2 Sheets—Sheet 1.

G. D. WOODWORTH.

Grain Cooler.

No. 56,136.

Patented July 3, 1866.

Fig. 1

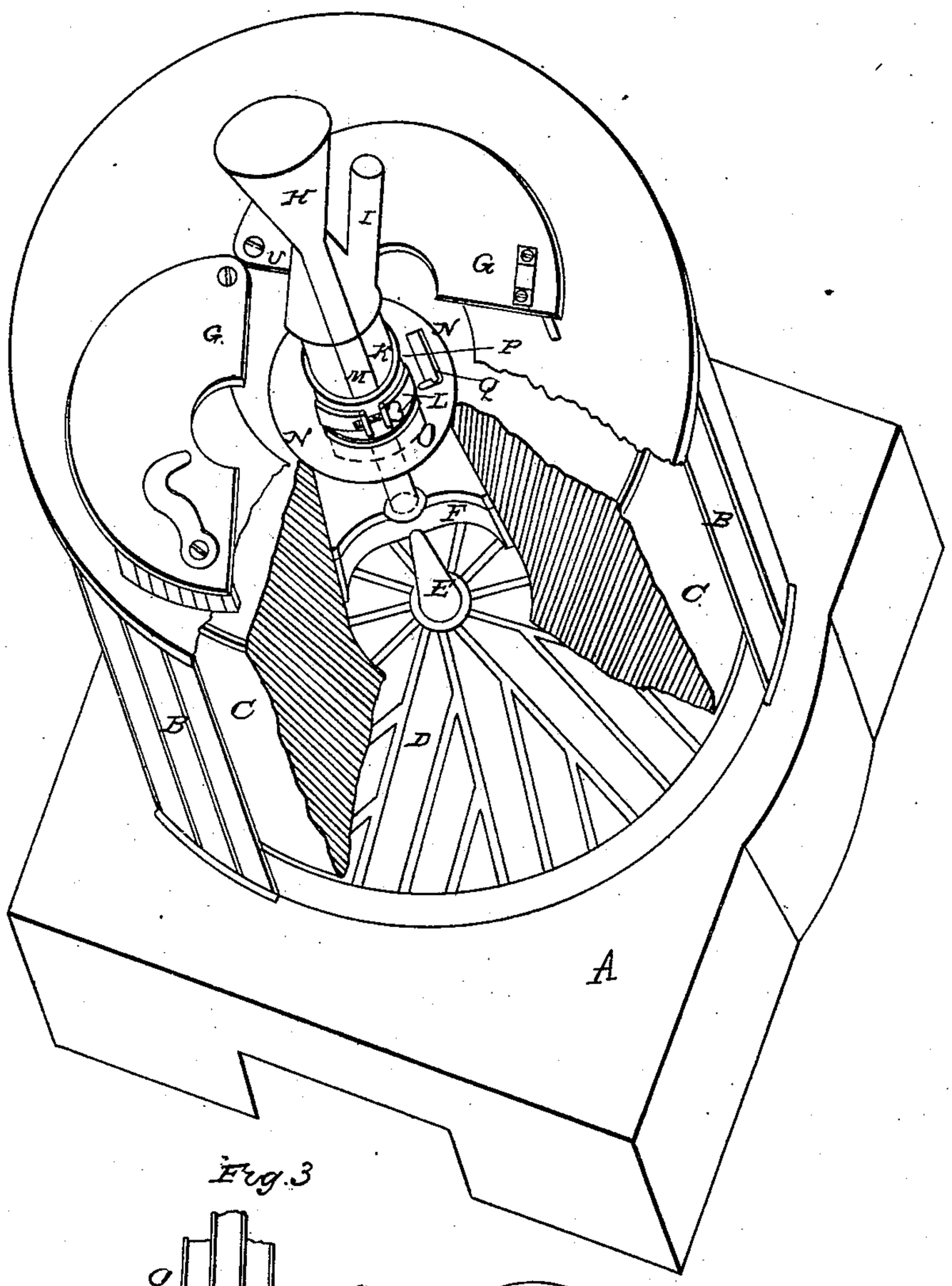


Fig. 3

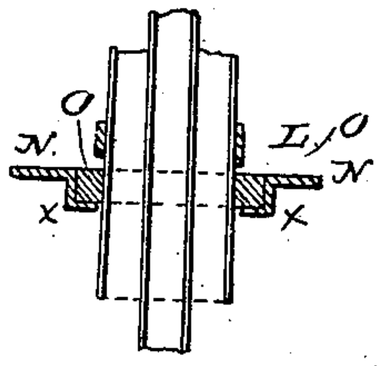
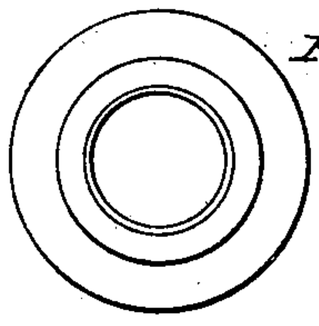


Fig. 4



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2 Sheets—Sheet 2.

