Dec. 23, 1941. F. L. EVOY 2,267,694

PROCESS FOR PREPARING WOOL FOR REMOVAL THEREFROM OF CARBONIZED MATERIAL

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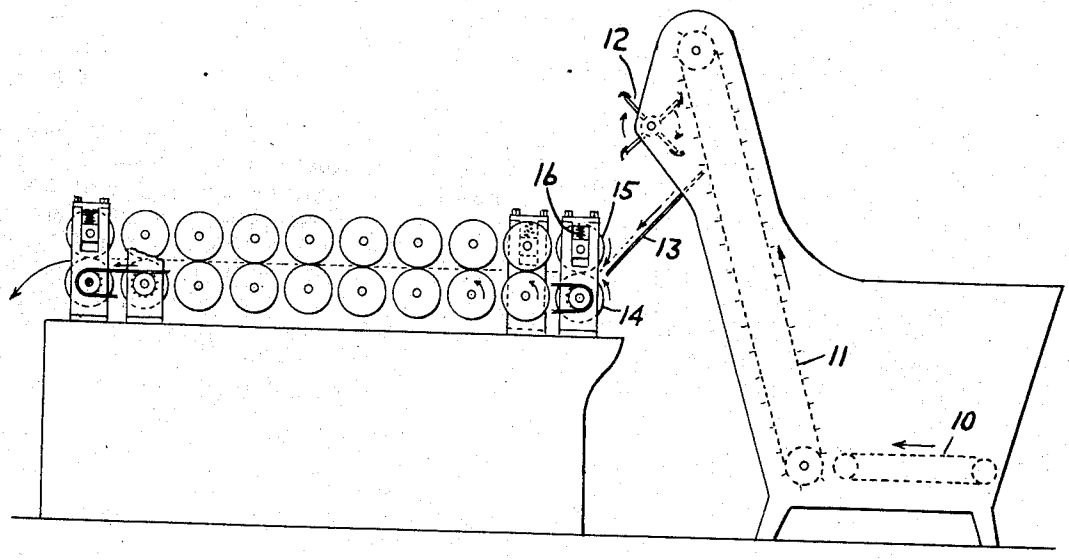

FIG. 1.

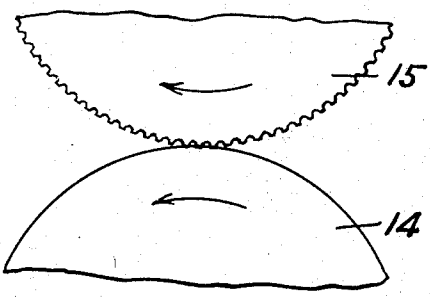

FIG. 2.

WITNESS:

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PROCESS FOR PREPARING WOOL FOR REMOVAL THEREFROM OF CARBONIZED MATERIAL

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1 Claim. (Cl. 19—65)

My improvement relates to the art of removing carbonized vegetable matter from wool.

In removing vegetable matter from wool, the vegetable matter is reduced to brittle carbon by carbonizing and the hot dry wool is then passed thru rolls of various types which pulverize the brittle carbon material and then thru dusters which dust out this pulverized carbon leaving the wool free of vegetable matter and carbon. The most common type of roll combination used for pulverizing the carbon is a pair of steel or iron rolls with flutes cut in the surface parallel with the axis. These flutes mesh like gear teeth and the carbon is pulverized by the grinding of the two roll surfaces against each other. Another combination consists of a pair of rolls similarly fluted, but spaced by some positive means at the ends, so that the rolls do not quite touch. The top roll is driven slower than the bottom roll and the scraping action between the two pulverizes the burrs which have been carbonized. Both of these types grind or scrape the wool as well as the burrs and injure it, although the scraping type is less severe than the grinding type.

In my improvement the wool is fed through a series of pairs of rapidly revolving rolls, preferably but not necessarily of approximately the same size, the pairs of rolls being preferably but not necessarily so arranged that the wool is fed in a straight line from the first roll to the last. One of each pair of rolls has a flexible and elastic surface (a roll of solid rubber or a roll enclosed by a thick rubber covering is employed in practice), while the other roll is of solid and unyielding material (a steel roll is employed in practice) having, preferably, but not necessarily, a roughened periphery, as, for example, a roll having flutes or ribs parallel with its axis of rotation. Either of the rolls may be positively driven. The rolls not positively driven are vertically movable, as by having their axles slidable in vertical grooves. For example, the rubber rolls may be positively driven and the metal rolls, not positively driven, may be sufficiently heavy to bear with considerable force upon the wool passing between them; but preferably they are pressed down by springs or weights.

A preferred embodiment of the invention is shown in the accompanying drawing, wherein:

Fig. 1 is a side elevation, in part diagrammatic, of a machine embodying my invention.

Fig. 2 is a view, on a larger scale, of parts of two contacting rolls of a pair.

The carbonized wool may be deposited in a hopper in which there is a conveyor 10 which delivers the wool onto an inclined spike apron conveyor 11, which conveys the wool up around and down past a beater 12 to a chute 13, which delivers the wool in the form of a loose thin sheet between the first pair of rolls 14 and 15. The feeding mechanism is not fully illustrated and need not be in detail described, since its specific construction is no part of the present invention. The lower set of rubber rolls is positively driven at a surface speed of about 200 feet per minute. The upper set of metal rolls need not be positively driven, but their axles may be positioned in grooves that permit them to yield upwardly as the wool passes between them and the rubber rolls, the rolls being pressed downward with a predetermined force by means of springs 16. The body of wool acted upon by the rolls is just thick enough to have sufficient cohesion to go through the rolls as a sheet whose thickness varies from 0 to about one-sixteenth of an inch. In the progress of the wool through the roll structure, the carbonized burrs and other vegetable particles contained in the wool are so bent that they are gradually pulverized or disintegrated so that they may be subsequently completely removed by the conventional dusting process. The main advantage of the process is not, however, the complete pulverization or disintegration of the carbonized vegetable matter but the accomplishment of this result without injuring the wool. In other words, the wool emerges from the treatment without any change in its physical condition other than such compacting as may be incidental to compression, due to the fact that the pulverizing rolls, pressing the wool against a yielding surface, do not grind or scrape the wool but merely bend it to the extent permitted by the yielding surfaces of the rubber rolls, which is not injurious; while, on the other hand, the pulverization of the carbonized material that it is desired to remove is fully as effective as, if not more effective than, if such material were subjected to the usual grinding or scraping action.

The metal rolls function with maximum efficiency if their surfaces are roughened, as, for example, by flutes, grooves or corrugations, as indicated in Fig. 2; but good and often acceptable results may be secured when the surfaces of the metal rolls are relatively smooth.

What I claim and desire to protect by Letters Patent is:

In a process for removing vegetable matter from wool, the steps consisting in carbonizing the wool to render the foreign vegetable matter brittle, then passing the wool through engaging surfaces, one of which is hard and unyielding, the other of which is soft and yielding, which act to reduce the brittle carbonized vegetable matter to pulverized carbon material, breaking it by bending and then dusting, which removes this pulverized carbon leaving the wool free of vegetable matter and carbon.

FRANK L. EVOY.