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C. POHL.

PROCESS FOR THE PRODUCTION OF ARTIFICIAL STONE PLATES.

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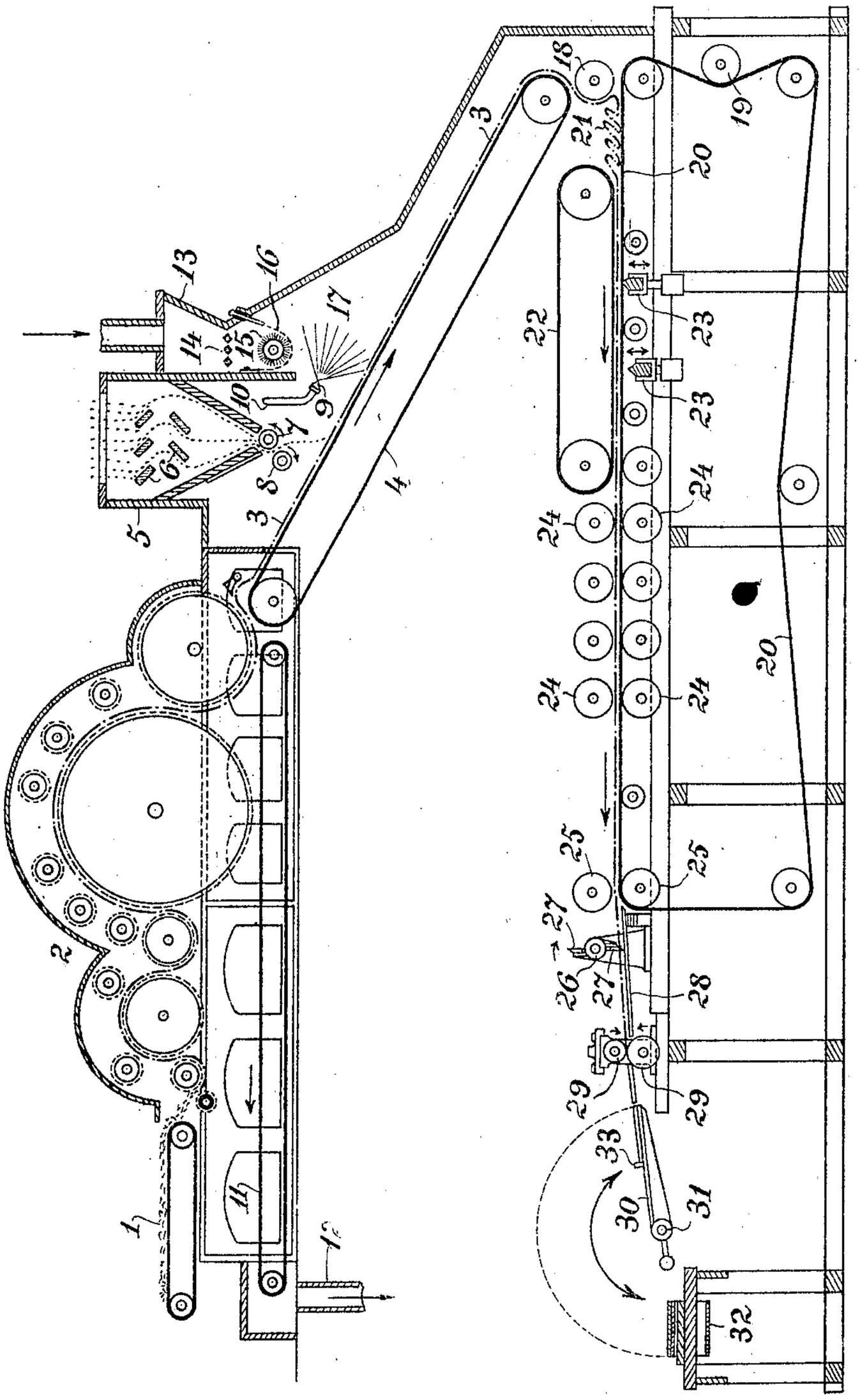

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PROCESS FOR THE PRODUCTION OF ARTIFICIAL-STONE PLATES.

No. 813,171. Specification of Letters Patent. Patented Feb. 20, 1906.

Application filed May 2, 1905. Serial No. 258,556.

To all whom it may concern:

Be it known that I, CARL POHL, general builder, a subject of the Emperor of Austria-Hungary, residing at Budapest, in the Empire of Austria-Hungary, have invented certain new and useful Improvements in Processes for the Production of Artificial-Stone Plates, of which the following is a specification.