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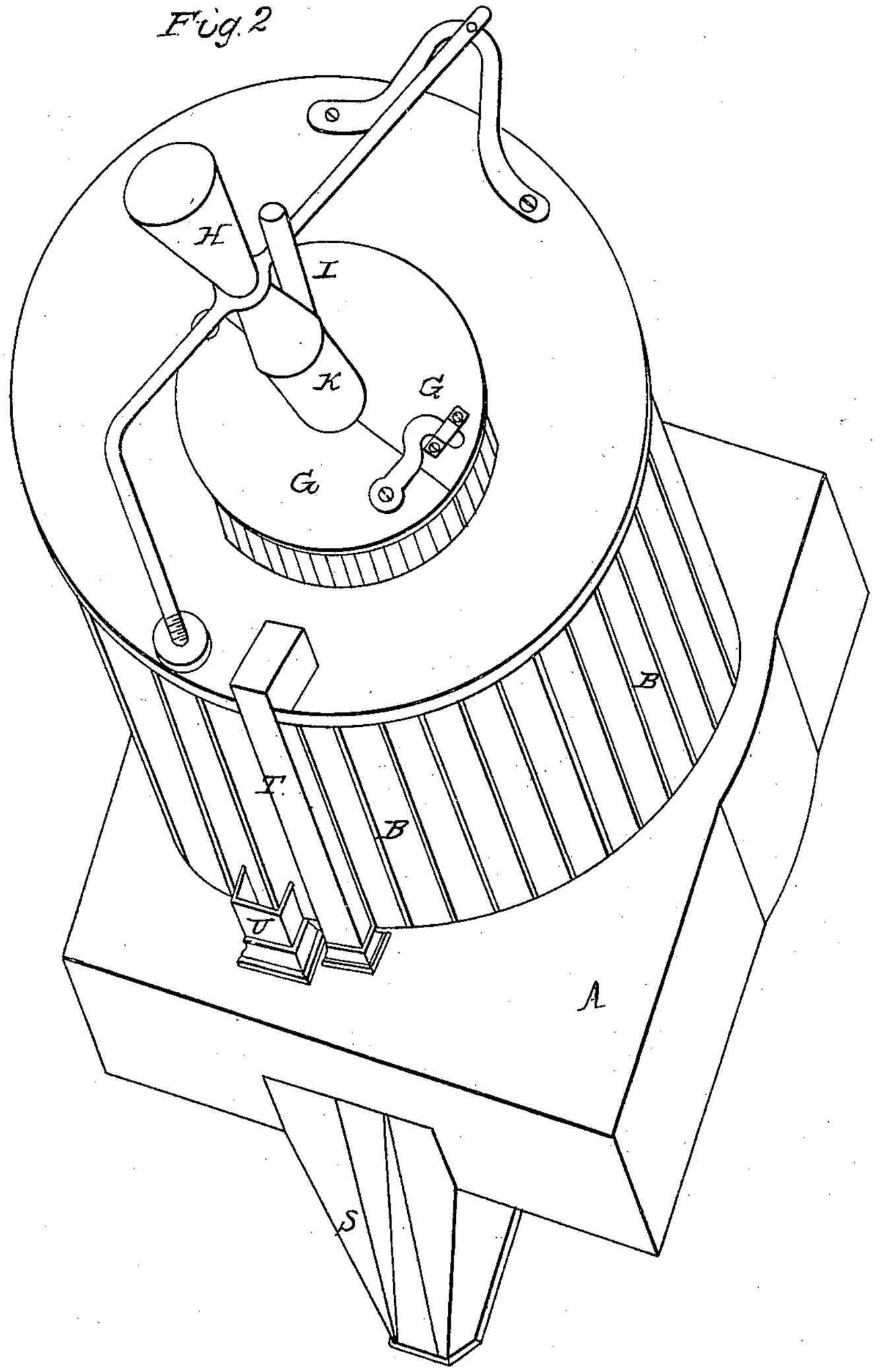
Fig. 2



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UNITED STATES PATENT OFFICE.

GEORGE D. WOODWORTH, OF CHICAGO, ILLINOIS.

IMPROVEMENT IN GRAIN-COOLERS.

Specification forming part of Letters Patent No. **56,136,** dated July 3, 1866.

