

Sheet 1-2, Sheets.

J. M. Clark.

Preserving Grain.

N<sup>o</sup> 27,887.

Patented Apr. 17, 1860.

Fig. 1.

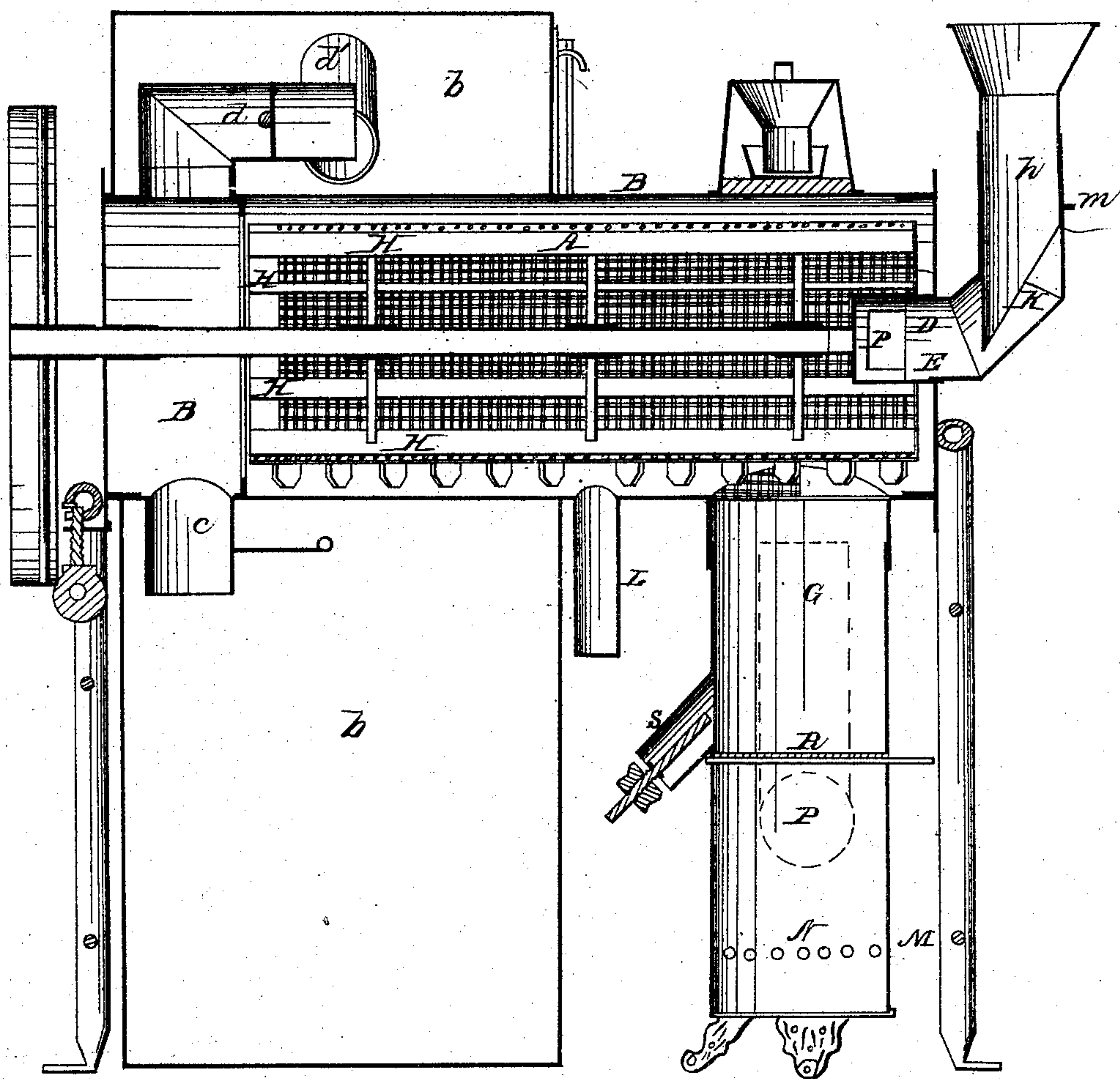
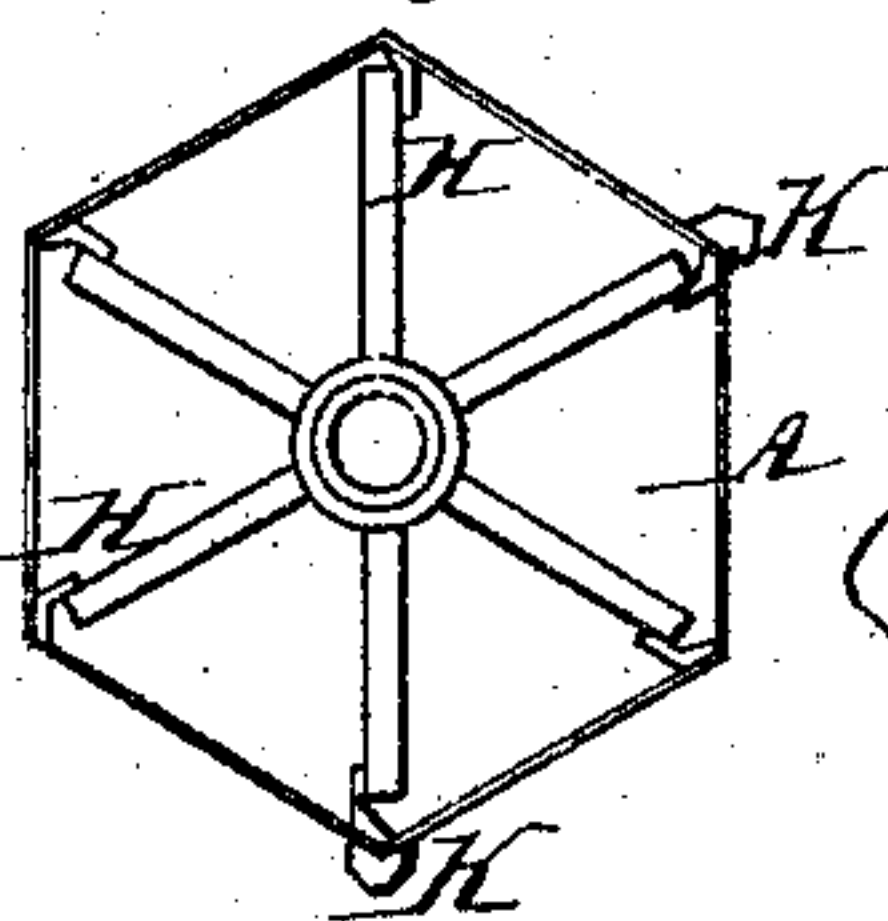


