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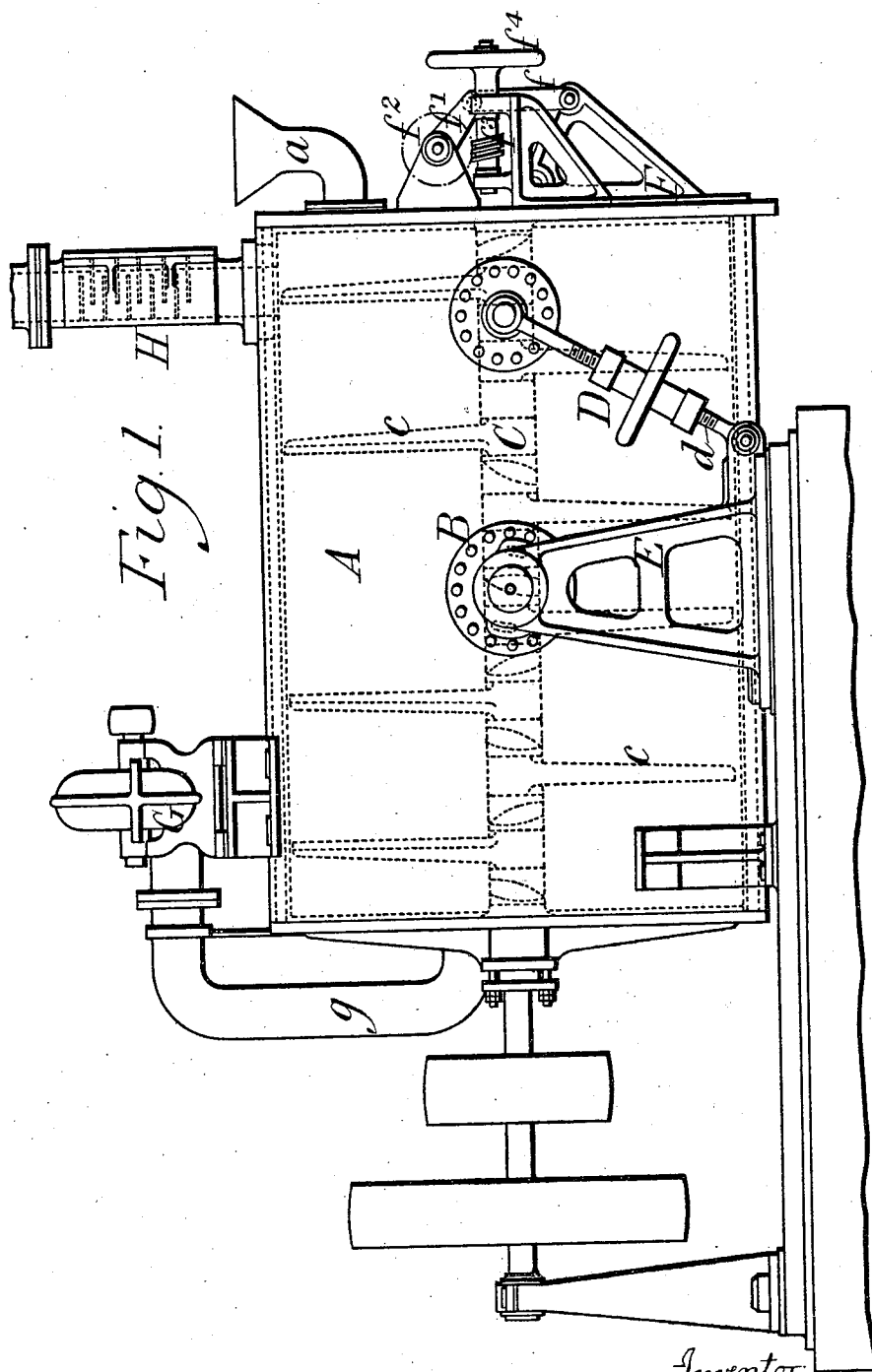
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F. WALTON.

PROCESS OF AND APPARATUS FOR OXIDIZING OILS.

No. 557,457.

Patented Mar. 31, 1896.



Witnesses;
G. W. Rea,
J. A. Green

Inventor,
Frederick Walton,
By James L. Norris
att'y.

(No Model.)

