

AMOR SMITH.

Improvement in Apparatus for Pulverizing Animal Matters for Fertilizers.

No. 125,343.

Patented April 2, 1872.

Fig. I.

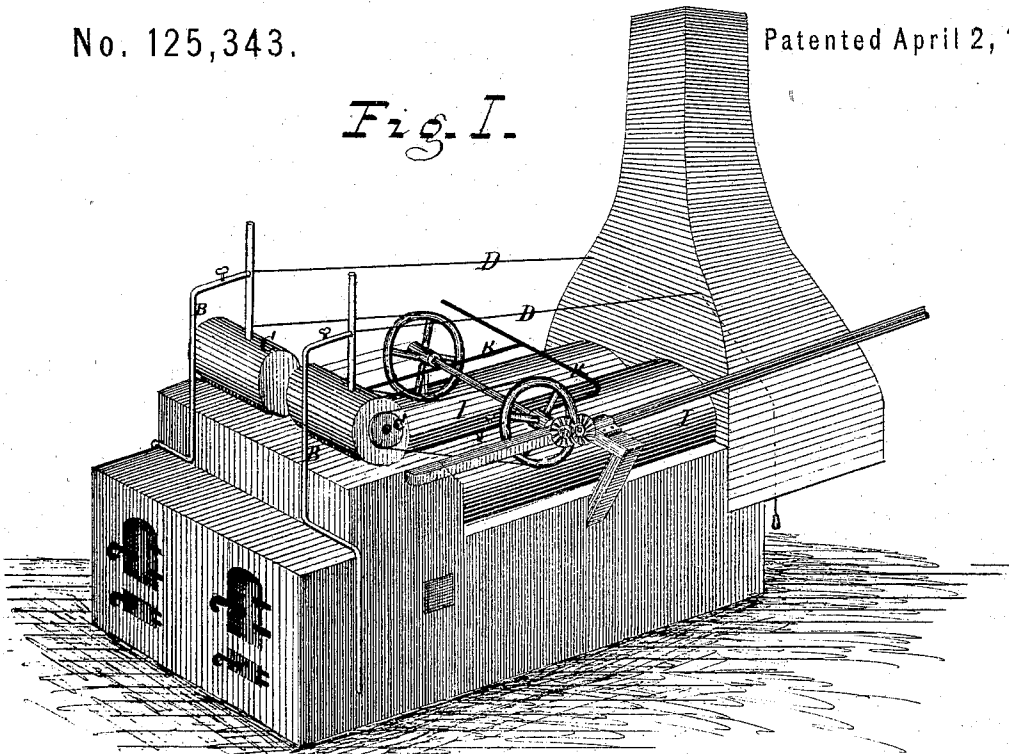


Fig. II.

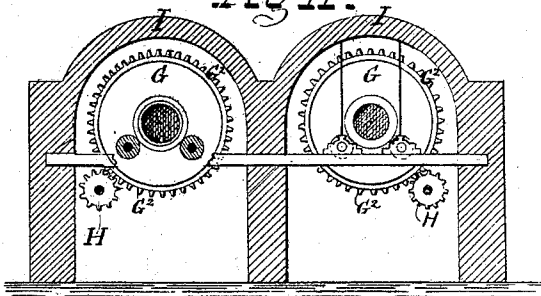


Fig. III.

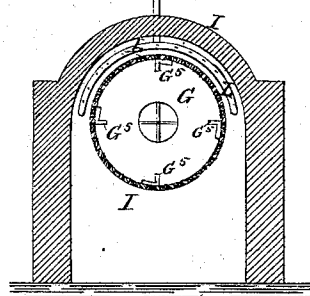
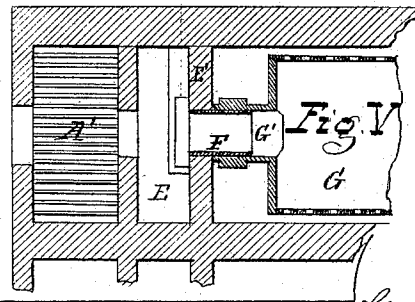
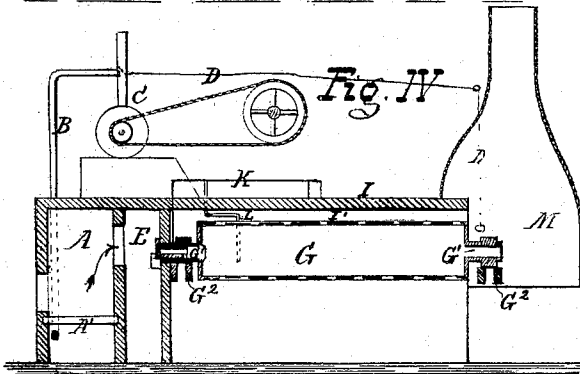


Fig. IV.



Attest
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UNITED STATES PATENT OFFICE.

