2 Sheets—Sheet 1.

J. W. BRIGHTMAN.
Pulp-Grinding Machine.

No. 202,698. Patented April 23, 1878.

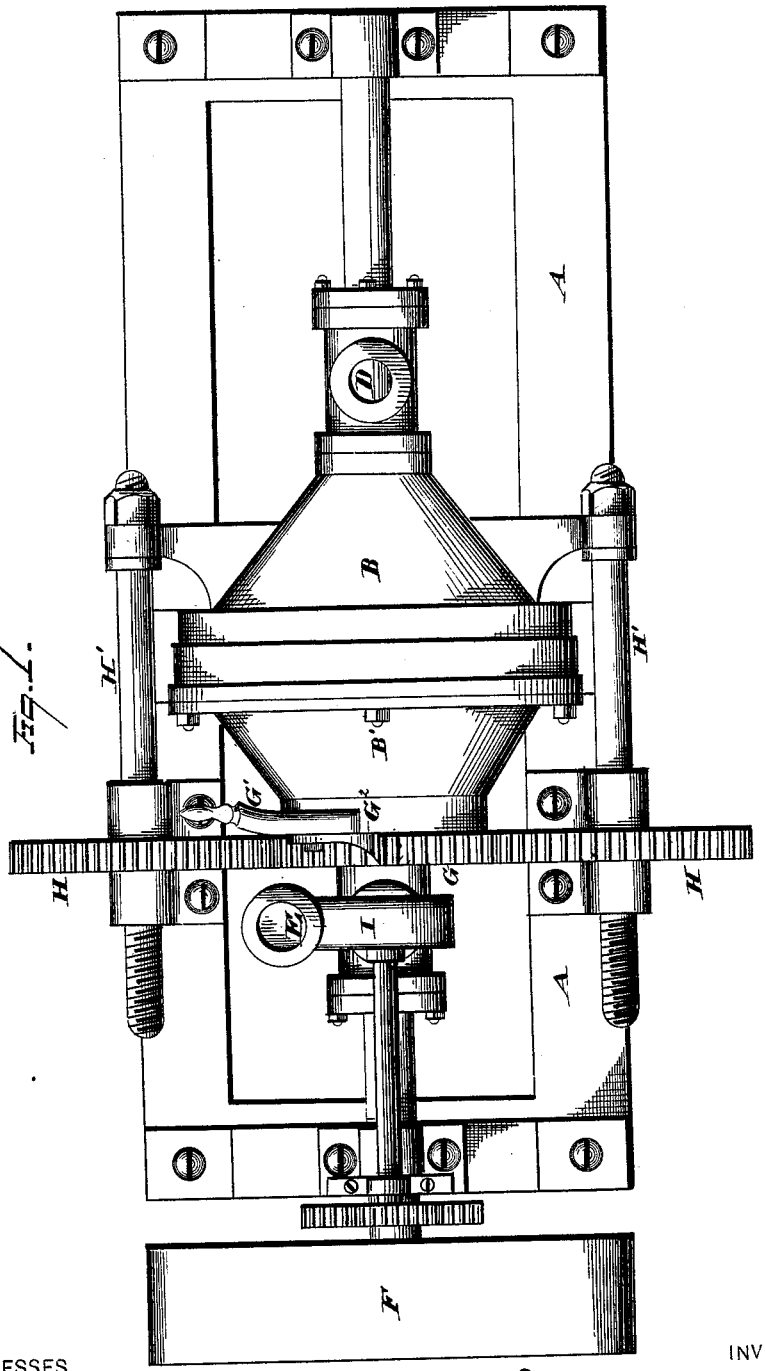

Fig. 1.

