

(No Model.)

3 Sheets—Sheet 1.

G. ROMWEBER.
MEANS FOR ELEVATING GRAIN.

No. 368,242.

Patented Aug. 16, 1887.

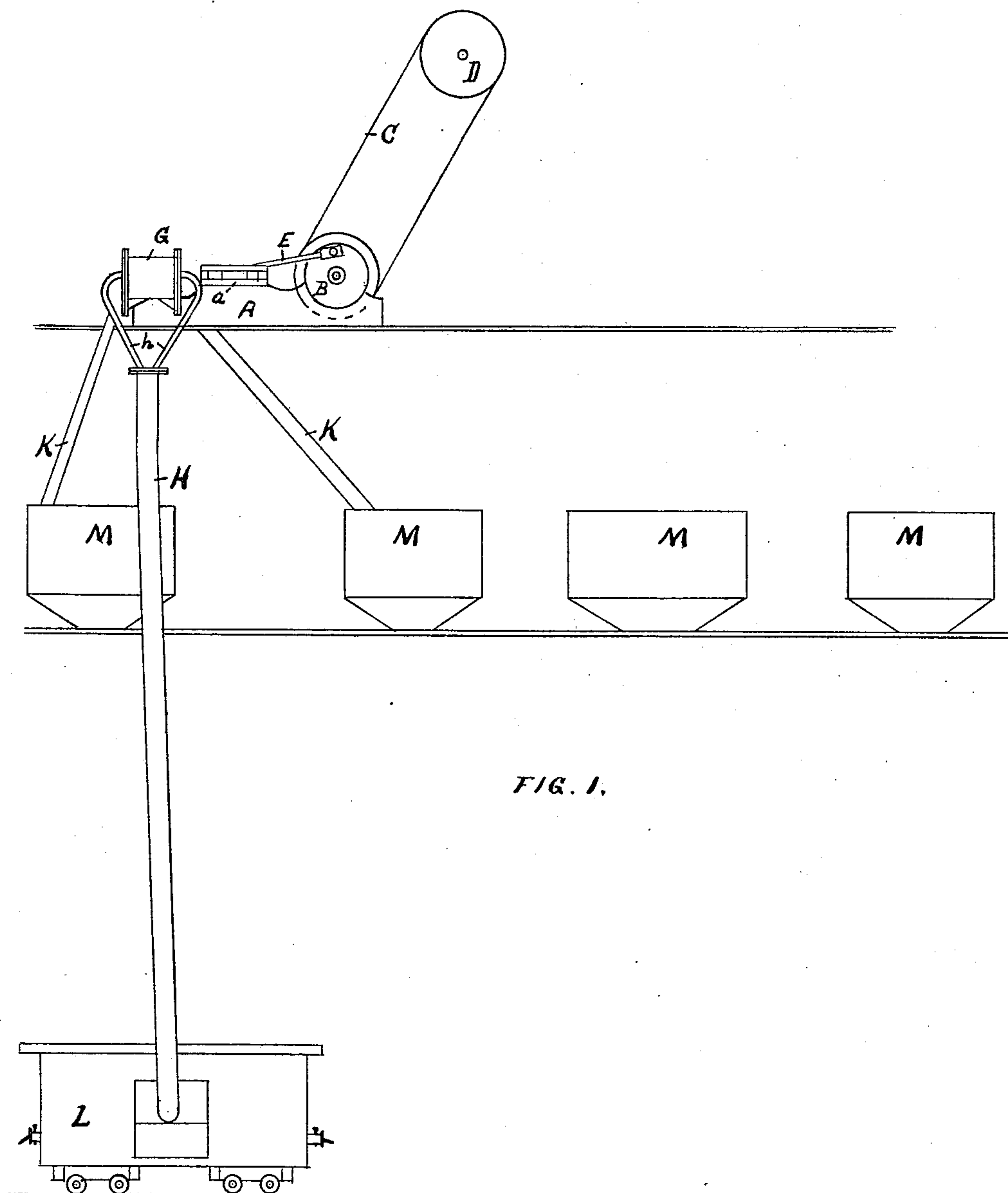


FIG. 1.

