June 18, 1946. L. C. PHARO 2,402,203

ASBESTOS FLUFFING

Original Filed Nov. 21, 1942

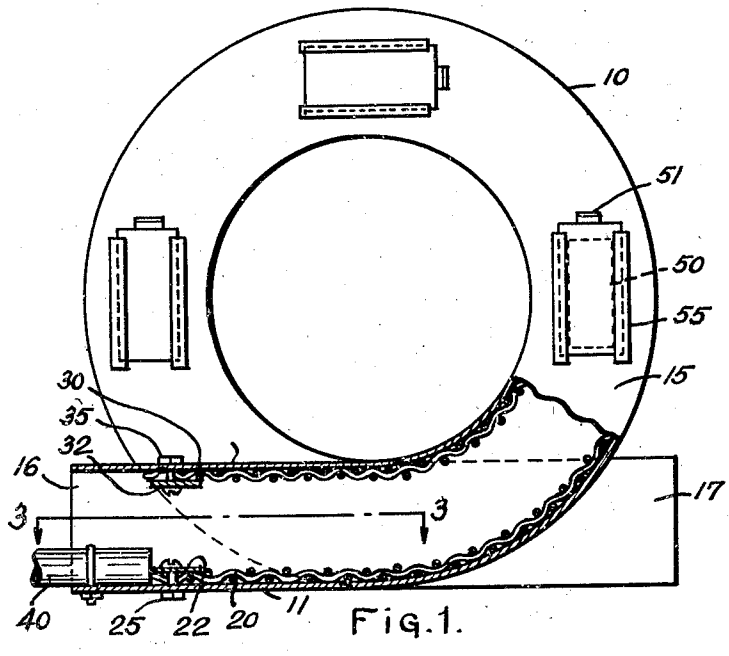


Fig.1.

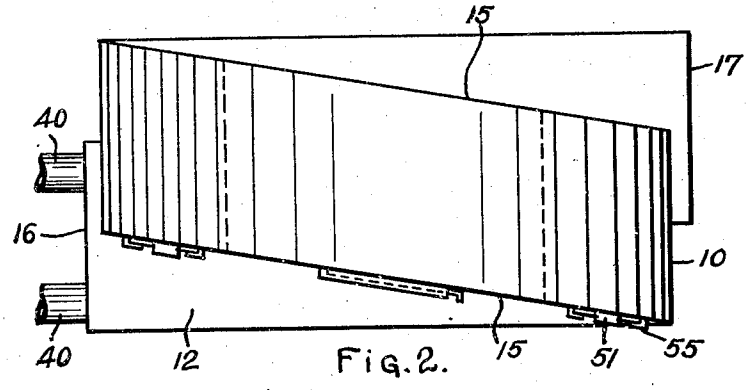


Fig.2.

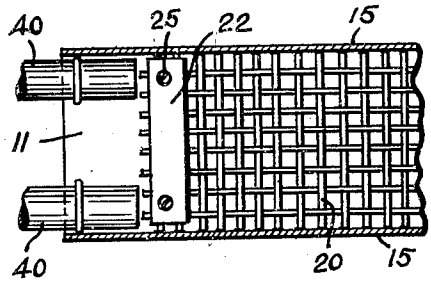


Fig.3.

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ASBESTOS FLUFFING

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Original application November 21, 1942, Serial No. 466,522, now Patent No. 2,386,713, dated October 9, 1945. Divided and this application February 17, 1944, Serial No. 522,811. In Canada October 14, 1942

2 Claims. (Cl. 19—72)

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Introduction

This invention relates to the fluffing of asbestos and the application is a division of application Serial No. 466,522, filed Nov. 21, 1942.

It is an object of the invention to provide a method and apparatus for freeing individual asbestos fibers from masses. It is a further object of the invention to provide a method and apparatus of this nature capable of liberating asbestos fiber for textile use.

Detailed description

In carrying out the invention the fiberized asbestos is blown against a resistance element, so as to liberate the fibers without injury. The invention will be understood more specifically by reference to a description of a preferred form of apparatus in which it is embodied, in conjunction with the accompanying drawing in which:

Figure 1 is a side elevation partly in section showing this preferred form of apparatus.

Figure 2 is a plan view of the apparatus shown in Figure 1.

Figure 3 is a fragmentary cross-section along the line 3—3 of Figure 1 illustrating the manner of attachment of the resistance element or screen.

