May 22, 1956 L. G. BAXTER ET AL 2,746,096

FELTING APPARATUS

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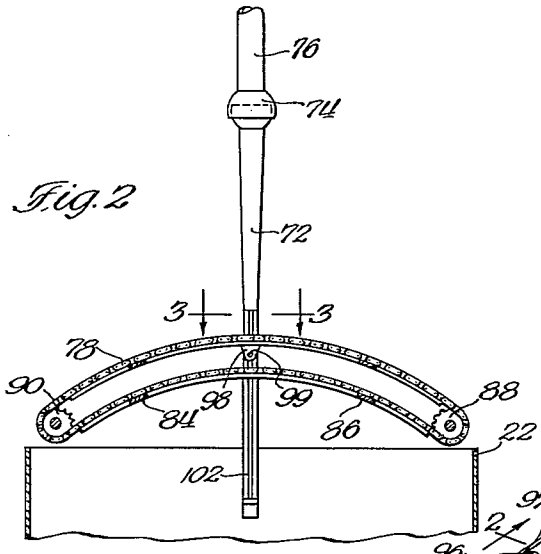


Fig. 2

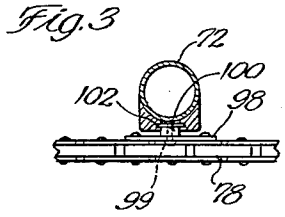


Fig. 3

Fig. 1

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Fig. 4

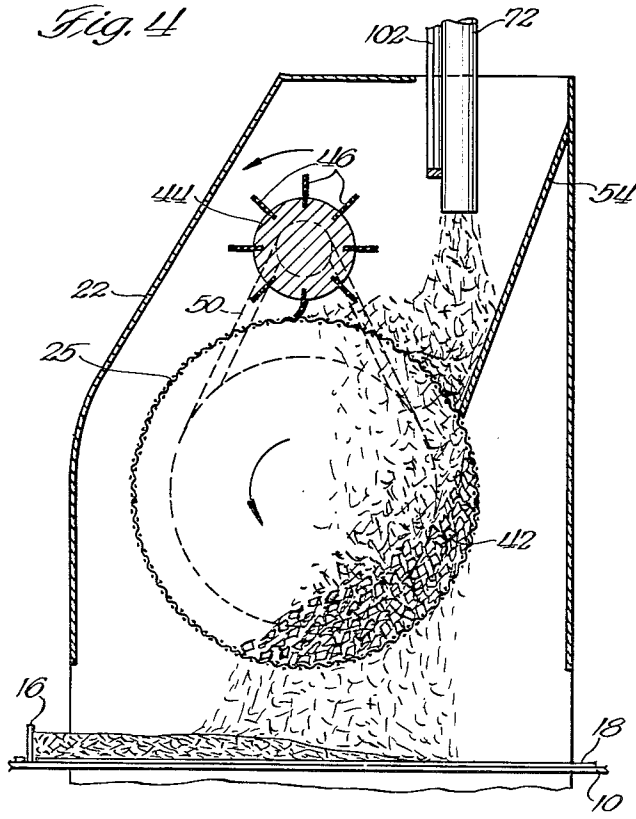


Fig. 6

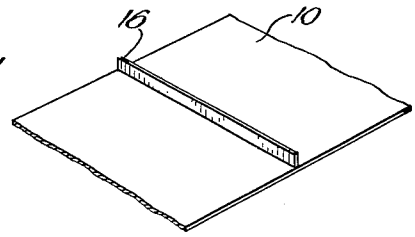


Fig. 7

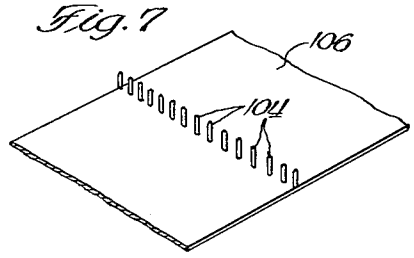


Fig. 8

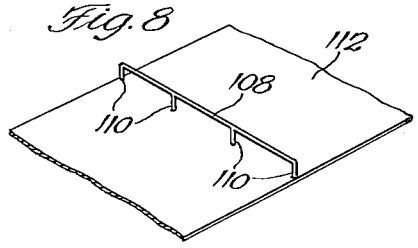


Fig. 5

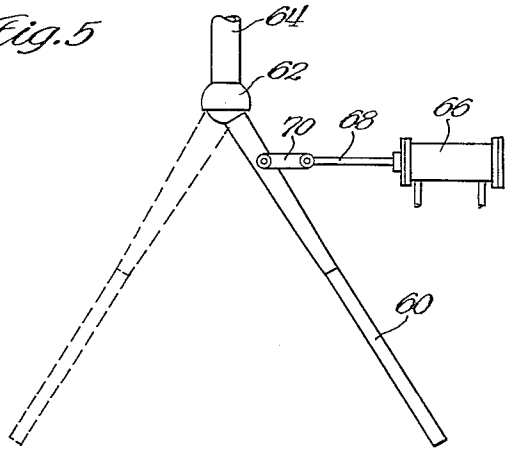
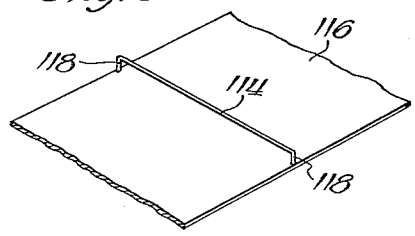


Fig. 9



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2,746,096

FELTING APPARATUS

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Application March 13, 1951, Serial No. 215,312

10 Claims. (Cl. 19—155)

The present invention pertains to felting apparatus and particularly relates to apparatus useful in the formation of mats or felts adapted to be compressed for the manufacture of consolidated products such as composition boards, particularly hardboard.

Both wet and dry methods are used conventionally in fabricating consolidated composition products such as hardboard. In the wet method, wood fiber or other suitable material is suspended in a thin water slurry. The latter is drained through a screen on an elaborate and expensive forming apparatus to form a wet lap or felt which then may be dried and pressed to form the consolidated product. This method results in the production of a felt which is uniform in thickness and which may be consolidated into a board having uniform density and strength across its width. However, the necessity of employing elaborate felting apparatus, of incorporating the fibers in an aqueous suspending medium, and of handling large volumes of water impose serious limitations on the economy of the method.

In the dry felting method, on the other hand, wood fiber or similar material is used directly without benefit of an aqueous suspending medium, although the fiber itself may have a substantial water content. The dry or moist fibers are formed directly into a felt of the desired thickness which then is pressed to form the consolidated product. This obviously is a much more direct felting method than is the wet method, but it is one in which many problems are inherent.

In the first place, it is difficult to form a dry felt of uniform thickness, and elaborate leveling and smoothing means have been provided in prior art apparatus for securing a felt satisfactory in this respect. It is apparent that if the felt is not uniform, the consolidated product prepared therefrom will be defective in that it will be of nonuniform density and strength.

Secondly, it is difficult to provide dry felting apparatus which in forming into felt fibers of varying dimensions, will not separate the fibers according to their particle size, i. e. separate the fine from the coarse, with the result that a laminated felt will be formed. This in turn will produce a board which is relatively weak at the point of lamination and which is prone to warp.

Still further, it is difficult in dry felting to provide apparatus which will deposit the fibers individually, since they tend to cling together and to be deposited in the form of fiber clumps or flocs. Also, if the fibers are elongated, they tend to lie in the same general direction in the felt and produce an oriented felt. Both of these factors also produce a structurally weak consolidated product.

