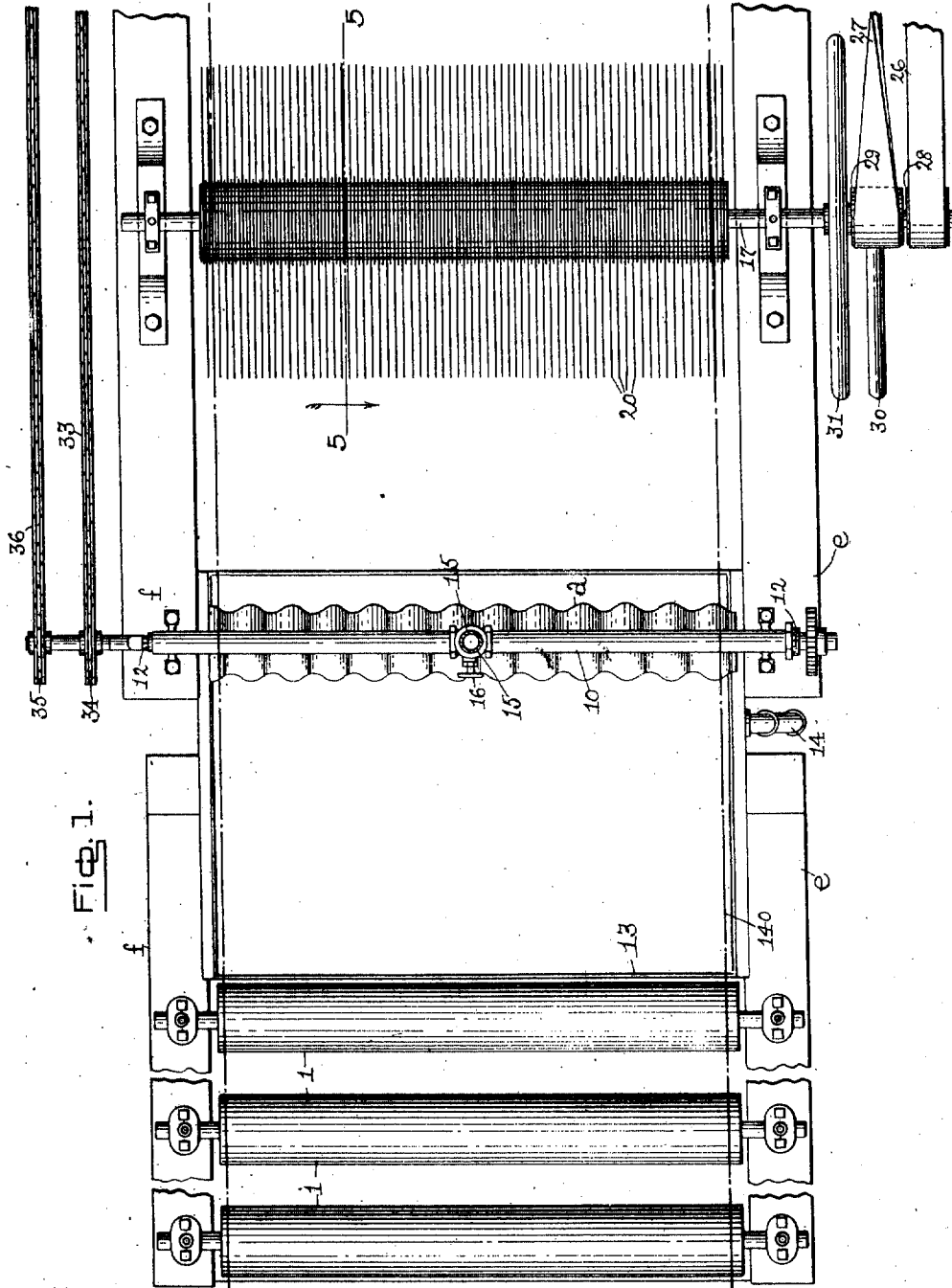


E. T. NEWSOME.  
 APPARATUS FOR FINISHING THE SURFACES OF FIBROUS LAYERS.  
 APPLICATION FILED DEC. 29, 1910.

1,002,302.