WITNESSES

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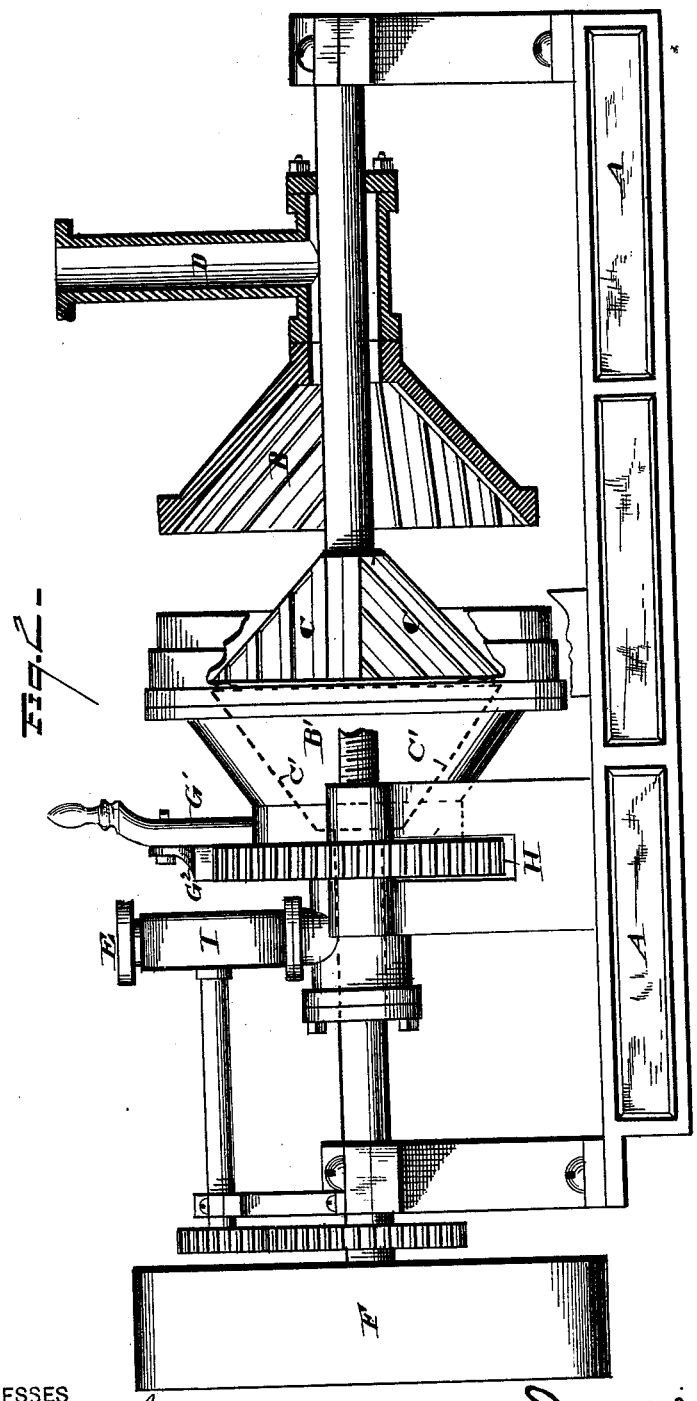

Fig. 2.

WITNESSES
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UNITED STATES PATENT OFFICE.

JOSEPH W. BRIGHTMAN, OF CLEVELAND, OHIO.

IMPROVEMENT IN PULP-GRINDING MACHINES.

Specification forming part of Letters Patent No. **202,698**, dated April 23, 1878; application filed January 16, 1878.

To all whom it may concern:

Be it known that I, JOSEPH W. BRIGHTMAN, of Cleveland, in the county of Cuyahoga and State of Ohio, have invented certain new and useful Improvements in Pulp-Grinding Machines; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it pertains to make and use it, reference being had to the accompanying drawings, which form part of this specification.

My invention consists of a pulp-grinding machine for disintegrating straw, wood, and other fibrous substances to a pulp for the manufacture of paper.

The nature of my invention consists of a pulp-grinding machine that will thoroughly macerate and separate from each other the fibrous and the vegetable matter by a grinding operation.

In the drawings accompanying and made a part of this specification, Figure 1 is a plan view or elevation of my invention, showing the whole machine as closed and in operation. Fig. 2 is a side open view, showing parts in section, to indicate the shape of the double conical stone, the dressing of the stone, and interior adjacent walls of the case, and showing the inlet-port and the outlet-port.

In the drawings, A represents any suitable frame for holding the machine. B and B′ represent a double cone-shaped cylinder, with its interior walls corrugated or cut so as to present an uneven harsh surface. C represents a double cone, corrugated or cut similarly to the face of a millstone. D represents an inlet-pipe for the entrance of the pulp, attached to a case covering the shaft at or near the apex of the cone B. E represents the outlet pipe or port, extending upward from the shaft, at or near the apex of the cone B′. F represents a drive-pulley, attached to the main shaft, by which power is communicated to the machine. G is a spur-gear, loosely attached to the main shaft. G^1 is a lever, also loosely attached to the main shaft. G^2 is a pawl or ratchet attached to the lever G^1, to work in the spur-gear G. H H are spur-gears, attached to shafts H′ by a screw-thread, and also to the spur-gear G. H′ is a shaft, attached to the spur-gear H by a screw-thread, also to the cone-shaped cylinder B. I represents a pump, attached to the outlet-port E, which relieves the cylinder B B′ when the stock has become sufficiently ground.

