May 22, 1934. A. GERARD ET AL 1,959,951

LAMINATED CUSHION PRODUCT

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Fig. 1.

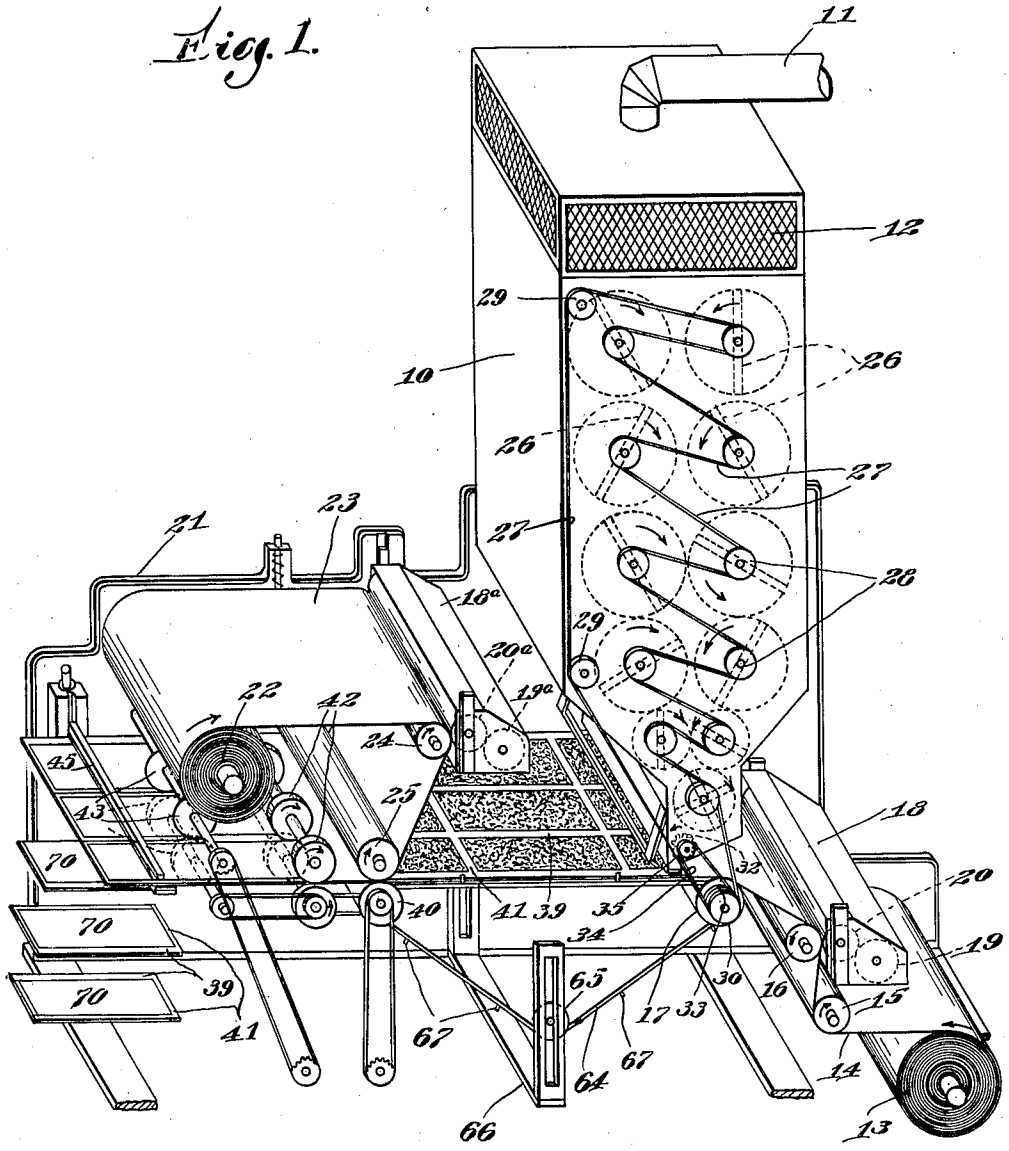
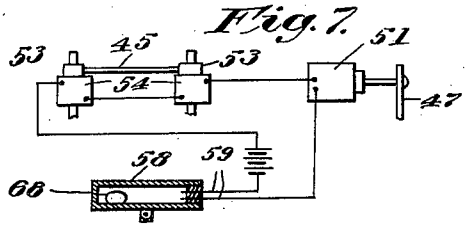


Fig. 7.



