(No Model.)

3 Sheets—Sheet 1.

G. M. EMERICK.

DUMB WAITER.

No. 434,437. Patented Aug. 19, 1890.

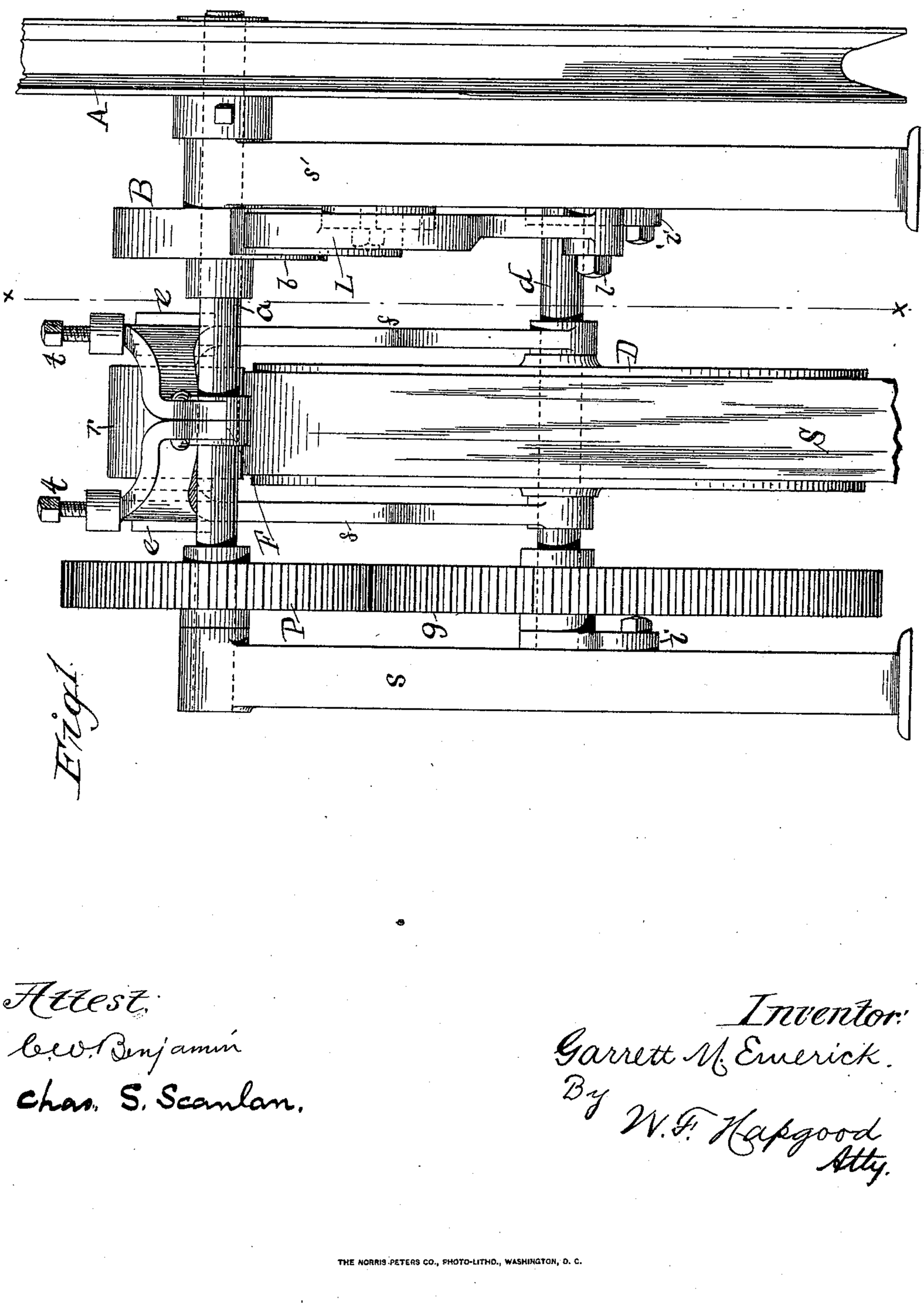

Fig. 1.