WITNESSES

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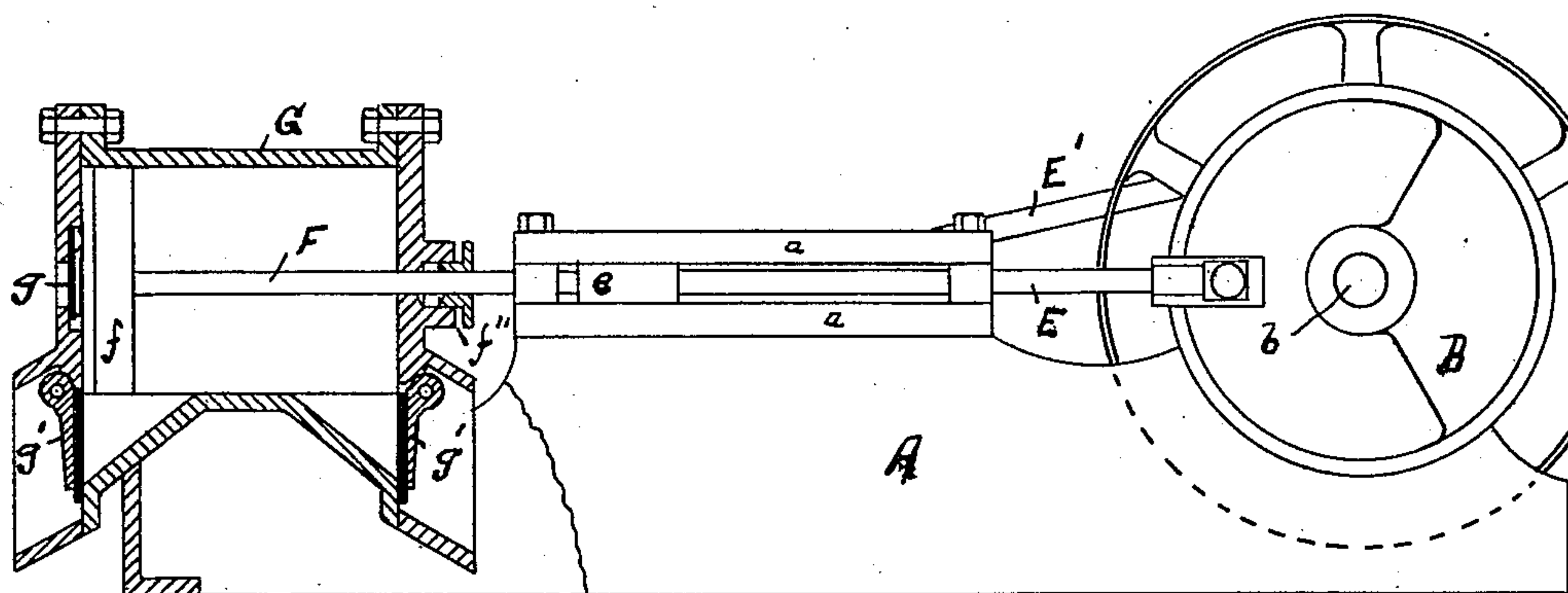


FIG. 2.