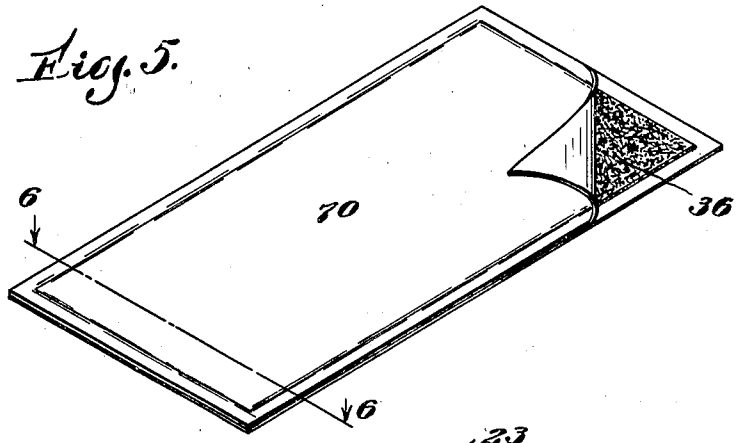
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Fig. 5.



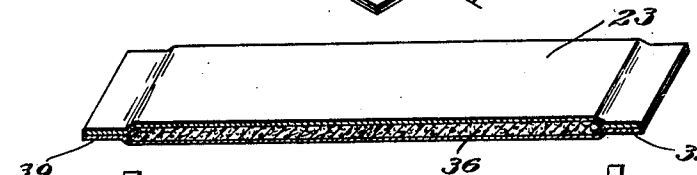


Fig. 6.

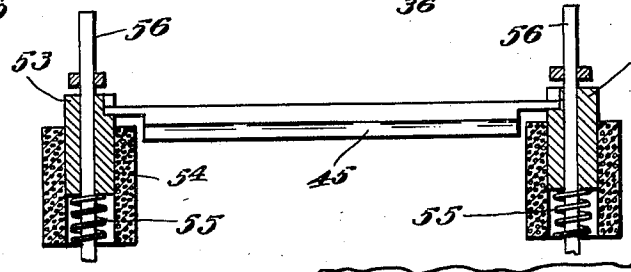


Fig. 3.

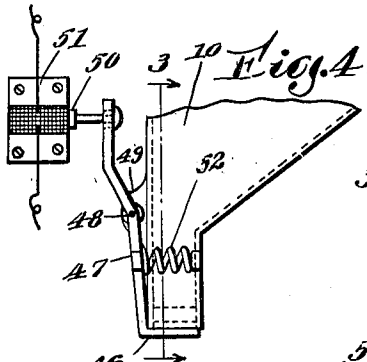


Fig. 4.

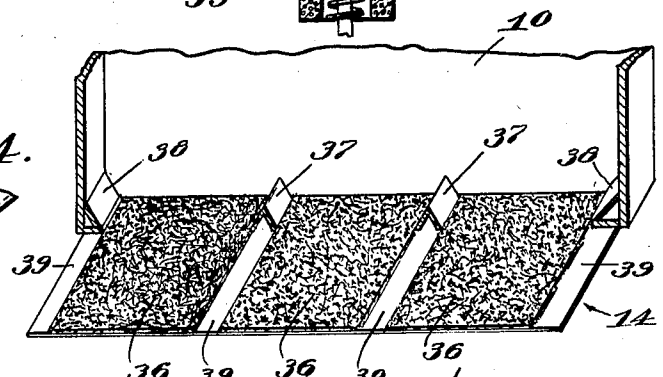


Fig. 2.

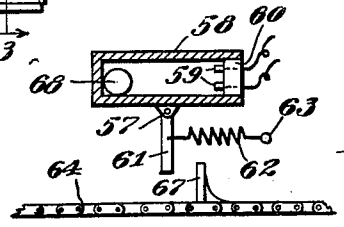


Fig. 8

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UNITED STATES PATENT OFFICE

1,959,951

LAMINATED CUSHION PRODUCT

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Application January 16, 1929, Serial No. 332,888

1 Claim. (Cl. 154—54)

This invention relates to fiber products having cushioning or insulating characteristics, and more particularly to fiber products of the type described in the Gerard and Weisman Patent No. 1,837,261, granted December 22, 1931.

Heretofore, efforts have been made to manufacture cushion pads, and the like, from wood pulp fiber with more or less success, but it has been necessary in most cases for the manufacturer to cut up the stock to suit his particular requirements as to sizes etc., and because of the nature of this material, it has been difficult to supply pads that would stand up under modern handling methods.