Fig. 2.



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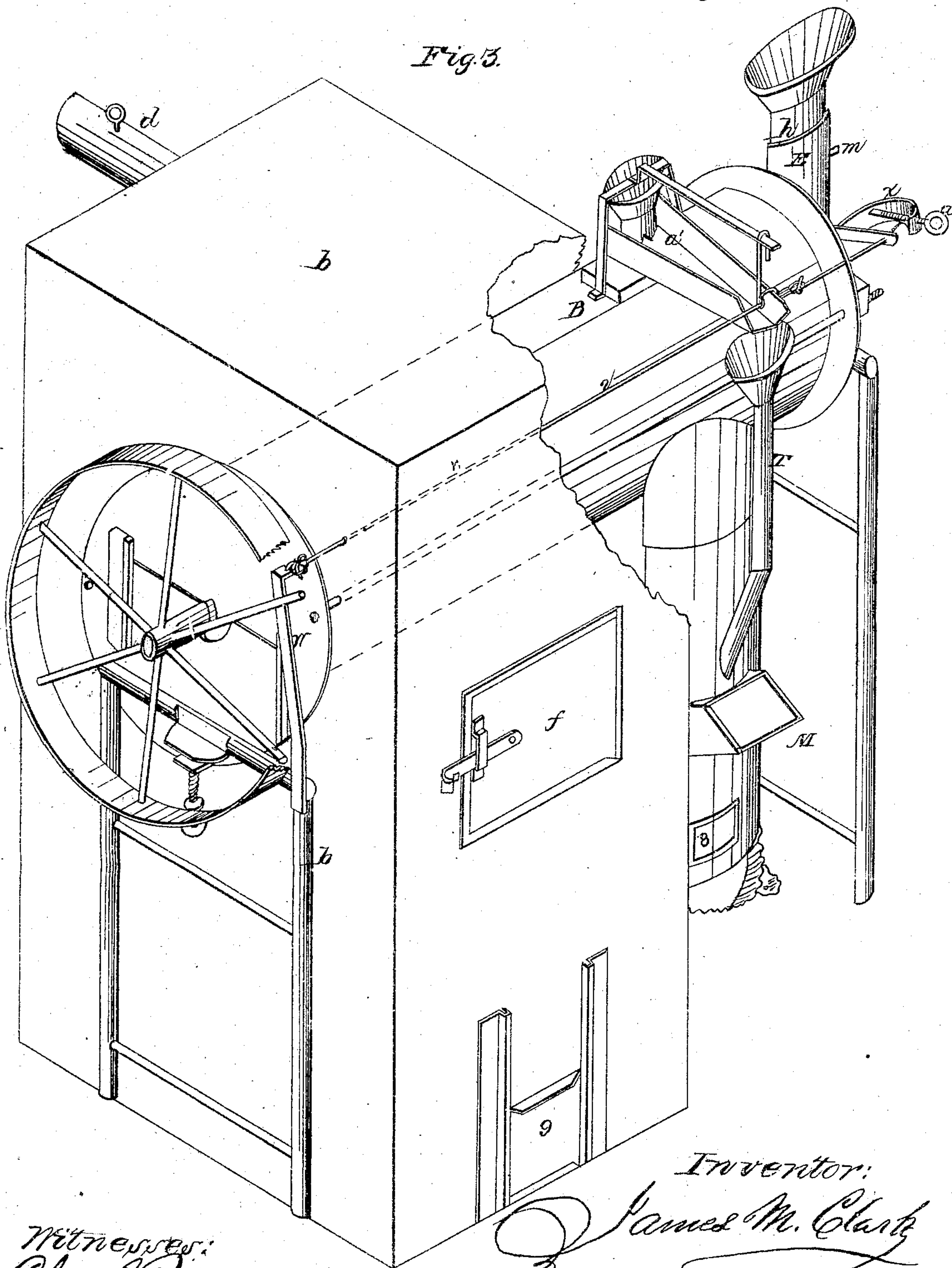
*Sheet 2 of 2 Sheets.*

*Preserving Grain*

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*Fig. 3.*



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# UNITED STATES PATENT OFFICE.

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## BLEACHING OF GRAIN BY SULFURIC ACID.

Specification of Letters Patent No. 27,887, dated April 17, 1860.

*To all whom it may concern:*

Be it known that I, JAMES M. CLARK, of Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented  
5 or discovered a Mode of Bleaching Wheat and Rye; and I do hereby declare that the following is a full, clear, and exact description of the principle or character which distinguishes it from all other things before  
19 known, and of the usual manner of making, modifying, and using the same.

My invention or discovery consists in exposing wheat and rye to the action of sulfurous acid gas so as to whiten the grains thereby enhancing the value of dark-colored, discolored, or damaged grains and also improving the flour from such grain. It is well known that what is called "red wheat" in commerce is richer in gluten than white  
20 wheat, although the latter is preferred on account of its appearance. Dark grain and dark flour are objected to merely on account of appearance, and so universal is this prejudice against dark flour and dark bread that  
25 bakers resort to deleterious arts to make white bread from dark flour. My discovery of whitening the grain in the kernel will thus contribute to the health of communities by dispensing with the necessity of adding  
30 drugs to flour, and will make dark grains equal in value to the white grains.

