

J. MONTGOMERY.

Grain Cleaner.

85,325.

Patented Dec. 29, 1868.

Fig. 1.

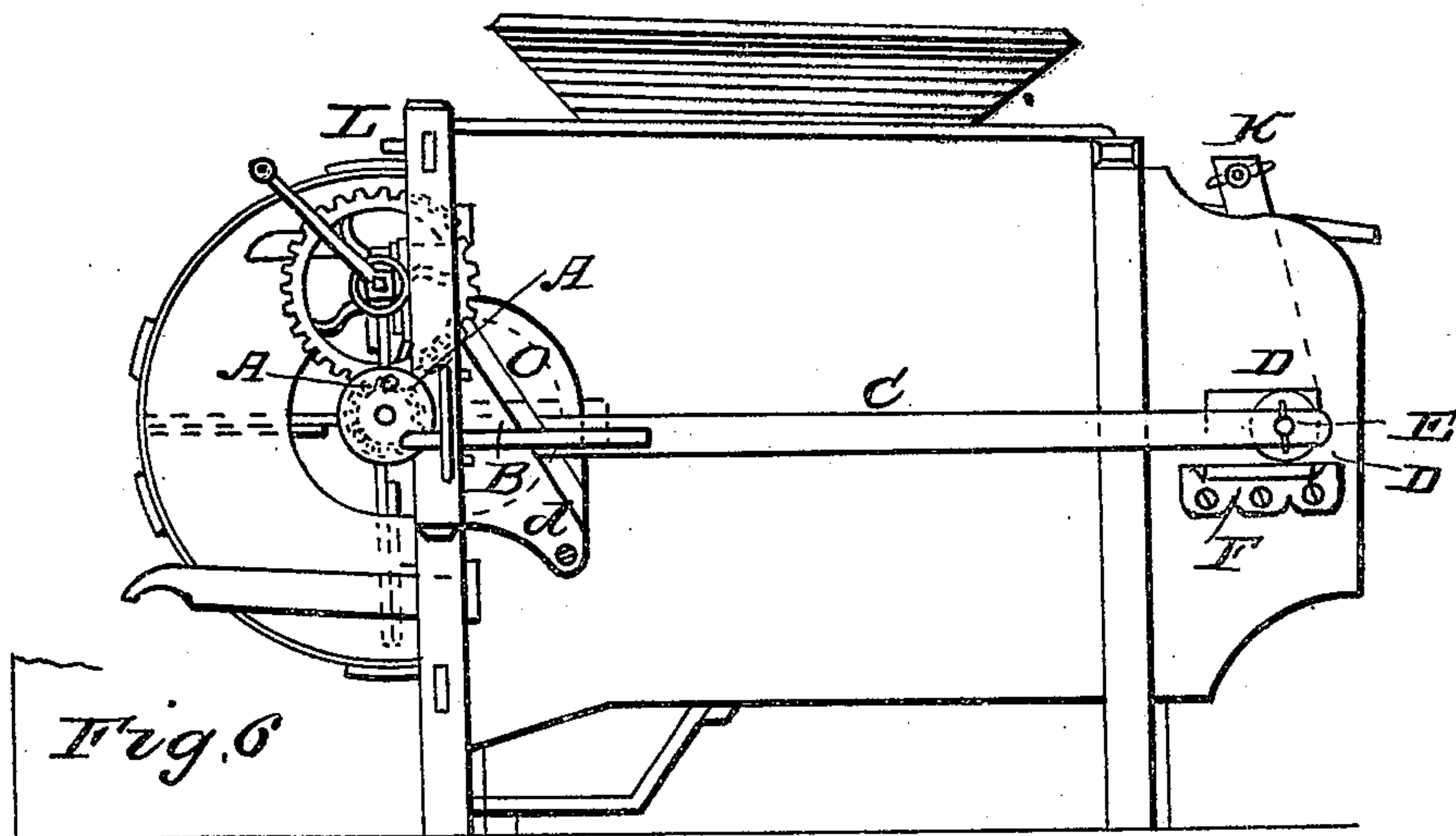


Fig. 6.

Fig. 2.