Patented Sept. 5, 1911.

4 SHEETS-SHEET 1.



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4 SHEETS—SHEET 2.

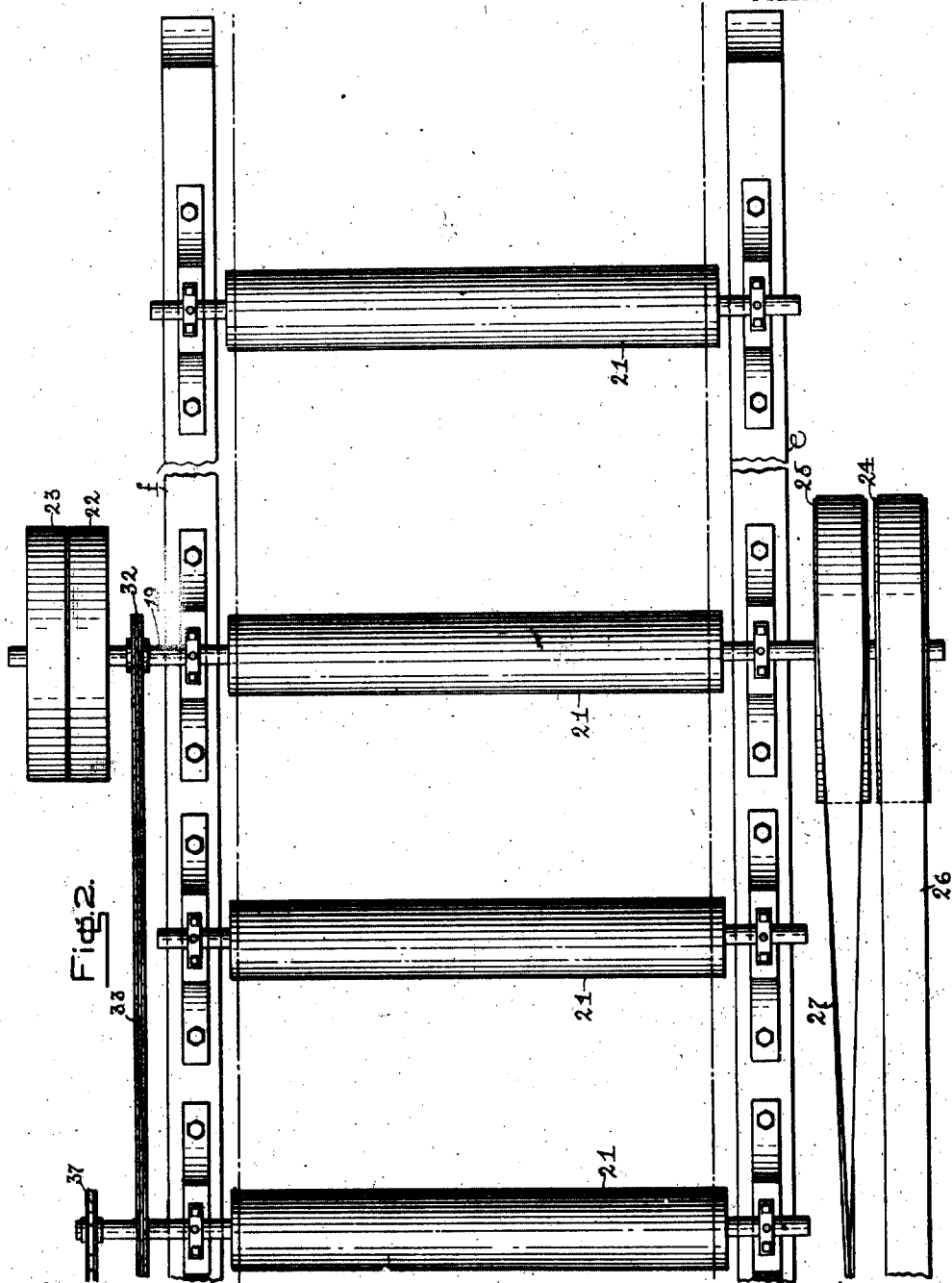


Fig. 2.