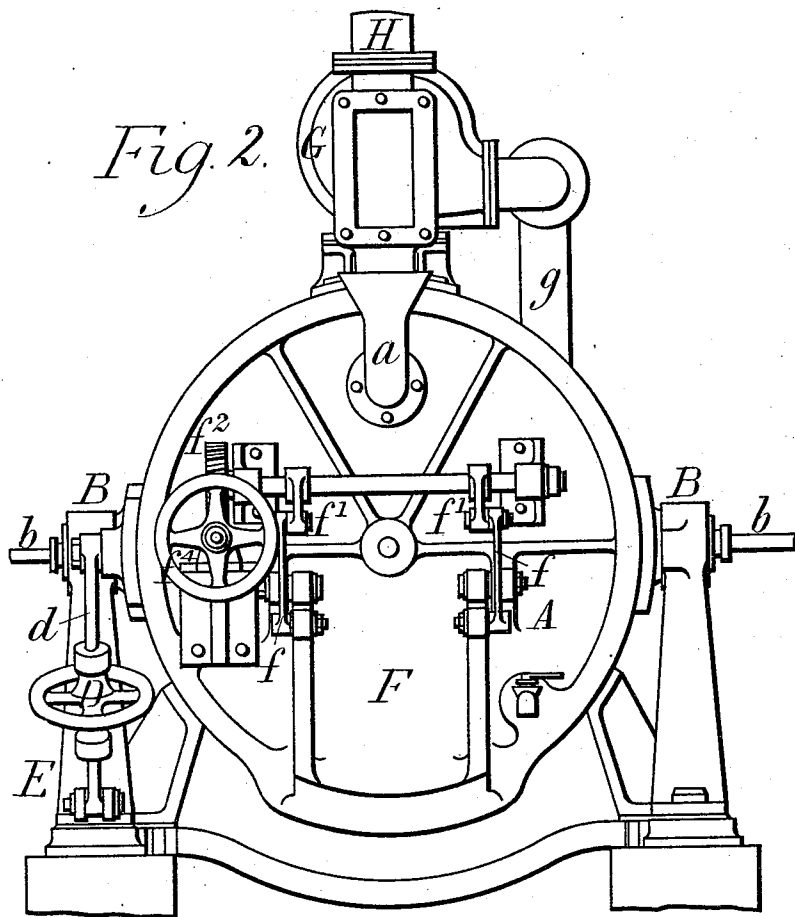
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J. A. Green

Inventor:
Frederick Walton
By James L. Norris
Atty.

(No Model.)