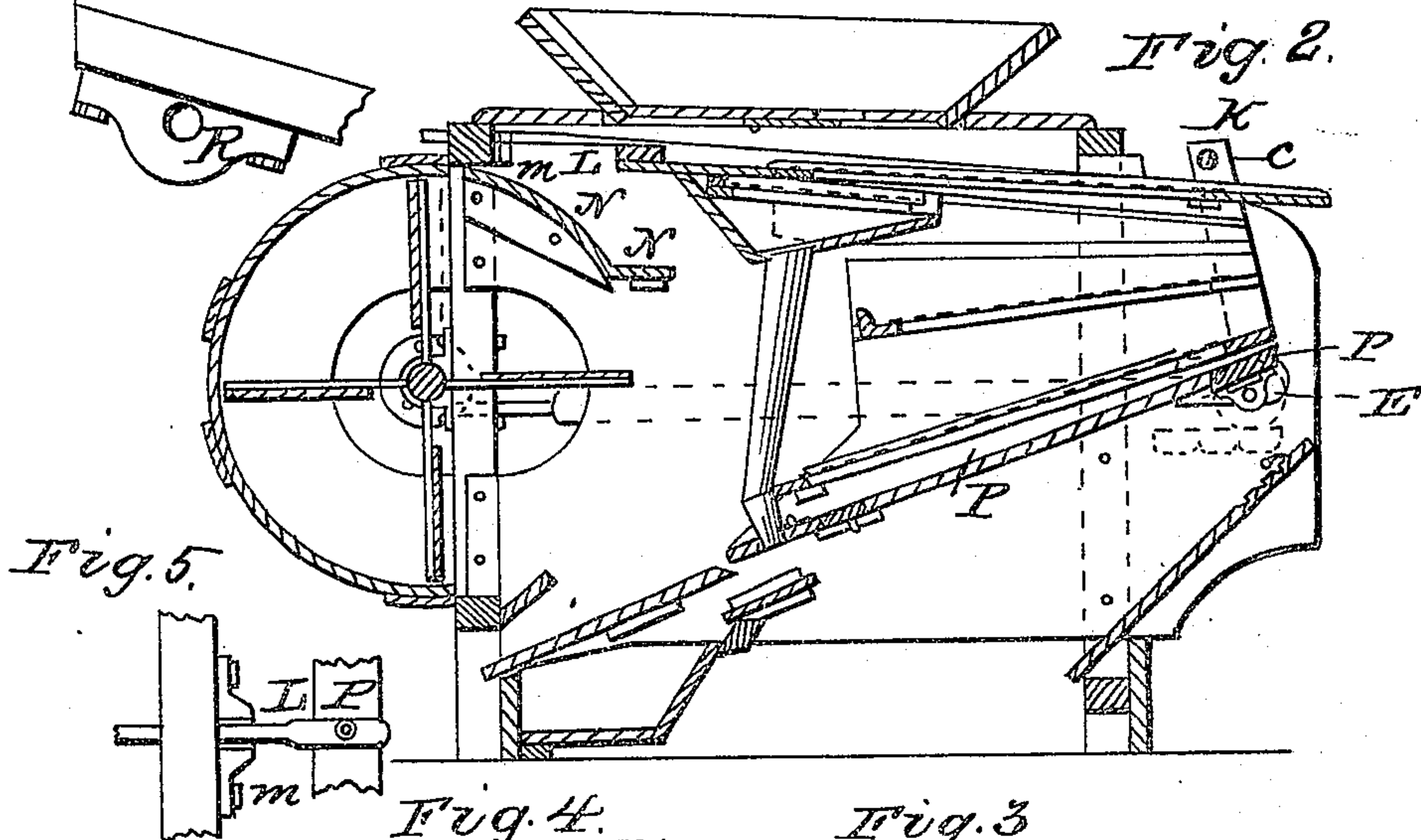
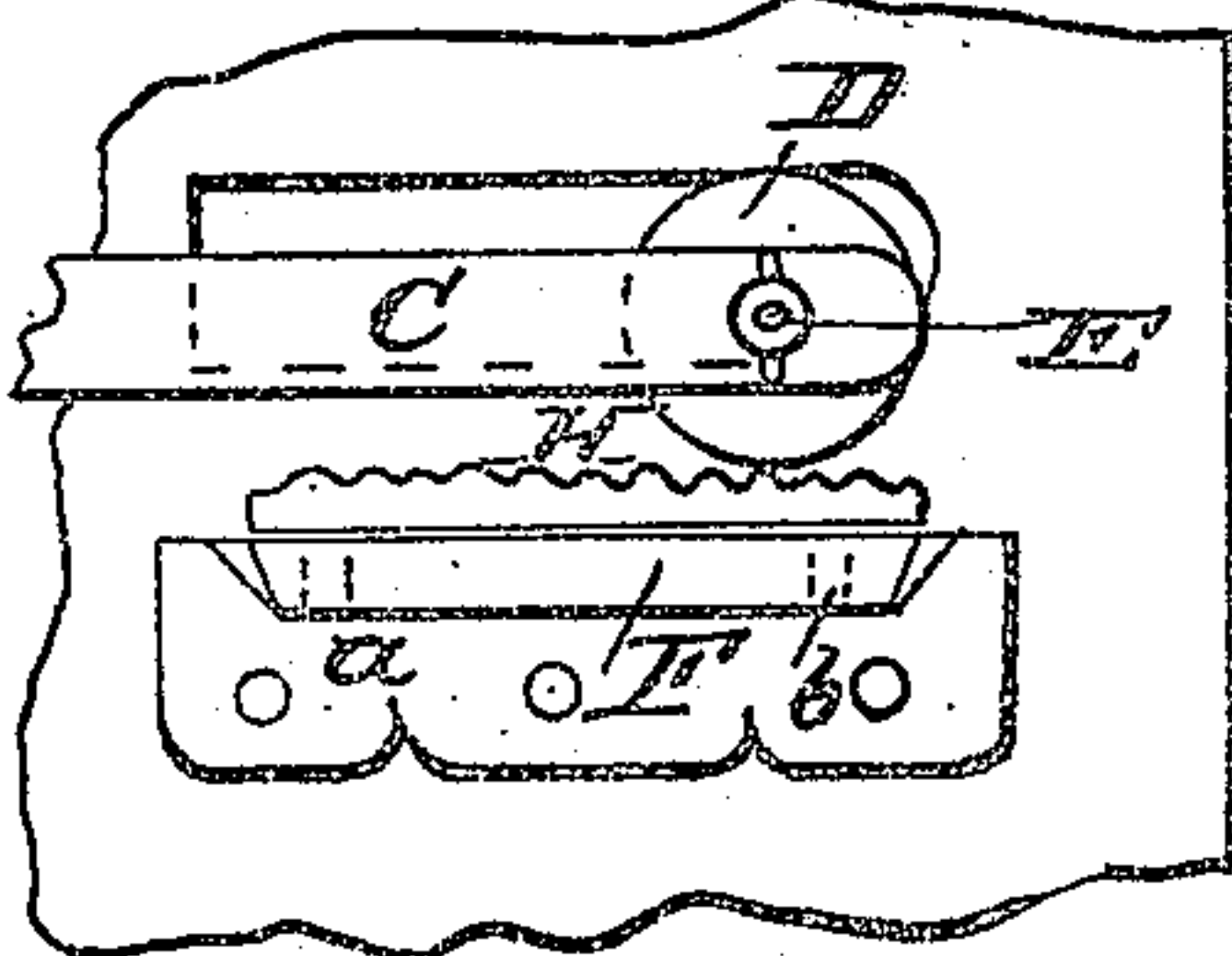