Attest:
C. C. Benjamin
Chas. S. Scanlan.

Inventor:
Garrett M. Emerick.
By W. F. Hapgood
Atty.

(No Model.) 3 Sheets—Sheet 2.

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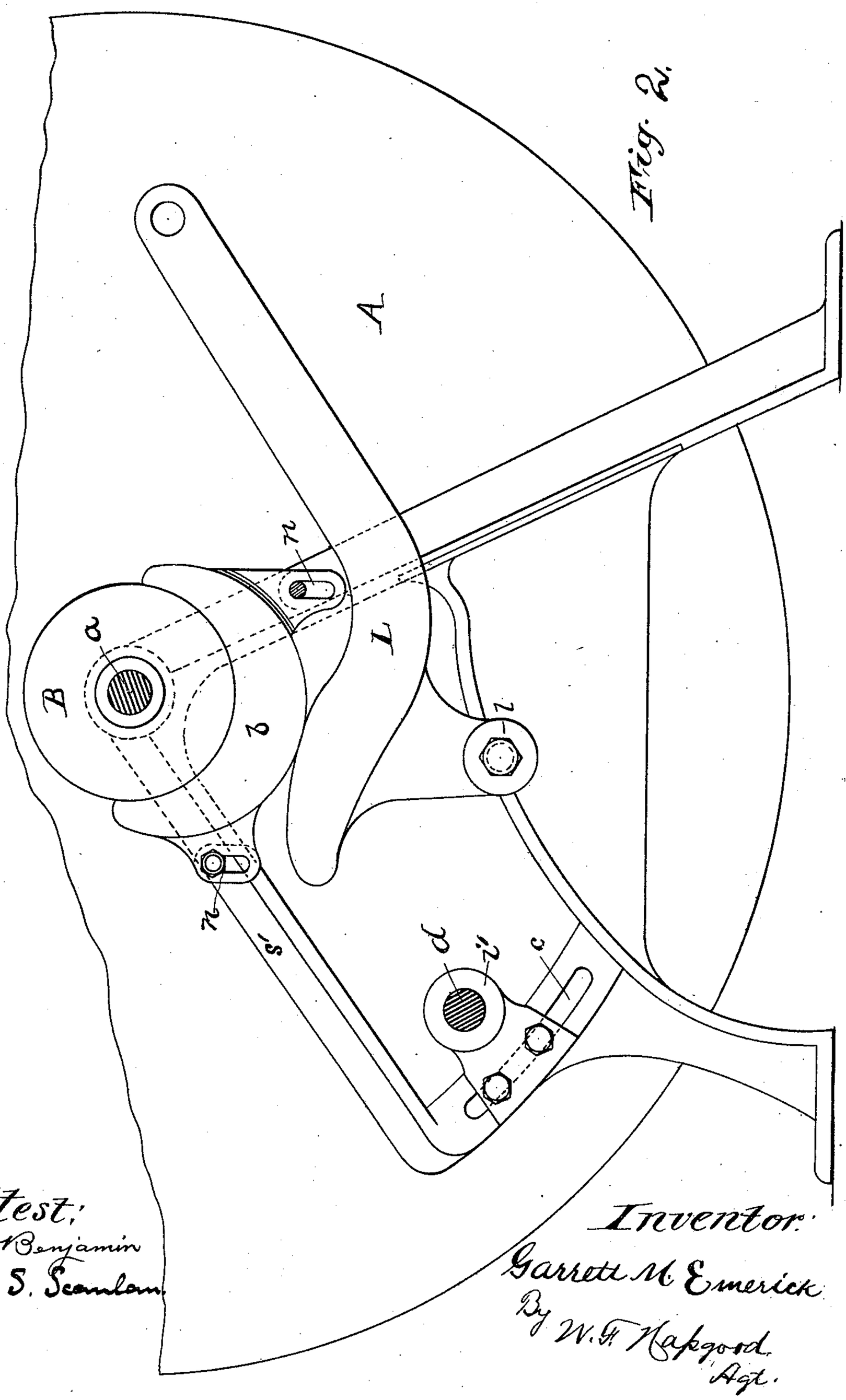

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Attest:
C. W. Benjamin
Chas. S. Seamlan.

