Dec. 27, 1949 G. C. LE COMPTE ET AL 2,492,158

WOOL CORING DEVICE

Filed Nov. 8, 1946 3 Sheets-Sheet 1

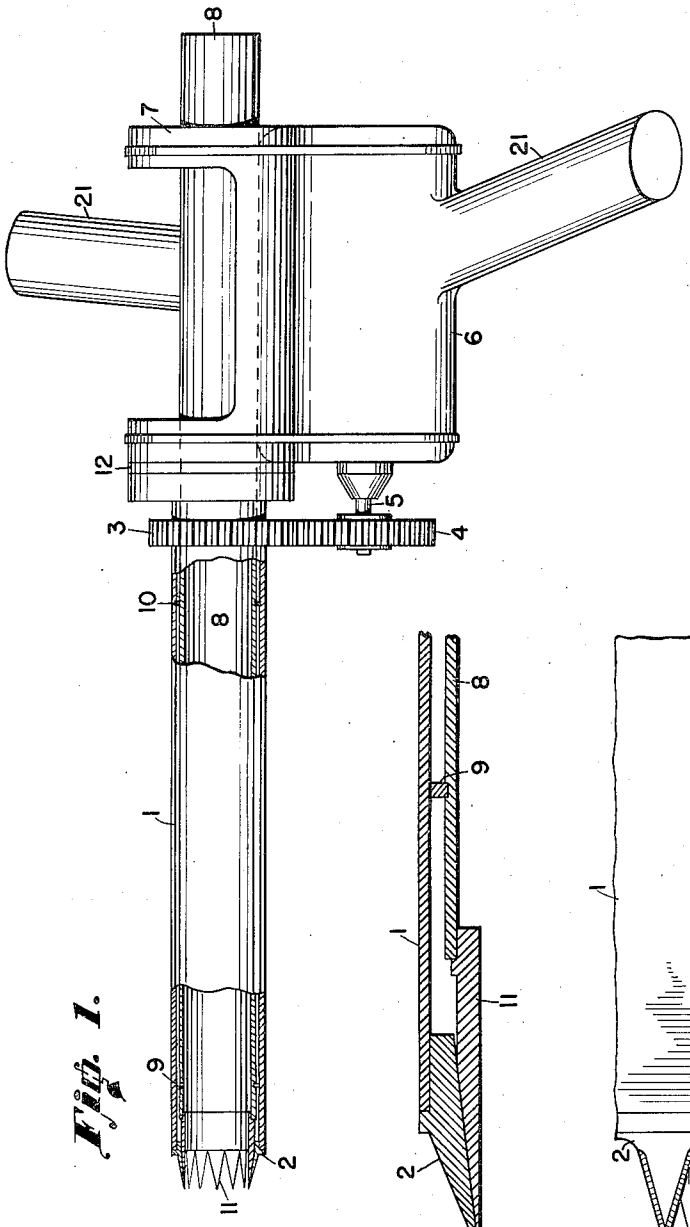


Fig. 1.

Fig. 2.

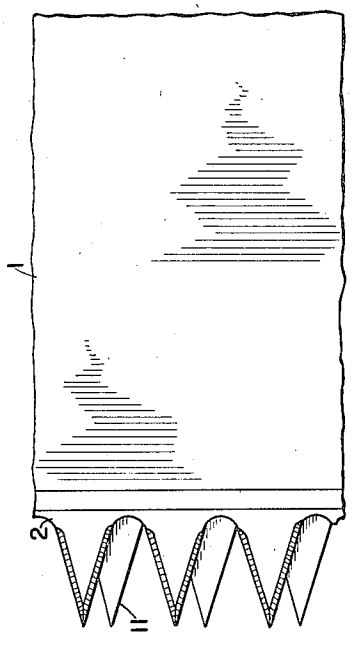


Fig. 3.

