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APPARATUS FOR FORMING ENCLOSED BLANKET INSULATION STRIPS

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2 SHEETS—SHEET 1

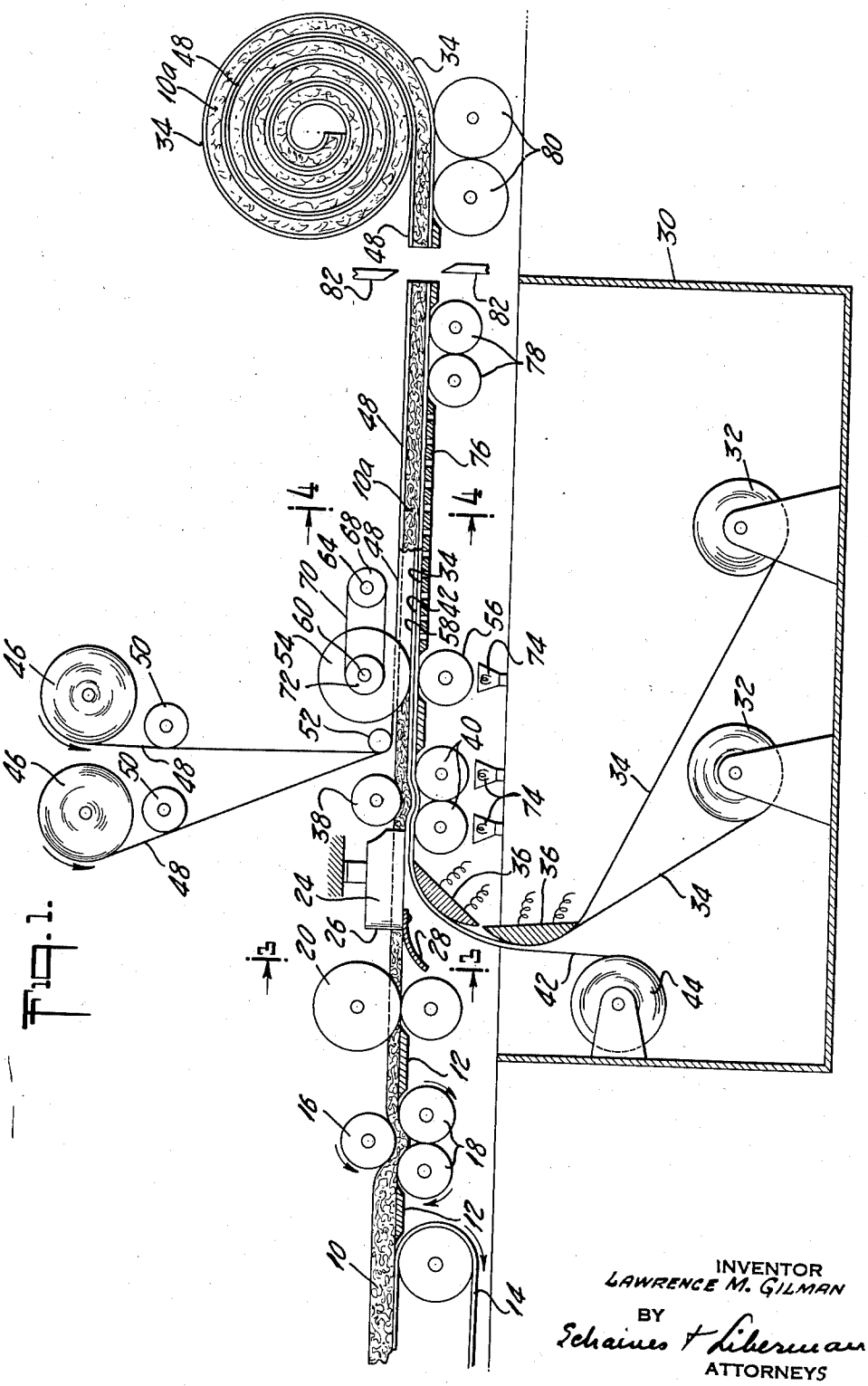


Fig. 1.

