

(No Model.)

2 Sheets—Sheet 1.

W. R. SMITH.
ELEVATOR.

No. 283,431.

Patented Aug. 21, 1883.

Fig. 2.

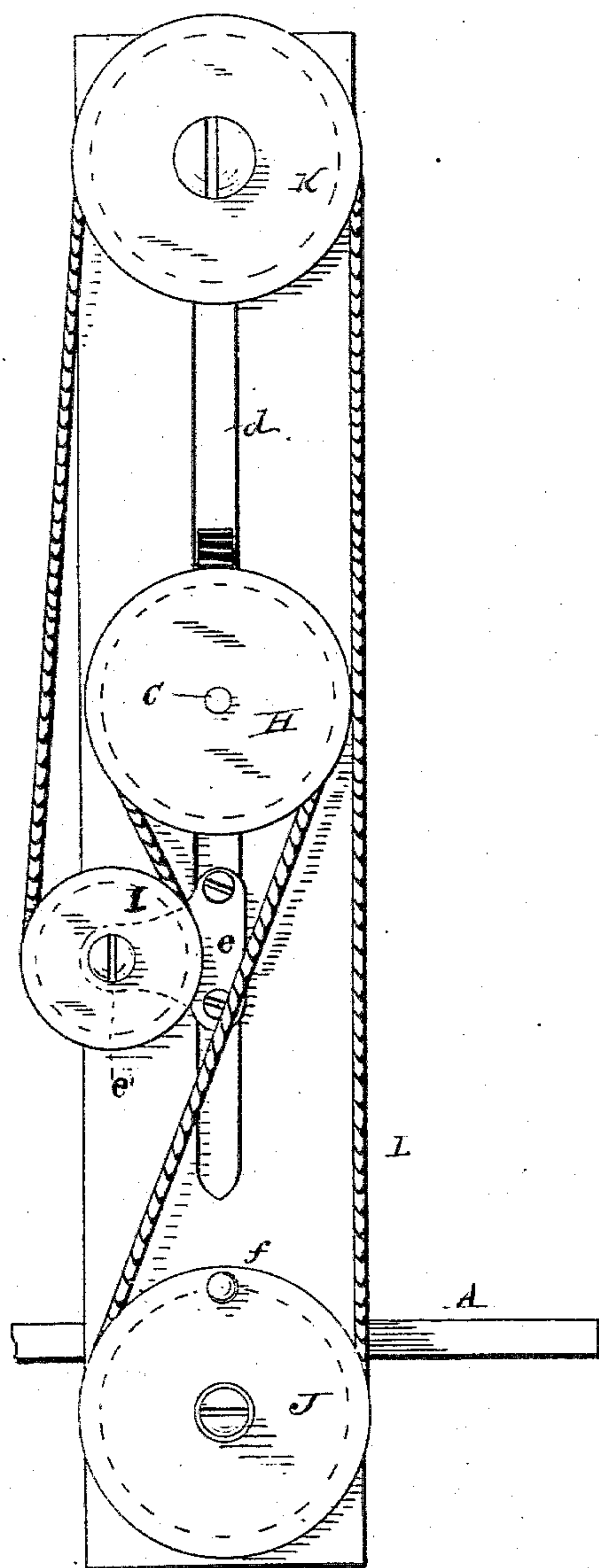
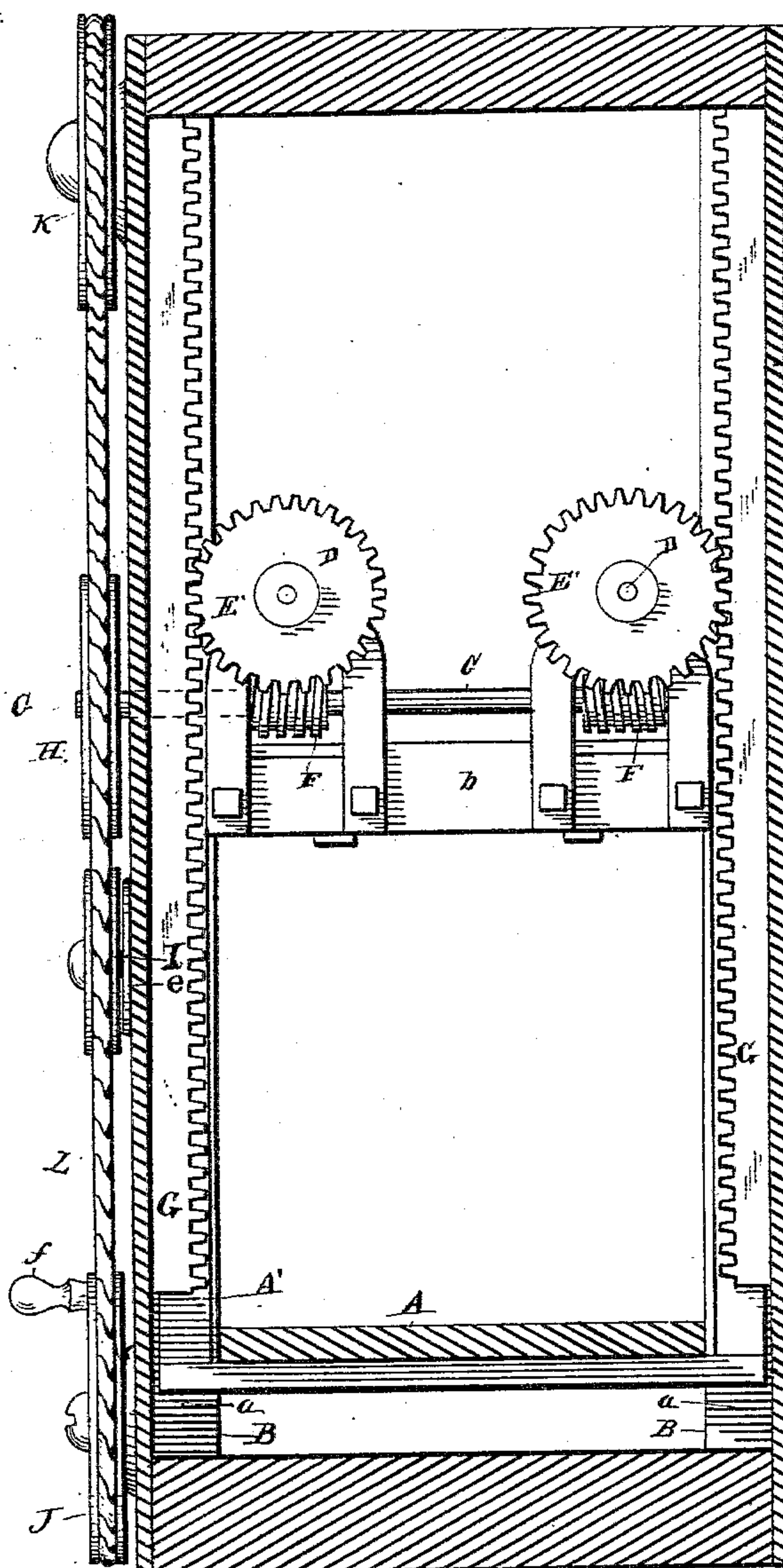