INVENTORS
G.C.LE COMPTE
W.SALKIND

BY H. N. Foss
L. M. Mantell
ATTORNEY

Dec. 27, 1949 G. C. LE COMPTE ET AL 2,492,158

WOOL CORING DEVICE

Filed Nov. 8, 1946 3 Sheets-Sheet 2

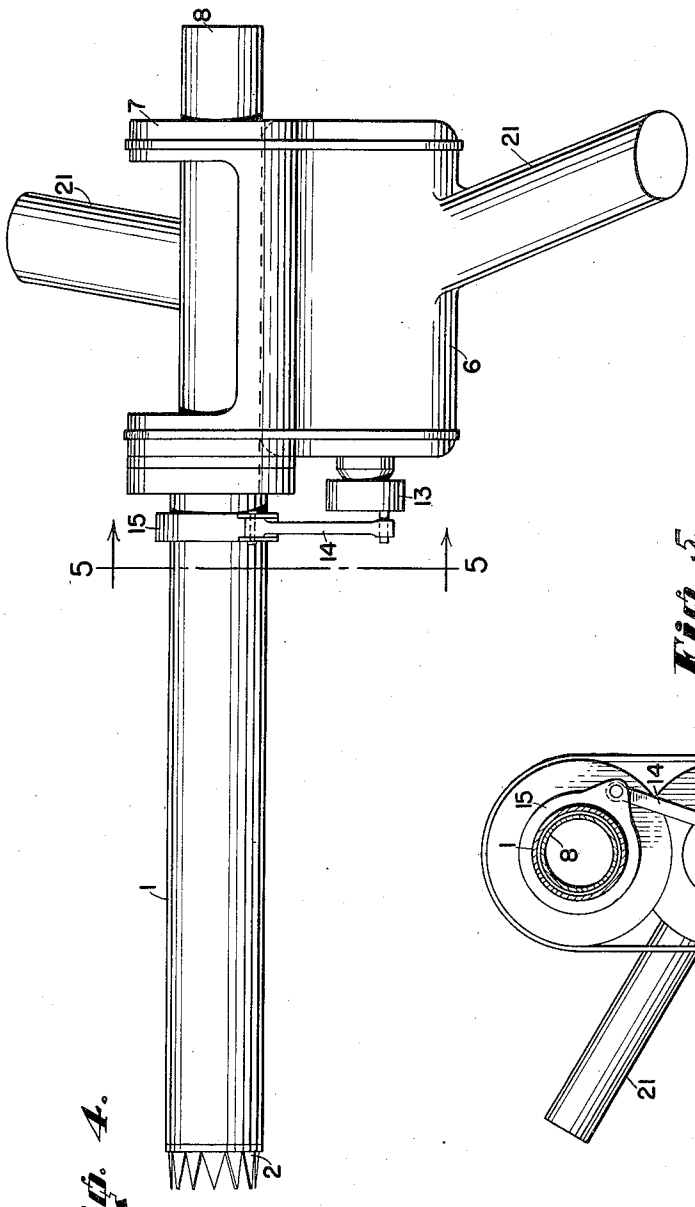


Fig. 4.

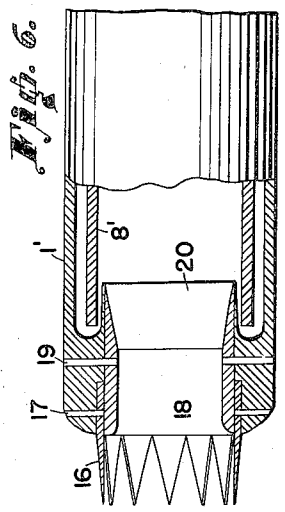


Fig. 6.