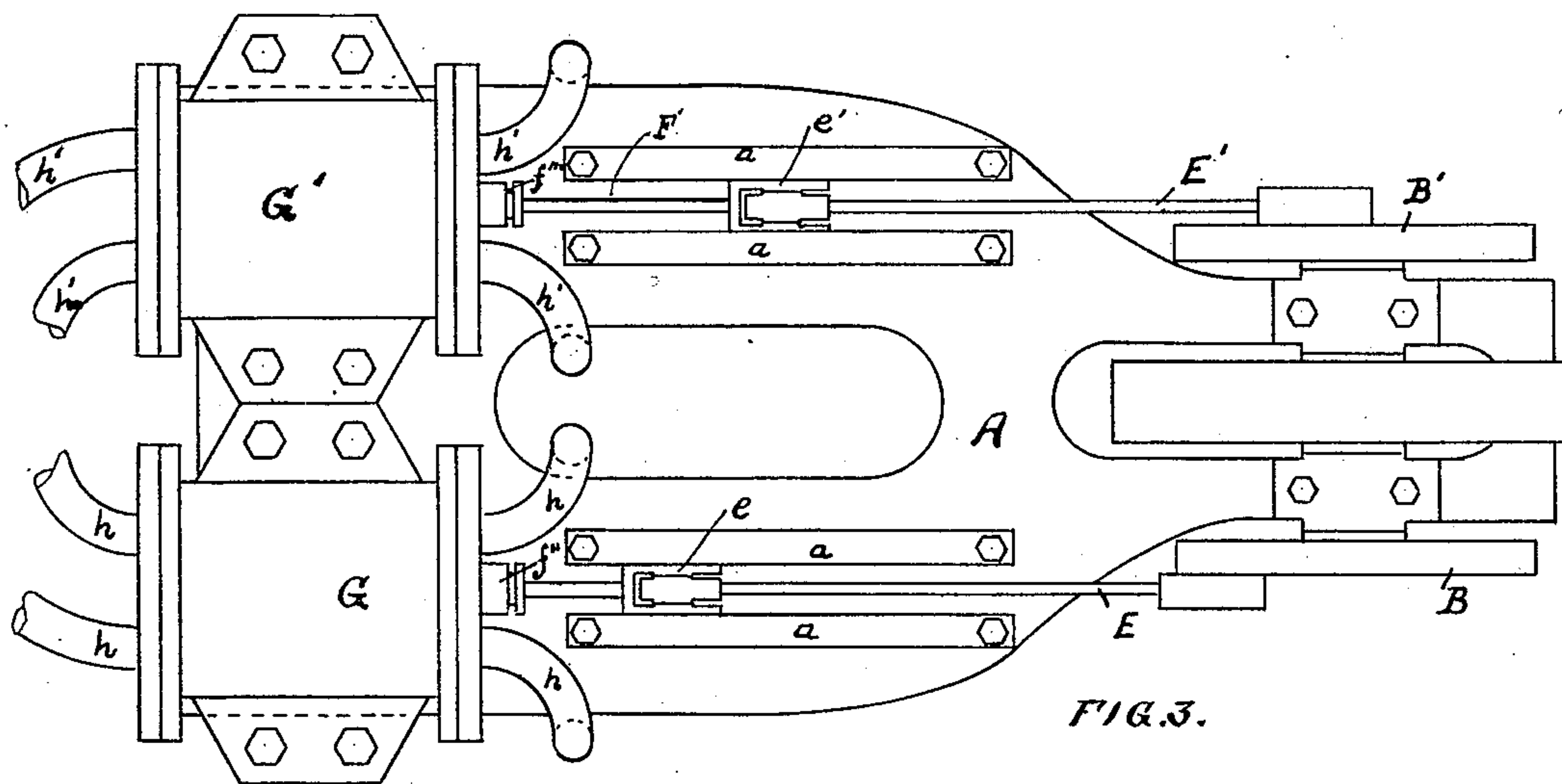


FIG. 3.