The material from which our pads are made are composed of old newspapers, or other waste paper, or similar materials, which are beaten while dry, into relatively small particles consisting of separate fibers of substantially completely disintegrated paper and of small flakes of incompletely disintegrated paper having a greater maximum length than that of said fibers. These particles are produced in such proportions that when thoroughly intermingled, the fibers form a soft wadding between the flakes, and the resulting combination consists of flakes dispersed through the soft wadding in interlocking relationship therewith.

A laminated product having cushioning and insulating characteristics may be made by enclosing flakes and fibers as a cushioning layer between sheets of fabric material, such as paper, as described in said patent.

The principal object of the present invention is to provide a cushion pad of the general type disclosed in the above-mentioned patent, but with sealed edges to prevent loss of any material from the cushion layer.

Other objects and novel features comprising the construction and operation of our invention will appear as the description of the machine progresses.

Fig. 1 is a schematic perspective view of the apparatus in which the near side frame has been removed for purposes of illustration;

Fig. 2 is a fragmentary perspective view of the delivery end of the container from which the fibrous material is discharged on to the cementitious surface of the lower enclosing material, and further indicating the means by which the fibrous material is divided longitudinally of the said lower enclosing material;

Fig. 3 is typical cross section of the mechanism which actuates the transverse cutter located at the extreme left end of the machine as viewed in Fig. 1;

Fig. 4 is a schematic layout of the electrical trip mechanism associated with the delivery end of the container from which the fibrous material is discharged;

Fig. 5 is a perspective view of one of the pads made in this machine after having been severed;

Fig. 6 is a section taken on the line 6—6 of Fig. 5, and

Figs. 7 and 8 are wiring diagrams showing connection between the several solenoids which operate the cutter, and the cover plate on the hopper.

Referring to Fig. 1, paper, such as waste paper and particularly old newspapers or other fibers of similar characteristics, are fed from an initial grinder into the hopper 10 by means of air pressure through the inlet pipe 11 which is provided at its top with a screen 12 for the purpose of relieving the air pressure and at the same time retaining the ground paper inside the hopper 10. At the lower right end of the machine is mounted a roll of enclosing material, such as paper, and indicated by the numeral 13 from which the lower enclosing material 14 is fed under an idler roll 15, over rolls 16, and 17, to a point just below the outlet of the hopper 10. At a point above and to the left of the roll of enclosing material 13, is located a container containing a cementitious material, such as glue, or the like, and generally designated by the numeral 18. Within the cementitious container 18 is located an immersed roll 19 engaging with a delivery roll 20, the upper side of the container 18 being provided with a cut away portion for the purpose of projecting the periphery of the roll 20 into contact with the enclosing material 14 in contact with the face of the roll 16, and depositing the cementitious material on the upper surface of such material 14. For purposes of illustration, the near side frame of the machine has been removed, is practically the same as the far side frame 21 illustrated in Fig. 1, and all members such as the hopper 10, material roll 13, rolls 15, 16, and 17 container 18, may be mounted therebetween. A similar arrangement located on the upper right portion of the machine, as viewed in Fig. 1, is composed of a roll 22 comprising the upper enclosing material 23, feeding down over the rolls 24, and 25. Another cementitious container 18*a*, together with rolls 19*a*, and 20*a*, similar in all respects to the container 18, and rolls 19, and 20, is located between the side frames 21, and contacting with the material 23, at a point adjacent the roll 24, for the purpose of coating

the surface of the material 23 with the cementitious material within the container 18*a*.

The hopper 10 is internally provided with a series of agitator paddles 26 for the purpose of keeping the fibrous material therein contained in motion, and with the gradual working down of same to a point adjacent the outlet end of the container, or hopper 10. A continuous belt drive is provided at 27, engaging the paddle pulleys 28, and idler pulleys 29, the power being applied through a drive shaft 30, and drive pulley 31, from any suitable source from without the removed side frame 21. A secondary series of small agitator paddles 32, located at the extreme lower portion of the hopper 10, may also be driven from the drive shaft 30 by means of a pulley 33, and a belt 34, engaging with a pulley 35 located on a suitable drive shaft connecting said secondary paddles.

