

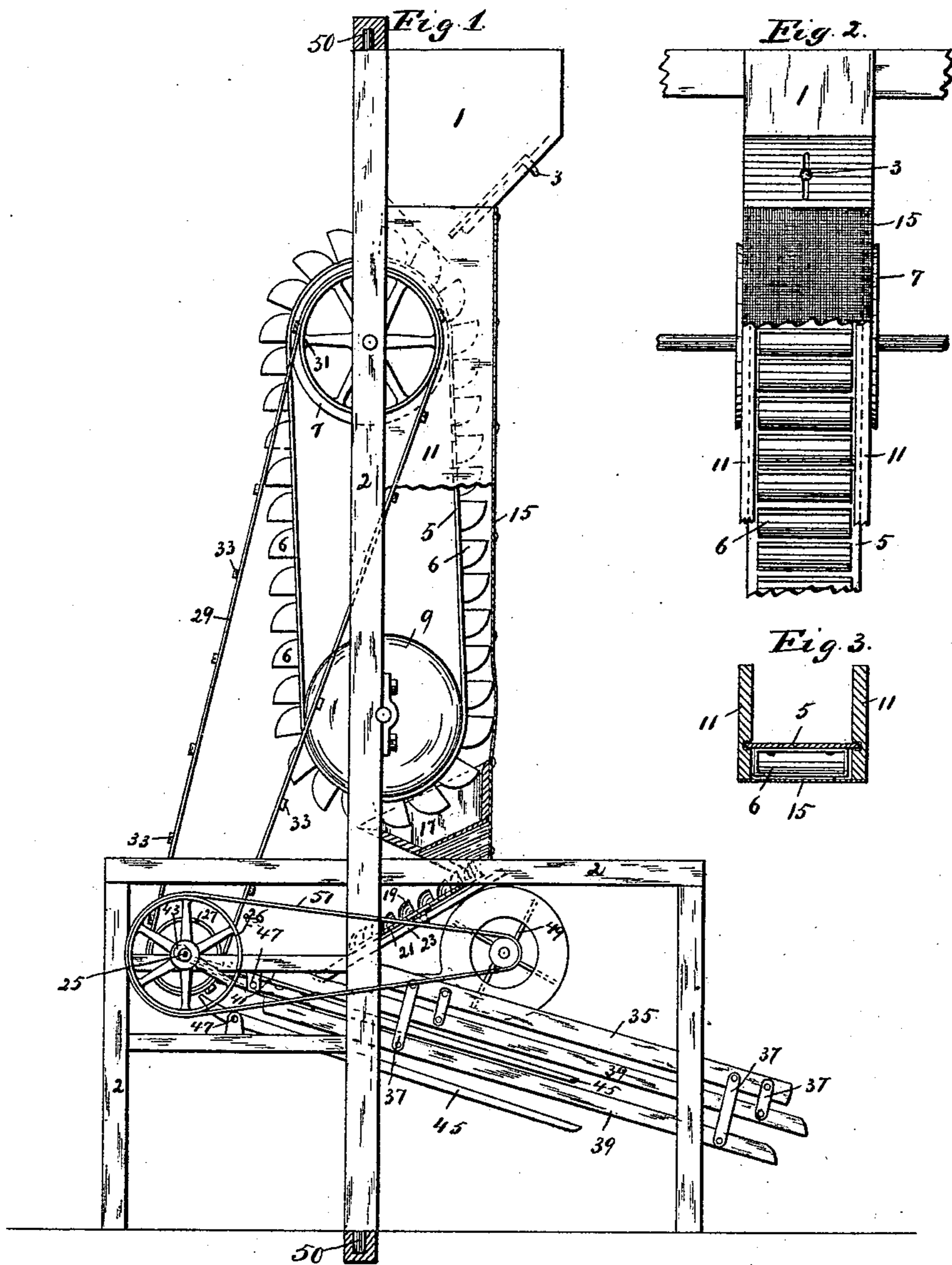
(No Model.)