To all whom it may concern:

Be it known that I, GEORGE D. WOODWORTH, of the city of Chicago, in the county of Cook and State of Illinois, have invented a new method of constructing machinery whereby grain and other material is prevented from being heated while in the process of grinding; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the annexed drawings, making a part of this specification, in which—

Figure 1 is a view of my improved machinery with portions of the curb and upper millstone removed, showing a portion of the lower stone with the bail and eye. Fig. 2 is a view showing the curb entirely closed with the discharge-spout already for use. Fig. 3 is a vertical sectional view of the feeding device, taken through the points N N, Fig. 1. Fig. 4 is a top view of the center portion of the upper stone.

The nature and object of my invention is to construct and apply to millstones proper devices, so that air will be introduced into the eye-hole and forced through between the stones while said stones are in the act of grinding, thus keeping the temperature in and between the stones at such a low degree as to secure an improved quality of flour.

I construct the millstones in the ordinary form and size and locate them with respect to each other in the ordinary way. I surround the millstones with a curb made in the usual form. This curb is represented by B B, Fig. 1.

A A is the top of the husk which supports the stones, and is made in the ordinary way. C C is the upper stone with a portion taken away. D is the lower stone. F is the bail. E is the spindle upon which the bail F plays. All of the above parts are made in the usual way.

G G are two covers, made to readily swing upon pivots, so as to be moved at pleasure.

H is a hopper connecting with and resting upon the feed-tube M, forming a common silent feeder.

K is an outer tube, surrounding the feed-tube M, and is connected with the silent feeder at *v*.

I is a conduit leading into the outer tube, K, and supplied with a stop-cock. (Not shown in the drawings.)

P is a leather boot, surrounding, and in which the lower end of, the outer tube, K, is inserted, and passes down into the eye of the stone C C.

K and P form one and the same tube, the lower part of which is made of leather. The leather part is called the "boot," and is used to conform to the vibrations of the stone.

L is a metallic band surrounding the boot P, and by means of a thumb-screw it is made to fit more or less closely. Its object is to fasten the boot P to the tube K.

N N is a metallic plate snugly and tightly fastened to the upper millstone, C C, nearly covering that portion of the eye between the boot P and the stone. The inner edge of this metallic plate is turned so as to form a shoulder, as shown at *x x*, Fig. 3.

O O is a ring, of hard and oil-soaked wood, surrounding the boot P and fitting closely to it and resting upon the shoulder *x x*.

Q is a slide, covering a hole in the metallic plate N N.

S, Fig. 3, is the discharge-spout, through which the ground material passes. This spout is covered with bunting or some kind of open-work cloth. The surface-covering of this spout is broken or made with re-entering angles, so as to present as large surface as possible for the escape of the air forced through between the stones, and both its sides and top are covered with bunting or some kind of open-work cloth.

T, Fig. 2, is a spout connecting with a hole cut in the top of the curb B B, and extending into the spout S, to allow escape of air collecting between the stones and curb.

I do not confine myself to the covering of the discharge-spout in the manner spoken of as the only means of allowing the air to escape. I can cover the elevator or conveyer-case with the same material, and thus accomplish the same result.

V is a hand-spout, used for the purpose of examining the meal, and connected diagonally to spout S.

The operation of my invention is as follows: Motion is communicated to the millstones in the ordinary way, and the grain is fed in the ordinary way. It being the object to keep a current of air passing between the stones during the process of grinding, it is accomplished as fol-

lows: At any convenient and suitable point in the building a common blower is located, and from this blower to the pipe I a tube is led, and through which a strong current of air is forced, by means of the blower, through pipes I, K, and P into the eye of the stone, thence between the stones, where the grinding is performed. Thus a constant stream of cool atmospheric air is continually kept passing between the stones while the material is in the immediate act of being ground, and the temperature of the material is thus kept at the desired point. The spout S, Fig. 2, being covered with bunting or some kind of open-work cloth, ample opportunity is offered for the escape of the air, while at the same time the ground material passes into the proper receptacle for it, being prevented from flying off in the form of dust by the open-cloth covering.

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

1. Covering the eye of the stone to prevent the escape of the air, in the manner described and substantially as set forth.

2. The use and employment of the ring O O, in the manner and substantially as set forth.

3. The combination of the pipes K and P, forming one and the same pipe, in the manner and for the purpose set forth.

4. Covering the discharge-spout, conveyer, or elevator with bunting or a similar material in such a way as to form a surface with one or more re-entering angles, in the manner and for the purpose set forth.

5. The combination of the spouts H, I, K, and P, in the manner and for the purpose described.

6. The combination of the tubes H I K P and ring O, in the manner and for the purpose described.

7. The combination of the spouts K P and ring O with plate N N, in the manner and for the purpose described.

GEORGE D. WOODWORTH.

Witnesses:
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