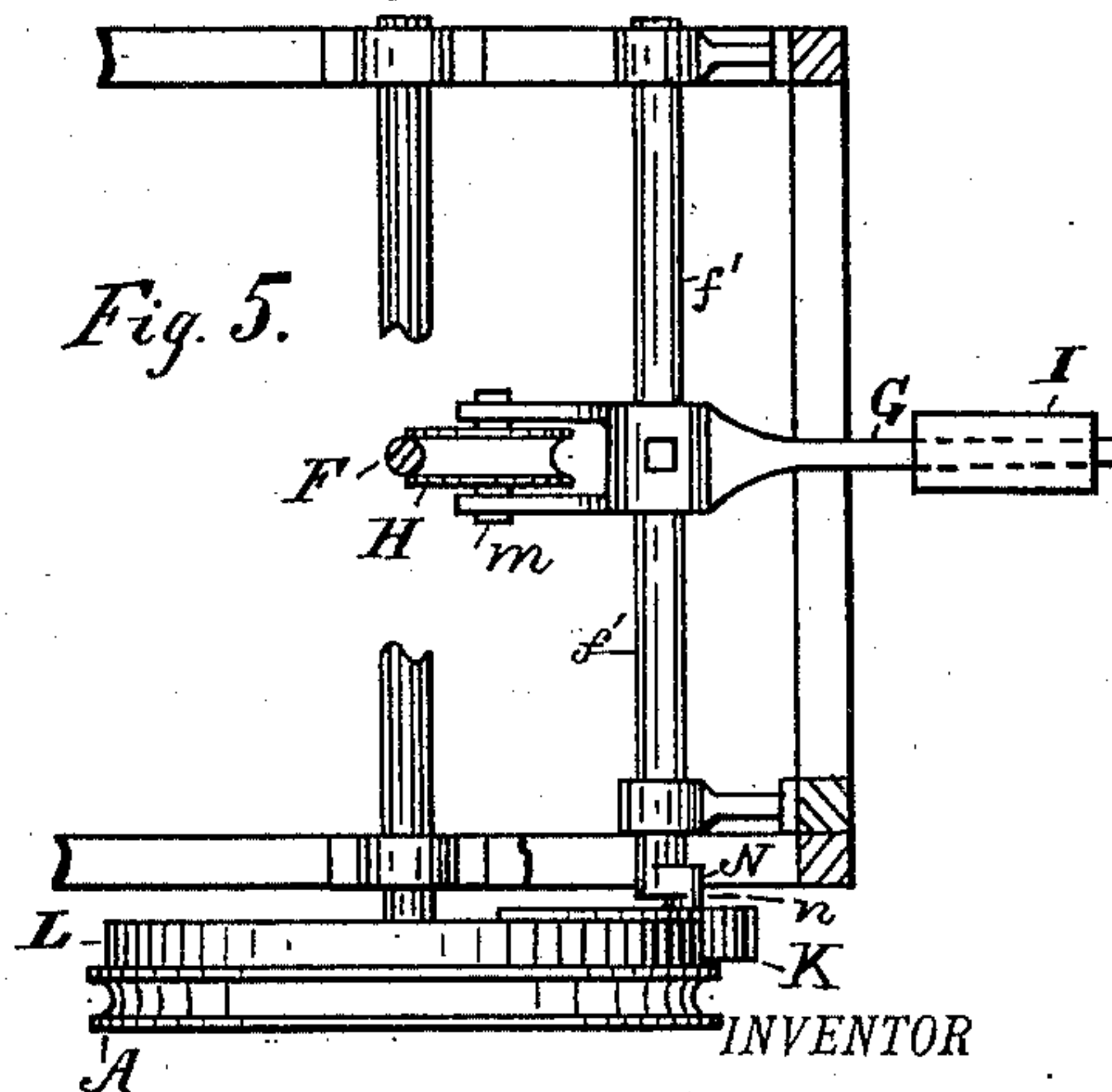


Fig. 5.

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# UNITED STATES PATENT OFFICE.

HORACE A. SMITH, OF BROOKLYN, NEW YORK.

## DUMB-WAITER.

SPECIFICATION forming part of Letters Patent No. 445,824, dated February 3, 1891.