2 Sheets—Sheet 1.

J. LEASER.
GRAIN CLEANING MACHINE.

No. 405,168.

Patented June 11, 1889.



Witnesses

J. Jensen.
C. L. Nachtrieb.

Inventor

Joseph Leaser.

By Paul Sanford & Associates

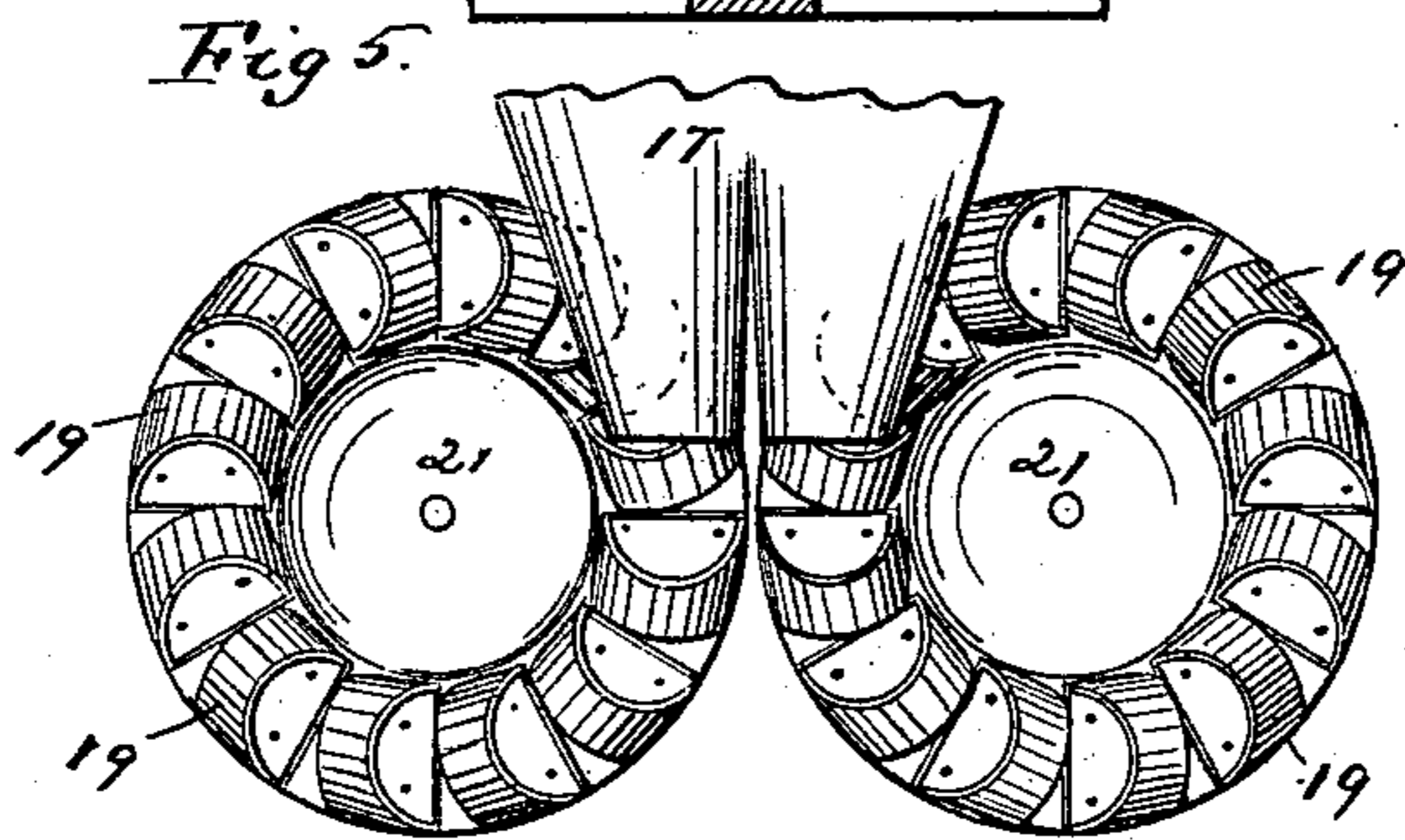
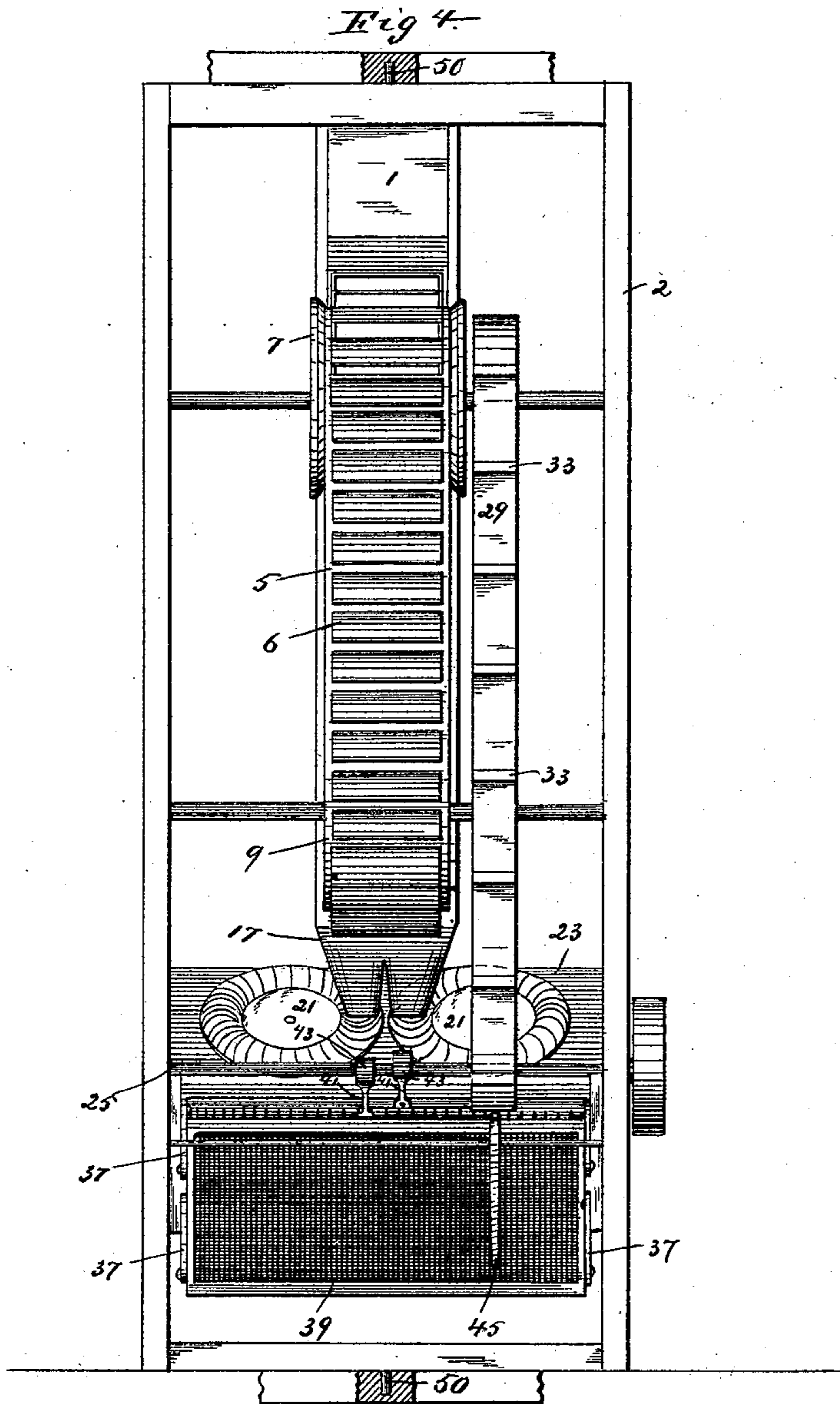
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By Paul, Sanford & Munn Attys

UNITED STATES PATENT OFFICE.

