(No Model.) 2 Sheets—Sheet 1.

J. SEAMAN.

APPARATUS FOR MANUFACTURING FERTILIZERS.

No. 344,139. Patented June 22, 1886.

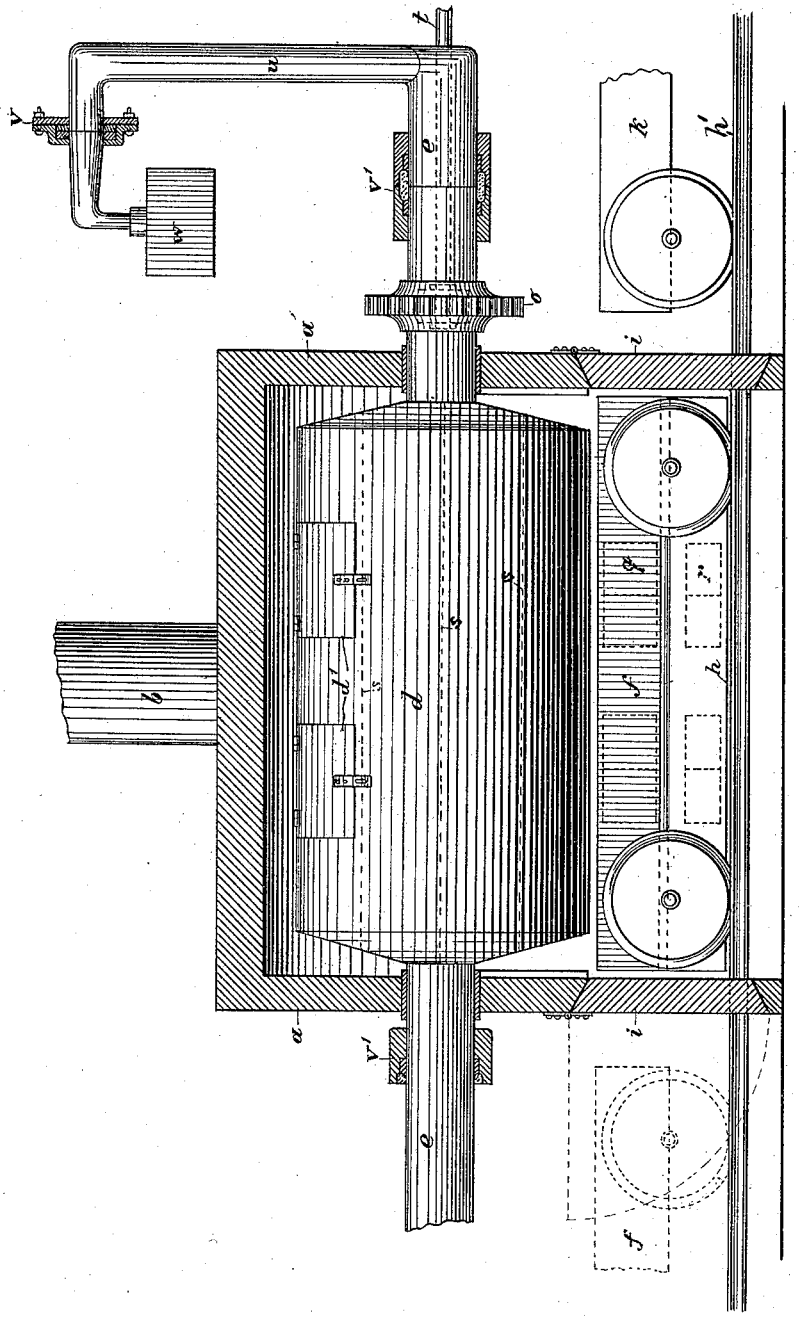

Fig. 1.

Witnesses:
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Anton Sonnemann.

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(No Model.) 2 Sheets—Sheet 2.

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Fig. 2.