Fig. 1.



WITNESSES
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Harry Bernhard

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W. R. Smith
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Attorney

(No Model.)

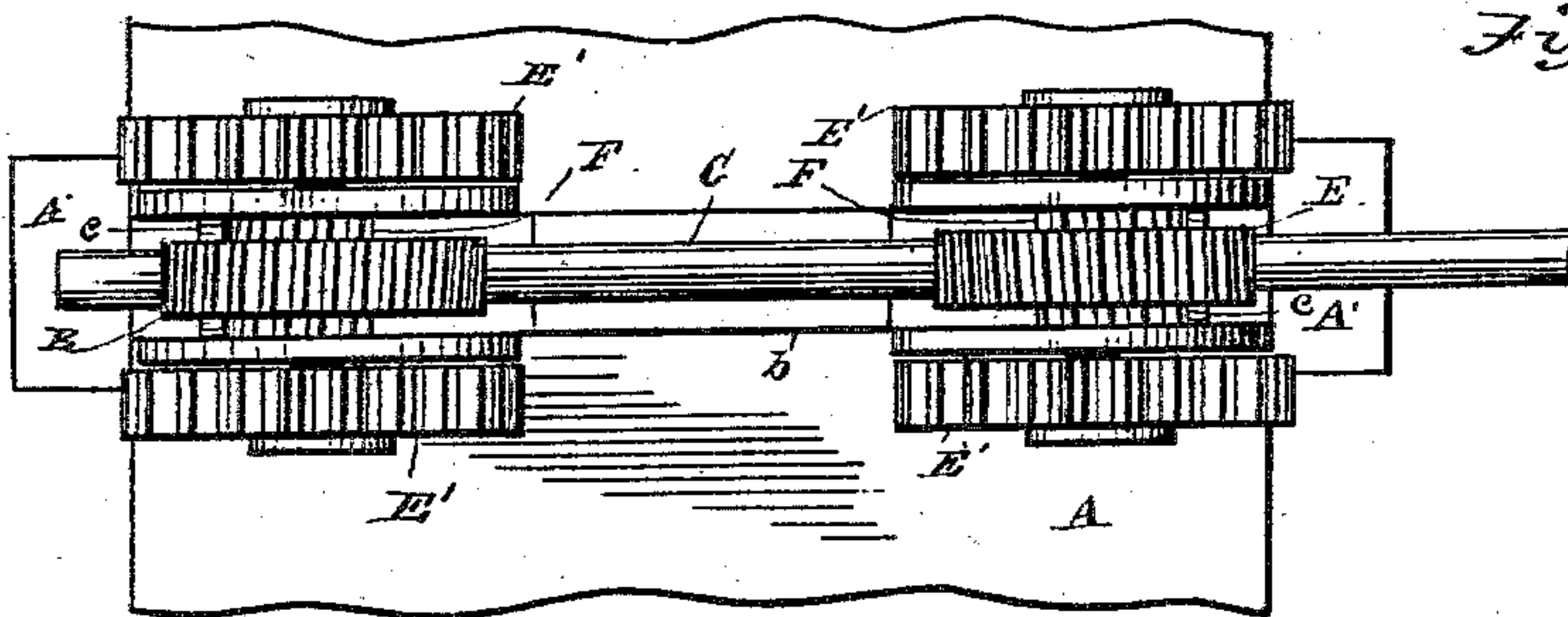
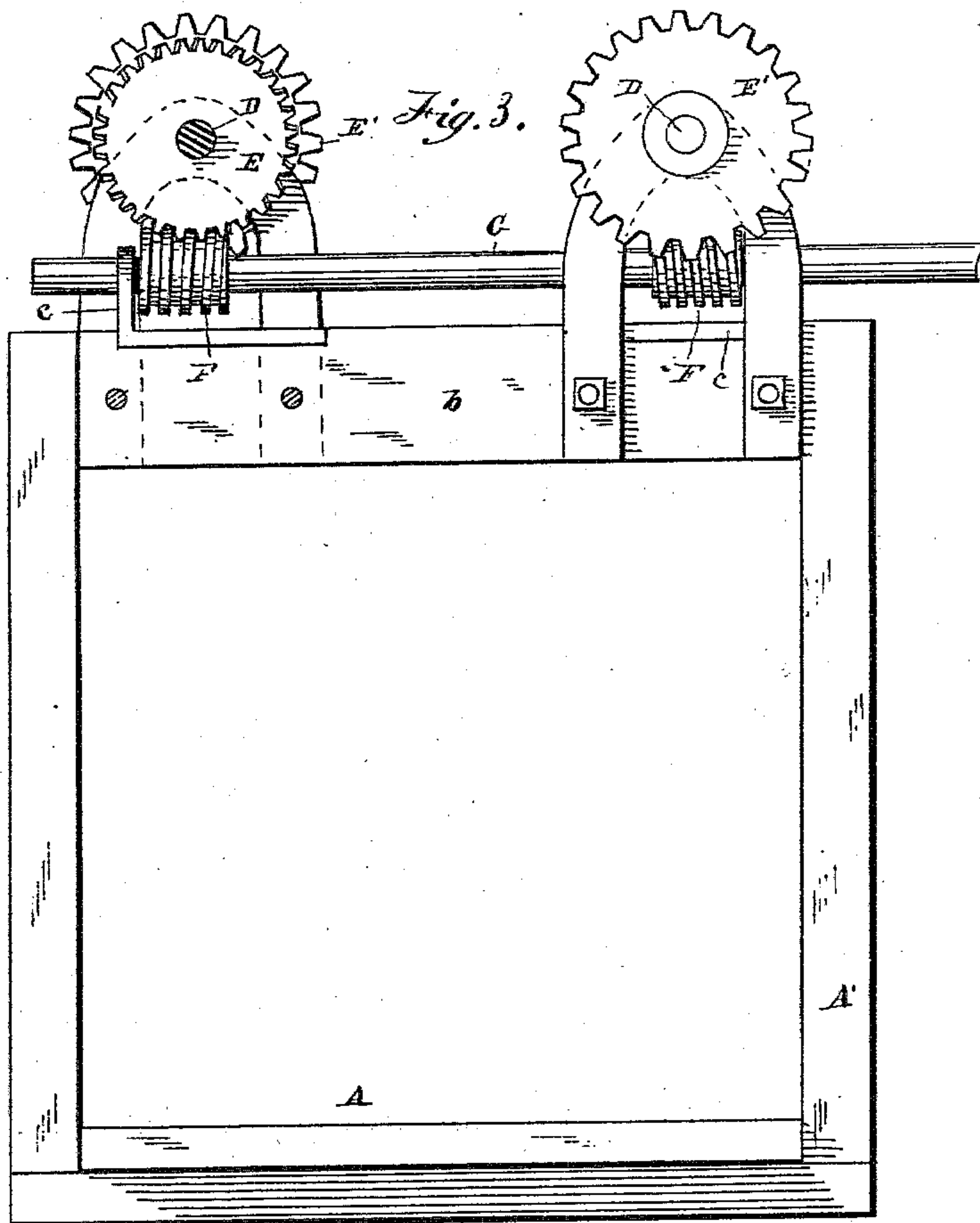
2 Sheets—Sheet 2.

