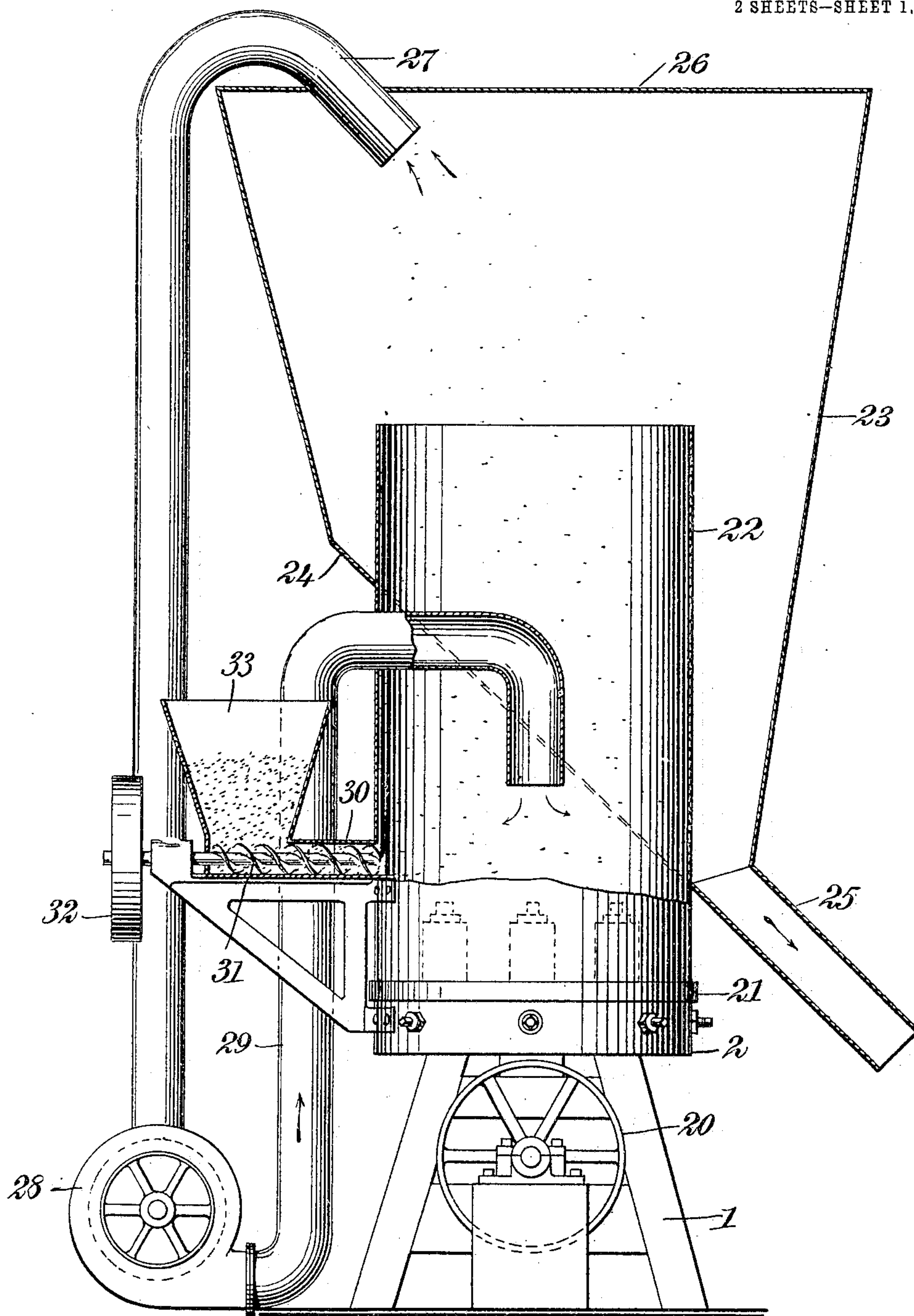


No. 801,572.

PATENTED OCT. 10, 1905.