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4 SHEETS—SHEET 3.

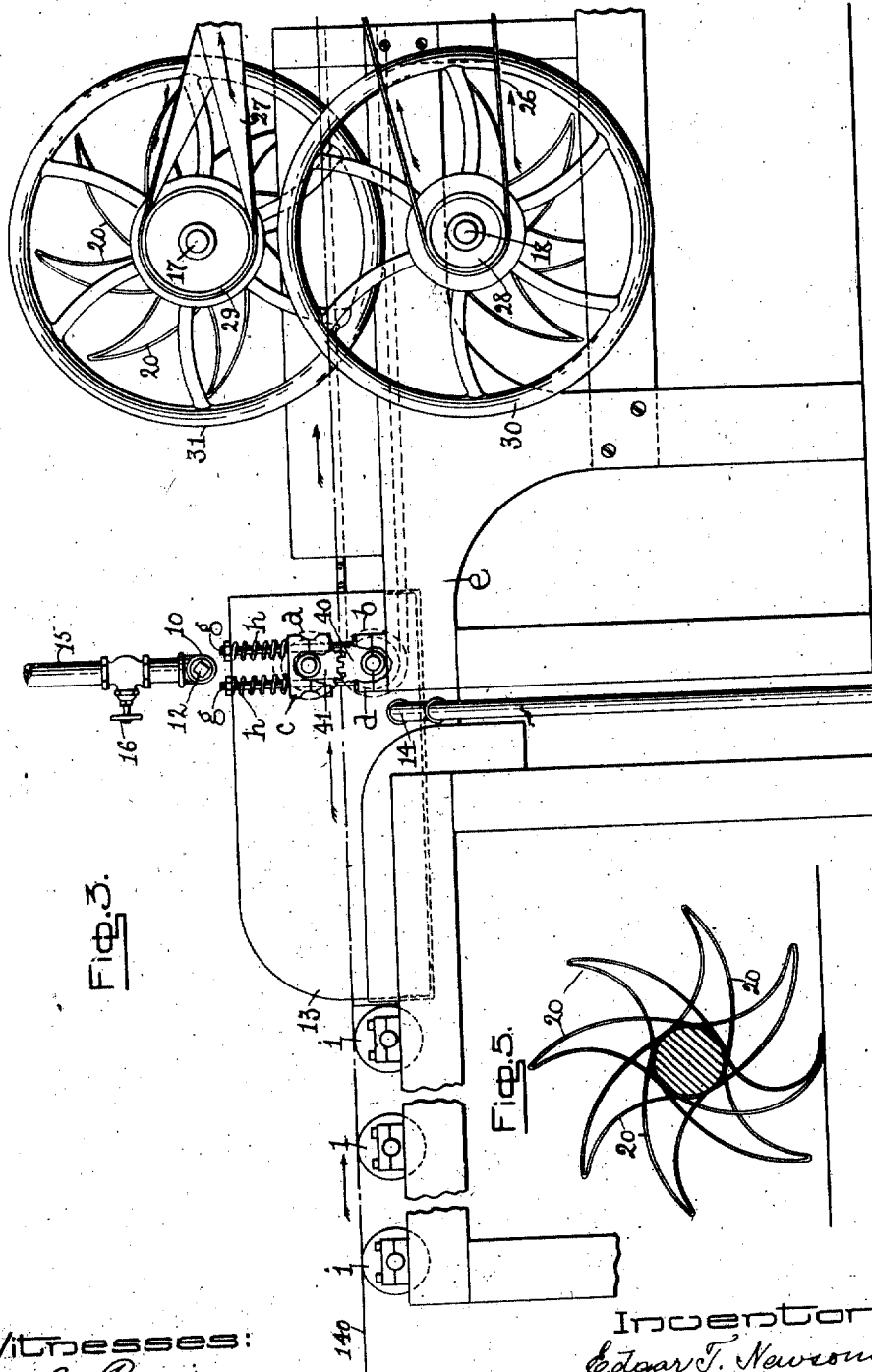


FIG. 3.

