

May 24, 1938.

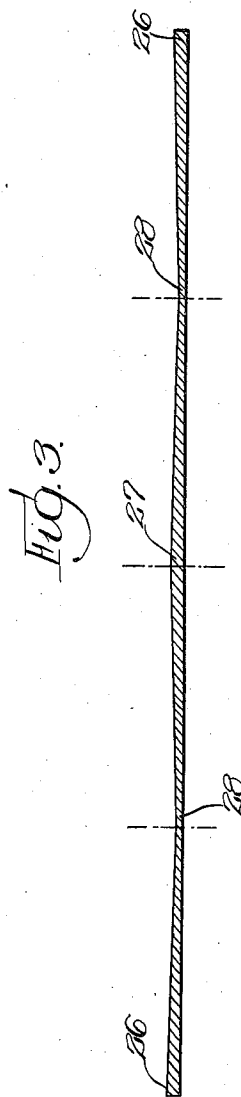
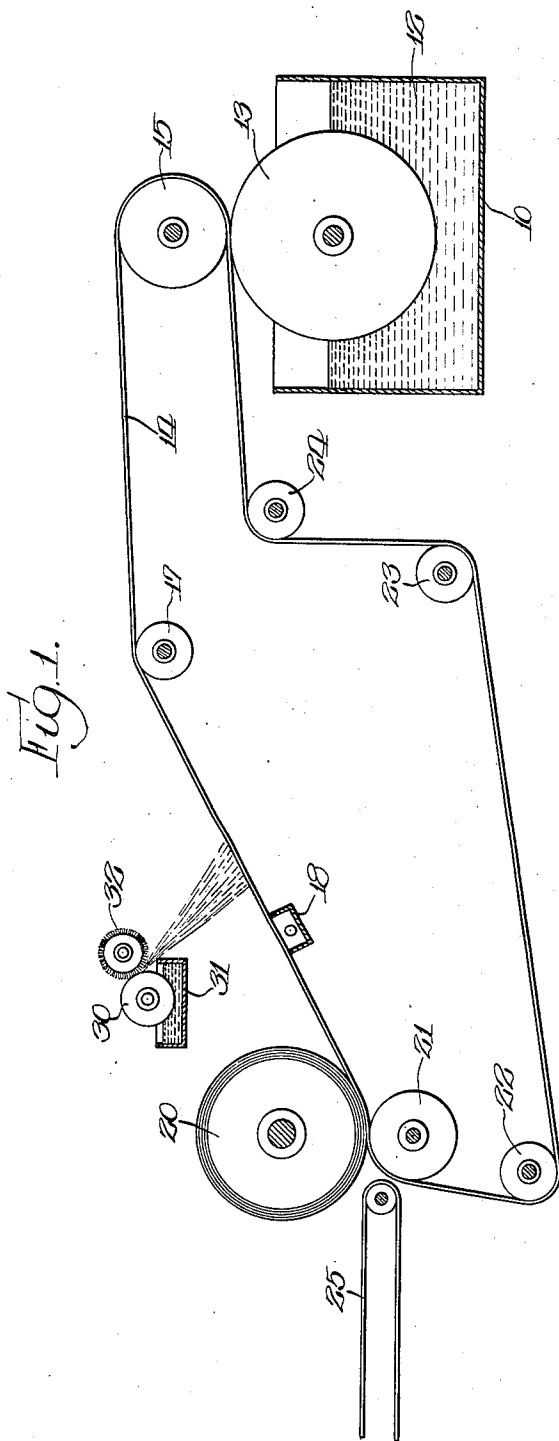
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MACHINE FOR MAKING TAPERED CEMENT ASBESTOS SHINGLES

