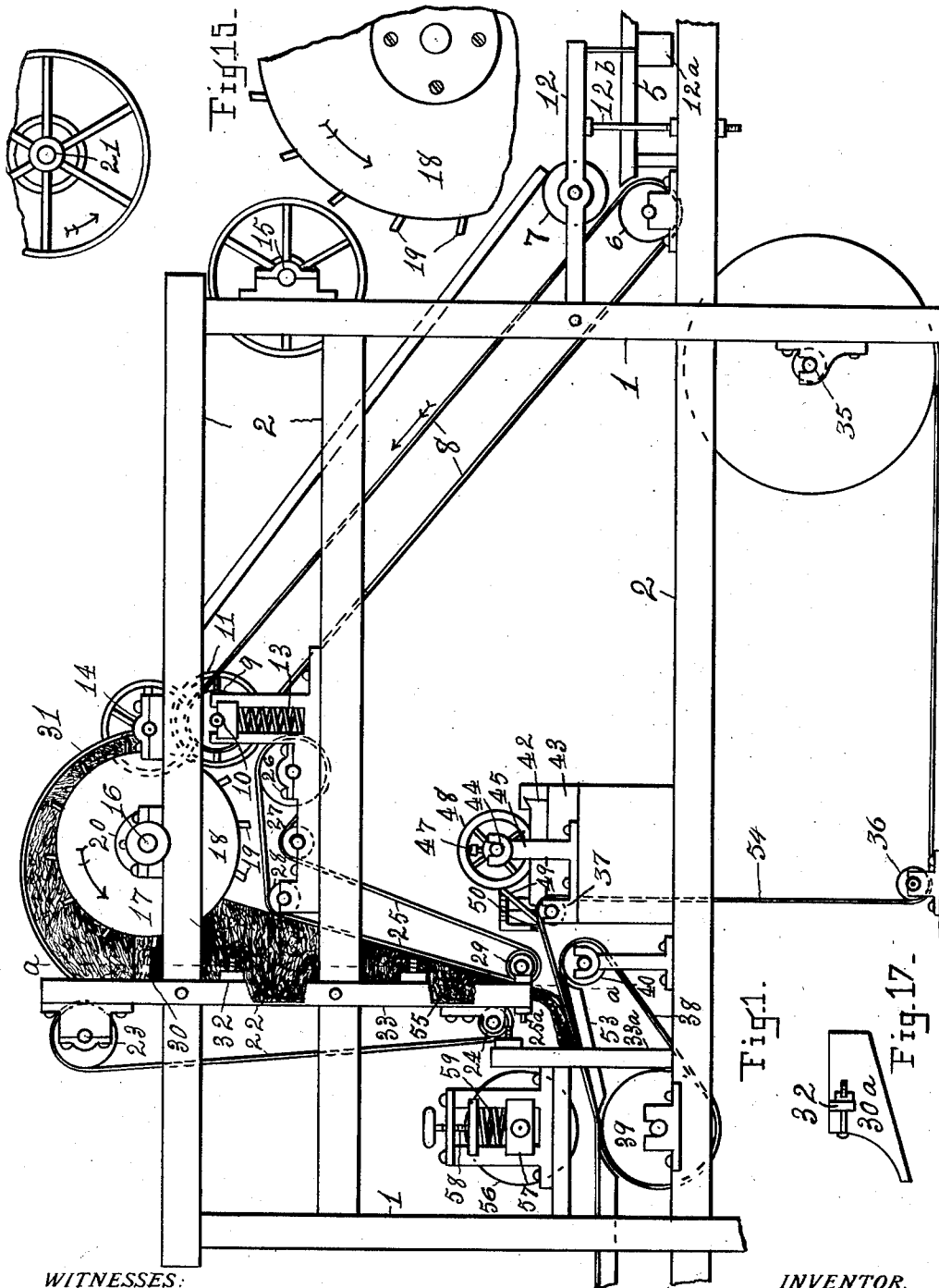


C. A. ANDERSON.
MACHINE FOR MAKING PACKING PADS.
APPLICATION FILED MAY 2, 1910.

1,006,452.

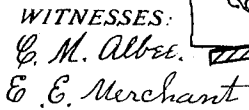
Patented Oct. 24, 1911.

3 SHEETS—SHEET 1.



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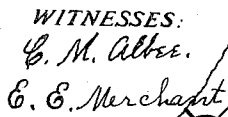
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MACHINE FOR MAKING PACKING-PADS.

1,006,452.

Specification of Letters Patent.

Patented Oct. 24, 1911.

Application filed May 2, 1910. Serial No. 558,939.

To all whom it may concern:

Be it known that I, CHRISTIAN A. ANDERSON, a citizen of the United States, residing at Appleton, in the county of Outagamie and State of Wisconsin, have invented a Machine for Making Packing-Pads, of which the following is a specification.