J. H. DAVIS.
PULVERIZING MILL.
APPLICATION FILED SEPT. 10, 1904.

2 SHEETS—SHEET 1.



WITNESSES:

John Bergstrom
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Fig. 1

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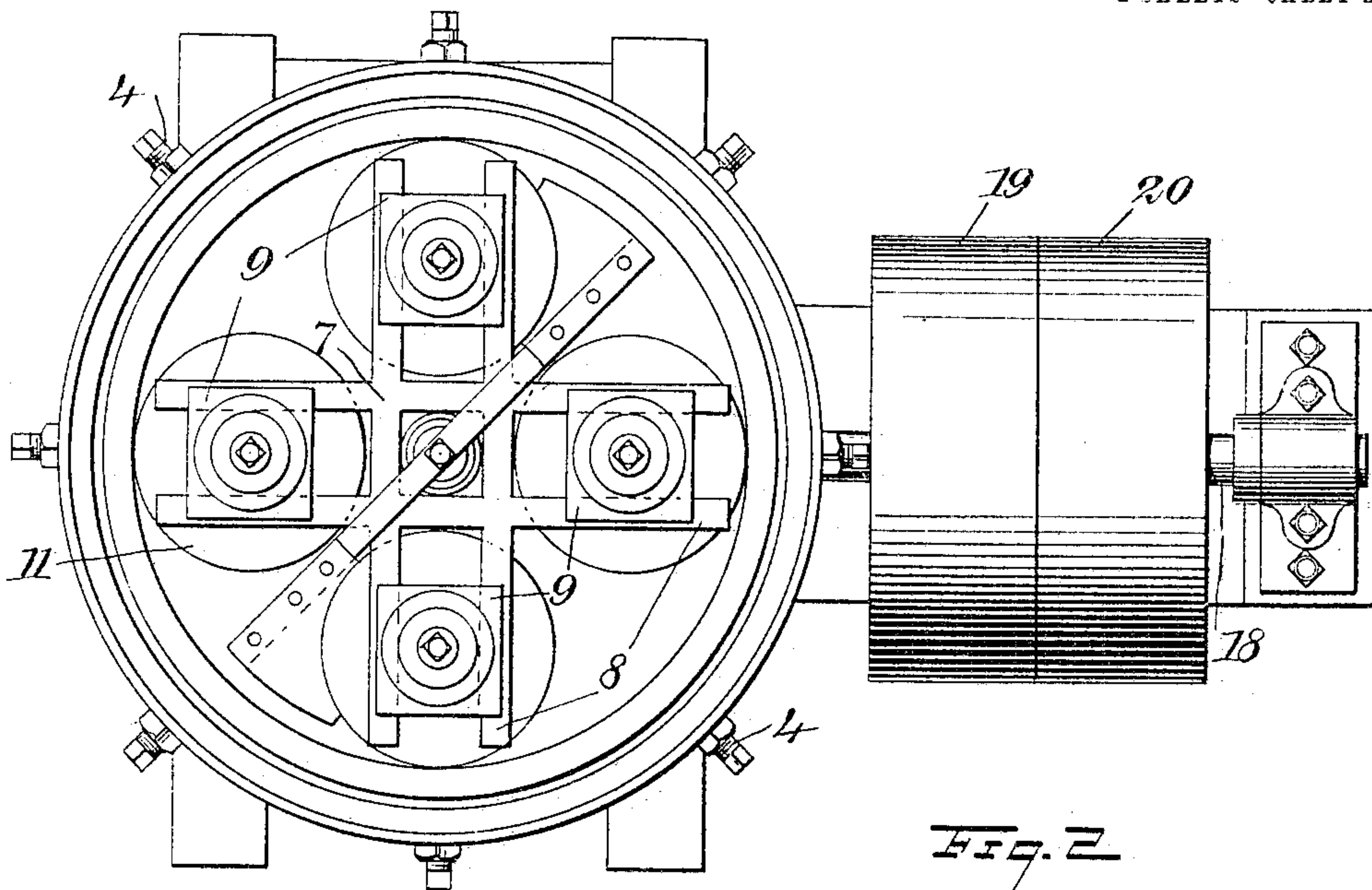