Filed July 3, 1936

2 Sheets-Sheet 1



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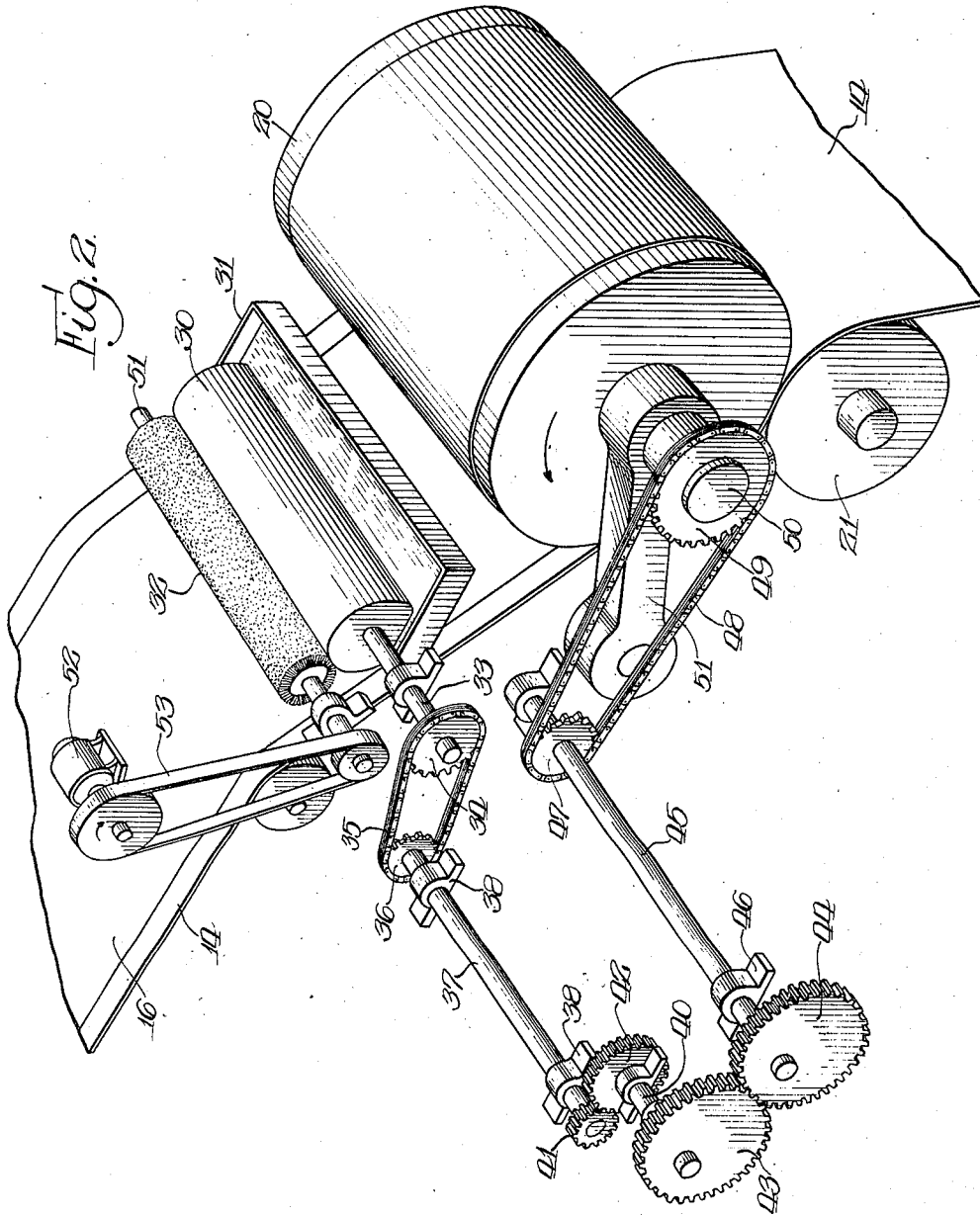
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UNITED STATES PATENT OFFICE

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MACHINE FOR MAKING TAPERED CEMENT
ASBESTOS SHINGLESArthur G. Leonard, Jr., Wilmington, Ill., assign-
or, by mesne assignments, to The Lehon Com-
pany, Chicago, Ill., a corporation of Illinois

Application July 3, 1936, Serial No. 88,759

14 Claims. (Cl. 92-41)

The invention relates to apparatus for mak-
ing asbestos shingle stock or any similar ma-
terial which is formed by the accumulation of
successive layers and has particular reference
to a method of and novel apparatus for making
shingle stock of tapering form.

