

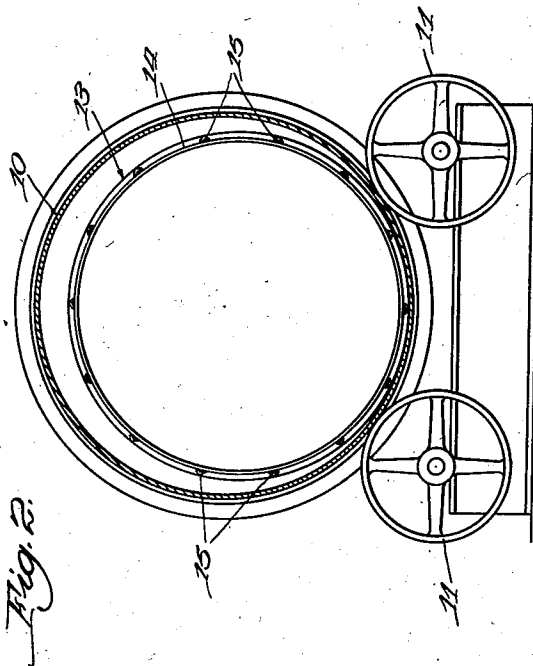
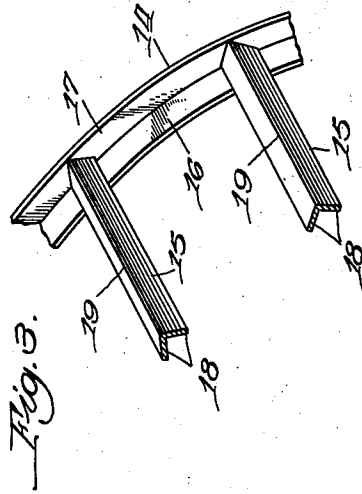
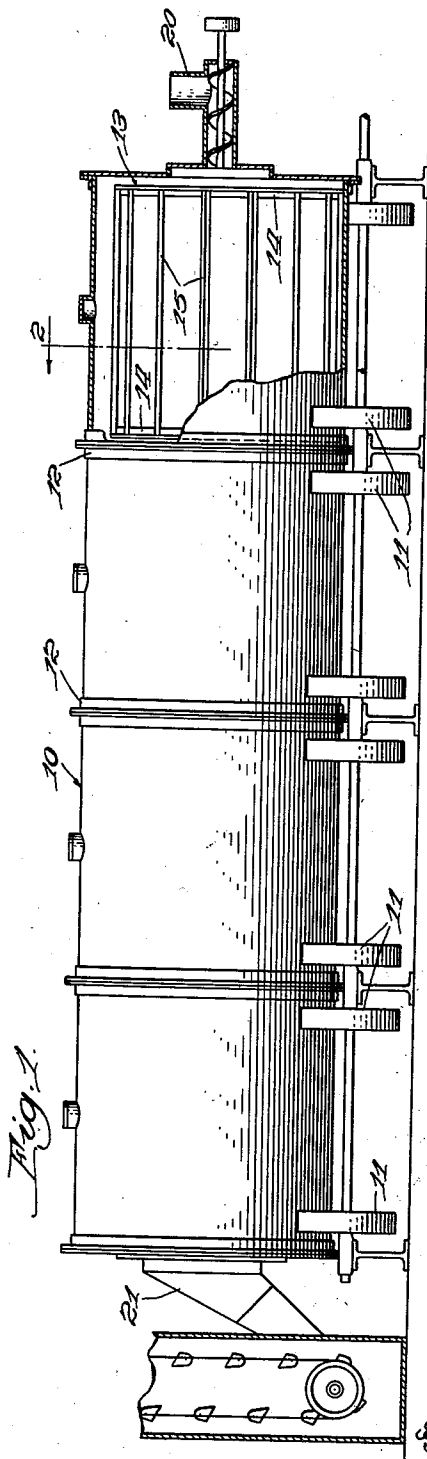
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SCRAPER FOR CARBON BLACK DRUM

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UNITED STATES PATENT OFFICE

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SCRAPER FOR CARBON BLACK DRUM

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4 Claims. (Cl. 259—3)

This invention relates to a scraper for a carbon black drum and more particularly to a light, open, free scraper.