Fig. 2

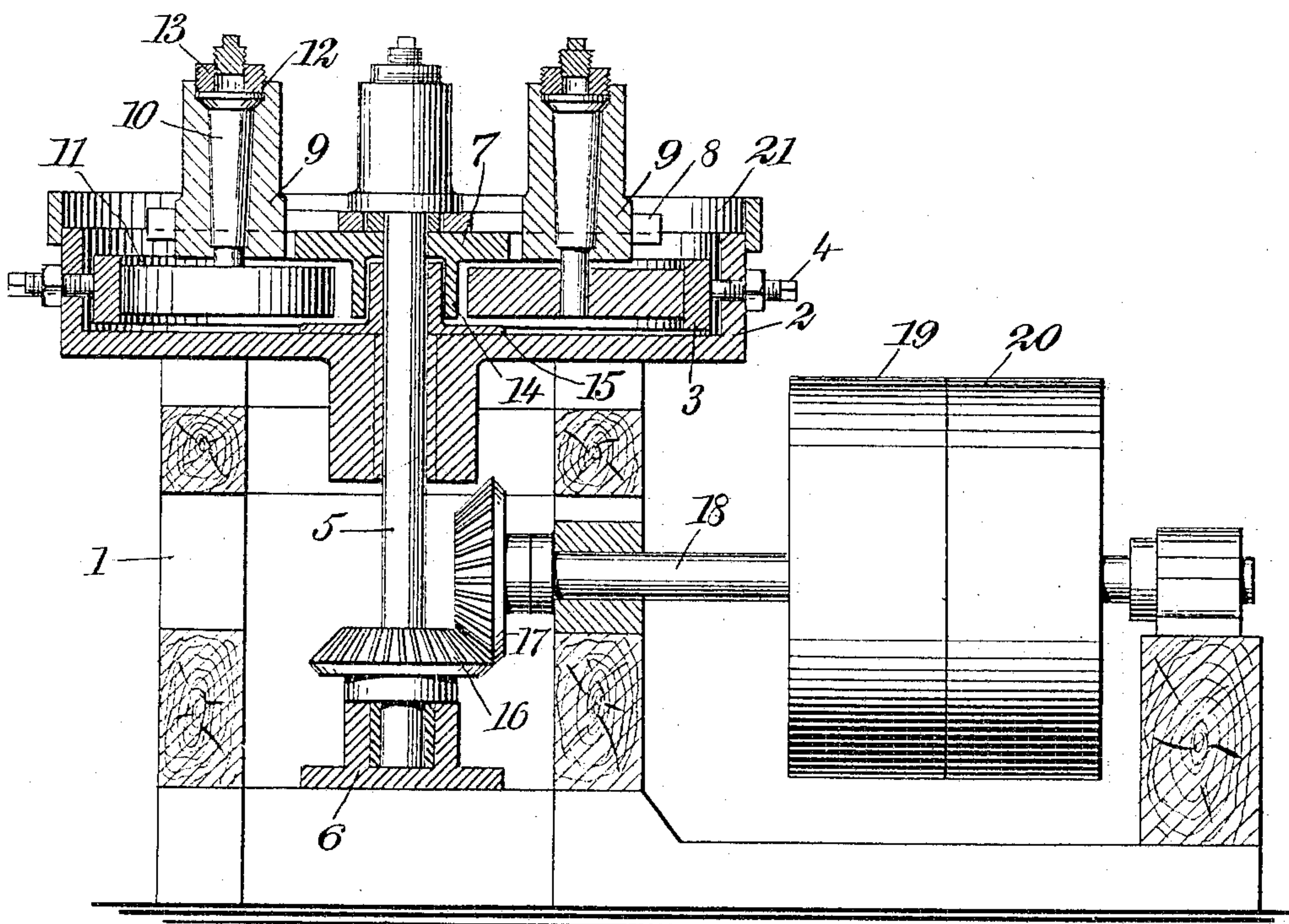


Fig. 3

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UNITED STATES PATENT OFFICE.

JOHN HENRY DAVIS, OF GLENS FALLS, NEW YORK.

PULVERIZING-MILL.

No. 801,572.

Specification of Letters Patent.

Patented Oct. 10, 1905.

(Application filed September 10, 1904. Serial No. 224,048.)

To all whom it may concern:

Be it known that I, JOHN HENRY DAVIS, a citizen of the United States, and a resident of Glens Falls, in the county of Warren and State of New York, have invented a new and Improved Pulverizing-Mill, of which the following is a full, clear, and exact description.

