Aug. 24, 1926. 1,597,257

A. P. WHITE

FABRICATING MACHINE FOR BUILDING MATERIALS

Filed Oct. 25, 1921 3 Sheets-Sheet 1

Fig. 1.

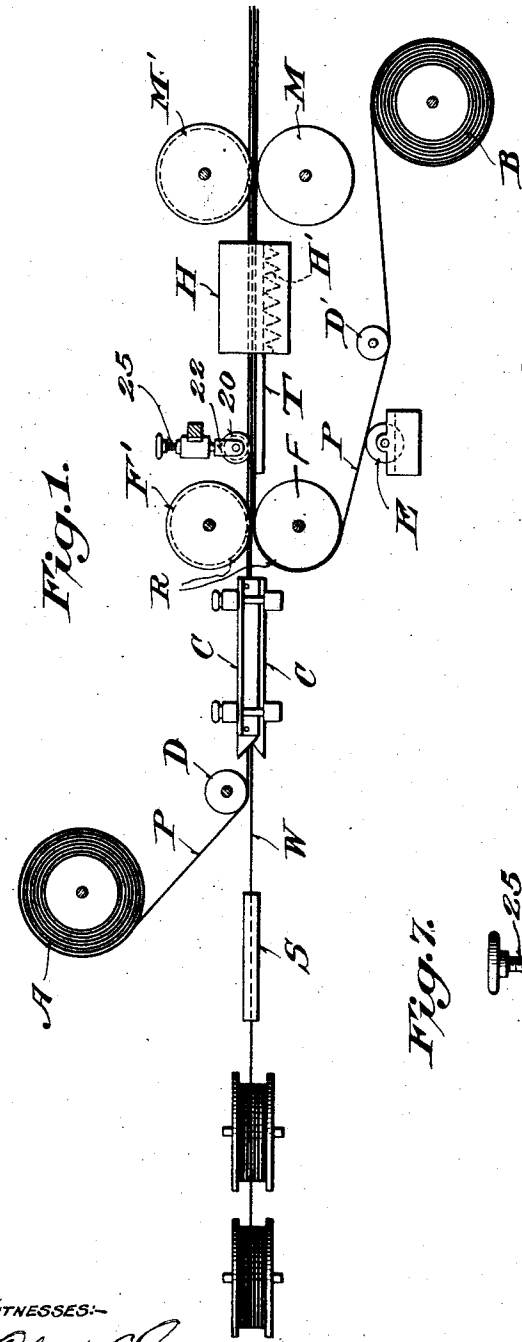


Fig. 8.

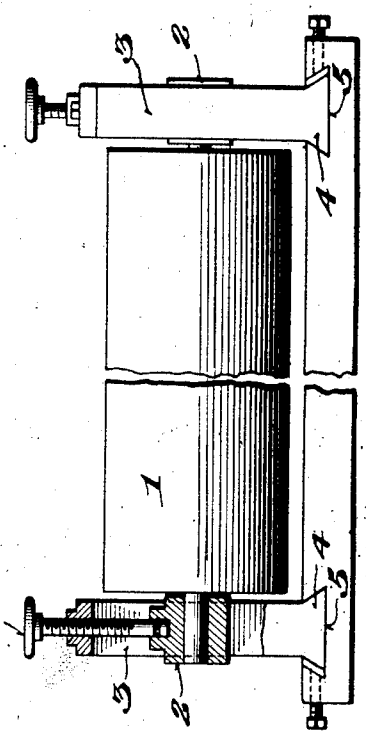
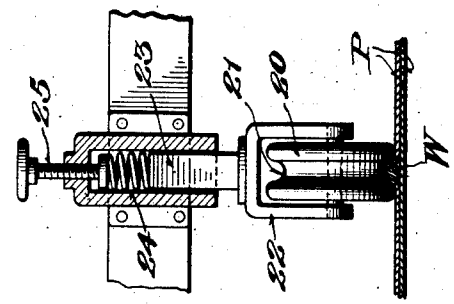


Fig. 7.



