May 27, 1958 E. J. ROMPRE 2,836,282

ROOF DECK FABRICATING MECHANISM

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FIG. 10

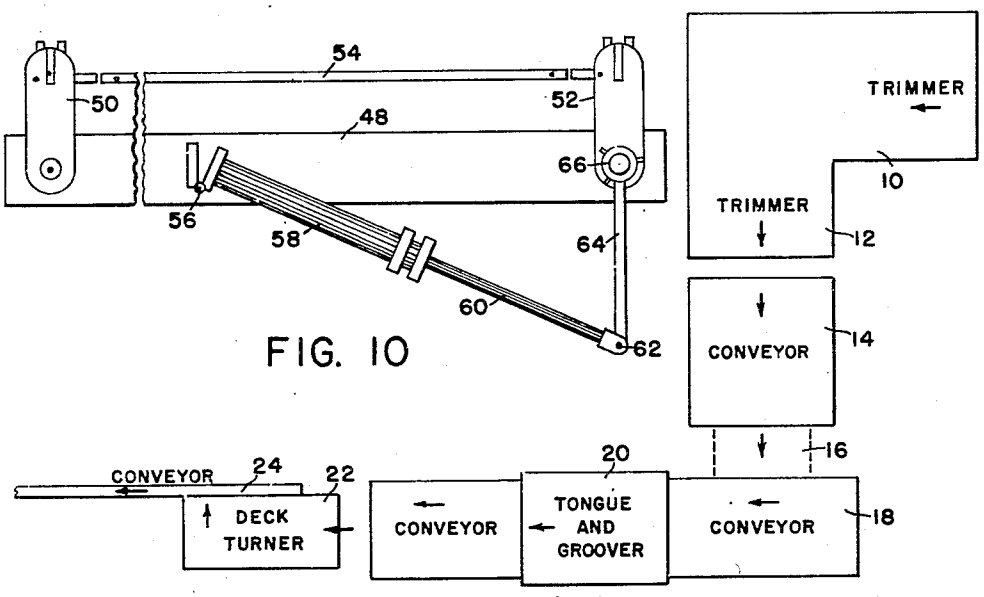

FIG. 1

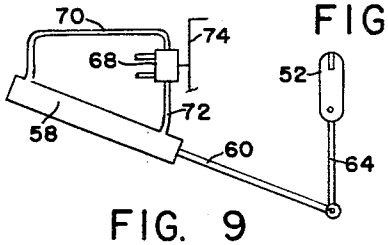

FIG. 9

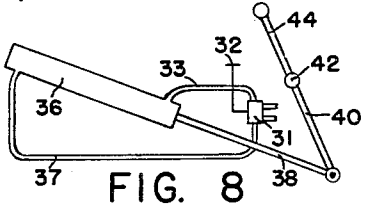

FIG. 8

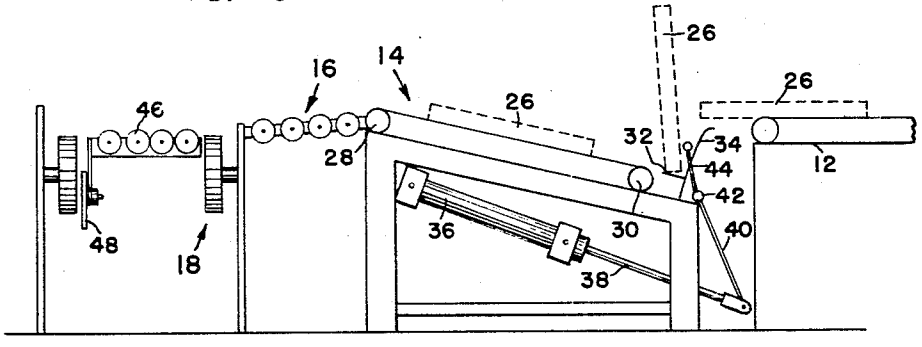

FIG. 2

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ROOF DECK FABRICATING MECHANISM

