

Nov. 18, 1924.

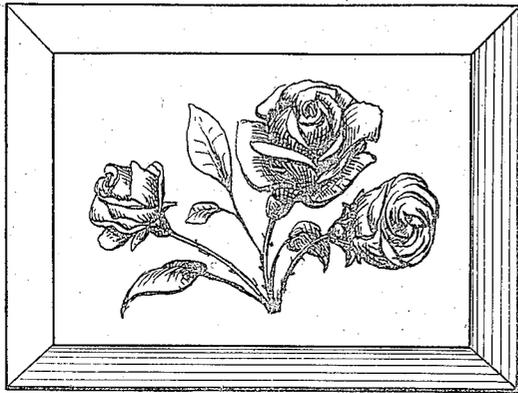
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1,516,045

BUILDING ELEMENT

Filed Jan. 22, 1924

Fig. 1



I-I

Fig. 2



Fig. 3

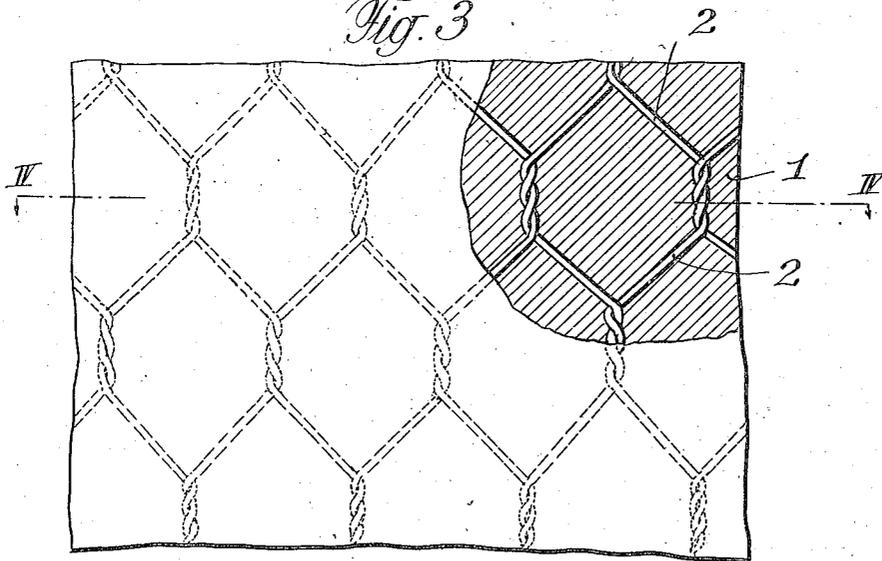
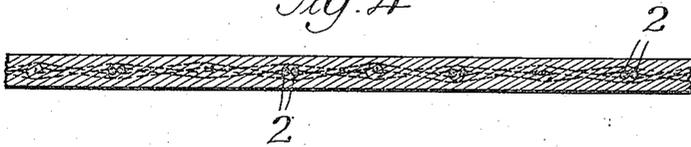


Fig. 4



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UNITED STATES PATENT OFFICE.

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BUILDING ELEMENT.

Application filed January 22, 1924. Serial No. 687,873.

To all whom it may concern:

Be it known that I, HEINRICH KOLLBRUNNER, a citizen of the Republic of Switzerland, residing at Rapperswil, Switzerland, have invented certain new and useful Improvements in Building Elements, of which the following is a specification, reference being had therein to the accompanying drawing.

The subject matter of the present invention is a building element consisting of compressed card board and a method for manufacturing same.

The building element according to the invention consists of a mixture of paper mass, asbestos, stones ground to powder, animal or vegetable glue or a similar substance, and, if desired, a colouring matter, which after binding or setting and drying is pressed, impregnated and subjected to an intense heat, and the product thus obtained is a building element which maintains its form, which is heat resisting and durable, and possesses a high mechanical strength, so that it is very suitable for building and constructional purposes.

The method according to the present invention consists in forming a mixture of paper mass, asbestos, stones in powder form, animal or vegetable glue, or a similar substance and a colouring matter, if required, permitting said mixture to bind and subjecting it thereafter to a pressure to give it a desired shape: then the element is impregnated and subjected to the action of a high temperature for effecting a thorough drying. If the element is made in tile or slab shape to one side of such a tile a polishing medium may be applied so that the elements may be utilized as coverings for walls, and floors in the manner of Dutch tiles.

Preferably the slabs are provided with a reinforcement arranged substantially parallel to the surface of the slabs, the reinforcement being inserted into the card-board slab before the latter is dry so that it is well embedded in the material when the latter has set; the strength of such slabs is materially increased and a distortion of the slabs owing to the influence of the dampness or of mechanical stresses is avoided.

The slabs, sheets and the like made of compressed cardboard according to the invention may, owing to their exceedingly high mechanical strength in comparison to their weight and particularly owing to their

heat resisting qualities, their low heat conductivity and their sound damping effects, be successfully utilized for building interior partition walls and panellings for ceilings and walls in buildings, as well as for making furniture, packing casings, carriage bodies, panellings of railway cars, trunks and other articles.

Owing to the high electric resistance of the compressed card-board combined with the high mechanical strength the building element may advantageously be used as element for making insulations of any type on machines, transformers and switch boards in the shape of slabs, plates, tubes as well as in any other shape formed in die-presses.