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FABRICATING MACHINE FOR BUILDING MATERIALS

Filed Oct. 25, 1921 3 Sheets-Sheet 2

Fig. 2.

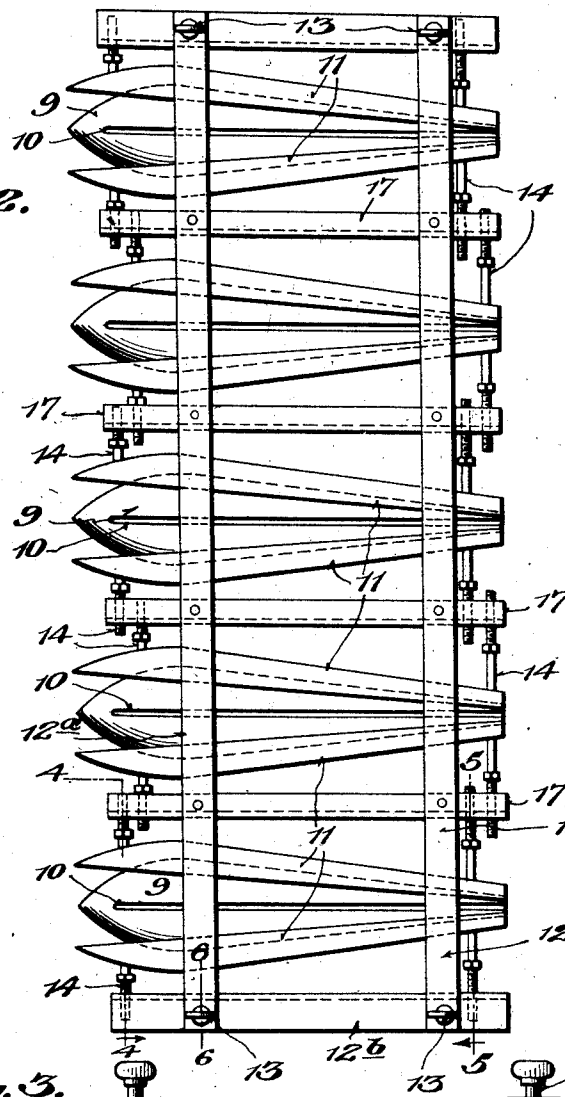
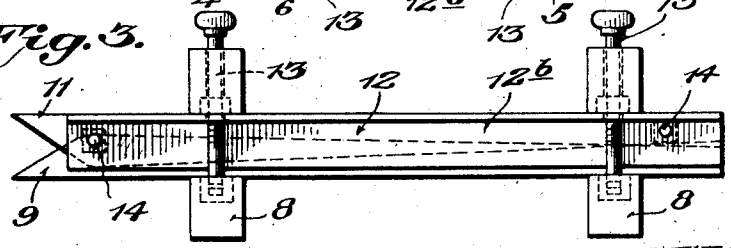


Fig. 3.



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FABRICATING MACHINE FOR BUILDING MATERIALS

Filed Oct. 25, 1921 3 Sheets-Sheet 3

Fig. 4.

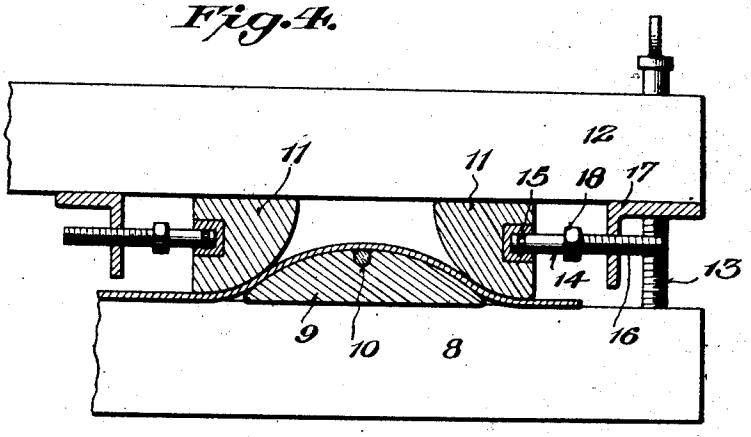


Fig. 5.