FIG. 5.

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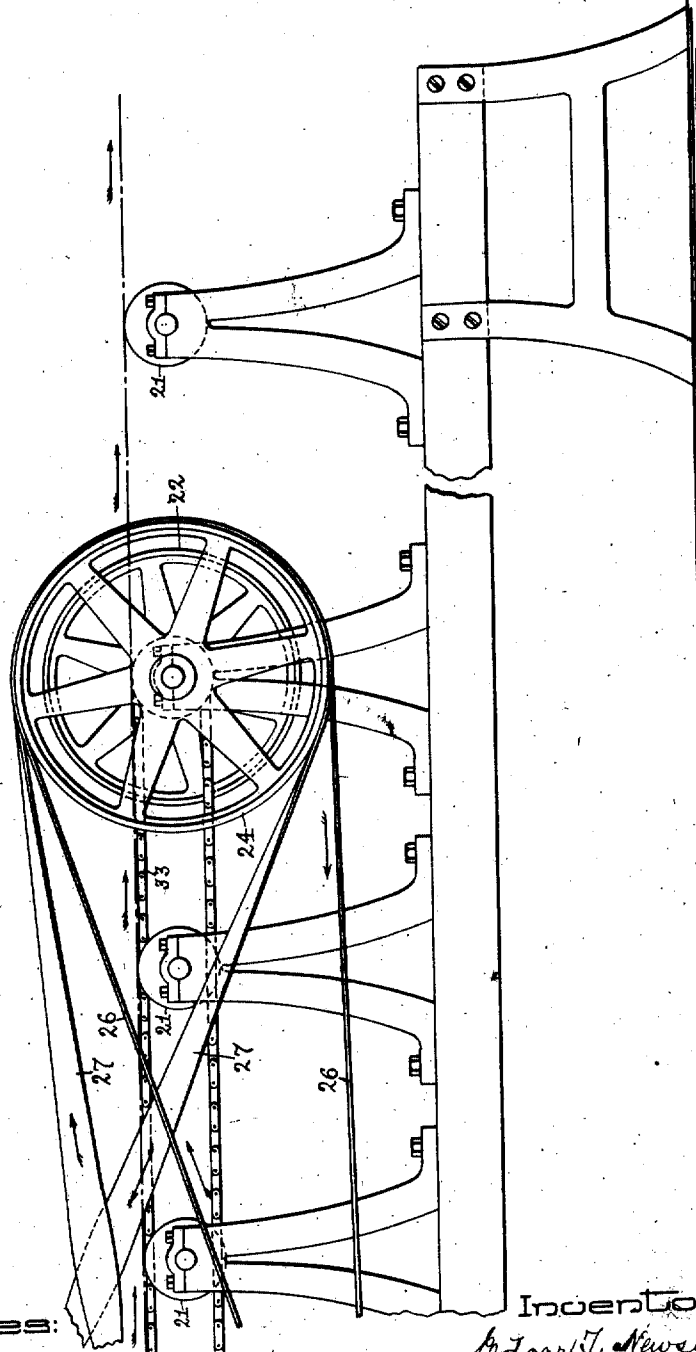
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4 SHEETS—SHEET 4.

Fig. 4.



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# UNITED STATES PATENT OFFICE.

EDGAR T. NEWSOME, OF BOSTON, MASSACHUSETTS, ASSIGNOR TO ASBESTOS PROTECTED METAL COMPANY, OF CANTON, MASSACHUSETTS, A CORPORATION OF MASSACHUSETTS.

APPARATUS FOR FINISHING THE SURFACES OF FIBROUS LAYERS.

1,002,302.

Specification of Letters Patent.

Patented Sept. 5, 1911.

Application filed December 29, 1910. Serial No. 599,894.