The object of my invention is to thoroughly disintegrate the fibrous particles of wood, straw, &c., from each other by mechanical means; and to do it thoroughly, the stock is made to enter at the axle, at the apex of one of the cones, or near its apex, and is forced through the machine by the action of gravity, coming in contact with all the corrugated surfaces of each cone and the corrugated surfaces of the cylinder, and forced out at the shaft near the apex of the opposite cone into the outlet-pipe, from whence it is drawn by the pump.

The operation of my invention is as follows: The machine having been set in motion by power transmitted to the pulley F, attached to the main shaft, the double cone C C′ is made to revolve in the conical-shaped cylinder B and B′. The stock enters at the point D, near the junction of the axle and the apex of the interior cone C. By the revolution of the double cone the stock is worked over the entire surface of the cones C and C′, and against the corrugated inner walls of the cone-shaped cylinder B B′, to the apex of the cone C′, from whence it is forced into the outlet-pipe E, from whence it is drawn by the pump I.

The spur-gear G, made to revolve by the lever G^1 and its pawl G^2, opens and closes the cylinder by forcing backward and forward the conical portion of the cylinder B, by the axles H′ attached to it and passing through the spur-gear H, and attached loosely thereto by a screw-thread. This arrangement, being easily worked, renders the interior of the cone B and the exterior of the cone C quickly and easily accessible for the purpose of cleaning or repairing, and, at the same time, easily adjusting the machine to grind fine or coarse. The main shaft being loosely attached with all parts of the machine with which it comes in contact, except the double interior cone, to which the shaft is permanently attached, it can be easily forced back by a screw at its upper end, or by any other device, so as to uncover the outer surface of the cone C′ and the

interior of the conical cylinder B′, so that they may be readily cleaned or repaired.

It will be apparent that as the inlet-pipe extends downward and the outlet upward, to which latter pipe is attached the pump I, the cylinder will be kept full until relieved by the pump I. The object of having the inlet-port at the shaft, and in front of the cone and surrounding its apex, is that the stock may be presented uniformly to all the grinding-surfaces of the machine; whereas if it entered at any other point, or simply on one side of the apex, the stock would, by centrifugal action, be forced toward the bases of the cones, and not be exposed to the grinding-surfaces near and at the apices of the double cone.

I am aware that it is not new in pulp-grinding machines to employ double-cone grinding-surfaces within a double-cone cylinder, and hence I make no claim to the same.

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

1. A pulp-grinding machine having a double corrugated cone attached to a shaft, and made to revolve within a double cone-shaped cylinder, the interior surfaces of which are corrugated, together with an entrance-pipe for the stock at the apex of one of the interior cones, and the outlet-pipe at the apex of the other interior cone, substantially in the manney and for the purpose specified.

2. In a conical pulp-grinder, an inlet-port for feeding stock to the machine, said inlet-port being at the apex and surrounding the shaft or axle, substantially in the manner and for the purpose specified.

3. The combination, with a conical pulp-grinder, of an inlet-port located at the apex of the cone and surrounding the axle on which the cone revolves, and an outlet-port located at the apex of the opposite cone and also surrounding the axle on which the cone revolves, substantially as set forth.

4. The combination, with a double conical pulp-grinder, of a series of spur-gears and a lever, by which the machine may be adjusted to grind fine or coarse, or by which the interior may be rendered accessible, substantially in the manner and for the purpose specified.

5. The combination, with the reverse cones and laterally-adjusting mechanism of a conical pulp-grinder, of an inlet-port located at the apex of one of the cones and surrounding the axle, and outlet-port located at the apex of the opposite cone and surrounding the shaft or axle, and a pump attached to a pipe leading to said outlet-port, substantially as set forth.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

JOSEPH W. BRIGHTMAN.

Witnesses:
F. TOUMEY,
WILLIAM E. DONNELLY.