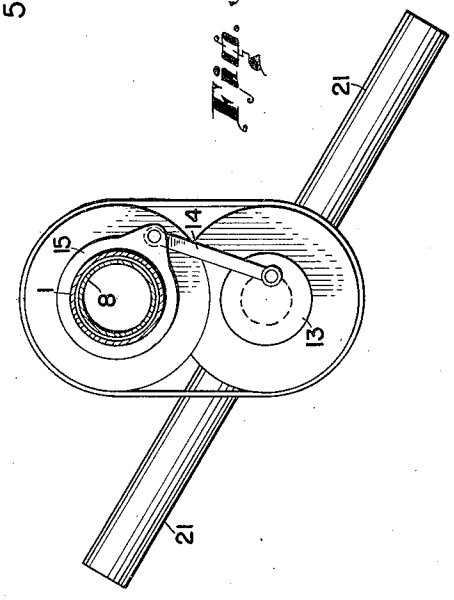


Fig. 5.

INVENTORS
G.C. LE COMPTE
W. SALKIND

BY H. N. Foss
L. M. Mantell
ATTORNEY

Dec. 27, 1949 G. C. LE COMPTE ET AL 2,492,158

WOOL CORING DEVICE

Filed Nov. 8, 1946 3 Sheets-Sheet 3

Fig. 9.

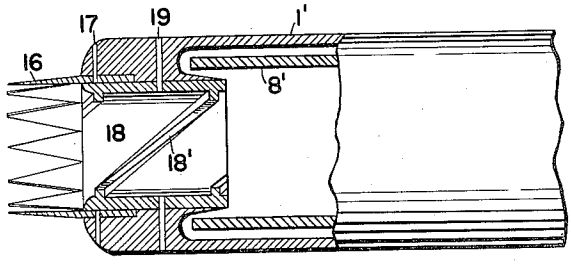
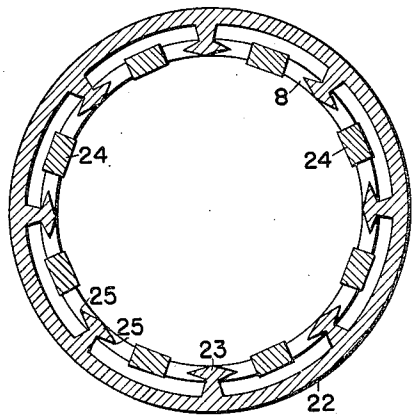


Fig. 7.



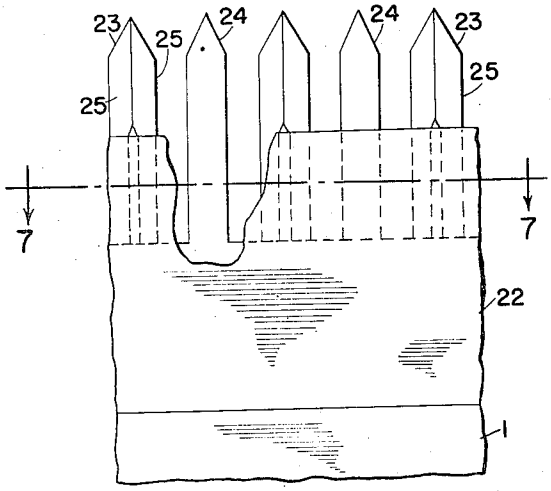


Fig. 8.

INVENTORS
G.C. LE COMPTE
W.SALKIND

BY H. N. Foss
L. M. Mantell
ATTORNEY

Patented Dec. 27, 1949 2,492,158

UNITED STATES PATENT OFFICE

2,492,158

WOOL CORING DEVICE

George C. Le Compte, Arlington, Va., and
William Salkind, Washington, D. C.

Application November 8, 1946, Serial No. 708,561

12 Claims. (Cl. 73—425)

(Granted under the act of March 3, 1883, as amended April 30, 1928; 370 O. G. 757)

1

This application is made under the act of March 3, 1883, as amended by the act of April 30, 1928, and the invention herein described, if patented, may be manufactured and used by or for the Government of the United States of America for governmental purposes without the payment to us of any royalty thereon.

This invention relates to wool sampling, and particularly to a device for cutting out a sample of wool known as a core, from bagged wool.