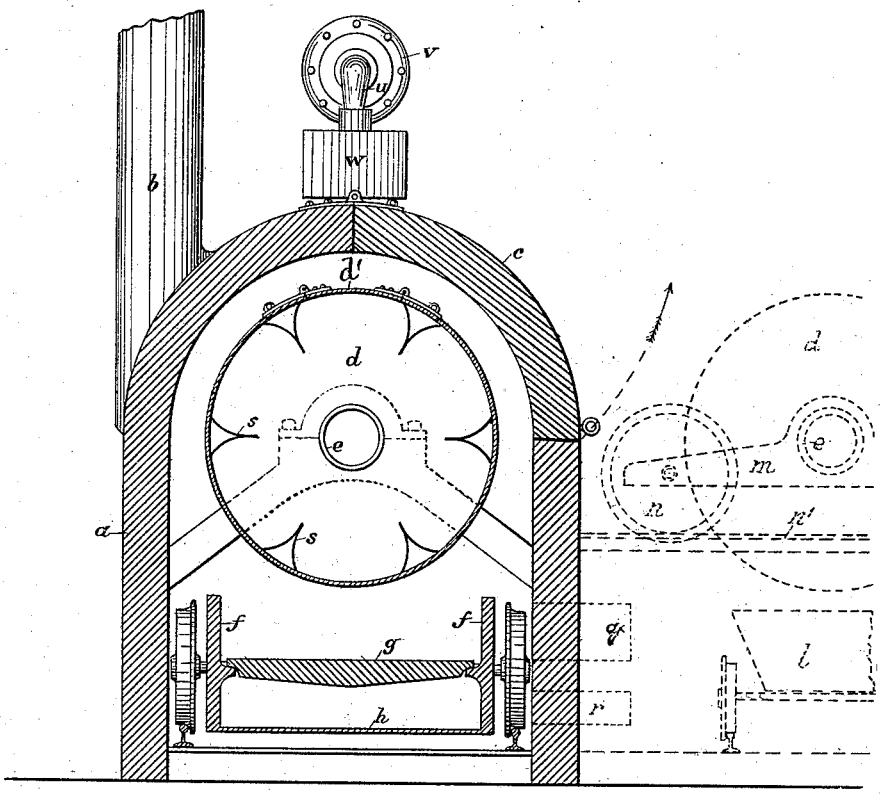


Fig. 3.

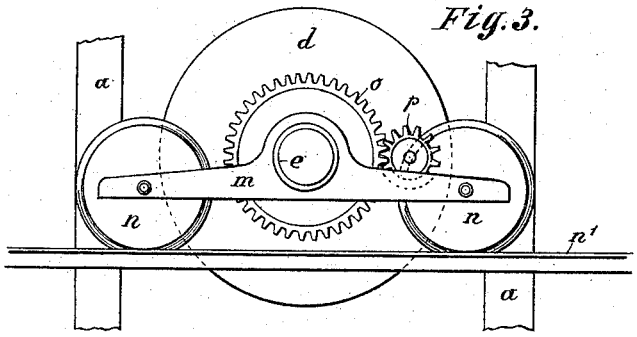
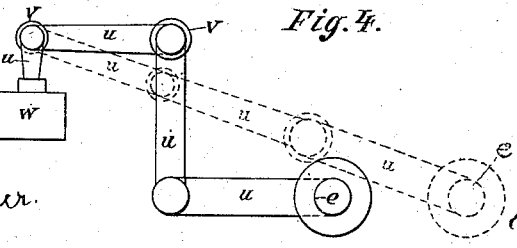


Fig. 4.



Witnesses:
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UNITED STATES PATENT OFFICE.

JOSEPH SEAMAN, OF SOUTH LYNNE, ILLINOIS.

APPARATUS FOR MANUFACTURING FERTILIZERS.

SPECIFICATION forming part of Letters Patent No. 344,139, dated June 22, 1886.

Application filed February 15, 1886. Serial No. 191,920. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH SEAMAN, a citizen of the United States, residing at South Lynne, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Machinery for Manufacturing Fertilizers, which are fully set forth in the following specification, reference being had to the accompanying drawings, forming a part hereof, and in which—

Figure 1 is a side view showing the casing of the apparatus in section and the revolving cylinder and its shafts, gas pipes, and connection in full. Fig. 2 shows an end view with the end wall removed, also the front end of the cylinder *d* removed, thus showing most of the parts and the end of the fire-box in section. Fig. 3 shows an end view of the mechanism for carrying the cylinder *d*, when made according to the special construction to be pointed out in the specification. Fig. 4 shows the manner of connecting the hollow journal *e* with the condenser *w* when the former is made removable from the housing *a* by means of jointed pipes.