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WITNESSES

H. H. Knight
Harry Bernhard.

INVENTOR

Wilson R. Smith
per Edson Bros.
Attorney

UNITED STATES PATENT OFFICE.

WILSON R. SMITH, OF BELOIT, WISCONSIN, ASSIGNOR OF ONE-HALF TO THE
MONITOR WORKS, OF SAME PLACE.

ELEVATOR.

SPECIFICATION forming part of Letters Patent No. 283,431, dated August 21, 1883.

Application filed July 6, 1883. (No model.)

To all whom it may concern:

Be it known that I, WILSON R. SMITH, a citizen of the United States, residing at Beloit, in the county of Rock and State of Wisconsin, have invented certain new and useful Improvements in Elevators, of which the following is a specification, reference being had therein to the accompanying drawings, and in which—

Figure 1 is a side view of my improved warehouse or store elevator. Fig. 2 is an end elevation, and Fig. 3 is a sectional elevation. Fig. 4 is a detailed end view of the same.

In elevators of this class the most important object, among others, is to provide a perfect safeguard against the sudden precipitation or falling of the car or platform in the event of the breaking of the hoisting-rope. This object is fully attained by my invention, and consequently the apprehension of danger and annoyance from this source dispelled.

The nature of my invention consists, therefore, in the combination and arrangement of parts, substantially as hereinafter more fully set forth and claimed.

In carrying out my invention I employ a car or platform of the construction generally employed in stores and warehouses. At the upper ends of uprights or standards affixed thereto, and moving in grooves or ways, is secured a cross bar or beam, which supports brackets having bearings. In these bearings are supported a worm-shaft and pinion-shafts. The worms of the former shaft—one disposed at each end—gear with pinions on the latter shaft, while additional pinions thereon engage with racks arranged one on each side of each of the grooves or ways of the standards or uprights of the platform or car. One end of the worm-shaft extends through a long vertical slot in one of the said ways, and has a pulley outside of the latter. Likewise arranged with relation to the same way is a second (smaller) pulley journaled upon an axis of a bracket secured to the standard of the car or platform on that side and projecting through the aforesaid slot. Two other pulleys are hung on the same side of the said way, one arranged at the lower end and the other at the upper end of the way. Around the several pulleys is passed an end-

less belt to transmit motion to the car or platform.

To enable the better understanding of my invention, reference is had to the accompanying drawings, in which—

A is the car or platform. Its standards A' move in grooves *a* in ways B, extending from the lower story floor through openings or "hatchways" in the floors of the upper stories. The standards A' are connected together at their upper ends by a cross-beam, *b*, as usual.

C is the worm-shaft, hung in bearings arranged between brackets *c*, fastened to the cross-beam *b* of the car. These brackets extend above the cross-beam, and also form bearings for the transverse shafts D, having each three pinions, E and E' E'. At the ends of the worm-shaft are worms or screws F, which gear with the middle pinions, E. The pinions E' engage with racks G, two of which are arranged upon each way B, one being disposed on each side of its groove. One end of the worm-shaft extends through a long vertical slot, *d*, in one of the ways B, and has secured to it outside of said way a pulley, H. Connected to the standard on the same side of the car or platform is a bracket, *e*, arranged outside of the slotted way, and having an axis, *e'*, upon which is hung a smaller pulley, I. The pulley I, with the pulley H, is thus permitted to move up and down with the car or platform. J K are two other pulleys of about the same diameter, but of greater diameter than the pulleys H I, one arranged at the lower end and the other at the upper end of one of the ways B. These pulleys, including pulleys H I, are encompassed by an endless belt, L. By turning the bottom pulley, J, having a handle or crank, *f*, attached thereto, movement is imparted to the aforesaid pulleys and the car or platform caused to travel up or down according to the direction given the bottom pulley. It will be seen that by means of this arrangement of worm-shaft and pinions, the middle ones of which gear with the worms of said shaft and the others engage with racks, while one of the hoisting-rope pulleys is attached to said worm-shaft and a second one connected to and caused to move with the platform or car, the very in-

stant the rope should break or snap asunder the car or platform would stand still and be unable to have further movement, and thus be prevented from being suddenly precipitated
5 below.

I am aware that it is old, broadly, to employ a worm-shaft gearing with a pinion engaging a rack, as is also the employment of a number of driving pulleys encompassed by an endless
10 belt or rope, but, arranged out of line with the upright ways, require other means for their support than one of the upright ways.

Having thus fully described my invention, I claim and desire to secure by Letters Patent—

15 In an elevator, the combination, with the car or platform with its standards moving in

grooves in upright ways and connected together by a cross-beam having a superposed worm-shaft gearing with the middle ones, of a number of pinions arranged upon transverse
20 shafts, the side pinions thereof engaging with racks upon the upright ways of the pulleys J K and H I, adapted with the pulley H of the worm-shaft to move with the car or platform, substantially as and for the purpose set forth. 25

In testimony whereof I affix my signature in presence of two witnesses.

WILSON R. SMITH.

Witnesses:

J. B. Dow,

W. E. SOUGUS.