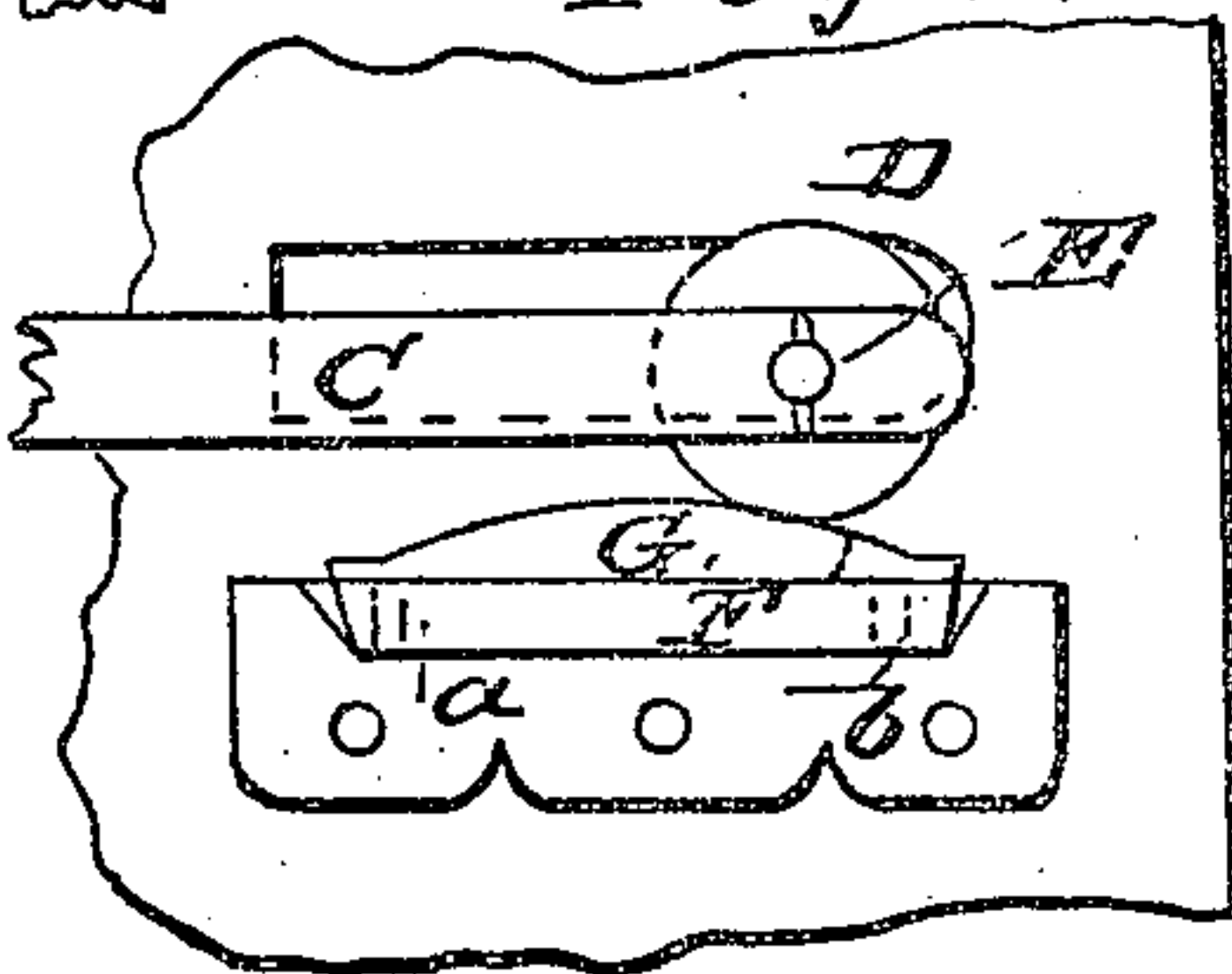


