(No Model.)

L. S. CHICHESTER.

PULVERIZER.

No. 262,571. Patented Aug. 15, 1882.

Fig. 2.

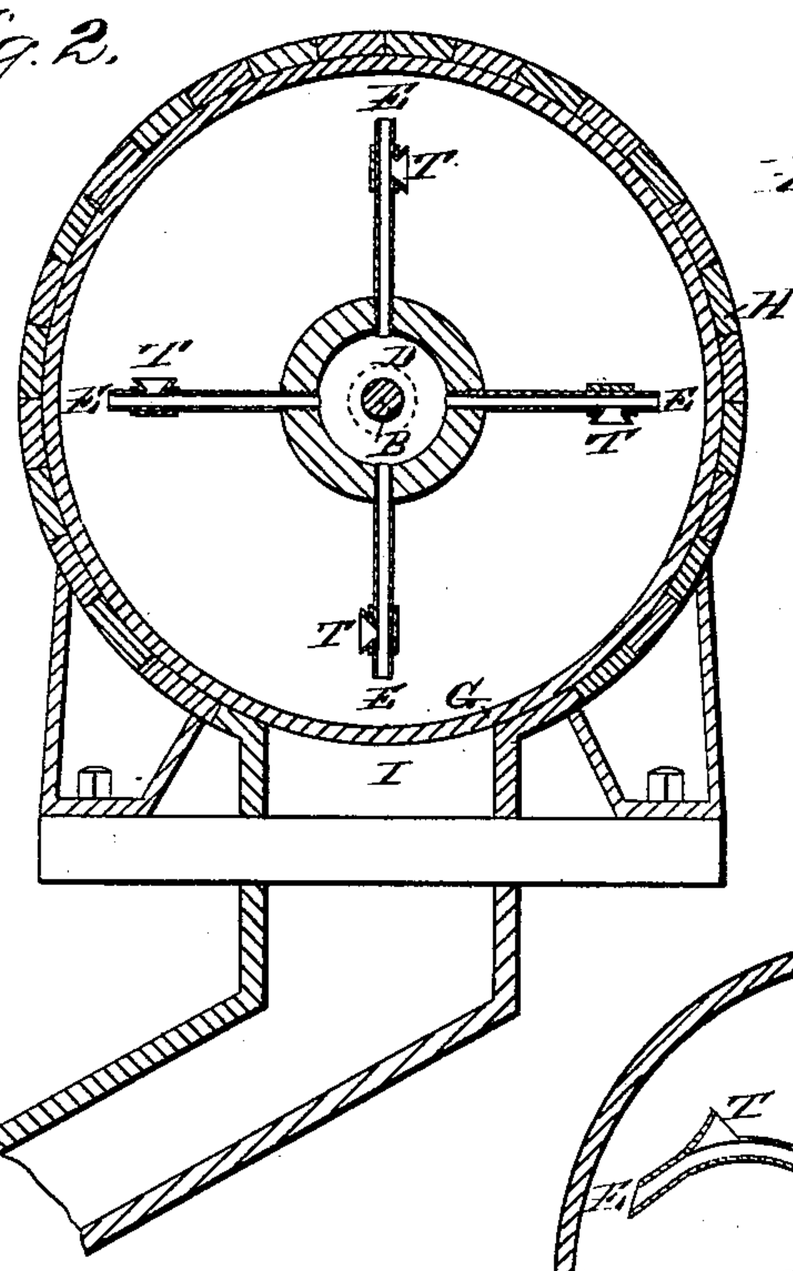


Fig. 6

Fig. 5.

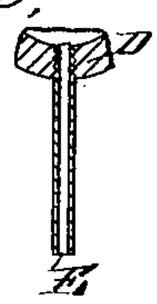


Fig. 4.