My invention relates to that class of mills known as "chasing-mills," and has for its object the improvement of the means for regulating the degree of fineness to which the material acted upon is to be reduced and also to practically eliminate the objectionable dust rising from such mills during their operation.

My invention further consists in the construction and combination of parts, as will more fully appear in the following description and be definitely set forth in the claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the figures.

Figure 1 is a side elevation of the mill with the inner and outer casings and feeding means in section. Fig. 2 is a plan of the mill alone, and Fig. 3 is a central section of the same.

1 is the base of the mill, upon which is mounted a cup-shaped casting 2. In this casting is removably mounted an annular die 3, held in place by means of set-screws 4. Centrally mounted in the casting 2 is a shaft 5, supported upon a vertical bearing 6. This shaft has rigidly mounted at its upper end a member 7, having radial arms 8, which are slotted for receiving sliding bearing-blocks 9, in which are journaled the trunnions 10, rigidly connected to pulverizing-wheels 11. These trunnions 10 are cone-shaped and have cone-shaped flanges 12 at their upper ends, revolving in correspondingly-shaped recesses formed in the bearing-blocks 9. In order to secure these trunnions in place and prevent their rising, the recesses in which they are mounted have internal threads at their upper ends, and cooperating with these recesses are nuts 13, which can be readily adjusted for wear.

The member 7 has a downwardly-extending annular flange 14, which surrounds a corresponding flange extending upward from a member 15, rigidly mounted on the cup-shaped casting 2. This flange 15 fits the shaft 5 as an ordinary bearing. By means of these flanges the material operated upon is pre-

vented from entering the bearings surrounding the shaft 5 and causing excessive wear.

On the lower end of the shaft 5 is mounted a bevel-wheel 16, cooperating with a corresponding bevel-wheel 17 on the end of a horizontal shaft 18, mounted in suitable bearings on the base of the machine. The ordinary fast and loose pulleys 19 and 20, respectively, are mounted on the shaft 18 for driving the same.

Surrounding the cup-shaped casting 2 and extending slightly above the same is an annular flange 21, within which is fastened a casing 22, extending above the moving parts of the mill, as shown in Fig. 1. Surrounding the casing 22 is a second casing 23, which has an inclined bottom 24, located some distance below the top of the casing 22. In line with this inclined bottom 24 is a chute 25 for directing the material which has been operated upon out of the machine. The top of the casing 23 is closed by means of a cover 26, and communicating therewith is a suction-pipe 27. This suction-pipe is connected with a fan 28, and the blast-pipe 29 of this fan is connected with the casing 22 by being passed through one side thereof and directed downward toward the center of the pulverizing means.

Connected with one side of the casing 22 and situated above the pulverizing means is a tube 30, having a screw-feeding means 31, operated by a pulley 32 from any source. Communicating with this tube 30 is a hopper 33, into which the material to be pulverized is put.

The operation of the machine is as follows: The material to be pulverized is placed in the hopper 33, from which it is fed into the casing 22 by means of the screw 31 when it drops down to the pulverizing-rolls 11. The pulverizing-rolls are forced outwardly by means of centrifugal force produced by the rotation of the member 7 and crush the material against the die 3. The blast from the fan 28 being directed downward upon the center of the revolving parts, when said parts revolve rapidly they produce a swirl and direct the fine particles upward along the casing 22 until they drop over the upper edge down to the bottom 24 of the outer casing 23. The finest particles produce a dust in the upper part of the casing, and by reason of the fact that the suction-pipe 27, which

supplies the fan 28 for the blast, is connected with the top of the casing 23 this dust is removed and again introduced upon the moving parts to go through the same operation as before. When the particles fall over the upper edge of the casing 22, they are directed out of the chute 25 into a receptacle placed thereunder. By varying the blast the fineness of the product is varied.

While this is a preferred form of my invention, it is to be understood that I do not limit myself to the precise details of construction.

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

1. In a pulverizing-mill, the combination of a support, an annular die in the support, a revoluble shaft having its upper end projecting into the support, a member fixedly secured to the said upper end of the shaft and provided with slotted radial arms, sliding bearings in the slots of the arms and projecting above the same, and crushing-rolls arranged below the arms of the said member, and provided with upwardly-projecting conical trunnions mounted in the said bearings.