To all whom it may concern:

Be it known that I, EDGAR THOMAS NEWSOME, a citizen of the United States, residing in Boston, county of Suffolk, and State of Massachusetts, have invented an Improvement in Apparatus for Finishing the Surfaces of Fibrous Layers, of which the following description, in connection with the accompanying drawings, is a specification, like letters on the drawings representing like parts.

This invention relates to apparatus for finishing the exterior surfaces of a fibrous layer, and is especially designed and adapted for imparting smooth, compact and firm external surfaces to protected metal sheets comprising a metal sheet or body and layers of asbestos, mineral wool or other fibrous material cemented thereto. To this end, the apparatus is provided with a plurality of beater rolls having flexible members secured to them, and between which the protected metal sheet is fed. Provision is made for applying a finishing liquid or composition to the protecting layers as the sheet is fed through the apparatus. These and other features of this invention will be pointed out in the claims at the end of this specification.

Figures 1 and 2, are plan views to be read together of an apparatus embodying this invention. Figs. 3 and 4, side elevations to be read together of the apparatus shown in Figs. 1 and 2, and Fig. 5, a detail to be referred to.

Referring to the drawings, *a, b*, represent a pair of feed rolls journaled respectively in movable and fixed bearings *c, d*, the fixed bearings being supported upon side frames *e, f*, of the apparatus and the movable bearings being mounted to slide on vertical rods *g*, erected upon the stationary bearings and normally pressed downward by helical springs *h* encircling said rods.

In front of the feed rolls are a series of rolls *i* herein shown as three in number, which are supported by the side frames *e, f*, of the apparatus and serve to support the fibrous covered metal sheet as it is pushed or fed by the operator into engagement with the feed rolls *a, b*, which in the present instance, are shown as corrugated to fit corrugated protected metal sheets, but which may be plain or smooth or of other shape to

engage plain or other shaped protected metal sheets. Above the feed rolls *a, b*, is arranged a pipe 10 for supplying a coating or finishing liquid composition, with which the fibrous layers of asbestos, mineral wool or like non-combustible material may be well moistened, said pipe being closed at its ends by suitable plugs 12 and provided on its underside with perforations (not shown), through which the finishing liquid may be discharged upon the upper roll *a* and upon the upper surface of the protected metal sheet, as the latter is fed through the rolls *a, b*, and into the trough when the protected metal sheets are not passing through the feed rolls. The lower roll *b* may revolve in a suitable pan, trough or receptacle 13 in which the finishing liquid accumulates and rises to the level of an overflow pipe 14, which is of sufficient height to insure the lower feed roll *b* being immersed in the finishing liquid, which is applied to the layer of the asbestos cemented to the lower side of the metal sheet by the roll *b*. The perforated pipe 10 is connected with a suitable source of supply for the finishing liquid by a pipe 15 provided with a shut-off valve 16. The feed rolls *a, b*, have cooperating with them a pair of beaters by which the moistened fibrous layers are hammered or beaten so as to render them smooth, compact and firm. The beaters referred to, are preferably made as herein shown and consists of a pair of rolls or shafts 17, 18, having affixed thereto a large number of flexible devices or members, which for the best results are loops of strings, cords, leather, etc. The shafts of the beater rolls are suitably journaled in the side frames of the apparatus above and below the path of movement of the protected metal sheet and at a suitable distance therefrom, so that the flexible members may be caused to strike or whip the upper and lower surfaces of the sheet with sharp, hard blows. Beyond the rotary beaters, the side frames *e, f*, support a plurality of delivery rolls 21, which are designed to receive and support the protected metal sheet after it has passed between the beaters.