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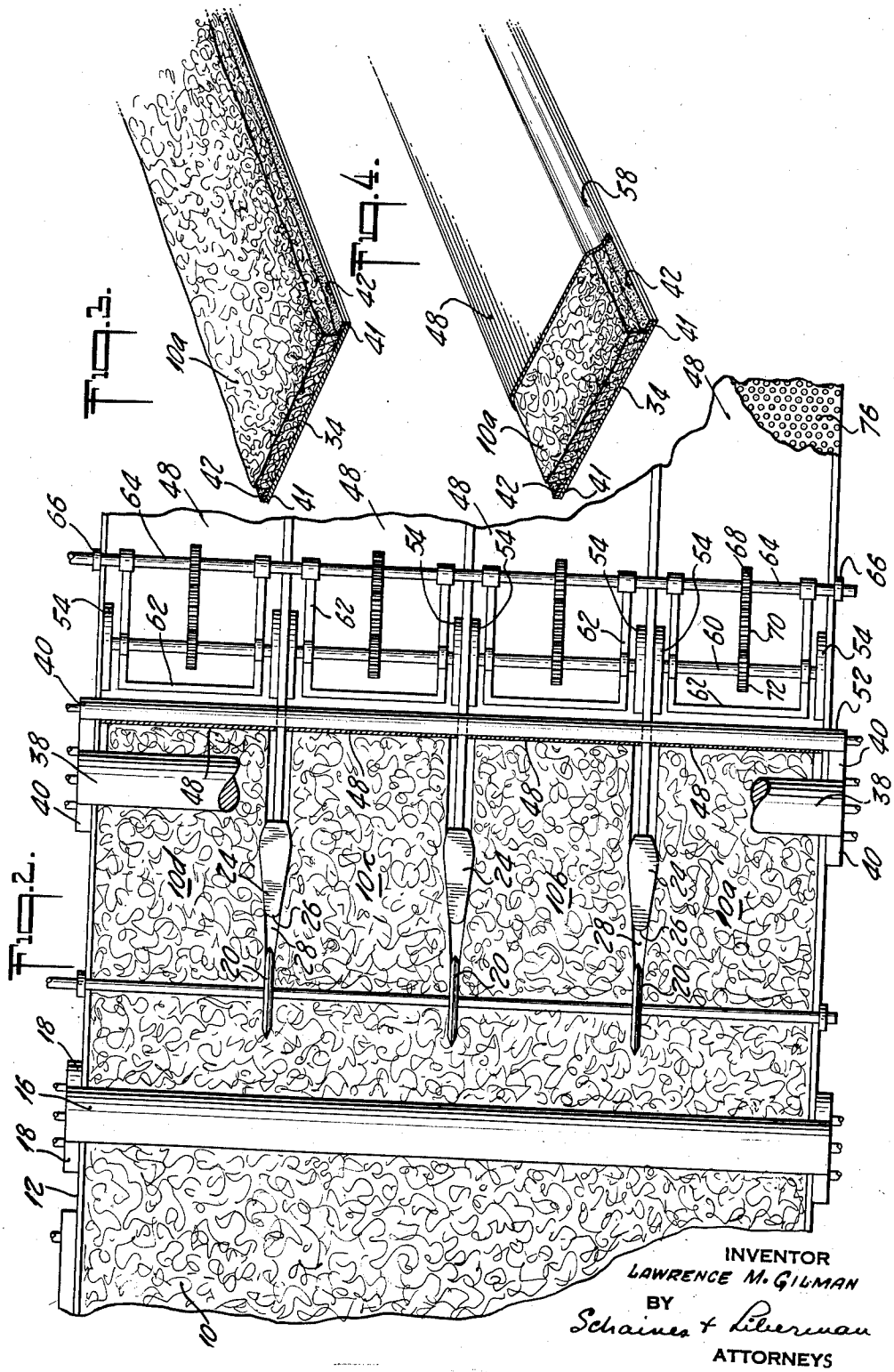
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APPARATUS FOR FORMING ENCLOSED BLANKET INSULATION STRIPS

Lawrence M. Gilman, Gilman, Conn.

