No. 609,936. Patented Aug. 30, 1898.

C. D. ISMAY.

PROCESS OF MAKING PAINT.

(Application filed Oct. 3, 1896.)

(No Model.) 3 Sheets—Sheet 1.

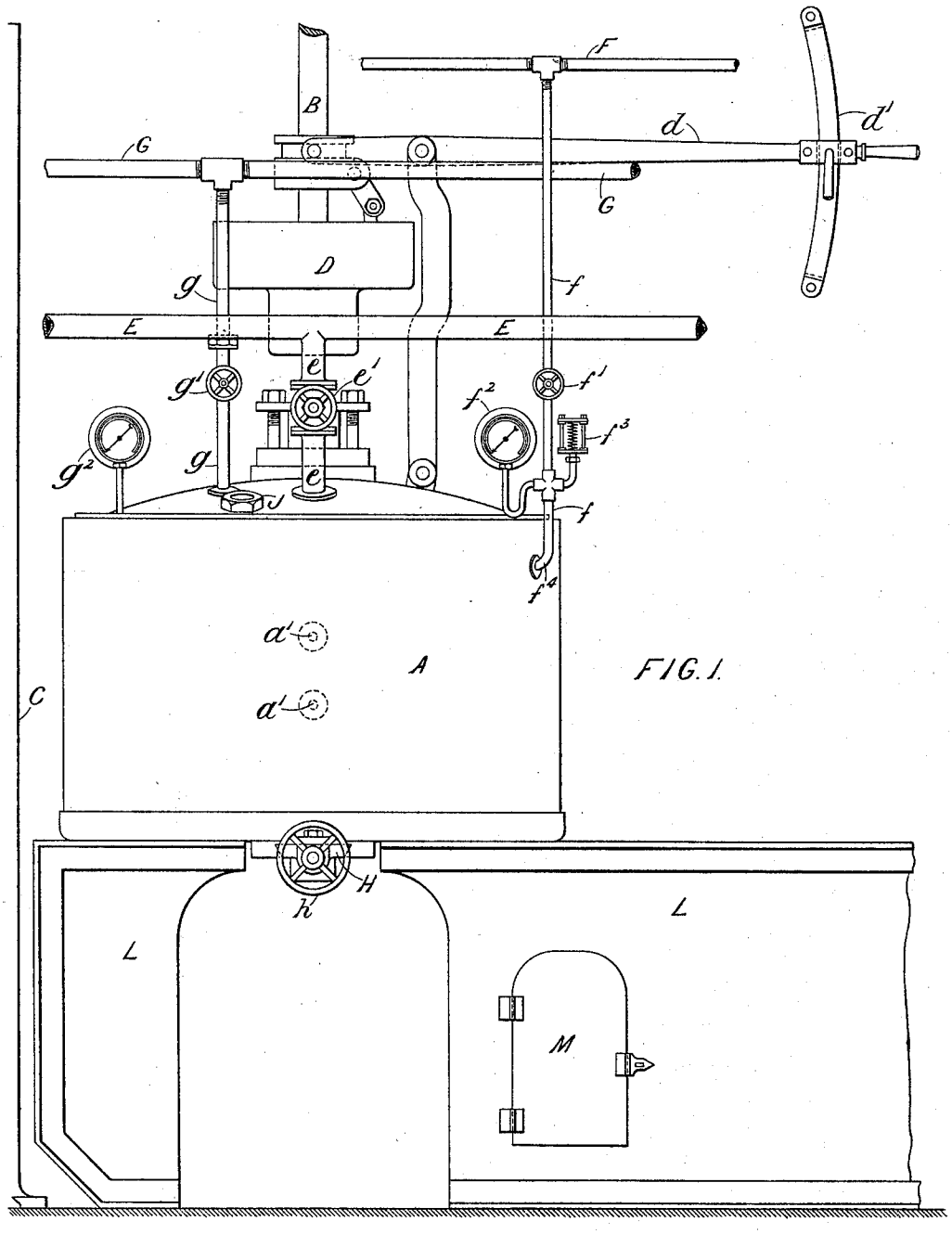


FIG. 1.