Referring more particularly to the drawing, the device consists of a spiral tubular casing 10 made preferably of suitable sheet material. This casing includes a floor 11, a ceiling 12 and side walls 15. In the particular embodiment shown, the casing 10 is provided with an entrance 16 and a discharge opening 17. Intermediate these openings the casing is looped in an abrupt spiral. The floor 11 is surfaced with a coarse mesh wire screen 20 presenting a ribbed surface. This screen is held in place by brackets 22 secured to the floor 11 by nuts and bolts 25. The ceiling 12 is similarly provided with ribbing in the form of a screen 30 held in place by a bracket 32, and nuts and bolts 35.

Adjacent the entrance 16 is a pair of air supply pipes 40 controlled by a valve (not shown). These pipes are connected with a suitable source of air supply capable of giving an air pressure at the outlet of the pipes of about 100 lbs. per square inch. In this particular apparatus the pipe is of internal diameter of about ½ inch. One of the sides 15 is provided with openings giving access to the inside of the casing. These openings are provided with sliding doors 51 fitting snugly in suitable guideways 55.

Operation

This apparatus is generally employed for the liberation from masses of asbestos which has been at least partially fiberized as for instance according to the method described in United States Patent No. 2,219,077, October 22, 1940. It may also be employed in processing asbestos which has

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also been subjected to other special treatment, as for instance that described in co-pending application Serial No. 466,522, filed Nov. 21, 1942, and for other purposes.

A method of treatment employing the apparatus described is as follows. The compressed air is turned on by the control valve setting up a high pressure blast at the entrance 16 and which is diverted through the abrupt spiral passage presented by the casing 10. The asbestos masses which have been at least partially fiberized are fed in a suitable manner and are immediately taken up by the air stream and forced through the helical casing at high speed. In their passage through the casing they impinge on the resistance elements or screens 20 and 30 and are thus subjected to a disintegrating action. The resistance of the screens is, however, only partial and the air-borne masses are free to leave the screens and to move further through the passage formed in the casing. Hence breakage of individual fibers is minimized.

In the present process the product reaching the discharge 17 is very fluffy. The individual fibers are liberated completely for practical purposes and in excellent condition for textile use. The general practice is to pass them through preliminary textile operations before they are actually spun.

Advantages

The nature of the fluffing method accomplished by this apparatus is important. Too much emphasis cannot be laid on the fact that asbestos must be handled carefully so as to liberate the fibers without breaking them. The fluffing or "teasing" action of the applicant's process also departs from any beating action on the fiber masses. They are blown under relatively heavy air pressure against the undulating or ribbed surface presented by the coarse screen lining of the fluffer tube. At all times, the fibers are free to leave the screen against which they have struck with a glancing blow as the air pressure carries them forward. At no time is any chopping action at right angles to the fiber as experienced in a Jumbo or grader employed. The action is comparable to "grabbing" and releasing or "plucking" at the masses, which is highly effective in liberating the individual fibers.

It should also be explained that air is forced into the mass of fiber before the air has fully expanded. Therefore, the further expansion of the air which has been forced into the asbestos mass tends to pull the fibers apart, that is, a minor explosion takes place from within the fiber mass, until the compressed air has reached atmospheric pressure.

It will be understood that, without departing from the spirit of the invention or the scope of the claims, various modifications may be made

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in the specific expedients described. The latter are illustrative only and not offered in a restricting sense, it being desired that only such limitations shall be placed thereon as may be required by the state of the prior art.

The sub-titles used throughout the specification are merely to simplify reference thereto and should otherwise be disregarded.

I claim:

1. An apparatus for liberating fibers of fibrous material from masses thereof comprising a continuous substantially helical unobstructed substantially air tight wind tunnel, a screen lining at least one continuous surface of the inner wall of said wind tunnel and constituting a roughened area, said wind tunnel having the screen disposed along the inner wall surface thereof whereby only a single passage is provided in said tunnel, means for concentrating a blast of high pressure air in said tunnel adjacent an entrance end thereof, an entrance to said passage whereby said fibrous material may be fed directly into said

blast, and a discharge opening at the opposite end of said wind tunnel for discharging liberated fibers therefrom.

2. An apparatus for liberating fibers of fibrous materials from masses thereof, comprising, a continuous substantially helical unobstructed substantially airtight wind tunnel, ribbing extending from at least one continuous surface of the inner wall of said wind tunnel and constituting a roughened area, said wind tunnel having the ribbing disposed along the inner wall surface thereof whereby only a single passage is provided in said tunnel which is lined by said ribbing, means for concentrating a blast of high pressure air in said tunnel adjacent an entrance end thereof, an entrance to said passage whereby said fibrous material may be fed into said blast, and a discharge opening at the opposite end of said wind tunnel for discharging liberated fibers therefrom.

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