Inventor:
Garrett M. Emerick
By W. H. Hapgood.
Agt.

(No Model.) 3 Sheets—Sheet 3.

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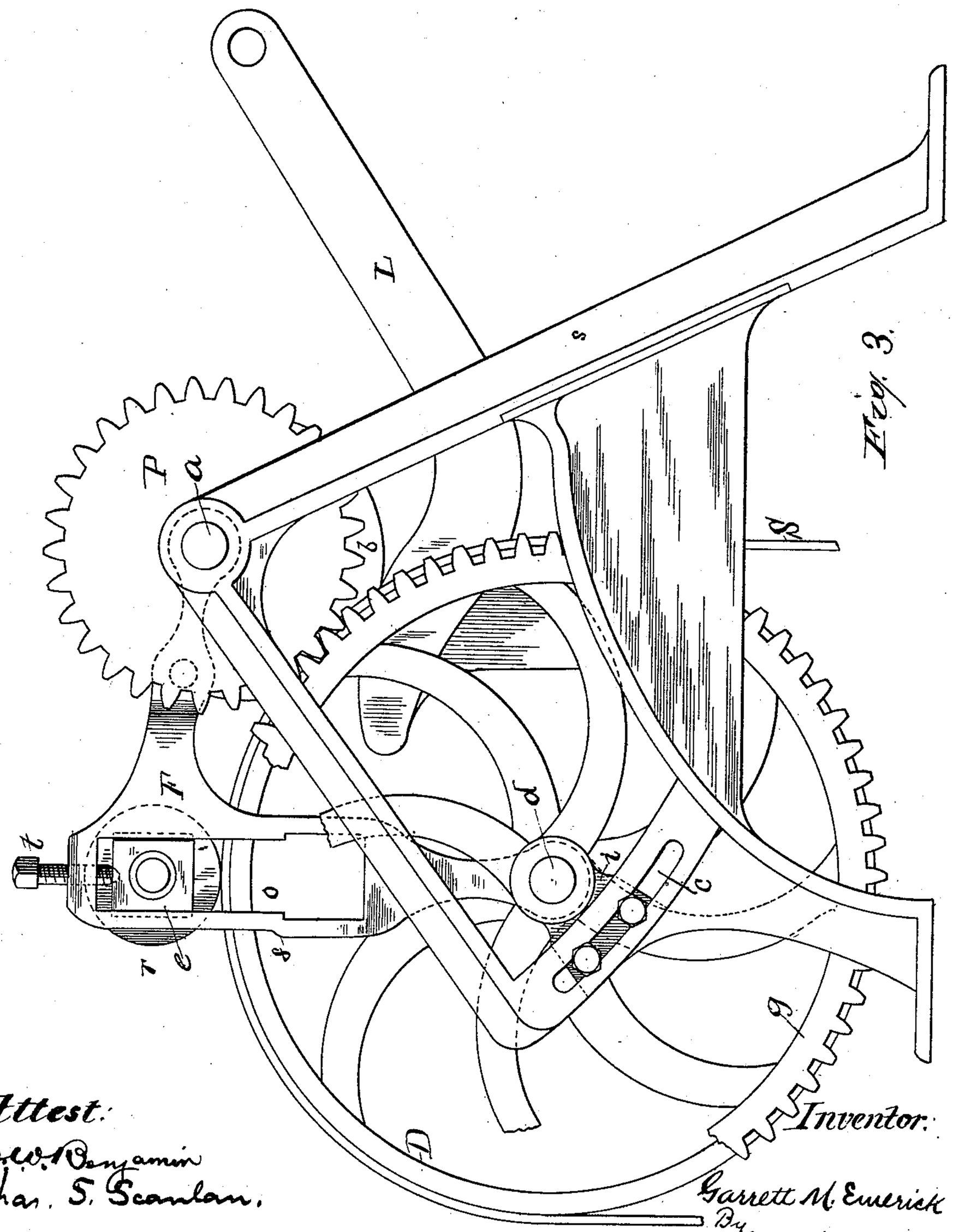