Witnesses.
O. B. Munn
Annie Isaac.

Inventor.
Charles Daglish Ismay
by Richards & R
Attys

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

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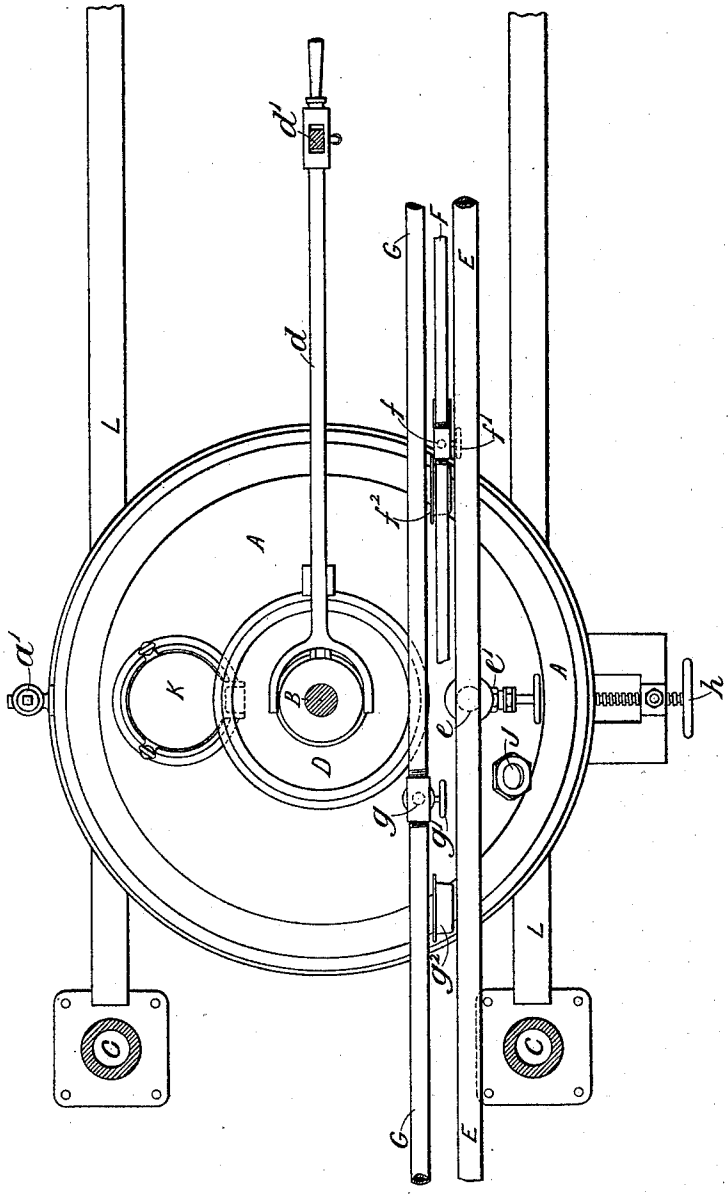


FIG. 2.

Witnesses.
Otto Munk
Annie Isaac.

Inventor.
Charles Daglish Ismay
by Reinhardt & Reinhardt
Atty's

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

No. 609,936. Patented Aug. 30, 1898.

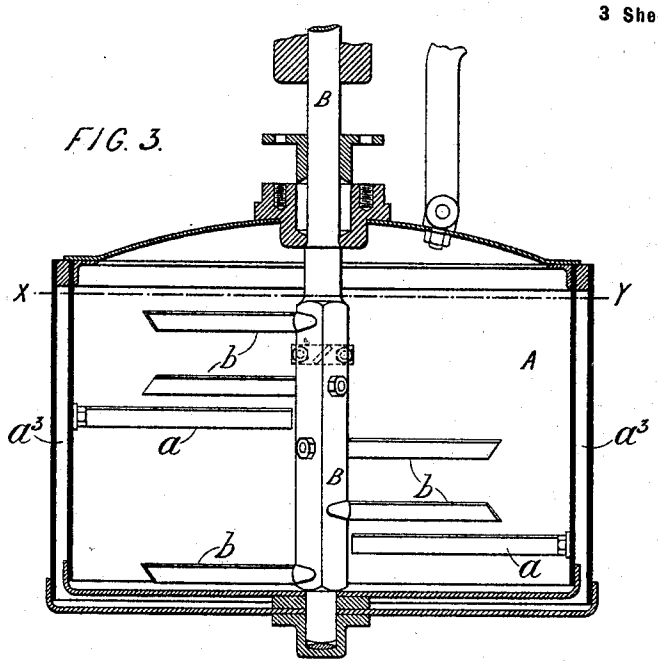
C. D. ISMAY.