2. In a pulverizing-mill, the combination of a support, an annular die mounted vertically in said support, a revoluble member also mounted in said support, said member having slotted radial arms, bearings slidably mounted on said arms, crushing-rolls suspended from and rotatably mounted in said bearings and cooperating with said die, means for revolving said revoluble member, a stationary casing surrounding said revoluble member and extending above the same, and means for directing an air-blast downward on the revoluble member.

3. In a pulverizing-mill, the combination of a support, an annular die mounted vertically in said support, a revoluble member also mounted in said support, said member having slotted radial arms, bearings slidably mounted on said arms, crushing-rolls suspended from and rotatably mounted in said bearings and cooperating with said die, means for revolving said revoluble member, a stationary casing open at its upper end, said casing surrounding said revoluble member and extending above the same, means for directing an air-blast downward on the revoluble member, and a second stationary casing surrounding the upper part of the first casing.

4. In a pulverizing-mill, the combination of a support, an annular die mounted vertically in said support, a revoluble member also mounted in said support, said member having slotted radial arms, bearings slidably mounted on said arms, crushing-rolls suspended from and rotatably mounted in said bearings and cooperating with said die, means for revolving said revoluble member, a stationary casing having open upper end, said casing surrounding said revoluble member and extending

above the same, means for directing an air-blast downward on the revoluble member, a second stationary casing surrounding the upper part of the first casing, said second casing being closed at the top and having an inclined bottom with a chute attached for leading the pulverized material out of the mill, and a suction-pipe connected with the top of the second casing for removing the dust in said casing and directing it into the blast for the revoluble member.

5. In a pulverizing-mill, means for feeding the material into the mill, means for pulverizing the material, a stationary casing surrounding the pulverizing means and extending above the same, the upper end of the casing being open, a second casing surrounding the upper part of the first casing and having a closed top spaced from the upper open end of said first casing, a fan, and a pipe leading from the fan into the first casing and having its end bent downwardly for directing a blast of air toward the pulverizing means.

6. In a pulverizing-mill, an outer support, an annular die mounted in said support, a rotatable support also mounted in said outer support, means operated by centrifugal force, due to the rotation of said rotatable support cooperating with said die, for pulverizing material passed through the mill, a stationary casing extending above and surrounding said pulverizing means, said casing being open at its top, a fan, and a pipe leading from the fan into the casing for directing a blast of air toward the center of said pulverizing means, and a second stationary casing surrounding the upper part of the first casing.

7. In a pulverizing-mill, an outer support, an annular die mounted in said support, a rotatable support also mounted in said outer support, means operated by centrifugal force, due to the rotation of said rotatable support cooperating with said die, for pulverizing material passed through the mill, a stationary casing extending above and surrounding said pulverizing means, said casing being open at its top, means for directing a blast of air downward toward the center of said pulverizing means, a second stationary casing surrounding the upper part of the first casing, said second casing being closed at the top and having an inclined bottom with a chute attached for leading the pulverized material out of the mill, and a suction-pipe connected with the top of the second casing for removing the dust in said casing and directing it into the blast for the revolving member.

8. In a pulverizing-mill, means for feeding material into the said mill, means for pulverizing the material, a stationary casing extending around said pulverizing means and having an open upper end, a blast-pipe extending through said casing and directed downward toward said pulverizing means, a fan for supplying the blast, a second casing surrounding

the upper part of the first casing, said second casing being closed at the top, the top being spaced from the upper open end of the first casing and a suction-tube connected with the
5 top of the second casing and blast-fan.

9. In a pulverizing-mill, means for feeding material into the said mill, means for pulverizing said material, a stationary casing extending around said pulverizing means and having
10 an open upper end, a blast-pipe extending through said casing and directed downward toward said pulverizing means, a fan for supplying the blast, a second casing surrounding the upper part of the first casing, said second

casing being closed at the top and having an
inclined bottom, a suction-tube connected with
the top of the second casing and blast-fan, and
a chute at the lower end of the second casing
for the removal of the pulverized material
therefrom.
20

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

JOHN HENRY DAVIS.

Witnesses:

GEORGE F. BRYANT,
SILAS B. WILCOX.