It has been customary, in wool sampling devices, to make use of a rotating tube equipped at one end with a sharp cutting edge. The rotating tube is pushed into the wool being sampled and cuts out a sample known as a core. Such a device works very satisfactorily on highly compressed wool. However, in loosely packed wool it is found that the rotating sampling tube is inefficient. There is a tendency to thrust aside and by-pass wool which should be sampled. In addition, wool which is taken in is converted, by the rotary motion of the sampling tube, into a tightly twisted rope which then twists and binds upon itself tending to obstruct the sampling tube, thereby preventing a full core and rendering the actual sampling operation far more difficult than it should be.

Previous efforts to get away from these difficulties have consisted in using wider tubes and in so designing the sampling tube that the cutting edge is smaller than the diameter of the main length of the tube. These modifications resulted in a partly satisfactory solution of the problem, but the troubles still persisted to some extent, and the wide sampling tubes needed were heavy and unwieldy. Another disadvantage of the tube which is applicable both to the narrow tube and the wide tube is the fact that although the wool is cored, the tube has to be detached from the motor and the wool ejected by means of a plunger.

The improved device, here described, is intended to core both loosely packed and well packed bags of grease wool, obtaining complete cores easily and quickly, the cores being in an open, untwisted condition.

Our invention is an improvement over the wool sampler described in Johnston and Le Compte Patent No. 2,378,484 of June 19, 1945.

The device consists of two tubes, an outer revolving or oscillating tube and an inner stationary tube. The outer tube may have an internal spiral ridge in the throat, as described in the Johnston and Le Compte patent. The wool is

2

cut in a number of ways. In one, a tubular sharp cutting edge, which may be notched or toothed, is attached to the outer tube by means of a removable metal throat which extends within the inner tube. In another, toothed cutting or severing means is attached to both the outer revolving or oscillating tube and the inner stationary tube, the wool being caught between the teeth as the outer tube revolves or oscillates.

In the accompanying drawing, which illustrates several embodiments of the invention,

Figure 1 is a longitudinal view of the form employing internal and external toothed cutters and also the rotary external tube;

Figure 2 is an enlarged view in longitudinal section of the cutters of Figure 1;

Figure 3 is an enlarged external longitudinal view of the teeth of the cutters of Figures 1 and 2;

Figure 4 is a longitudinal view of the modification employing an oscillating or reciprocating external tube;

Figure 5 is a side view in section at line 5—5 of Figure 4;

Figure 6 is a longitudinal section of the throat end of the modification employing one notched cutter;

Figure 7 is a cross section of another form of cutter, being a completed section taken on line 7—7 of Figure 8;

Figure 8 is a fragmentary outer and side view of the cutters of Figure 7;

Figure 9 is a view of a modification of the device shown in Figure 6, having an internal spiral ridge in the removable throat.

Referring more particularly to the drawing, the sampler of Figure 1 comprises an outer rotary cylindrical tube 1 having removably attached thereto at the inlet end the toothed cylindrical cutter 2. Tube 1 is attached to gear 3 which meshes with gear 4. The latter gear is mounted on and is rotated by shaft 5 driven by an electric motor in casing 6.

Integral with or attached to casing 6 is a bracket or block 7 which supports, and to which is rigidly attached, stationary cylindrical tube 8. Tube 8 extends within the rotary tube 1, the latter being rotatably supported on tube 8 by means of bearings 9 and 10. Tube 1 is rotatably attached to block 7 by a flange and thrust bearing at 12.

Rigidly attached to the end of the tube 8 is a toothed cylindrical cutter 11 which contacts with or is closely adjacent to rotary cutter 2. The

wool is caught between the teeth as the outer tube revolves or oscillates. The teeth of cutters 2 and 11 are flat at their contacting or adjacent inner surfaces, the edges being sharpened by bevelling, as shown in Figure 3.

Tube 8 is open throughout and at both ends, permitting ejection of the wool sample into a bag or moisture-proof container at the end opposite the cutters.