In the present instance, the delivery rolls are shown as four in number and two are positively driven, one of said rolls being employed as the main or driving shaft for

the apparatus, it having its shaft 19 provided with fast and loose pulleys 22, 23, at one end, and with two fast pulleys 24, 25 at its opposite end. The pulleys 24, 25, are 5 connected by straight and cross belts 26, 27, with pulleys 28, 29, on the beater shafts 18, 17, which are provided with fly wheels 30, 31. The driving shaft 19 is also provided with a sprocket wheel 32, which is connected by 10 a link chain 33, with a sprocket wheel 34 on the shaft of the delivery roll *b*, which shaft is provided with a second sprocket wheel 35, which is connected by link chain 36 to sprocket wheel 37 on the feed roll 21 nearest 15 to the beater. The upper feed roll *a* is driven from the lower feed roll *b* by the gears 40, 41. The pulleys 28, 29, are substantially small so that the beater rolls may be rotated at a high speed.

20 In operation with the apparatus herein shown, the protected metal sheet, indicated by the line 140, is placed by the operator upon the supporting rolls *i*, Fig. 3, and pushed by him into engagement with the 25 feed rolls *a*, *b*, which in turn feed the sheet between the rotatable beaters and onto the delivery rolls 21, which carry the finished sheet toward the outlet end of the apparatus and into position to be grasped by an operator 30 at that end, who removes the finished sheet from the machine. The protecting layers of asbestos or like fibrous material are moistened with the finishing liquid on its 35 fibrous material thus moistened is whipped or struck by the flexible members of the rapidly revolving rotary beaters as the protected sheet is fed between them. The flexible 40 members serve to drive the finishing liquid into the fibrous material and also to compact the fibers and impart a smooth, firm and relatively hard surface to the fibrous layers, which not only serves to render the fibrous 45 appearance to the same. The loops of string 20 are arranged along the beater roll in close proximity to one another after the manner represented in Fig. 1.

I have herein shown one form of apparatus, which I may prefer, but I do not desire 50 to limit the invention to the particular construction shown.

#### Claims.

1. In an apparatus of the character described, in combination, a plurality of beater 55 rolls, each provided with flexible members arranged in close proximity to one another and having free ends, said rolls being separated for the passage between them of a metal sheet having fibrous layers cemented 60 thereto, and said flexible members being of

a length greater than the distance from its roll to the path of movement of said sheet, means to rotate said members to cause the flexible members to whip or lash the fibrous 65 layers, feed rolls to feed the said metal sheet to the beaters, means to rotate said feed rolls, and means to supply liquid to the fibrous layers previous to their being beaten, substantially as described. 70

2. In an apparatus of the character described, in combination, a plurality of substantially horizontal beater rolls arranged in a substantially vertical plane and separated 75 for the passage between them of a metal sheet having fibrous layers cemented thereto, said rolls being provided with flexible members arranged in close proximity to one another and having free ends, means to rotate said beater rolls to cause the flexible members to 80 whip or lash the fibrous layers, a liquid-containing receptacle arranged in a substantially horizontal plane passing between said beater rolls, a lower feed roll located in said receptacle and immersed in the liquid there- 85 in to take up the latter and apply it to the fibrous layer on the lower surface of said metal sheet, an upper feed roll located above the lower feed roll, a perforated pipe located above the upper feed roll to supply 90 liquid to the upper feed roll and thereby to the fibrous layer on the upper surface of said metal sheet, substantially as described.

3. In an apparatus of the character described, in combination, a plurality of substantially horizontal beater rolls arranged in a substantially vertical plane and separated 95 for the passage between them of a metal sheet having fibrous layers cemented thereto, said rolls being provided with flexible 100 members arranged in close proximity to one another and having free ends, means to rotate said beater rolls to cause the flexible members to whip or lash the fibrous layers, a liquid-containing receptacle arranged in a 105 substantially horizontal plane passing between said beater rolls, a lower feed roll located in said receptacle and immersed in the liquid therein to take up the latter and 110 apply it to the fibrous layer on the lower surface of said metal sheet, an upper feed roll located above the lower feed roll, and means to supply liquid to the fibrous layer on the upper surface of said metal sheet, substantially as described. 115

In testimony whereof, I have signed my name to this specification in the presence of two subscribing witnesses.

EDGAR T. NEWSOME.

Witnesses:

JAS. H. CHURCHILL,  
J. MURPHY.