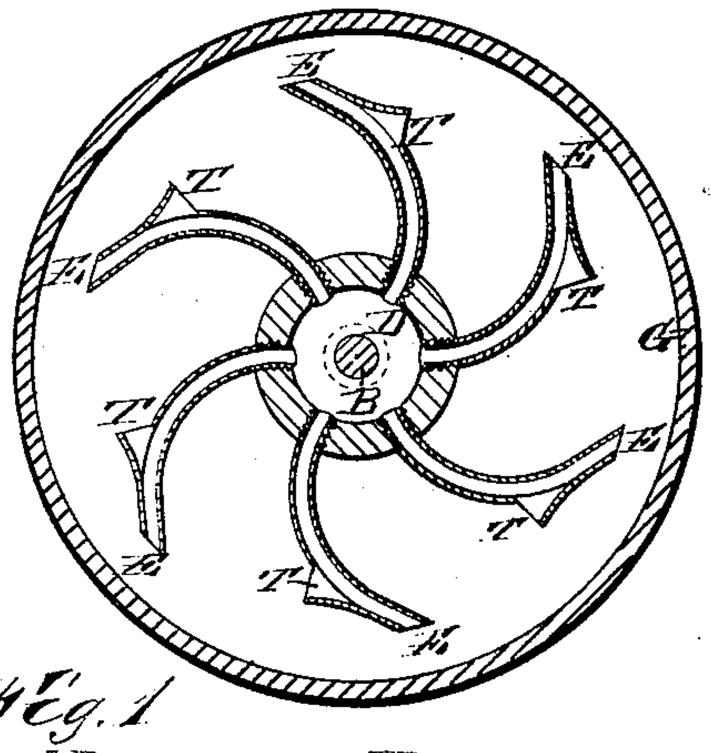
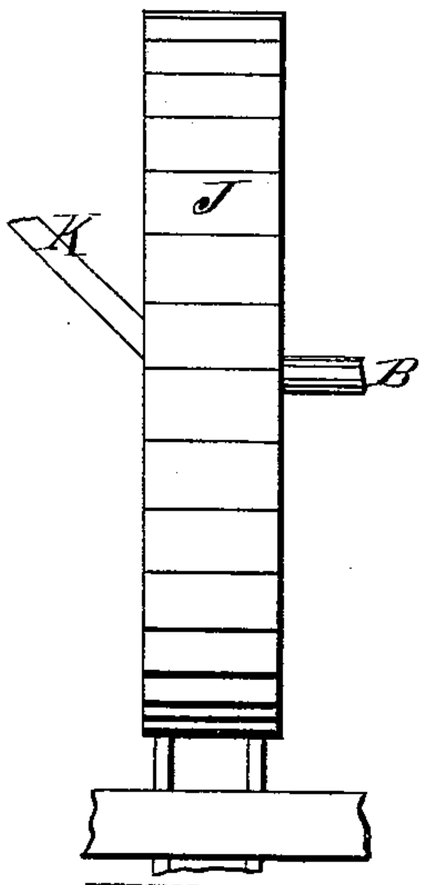


Fig. 3.



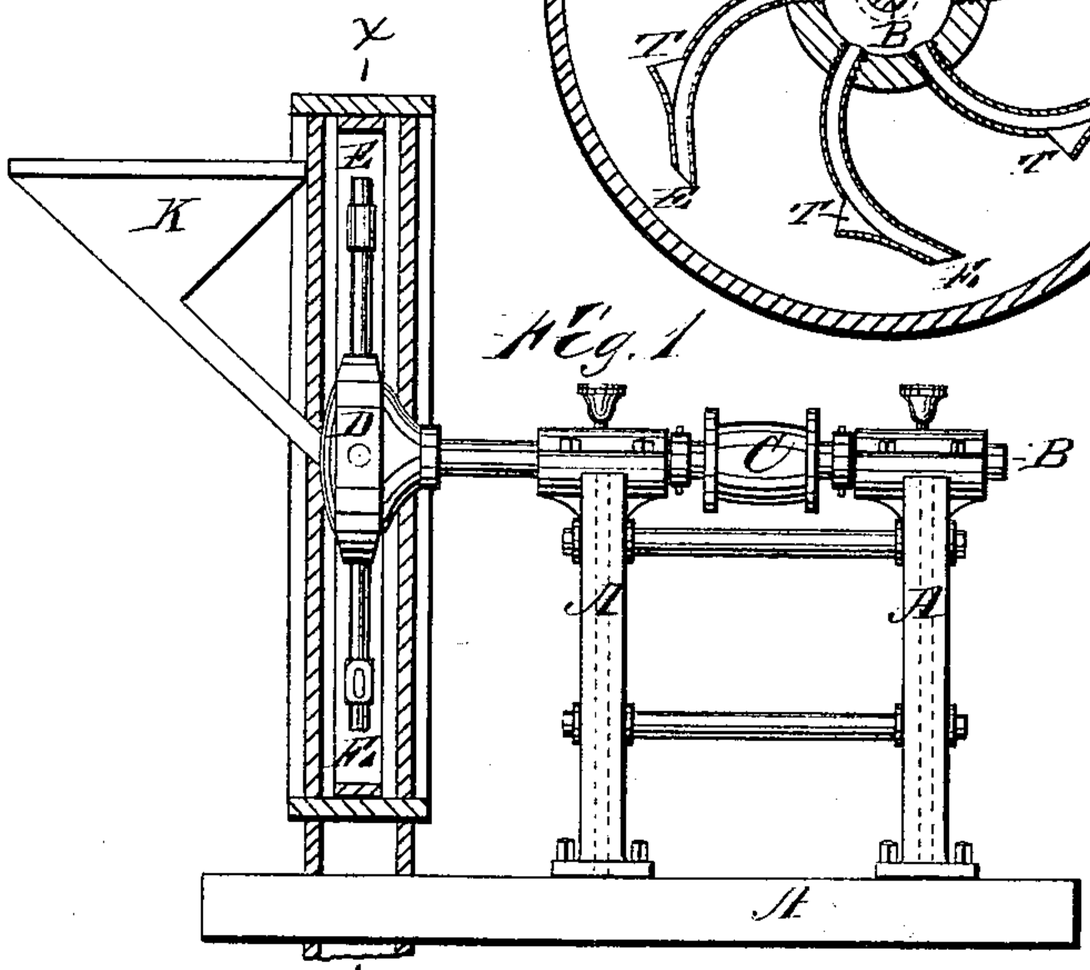


Fig. 1

WITNESSES:

John W. Ripley

W. C. Bennem.

INVENTOR

Lewis L. Chichester

by L. J. Gordon, his Atty

UNITED STATES PATENT OFFICE.