AMOR SMITH, OF CINCINNATI, OHIO.

IMPROVEMENT IN APPARATUS FOR PULVERIZING ANIMAL MATTERS FOR FERTILIZERS.

Specification forming part of Letters Patent No. 125,343, dated April 2, 1872.

To all whom it may concern:

Be it known that I, AMOR SMITH, of Cincinnati, in the county of Hamilton and State of Ohio, have invented an Improved Process and Apparatus for Pulverizing Animal Matter for the Preparation of a Fertilizer; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the annexed drawing making part of this specification, in which—

Figure 1 is a perspective view. Fig. 2 is an end elevation. Fig. 3 is a vertical longitudinal section. Fig. 4 is a horizontal longitudinal section. Fig. 5 is a vertical transverse section.

The same letters are employed in all the figures to indicate identical parts.

The first part of my invention relates to an improved process of pulverizing refuse animal matter; and the second part relates to a new combination and arrangement of apparatus for desiccating and pulverizing such refuse animal matter to be used as a fertilizer.

In the annexed drawing, A is a combustion-chamber, in which fuel is burned upon the grates A'; the blast-pipe B conducts the blast from the fan C and discharges it into the ash-pit under the grate-bars A'. The cord D extends from the end of the apparatus where the operator stands to a valve or three-way cock in the blast-pipe, by means of which the operator may regulate the force of the blast at will. E is a dead-air space, formed in the walls of the furnace to prevent the passage of flames from the combustion-chamber into the cylinder in which the material to be operated upon is placed. F is a tube, of fire-brick or other refractory material, passing through the wall E' to conduct the heat into said cylinder. G is the cylinder, formed of boiler-iron or other stout metal, perforated at all parts of its periphery with fine holes. Tubular trunnions G¹ are attached to the heads which support the cylinder, resting upon friction-wheels G². The trunnion G¹, nearest the furnace, extends over the tube or pipe F, which is extended beyond the wall E' for the purpose. Segmental gearing G⁴ is bolted to the exterior surface of cylinder G and meshes into pinions H H, which are revolved by any convenient prime-motor. Longitudinal flanges (of angle iron) G³ are attached to the inner surface of the cylinder.

The cylinder is placed within a chamber, I, covered by the arch I'. Steam-pipe K is connected at one end with the steam-space of the steam-generator, and has its other end passing through the tubular tile F so as to discharge a jet of steam into the cylinder G. The object of this jet is to extinguish any fire which may occur in the materials subjected to treatment in the cylinder. Another steam-pipe, L, bent in the form of a semicircle and perforated with fine holes, is placed in the space between the cylinder G and the arch I'. The perforations must be so arranged that the jets of steam passing through them sweep along the exterior surface of the cylinder on top to prevent the accumulation of fine pulverized particles between the cylinder and the arch. The trunnion G¹ which is furthest from the combustion-chamber opens under a cowl, M, which is open below and extends down below the level of this trunnion or exit-pipe G¹. The heated gases from the combustion-chamber passing through the cylinder escape partly with the pulverized material into the chamber I between the arch I' and the cylinder and partly through the further trunnion under the cowl M. The uptake N opens on top of this cowl.

The operation of this machine is as follows: Fire is maintained in the combustion-chamber A, and the heat and gaseous products of combustion discharged into the revolving cylinder G, which is partly filled with scraps of leather, hoofs, horns, bones, &c., mingled with pieces of iron, stones, or other hard substances, which falling upon and rubbing against the particles of animal matter heated by the furnace to a roasting temperature, (but not sufficiently to set them afire,) will reduce them to a fine powder, which, sifting through the fine perforations in the cylinder, falls into the chamber I in a condition fit for use as a fertilizer, and used either separately or mixed with other substances. Should these particles while in the cylinder become so highly heated as to take fire it can be immediately extinguished by opening the steam-pipe K. Fine particles escaping with the draught will strike against the inner surface of the cowl M and either be precipitated, or, adhering thereto, may be swept off by the attendant.

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

1. The process for desiccating and pulverizing animal matter, such as herein set forth, for the preparation of a fertilizer by tritulating them in a hot chamber in a revolving cylinder mixed with hard substances, substantially as set forth.

2. In combination, the combustion-chamber A, air-space E, and perforated cylinder G, revolving in the chamber I, substantially as set forth.

3. The perforated cylinder G when constructed with internal longitudinal flanges G^s and revolved upon tubular trunnions G^t and used in combination with a furnace and pieces of hard substances for desiccating and grinding, substantially in the manner herein set forth.

4. The cowl M when used in combination with the perforated cylinder G and arranged in relation thereto, substantially as and for the purpose set forth.

5. The arrangement of the revolving cylinder G, tubular tile F, and steam-pipe K, substantially as and for the purpose set forth.

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

AMOR SMITH.

Witnesses:

AMOR SMITH, Jr.,

E. A. J. F. SPRENGER.