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1 Claim. (Cl. 154—27)

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The present invention relates generally to the field of blanket insulation, and in particular it relates to the method of forming enclosed blanket insulation strips, and the apparatus therefor, the enclosure being by paper or the like material.

A main object of the present invention consists in the provision of a method of and apparatus whereby a wide elongated batt or loose fluffy sheet of insulating material is successively compacted, severed into a plurality of elongated strips, each of which is then covered on one side with enveloping material, covered on the other side with enveloping material, the two pieces of enveloping material secured together along the side edges of the strips, and the strips severed into units of any desired length and coiled into roll form for easier handling and packaging.

Other objects of the present invention will in part be pointed out specifically hereinafter, and still others will be obvious from the following description of an illustrative embodiment.

In the drawings annexed hereto and forming a part hereof,

Figure 1 is a diagrammatic side elevational view, partly in section, showing one form of apparatus constructed according to and embodying my invention.

Fig. 2 is a part plan view of the compacting, slitting and sealing mechanism, and

Figs. 3 and 4 are sections, respectively, on the lines 3—3 and 4—4 of Fig. 1.

A continuous elongated web of fibrous insulating material 10, which may be formed on conventional machinery (not shown), is moved along atop table 12 and lengthwise thereof, as by endless belt 14, and between a battery of compression rollers 16, 16, 16 mounted transversely of table 12, which reduce the originally thick, loose web to substantially uniform thickness. As seen in Fig. 1, rollers 16 and 18, 18 are so mounted as to receive the web 10 therebetween, compress same and move it along on table 12, the direction of rollers rotation being indicated by the arrows. The reduced-thickness web is then driven against a plurality of vertically-disposed, lengthwise-arranged circular cutting knives 20, 20, which divide the original web of table width into a plurality of strips of any desired widths, according to the spacing between the knives 20, 20 on shaft 22. Three knives 20, 20 are here shown, severing web 10 into four strips 10*a*, 10*b*, 10*c*, and 10*d*, but it will be readily appreciated that fewer or more knives may be employed, and the originally wide batt reduced to any number of narrow strips.

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The strips 10*a* . . . 10*d* are then moved along and between separator shoes 24, 24. Each shoe comprises a narrow V-shaped member having a vertical leading edge 26 of reduced thickness directed towards and in line with blade 20, and a downwardly and forwardly extended guide plate 28, secured to the underside thereof to insure the movement of strips 10*a* . . . 10*d* between the separators 24, 24 and along the sides thereof.

Contained within a suitable receptacle or magazine 30, disposed below support table 12, are a plurality of supply rolls 32, 32 of paper of any suitable or desired material, the one side of which, the outer side, may be coated with a reflective material, and the other side thereof coated with asphalt. As many supply rolls 32, 32 are provided as there are strips as 10*a*, 10*b*, etc., formed of web 10 to be enveloped. Two rolls 32, 32 are shown, but only for illustrative purposes, since with four strips 10*a* . . . 10*d*, four supply rolls 32 would be required. Considering the treatment of but one strip, since the others are similarly handled, paper from a supply roll 32 is drawn off and threaded underneath the strip, as 10*a*, see Fig. 1. Before reaching strip 10*a*, however, the paper 34 is passed over electrically or otherwise heated drums 36, 36, to heat the asphalt on the inner surface of the paper and render same tacky for more positive adherence to the bottom of the web, the web strip and paper 34 sandwich passing between a battery of compression rollers 38, 40, 40.

Paper strips 34 are preferably wider than the individual web strips 10*a* . . . 10*d*, and have wings 41, 41 which extend outwardly beyond the web on both sides thereof, see Fig. 3. At the same time, narrow lengths of tobacco cloth 42 from supply rolls 44, which may also be disposed within chamber 30, are passed over the heaters 36, 36 and onto the tacky surfaces of both of the wings 41, 41 of sheets 34, 34. This stripping 42 of tobacco cloth, or of burlap, paper or the like, may be about one inch wide, and serves to reinforce the edges of the insulation wrapping.