The impregnation may be effected by treating the material in vacuum with hot oil and drying it thereafter thoroughly by the application of artificial heat whereby a very hard product is obtained which is not influenced by dampness and which may be used as building element in damp rooms, for instance in bath rooms.

The building elements of compressed card-board may be made in the shape of plates, slabs and the like in any desired colour; by means of dies or roller presses any desired ornamentation may be applied to the slabs; in this manner, for instance, stucco-like reliefs for panel work, imitations of carvings in wood, ornamentation similar to that in Dutch tiles, perfect imitations of veined wood for veneers and of artificial leather may be obtained.

Constructional examples of the subject matter of the present invention are illustrated on the accompanying drawings in which:

Fig. 1 shows in a front view a slab made of compressed card-board,

Fig. 2 is a section along line II—II in Fig. 1,

Fig. 3 shows partly in section a reinforced slab made of compressed card-board,

Fig. 4 is a section along line IV—IV in Fig. 3.

When making the building element the compressed card-board is manufactured in the first stage like ordinary card-board from a mixture of raw paper mass and asbestos. To this mixture stone in powder form is added as well as animal or vegetable glue and a colouring matter. Thereby a mass is formed which is able to set and which is pressed after it is dry, in applying the pres-

sure the desired ornamentations or patterns are applied as well by means of dies or rollers. The surface of the compressed card-board may receive any treatment, for instance a coating of a polishing matter may be applied. In order to prevent that dampness has any influence on the card-board element and to harden it the latter after having been pressed is impregnated in a vacuum with hot oil and is thereafter thoroughly dried by applying an artificial heat having a temperature of approximately 200°, the hardened slab has an increased resistance against deformations.

Fig. 1 shows in a front view a slab made of compressed card-board provided with an ornamentation impressed into it, which slab may be utilized as part of a furniture, tiles for covering walls or the like, Fig. 2 illustrates a cross-section through the slab.

In Fig. 3 a portion of a compressed card-board slab 1 reinforced by the insertion of a wire netting 2 is shown. The reinforcement is inserted in between two fresh layers of compressed card-board which are still somewhat damp and the whole is subjected to a pressure. When the material has completely set and is dry the slab is again subjected to a heavy pressure, so that the reinforcement netting is well embedded in the set mass, whereby a slab is obtained which has a great strength and a resisting power against any deformation. The reinforcement netting which is substantially parallel to the surface of the slab may be arranged in the middle of the cross-section as may be seen in Fig. 4, or it may be arranged nearer to any of the surfaces.

The reinforced building element as well as the building element without the reinforcement may be used in many ways, a particularly extended utilization presents itself in the electro-technical industry. Its suitability for the latter kind of work results from the fact that a slab of a thickness of approximately 4.5 mm. ($\frac{1}{8}$ "') has a disruptive strength of 50000 volts.

I claim:

1. The method of manufacturing building elements of compressed card-board, which consists in forming a mixture of paper mass, asbestos, stones in powder form and animal or vegetable glue, spreading said mixture out into a layer and permitting it to set and dry, subjecting the material to a pressure, impregnating it and subjecting it to the action of heat for thoroughly drying it.

2. The method of manufacturing building elements of compressed card-board, which consists in forming a mixture of paper mass, asbestos, stones in powder form and animal or vegetable glue, spreading said mixture out into a layer and permitting it to set and dry, subjecting the material to a

pressure, impregnating it, subjecting it to the action of heat for thoroughly drying it, and applying a coating adapted to be highly polished to one of the surfaces of the material.

3. The method of manufacturing building elements of compressed card-board, which consists in forming a mixture of paper mass, asbestos, stone in powder form and animal or vegetable glue, spreading said material out into layers, permitting it to set partly, inserting between two layers of the mass a reinforcement wire netting and subjecting the composition to a pressure, permitting it to dry and subjecting it thereafter to a heavy pressure to embed the reinforcement thoroughly in the material.

4. A method of manufacturing building elements of compressed card-board, which consists in forming a mixture of paper mass, asbestos, stones in powder form and animal or vegetable glue, spreading said mixture out into a layer and permitting it to set and dry, subjecting the material to a pressure, impregnating it in vacuum by hot oil, and subjecting the impregnated material to the action of heat for thoroughly drying it.

5. A building element of compressed card-board, which consists of a mixture of paper mass, asbestos, stones ground to powder, glue, which after setting is pressed, impregnated and artificially dried, whereby the element maintains its form, resists heat and dampness and possesses a high mechanical strength.

6. A building element of compressed card-board, which consists of a mixture of paper mass, asbestos, stones ground to powder, glue formed in slabs, which after setting are pressed, impregnated and artificially dried, whereby the slabs maintain their form, resist heat and dampness and possess a high mechanical strength.

7. A building element of compressed card-board which consists of a mixture of paper mass, asbestos, stones ground to powder, glue formed in layers, and having a reinforcement inserted between two layers to form a slab, the slabs are pressed after setting, impregnated and artificially dried, whereby the slabs maintain their form, resist heat and dampness and possess a high mechanical strength.

8. A building element of compressed card-board, which consists of a mixture of paper mass, asbestos, stones ground to powder, glue, formed in slabs which after setting are pressed and provided with an impressed ornamentation, impregnated and artificially dried, whereby the slabs maintain their form, resist heat and dampness and possess a high mechanical strength.

In testimony whereof I affix my signature.
HEINRICH KOLLBRUNNER.