Feb. 9, 1971 J. W. LA GRONE 3,561,132

CARBON BLACK DRYING APPARATUS

Filed Sept. 10, 1969

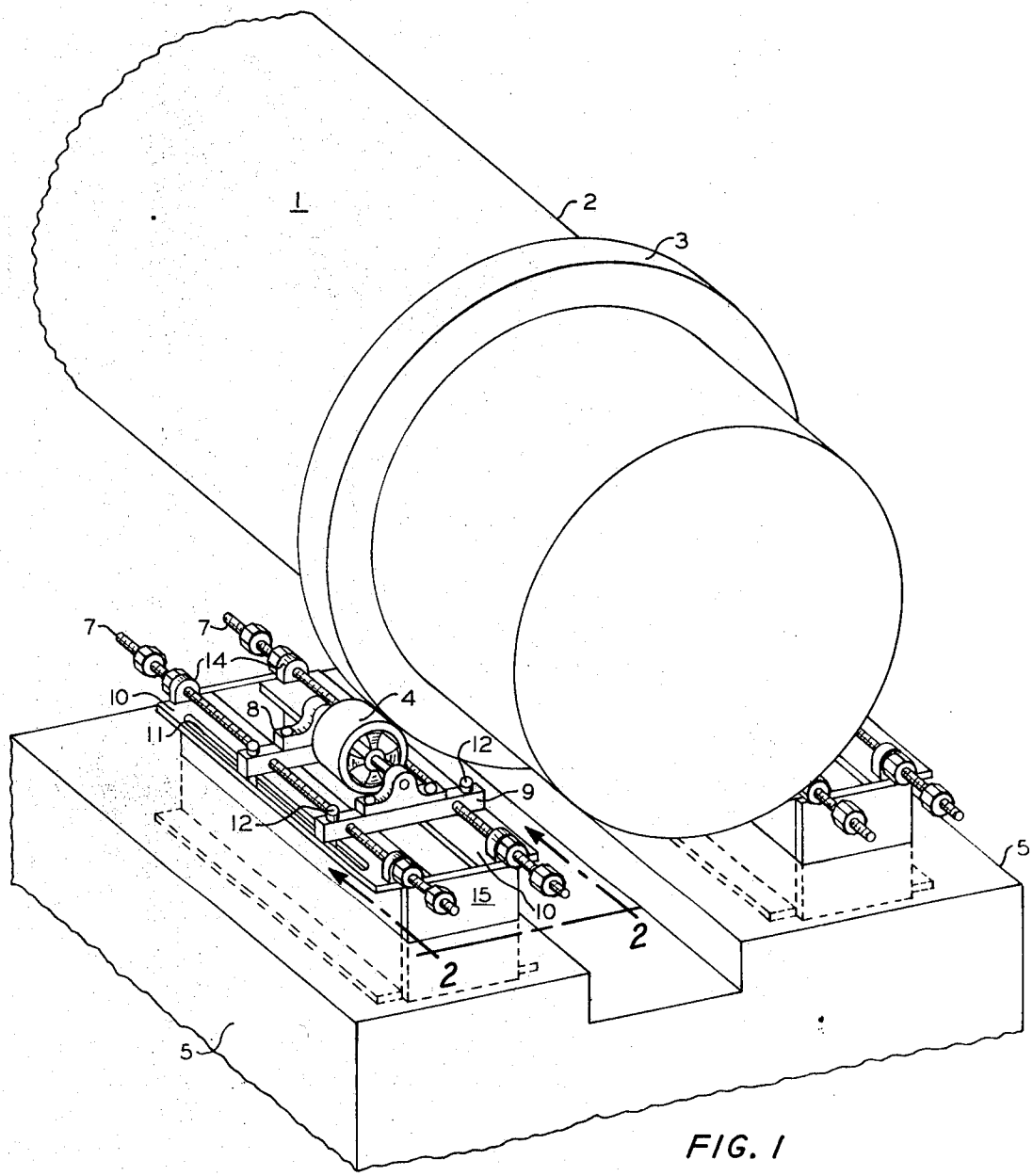


FIG. 1

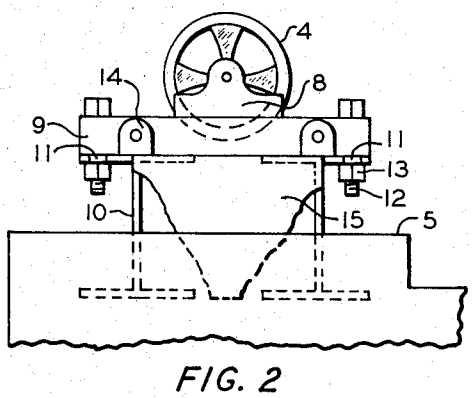


FIG. 2

INVENTOR.
J. W. LaGRONE

BY

Young & Quigg
ATTORNEYS

United States Patent Office 3,561,132 Patented Feb. 9, 1971

3,561,132

CARBON BLACK DRYING APPARATUS

John W. La Grone, Borger, Tex., assignor to Phillips Petroleum Company, a corporation of Delaware

Filed Sept. 10, 1969, Ser. No. 856,751
Int. Cl. F26g 11/02
U.S. Cl. 34—108 5 Claims

ABSTRACT OF THE DISCLOSURE

Apparatus is disclosed which comprises a rotary carbon black drier, subjected to permanent elongation of its metallic shell, in combination with trunnion supports positioned in relation to a flange extending circumferentially to, and outwardly from, the drier shell, the trunnions being movably positionable along the length of the drier coincidental with the repositioning of the flange upon elongation of the drier shell.

