

Mar. 6, 1923.

A. C. MICHIE ET AL.
RETORT.
FILED NOV. 12, 1919.

1,447,680.

2 SHEETS—SHEET 1.

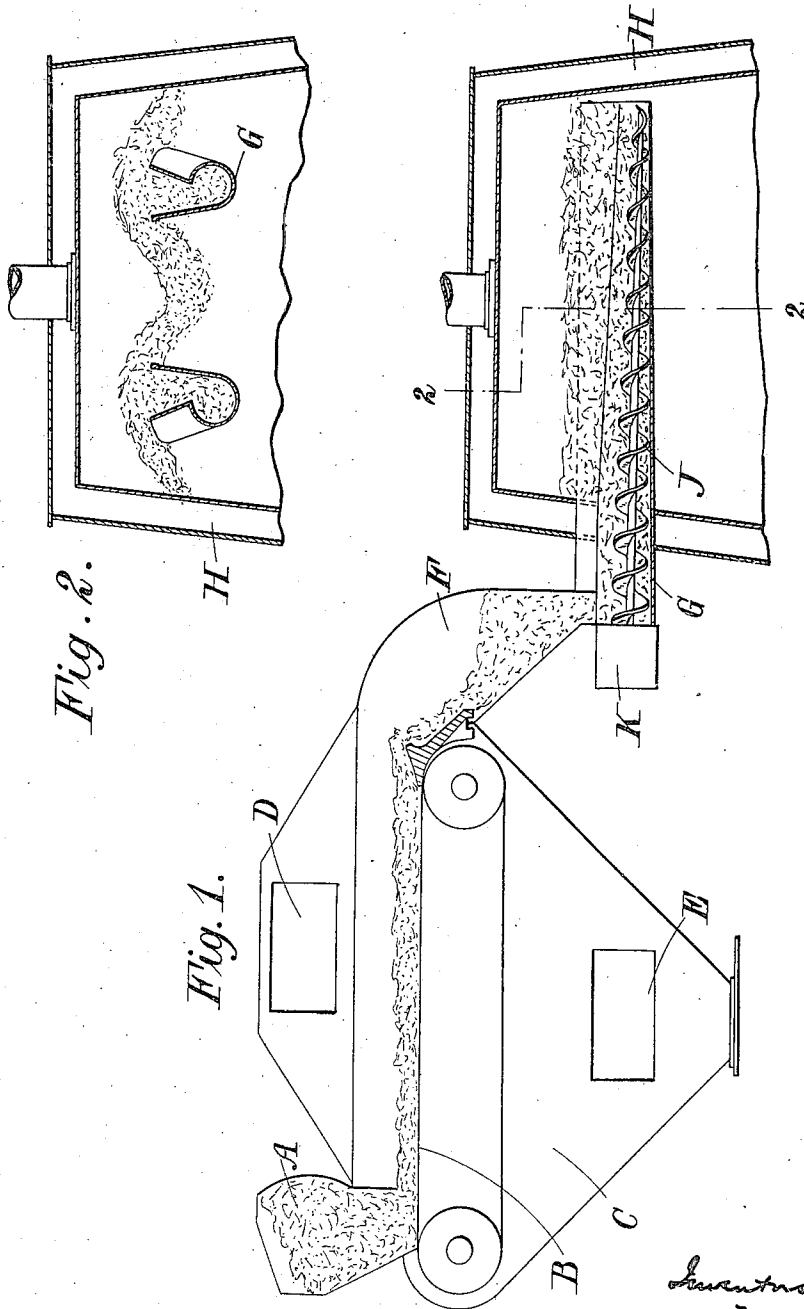


Fig. 2.

Fig. 1.

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by *[Signature]*
Attorney, Atty.

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2 SHEETS—SHEET 2.

Fig. 4.