Fig. 5.

Fig. 4.

Fig. 3.



Witnesses  
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# United States Patent Office.

JOSEPH MONTGOMERY, OF BALTIMORE, MARYLAND.

Letters Patent No. 85,325, dated December 29, 1868; antedated December 22, 1868.

## IMPROVEMENT IN GRAIN-CLEANERS.

The Schedule referred to in these Letters Patent and making part of the same

To all whom it may concern:

Be it known that I, JOSEPH MONTGOMERY, of the city and county of Baltimore, and State of Maryland, have invented a new and useful Improvement in Grain-Cleaners; and I do hereby declare the following to be a full, clear, and exact description of the construction and operation of the same, reference being had to the accompanying drawings, making a part of this specification, in which—

Figure 1 is a side elevation;

Figure 2 is a longitudinal vertical section;

Figures 3 and 4 are views in detail, showing the adjustable plates attached under the wheels;

Figure 5 is a detail view, showing the bar attached to the forward end of the shoe, resting in the groove in which it works.

Figure 6 shows boxes holding axles or shake-rods attached to the bottom of the shoe.

Like letters in the different figures of the drawings represent like parts.

My invention relates mainly to the motions of the shoe of a fanning-mill, the motions being backward and forward, and upward and downward, instead of a side-wise motion; and

The nature of the invention consists—

First, in the manner of producing the backward-and-forward motion, by means of plates with requisite holes, attached to the end of the fan-wheel shaft, and of wheels properly attached to the back end of the shoe, working on plates or bars similar to a railroad-track, the forward end of the shoe being supported by bars working in grooves.

Second, imparting upward and downward motion to the shoe by means of adjustable plates or bars, provided with curved or corrugated surfaces, to be placed, when required, under the wheels upon the stationary plates.

Third, the manner of securing the sieves in the shoe by means of a rod with proper screw-nuts.

Fourth, the manner of obtaining the full force of the current of wind upon the sieves by extending the drum under the hopper, and of regulating the volume of the current by means of pivoted side shutters.

To enable others skilled in the art to make and use my invention, I will proceed to describe its construction and operation.