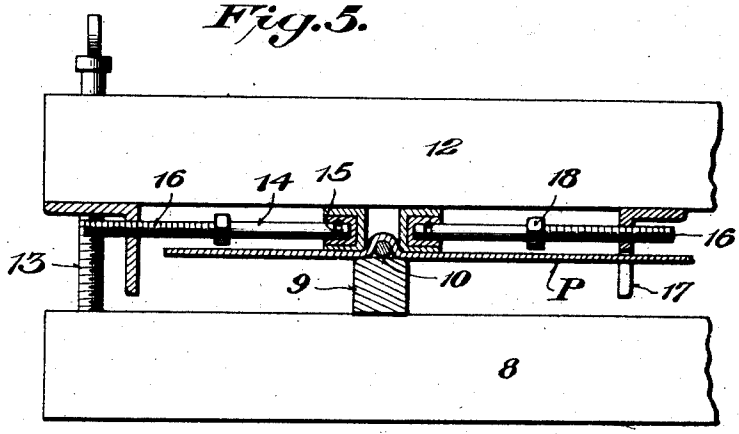
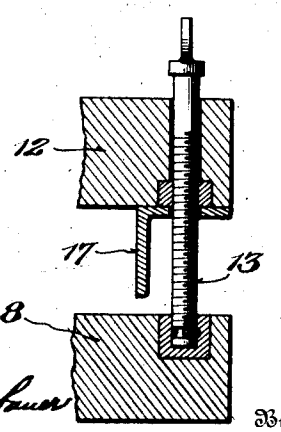


Fig. 6.



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UNITED STATES PATENT OFFICE.

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FABRICATING MACHINE FOR BUILDING MATERIALS.

Application filed October 25, 1921. Serial No. 510,373.

This invention relates to an improvement in machines for fabricating building material of the type having a paper or other fibrous base re-inforced by metal rods or wires embodied therein.

In handling the several parts of the material, particularly the fibrous body sheets and the wires, it is necessary that the different characteristics thereof be reckoned with in order to provide a satisfactory finished product. That is to say, in order to assure proper assembly of the fibrous body sheets and the wire reinforcement in a thoroughly practical and efficient manner, it is necessary to combine these elements correctly and accurately to prevent the slipping of the wire and also relieve the fibrous material from as much tension as possible to prevent rupture. Accordingly, the present invention proposes to provide a novel organization of operating instrumentalities for effectively handling the paper or other fibrous material and the wire so as to render their incorporation into a homogeneous structure entirely practical, and as a result obtaining a uniform and satisfactory product.

Another object is to provide a novel crimping device for the paper or other fibrous material, whose parts are capable of being adjusted to readily permit of the handling of the paper of different grades or thickness, as well as to also permit of the adjustment of the individual crimping passes to insure a uniform tension on the paper as it passes through the crimping device.

A further object of the invention is to provide simple and practical feeding means for effecting the consolidation of the paper and wire as they pass through the machine. To that end it is proposed to uniformly draw the product through the apparatus without undue strain being placed upon the paper, while at the same time providing for thoroughly pressing both the paper and wires together.

A still further object is to provide a novel ironing roll unit for insuring the proper adherence of the paper sheets and the wires.

Although the invention is susceptible of embodiment in various forms a preferred and practical arrangement is shown in the accompanying drawings in which

Figure 1 is a diagrammatic side view of the improved machine.

Figure 2 is a top plan view of the adjustable crimping device.

Figure 3 is an end elevation thereof.

Figure 4 is a cross sectional view taken on the line 4—4 of Figure 2.

Figure 5 is a cross sectional view taken on the line 5—5 of Figure 2.

Figure 6 is a detail vertical sectional view taken on the line 6—6 of Figure 2.

Figure 7 is a detail view of an ironing roll unit.