Another point of difficulty in dry felting operations is that of providing apparatus which is flexible and will deposit the fiber at any one of a number of predetermined rates, and which may be applied to the building of a felt of any desired thickness. It is difficult, furthermore, to control the thickness of the felt at the side edges to avoid the formation, through fiber squeeze out during

pressing, of marginal board areas of reduced density which must be trimmed off. Hence, all of the above factors must be controlled if the felting apparatus is to be suitable for commercial operation, particularly if it is to make a product comparable in properties to that produced by the conventional wet felting apparatus.

It therefore is a primary object of the present invention to provide a practical and commercially operable apparatus for use in the production of a consolidated fibrous product by the dry felting method.

Still another object of the present invention is the provision of dry felting apparatus which will produce consolidated products of uniform density and strength.

Still another object of the present invention is the provision of apparatus for dry felting fibrous material of non-uniform dimensions without separation of the fine and coarse particles into laminae, which, if present, would impart to the final consolidated product an undesirable laminated structure.

Another object of this invention is the provision of dry felting apparatus in which the felted particles are completely randomized as to fiber direction.

Another object of the present invention is the provision of dry felting apparatus which will form a felt free from fiber clots and flocs.

Still a further object of the present invention is the provision of dry felting apparatus which will deposit a felt having relatively thick side margins with the result that the consolidated product made from the felt will have the required thickness and density across substantially its entire width.

Still a further object of the present invention is the provision of dry felting apparatus adapted to the continuous formation of a felt, but eliminating the necessity of providing means for sawing or cutting a continuous felt into blanks of the required length for insertion in the press.

Another object of the present invention is the provision of dry felting apparatus which is completely flexible and may be controlled precisely as to the rate of fiber deposit and thickness of felt produced.

Another object of the present invention is the provision of dry felting apparatus in which the felt may be deposited directly on the press caul plates, thereby eliminating the necessity of providing transfer apparatus for transferring the felt from the felting apparatus to the caul plates.

Still another object of the present invention is the provision of dry felting apparatus which will produce a felt of uniform thickness without the necessity of providing separate smoothing and leveling means.

Still a further object of the present invention is the provision of dry felting apparatus which is simple in construction and economical to operate.

The manner in which the foregoing and other objects of the present invention are accomplished will be apparent from the accompanying specification and claims considered together with the drawings wherein:

Figure 1 is a view in perspective of the dry felting apparatus of the present invention, the structure being partly broken away better to reveal its construction;

Figure 2 is a detail sectional view in elevation taken along the line 2—2 of Figure 1;

Figure 3 is a detail sectional view taken along the line 3—3 of Figure 2;

Figure 4 is a sectional view in elevation taken along the line 4—4 of Figure 1;

Figure 5 is a fragmentary view in elevation illustrating an alternate form of the presently described apparatus; and

Figures 6 to 9 inclusively are perspective fragmentary

views illustrating various types of felt-dividing means applicable in the felting apparatus of Figure 1.

Generally stated the felting apparatus of this invention comprises a felt support or conveyor means having a foraminous cylinder or drum rotatably mounted above it. The cylinder is positioned transversely of the conveyor and preferably contains a plurality of tumbling blocks. Brushing means such as a brushing roll is rotatably mounted above the drum parallel thereto and in peripheral contact therewith. Also, a baffle plate is stationed above the cylinder parallel thereto and in frictional engagement therewith a spaced distance ahead of the brushing roll. This forms a chamber defined on three sides by the brushing roll, the baffle plate, and the upper surface of the foraminous cylinder.

Means also are provided for feeding wood fiber or similar comminuted material into the chamber formed by the above members. Upon rotation of the drum, this material sifts through the upper surface of the same, being restrained from following the outer surface of the drum by the brushing roll and being directed toward the tumbling blocks by the baffle plate. The fiber feeding means preferably is reciprocable so that the fiber is distributed substantially uniformly along the length of the cylinder.