The invention is particularly concerned with
the making of shingle stock from asbestos fibers
and cement which is transferred as a wet mix-
ture to an endless cloth band by an operation
known as couching in the paper making art and
which forms a relatively thin layer or web of
the cement asbestos mixture on the endless cloth
band. As shown in my Patent No. 2,010,308
granted August 6, 1935 an accumulation roll is
used on which the wet paper-like web of the ce-
ment asbestos mixture is accumulated until the
desired thickness is secured, whereupon the ply-
board thus formed is stripped from the roll and
delivered to the conveying means.

After the plyboard has been subjected to pres-
sure to force out most of the water and then
dried a very satisfactory stock for shingles is
secured, which, however, is of uniform thick-
ness throughout.

It is an object of the invention to produce
shingle stock of cement and asbestos which will
taper in one direction so that the resulting shin-
gles may have a relatively thick butt end. The
method contemplated by the invention for mak-
ing tapering cement-asbestos stock consists in
forming in the usual manner a wet paper-like
web of the cement asbestos mixture which will
be uniform in thickness. Before the web is de-
livered to the accumulation roll a wet cement
mixture is applied to the upper surface of the
web in quantities which vary from a maximum
to a minimum within a certain length of the
web, determined by the radius of the accumu-
lation roll.

Therefore, another object of the invention is
to provide novel distributing means which will
spray a wet cement mixture on the travelling
cement-asbestos web and which will alternately
accelerate to a maximum speed and then deceler-
ate in timed relation with the travel of the web.

With these and various other objects in view
the invention may consist of certain novel fea-
tures of construction and operation as will be
more fully described and particularly pointed out
in the specification, drawings and claims ap-
ended hereto.

In the drawings which illustrate an embodi-
ment of the invention and wherein like refer-
ence characters are used to designate like parts—

Figure 1 is a diagrammatic view illustrating
apparatus for forming ply-board in accordance
with the invention;

Figure 2 is a fragmentary perspective view
showing the distributing apparatus and operat-
ing means therefor for applying the wet cement
mixture to the web; and

Figure 3 is a longitudinal sectional view of the
shingle stock as stripped from the accumulation
roll, showing the tapering formation of the same.

The apparatus for producing the tapering ply-
board of the invention consists of a vat or con-
tainer 10, Figure 1, for the cement-asbestos mix-
ture 12, a considerable proportion of the mix-
ture being water so that the same can be read-
ily transferred from a mixing tank, not shown,
to the vat 10. Rotatably journaled within the
vat 10 is a drum 13 having a periphery formed
by a fine wire mesh fabric. A section of the
periphery of the drum is subjected to vacuum
to cause the mixture in tank 10, that is, the
asbestos fiber and cement, to adhere to the wire
fabric forming a relatively thin coat on the ex-
terior of the drum. The character of drum
above described is well known and the opera-
tion of transferring the material adhering to the
wire fabric is known as couching.

The endless belt 14 is suitably supported by
roller 15 located directly over the drum 13 so
that the band contacts the periphery of the
drum and picks up the coating which is deposited
on the band as a wet paper-like web indicated
in Figure 2 by numeral 16. The web travels
over a small supporting roller 17, over the vacu-
um means 18, which removes from the web
excess moisture before the web is deposited on
the accumulation roll 20. The band passes be-
tween the accumulation roll 20 and the lower
supporting roller 21 and around small rollers
22, 23 and 24, respectively, when the band again
functions to remove the web from the drum 13.