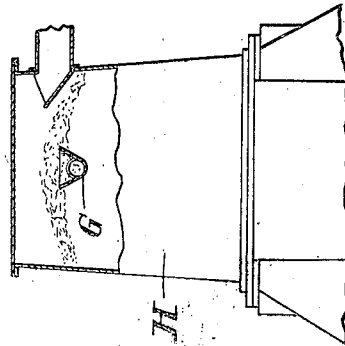
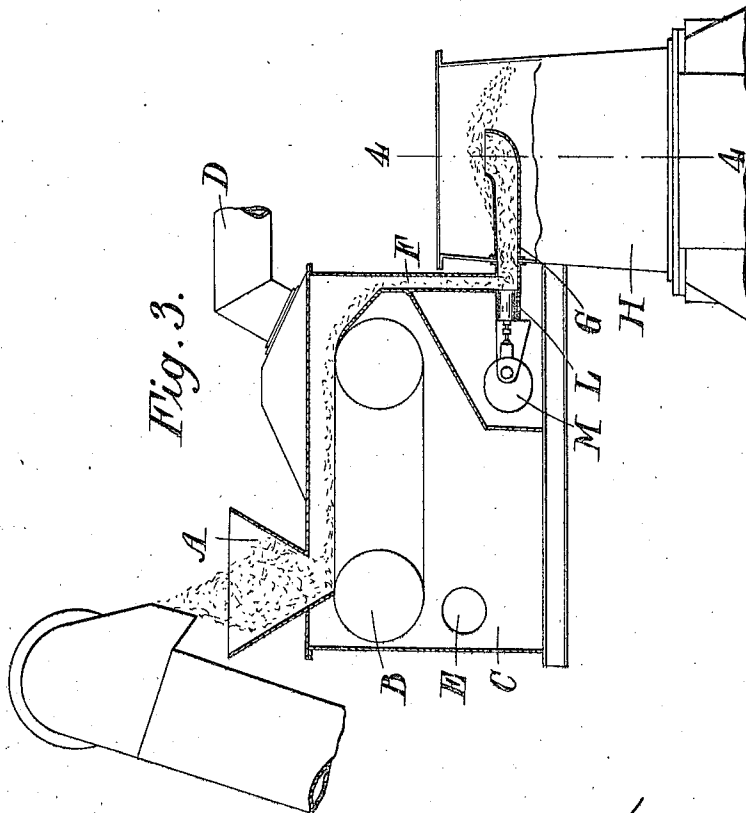


Fig. 3.



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UNITED STATES PATENT OFFICE.

ARTHUR CUMMING MICHIE, OF NEWCASTLE-UPON-TYNE, AND EDMUND GEORGE WEEKS, OF NORTHUMBERLAND, ENGLAND, ASSIGNORS TO CHARLES HESTERMAN MERZ AND WILLIAM McLELLAN, OF WESTMINSTER, LONDON, ENGLAND.

RETORT.

Application filed November 12, 1919. Serial No. 337,572.

To all whom it may concern:

Be it known that we, ARTHUR CUMMING MICHIE and EDMUND GEORGE WEEKS, subjects of the King of England, and residents, respectively, of Newcastle-upon-Tyne, England, and Northumberland, England, have invented certain new and useful Improvements in Retorts, of which the following is a specification.

10 This invention is for improvements in or relating to retorts and the like, and has for its main object to provide a retort for low-temperature distillation of fuel wherein the fuel may be introduced without creating
5 dust at the surface. If the fuel is dropped from a hopper into the retort on to the general upper surface of the fuel already in the retort, and is of such a character as to produce or contain dust, this dust is carried
20 through to the condensers and by-product plant, which renders the recovery of the by-products difficult owing to the admixture therewith of the fine dust, and also difficulty in operation arises owing to the blocking of
25 pipes and passages in the condensing and by-product plant.

According to the present invention, the retort is provided with one or more feeding conduits which enter the sides of the retort
30 and deliver their fuel at a level which is below that intended to be occupied by the surface of the fuel contained in the retort.

Preferably the feed-conduit or conduits project into the retort in the form of one or
35 more open troughs which extend from one side towards the other in an approximately horizontal plane, and convenient means, such as rotating worms or oscillating plungers, are provided for propelling the fuel along
40 the troughs.

In the accompanying drawings, which illustrate by way of example practical embodiments of this invention,

Figure 1 is a section through a preheater
45 and upper portion of a retort with a worm feed,

Figure 2 is a section on the line 2—2 of Figure 1,

Figure 3 is a sectional elevation similar
50 to Figure 1 but showing a modified arrangement, and

Figure 4 is a sectional elevation on the line 4—4 of Figure 3.

