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PROCESS FOR THE MANUFACTURE OF CONTINUOUS SHEETS OR CORRUGATED PLATES OF ASBESTOS CEMENT WITH INSERTION OR INSERTIONS OF IRON WIRE NETTING

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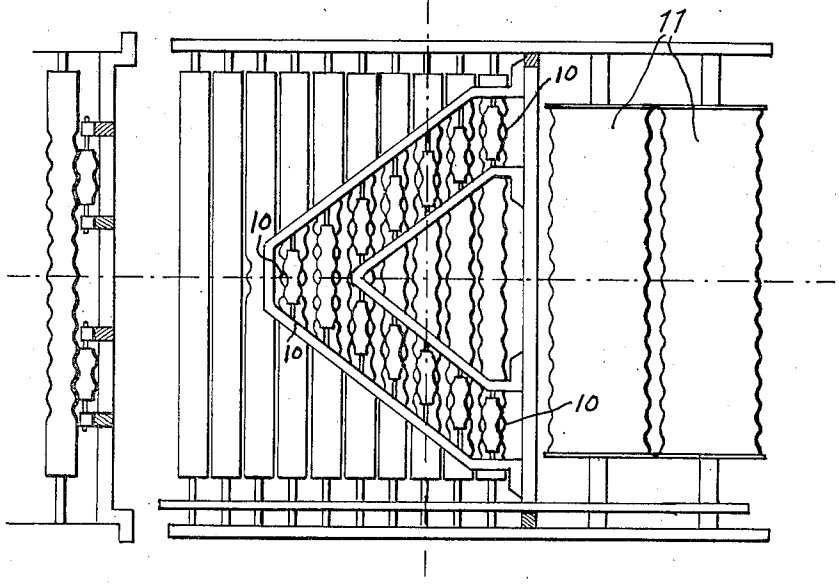


Fig. 2.

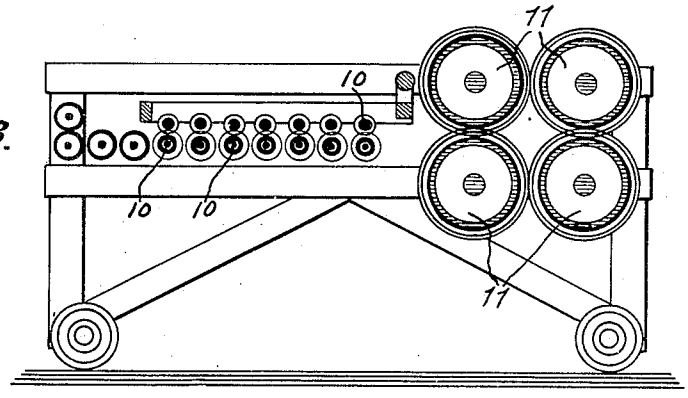


Fig. 3.

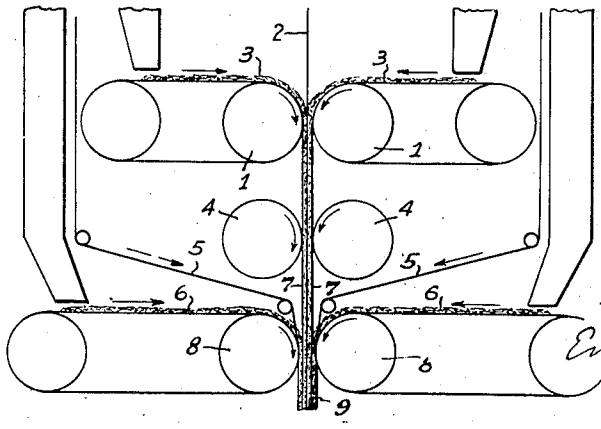


Fig. 1.

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UNITED STATES PATENT OFFICE

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PROCESS FOR THE MANUFACTURE OF CONTINUOUS SHEETS OR CORRUGATED PLATES OF ASBESTOS CEMENT WITH INSERTION OR INSERTIONS OF IRON WIRE NETTING

Application filed August 14, 1929, Serial No. 385,930, and in the Netherlands and Germany May 16, 1929.

