(No Model.)

M. C. KERBAUGH.

APPARATUS FOR MAKING ROOFING FABRIC.

No. 455,000. Patented June 30, 1891.

Fig. 1.

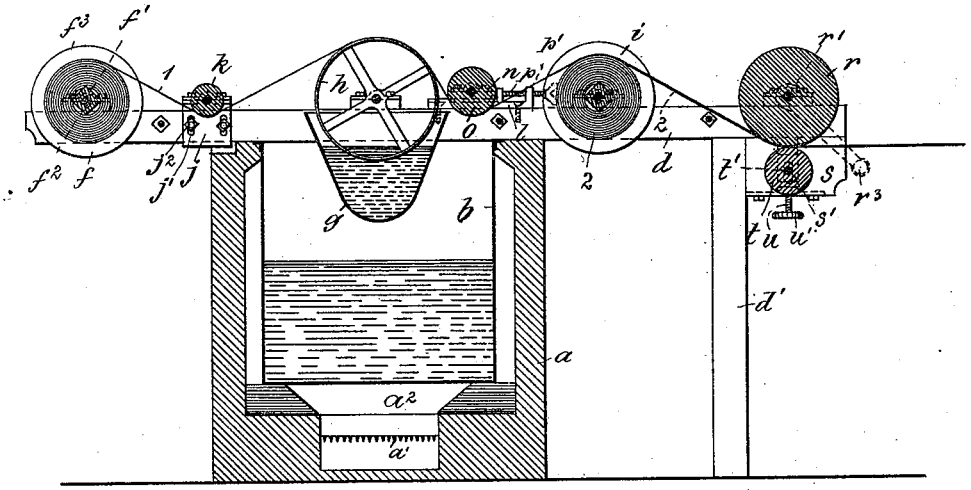


Fig. 2.

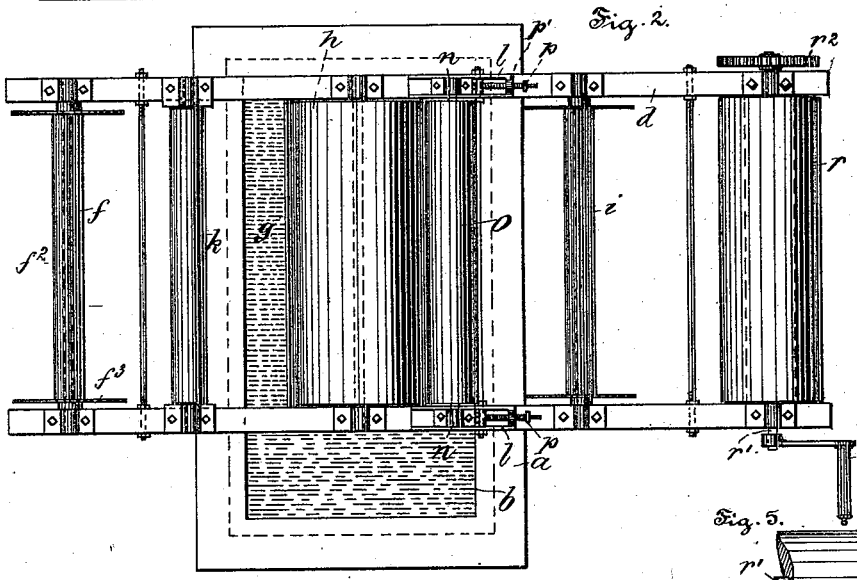


Fig. 3.

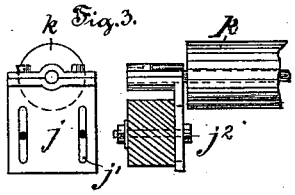


Fig. 4.

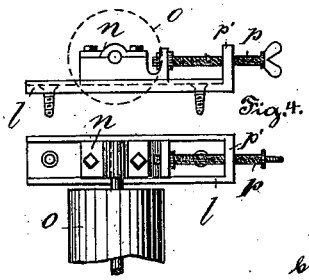
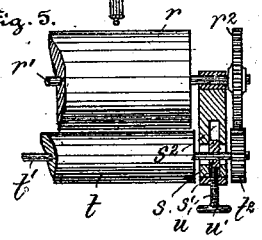


Fig. 5.



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UNITED STATES PATENT OFFICE.

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APPARATUS FOR MAKING ROOFING FABRIC.

SPECIFICATION forming part of Letters Patent No. 455,000, dated June 30, 1891.

Application filed May 24, 1890. Serial No. 352,973. (No model.)

To all whom it may concern:

Be it known that I, MINOR C. KERBAUGH, a citizen of the United States, residing at the city of Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Apparatus for Making Roofing Fabrics, of which the following is a specification.