The said paper-like web of asbestos fibers and
cement is picked up by the accumulation roll 20
and is accumulated on the roll until the desired
thickness is secured, whereupon the plyboard
produced is severed and stripped from the roll.
The conveyor 25 conveys the plyboard to hy-
draulic means, not shown, where the same is
pressed to squeeze out the remaining moisture
and is subsequently cut into shingle size and
dried.

The apparatus above described will produce
plyboard of uniform thickness, whereas, the ply-
board of the invention is of tapering form, as
shown in Figure 3, which is a strip as removed 55

from the accumulation roll. The respective ends 26 of said strip and the center 27 have the maximum thickness which tapers toward the points 28 of minimum thickness. The mechanism for applying a coating to the cement-asbestos web to produce the tapering formation is more particularly shown in Figure 2 and consists of a fountain or supply roller 30 suitably journaled for rotation within the fountain 31, and a distributing roller 32 which is rotated at a relatively high peripheral speed compared to the surface speed of roller 30 to spray the cement mixture onto the web 16.

The fountain 31 is supplied with a wet cement mixture which is picked up by the roller 30 and due to the greater peripheral speed of the distributing roller is discharged from roller 30 and in effect sprayed onto the cement-asbestos web. The distributing roller is suitably journaled by shaft 51 and is rotated by motor 52 through the belt 53 which connects pulleys on the respective members.

The fountain roller 30 is suitably supported by shaft 33 which is fixed to gear 34 operatively connected by chain 35 with gear 36 fixed to counter-shaft 37. Bearings 38 journal said counter-shaft which is connected with shaft 40 by pinion 41 and gear 42 on the shafts respectively. The elliptical gear 43 meshes with a similar gear 44 fixed to drive shaft 45 suitably journaled by members 46. Fixed to this shaft is a gear 47 operatively connected by the chain 48 and gear 49 with shaft 50 carrying the accumulation roll 20. The shaft of the accumulation roll is suitably journaled by arms 51 and said roll is driven by structure not disclosed since the same forms no part of the present invention. Thus the fountain or supply roller 30 is driven by the accumulation roll 20, the drive including the elliptical gears 43 and 44 which have operation automatically to vary the speed of rotation of the supply roller, it being understood, of course, that the accumulation roll is driven at a constant speed. Whatever the speed of the supply roller some of the wet cement mixture in fountain 31 will be picked up by the surface of said roller and supplied to the distributing roller 32. Said distributing roller is formed of a plurality of radially extending wires of uniform length. The material picked up by the surface of the supply roller is in effect sprayed onto the web 16, the amount applied being greater when the speed of the supply roller 30 is a maximum. In this manner certain portions of said web are increased in thickness, thus producing the tapering formation of the shingle stock on the accumulation roll.

The elliptical gears 43 and 44 in the drive from the accumulation roll to the supply roller 30 are so designed that said roller will rotate at varying speeds, alternating from a maximum speed to a minimum speed within a certain length of travel of the web 16. During maximum speed of the supply roller the greatest amount of said material is applied to the web 16 and during the minimum speed of said roller very little, if any, material is applied. Therefore, the web delivered to the accumulation roll has a varying thickness. The maximum and minimum speeds of the supply roller 30 occur in timed relation to the travel of the web, since said roller is driven by the accumulation roll. More particularly, the drive, including the elliptical gears 43 and 44, is designed so that the supply roller will complete a cycle of operations during the travel of a length of the web equal to one-half the circumference of the

accumulation roll. Expressed in other words, the roller will complete two cycles during the travel of a length of web equal to the entire circumference of the accumulation roll. A cycle includes a minimum and a maximum speed of operation which occur periodically and therefore the portions of the web of increased thickness will be spaced a uniform distance. Thus, when the web is wound on the accumulation roll the thick portions will coincide and also the thin portions will be in alignment.