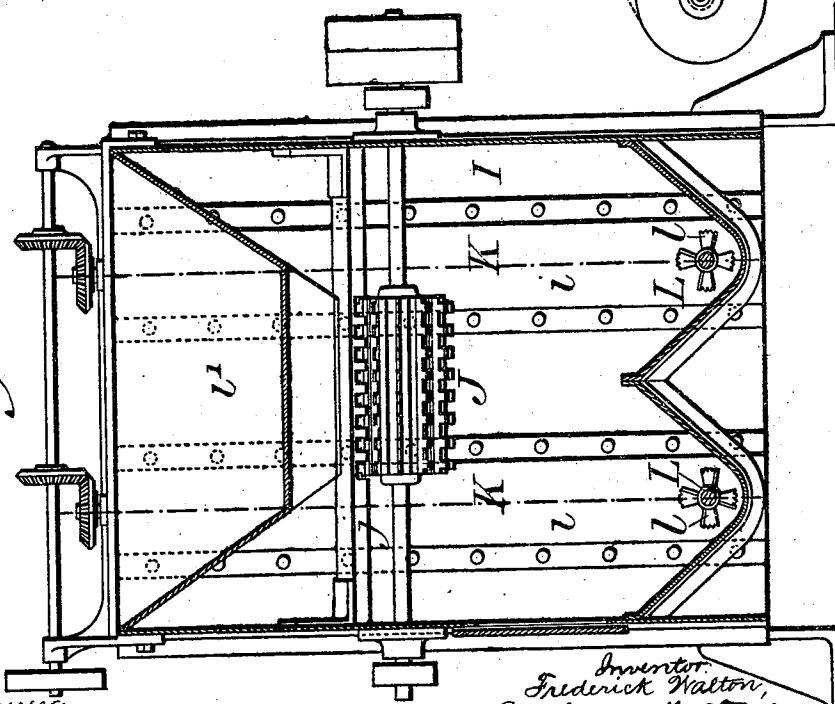
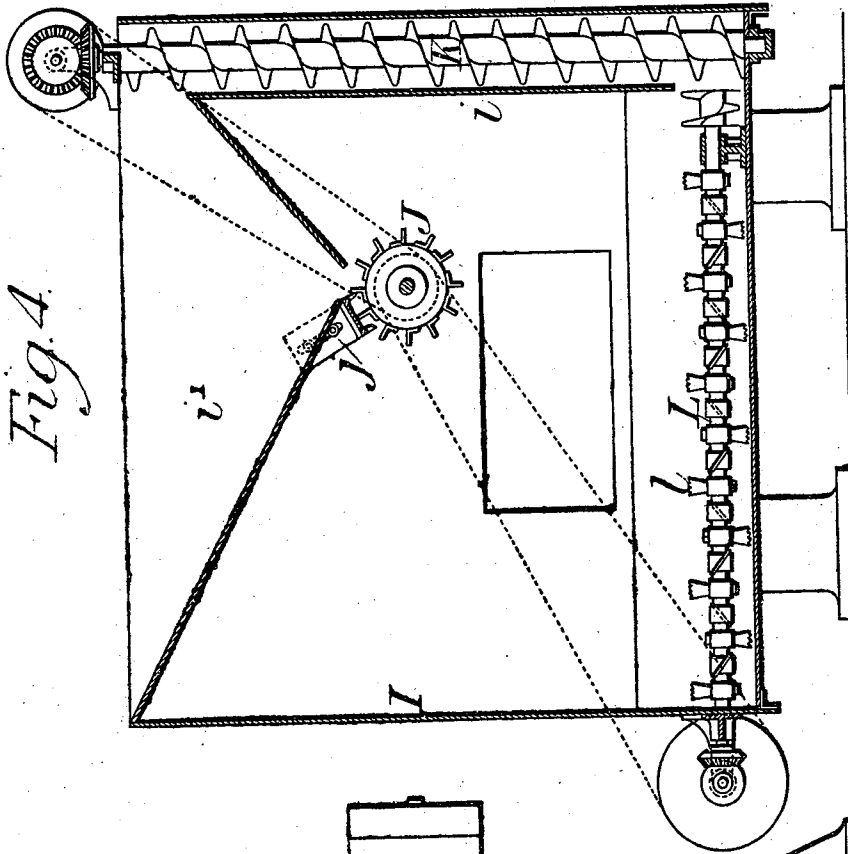
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F. WALTON.

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Witnesses;
G. W. Rea,
T. A. Green

Inventor.
Frederick Walton,
By James L. Torrig.
Atty.

(No Model.)

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Fig. 6.