My invention relates to an apparatus or machine for making one or more ply roofing fabrics.

The principal object of the invention is to provide bearings or journal-boxes for the guide-rollers of apparatus for making roofing fabrics, and more especially two or more ply roofing fabrics with certain adjustable features, whereby uniformity in coating, firmness of the union of the sheets of the fabric, and the prevention of any oozing of the coating material at the edges of the sheets is attained in a marked degree.

The invention consists in providing bearings or journal-boxes susceptible of adjustment vertically and adapted for the reception of the guide-roll, which directs and guides the uncoated material to the vat and coating-roll, and in means for clamping said bearings or journal-boxes to place.

The invention further consists in providing bearings or journal-boxes susceptible of a range of adjustment horizontally and adapted for the reception of the guide-roll which directs and guides the coated material from the vat, and in means for clamping or otherwise retaining said bearings or journal-boxes in place.

The invention further consists in making the journals of the guide-roller between the fabric-roll and coating-roll adjustable vertically, and the journals of the guide-roll receiving the fabric between the coating-roll and the second fabric-roll adjustable horizontally.

The invention further consists in the combination and arrangement of an apparatus for making roofing fabrics, as hereinafter described, and particularly pointed out in the claims.

The nature and characteristic features of the invention will be more fully understood from the following description, taken in connection with the accompanying drawings, forming part hereof, and in which—

Figure 1 is a transverse central section of a machine for making a two-ply roofing fabric embodying my invention and showing guide-rolls mounted in journal boxes or bearings susceptible of a range of horizontal and vertical movement and the means for clamping or otherwise securing said journal boxes or bearings to place, also showing the positively-driven pressure-rolls. Fig. 2 is a top or plan view of the same, showing gear-wheels and a hand-crank for actuating the pressure-rolls. Fig. 3 is a detail view of a guide-roll supported in a vertically-slotted bearing or journal box, showing set-screws attached to the frame of the machine and engaging in said slots. Fig. 4 is a similar view of a guide-roll mounted in bearings or journal-boxes adapted to slide horizontally in ways attached to the frame of the machine and showing screws for shifting and properly retaining said journal boxes or bearings; and Fig. 5 is a similar view of the positively-driven pressure-rolls, showing a screw provided with a hand-wheel for shifting the bearings or journal-boxes of one of said rolls.

Referring to the drawings for a further description of my invention, *a* is a brick or other suitable form of furnace, provided with a grate *a'* in the lower part thereof and with a chamber a^2, located above said grate. In this chamber a^2 is mounted a heating-tank *b*, adapted to contain pitch, tar, or other material.

d is a rectangular-shaped main frame supported by the side walls of the furnace *a* and by two or more vertical supports *d'*. The upper surface of the frame *d* is provided with a spool-bobbin *f*, adapted to contain a sheet of felt or paper 1, and having a central metallic rod *f'*, surrounded by a rectangular casing or distance piece f^2, and having circular end pieces f^3 attached to the metallic rod *f'* by means of set-screws or in any other convenient manner. Of course an ordinary cylindrical roll may be employed for such purpose; but preference is given to the above-described spool *f*, because it permits the roll

of felt to be easily and quickly mounted thereon and also prevents the felt or paper from accidentally falling off the bobbin.

g is a vat suspended from the frame *d* into the tank *b*, and adapted to permit of heated tar or pitch being introduced therein. Above the vat *g* and journaled to said frame *d* is a plain-surfaced roller *h*, one portion of which extends partially into said vat.

i is a spool, bobbin, or flanged roller, similar in all respects to the spool, bobbin, or flanged roller *f*, but supported in suitable journals attached to the frame *d* upon the opposite side of the roller *h* and adapted to contain a roll of felt or paper 2.

j are bearings or journal-boxes provided with vertical slots *j'*, and attached to the respective sides of the frame *d* between the spool *f* and roller *h* by means of set-screws j^2, so that said bearings may be elevated or depressed, as required, and finally secured to place.

k is a guide-roller pivotally supported in said vertically-adjustable bearings *j*, for a purpose to be hereinafter described.

l are ways attached to the upper surface of the frame *d* and located between the roller *h* and spool *i*.

n are journal-boxes permitted to slide on or traverse the ways *l* and adapted for the reception of the guide-roller *o*.

p are hand-screws suitably attached to the journal-boxes *n* and engaging in screw-eyes *p'*, attached to the ways *l*, so that the journal-boxes *n*, together with the guide-roller *o*, may be shifted by rotating the screws *p* either toward or away from the roller *h*, for a purpose to be presently described. Moreover, the friction of the screws *p* in the screw-eyes *p'* prevents any accidental shifting of the boxes *n* after the latter have been adjusted.