Figure 8 is a detail elevation of a steering roll unit.

Similar reference characters designate corresponding parts throughout the several figures of the drawings.

The present machine is adapted to fabricate a building material of the so-called paper lath type which includes a paper or other fibrous body sheet having reinforcing rods or wires embodied therein to reinforce and strengthen the same. In producing this material expeditiously in commercial quantities it is desirable to utilize a machine of the general characteristics shown in Figure 1 of the drawings. This machine preferably includes conventional means for supporting the reels carrying the wire W which is first fed into a suitable wire straightener S and thence to the crimping device C where it may be partly enveloped by one of the sheets of the paper P or fibrous material as will presently appear.

The said fibrous material is supplied in any suitable manner, as for example from the supply reels A and B. The paper from the former reel passes into the crimping device C under the guiding influence of the steering roll D, as will hereinafter more fully appear, while the paper from the reel B likewise passes over a steering roll D′ and thence to the paste applying roller E which coats one side of the paper with paste before the uncoated side passes entirely over the periphery of the lower roll F of the consolidating unit R comprising the said roll F and the roll F′.

In connection with the feeding of the paper from the supply reels A and B, respectively to the crimper and lower roll F, it is pointed out that it is important that the paper is properly guided and handled as it leaves the supply reels to prevent the chocking and clogging of the crimper device C, as well as insuring a straight feed to the rolls F and F′ of the consolidating unit R. Accordingly, it is proposed to locate at a suitable point in the reach or run of the paper

from each reel to the crimper, and the pressure rolls, the steering units D and D'. Each steering roll unit preferably includes a guiding roller 1 under which the paper passes, and to enable the roller to be adjusted to perform its guiding function the same is journalled as at 2 in bearing frames 3 having the channel blocks or shoes 4 arranged in the horizontal guide ways 5 disposed at right angles to the axis of the roller. This mounting of the frames permits the roller to be shifted backward or forward in the path of travel of the paper, while the bearing 2 of the steering roll unit is vertically adjustable through the medium of the adjusting screw 7 to permit of a vertical shifting of the rolls when desired.

Referring now to the crimping device C through which the paper from the supply reel A passes to be pressed over and about the wires W, it will be observed from Figures 2 and 3 of the drawings that the said crimping device, includes a bed frame 8, carrying therewith the arched former blocks 9 having the grooves 10 therein to receive the wires W. Above the said former blocks are the depressing ribs 11 which cooperate therewith to form a crimping pass for the paper and also hold said paper over and about the wires W. These ribs 11 are all preferably carried by a suitable frame 12 consisting of the side bars 12^a and end bars 12^b, and which is adjustable vertically as a unit with reference to the bed 8 through the medium of adjusting screws 13 or the like, whereby the entire frame may be raised or lowered to provide greater or less clearance between the underside of the depressing ribs and the upper side of the former blocks, thereby making a vertical pass adjustment.

It will also be seen from Figures 4 and 5 that the depressing ribs 11 may be shifted or adjusted horizontally since they are carried by the adjustable supports or screws 14 which are swiveled in the ribs as at 15, and have a threaded supporting engagement as at 16 with the angle part 17 of the frame 12. By manipulating the screws 14 through the medium of the nut portion 18, it will be apparent that the ribs 11 may be shifted horizontally so as to accurately gauge and adjust the pass channel for the paper sheet. The vertical and horizontal adjusting means provided for the frame and depressing ribs of the crimping unit are an important and necessary part of the device because they enable the paper to be accurately handled without breaking, as it is turned and bound about the wire.