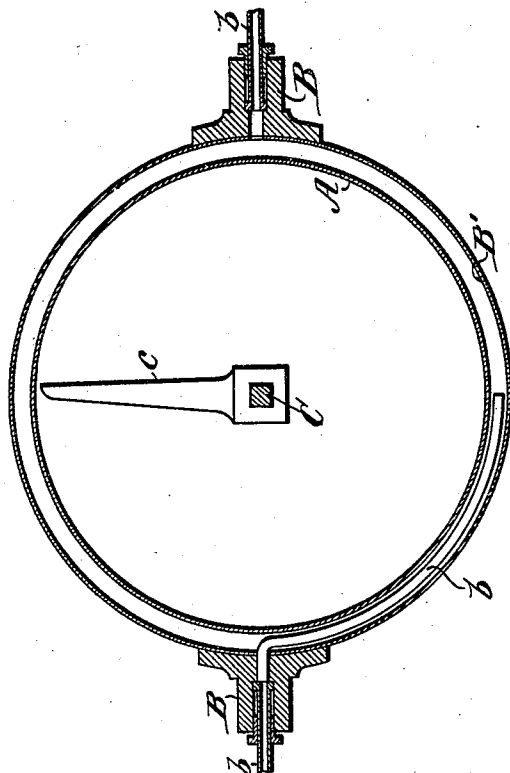
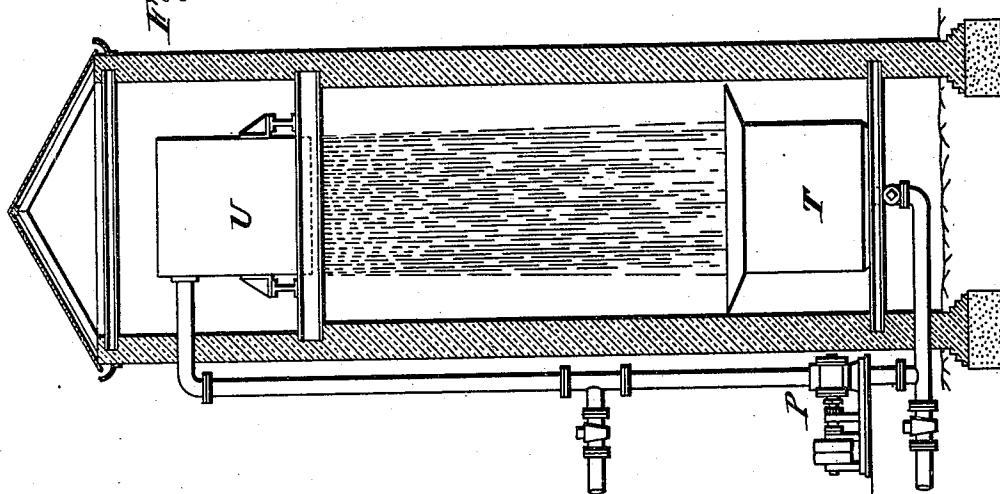


Fig. 5.



Witnesses.
A. H. Norris.
Robert G. Smith.

Inventor.
Frederick Walton.
By James L. Norris.
Atty.

UNITED STATES PATENT OFFICE.

FREDERICK WALTON, OF LONDON, ENGLAND.

PROCESS OF AND APPARATUS FOR OXIDIZING OILS.

SPECIFICATION forming part of Letters Patent No. 557,457, dated March 31, 1896.

Application filed October 29, 1894. Serial No. 527,325. (No model.) Patented in England April 10, 1894, No. 7,126; in Germany July 26, 1894, No. 83,584; in France October 6, 1894, No. 241,901, and in Belgium October 8, 1894, No. 112,169.

To all whom it may concern:

Be it known that I, FREDERICK WALTON, a citizen of England, residing at 114 Holborn, in the city of London, England, have invented a certain new and useful Process of and Apparatus for Effecting Oxidation of Drying-Oils, (for which I have obtained Letters Patent in Belgium, dated October 8, 1894, No. 112,169; in France, dated October 6, 1894, No. 241,901; in Germany, dated July 26, 1894, No. 83,584, and in Great Britain, dated April 10, 1894, No. 7,126,) of which the following is a specification.

My invention relates to means of economizing time and labor in effecting the oxidation of drying-oils, so as to render them fit for use in making various compounds—such, for instance, as those employed for the manufacture of linoleum and other floor-cloths. For this purpose I first mix the oil with a small proportion—say about one-half per cent., by weight—of concentrated driers and treat it in a known manner by heating it and letting it descend in a shower in the condition of drops or fine streams, exposed to the air during their descent, and repeating this treatment until the oil becomes too viscid to flow. For this preliminary treatment it is only necessary to provide a steam-jacketed tank with a perforated bottom for heating the oil to about 50° centigrade and discharging it as a shower, a tank below to receive the shower, and a pump by which the oil that has descended is pumped up to the tank above to descend repeatedly. After this preliminary treatment the viscid oil is further oxidized and rendered still more viscid by apparatus of which—

Figure 1 is a side view, and Fig. 2 is an end view. Fig. 3 is a vertical section of the granulating-machine. Fig. 4 is a similar view taken on the line 4 4, Fig. 3. Fig. 5 is a vertical sectional view of an apparatus adapted for the preliminary treatment of the oil; and Fig. 6 is a detail transverse sectional view of the cylinder shown in Figs. 1 and 2, for the purpose of illustrating one of the agitating-arms, the jacket, the hollow trunnions, and the steam and condensed-water pipes passing through stuffing-boxes.

The apparatus consists of a cylinder A mounted on trunnions B and made with a jacket B', through which steam can be passed

for heating or water for cooling by pipes *b* passing through stuffing-boxes in the trunnions B.