Within the cylinder the fibrous material is completely separated into its component fibers by the action of the tumbling blocks, and the fibers are completely randomized, i. e. unoriented as to fiber direction. After they filter down through the tumbling blocks they pass through the lower surface of the foraminous cylinder and rain down upon the conveyor. There they build up a felt having a thickness determined by the rate of fiber flow and the speed of the conveyor. The latter preferably carries caul plates in edge to edge relationship and dimensioned to fit the press to be used in consolidating the felt. Preferably also, the conveyor is provided with transverse dividing means to facilitate the division of the felt into blanks codimensional with the caul plates in a manner to be explained in detail hereinbelow.

Referring now more particularly to the drawings:

The presently described dry felting apparatus is operated in conjunction with felt support means such as the endless conveyor belt **10**. This is mounted on rolls **12**, **14** at least one of which may be driven through control means making possible driving of the belt at any suitable speed. Directly attached to the conveyor belt are a plurality of dividers **16** extending transversely of the belt and positioned a spaced distance from each other, the spacing being determined by the length of the fibrous blanks it is desired to prepare.

Caul plates **18** dimensioned to fit between the dividers **16** rest upon the conveyor belt. These are made of steel, aluminum or other suitable metal and are adapted to support the felt **20** and to be used in conveying the same to a suitable press where it may be consolidated by the application of pressure and heat. In this way it is possible to felt directly upon the caul plates and to eliminate the expense and complications attendant upon transferring a bulky felt, which is not self sustaining, from the conveyor belt to the caul plates of the press.

Rotatably mounted in a housing **22** of suitable construction and positioned above the conveyor belt **10** is a foraminous cylinder or drum **25**. This extends transversely of the conveyor a spaced distance thereabove. It may comprise a metal cylinder having perforations of suitable diameter, or preferably a screen cylinder having a mesh size suitable for passing or transmitting the fibrous material to be felted. Cylinder **25** may be rotatably mounted within the housing in any suitable manner, as by being journaled thereto or preferably by being provided with a ring gear **28** externally of the housing. Gear **28** engages a pair of pinion gears **30**, **32**. One of the latter, e. g. gear **32**, is mounted on the same shaft with a pulley wheel **34** interconnected by belt **36** to pulley wheel **38** on a variable speed motor **40**. In this manner means are provided for driving the cylinder at any desired speed.

Although fibers introduced into cylinder **25** may be randomized and distributed to a certain degree solely by the action of the rotating screen, these desirable results may be attained to a much higher degree by placing within the cylinder a quantity of tumbling blocks **42** which serve as tumbling baffles to divert the fiber flow. The tumbling blocks or baffles may comprise solid pieces of material such as wood blocks, metal or plastic spheres or inert solid objects which are sufficiently large to be retained in the foraminous cylinder. In practice, plywood blocks ⅜ inch thick and about 1 inch square have been found well suited for this purpose, where the mesh size of the cylinder screen is about ¾ inch.

Means also are provided for supplying fibrous material to the upper surface of the cylinder where it sifts through the same down into the tumbling blocks, thus securing maximum separation and randomizing of the fibers. To this end there is provided above the cylinder and parallel thereto brushing means which preferably comprise a rotary cylinder **44** having blades **46** which are in peripheral engagement with the cylinder. The brushing roll **44** is rotatably mounted on the housing **22** as by being journaled thereto and preferably is driven directly from cylinder **25**. Thus the latter cylinder may have attached thereto pulley wheel **48** which is connected through belt **50** to pulley wheel **52** on the shaft of brushing roll **44**. Then as cylinder **25** rotates, it will drive brushing roll **44** at a rate determined in part by the differential in diameter of pulleys **48** and **52**.

Further to promote the passage of fibrous material into cylinder **25**, there is provided a baffle plate **54** which like brushing roll **44** lies parallel to cylinder **25**. Plate **54** preferably has a blade of resilient material which is in peripheral contact with the outer surface of the cylinder.