LEWIS S. CHICHESTER, OF JERSEY CITY, NEW JERSEY, ASSIGNOR TO FRANK M. HAYES, OF SAME PLACE.

PULVERIZER.

SPECIFICATION forming part of Letters Patent No. 262,571, dated August 15, 1882.

Application filed April 4, 1882. (No model.)

To all whom it may concern:

Be it known that I, LEWIS S. CHICHESTER, of Jersey City, county of Hudson, State of New Jersey, have invented a new and useful Improvement in Pulverizers, which is fully set forth in the following specification and accompanying drawings, in which—

Figure 1 is a side view of my pulverizer, partly in section and partly in elevation; Fig. 2, a cross-section of the same, at line *x x* of Fig. 1; Fig. 3, an end view of the case; Figs. 4, 5, and 6, sectional views of different kinds of radial tubes.

The object of my invention is to pulverize minerals, cereals, and other frangible substances by the aid of centrifugal motion arising from the rapid revolution of a hollow material-receiving hub having hollow extension-arms, which are provided with air-inlets, said arms operating to impel the material against an inclosing metal circle.

I am aware that various revolving devices have been used to pulverize or reduce hard substances to a desired fineness.

It is well known that when hard substances are ground between moving surfaces such surfaces are exposed to destructive wear, and the space necessarily separating such surfaces determines or prevents extreme fineness of product. Also, when minerals, ores, &c., are exposed to the action of revolving beaters, as in rotary pulverizers and some other mills, the small surfaces which strike the blows and upon which the wear comes are soon destroyed. Besides, the product cannot be of uniform fineness, as the intensity of the blows struck by the beating-surfaces varies as they occur on said surfaces farther from or nearer to the center of motion.

I am also aware that compressed air and superheated steam have been used to accomplish this work when forced through a stationary injector to hurl hard mineral and other substances against a fixed target, as also against a target revolving at right angles with the issuing current, started and kept in motion by the force of such air-current, to throw off the particles impacted against the inner walls of an inclosing chamber; also, that guns or destructive machines have been made in which centrifugal motion was applied to throw balls or bullets with great force and to great distances for war purposes.

This centrifugal pulverizer of my construction, is portable, inexpensive, and well adapted to accomplish its work, also insures durability, large capacity, extreme fineness of product, and minimum expenditure of power.

I provide the arms, which may be either straight or curved, with air-inlets near their outer ends, into which a rapid current of air will be drawn as the arms revolve, which, rushing out of the arms with the material, will impel it with augmented force against the metal concussion-ring. These air-inlets may be in the form of a cup and placed near the ends of the arms, or in that of a hood surrounding the ends of the arms. The air rushing through the tubes or arms surrounding and carrying forward the hard substances to be reduced cushions the inner surfaces of the tubes and prevents wear, so that nearly all the wear in this pulverizer is upon the encircling metal anvil, which presents a very large surface, and is made so as to be easily replaced when worn out.

Several impacts are often required to reduce very hard substances to the desired fineness, the coarser particles or tailings of the impact being returned to the same machine or to another similar machine, and so on until the end is attained.

In the drawings, A is the frame of the machine, supporting shaft B, on which is driving-pulley C. D is the spherical hollow hub; E E, the radial hollow tubes; G, the concussion-ring; H, the jacket or support thereof; J, a covering or casing for these parts; I, the delivering-chute; K, the hopper, and T the hooded air-inlet.

The action of the apparatus is as follows: Hopper K being charged with material, motion is given to shaft B, which rotates hub D, into which the material is fed. The rapid rotation of the hub, assisted by action of centrifugal force, carries the material through radial tubes E E and impels it against the hard metal surface of concussion-ring G. The ejection of the material is efficiently aided by the current of air caught by hooded air-inlets T in the rapid rotation of the radial tubes, increasing the force

of the main current through the same, and thereby effectually pulverizing the material.

The different forms of radial tubes and hooded air-inlets shown in the drawings will be found applicable to different kinds of material.

By giving concussion-ring G rotation in an opposite direction to that of hub D, and especially by providing the inner surface of ring G with asperities, yet greater force of impact may be obtained, if desired, between it and the material.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. The combination, in a pulverizing-machine, of spherical receiving-hub D, radial tubes E E, provided with air-inlets T at or near the ends thereof, and concussion-ring G, constructed and operating together substantially as described.

2. In a pulverizing-machine, the hollow spherical hub provided with hollow radiating arms having hooded air-receiving openings or slots at or near the outer ends, as and for the purpose described.

LEWIS S. CHICHESTER.

Witnesses:
S. J. GORDON,
J. W. RIPLEY.