In the German Patent No. 151,946 there is set forth a process for the manufacture of artificial-stone slabs of a filamentous material and hydraulic cement, in which process the filamentous material is applied in the form of a web-like fabric.

The present invention relates to an improvement on the aforesaid process and is devised to simplify the apparatus for the production of artificial-stone slabs and at the same time to improve the product.

According to the process previously known several machines had to be made use of in order to secure a given strength of artificial-stone slabs, whereas according to the present invention only a single machine is needed in order to produce slabs of any desired strength. A further improvement of the process previously known consists in that the hydraulic cement is applied to the fabric in a dry state and the water is only added afterward in the exact quantity required, whereby the excess of water in the previously-employed process, which involves a very long treatment of the slabs, is avoided.

In the accompanying drawing an apparatus for carrying out the improved process is illustrated diagrammatically.

The filamentous material, preferably asbestos, is placed in the requisite loose condition upon the carrier-band 1, from which it is delivered into the carding-machine 2. In this machine the filamentous material is worked up in the well-known manner into a thin web-like layer 3, and in this condition it arrives upon the carrier-band 4. Above the band 4 is placed a hopper 5, through which the hydraulic binding material is supplied in a completely dry and powdered condition onto the web-like layer 3. The binding material consists, preferably, of sand and cement which has been well mingled in a mixing-machine and is delivered by suitable carrier devices into the hopper 5. In the hopper 5 are arranged inclined plates 6, which effect the further mixture of the sand and cement and prevent any choking of the hopper. Under the aperture of the hopper are placed distributing-rolls 7 and 8, which rolls distribute the powdered cementing material uniformly over the entire width of the layer 3. The binding material thus equally scattered over the layer accumulates in the interstices thereof. Close to the mouth of the hopper there is placed a nozzle 9, having fine apertures and connected with a water-pipe standing under high pressure. Thus a finely-divided stream of water is discharged upon the layer covered with the binding material. The binding material absorbs the moisture eagerly and at once begins to compact. Since the hydraulic binding material has been scattered in a dry state upon the dry layer of filaments and only so much water is subsequently added as is just necessary to cause the hardening of the hydraulic binding material, the slabs harden very rapidly and are ready for use after being stored for from twenty-eight to thirty days, whereas in the process previously in use to the hydraulic cement so much water was added that the excess of water had to be removed during the manufacture of the slabs by allowing it to run off and pressing it out, and the slabs had to lie for months in order to harden.

In order to utilize the short filaments and dust which are thrown out of the carding-machine, they are collected on the carrier-band 11, passing under the rollers of the machine, and are delivered into a tube 12, from whence they are carried by suitable devices into a hopper 13. The hopper 13 possesses a bottom of movable bars 14, which distribute the dust upon a revolving brush 15. The revolving brush 15 is set in quick motion, thereby scattering the dust through a sieve 16 into the space 17, where it meets the fine streams of water from the jet 9 and is thereby uniformly moistened and falls upon the layer of filaments 3, upon which the binding material has been previously scattered. The layer of filamentous material and binding material thus produced is delivered by means of the carrier-band 4 to a roller 18, from which it passes to an endless band 20, kept in tension by means of the adjustable roller 19. The speed of the carrier-band 4 and of the roller 18 is from five to six times greater than that of the endless band 20, so that the layer 3 places itself in folds upon the band 20. The folds 21 are superimposed, and as the material at this point is still soft and pliable these superimposed layers are compacted by means