It has heretofore been suggested that spherical carbon black be formed by treating carbon black of low density in rotating drums, either with a number of compartments, some of which contain heavy rollers, or in a number of compartments without rollers. The use of a drum divided by partitions into compartments in which rollers are employed is undesirable for several reasons. For example, maintenance and expense are increased and certain types of material cannot readily be manufactured when such rollers are employed. On the other hand the elimination of both rollers and partitions occasionally results in caking of some of the carbon black material within the drum. While this is not a serious matter and may readily be relieved, for example by pounding the drums at the affected portions, the operation of the drums is a continuous one and it is highly desirable to have an automatic means for preventing or overcoming caking.

Ordinary scrapers cannot readily be employed on account of the nature of the mechanism. This is particularly true because the drums are driven by external rollers and are free from an internal shaft upon which scrapers could be mounted.

It has now been discovered that a very satisfactory apparatus for scraping may be cheaply made in the form of a free-rolling open cylinder. The invention is illustrated in the drawing in which Figure 1 is a longitudinal elevation of a carbon black drum cut away at one end to indicate the scraper therein; Figure 2 is a section taken along the line 2 in Figure 1; and Figure 3 is a detail perspective view of a portion of the scraper.

As shown in the drawing, the drum 10 is rotatably mounted and is driven by the rollers 11. The drum may be divided into a number of compartments as indicated by the partition grooves 12, but preferably the partitions are absent. Preferably a plurality of scrapers is employed, one scraper being utilized in each of what were formerly the compartments of the drum. However, a unitary scraper for the entire drum may be employed if desired.

The preferred scraper 13 is illustrated in the drawing and occupies one compartment of the drum 10. The scraper is made up of two rings 14 of angle iron which are connected by angle iron stringers 15 welded at suitable intervals thereon. The rings are suitably $1\frac{1}{2}'' \times 1\frac{1}{2}'' \times \frac{1}{4}''$ iron positioned so that one side 16 thereof is horizontal and provides a circumferential plate

upon which the stringers may be readily secured; whereas the other angle 17 provides a limiting shoulder and also may be employed to cooperate with the grooves 12 and hold the scraper in position in its compartment.

The stringers are likewise suitably $1\frac{1}{2}'' \times 1\frac{1}{2}'' \times \frac{1}{4}''$ material and are positioned at regular intervals with both open edges 18 upon the horizontal side 16 of the rings. This leaves the points 19 of the stringers facing directly outward.

For a drum of 6 feet in internal diameter a scraper of 5 feet 9 inches maximum external diameter is preferred. Fourteen stringers mounted on the rings at approximately 26° intervals have provided satisfactory but the interval may be reduced if desired. For example, stringers at 12° intervals have likewise proved satisfactory.

In operation carbon black is fed into the drum 10 through the screw feed 20, passes therethrough, emerging at the gravity discharge 21 in the form of much denser material, either in the form of hard pellets or soft pellets, as described in the co-pending application of Russell D. Weekley and Charles E. McKinney, Serial No. 253,713, filed January 30, 1939. The drum is rotated during the process, carrying with it the scraper, which because of its smaller diameter rotates at a greater angular velocity, thus preventing caking both by reason of the shape of the angular stringers as well as by the different speed thereof.

What I claim as new, and desire to secure by Letters Patent, is:

1. Apparatus for carbon black manufacture comprising, in combination with a rotatably mounted horizontal-cylindrical drums; an open scraper cylinder having a diameter approximating that of the drum mounted within the drum and axially parallel therewith and riding loosely in and supported by the drum, the cylinder being formed of widely spaced longitudinal scraper members disposed about the circumference of the scraper cylinder, and means for supporting the longitudinal members in their spaced relationship.

2. Apparatus as set forth in claim 1, in which the scraper cylinder comprises a plurality of rings perpendicularly disposed to the axis of the cylinder, and a plurality of widely spaced scraper members parallel with the axis of the cylinder connecting and supported by the rings.

3. Apparatus as set forth in claim 1, in which the scraper members are angle irons.

4. Apparatus as set forth in claim 1, in which the scraper members are angle irons having the point of the angle outward.

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