WITNESSES

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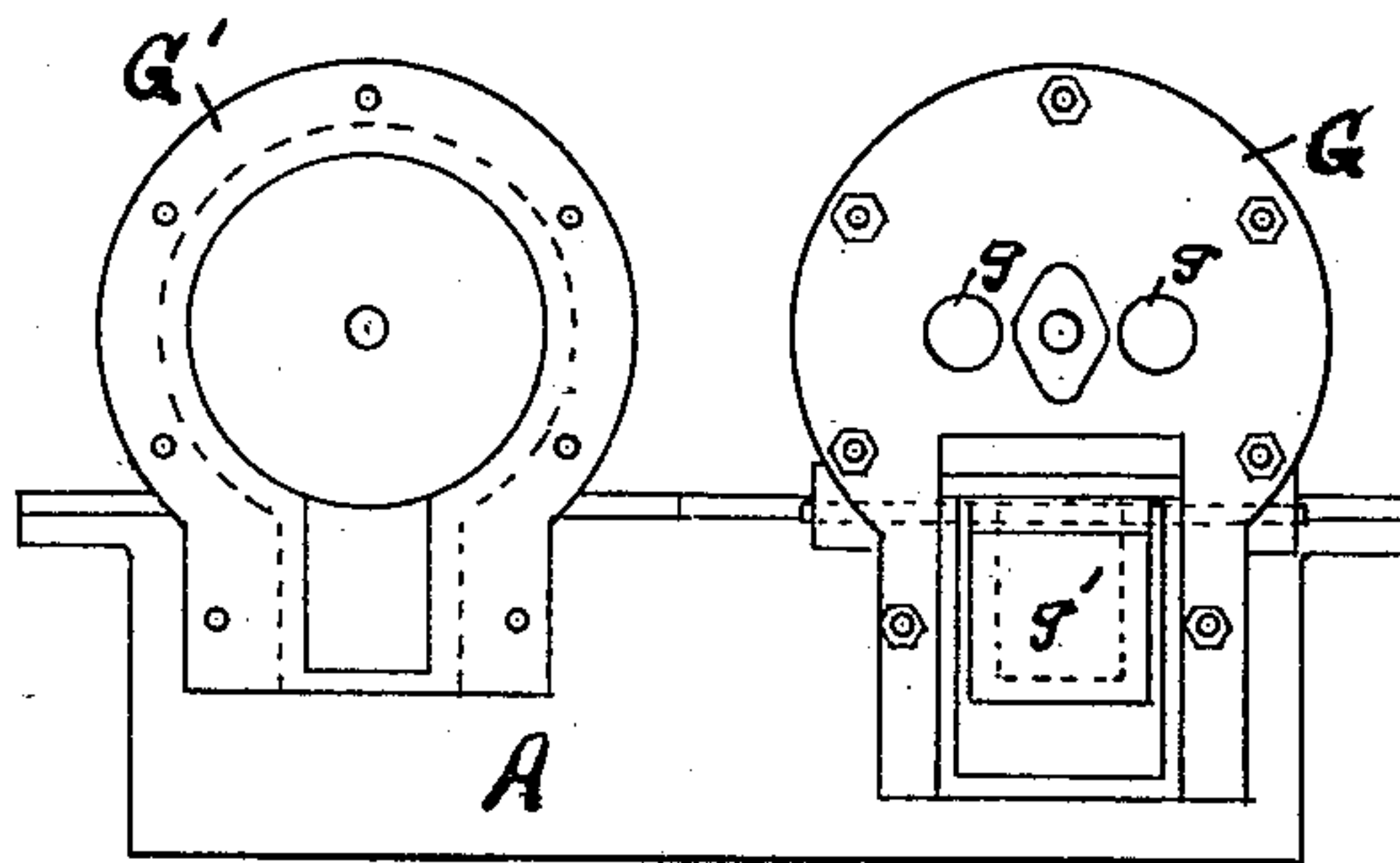


FIG. 4.

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UNITED STATES PATENT OFFICE.

GUST ROMWEBER, OF MINNEAPOLIS, MINNESOTA.

MEANS FOR ELEVATING GRAIN.

SPECIFICATION forming part of Letters Patent No. 368,242, dated August 16, 1887.

Application filed November 20, 1886. Serial No. 219,521. (No model.)

To all whom it may concern:

Be it known that I, GUST ROMWEBER, a citizen of the United States, and a resident of Minneapolis, county of Hennepin, State of Minnesota, have invented a new and useful Means for Elevating Grain, of which the following is a specification.

My invention has for its object to elevate wheat and other small grains with the utmost rapidity and the greatest economy. It is designed more especially to elevate wheat directly from the car on the track and deliver it into the bins of the elevator, without regard to the height of the same above the ground.

By my invention I take the wheat directly from the car and deliver it into the bins at any elevation—even if two hundred feet above the ground—by atmospheric action, and I unload the largest cars in from two to three minutes.

In my invention I make use of the principle that a current of air will carry wheat or other small grain with it to an indefinite height, provided atmospheric pressure be removed from above. In other words, air rushing in to fill (or rather to prevent) a vacuum will carry grain with it to an indefinite height. In applying this principle I place two strong double-acting pumps with quadruple valves at some convenient point in the elevator above the bins to be filled and drive the same from a crank-shaft, to which motion is imparted from the elevator-engine through suitable shafting, or in any other suitable way. There are two valves in each end of the pump-cylinders.