The device of Figure 4 is similar to that of Figure 1, differing in that the outer tube 1 is oscillated or reciprocated, and not revolved. The inner tube is stationary. Reciprocation of tube 1 is obtained by means of wheel or plate 13 which is rotated by the motor in 6, and by means of a reciprocating arm 14 which is rotatably fastened at one end to rotating plate 13 and at its other end to reciprocating ring 15, which ring is fastened on tube 1.

In Figure 6 is shown an alternative cutting means which may be substituted for the cutters of Figures 1 and 4. To an outer rotating or reciprocating tube 1' is removably attached a cutter split ring 16 formed of spring steel, and preferably providing a serrated or toothed cutting edge. Cutter ring 16 is fastened in the end of tube 1' by means of cutter pin 17 in the manner taught in the Johnston and Le Compte patent. Removable throat 18 is fastened within tube 1' by means of a conventional bayonet slot in 18 in which fits a pin 19 fixed to a tube 1'. The inner surface of throat 18 may be provided with spiral ridge, as shown in Figure 7. The inner end 20 of the rotating throat 18 extends within the stationary tube 8'. Tube 8' is similar to tube 8, being open at both ends. Tube 1' is otherwise similar to tube 1, and may be revolved or oscillated.

Handles 21 are provided for convenience.

Figure 9 is a modification of the device of Figure 6, the sole difference being in the provision of a spiral ridge 18' projecting from the internal surface of the throat 18. This assists the inward movement of the wool core.

In Figures 7 and 8 are shown other cutting or severing elements to be employed with the oscillating tube of Figure 4, in place of the cutters 2 and 11, and 16. Attached to outer oscillating tube 1 is a tubular ring 22 provided with teeth 23. Attached to fixed inner tube 8, or to a removable ring affixed to tube 8 is a second series of severing elements or bars 24 interposed between and alternating with the teeth 23. Teeth 23 are provided with two sharp edges 25 which squeeze and sever the wool when the teeth are reciprocated to and from the stationary surfaces of bars 24. It is preferred that the amplitude of oscillation be such that the edges 25 of the sharpened teeth just meet the flat surface of bars 24. The teeth 23 extend outwardly from the end of the oscillating tube 1. The teeth 23, that is the sharp edges 25 thereof, also extend within the oscillating tube 1. The teeth 23 and the bars 24 may be interchanged, by placing the teeth 23 on the inner tube 8 and the bars 24 on the outer tube 1. Both inner and outer tubes may be made to oscillate, or the outer tube may be held stationary and the inner tube oscillated. The preferred form is that first described.

In operation, the cutting edge, or edges, is pressed against the bag of wool being sampled, cutting the fibers to form a core. This core then enters tube 8 and is ejected at the other end. By the provision of stationary tube 8, the binding and other twisting difficulties referred to above are obviated. Open, untwisted, complete cores are obtained from both loosely packed and well packed bags of grease wool, quickly and easily.

The device is applicable to other fibers.

Mechanical modifications are within the purview of our invention. For example, the inwardly projecting part 20 need not be part of the removable throat; it may be attached to or integral with the end of the outer tube 1'. Also, the shaft 5, of the motor in 6, need not be directly connected to the shaft of gear 4 or plate 13. A long flexible shaft or cable may be attached at one end to shaft 5 and at the other to the gear or plate shaft. By so doing, the motor and casing 6 need not be mounted on the corer; it may be made a separately supported element or placed on the ground to lighten the sampling device.

Having thus described our invention, we claim:

1. A sampler and corer for fibrous materials comprising an outer rotary tube, a stationary tube longitudinally disposed within the outer tube, motor driven means for rotating the outer tube, supporting means for maintaining the inner tube stationary, a tubular toothed cutter on an end of said outer tube and rotating therewith, a stationary tubular toothed cutter on the adjacent end of the stationary tube, the rotary cutter overlying the stationary cutter, whereby upon pressing the cutters against a body of the fibrous material the strands of fiber are caught between the teeth and severed thereby, and introduced into the inner stationary tube to form a core, the teeth of both the rotating and the stationary cutters each having forward knife edges and lateral knife edges, the other end of the outer rotary tube being rotatably mounted upon said supporting means through a thrust bearing.