JOSEPH LEASER, OF WHEATON, MINNESOTA.

GRAIN-CLEANING MACHINE.

SPECIFICATION forming part of Letters Patent No. 405,168, dated June 11, 1889.

Application filed August 24, 1888. Serial No. 283,642. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH LEASER, of Wheaton, in the county of Traverse and State of Minnesota, have invented certain new and useful Improvements in Grain-Cleaning Machines, of which the following is a specification.

My invention consists, generally, in the construction and combination hereinafter described, and particularly pointed out in the claims.

My object is to provide a machine for grain-cleaning purposes in which the gravity of the grain is utilized as a motive power for starting and driving or operating a screen-cleaning apparatus, a fan, or other device connected with grain-cleaning machinery, thereby effecting a saving of labor and power.

In the drawings forming a part of this specification, Figure 1 is a side elevation of a machine constructed in accordance with my invention. Fig. 2 is a detail front view showing the upper part of the machine and the endless bucket-carrying belt. Fig. 3 is a detail sectional view showing the manner in which the belt is guided in the chute or box which incloses its three sides. Fig. 4 is a rear elevation of the machine. Fig. 5 is a detail view of the distributing bucket-wheel.

In the drawings, 2 represents a suitable frame, which supports and to which is secured the operating parts of the machine.

1 represents a hopper to receive the grain to be cleaned, having at its bottom an opening the size of which is regulated by the slide 3, and through which the grain is delivered from the hopper into the buckets 6 of the endless belt 5. This belt is supported and carried upon suitable belt-wheels 7 and 9, which are adjusted in proper bearings in and upon the frame 2. The wheel 7 is shown as journaled in the center of the supporting-frame posts, while the wheel 9 turns in bearings, which are fastened to the front of the frame-posts, so that the wheel 9 is not directly under the wheel 7, but forward of it, and the bucket-belt is supported in an inclined position instead of a vertical one. Any suitable means may be used for supporting the "down" side of the belt in an inclined position. This endless belt is inclosed in a tapering spout or chute formed partially by the sides 11, made,

preferably, of wood and provided with grooves in which the belt is guided. The front of the spout is formed by the flexible apron 15, fastened to the sides 11. This apron is fastened in a substantially vertical position, so that the buckets of the belt stand back a short distance from it at the top and approach it as they descend, fitting closely against it at the bottom, and the grain is thus prevented from passing by the buckets. This arrangement of the sides 11 and the apron forms a tapering spout or chute, through which the down side of the bucket-belt passes. As the buckets do not fill the spout at its upper part, the grain passes down the spout, some of it entering each of the buckets until all of them are filled. The weight of the grain in the series of buckets both starts the machine and keeps it going, and this form of spout also prevents any clogging of the grain in its passage from the hopper. Were it not for this arrangement of the spout the grain passing from the hopper could only strike the upper bucket, and to start the machine it would be necessary to move it by hand until all or nearly all of the buckets had become filled.

17 is an inclined chute or board, upon which the grain drops from the buckets as they pass under the wheel 9, and which delivers the grain into the buckets or cups 19 of the cup-wheels 21, which are supported and revolve in a slightly-inclined position upon their support 23. These cups 19 are preferably of semicircular or half-cylindrical form, so that they are adapted to receive and hold the grain as it is delivered to them from the chute 17, (see Fig. 5,) and so on, that as they are turned by the weight of the grain the grain is gradually poured out of them and distributed over a wide surface.

25 is a shaft supported upon the frame 2, and carries the band-wheel 27, upon which runs the belt 29. This belt also runs over a drum or band-wheel 31, which is fixed to the shaft of the belt-carrying wheel 7. It is furnished with the cleats or cross-pieces 33, fastened at regular intervals to the outside of the belt. Supported from the inclined frame 35 by the links 37 are the screens or sieves 39, which are substantially parallel to the frame 35 and to each other. These sieves are allowed by the links to move freely longitudi-

nally, and are connected by the bars 41 to eccentric 43 upon the shaft 25, by means of which they are given a vibrating motion.