Fig. 3 illustrates a cut-away perspective view of the lower discharge end of the hopper 10, with a sheet of material 14 in place, and a quantity of fibrous material deposited thereon as indicated at 36. Separators 37, and side deflectors 38 are provided for the purpose of separating the fibers at predetermined places as indicated at 39, on which cementitious material has been deposited such that when the lower and/or upper enclosing materials 14, and 23 respectively, pass under the roll 25 which is in close contact with the roll 40 directly below, the bare strips 39, except of cementitious material thereon deposited, will adhere together. The fibrous material 36 is maintained in position and in contact with the enclosing materials 14, and 23, by means of the cementitious material applied to the inner surfaces of such enclosing materials, and the principal purpose of the rolls 25 and 40 is to produce this union although such rolls 25, and 40 to a limited extent will effect a seal along the clear spaces 29, and also the transverse spaces 41. In order to assure a perfect seal of the edges, or clear spaces 39, we have further provided sealing rolls 42, mounted on a common shaft in alignment with and to the left of the rolls 25, and 40. Such rolls 42 are of proper width corresponding to the width of the clear spaces 39, and in alignment longitudinally thereto, insure pressure at such points sufficient to insure a perfect seal through the entire pad, or series of pads. Following the rolls 42 and in horizontal alignment thereto, are a series of splitting cutter disks 43 for the purpose of separating the pads mid-way between the fibre deposits, or at the central portion of the clear spaces 39. At the extreme left end of the machine is mounted a transverse knife blade 45 operating in synchronism with a hinged cover 46 illustrated in Fig. 4, the cover 46 being adapted to close the opening in the bottom of the hopper 10 for a short interval of time for the purpose of producing the transverse clear portions 41 on the lower enclosing material 14 which together with the upper enclosing material 23, is in continuous motion toward the left hand end of the machine. The plate 46, is provided with an upright lever arm 47 pivoted at a central point 48, to an outwardly extended bracket 49, comprising a part of the hopper 10. The upper portion of this lever 47 is adapted to engage with the core 50 of a solenoid 51, the plate 46 being held in open relation with the hopper 10 by means of a coil spring 52 during such time as the solenoid 51 is deenergized. The knife blade 45, better illustrated at Fig. 3, is attached to slidably mounted cores 53 located within the solenoid windings 54, and held in an extended position during the intervals in which the windings 54 are deenergized, by means of the coil compression springs 55. Guide rods 56, preferably of a non-magnetic nature may be used as slide members for the cores 53, to lower end of which may be secured to any suitable part of the stationary frame of the machine. On the inside of the side frame 21, preferably on the near side shown removed in Fig. 1, is pivotally mounted at 57, an electrical contact member comprising a hollow tubular member 58, one end of which is provided with two electrical contact members 59 imbedded in an insulated plug 60. On the under side of this tubular member 58, and rigidly attached thereto is a downwardly extending lever 61 which is attached to a tension spring 62, the opposite end of which is attached to a pin 63 located on the inner side of the near side frame 21, removed from Fig. 1, for purposes of illustration. A chain drive 64 is provided to engage suitable sprockets on the rolls 17, and 40, together with an idler sprocket 65 located within a frame 66 provided therefor and attached to the side frames 21 of the machine, and on this chain 64, at proper intervals are located upstanding obstructions 67 for the purpose of engaging with the arm 61. On the inside of the tubular member 58, we have provided a ball of mercury 68 so that when the chain member 67 engages with the arm 61, the tubular member 58 is tilted on the pivot 58 and the mercury ball 68 rolls into contact with the bare contact members 59 and closes a circuit which passes through the solenoid 51, closing the hopper cover plate 46, and at the same time passing through the coils 54 and actuating the cutter blade 45 which severs a series of the pads 70. At all times in which the current is shut off, the lower opening of the hopper 10 is open and the fibrous material 36 is being deposited upon the continuously moving lower enclosing material 14 except at such places as are indicated at 37, and 38, in Fig. 2, but when the windings 54 are energized together with the solenoid 51, the plate 46 closes the opening in the hopper 10 and produces the bare transverse portions 41, and at this time the cutter 45 cuts off a series of pads on the extreme left end of the machine that have been split in a horizontal direction by the cutters 43, and which are cemented together on all four edges as shown in Fig. 5, thereby completing a complete pad ready for use.

Various size pads may be produced as desired by changing the proportions of the machine to the end that it will be possible to furnish the user of such pads with exactly the proper size for his requirements and thereby making it unnecessary for him to buy his stock in large sheets and cut it up himself, and the fact that these pads are glued on all four edges renders them more substantial and desirable from the user's point of view, as of course they may be used over and over again.

Having thus described our invention, what we claim as new, is:

A laminated cushion product comprising a fabric sheet, a wadding of fibrous material thereon in a plurality of areas separated by transverse and longitudinal spaces, and a second fabric sheet on the opposite side of the wadding, the two sheets being sealed together around the edges of the wadding and in the transverse and longitudinal spaces.

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