In this manner there is formed a chamber or compartment defined on three sides by the brushing roll, the baffle plate and the upper peripheral surface of the cylinder. When fibrous material is introduced in this chamber, it passes through the foraminous cylinder onto the tumbling blocks, being guided by baffle plate **54**. During this operation brushing roll **44** rotating counterclockwise in the same direction as the foraminous cylinder (Fig. 4) prevents passage of fiber over the top of the cylinder and also assists in driving the fibrous particles through the foramens of the cylinder.

The amount of fibrous material passing through the cylinder in a given time will be determined by several factors such as the character of the fiber, the relative sizes of the foramens and the fiber particles, the effect of the brushing roll, the rate of feed of fibrous material to the upper surface of the cylinder, and the cylinder surface area in contact with the fibers between the brushing roll **44** and the baffle plate **54**. Since it may be desirable to adjust the rate of fiber flow through the cylinder from time to time, means are provided for varying the surface area of the cylinder which is in contact with the fibers. To this end the distance between brushing roll **44** and the baffle plate **54** may be made variable as by making one or more of these members adjustable. In the illustrated embodiment the brushing roll is made adjustable, as for example, by extending the shaft thereof through an arcuate slot **56** in housing **22** and fastening the bearings **58** mounting the shaft at stations corresponding to the desired spacing between the brushing roll and the baffle plate.

The action of the means employed for supplying fibrous material to the space between brushing roll **44** and baffle plate **54** preferably is such as to distribute the fiber along the length of the cylinder, rather than depositing it all in one place. As is illustrated in Figure 5 there may be supplied conduit means such as a spout **60** connected through a ball and socket joint **62** or other flexible union to a conduit **64** communicating with a source of fibrous

material. Means then are provided for oscillating spout 60 so that it moves along the length of the cylinder, distributing fiber thereon as it goes. Such a means may comprise, for example, a fluid operated cylinder such as the air or hydraulic cylinder 66, the piston rod 68 of which may be pivotally connected through link 70 to spout 60.

When the oscillating conduit employed is of substantial length, as fifteen feet or more, the rate of gravitational fiber flow therethrough will be substantially uniform since the conduit will be almost vertical along its entire arc. However, when a relatively short conduit is used, a problem in fiber flow is presented by reason of the fact that the fiber flows more rapidly through the conduit when the latter is in a vertical position than when it is extended angularly to either side. As a result, the distribution of fiber on the surface of the cylinder will not be uniform, a greater quantity being deposited in the middle portion of the arc than in the terminal portions.

For this reason an oscillating conduit preferably is provided which moves faster through the central portion of its arc than at the terminal portions thereof. Such a conduit is illustrated in Figures 1 and 2. In the embodiment of these figures, the spout 72 is connected through a flexible union such as the ball and socket joint 74 to a conduit 76 communicating with a fiber source. The outlet of the spout is disposed within the housing 22 above the cylinder and directed toward baffle plate 54 (Figure 4).

The driving means employed to oscillate the spout comprises a continuous flexible member such as the chain 78 arranged in a vertical arc in a direction parallel to the longitudinal axis of the cylinder. Chain 78 is maintained in the desired arcuate form by means of an upper chain guide 80, and a lower chain guide 82, these being supported by means of brackets 84, 86. The chain assembly includes the idler sprocket 88 rotatably mounted on the housing of the apparatus and the driven sprocket 90. The latter is connected to the variable speed motor 92 through pulleys 94 and 96 and the interconnecting belt 97.

Spout 72 is attached to chain 78 by suitable means, such as the plate 98 fastened through pivot pin 99 to flanged roller 100, which moves in guideway 102 extending longitudinally along the lower portion of spout 72. It thus will be apparent that as the spout is driven by the chain, the rate of travel will be relatively great along the center portion of its path and relatively slow along the terminal portions because the horizontal travel component of the arcuate chain is greater at its middle portion than at its ends. Also, the spout will pause momentarily when it reverses the direction of its travel at the end of each pass because at these two points the direction of travel of the chain is substantially vertical. This results in a slightly increased deposit of fibrous material along the extreme side edges of the felt.