As the web continues to accumulate on the roll 20 the surface of the same gradually assumes a wavy outline produced by the sections of the web of increased thickness with respect to other sections, which are considerably thinner as the result of the reduced speed of rotation of the roller 30. When the accumulated material on the roll 20 has reached the desired average thickness the same is automatically severed and stripped from the roll, whereupon the length of plywood produced is conveyed by the means 25 to other apparatus for squeezing out the excess moisture, drying the same, and finally cutting the stock into shingles.

As will be evident from Figure 3, each length of plywood as stripped from the accumulation roll has two portions of increased thickness which were diametrically opposite when the stock was on the roll. In a like manner the same has two portions of minimum thickness, also diametrically opposite when on the accumulation roll. The production of shingles of tapering thickness requires that the stock be severed along the dotted lines, as shown in Figure 3, which will divide the length of stock into four sections of equal length and wherein each section will have one edge of maximum thickness and the opposite edge of minimum thickness.

The invention is not to be limited to or by details of construction of the particular embodiment thereof illustrated by the drawings, as various other forms of the device will of course be apparent to those skilled in the art without departing from the spirit of the invention or the scope of the claims.

What is claimed is:

1. In apparatus for making shingle stock of tapering formation from an asbestos mixture, the combination with a roll on which said stock is formed by the accumulation of several layers of web formed from said mixture, of means for applying a cement coating to one surface of the web at spaced locations along the length thereof, said coatings increasing the thickness of said web and being spaced so that two coatings occur within a length of web equal to the circumference of the accumulation roll.

2. In apparatus for making shingle stock of tapering formation from an asbestos mixture, the combination with a roll on which said stock is formed by the accumulation of several layers of web formed from said mixture, of means for applying a cement coating to one surface of the web at spaced locations along the length thereof, said coatings increasing the thickness of said web at the locations, and means driving said coat applying means from the accumulation roll.

3. In apparatus for making shingle stock of tapering formation from an asbestos mixture, the combination with a roll on which said stock is formed by the accumulation of several layers of web formed from said mixture, of means for applying a cement coating to one surface of the web at spaced locations along the length thereof, said coating increasing the thickness of said web

at the locations, and means driving said coat applying means in timed relation to the travel of the web to thereby thicken the web at points which are equi-distant apart.

5 4. In apparatus for making shingle stock of tapering formation from an asbestos mixture, the combination with a roll on which said stock is formed by the accumulation of several layers of web formed from said mixture, of means for ap-
10 plying a cement coating to one surface of the web at spaced locations along the length thereof, to thereby increase the thickness of the web at said locations, said means including a supply roller having rotation at varying speeds, and a
15 distributing roller contacting the periphery of the supply roller.

5. In apparatus for making shingle stock having a tapering formation, the combination with a roll on which said stock is formed by the ac-
20 cumulation of several layers of web having the same composition as said stock, of means for applying a coating to one surface of the web at spaced locations along its length to increase the thickness thereof at said locations, said means
25 including a supply roller, and a distributing roller contacting the periphery of the supply roller, said supply roller rotating at varying speeds and said distributing roller at all times rotating at a higher peripheral speed than said supply roller.

30 6. In apparatus for making shingle stock having a tapering formation, the combination with a roll on which said stock is formed by the accumulation of several layers of web having the same composition as said stock, of means for ap-
35 plying a coating to one surface of the web at spaced locations along its length to increase the thickness thereof at said locations, said means including a supply roller, and a distributing roller contacting the periphery of the supply
40 roller, said supply roller being driven at varying speeds from the accumulation roll.

7. In apparatus for making shingle stock having a tapering formation, the combination with a roll on which said stock is formed by the ac-
45 cumulation of several layers of web having the same composition as said stock, of means for applying a coating to one surface of the web at spaced locations along its length to increase the thickness thereof at said locations, said means
50 including a supply roller and a distributing roller contacting the periphery thereof, said supply roller rotating at speeds which periodically vary between a minimum and a maximum and said rollers at all times rotating at different peripheral
55 speeds.