Attest:
C. W. Benjamin
Chas. S. Scanlan.

Inventor:
Garrett M. Emerick
By W. F. Hapgood Atty

UNITED STATES PATENT OFFICE.

GARRETT M. EMERICK, OF BROOKLYN, NEW YORK.

DUMB-WAITER.

SPECIFICATION forming part of Letters Patent No. 434,437, dated August 19, 1890.

Application filed March 31, 1890. Serial No. 345,943. (No model.)

To all whom it may concern:

Be it known that I, GARRETT M. EMERICK, a citizen of the United States, residing at Brooklyn, in the county of Kings and State of New York, have invented certain new and useful Improvements in Dumb-Waiters or Elevators, of which the following is a specification.

In arranging the machinery for dumb-waiters or light elevators it is usually necessary to make use of guide-pulleys to obtain the proper lead for the hoisting-rope, and to give the rope the required grip on the hoisting-pulley, on account of the variations in the dimensions of the cars and the shaftways provided for them. The brakes employed in existing dumb-waiter machinery are also not as effective as is desirable.

The object of my invention is to provide a mechanism for operating dumb-waiters or light elevators which can be easily adapted to cars of different sizes and which shall have an efficient and powerful brake that can control the movements of the car quickly under all circumstances, and I attain these objects by the mechanism illustrated in the accompanying drawings, in which—

Figure 1 is a side elevation of the entire machine. Fig. 2 is an elevation through *x x*, Fig. 1; and Fig. 3 is an end elevation.

The driving-shaft *a*, mounted in suitable framing *s s'*, has on its outer end the usual hand-wheel A, over which works the rope for operating the mechanism. The shaft *a* also carries the brake-drum B and a pinion P. Curved slideways *c c'* are formed in the frames *s s'*, the curvature being that of an arc of a circle of which the shaft *a* is a center. In these ways *c c'* are fitted blocks *i i'*, which form the bearings for the shaft *d*, on which are fixed the gear-wheel *g*, meshing with the pinion P, and the hoisting-pulley D. An angular bracket-frame F is mounted loosely on the shafts *a* and *d*, with the hoisting-pulley D between its bifurcated arms *f f'*. In these arms *f f'* are slots *o*, in which slide bearing-blocks *e*, carrying a friction-roller *r*, of rubber or other suitable material. Set-screws *t t'* regulate the position of the bearings *e* and the roll *r*.

In Fig. 2, B is the brake-drum, and *b* the brake-shoe, which is attached to the frame *s'* by bolts passing through the vertical slots *n n'*. The lever L, pivoted at *l*, operates the brake-shoe *b*.

S is the hoisting-belt passing over the pulley D, one end being attached to the car, while the other is fastened to the counterweight.

The operation of my improved mechanism is as follows: The hand-wheel A, being operated in the usual manner by means of a rope passing over it, revolves the shaft *a* with the brake-drum B and pinion P. The pinion P, meshing with the gear-wheel *g*, revolves the shaft *d* and the hoisting-pulley D, which carries with it the hoisting-belt S.