r is a pressure-roll journaled to the upper surface of the frame *d* by means of a shaft *r'*, provided with a gear-wheel r^2 and with a hand-crank r^3.

s is a pillow-block attached to the under side of the frame *d* and provided with journal-boxes *s'*, susceptible of being shifted in vertical slots s^2.

t is a pressure-roll contacting with the roll *r* and mounted upon a shaft *t'*, supported in the journal-boxes *s'* and provided with a gear-wheel t^2, meshing with the gear-wheel r^2.

u are screws provided with hand-wheels *u'*, and adapted to shift the journal-boxes *s'*, so as to increase or diminish the contact-pressure between the pressure-rolls *r* and *t*, as required.

The mode of making a two-ply roofing fabric in the apparatus above described may be explained as follows: A fire is started on the grate *a'* of the furnace *a*, whereby the tar or pitch contained in the tank *b* is heated or melted. The vat *g*, suspended from the frame *d*, is then filled with hot tar or pitch, so that the coating-roller *h* is partially immersed therein. The felt or paper 1, wound around the spool or bobbin *f*, is passed under the guide-roller *k*, thence over the coating-roller *h*, partially immersed in the vat *g*, and under the guide-roller *o*, whereupon the sheet coated on the under side thereof is united by contact with the end of an uncoated sheet of felt or paper 2, wound around the roller *i*. The two partially-united sheets are then caused to pass between the pressure-rolls *r* and *t* in order to thoroughly unite them. The finished product is then led off from the pressure-rolls and laid up for use.

In the practice of the invention the attendant in charge turns the hand-crank r^3, which causes the pressure-roll *r* to revolve, and the rotary motion of the latter is transmitted by means of the gear-wheels r^2 and t^2 to the roller *t*, so that the two pressure-rolls *r* and *t* are caused to revolve with the same tangential velocity, thus drawing the two sheets of felt or paper through the machine in the manner above described. Of course the pressure exerted upon the fabric by the pressure-rolls *r* and *t* may be increased, diminished, or otherwise adjusted by turning the screws *u*, by means of the hand-wheels *u'*, either in one direction or the other, as required. It may be remarked that during the above operation and by the adjustment of each of the guide-rolls *k* and *o* the area of contact of the fabric with the coating-roller *h* may be varied, and thus the attendant in charge is enabled to regulate to a nicety the amount of coating material applied to the fabric, and by the horizontal adjustment of the guide-roll *o* he can likewise vary the area of contact and the degree of pressure of the coated and uncoated sheets of fabric, and by differentiating these two, contact and pressure, secures both the requisite amount of coating material and the proper spreading of the same. In other words, by these adjustments the following benefits are secured: uniformity in coating, firmness in the union of the sheets comprising the fabric, and the prevention of any oozing of the coating material at the edges of the sheets.

Having thus described the nature and objects of my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a machine for making roofing fabrics, the combination, with a vat containing a liquid or fluid, of a coating-roll partially immersed therein, adjustable journal-boxes arranged on opposite sides of said coating-roll and outside of said vat, tension and guide rolls pivotally supported in said journal-boxes, and separate means for shifting said journal-boxes so as to regulate the degree of saturation of the finished fabric, substantially as shown and described.

2. The combination, in a machine for making a roofing fabric, of a frame, a vat containing a liquid or fluid located beneath said frame, a coating-roll partially immersed therein, spools or bobbins journaled to said frame and located on opposite sides of said

vat, pressure-rolls located at or near one extremity of said frame, a guide-roll interposed between each of said spools or bobbins and coating-roll and located outside of said vat, and one of said guide-rolls supported in vertically-adjustable bearings or journal-boxes and the other of said guide-rolls supported in horizontally-adjustable bearings, substantially as and for the purposes set forth.

3. The combination, in a machine for making a roofing fabric, with a furnace and a vat supported therein, of a frame, a coating-roll partially immersed in said vat, spools or bobbins journaled to said frame and located on opposite sides of said vat, pressure-rolls located at or near one extremity of said frame, guide-rolls interposed between said spools or bobbins and coating-roll and one of said guide-rolls supported in vertically-adjustable bearings or journal-boxes and the other of said rolls supported in horizontally-adjustable bearings, and both of said guide-rolls being located outside of said vat, substantially as shown, and for the purposes set forth.

In witness whereof I have hereunto set my signature in the presence of two subscribing witnesses.

MINOR C. KERBAUGH.

Witnesses:
GEO. W. REED,
THOMAS M. SMITH.