Above support 12, I provide a suitable mount or support, not shown, for a number of supply rolls 46, 46 of paper or enveloping material for the top of the strips 10. As many supply rolls 46 are provided as there are strips to be enclosed. The continuous elongated sheet 48 from rolls 46, 46 may be surfaced or otherwise treated with reflective material on its outer side, or it may be of ordinary craft material or the like. From supply rolls 46, the sheets 48 may be passed over perforating rollers 50, 50 and then

under suitably located guides, as rollers 52, and directed over and atop the upper surface of the batt strips 10a, 10b, 10c, 10d. Sheets 48, 48 are also preferably formed of greater width than the batt strips, and have side wing extensions 58, 58 on each side thereof which overlie the wing extensions 41, 41 of base sheet 34. Each sandwich of base sheet 34, batt strip 10, and cover sheet 48 is then passed between a pair of compression rollers 54, 56 which are spaced apart so as to receive the wings 41, 58 therebetween to cause them to adhere on opposite sides of the intermediate strip 42 of tacky material. Asphalt or some type of quick setting adhesive is used to impart the tackiness desired. Referring to Fig. 2, it will be seen that each pair of rollers 54, 54 is mounted on a stub shaft 60 supported by a frame 62 on a shaft 64 mounted across the support 12 in bearings 66, 66 and driven by any convenient power source (not shown). A sprocket wheel 68 is fixed on shaft 66 for rotation therewith, within each frame 62, which, through endless chain 70, drives a sprocket 72 fixed on shaft 60 to rotate rollers 54, 54 in counterclockwise direction. Shafts 60 and frames 62 can easily be interchanged when it is desired to treat batt strips of different widths.

A battery of infra-red or other heat producing lamps 74, 74 are disposed beneath and adjacent rollers 40, 40, 56 to keep these rollers warm and the tacky material sufficiently loose to insure adherence at the side wing areas.

The enclosed strips are then moved over and along a perforated steel plate 76, about six feet long, cooling as they advance, onto counterclockwise rotating rollers 78, 78 which aid in moving the strips and then onto head rollers 80, 80 which wind the elongated and enclosed strips into huge rollers. Shears 82, 82 are provided between rollers 78, 78 and head rollers 80, 80, which are operable automatically or in any other suitable manner to sever the batt strips into lengths of any desired footage.

With the apparatus of my invention, I am enabled to start with a single, wide, endless strip of insulating material; reduce the originally wide strip to a plurality of individual strips of any desired lesser width; handle each separate strip individually and enclose same completely and securely within paper or similar material treated as desired with reflective coatings and the like; all to result in a plurality of lengths of completely enclosed insulating material.

Having described my invention, what I claim and desire to secure by Letters Patent is:

In an apparatus for continuously wrapping elongated strips of fibrous insulating material, an elongated support, drive roller means associated therewith to move an originally loose, fluffy mass of fibrous insulating material along the support, pressure roller means associated with the support to compress the mass short of the limit of compressibility thereof, continuously operating cutters also associated with the support to sever the partially compressed mass into a plurality of elongated strips as it moves along the support, guides on the support to direct the severed strips along divergent paths, a supply roll of sheet wrapping material below the support, a supply roll of sheet wrapping material above the support, the drive roller means also drawing the wrapping sheets from the supply rolls and moving same along the support with the strips disposed therebetween, and supply rolls of tacky narrow width reinforcing material also below the support, the drive rollers also drawing the reinforcing material from the supply rolls and moving same with the strips and between the wrapping sheets at the longitudinal edges thereof, and pressure rollers at both sides of the support bearing against the wrapping sheets and the interposed tacky reinforcing material along both longitudinal marginal edges of the strips whereby to enclose the strips between the wrapping sheets and tacky material.

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