45 are beaters pivoted to the frame at 47, and so adjusted as to be struck by the cleats of the belt 29, which depress their short ends in passing, so as to throw up the longer ends against the under sides of the screens 39.

49 is a fan-wheel properly supported in bearings directly over the upper screen 39, and which is driven by the belt 51, running over the band-wheel 26.

23, which supports the cup-wheels 21, delivers the grain as it is distributed from the cups directly upon the upper end of the upper sieve 39. This upper sieve is preferably provided with larger meshes than the lower, and of sufficient size to allow the grain to drop through, but separating and carrying off the straw, sticks, and larger particles, while the lower screen frees the grain from grass-seed and the smaller impurities. The screens are placed a sufficient distance apart to allow the beater freedom of motion between them.

The fan 49 serves to blow backward and separate from the grain the dust and lighter impurities as the grain is delivered upon the screen by the chute 23.

When the machine is used in grain-elevators, I prefer to provide the frame with a central vertical pivot 50 at its top and bottom, which is mounted in suitable steps or journal-bearings, and which permits the whole machine to be swung around, so as to cause the grain to be delivered into any one of the bins of the elevator.

I do not wish to limit myself to the devices shown for imparting motion from the upper shaft to the fan, the sieves, and the beaters. Any preferred arrangement of belts or gearing may be used for driving these devices from either the upper or the lower shaft.

The operation of the machine is as follows: The grain being placed in the hopper 1, the slide 3 is raised sufficiently to allow the desired amount to flow through the mouth of the hopper 4, which directs the grain into the buckets 6 of the endless belt 5, and the shape of the spout in which the belt runs permits all of the buckets to be filled, which causes the machine to start. The weight of the grain carried by the buckets serves as a motive power for the machinery. The buckets descend with their loads, fitting more and more closely in their confined space and emptying their loads as they pass under the wheel 9. The chute 17 receives the grain as poured out from the buckets and discharges

it into the cups of the wheels 21. As these cups are filled, the weight of the grain serves to turn the wheels 21 and the grain is thus gradually poured out of the cups and evenly distributed over the width of the chute 23, whence it passes downward and upon the upper screen 39. The endless belt 5 in its movement, as described, turns its supporting-wheel 7 and the wheel 31, fastened to the same shaft. The wheel 31 thus drives the belt 29, which in turn drives the wheel 27, and it, by means of the belt 51, also drives the fan-wheel 49, so that the fan-wheel 49 serves to fan the grain as it descends upon the screen 39. The eccentric 43 shakes the screens 39, as described. The cleats of the belt 29 strike the beaters 45, and they in turn strike the screens 39, by means of all which mechanism the grain is cleared of its impurities and delivered from the lower end of the lower screen.

The power derived from gravity of the loaded buckets of the belt 5 depends upon the number and size of the buckets, which may be increased, so as to supply any desired power.

I claim as my invention—

1. In a grain-cleaning machine, the combination, with the cleaning mechanism, of the grain delivering and operating mechanism, comprising the tapering spout or passage formed of the sides 11, provided with grooves in their inner surfaces, the flexible apron 15, forming the front of said spout, and the endless belt 5, provided with a series of buckets 6, arranged in said spout and having its edges guided by the grooves in the sides 11, substantially as described.

2. The combination, in a grain-cleaning machine with a suitable sieve, of the inclined spreading-wheels 21, provided with the series of buckets arranged upon their upper surfaces, as and for the purpose specified.

3. In a grain-cleaning machine, the combination, with a suitable sieve, of the wheels 21, provided with the buckets 19 and arranged to discharge the grain across said sieve, and the endless band provided with a series of buckets adapted to be moved by the falling grain and to deliver the grain to the buckets upon said wheel, substantially as described.

In testimony whereof I have hereunto set my hand this 6th day of July, 1888.

JOSEPH LEASER.

In presence of—

A. C. PAUL,

C. L. NACHTRIEB.