This invention pertains to carbon black.

In one of its more specific aspects, this invention pertains to apparatus for drying carbon black.

In the production of carbon black, the particulate black is frequently pelleted in the presence of an aqueous medium and the pellets are dried thereafter to produce the carbon black in the form in which it is conveniently marketed.

Carbon black is conventionally dried in rotary driers which are well known in the industry, these driers having a metal shell, being positioned horizontally and being rotated around their longitudinal axis which lies proximately in a horizontal plane. These driers are heated with the result that the metal shell undergoes considerable expansion. Since the drier is generally considered as being fixed at its drive end, the expansion of the shell is in a direction away from the drive end.

Normally, the driers are supported on and cradled between trunnions which are free to rotate with the drier. At those points at which the drier contacts the trunnions the drier is adapted with bearing flanges extending circumferentially around the drier and outwardly from the shell. These flanges minimize the bearing surface between the drier and the trunnions.

Inasmuch as a dryer is subjected to high temperatures, after a time a dryer takes on a permanent growth along its longitudinal axis and eventually it grows to such an increased length that the bearing flanges extend beyond the outer limit of the trunnion. At that point, a section is cut from its shell to shorten its length and to bring the bearing flanges back to such positions as to once again rest upon the inner ends of the trunnions. This procedure is disadvantageous, however, since besides the loss of operating time involved, considerable costs are involved in the cutting and rewelding necessary to shorten the drier. The apparatus of this invention is directed toward the elimination of these disadvantages.

According to this invention there is provided a carbon black drier disposed to rotate around its horizontal axis, said drier having a metallic shell and an outwardly extending circumferentially disposed flange in combination with at least two trunnions in supporting relationship to the flange of the drier, the trunnion supports being movably positionable along the longitudinal length of the drier.

Accordingly, it is an object of this invention to provide a carbon black drier having an extended operating time.

It is another object of this invention to provide a drier requiring minimal operating maintenance.

The apparatus of this invention will be more easily understood if explained in conjunction with the attached drawings which illustrate one embodiment of this invention. FIG. 1 illustrates one embodiment of this invention. FIG. 2 is a view through section 2—2 of FIG. 1.

Referring now to FIG. 1 there is illustrated one end of longitudinally positioned drier **1**, the drive end not being shown. Drier **1** is enclosed by shell **2** which takes on a permanent elongation after prolonged periods of high temperature operation.

Metallic shell **2** is adapted with one or more bearing flanges **3** which extend any suitable direction outwardly from shell **2**. Bearing flange **3** is cradled between two or more trunnions **4** which, in turn, are supported on conventional foundation footings **5**.

Trunnions **4** are axially and rotatably supported on pillow blocks **8** resting on bearing supports **9** such that with the rotation of drier **1**, trunnions **4** support and rotate with bearing flange **3**.

As mentioned, as shell **2** permanently elongates, bearing flange **3** tends to extend beyond and move off of trunnions **4**. However, according to the apparatus of the present invention, trunnions **4** are adapted for repositioning with the movement of bearing flange **3**. For this purpose trunnions **4** are adapted to be repositioned along the length of footing **5** in a direction parallel to the movement of bearing flange **3**.

Referring now to FIG. 2, it will be seen that bolts **12** which attach bearing support **9** to base plate **10** extend through elongated slot **11** of base plate **10** such that trunnions **4** are positionable along the length of footing **5** upon loosening of nut **13** on bolt **12**. Upon loosening of nuts **13**, trunnions **4** are movable along the length of base plate **10** to coincide with the position of bearing flange **3** by means of jack screws **7** attached to bearing supports **9** and anchors **14** affixed to the end plate **15**. After the positioning of trunnions **4** in this manner, trunnions **4** are fixed in position by tightening nuts **13** on bolts **12** to retain bearing supports **9** in position until it is again desired to reposition the trunnions due to the further lengthening of shell **2**.

The apparatus of this invention is not to be limited to the described embodiment. Actually, any number of trunnion positioning means can be employed. For example, a single jack screw, centrally and diametrically located in respect to each trunnion, can be employed. Similarly, motorized positioning means of the trunnions can be employed, the trunnions being adapted to move along guide rails which insure alignment and positioning.

Similarly, the base plate can comprise a wide face beam or channel, the trunnion bearing support being adapted to slide along a slot in the flange of the beam or channel, the positioning bolt extending through the bearing support and the slot in the flange.

It will be evident that other modifications can be made to the apparatus of this invention. Such are, however, within the scope of the invention.

What is claimed is:

1. A carbon black drier in combination with trunnion supports, said drier being disposed to rotate about its horizontal axis, said drier being adapted with a metallic shell and an outwardly extending flange circumferential to said shell, said trunnion supports being positioned in supporting relationship to said flange, said trunnion sup-

ports being adjustably positionable along the horizontal axis of the drier coincidental with said flange.

2. The apparatus defined in claim 1 in which said trunnion supports comprise two trunnions in spaced relationship to cradle said drier therebetween.

3. The apparatus defined in claim 2 in which said trunnions are individually positionable along the axis of said drier.

4. The apparatus defined in claim 3 in which said trunnions are positionable along the axis of said drier by jack screw means.

5. The apparatus defined in claim 4 in which said trunnions are positionable individually.

References Cited

UNITED STATES PATENTS

1,698,454	1/1929	Schaaf	110—14
2,858,177	10/1958	Birdsall	308—203
3,247,601	4/1966	Sims	34—108

MARTIN P. SCHWADRON, Primary Examiner

T. W. STREULE, Assistant Examiner

U.S. Cl. X.R.

165—82; 308—203; 263—33