After the upper sheet of paper has been crimped and formed about one side of the wires, the paper and wire passes from the crimping device to the rolls F and F' of the consolidating unit R, where the two sheets are united with the wire between them. After leaving the consolidating unit R the paper and wire passes to the drawing rolls M and M' which may be geared with the rolls F and F', but if so geared are slightly larger in diameter whereby they have a faster peripheral speed than the rolls F and F' which is the equivalent, in effect, of the rolls M and M' being geared to move at a higher rate of speed. The result of this arrangement is that the rolls M and M' constitute drawing rolls while the rolls F and F' are in effect idlers, since they impose no tension on the paper and wires but simply act to consolidate the paper and wire. That is to say, as the two paper sheets and wires pass through the rolls F and F' they are drawn by the action of the rolls M and M' which move slightly faster than F and F', whereby the action of the latter rolls is simply to press together the sheets and wire while the action of M and M' is to draw on the consolidated elements. However, the said rolls M and M' do not draw until the paper sheets and wire have been consolidated into a sheet unit so that the tensile strength of the drawing operation is directed to a strong sheet substance which will readily stand the strain. Otherwise, the drawing would be exerted on the individual wires and sheets thus imposing the necessity of exerting exactly the same force on each wire and each sheet. While it may be possible to direct exactly the same force it is not possible to provide for slippage and stretching.

Until the rolls M and M' get into action there is little or no pulling, and therefore it is desirable to pull the consolidated portion by hand until there is enough material through the rolls F and F' to permit the blank to be inserted between the rolls M and M'. It has been found that good results are produced by causing the rolls M and M' to draw fourteen feet one inch, while the normal movement of the blank through the rolls F and F' is only fourteen feet. That is to say, the tension in the rolls M and M' is one inch in fourteen feet, this tension distinguishing the normal operation of the two sets of rolls, and making rolls M and M' pullers, and rolls F and F' formers.

Between the consolidating rolls and the drawing rolls the assembled blank passes over the platform or table T which constitutes a bed or base against which the resiliently mounted ironing rollers 20 of the ironing roll units 1 operate to further assist in pressing the paper and wires together. As will be seen from Figure 7 the ironing roll unit may include the said ironing roller 20 which has a central groove or channel 21 for receiving the rib in the blank formed by the wire or rod incorporated therein. The said roller 20 is preferably caried by the frame 22 having a shank portion 23 adapted

to fit in a socket containing a spring 24 whose tension may be varied by means of the hand wheel 25 or the like. Although the ironing rolls 20 are shown as located directly behind the consolidating rolls F and F', they may be located at any convenient point over which the blank passes. It will of course be understood that the operation of this machine will be facilitated if the blank be passed through a tunnel H heated by a steam coil H' or other method of heating for the purpose of expediting the setting of the adhesive used. Ironing rolls may be placed in a hot chamber to cause the surface of the product to be uniform, especially where the paper passes around the wires. This hot chamber may be located before or after the drawing rolls M and M'.

It will also be understood that if very thin wires or heavy paper of an elastic nature be used, that is paper capable of being stretched, this organization may be used without the crimping device as the essential function of the crimping device is to form the paper into grooves to surround the wires so that the paper will not be broken in its passage through the consolidating rolls F and F'. It will thus be seen that the function of the rolls M and M' is a very important one, as has been previously explained.

Without further description it is thought that the features and advantages of the invention will be readily apparent, particularly those features directed to adjustments which permit of the accurate and safe handling of the fibrous sheets. And, although certain preferred and practical forms of devices have been shown in the present case, it will of course be understood that changes in the form, proportion, and minor details of construction may be resorted to without departing from the spirit of the invention or scope of the appended claims.

I claim:

1. A machine for fabricating building material including a sheet crimping device, means for directing a fibrous sheet and reinforcing wires through the crimping device, a consolidating unit arranged to receive the crimped sheets and wires from the crimping device, and means for directing a second fibrous sheet to the consolidating unit.

2. A machine for fabricating building material including a crimping device having passes converging toward the exit end, means for feeding a fibrous body sheet and wires to the crimping device and means beyond the exit end of the crimping device for consolidating the fibrous sheet and wires.

3. A machine for fabricating building material comprising a crimping device having passes converging toward the exit end, means for causing a fibrous body sheet to pass through the crimping device producing grooves therein, and means for feeding wires through the crimping device and positioning them in the grooves of the body sheet.