8. Apparatus for making shingle stock of tapering formation comprising an accumulation roll on which said stock is formed by the accu-
60 mulation of several layers of web having the same composition as said stock, coating means for spraying a coating on one surface of the web at spaced locations along its length to increase the thickness thereof at said locations, said means
65 including a supply roller and a distributing roller contacting the periphery thereof, and driving means for the supply roller, said driving means rotating the supply roller at varying speeds.

9. Apparatus for making shingle stock of tapering formation, comprising an accumulation
70 roll on which said stock is formed by the accumulation of several layers of web having the same composition as said stock, coating means for spraying a coating on one surface of the web at spaced locations along its length to increase
75 the thickness thereof at said locations, said

means including a supply roller and a distributing roller contacting the periphery thereof, and means driving the supply roller from the accumulation roll at speeds periodically varying between a minimum and a maximum.

10. Apparatus for making shingle stock of tapering formation from asbestos mixture, comprising an accumulation roll on which said stock is formed by the accumulation of several layers of web formed from said asbestos mixture, coating
10 means for spraying a coating of cement on one surface of said web at spaced locations along its length to increase the thickness thereof at said locations, said means including a supply roller and a distributing roller contacting the periph-
15 ery thereof, means driving said supply roller from the accumulation roll at speeds periodically varying between a minimum and a maximum, and means rotating said distributing roller at a substantially constant speed, said rollers at all times
20 rotating at different peripheral speeds.

11. Apparatus for making shingle stock of tapering formation from asbestos mixture, comprising an accumulation roll on which said stock is formed by the accumulation of several layers
25 of web formed from said asbestos mixture, coating means for spraying a coating of cement on one surface of said web at spaced locations along its length to increase the thickness thereof at said locations, said means including a supply
30 roller and a distributing roller contacting the periphery thereof, means driving said supply roller from the accumulation roll at speeds periodically varying between a minimum and a maximum, and other means rotating said distributing roller at
35 a greater peripheral speed than said supply roller.

12. Apparatus for making shingle stock of tapering formation from asbestos mixture, comprising an accumulation roll on which said stock is formed by the accumulation of several layers
40 of web formed from said asbestos mixture, coating means for spraying a coating of cement on one surface of said web at spaced locations along its length to increase the thickness thereof at said locations, said means including a supply
45 roller and a distributing roller contacting the periphery thereof, a drive for rotating said supply roller including means for varying the speed of said roller, and other means for rotating the distributing roller at a higher speed than the supply
50 roller.

13. Apparatus for making shingle stock of tapering formation from asbestos mixture, comprising an accumulation roll on which said stock is formed by the accumulation of several layers
55 of web formed from said asbestos mixture, coating means for spraying a coating of cement on one surface of said web at spaced locations along its length to increase the thickness thereof at said locations, said means including a supply
60 roller and a distributing roller contacting the periphery thereof, a drive for rotating said supply roller from the accumulation roll including means operative to periodically vary the speed of said supply roller between a minimum and a
65 maximum, and other means for rotating said distributing roller at a higher peripheral speed than said supply roller.

14. Apparatus for making shingle stock of tapering formation from an asbestos mixture, comprising an accumulation roll on which said stock is formed by the accumulation of several layers
70 of web formed from said asbestos mixture, coating means for spraying a cement coating on one surface of the web at spaced locations along its
75

length to increase the thickness thereof at said locations, said means including a supply roller, a fountain containing the coating composition and journalling said supply roller, and a distributing roller having contact with the periphery of the supply roller, a drive for rotating said supply roller from the accumulation roll including means operative to periodically vary the speed of said roller between a minimum and a maximum, and other means rotating said distributing roller at a relatively high peripheral speed.

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