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(Application filed Oct. 3, 1896.)

(No Model.) 3 Sheets—Sheet 3.

FIG. 3.



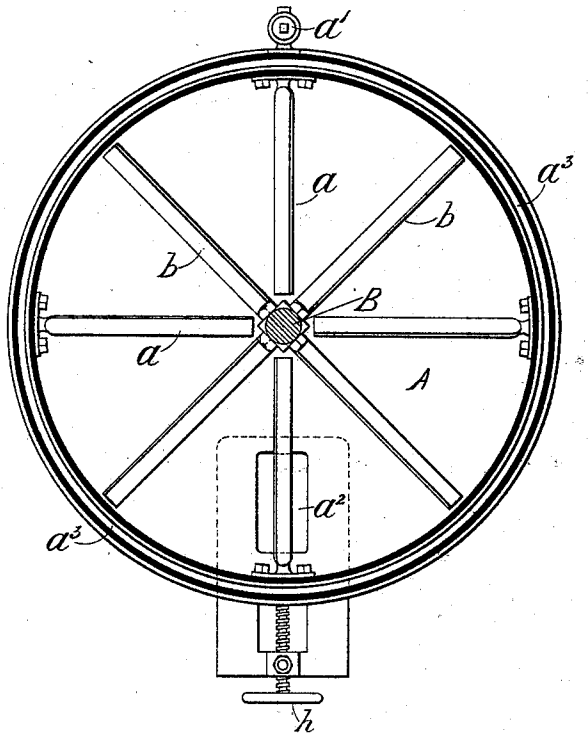


FIG. 4.

Witnesses.
A. H. Merrick
Annie Isaac.

Inventor.
Charles Daglish Ismay
by Pennie & Pr
Atys

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

CHARLES D. ISMAY, OF NEWCASTLE-UPON-TYNE, ENGLAND.

PROCESS OF MAKING PAINT.

SPECIFICATION forming part of Letters Patent No. 609,936, dated August 30, 1898.

Application filed October 3, 1896. Serial No. 607,770. (No specimens.) Patented in England December 14, 1895, No. 23,969; in France September 28, 1896, No. 260,661, and in Belgium September 28, 1896, No. 123,741.

To all whom it may concern:

Be it known that I, CHARLES DAGLISH ISMAY, a subject of the Queen of Great Britain and Ireland, and a resident of Newcastle-upon-Tyne, county of Northumberland, England, have invented a certain Improved Process of Making Paint, of which the following is a specification.

The invention has been patented in England, No. 23,969, dated December 14, 1895; in France, No. 260,661, dated September 28, 1896, and in Belgium, No. 123,741, dated September 28, 1896.

This invention relates to the conversion of white lead into white-lead paint, for which purpose the white-lead pulp has to be mixed with oil.

The object of my invention is the effectual and complete removal or separation of the water which has hitherto remained in the material, and also particularly to avoid stove-heating and as far as possible the handling of the material by the operatives, since these operations are of the most dangerous and unsanitary character.

Hitherto in the conversion of white lead into white-lead paint the lead-pulp has been dried to powder, which process is, as stated, objectionable and dangerous, and by my invention I dispense with it entirely. In another process the lead-pulp, with its contained water, is mixed with oil in a pug-mill and the whole thoroughly incorporated while cold. By these means the bulk of the water is separated and discharged; but a certain quantity has always necessarily been carried forward in the material (which is most deleterious thereto) to the next or grinding process, which consists in passing the mixture between solid granite or other stones or rolls.