Where the felt is deposited directly on the caul plate it will be separated into the desired lengths as the caul plates are removed from the conveyor 10. However, it is preferred to provide dividing means to assist in this operation. It has been found that a continuous divider, such as divider 16, is not necessary for this purpose since the felt is sufficiently weakened for separation by the presence of even a discontinuous divider.

Thus various forms of discontinuous dividers such as are illustrated in Figures 7 to 9 inclusive may be used, these having the advantage of being light in weight and not subject to breakage. In the embodiment of Figure 7, for example, the dividing means may comprise a transverse row of spikes or studs 104 fastened to the conveyor belt 106. When the fibrous material is deposited on these, the resulting felt will have a corresponding series of weakened areas which enable its ready separation at the desired point.

Similarly the dividing means may comprise a bar 108 extending transversely of the conveyor 112 and maintained a spaced distance apart therefrom by means of the supporting legs 110 (Figure 8). In still another form, the dividing means may comprise simply a bar 114 maintained apart from the conveyor 116 by the support means 118. In the constructions of Figures 8 and 9 the bar preferably is maintained at an elevation substantially on the same plane as the upper surface of the felt so that it creases or indents the latter, forming a transverse area of fiber deficiency which permits separation of the felt in the desired place.

In operation, fiber which preferably has been admixed with a suitable adhesive is fed at a controlled rate through conduit 76 to oscillating spout 72. It is distributed by means of this spout along the upper surface of cylinder 25. The distribution is uniform along the greater part of the spout travel, the vertically arcuate configuration of the spout driving chain 78 serving to move it most rapidly through the central portion of its travel at which it is substantially vertical and fibrous flow therethrough is correspondingly great. However, during the momentary pause occurring as the chain reverses its direction at the terminal portions of its arc, a slightly increased amount of fiber is permitted to flow, building up a felt of increased thickness along its side edges. This compensates for squeeze-out in the press and reduces the amount of trim in the finished panel, as explained above.

Fiber distributed from the spout on the exterior surface of the foraminous cylinder is directed toward the tumbling blocks 42 contained therein by means of baffle plate 54. Any excess fiber which might be carried over the top of the cylinder is prevented from so doing by means of brushing roll 44, which serves the additional important function of up-ending the fibers so that they pass through the openings of the cylinder more readily. The rate of flow of the fibers through the cylinder may be readily controlled by varying the rate at which it is fed from spout 72 as well as by adjustment of the space separating brushing roll 44 and baffle plate 54 to provide more or less surface of the cylinder therebetween.

As the fibers enter the drum they are engulfed by the tumbling blocks which separate any clumps or aggregates of fiber into completely randomized individual fibers. These then gravitate downwardly through the lower surface of the cylinder and sift onto conveyor 10 or preferably onto caul plates 18 carried thereby.

This results in the formation of a felt of uniform thickness (except for the marginal beads of slightly increased thickness), the fiber content of which is completely randomized and the component fibers of which are intimately mixed with each other regardless of their size. Consequently the fibers are completely unoriented in the felt and the fine and coarse fibers are uniformly mixed with each other. This leads to the production of a consolidated board which will not delaminate and which is of uniform strength and density across its entire surface.

The mode of operation of the presently described apparatus and the benefits accruing therefrom are further illustrated in the following example:

A dry felt was prepared in apparatus of the type described above wherein the cylinder had a diameter of 24 inches and a length of 52 inches, and was covered with a three-fourths inch mesh screen. It was filled with tumbling blocks comprising plywood blocks 1 inch square and three-eighths inch thick. The cylinder was rotated at a speed of 10 R. P. M. and the brushing roll at 50 R. P. M. Kiln dried Douglas fir fiber, having a maximum length of about 0.5 inch, which had previously been mixed with about 3% by weight of phenol-aldehyde binder was fed to the upper surface of the cylinder by means of reciprocating spout at a rate of 200 pounds per hour. The felt was built up on caul plates to a depth of three inches after which it was consolidated to a thickness of ¼ inch in a heated hydraulic press maintained at a temperature

of 350° F. at a pressure of 400 pounds per square inch for five minutes.