Application filed May 31, 1890. Serial No. 353,735. (No model.)

*To all whom it may concern:*

Be it known that I, HORACE A. SMITH, of Brooklyn, in the county of Kings and State of New York, have invented certain new and useful Improvements in Dumb-Waiters; 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.

This invention relates to that class of hoisting and lowering apparatuses commonly termed "dumb-waiters."

Its object is to provide for the retention of the car in a fixed position at any desired point without the aid of separately-operated brake-ropes or like devices requiring independent manipulation.

It comprises certain novel combinations of parts whereby the brake mechanism, when the car is loaded, is actuated automatically upon the tightening of the hoist-rope, and in such manner that the car will be stationary in the place and position occupied by it at the moment the hoist-rope is tightened.

Figure 1 is a front elevation of a dumb-waiter apparatus embracing my said invention. Fig. 2 is a front elevation and partial vertical sectional view of the same; and Fig. 3 is a detail view as seen from the right-hand end of Figs. 1 and 2, further illustrating said invention. Fig. 4 is a detail front view, and Fig. 5 a plan view, illustrating a brake mechanism which may be used in place of that represented in Figs. 1, 2, and 3.

A is the hand-wheel, and B the hand-rope, of a dumb-waiter. The hand-wheel A is fast on the drive-shaft C, which carries the hoisting-pulley D. Said shaft is supported in suitable fixed bearings which may be provided upon the top *a* of the frame-work, of which the posts *b* constitute the vertical guides of the car E. The latter is attached to the inner end of the draft-rope F, which passes over the hoisting-pulley D, then under the guide-pulley *c*, and over the guide-pulley *d*, and thence downward with a weight *e* at its outer end. This weight is the counterpoise to the car E. The guide-pulleys aforesaid may be changed or substituted by any other suitable arrangement of guiding devices to bring the

draft-rope aside from the path of the car as the latter in its operation ascends and descends.

G is a lever pivoted in a fixed bearing, as at *f*, and which has at its inner end a pulley H, against which bears the draft-rope F. Upon the opposite end of the lever G is a counter-weight I. The pulley H, like all others against which runs the draft-rope F, should be suitably circumferentially grooved to receive said rope. Said pulley I should be so placed as to guide the draft-rope to a point substantially midway between the sides of the way in which the car E travels. In so doing the draft-rope is kept in snug contact with the periphery of the pulley H. The lever G is so arranged that the downward movement of the said pulley will cause it to press with increased pressure upon the contiguous portion of the draft-rope, while the upward movement of said pulley will tend to diminish its pressure against said part of said rope. The car being balanced by its counterpoise *e*, in the usual or in any suitable manner, may be run up and down by reversing the movement of the hand-wheel by manipulating the hand-rope in a manner well understood in the art. The weight of the car being comparatively slight, the bend of the draft-rope, when it passes upon the pulley H, produces so little friction that it does not materially depress the said pulley, and the latter, when the car is empty or not loaded, acts simply as a guide for the draft-rope to keep the line of draft in the proper place, substantially midway between the sides of the way in which the car is arranged to move up and down. When, however, the car is loaded, and is not counterbalanced by an opposing hold on the hand-rope, its greater weight tends to straighten the bend of the draft-rope where it passes from the hoisting-pulley to the pulley H. This causes said rope to press more forcibly against the pulley H, and the increased friction carries the latter downward. The lever G of course turns upon its pivot to permit the movement of said pulley. The lever G is connected with a brake mechanism, so that when the pulley H is depressed, as just described, its downward movement automatically operates the brake mechanism to stop



the rotation of the shaft C, and thus retain the car E suspended at the point occupied thereby at the moment said stopping of the rotation of the shaft occurs.