Processes are known whereby both sides of an insertion of jute, cloth or wire are coated with a mixture of asbestos, zinc-oxide, cement and a solution of glue, and the sheets thus obtained are freed from liquid substances by pressure and are then dried.

This process, however, has not proved a success in practice, because the composition of the mixture is, in consequence of the use of zinc-oxide and of the large quantity of asbestos much too expensive and also because the application of the mixture to the inserted material is difficult and very slow. Moreover it is very often the case that the inserted material rises to the surface of the thin mixture and is consequently not properly covered by the asbestos cement mixture, whilst at the same time the addition of the mass to the inserted reinforcement is very imperfect. These are some of the causes why this process is not in practical use. Finally it must be pointed out that the so-called circular sieve and joggling machines which are employed for the manufacture of the usual asbestos cement plates or sheets without insertions are absolutely unsuitable for the manufacture of such sheets or plates with iron wire insertions.

According to the present invention which eliminates the above mentioned defects the cement and asbestos are mixed together with water in certain proportions with or without an admixture of colouring matter to a thick paste, which paste is applied to both sides of an iron wire netting or gauze. The netting or gauze is then passed centrally between one or more pairs of rollers arranged in sequence, whereby the paste is pressed through and around the meshes of the wire netting by means of rollers spaced at a distance from one another, the excess water being then removed by means of one or more pairs of rollers, whereupon the continuous sheet of asbestos cement is rolled or pressed out to the desired thickness. After the termination of this process further layers of iron wire netting may be applied to both sides of the asbestos cement sheet as previously manufactured, these new layers of netting being again embedded in asbestos cement, whereupon the excess water is removed by pressing. The process may if required be repeated several times. Finally before the asbestos cement sheet is quite dry it may be passed between pairs of corrugated or fluted rollers, arranged in point form, in such a manner that in the first instance two corrugations are formed in the middle of the sheet whereupon further corrugations are rolled on either side of the middle into the asbestos cement sheet which has in the meantime been cut off, so that the plate or sheet is progressively corrugated throughout the whole width.

The asbestos cement sheet containing an iron netting insertion or insertions is thus manufactured in a continuous endless band, which can be cut into sheets of any desired length.

For the purpose of explaining the process according to the invention more clearly, reference is made to the attached drawing in which Fig. 1 is a diagrammatic view showing the operations for the manufacture of continuous asbestos cement sheet with a reinforcing iron wire netting insertion or insertions and Figs. 2 and 3 schematically illustrate the manufacturing process for corrugated plates or sheets.

The process consists in mixing together cement and asbestos, preferably asbestos of short fibres in a proportion say 7:1 with sufficient water to make a thick paste. If it is desired to produce coloured sheets or plates then the desired colouring matter is worked into and thoroughly mixed with this paste. This asbestos cement plate, which contains comparatively little water is then applied to both sides of a continuous band or web of iron netting 2, this iron wire net-

ting sheet is passed in its vertical position smoothly and centrally between two or more pairs of rolls 1 arranged one behind the other, the rolls being arranged at same distance from one another. The rolls 1 are provided with vertically projecting edges whilst the surfaces of the rolls are preferably made of metal gauze, for the purpose of enabling the water to escape through the meshes of this gauze surface. The asbestos cement mass 3 is pressed by means of the rolls between, through and around the meshes of the iron wire netting 2 and it consequently encloses the meshes completely. A second pair of rolls 4, which is preferably designed and constructed similarly to the pair of rolls 1, forces the excess water out of the mass and at the same time rolls the continuous asbestos cement sheet to the desired thickness. If it is required, several pairs of rollers 4 may be provided.