In order to whiten red wheat I pass the grain through an atmosphere of sulfurous-acid gas, which bleaches the kernel, removing all discoloration and without any injury whatever to the grain. The flour of this bleached grain has a fair white appearance and is not affected in any way injuriously by this treatment. The grain is agitated in a  
40 screen or other suitable receptacle for a sufficient time in the gas; and various methods may be resorted to for exposing the grain uniformly to the action of the bleaching agent.

45 The machinery for bleaching is described and represented as follows.

A is a screen mounted upon suitable bearings so that it may be revolved within the casing B. The bearing is in the wall of the  
50 casing and the bearing D is of peculiar construction, so as to admit the grain to the screen from the spout E. The shaft or axis of the screen enlarges at F into a collar which embraces and turns upon the spout E  
55 and this collar is provided with openings in its circumference through which the grain

passes into the screen. One of the openings is indicated by the blank space in Fig. 1. At intervals and extending the whole length of the inside of the screen are wings or lift  
60 pieces H, which as the screen revolves carry the grain up and drop it, thereby securing a thorough agitation and exposure of the grain to the bleaching atmosphere of the casing or compartment in which the screen re-  
65 volves. On the outside of the screen are wings or carrying pieces K which being set obliquely and in different directions on different halves of the cylinder conduct the screenings to the central escape pipe L. 70

The bleaching atmosphere is obtained and regulated as follows: M is a stove, N its fire chamber and P the smoke pipe shown in dotted lines. R is a division plate upon which sulfur is sprinkled and as it burns, the  
75 sulfurous-acid gas arising therefrom passes up into the casing B and through the meshes of screen A and bleaches the grain. The air for supplying the combustion of the sulfur is admitted to the gas generating chamber  
80 G, and regulated through the valve S. The sulfur is conveyed to the plate R through the passage T. The quantity is regulated as follows: The shoe  $a^1$  under the hopper; which receives the sulfur, is agitated as fol-  
85 lows: V is a wire connected with the shoe and also with springs W and X. The spring W is so arranged that when the band wheel Z revolves its spokes strike the spring and push it out of the way. At the same  
90 time the spring X draws upon the wire and gives motion to the shoe and when the spoke has passed the spring W, falls back again and gives motion to the shoe in an opposite direction. The vibration of the shoe is  
95 shortened or lengthened by turning the regulating stem  $a$ , around which the wire passes, and thus regulates the quantity of sulfur falling from the shoe into passage T. The sulfurous-acid gas passes out of the casing  
100 B through pipe  $d$  into the grain receptacle  $b$  from which it escapes through the pipe  $d^1$ . The receptacle  $b$  or chamber into which the grain falls from the pipe  $e$  embraces part of casing B and is intended to be close, so as to  
105 prevent the escape of the acid fumes, except at the discharge pipe  $d^1$  and is furnished with suitable means of entrance or man hole at  $f$  and discharge of the grain at  $g$ . The gas and grain may both be discharged at  
110 pipe  $e$  in which case the pipe  $d$  must be closed. The hopper  $h$ , through which the

grain passes, to spout E, is movable up and down and having its lower end cut off obliquely at *k*, the amount of grain passing may be regulated by raising or lowering the  
5 hopper, and is fixed at any desired height by the set screw *m*.

It will be seen that the operation of this machine upon the grain is twofold, cleansing it by screening as well as bleaching it.

What I claim as my invention and discovery is— 10

The bleaching of wheat and rye by exposing the same to the action of sulfurous-acid gas, substantially as herein above set forth.

JAMES M. CLARK.

Witnesses:

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