Referring first to Figures 1 and 2, a coal

hopper A discharges on to a perforated travelling conveyor B in a preheating chamber C, having a hot-gas inlet D and a hot-gas outlet E, and the preheated coal is discharged through a hopper F into two troughs, which enter the retort H at one side
55 and extend across towards the other side, parallel to one another and in an approximately horizontal plane. Each trough G contains a worm J connected with driving mechanism (shown diagrammatically by its casing K), for feeding the fuel along the
60 trough. The outer portion of the troughs may be covered in, as shown, to constitute a closed conduit, but that part which lies within the retort is open at the top, for all or
65 part of its length, so that the fuel can rise out of the trough and flow over the sides.

In operation, the fuel is fed sufficiently rapidly into the retort so that it piles up in the troughs and flows over the sides around
70 the same, so that the troughs remain buried below the surface of the fuel, which fuel will usually be highest above the centre-line of each trough, and will slope away down to
75 a lowest point between the two troughs, and between the troughs and those walls of the retort which face the sides of the troughs.

In the arrangement shown in Figures 3 and 4, the parts down to letter H are substantially the same, but in this modification
80 only one trough G is shown, and instead of using a worm, the feeding of the coal along the trough G is effected by a plunger L reciprocated by suitable gearing, such as the eccentric M. It will be seen that the
85 plunger L in its rear position allows fresh fuel (preheated in the example illustrated) to fall in front of it, and on its forward stroke the plunger pushes that fuel along the
90 trough G. The plunger may reciprocate, say, 25 times per minute. The operation is similar to that already described.

With feed-apparatus of this kind there is little disturbance of the surface of the fuel, as the fuel is continuously slowly rising out
100 of the troughs and flowing over the sides, the movement being such as not to release any large quantity of dust, and thus this is prevented from being carried over to the condensers and by-product plant. The
105 methods of feeding described have the additional advantage of giving a substantially continuous feed of fuel into the retort, and

this has been found preferable to intermittent methods of feeding.

What we claim as our invention and desire to secure by Letters Patent is:—

5 1. Apparatus for feeding fuel to distillation retorts wherein the fuel is introduced near the top and discharged from the bottom, said apparatus comprising a feeding conduit which enters laterally through the side of the retort and has its discharge outlet upwardly directed and within the retort at a distance from the side walls, and means for feeding fuel through said conduit and discharging it below the level of the surface of the fuel in the retort, thereby preventing dust from being formed and carried over with the distillation products.

20 2. Apparatus for feeding fuel to a distillation retort wherein the fuel is introduced near the top and discharged from the bottom, said apparatus comprising a feeding conduit which enters through the side of the retort and has its discharge outlet upwardly directed and at a distance from the side walls of the retort, and means for feeding fuel through said conduit and discharging it uniformly below the surface of the fuel in the retort, thereby preventing the formation of dust and consequent contamination of the distillation products.

30 3. Apparatus for feeding fuel to a distillation retort wherein the fuel is introduced near the top and discharged from the bot-

tom, said apparatus comprising a feeding conduit which enters through the side of the retort and has an upper open side at a distance from the walls of the retort, and means for continuously feeding fuel through said conduit and discharging it through said open side uniformly and beneath the surface of the fuel in the retort, thereby preventing the formation of dust and consequent contamination of the distillation products.

4. Apparatus for feeding fuel to a distillation retort wherein the fuel is introduced near the top and discharged from the bottom, said apparatus comprising a feeding conduit which enters through the side of the retort and has an upper open side at a distance from the walls of the retort, and a rotating worm for continuously feeding fuel through said conduit and discharging it through said open side uniformly and beneath the surface of the fuel in the retort thereby preventing the formation of dust and consequent contamination of the distillation products.

In testimony whereof we have signed our names to this specification in the presence of two subscribing witnesses.

ARTHUR CUMMING MICHIE.
EDMUND GEORGE WEEKS.

Witnesses:

EVELYN H. URQUHART,
E. FENWICK.