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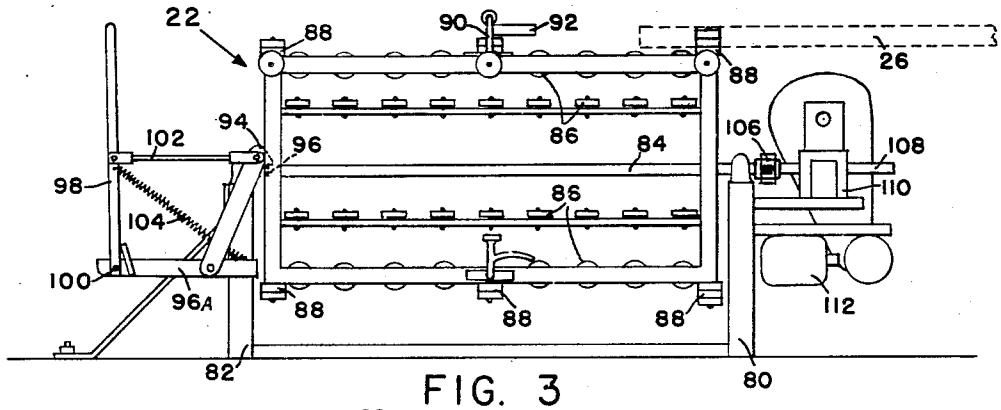

FIG. 3

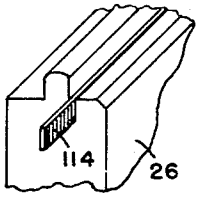

FIG. 7

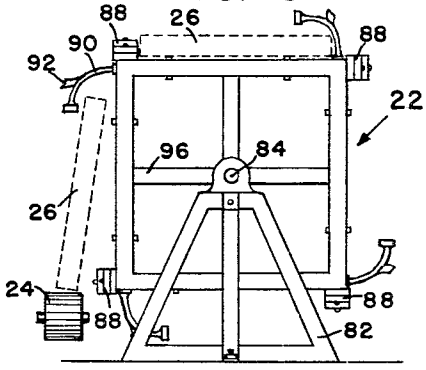

FIG. 4

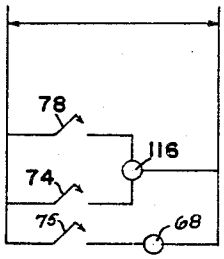

FIG. 6

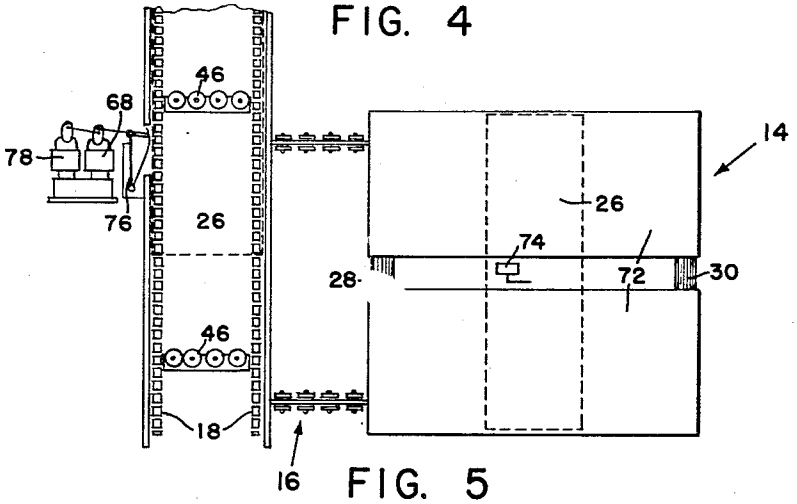

FIG. 5

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ROOF DECK FABRICATING MECHANISM

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Application February 18, 1957, Serial No. 640,774

2 Claims. (Cl. 198—33)

This invention relates to an apparatus for fabricating insulating roof material.

An important object of the invention is to provide an apparatus which permits fast and economical production of an insulating roof unit.

For the purpose of this invention there has been elected to set forth one particular structure but it is here presented for illustrative purposes only and is not to be accorded any interpretation such as might have the effect of limiting what is claimed as the invention short of its true and comprehensive scope in the art.