of the band 22 into one correspondingly-thick layer. The greater the difference between the speeds of the carrier-band 4 and of the band 20 the thicker will be the layer of material formed on the band 20, so that it is possible by means of a single machine to produce artificial-stone plates of any desired thickness. In order to thoroughly compact the material between the two bands 20 and 22, there are provided under band 20 the strikers 23, which can be brought into oscillation by means of suitable means, so as to impart a quick series of little blows to the band 20, whereby the material upon said band is compacted. The layer of material passes from the band 22 through a row of adjustable pressing-rollers 24, which lightly press the layers, so that the material leaving the last pair of rollers 25 already possesses some firmness. After the pair of rollers 25 there is revolubly supported a cutting-roller 26, which has projecting knives 27, revolving across the material-band. Under the cutting-roller 26 is a spring-supported table 28, upon which the material is carried forward from the endless band 20. By corresponding revolutions of the cutting-roller the layer of material is cut into pieces. As the table 28 is supported on springs, the cutting edges of the knives 27 can make contact with the table, and thus cut the material well through without being hindered in revolving. The pieces cut off by the cutting-roller are pushed by the knives to circular shears 29, which divide the pieces by sections running in the longitudinal direction according to need into two or more parts. In this manner the material is divided into pieces of the desired size and then reaches a swinging table 30, which swings about its axle 31 in such a manner that the pieces pushed upon the table 30 are delivered to a carrier-band 32. The swinging of the table 30 is effected with correspondingly great speed, so that the pieces cannot fall down from the table. After the pieces have been placed by the table upon the carrier-band 32 the table 30 again swings back into the position illustrated in the drawings in order to receive a number of fresh pieces. In order that the table 30 may have time enough to effect its to-and-fro motion, the actuation of the circular shears 29 is so arranged that these shears throw the pieces after they have seized them at a speed much greater onto the table 30 than that at which the following pieces are pushed by the knives 27 between the shears, so that the pieces can arrive only at intervals upon the table 30, and the table 30 can complete an oscillation in these intervals of time. In order that the pieces may not travel too far upon the table 30, there is provided a stop 33 on the table. The carrier-band 32 forwards the pieces for further treatment—pressing, drying, &c.—which is effected in the well-known manner.

Having now particularly described and ascertained the nature of my said invention and in what manner the same is to be performed, I declare that what I claim is—

1. Process of producing artificial-stone plates, consisting in spreading upon a layer of filamentous material binding material, as hydraulic cement in a dry state and subsequently adding water in a finely-divided condition and in the required quantity to compact the said binding material.

2. A process of producing artificial-stone plates, consisting in uniformly distributing upon a layer of dry filamentous material a binding material, as hydraulic cement mixed with sand, in a dry powdered state, and subsequently adding water in a finely-divided condition and in the required quantity to compact the said binding material.

3. Process of producing artificial-stone plates, consisting in uniformly distributing over a layer of dry filamentous material a binding material in a dry powdered state, subsequently adding water in a finely-divided condition and in the required quantity to compact the said binding material and carrying the not yet hardened mass at a certain speed onto a carrier moving at a less speed, the folds caused thereby in the mass being joined and compacted by pressing and shaking the mass.

4. A process of producing artificial-stone plates, which consists in spreading hydraulic cement, mixed with sand, in a dry powdered condition upon a layer of dry filamentous material, as asbestos, subsequently adding water in small quantities so as to compact the binding material and carrying the not yet hardened wet mass at a certain speed onto a carrier moving at a less speed, the folds produced thereby being compacted by shaking the carrier and passed between the carrier and an endless band, whereby the mass is made of uniform thickness.

5. A process of producing artificial-stone plates, consisting in uniformly distributing a binding material, as hydraulic cement in a dry powdered condition over a layer of dry filamentous material, subsequently adding small quantities of water to compact the said binding material and carrying the whole not yet hardened mass at a certain speed onto a carrier, moving at a less speed, folds in the mass being caused thereby, which folds are compacted by oscillating beaters shaking said carrier and an endless band pressing the mass between itself and said carrier.

6. A process of producing artificial-stone plates, consisting in spreading a binding material, as hydraulic cement, in a finely-divided dry condition upon a loose layer of dry filamentous material, subsequently adding water in a finely-divided condition to compact the said binding material and carrying the not yet dried mass at a certain speed to a carrier, moving at a less speed, folds being pro-

duced thereby in the mass, which, by shaking the carrier and by applying pressure, are caused to form into a compact layer of uniform thickness, means being provided for varying the speed of the carrier, whereby the thickness of the compacted layer can be varied.

7. A process of producing artificial-stone plates, of any desired thickness and size, consisting in spreading a binding material in a finely-divided dry condition upon a layer of dry filamentous material, subsequently adding a sufficient quantity of water to compact the said binding material and carrying the not yet hardened dried mass at a certain speed to a carrier, moving at a less speed, folds being caused thereby in the mass, which folds are compacted by shaking the said carrier and by pressure, thus forming a compact layer of uniform thickness, the mass thus compacted being cut and divided into plates of the required size, while not yet hardened.

In testimony whereof I affix my signature in presence of two witnesses.

CARL POHL.

Witnesses:
CHLUEN FUOYS,
LOUIS VANDORY.