My invention is directed to the latter process; and it consists in mixing the white-lead pulp with oil, agitating the same to cause the separation of the water, decanting the water, and then subjecting the resulting product to heat and vacuum, these several operations being carried out in a closed pug-mill provided with a heating-jacket wholly or in such degree as may be required.

In the accompanying drawings I illustrate one of a series of pug-mills, with its accessories, for carrying my invention into practice, Figure 1 being a general elevation, and Fig. 2 a plan of same. Fig. 3 is a central vertical section, and Fig. 4 a horizontal section, on line X Y.

A is the pan of the pug-mill, capable of being closed air-tight by a suitable cover, as shown, and furnished with fixed agitating-arms *a*, water-discharging cocks *a'*, main discharge-orifice a^2, and jacket a^3.

B is a vertical spindle fitted with agitating-arms *b* and revolved by suitable horizontal shafting, bevel-wheels, &c., supported by the columns C.

D is a clutch of ordinary construction with operating-lever *d* and guide *d'*.

E is a pipe conveying from a main supply-chest or the like the lead-pulp, which enters the pan A by branch *e*, controlled by valve *e'*.

F is a pipe conducting steam, hot air, or equivalent heated fluid from a boiler or hot-fluid generator, and *f* is a branch therefrom entering the jacket-space a^3 of the pan A at f^4.

f', f^2, and f^3 are respectively a stop-valve, pressure-gage, and relief-valve.

G is a pipe connecting with a vacuum-pump or condenser, and *g* is a pipe under the control of a valve *g'*, uniting it to the pan A.

g^2 is a vacuum-gage.

H is a discharge-valve operated by handle *h*.

J is a sight-hole, and K a manhole.

L are supporting-frames, and M is a tool-cupboard.

The practical working of my invention is as follows: The water-charged lead or pulp is run into the pan A via the pipes E *e*, and when the required quantity of oil is added the two are well mixed and incorporated by the agitating-arms *a* and *b* on the revolution of the spindle B. This mixing or agitation may be accomplished cold; but heat may with advantage be applied to the pan by admitting the hot fluid to the jacket a^3 by means of the pipes F *f*. The effect of this agitation, as is well known, is to cause the lead and oil to combine and the water to separate out, which rises to the surface, whence it is drawn off by the cocks *a'*. Thus the pigment is freed of the greater part of the water; but still a small quantity remains, and to get rid

of it the pan A is connected to the vacuum-pump or condenser through the pipes G g. Then heat is applied and the mass agitated, both as before described. The pressure of the hot fluid is such as to raise the contents of the pan to a temperature which will vary with and be regulated by the vacuum obtained, but which must not in any case be such as to damage the lead and which may be, for example, from 150° to 250° Fahrenheit. The agitation and heating of the mass are simultaneously conducted and continued until all or as much water as practicable has been evaporated therefrom, and subsequently the dried product is discharged from the pan A at the orifice a^2 and may be conveyed in any convenient manner to the final grinding-rolls. In order to insure that no water remains, these rolls may be heated rolls, such as are employed in kindred trades—that is, constructed of hollow metal and supplied with steam, hot air, or the like, for example, through the trunnions—so as to effect a further drying by evaporation in and during the grinding process; but this final heating and evaporating is seldom necessary.

From the above it will be seen that by my invention the conversion of white lead into white-lead paint is effected without the necessity of stove-drying, and as far as possible handling of the material, with its subsequent prejudicial effects on the operatives, is avoided, and at the same time the finished article is of a superior quality and is produced much more cheaply.

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

The herein-described process of converting white lead into white-lead paint consisting in mixing the pulp of white lead with oil, agitating the same to cause the separation of the water, decanting the water and then subjecting the resulting product to heat and vacuum, substantially as described.

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

CHAS. D. ISMAY.

Witnesses:
J. A. HARVEY,
E. W. PATTISON.