If it is desired to manufacture continuous asbestos cement sheets with several insertions of iron wire netting, the iron wire netting bands 5 are applied again to both sides of the asbestos cement band or sheet 7 already produced and these new insertions are again coated with asbestos cement paste 6. The continuous asbestos cement sheet 7 originally manufactured together with the iron wire netting sheets 5 applied to both its sides with their respective asbestos coatings 6 are then passed between one or more pairs of rollers 8.

For the purpose of forcing the water out of the outer coatings and also for the purpose of rolling the continuous sheet 9 to the desired thickness it is passed through one or more further pairs of rolls.

If this process is continued further continuous asbestos cement sheets with any desired number of reinforcing wire insertions can be produced, and they may be, according to the invention, whether the paste 1 was mixed with colouring matter or not, either all of one colour or of one colour on one side and of another colour on the other side, or they may be left in their natural colour.

If corrugated plates are required, then the continuous asbestos sheet 9 is before it is quite dry passed between pairs of fluted rolls 10 arranged in pointed form, in such a manner, that in the first instance two corrugations are rolled into the middle of the continuous sheet, and thereafter other corrugations are rolled into the continuous sheet on either side of the previously formed corrugations and so on until the sheet is corrugated throughout its whole width. Finally the corrugated plates or sheets may be passed through between one or more pairs of fluted rolls so as to accentuate the shape of the corrugations.

When the continuous sheet 9 is clamped or held by the first pair of rolls 10 it is cut off to the desired length.

The continuous asbestos cement sheet or the corrugated asbestos cement plates may after they have been scored be bent to any angle, while after the score has been filled the thickness of the sheet or plate remains the same as it was before. The corrugations formed in the plate remain in it even after it has been cut off, as the wire netting acquires the corrugated shape imparted to the plate.

As the process according to the invention is a continuous one the manufacture proceeds rapidly, and consequently the manufacturing costs are low, while the plastic mass remains in a good condition because of its quick application.

The lateral edges of the continuous sheet stand accurately at right angles to the plane of the sheet. The sheet has therefore no water edges as in the case with the hitherto known asbestos cement plates or wire insertion. The two sides of the sheet are perfectly smooth, as the mass is moulded by means of rolls and as no felt bedding is used in the manufacturing process.

It is self-evident that the asbestos cement plates or sheets with iron wire netting can be used for numerous purposes, especially in such cases where the usual asbestos cement plates without any wire reinforcement are useless because they do not possess sufficient carrying capacity or tensile strength.

I claim as my invention:

1. A process for the manufacture of continuous sheets and corrugated plates of asbestos cement with the reinforcement of iron wire netting, consisting in the mixing of cement and asbestos in a certain proportion together with water and coloring matter to a thick paste, applying this paste to both sides of an iron wire netting, pressing the paste and netting a plurality of times by water permeable means to force the paste against, through and around the meshes of the iron netting and to remove the excess water, rolling the sheet to the desired thickness, drying the sheet to nearly complete dryness, corrugating the sheets by first rolling two corrugations into the middle of the sheet and then other corrugations on either side of the middle of the asbestos cement sheet in such a manner that the plate is corrugated progressively throughout its whole width, and cutting the sheets into desired lengths.

2. A process for the manufacture of continuous sheets and corrugated plates of asbestos cement with the reinforcement of iron wire netting, consisting in the mixing of cement and asbestos in a certain proportion together with water and coloring matter to a thick paste, applying this paste to both sides of an iron wire netting, pressing the paste and netting a plurality of times by water permeable means to force the paste against, through and around the meshes of the iron

netting and to remove the excess water, applying more iron wire netting to both sides of the previously manufactured continuous asbestos cement sheet, applying asbestos cement to said netting as before, pressing said cement to remove excess water, rolling the sheet of asbestos cement to the desired thickness, drying the sheet to nearly complete dryness, corrugating the sheet by first rolling two corrugations into the middle of the sheet and then other corrugations on either side of the middle of the asbestos cement sheet in such a manner that the plate is corrugated progressively throughout its whole width, and cutting off the sheets to desired lengths.

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