5 As represented in the drawings, a brake-shoe K is applied in suitable relation to a flange L, fast upon the hand-wheel A and concentric with its shaft C. From this brake-shoe extends a lever M, pivoted, as shown, at  
10 *g* in Fig. 3, the opposite end of which extends underneath a stud *m*, which projects from one side of that arm of the lever G which carries the pulley H, so that the downward movement of said pulley, hereinbefore de-  
15 scribed, depresses the adjacent end of the lever M and raises the opposite end thereof, so as to bring the brake-shoe K into frictional contact with the flange L to stop the motion of the shaft C, and consequently to hold the  
20 carsuspended, as hereinbefore set forth. The construction described possesses certain practical advantages over other means of applying the brake-shoe to stop the rotation of the shaft; but any suitable devices may be em-  
25 ployed for connecting the brake-shoe with the lever G to automatically stop the rotation of the shaft C, when the load upon the car is allowed to operate, as set forth, and the brake-shoe itself may be of any suitable or preferred  
30 construction, all without departing from my said invention.

The stud on the lever G may be provided by laterally extending the axle or journal of the pulley H. Said pulley is made adjusta-  
35 ble along the length of the arm, which carries it, of the lever *g* to enable the pulley to be easily adjusted to the adjacent bend of the draft-rope, and the counterpoise I on the other arm of said lever is adjustable along  
40 the same to regulate within certain limits the pressure with which the said pulley bears against the draft-rope. A spring *n* may be applied to the lever K to more readily insure the retraction of the brake-shoe from the  
45 flange of the hand-wheel when the pulley H is moved upward by a reverse movement of the draft-rope.

In order to release the car from its fixed position and permit the apparatus to resume its  
50 normal operation of raising and lowering the car, it is only necessary to operate the hand-rope to slightly raise the car, whereupon the reverse movement of the draft-rope lifts the pulley H, so that it runs lightly in contact  
55 with said pulley, whereupon the hand-rope, and consequently the draft-rope, being held under controlled and regulated movement with the weight of the loaded car measurably counterbalanced by the hold of the operator  
60 upon the hand-rope, the draft-rope glides over the pulley H without depressing the same, and the car is allowed to descend. In hoisting the car the tendency of the draft-

rope is to throw the pulley H into a practically-frictionless position with regard to said  
65 rope, so that its upward or transverse movement is not interfered with.

As hereinbefore mentioned, the brake and brake mechanism may be of any desired kind or character. Thus, instead of that repre-  
70 sented in Figs. 1, 2, and 3, the construction shown in Figs. 4 and 5 may be adopted, in which the pivot *f'* is fast to the lever and works in journals at its ends, one of said ends having a crank-arm N, to the wrist *n* of which  
75 is attached the brake-shoe K, applied in due relation with the flange L or brake-surface of the wheel A.

What I claim as my invention is—

1. The combination of the lever G, pulley 8c H, and a brake mechanism with the car, draft-rope, driving-shaft, hand-wheel, and hand-rope of a dumb-waiter, substantially as and for the purpose herein set forth.

2. The combination of the lever G, counter- 85 poise I, pulley H, and a brake mechanism with the car, draft-rope, driving-shaft, hand-wheel, and hand-rope of a dumb-waiter, substantially as and for the purpose herein set forth.

3. The combination of the lever G, pulley H, adjustable on said lever, and a brake mechanism with the car, draft-rope, driving-shaft, hand-wheel, and hand-rope of a dumb-waiter, substantially as and for the purpose 95 herein set forth.

4. The combination of the lever G, counterpoise I, adjustable on said lever, pulley H, and a brake mechanism with the car, draft-rope, driving-shaft, hand-wheel, and hand- 100 rope of a dumb-waiter, substantially as and for the purpose herein set forth.

5. The combination of the lever G, counterpoise I, pulley H, said counterpoise and pulley adjustable on said lever, and a brake 105 mechanism with the car, draft-rope, driving-shaft, hand-wheel, and hand-rope of a dumb-waiter, substantially as and for the purpose herein set forth.

6. The combination of the lever G, having a 110 stud *m*, the pulley H, the lever M, and brake-shoe K with the car, draft-rope, driving-shaft, hand-wheel, and hand-rope of a dumb-waiter, substantially as and for the purpose herein set forth.

7. The combination of the lever G, having a 115 stud *m*, the pulley H, the lever M, the brake-shoe K, and the flange L on the hand-wheel with the car, draft-rope, driving-shaft, draft-pulley, and hand-rope of a dumb-waiter, sub- 120 stantially as and for the purpose herein set forth.

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Witnesses:

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ALEX. J. HUTCHINSON.