Other and further objects of the invention and the advantages of the same will be pointed out hereinafter and indicated in the appended claims or will be obvious to one skilled in the art upon understanding the present disclosure.

In the drawings:

Figure 1 is a schematic diagram of the steps used in producing roof deck;

Figure 2 is an end view of part of the roof deck conveying apparatus;

Figure 3 is a side view of the roof deck turning apparatus;

Figure 4 is an end view of the device shown in Figure 3 with parts broken away;

Figure 5 is a top plan view of the apparatus shown in Figure 2 with parts broken away;

Figure 6 is a schematic view of the control circuit for one of the conveyors shown in Figure 5;

Figure 7 is a fragmentary view of a roof deck material that can be fabricated on the apparatus comprising the invention; and,

Figures 8 and 9 are schematic diagrams of fluid control circuits utilized in controlling parts of the conveying apparatus.

Fig. 10 shows details of a fluid transfer structure.

There is now being produced a roofing material which is being sold under the name of "Insulite." Such product serves the purpose as decking, insulating and a finished interior ceiling. It is usually made of layers of insulating board laminated together with waterproof adhesive. One of the face surfaces is coated to present a finished ceiling surface. When such a product is to be used where the average January temperature is below 45° F., a vapor barrier should be incorporated in the roof deck. The roof deck is fabricated in units generally about 2' x 8'. The joints formed by the adjacent units should be sealed to prevent the passage of vapor and this may be accomplished.

Roof slabs are generally made up of a plurality of fiberboards with a vapor barirer membrane between the board forming the finished ceiling surface and the adjacent board. The roof slabs are not less than about 1½" in thickness and may be as thick as about 3". Fiberboards are made up in slabs of a little larger than 8' x 8' with one face surface coated. This type of slab is divided into four units of about 2" in width and then

trimmed to about 8' in length. This dividing of the slab into units is accomplished with the coated surface up and saws or the like coming from the under side. After the slabs are divided the units are turned over so that the edges may be formed with a tongue on one side edge with the opposite side edge with a groove. At the time the tongue is being formed, a groove is made adjacent the tongue for the reception of an elastic member. Roof deck is usually fabricated with one surface coated to provide a finished ceiling surface. To prevent the finished surface from becoming marred, etc., the roof deck is turned during its manufacture.

Roof deck slabs with coated side up are transferred to trimmer conveyors **10** where the slabs are divided longitudinally into the desired width, the lengthwise divided units are then cut to the desired length by trimmer **12**. The units **26**, after leaving trimmer **12**, slide down guide members **34** or board receiving means to limit-switch member **32**. The units are then discharged upon conveyor **14** with the coated surface downwardly. From the conveyor **14** the roof deck units are discharged to gravity conveyor **16** and then to roller supports mounted on arms **46**. The supports lower the units **26** on to endless chain conveyor **18**. The units are moved through the tongue and groover and discharged on to the deck turner **22**. From the deck turner the units **26** are discharged on to conveyor **24**.

Roof deck units **26**, when discharged from trimmer **12**, come into contact with member **32** which is connected to fluid control valve **31**. The fluid flows through line **37** to fluid cylinder **36** and results in the rod **38** operating member **40**. The member **40** is attached to rockable mounted member **42**. Secured to member **42** are a series of pusher rods **44** which contact the deck unit **26** and result in turning the units. Upon the units **26** being discharged from the member **32** the fluid valve operates and the fluid flows through line **33** resulting in movement of rod **38** and associated parts to the inactive position.