Within the cylinder there is an agitator consisting of a number of arms *c* fixed on a shaft C, which extends through a stuffing-box in one end of the cylinder and is caused to revolve at various speeds, such as from forty to ninety revolutions per minute, by a suitable motor. By means of a hand-wheel and screwed sleeve D working on a right-and-left screw *d*, jointed at its one end to the cylinder A and at its other end to the base of the standard E, which supports the trunnion, the cylinder can be more or less inclined or tilted.

At one end of the cylinder there is a door F, hinged at its upper edge and connected by links *f* to cranks *f'* fixed on the spindle of a worm-wheel *f*², with which gears a worm *f*³. By turning this worm by its hand-wheel *f*⁴ the cranks *f'* are moved so as to open or close the door F. On the opposite end of the cylinder A is mounted a fan or air-blower G communicating with the interior of the cylinder by a pipe *g*. There is also on the top of the cylinder an outlet-pipe H for air, having a number of internal baffles to catch such particles of the oil as the air may carry with it.

The viscid oil, along with about five per cent. of whiting, is charged into the cylinder A by a pipe *a*, which is then closed, and is subjected to the beating and breaking action of the revolving arms *c*, while air is driven by the fan or blower G and pipe *g* into and through the cylinder, from which it escapes at H. During this action the temperature is prevented from rising above 55° centigrade by causing cold water to circulate through the jacket and, if necessary, by reducing the speed of the agitating-arms. The action is continued until the oil attains the condition of thick paste. The door F is then opened and the contents of the cylinder are discharged into shallow trays, in which they are allowed to cool and set. The trays containing the material are then placed in a drying-stove and kept at a temperature of about 40° centigrade until the material attains a dry spongy condition, when it is removed to be operated on by a machine of which Figs. 3 and 4 are vertical sections on planes at right angles to each other. It

consists of a vessel I, in which revolves a toothed roller J, its teeth passing between two sets of teeth on an adjustable toothed bar j.

At the end of the vessel I are casings *i*, in which revolve two vertical worms K, and at the bottom of the vessel, which is made in the form of a double trough, revolve two spindles L carrying inclined blades *l*. The dry spongy material fed into the hopper *i'* at the top is caused to pass through between the teeth of the roller J and the bar *j*, being thus cut or broken up into fragments. These, falling to the bottom, are carried by the inclined blades *l* to the end and by the worms K are raised and delivered into the hopper to be again operated on by the teeth, and this treatment is continued until the material is completely granulated.

The preferred apparatus employed for the preliminary treatment of the oil is shown in Fig. 5, and comprises a lower tank T, from which the oil is drawn by a rotary or other suitable pump P and forced up to an upper tank U, the bottom of which is perforated with holes through which the oil descends in a shower.

The concentrated drier which I first mix with the oil may be sulfate of zinc, or any one of the concentrated driers which are sold in the market under the name of "manganese driers," or any other concentrated drier.

Having thus described the nature of my invention and the best means I know for carrying the same into practical effect, I claim—

1. The herein-described process of effecting the oxidation of drying-oils consisting in first causing the oil mixed with a small pro-

portion of drier to fall repeatedly in a shower while exposed to currents of air, secondly in adding whiting to the oil thus rendered viscid and agitating the mixture in a current of air, thirdly, in drying the material to a spongy consistency, and finally reducing the spongy material to a granulated condition.

2. In a machine for treating drying-oils, the combination of a jacketed cylinder A mounted on hollow trunnions B provided with passages communicating with said jacket, a connection D for adjustably holding one end of said cylinder, a hinged door F arranged at one end of said cylinder, means for opening and closing said door, a rotary shaft journaled in said cylinder, agitators carried by said shaft, a blower connected with the cylinder, and an air-outlet H having baffle-plates arranged therein, substantially as described.

3. In an apparatus for treating drying-oils, the combination of a vessel I, a toothed roller J journaled therein, an adjustable toothed bar arranged in proximity to said roller, horizontal shafts L journaled in the bottom of the vessel and provided with inclined blades *l*, vertical worms K arranged at one end of the vessel, and a hopper disposed over the toothed roller J, substantially as described.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, this 18th day of October, A. D. 1894.

FREDERICK WALTON.

Witnesses:

OLIVER IMRAY,
JNO. P. M. MILLARD.