The resulting hardboard was tested for uniformity of density and strength across its width, i. e. perpendicular to the machine direction, and the results compared with corresponding tests carried out on a competitive commercial hardboard prepared by the wet felting technique. The results indicated the dry felted hardboard of the present invention to be uniform in density and strength, the degree of uniformity being comparable to that achieved in the commercial product. The results are given in the following table:

Board strength and gravity variation perpendicular to machine direction

Distance From Edge (Inches)	Specific Gravity		Flexural Modulus of Rupture	
	Dry Felted Hardboard	Commercial Wet Felted Hardboard	Dry Felted Hardboard, p. s. i. @ 1.00 Sp. Gr.	Commercial Wet Felted Hardboard, p. s. i. @ 1.00 Sp. Gr.
0–2	1.06	1.06		
2–4	1.10	1.05	4,900	4,000
4–6	1.06	1.05		
6–8	1.10	1.05		
8–10	1.08	1.05	5,000	4,700
10–12	1.07	1.05		
12–14	1.06	1.04		
14–16	1.08	1.06	5,100	4,500
16–18	1.09	1.06		
18–20	1.09	1.05		
20–22	1.09	1.06	5,200	4,300
22–24	1.09	1.05		
24–26	1.05	1.07		
26–28	1.03	1.06	5,200	4,100
28–30	1.05	1.06		
30–32	1.04	1.07		
32–34	1.06	1.07	5,100	4,500
34–36	1.07	1.08		
36–38	1.08	1.07		
38–40	1.10	1.07	4,600	4,400
40–42	1.10	1.08		
42–44	1.11	1.07		
44–46	1.09	1.07	4,800	4,400
46–48	1.08	1.09		
Range	0.08	0.05	700	700

It is to be understood that the forms of our invention herewith shown and described, are to be taken as preferred examples of the same, and that various changes in the shape, size and arrangement of parts may be resorted to, without departing from the spirit of our invention, or the scope of the sub-joined claims.

Having thus described our invention, we claim:

1. Felting apparatus comprising conveyor means; a foraminous drum rotatably mounted above the conveyor means; a brushing roll rotatably mounted above the drum parallel thereto and in peripheral contact therewith; a baffle plate stationed ahead of the brushing roll parallel to the drum and in peripheral contact therewith, thereby forming a chamber three sides of which are defined by the brushing roll, the baffle plate and the upper surface of the drum; and fiber feeding means for feeding fibrous material into the chamber, the rotation of the brushing roll and the drum acting to sift the material through the drum and to deposit it in a uniform layer upon the conveyor means.

2. Felting apparatus comprising conveyor means; a foraminous drum rotatably mounted above the conveyor means; a brushing roll rotatably mounted above the drum parallel thereto and in peripheral contact therewith; a baffle plate mounted a spaced distance ahead of the brushing roll, the baffle plate being parallel to the drum and in peripheral contact therewith, thereby forming a chamber defined on three sides by the brushing roll, the baffle plate and the upper surface of the drum; feeding means for feeding fiber into the chamber; and motor means for rotating the drum and the brushing roll, thereby sifting the fiber through the drum at a rate determined by the spacing between the brushing roll and the baffle plate, and depositing the sifted fiber in a uniform layer on the conveyor means.

3. Felting apparatus comprising conveyor means, a foraminous drum rotatably mounted above the conveyor means, a brushing roll rotatably mounted above the drum parallel thereto and in peripheral contact therewith; a baffle plate mounted a spaced distance ahead of the brushing roll, the baffle plate being parallel to the drum and in peripheral contact therewith to form a chamber defined on three sides by the brushing roll, baffle plate and upper surface of the drum; means for varying the spacing between the brushing roll and the baffle plate; feeding means for feeding fiber into the chamber; and motor means for rotating the drum and the brushing roll, thereby sifting fiber through the drum at a rate determined by the spacing between the brushing roll and the baffle plate, and depositing the sifted fiber in a uniform layer on the conveyor means.