4. In a machine for fabricating building material, a crimping device, means for drawing a fibrous body sheet and wires through the crimping device, and means for consolidating the wires and body sheet, the said drawing means being arranged to apply the drawing force to the body sheet after the wires have been consolidated therewith.

5. In a machine of the class described, the combination with means for moving a body sheet and reinforcement therefor, of a crimping device consisting of an arched former block and a pair of depressing elements arranged at opposite sides of the block in spaced relation thereto forming an arched crimping pass, and means for adjusting the size of the pass formed by said block and depressing elements.

6. In a machine of the class described, the combination with means for moving a body sheet and reinforcement therefor, of a crimping device consisting of an arched former block having a wire holding and guiding groove therein and a pair of depressing ribs arranged respectively at opposite sides of the block in spaced relation therewith forming an arched crimping pass, and means for effecting relatively vertical and lateral adjustment of the former block and depressing ribs.

7. In a machine of the class described, the combination with means for moving a body sheet and reinforcement therefor, of a crimping device consisting of an arched former block and a pair of depressing elements arranged at opposite sides of the block in spaced relation thereto and converging therewith toward the exit end of the crimper, and means for effecting relatively vertical and lateral adjustment of said block and depressing elements.

8. In a machine of the class described, the combination with means for moving a body sheet and reinforcement therefor, of a crimping device consisting of an arched former block having a wire holding and guiding groove therein and a pair of converging depressing ribs arranged respectively at opposite sides of the block in spaced relation thereto forming an arched and tapered crimping pass, and means for effecting relatively vertical adjustment of the said block and said ribs.

9. A machine of the class described including a sheet crimping device comprising a plurality of crimping units each of which units is provided with an arched and tapering crimping pass for the body sheet and with a wire guide and means for adjusting the size of said pass.

10. A machine of the class described including a sheet crimping device, a consoli-

dating unit, means for directing a fibrous sheet and reinforcing wires through the crimping device, means for directing a second fibrous sheet to the consolidating unit to thereby consolidate it with the other sheet and said wires, and means for causing a uniform drawing of the product through and from the consolidating unit, said means consisting of feeding rolls having a greater peripheral speed than the elements of the consolidating unit.

11. A machine of the class described including a sheet crimping device, a consolidating unit, means for directing a fibrous sheet and reinforcing wires through the crimping device, means for directing a second fibrous sheet to the consolidating unit to thereby consolidate it with the other sheet and said wires, means for causing a uniform movement of the product through and from the consolidating unit, and auxiliary pressure means arranged between the consolidating unit and the means for causing movement.

12. A machine of the class described including a sheet crimping device, a consolidating unit, means for directing a fibrous sheet and reinforcing wires through the crimping device, means for directing a second fibrous sheet to the consolidating unit to thereby consolidate it with the other sheet and said wires, feeding means for causing a uniform drawing of the product through and from the consolidating unit, a table surface between the feeding means and the consolidating unit, and resiliently mounted rollers cooperating with the table surface and constituting auxiliary pressure means for pressing the fibrous sheets together about the wires.

13. A machine of the class described, including a sheet crimping device, means for feeding a body sheet to the crimping device, wire feeding means, a wire straightener arranged to deliver the wires directly to the crimping device and drawing means arranged to apply the drawing force to the consolidated material.

14. In a machine of the class described including a crimping device, a consolidating unit, means for feeding the crimped fibre sheets and wire to said consolidating unit, and means for drawing the consolidated elements through the consolidating unit.

15. In a machine of the class described including a crimping device a consolidating roll-unit, means for feeding the crimped fibre sheets and wire to the consolidating unit, a roll unit for engaging with the consolidated elements passing through the consolidating unit to cause the same to be drawn therethrough.

16. In a machine of the class described including a crimping device, a consolidating roll-unit, means for feeding the crimped fibre sheets and wire to the consolidating unit, a roll unit for engaging with the consolidating element passing through the consolidating unit to cause the same to move therethrough and heating means for the consolidated sheet.

In testimony whereof I hereunto affix my signature.

ALEXANDER P. WHITE.