These are connected by continuous short tubes to the upper end of a long elevator-pipe, which extends downward to the level of the car-door, and by a flexible elbow-extension which lies with its open mouth directly over or partially embedded in the wheat near the center of the car. The pumps are also provided with two large outlet-valves—one at each end just below the lower line of the piston—from each of which extend chutes to the various bins to be filled.

The pumps having been started, their sucking action will tend to exhaust all the air out of the tubes and produce a vacuum; but the tube having an open mouth below over the wheat their only effect will be to cause a tremendous current of air to rush into the mouth of the tube from all parts of the car, carrying the wheat with it the entire length of the tube and

delivering it through the outlet-valves of the pump-cylinders. By the action of the pumps atmospheric pressure is removed from above, and a vacuum would be produced did not the air and wheat from below rush in to prevent the same. As the pumps are double-acting pumps, driven from a common crank-shaft with cranks at right angles to each other and with inlet-valves at both ends of the cylinders, the process is a continuous one. The air and wheat ascend the tube continuously with great rapidity, and the car is unloaded in less time than it takes to describe the process.

The accompanying drawings illustrate my preferred construction.

Like letters refer to like parts throughout.

Figure 1 is a side elevation showing my apparatus in position for use. Fig. 2 is a central longitudinal section of the pump-cylinder and piston and a side elevation of the crank-shaft and pitman. Fig. 3 is a plan view of the two pumps—such as is shown in Fig. 2—and the means of driving the same. Fig. 4 is an end elevation of the two pump-cylinders with the head removed from one cylinder.

A is a frame or support, of any suitable kind, for firmly holding the pump-cylinders, cross-head guides, and crank-shaft. B B' are the crank-disks. b is the common crank-shaft. C is a belt from a pulley on a crank-shaft to a general driving-shaft, D. E e and E' e' are pitmen and cross-heads. F F' are the piston-rods, and f is the piston-head in the cylinder G, and there is a similar piston-head (not shown) in G'. f'' f''' are the stuffing-boxes. G G' are the pump-cylinders. g g are inlet-valves in the same, of which there are two pairs—one pair at each end—all opening inwardly. g' g' are outlet-valves from the cylinders. H is the main pipe leading to the car L, and h h are tubes from the inlet-valves g to the top of pipe H. K K are the chutes from the outlet-valves g' to the various bins M.

The valves g open inward and the valves g' open outward. When the piston-heads are moving away from the crank-shaft, air and wheat pour into the cylinders behind the piston. When moving toward the crank-shaft, the air and wheat pour into the cylinders in front of the piston. When moving toward the crank-shaft, the air and wheat pour into the cylinders in front of the piston-heads, and the

wheat and air behind the cylinders are forced out through the valves *g'* on the ends toward the crank-shaft. On the next forward thrust the air and wheat in front are forced out through valves *g'* into the chutes at the front end of the cylinders.

From the fact that the cranks are at right angles to each other, one or the other pump will always be exhausting the air from the pipe
10 H. When one piston is standing on one of the dead-centers at the end of a stroke, the other piston will be moving. In this way the exhaust is made perfect and continuous. For elevating short distances one pump driven at
15 a high rate of speed may be sufficient.

I have described and shown my process as applied in elevating grain from a car; but it will be readily understood, of course, that it is equally well adapted for elevating grain
20 from the floor of the elevator or mill, or from any receptacle containing the same at a level below the top of the elevator-pipe; or it may

be used to carry grain long distances on substantially the same level, as from one elevator to another, or from an elevator to a mill. 25

What I claim, and desire to secure by Letters Patent of the United States in this application, is as follows:

In combination, for elevating grain, a pair of air-pumps driven from cranks set at right angles to each other on a common shaft, each pump-cylinder being provided with a pair of inlet-valves at each end and an outlet-valve at each end below the level of the thrust-line of the piston-head, and an elevator or grain-conducting tube connected at one end directly to the inlet-valves of the pump-cylinders and at the other end communicating with the mass of grain to be elevated, all substantially as and for the purpose set forth. 35

GUST ROMWEBER.

In presence of—

EMMA F. ELMORE,
JAS. F. WILLIAMSON.