4. Felting apparatus comprising conveyor means; a foraminous cylinder rotatably mounted above the conveyor means; a brushing roll rotatably mounted above the cylinder parallel thereto and in peripheral contact therewith; a baffle plate stationed in front of the brushing roll, the baffle plate being parallel to the cylinder and in peripheral engagement therewith and the brushing roll, baffle plate and upper surface of the cylinder forming a chamber for the reception of the fibers; a plurality of tumbling blocks within the cylinder; fiber feeding means for feeding fiber into the chamber; and motor means for rotating the drum and the brushing roll, thereby sifting the fiber through the drum and tumbling blocks, randomizing the fibers and depositing them in a uniform layer on the conveyor means.

5. Felting apparatus comprising felt support means, a foraminous drum rotatably mounted across the felt support means and transversely thereof; reciprocable feeding means mounted above the drum and reciprocable in a plane parallel to the longitudinal axis of the drum; driving means for reciprocating the feeding means at a variable rate, the rate being greater at the central portion of each traverse than at the terminal portions thereof, thereby securing uniform delivery of fiber from the feeding means; and motor means for rotating the drum thereby sifting fiber deposited thereon through the same and forming it in a uniform layer on the felt support means.

6. Felting apparatus comprising conveyor means, a foraminous drum rotatably mounted above the conveyor means and transversely thereof, a reciprocable fiber-feeding conduit for feeding fiber to the upper surface of the drum in a plane parallel to the longitudinal axis thereof, vertically arcuate flexible driving means for reciprocating the conduit, means for attaching the conduit to the driving means, and motor means for rotating the drum, thereby sifting the fibers therethrough and depositing them in a uniform felt on the conveyor means.

7. The felting apparatus of claim 6 wherein the flexible driving means for the conduit feeding means comprises a vertically arcuate continuous chain attached to the conduit means.

8. Felting apparatus comprising felt support means, a foraminous cylinder rotatably mounted above the felt support means and extending transversely thereof, brushing means rotatably mounted above the cylinder parallel thereto and in peripheral contact therewith; a baffle plate mounted parallel to the longitudinal axis of the cylinder and contacting the periphery thereof, the cylinder, the baffle plate, and the upper surface of the cylinder forming a fiber-receiving chamber; reciprocable feeding means for feeding fiber into the chamber along the length thereof, and motor means for rotating the cylinder, thereby sifting therethrough fiber fed into the chamber and depositing it in a uniform layer on the felt support means.

9. Felting apparatus comprising conveyor means, a foraminous drum rotatably mounted above the conveyor means and transversely thereof, a brushing roll rotatably

mounted above the drum parallel thereto and in peripheral contact therewith, a baffle plate mounted a spaced distance ahead of the brushing roll, the baffle plate extending longitudinally of the drum and being in peripheral contact therewith to form with the brushing roll a fiber-receiving chamber, reciprocable conduit means for distributing fiber lengthwise of the fiber-receiving chamber, a plurality of tumbling blocks within the cylinder, and motor means for driving the brushing roll and the cylinder, thereby sifting the fibers through the foraminous drum and tumbling blocks, and depositing the fibers in a uniform layer on the conveyor means.

10. Felting apparatus comprising felting means for forming a felt of material in particle form, a conveyor positioned below the felting means for receiving and supporting the felted material, the conveyor having on the upper surface thereof a plurality of rods extending transversely of the conveyor and spaced apart therefrom but attached thereto by connecting members at predetermined intervals, the rods being adapted to divide the felt into blanks of predetermined size suitable for introduction between the platens of a press.

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