A represents a plate attached to the end of the journal of the shaft of the fan-wheel, which journal is made sufficiently long to extend through the plate, so that the plate may work on the outside of the post of the mill.

This plate is provided with holes at different distances from the centre thereof, into one of which is inserted a rod, B, attached to shaft C.

D is a wheel placed loosely upon and turns on the axle E, which is properly attached at the back end and on the bottom of the shoe, the axle being made long

enough to extend through the end of shaft C, which imparts the backward-and-forward motion to the shoe, and is secured on the axle by a pin.

F is a plate, the upper surface of which is straight, provided with proper flanges, with holes for securing it, by screws, to the side of the mill under the wheel, and upon which the wheel rests and operates, and which supports the back end of the shoe.

G and H are adjustable plates or bars, the upper surfaces of which are curved or corrugated, placed, when required, under the wheel upon the stationary plate, and secured there by the pins *a b* in suitable holes in the under plates, as shown in figs. 3 and 4 of the drawings.

Similar plates, wheels, rod, and shaft are in like manner attached on the other side of the mill.

K represents the upper part of a brace extending across the side, at the back end of the shoe, and is properly secured thereto by screws. A similar brace is, in like manner, placed and secured on the opposite side of the shoe. These braces are made to extend above the shoe, to allow space for the rod *c*, which passes through the ends of the braces, and is provided with a screw and thumb-nut at one end, and a flat head with proper shoulder at the other end, for the purpose of drawing the sides of the shoe tightly against and thus securely holding in place the upper sieve.

L represents one of the two bars, which are attached to and support the forward end of the shoe. These bars extend through the upper forward beam of the mill, but bear and work in grooves upon the upper side of the metallic supports *m*, which are properly attached to the said beam, as shown in figs. 2 and 5.

N represents the continuation of the cylinder or drum under the hopper, for the purpose of throwing the current of wind more directly upon the sieves, and preventing the escape thereof, as heretofore, through or under the hopper.

O represents a side shutter, with a batten, to prevent wrapping, and is operated upon the pivot *d*.

R is a metallic box screwed on the bottom of the shoe, over the axle or shake-rod E, to securely hold it. This axle or rod may be made long enough to extend the entire width of the mill, instead of being in two. (See fig. 6.)

### Operation.

To produce the greatest backward-and-forward motion, rod B is placed in the hole in plate A, which is farthest from the centre thereof, and the motion is diminished by placing the rod in a hole nearer the centre.

In this respect, the rods on both sides must correspond, that is, they must be placed in holes equally distant from the centre of their respective plates.

The upward-and-downward motion is produced and regulated by means of the adjustable plates, which



may be made in sufficient number and of such varied shapes as to secure the motion required.

When but little motion is required, the plates with slight curvature or unevenness are used, and the motion is increased by using plates of greater unevenness of surface.

Every practical operator with fanning-mills will readily see the advantage of these motions of the shoe over the sidewise motion, while it must be manifest that the use of the wheels working on plates, as described, possesses great advantages over the slides, greatly diminishing the friction, and securing also the upward-and-downward motion, which, with slides instead of the wheels, is impracticable.

With the sidewise motion, the back ends of the shoe and sieves move rapidly, while the forward end moves but slightly, but the backward-and-forward motion affects all parts equally. This motion also greatly facilitates the feeding of the mill, while the up-and-down motion increases very considerably the speed with which the grain is cleaned.

At least one-third more grain can be cleaned in the same time, and fully as well, by a mill constructed as described, than by one with only the sidewise motion.

This arrangement is simple, and not nearly so liable to get out of order as the other mills.

The sieves are very readily and securely held in any required position by means of the rod and thumb-screw.

The continuation of the cylinder or drum, as described, under the hopper, serves to throw the current of wind more directly upon the sieves, and to prevent its escape through or under the hopper, and the volume of the current of wind is decreased by closing the pivoted shutters on the sides.

#### *Claims.*

Having thus fully described my invention, What I claim therein as new, and desire to secure by Letters Patent, is—

1. Wheels D, in combination with plates F and shoe P, substantially in the manner and for the purpose as described.
2. The combination and arrangement of plates A, rods B, shafts C, wheels D, axles or shake-rods E, and boxes R, plates F, bars or slides L, and supports M, substantially as described.
3. The adjustable curved or corrugated plates or bars G and H, separately, or in combination with stationary plates, for the purpose as described.
4. The combination and arrangement of the braces K, rod O, and shoe P, substantially as described.

JOSEPH MONTGOMERY.

Witnesses:

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