The conveyor **14** may be of the endless type and includes two endless belts **72** operatively mounted on shafts **28** and **30**. A switch **74** is mounted on the conveyor **14** so that the roof deck units contact the switch control means when passing along the conveyor. The conveyor **14** discharges the roof deck units on to conveyor **16** which carries the units to conveyor **18**. When discharged from the conveyor **16** the units are received by spaced apart support arms **46**. The support arms have mounted thereon covered rolls so that the finished ceiling surface is not damaged. The arms **46** are supported by pivotally mounted members **50** and **52**. These members **50** and **52** are connected by rod **54** so that movement of one results in an equal movement of the other arms. Fluid cylinder **58** is hingedly connected to the frame at **56** and piston rod **60** is connected to rod **64** at **62**. The rod **64** is attached to arm member **52** at **66**. When a roof deck unit strikes the control lever **76** the contact **75** is closed and the fluid valve **68** opens which permits the fluid to flow through line **72**. The fluid flowing through line **72** to cylinder **85** moves rod **60** and results in the arm **46** folding downwardly in the direction of the traveling conveyor **18** to the position shown in Figure 5. The arms **46** are mounted so that they fold downwardly and deposit the roof deck unit on the conveyor **18** without damage to the surface thereof.

The conveyor **18** carries the units through the tongue and groover and discharges the units on to the deck turner **22**. The roof deck turner is rotatable mounted on shaft **84** which is supported by frame members **80** and **82**. Shaft **84** is connected to a suitable well known type of slip clutch **106** and shaft **108** is also connected to the clutch **106**. Shaft **108** is continually driven by motor

112. The deck turner is normally locked against turning by bar 94 which has a projection which extends over end bar 96 of the deck turner. The bar 94 is connected to bar 96 which is attached to frame 84 and has an upwardly extending release bar hingedly attached to bar 96A adjacent an end. Spring 104 normally urges the bar 94 to the locked position as shown in Figure 3.

Mounted on the deck turner 22 are spaced rubber rolls 86 on which the units 26 travel. On each corner of the deck turner are mounted a plurality of rubber rollers 88 which in cooperation with the guard arms 90 insures that the roof deck units are properly positioned on the turner 22. Attached to arms 90 and extending toward receiving end of the turner are flat spring members 92. The spring 92 guides the board 26 so that it does not strike the arm 90. When the unit 26 strikes the upper end of bar 98 the bar 94 is forced from the locked position and the turner rotates one quarter turn to discharge the roof deck unit upon conveyor 24.

So that the roof deck units do not jam up on the conveyor 18 there is provided limit switches 74 and 78. Where the apparatus is idling, switches 74 and 78 are closed permitting the operation of conveyor 14. When a roof deck unit 26 trips switch 74 the circuit activating the conveyor 14 drive is still closed by switch 78. If a roof deck units are placed in the positions shown in Figure 5 the switches 74 and 78 are open and the motor 114 for driving the conveyor 14 is stopped until the roof deck unit supported by arms 46 moves past the member 76. By the arrangement just described units 26 are prevented from jamming on the arms 46.

The trimmers or conveyors may be of any suitable type and the type shown in Patent No. 2,031,385, Figure 1, or Patent No. 2,667,259 may be used.

What is claimed:

1. A board turner positioned adjacent the discharge end of one conveyor and adjacent the receiving end of a second conveyor, said second conveyor positioned in a lower plane than the first mentioned conveyor, turner activating means mounted on the turner and engageable by board thereon, cushioning rolls positioned on one side of a board receiving surface, a guard arm positioned on the opposite side of the board receiving surface, and means for locking the board receiving surface in position so a board can be discharged thereon from the first mentioned conveyor.

2. A board turner of the drum type having four board receiving surfaces, means along the edges of each board receiving surface to assist in positioning board on the receiving surfaces, a shaft supported by the turner, means for turning the shaft, locking means for holding a board receiving surface in position to receive a board, a lever for releasing the locking means, said lever engageable by a board on the turner, and means for locking second board receiving surface in position upon the turning of the drum.

References Cited in the file of this patent

UNITED STATES PATENTS

912,764	Wintgens	Feb. 16, 1909
1,446,851	Littleford	Feb. 27, 1923
1,929,204	Jeffrey	Oct. 3, 1933
1,943,530	Hoeffleur	Jan. 16, 1934
2,029,456	Zuber	Feb. 4, 1936
2,434,411	Johnson	Jan. 13, 1948
2,659,475	Archer	Nov. 17, 1953
2,732,057	Temple	Jan. 24, 1956
2,784,831	Connell	Mar. 12, 1957