2. The device of claim 1 in which the stationary tube is open at the end opposite the cutter to permit ejection of the core at said end.

3. A sampler and corer for fibrous materials comprising an outer tube mounted to move about its longitudinal axis, a stationary tube longitudinally disposed within the outer tube, motor driven means for moving the outer tube about its longitudinal axis, supporting means for maintaining the inner tube stationary; a tubular toothed cutter on an end of said outer tube and moving therewith, a stationary tubular toothed cutter on the adjacent end of the stationary tube, the movable cutter overlying the stationary cutter, whereby upon pressing the cutters against a body of the fibrous material the strands of fiber are caught between the teeth and severed thereby, and introduced into the inner stationary tube to form a core, the teeth of both the rotating and the stationary cutters each having forward knife edges and lateral knife edges, the other end of the outer rotary tube being rotatably mounted upon said supporting means through a thrust bearing.

4. The device of claim 3 in which the stationary tube is open at the end opposite the cutter to permit ejection of the core at said end.

5. The device of claim 3 in which the means for moving the outer tube comprises a reciprocating element that oscillates the outer tube.

6. A sampler and corer for fibrous materials comprising an outer tube mounted to move about its longitudinal axis, a stationary tube longitudinally disposed within the outer tube, means for moving the outer tube about its longitudinal axis, supporting means for maintaining the inner tube

stationary, a tubular cutter on an end of said outer tube, tubular means on said end and moving therewith and projecting into the inner stationary tube.

7. The device described in claim 6 in which the inner surface of the tubular means is provided with a spiral ridge to propel the core into the stationary tube.

8. A sampler and corer for fibrous materials comprising an outer tube mounted to move about its longitudinal axis, a stationary tube longitudinally disposed within the outer tube, motor driven means for moving the outer tube about its longitudinal axis, supporting means for maintaining the inner tube stationary, a tubular cutter on an end of said outer tube and moving therewith, means on said end providing an internal throat for said outer tube, the internal diameter of the stationary inner tube being greater, adjacent said throat, than the internal diameter of the throat.

9. A sampler and corer for fibrous materials comprising an outer tube, a second tube longitudinally disposed within the outer tube, severing means mounted on the tubes comprising a series of circumferentially spaced teeth on and longitudinally projecting from an end of one of said tubes and a second series of teeth on the adjacent end of the other of said tubes, the teeth of the second series being interposed between the teeth of the first series, the teeth of one said series having severing edges, means for oscillating one of said tubes about its longitudinal axis to bring the severing edges toward surfaces presented by

the teeth of the other series, whereby the fibrous material is pressed between the teeth and severed.

10. The device defined in claim 9, the said means for oscillating having a driving connection with the outer tube to oscillate the latter, the inner tube being stationary.

11. The device defined in claim 9, the said means for oscillating having a driving connection with the outer tube to oscillate the latter, the inner tube being stationary and being open at the end opposite the teeth to permit ejection of the core.

12. The apparatus described in claim 3 in which the supporting means comprises a bracket rigidly attached to and depending from the inner tube, a motor housing attached to said bracket, one end of the outer tube being rotatably attached to the bracket, a motor in said housing and a driving connection between the motor and the motor driven means.

GEORGE C. LE COMPTE.
WILLIAM SALKIND.

REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
1,105,189	Fallkin	July 28, 1914
1,109,446	Melberg	Sept. 1, 1914
2,074,020	Marholt	Mar. 16, 1937
2,346,220	Kienzle et al.	Apr. 11, 1944
2,378,484	Johnston et al.	June 19, 1945