Like letters of reference indicate like parts.

The object of my invention is to construct a mechanism by means of which certain chemical operations may be accomplished in the manufacture of fertilizers from the tank-waters of slaughter-houses and like substances requiring such treatment.

In the upper part of said furnace *a* is arranged a revolving cylinder having hollow journals *e*, and provided on its interior with fixed blades or dashers *s*. To the ends of said journals *e* are attached one or more pipes, *u*, forming a connected communication with the condensing or collecting chamber *w*. Said pipes are connected to the shaft *e* by means of a coupling, *v'*, packed with asbestus fiber or like material in any well-known manner, so as to form a tight packing, and the pipes *u* are provided with joints *v*, (shown in section,) so as to permit the motion as indicated in dotted outlines in Fig. 4 and remain gas-tight.

The object of making the pipes with movable joints is to remove and replace the cylinder *d* from the furnace into the position indicated in dotted outlines shown in Fig. 2 for the purpose of emptying it of its contents without severing its connection with the condenser *w*. In this last construction the cylinder *d* is carried in the frames *m*, provided with wheels *n*, traveling on track *n'*, placed at each end of the furnace. This construction, however, has some practical difficulties which render it less desirable than the construction now to be described.

In the following construction the cylinder *d* is mounted in permanent bearings fixed in the furnace. In the place of the permanent fire-box is substituted one which runs on the rails or tracks *h'*. The furnace is provided on each of its ends with doors *i*, from which the fire-box *f* is passed out at one end, as indicated in dotted outlines, and in its place through another door, *i*, at the opposite end of the furnace, is placed a truck, *k*, into which the contents of the cylinder *d* are emptied, after which it is removed and the fire-box *f* replaced, as shown. Doors *q* and *r* give access to the grate *g* and ash-pit *h*. Motion is given to the cylinder *d* by means of wheels *o* and *p*, the latter receiving motion from its shaft *t*, connected to some power. The necessary high degree of heat would soon destroy the material in the cylinder *d* unless some churning or other motion was given to it, which is accomplished by the material falling over the dashers *s* during the revolution of the cylinder *d*.

To operate the apparatus, doors *c* and *d'* are opened and the cylinder filled with the previously-prepared material, after which said parts are securely closed and the fire placed under the cylinder *d* and left until the contents are sufficiently heated, which is indicated to the experienced workman either by sight or by the sound of the material under motion, which resembles that of butter forming in a revolving churn. When sufficiently treated, the fire is removed from out of the furnace and the truck *k* moved into its place, into which the contents of the cylinder *d* are emptied, after which the truck *k* is removed, the cylinder *d* refilled, and the fire-box *f* replaced and the operation continued as before. The gases arising during the operation escape through the bearings *e* and pipes *u* into the chemical condenser or chamber *w*, where they are collected for other useful purposes. The draft in the flue *b* is here shown to be direct; but it

may be, as is obvious, reversed by means of proper dampers.

What I claim is—

1. A revolving cylinder provided with dashers *s*, hollow shafts *e*, pipes *u*, chemical condenser *w*, and a heating-furnace, substantially as specified.

2. In combination with a furnace provided with a revolving cylinder having hollow shafts *e*, the removable fire-box *f*, within the furnace *a*, and truck *k*, substantially as specified.

3. A cylinder provided with dashers *s*, hollow shafts *e*, pipes *u*, condenser *w*, and the mechanism to heat and agitate the contents of said cylinder, substantially as specified.

4. A furnace, *a*, provided with revolving cylinder *d*, having hollow shafts *e*, in combination with the chamber *w*, pipes *u*, and joints *v'*, substantially as specified.

5. In combination with a furnace-chamber, *a*, having door *c*, revolving cylinder *d*, provided with hollow shafts *e*, and doors *d'*, the removable fire-box *f*, substantially as specified.

In testimony of the foregoing I have hereunto signed my name this 15th day of January, 1886.

JOSEPH SEAMAN.

Witnesses:

ANTON FOUGNER,

J. D. DEAHOFE.