In setting up the apparatus in the dumb-waiter well it is placed so that the inner periphery of the hoisting-pulley P shall be as nearly over the center of the well as possible, which will allow the belt S to lead vertically directly to the car without the intervention of guide-pulleys. If, on account of the size or construction of the well, the machinery cannot be placed exactly in the desired position, the proper lead for the hoisting-belt may be obtained in many cases by the adjustment provided by the curved slides *c c'*, the bolts that secure the bearing-blocks *i i'* being loosened and the blocks being moved so as to bring the pulley D into the proper position. As these blocks *i i'* move in a circular path with the shaft *a* as a center, it is obvious that the gear-wheel *g* will always be in mesh with the pinion P in whatever position the blocks *i i'* may be placed. If the proper adjustment cannot be obtained by shifting the bearings *i i'*, the pulley D is removed and another of a different size, suited to the case, is substituted in its place and adjusted as before, the gear-wheel *g* being unchanged. It is evident that by this arrangement one size of machinery can be adapted to dumb-waiters or elevators of a great variety of dimensions and sizes.

When, as in the usual description of dumb-waiter machinery, it is necessary to use a number of guide-pulleys, both to obtain the proper lead for the hoisting-rope and the necessary contact of the rope with the hoisting-pulley, there is a great deal of friction created, which both consumes power and rapidly destroys the rope. Moreover, on account of the

short turns it is impossible to use anything but a fiber rope for the purpose.

In my improved machine I am enabled to use either a belt, as shown in the drawings, and which I prefer, or a wire rope, as the hoisting rope or belt is not required to make any sharp turns. If it is desired to use a wire or other rope in my apparatus, it can be done by simply substituting the ordinary grooved wheel for the flat pulley D here shown.

If the friction of the belt S on the pulley D is not sufficient to raise the load desired, the friction-roller *r* is made use of to increase the adhesion of the belt. This roll is mounted in the bracket-frame F, as shown in Fig. 3, and rests on the belt S at the upper part of the pulley D. As the bracket F is carried by the shafts *a* and *d*, which are free to revolve in the bearings of F, it is evident that the position of *r* to D will always be practically the same, whatever the adjustment of the bearings *i i'* may be. The sliding bearings *e* allow the roll *r* to be adjusted to the hoisting-pulley D, whatever its size, and the set-screws *t t'* provide for regulating the pressure of the roll upon the belt S and pulley D.

The brake-shoe *b*, Fig. 2, is made sufficiently large to embrace about one-half the circumference of the brake-drum B, and as the slots *n n'* allow only of a vertical movement it is evident that a very small movement will apply the entire shoe-surface to the drum B or remove it. The lever L has its short arm made in the form of a cam, which bears on the lower side of *b* and requires but a slight power on the long arm to produce a very great pressure on *b*. An endless rope attached to the long arm of L may be led down the well in the usual manner for operating the brake.

What I claim, and desire to secure by Letters Patent, is—

1. In a mechanism for operating dumb-waiters or light elevators, the frames *s s'*, having slideways *c c'* in the form of an arc of a circle having shaft *a* as a center, bearing-blocks *i i'*, carrying shaft *d*, with hoisting-pulley D, and gear-wheel *g*, in combination with the driving-shaft *a*, pinion P, and hand-wheel A, substantially as described.

2. In a mechanism for operating dumb-waiters or light elevators, the combination of a driving-shaft *a*, operated by the hand-wheel A and carrying a pinion P, with the shaft *d*, gear-wheel *g*, and hoisting-pulley D, said shaft *d*, with its attachments, being radially adjustable with relation to the shaft *a*, substantially as and for the purpose set forth.

3. In a mechanism for operating dumb-waiters or light elevators, the driving-shaft *a*, with its pinion P, and the shaft *d*, with gear-wheel *g* and hoisting-pulley D, in combination with the angular bracket F, mounted loosely on said shafts *a* and *d* and carrying the friction-roller *r*, adjustably mounted in slides in the bifurcated arms *f f'* of said bracket, and belt or rope S, substantially as and for the purpose set forth.

GARRETT M. EMERICK.

Witnesses:
WM. BARKER,
GEO. W. BEST.