My invention relates to mechanism for making what is known to the trade as packing pads, which pads of late years have become a necessity to the furniture trade and for some other industries, the pads being made of a paper envelop filled with excelsior, grass, or other cheap compressible material for a filling the longitudinal edges of the envelop being glued or pasted together, and some glue applied inside of and lengthwise of the envelop for retaining the filling therein, the ends of the envelop being cut off and the pads made of such width and length as their use demands, the mechanism for preparing the filling and depositing it upon a strip of paper as the paper is fed into the machine, applying glue thereto, turning the paper over the filling, pressing the glued parts together and cutting the envelops to the desired length being automatic and continuous in its operation, and the mechanism therefor being shown in the accompanying drawing, in which,—

Figure 1 is a side elevation of the end of the machine in which the filling is prepared, the paper from a roll unwound for the envelop and fed into the machine, glue applied to the envelop and the prepared filling deposited upon the sheet, the mechanism for doing which is mounted upon a suitable frame. Fig. 2 is a plan of the mechanism shown in the upper portion of Fig. 1, its endless belts or carriers, being omitted. Fig. 3 is a plan of the lower portion of the left hand of Fig. 1, and continuing along a little past the roll that presses the glued edges together, the frame for the parts shown in Fig. 2, ending intermediate the ends of Fig. 3. Fig. 4 is a plan of a cutter for cutting the pads. Fig. 5 is a side elevation of the same, Figs. 4 and 5 showing at their right hand end the last roll on Fig. 3, its left hand end and its attachments, completing the machine. Fig. 6 shows plans of slightly different forms of pad envelop formers, and Fig. 7, end views of the finishing end of the formers. Fig. 8 is a plan of a cone pulley, its shaft, its clutch pinion and clutch lever.

Fig. 9 represents parts of two cog wheels and their driving pinions for operating the cutters for the pads. Fig. 10, is a plan of the knives of the cutter wheel. Fig. 11 is a transverse section of two spiders for the cutter wheel shaft, with one end of its knife holder bolted to said spiders. Fig. 12 is an end view of one of the knives of the cutter, in its holder, the holder being bolted to the two spiders at one end of the holder. Fig. 13, is a side elevation of a journal box stand for supporting the outer end of the cone pulley shaft. Fig. 14 is a transverse section of Fig. 1 upon the line *a, a*, of said figure. Fig. 15, is an end view of a section of the picker cylinder and showing its spurs or teeth for tearing the filling material apart. Fig. 16 is a transverse section of the glue tank and showing the manner of securing the glue slides thereto, and a brush to the tank for spreading the glue over the paper sheet. Fig. 17 is a side elevation of one of the hopper boards which is used in Fig. 1, but not easily shown there. Figs. 1, 2, 3, 4, 5, 8, 13, 14 and 17, are upon the same scale, 6, 7, 9, 10, 11, 12 and 16, upon a larger scale and 15, upon a still larger one.

Similar numerals and letters indicate like parts in the several views.

1, indicates wood posts of the frame of the machine in Figs. 1 and 3 and 5; 2, longitudinal girths and cap pieces, and 1^a, the cast iron frame in Figs. 4 and 5, the latter frame consisting of right and left hand castings spaced apart and connected together by means of nuts and bolts 3 and 4. No particular material or form of frame is claimed. The elevated portion of the frame in Fig. 1 ends at the posts 1, intermediate the ends of Fig. 3. Mounted upon the lower girth of the frame in Fig. 1, is a table 5, upon which the excelsior, grass, hay, or like filling material is received, where it is to be fed in by the operator between rolls 6 and 7 and carried upon an incline upward. The table 5 and girth 2, should extend to the right sufficiently far to provide the necessary space for the filling material thereon, and a short post may be required under the girth.

The roll 6 is connected by an endless carrier belt 8, with the roll 9, the latter roll being mounted for revolution upon a shaft 10, having a pulley 11, thereon, by which it may be revolved for carrying the belt in the direction of the arrow. The roll 7, is not

driven but is mounted in journals in the levers 12, which levers are pivoted in the posts 1 and are provided with weights 12^a and stop bolts 12^b, for allowing for the rise and fall of said roll as the bulk of the filling material entering between it and the belt 8, demands. The roll 9, has its journals mounted in boxes having a spring 13, under each box for allowing the roll to lower as the bulk of the filling material which passes between it and the roll 14, requires. The roll 9, may be driven with a belt from the slow running countershaft 15, and the roll 14, from the same counter shaft with a crossed belt for assisting in feeding the filling material as it leaves the belt 8.

A shaft 16, is mounted in journal boxes 17, upon which a picker cylinder 18, is secured, said picker cylinder being provided with a series of short spurs or pins, 19, arranged opposite each other in alternate rows around the cylinder, the spurs being inclined backward from the direction in which the cylinder is revolved for the quick release of the spurs from the filling material. The inclination of the spurs is fully shown in Fig. 15. The cylinder is to be driven at a fast speed, much faster than heretofore, on account of the inclination of its spurs, that is, its speed should be so that its outer surface runs at the rate of nearly 5,000 feet per minute, and it may be driven by its pulley 20, from the main line of shafting 21, but no particular source of power is claimed for any of the revolving shafts of the machine. As the excelsior, grass, or other filling material is torn to pieces by the spurs of the cylinder, it is thrown against the endless belt 22, which belt is mounted upon rolls 23 and 24, and is carried downward by its centrifugal tendency, between it and the endless belt 25, which belt is mounted upon rolls 26, 27, 28 and 29, into a narrow space between the rolls 24 and 29, and the hopper side boards 30, (see Fig. 13, the boards not being plainly shown in Fig. 1.) A curved covering 31, confines the filling and directs it downward between the side boards. The side boards 30, are attached to slotted arms 32, which arms can be adjustably secured to the upright pieces 33, which pieces are bolted to the girths 2 of the frame, the arms being bolted to the pieces 33, with bolts provided with thumb nuts 34, so that the space between the boards can be gaged to the width of pad it is desired to make.

Side boards 30^a, are shown, the front one, they being made rights and lefts, in Fig. 17, and serve as a continuation of the boards 30, for confining the filling material upon the paper strip until it is pressed down upon the glued surface of the paper by its pressure roll. The boards 30^a, are movable by means of arms 32, the same as the boards

30, for adapting the space between them for different widths of pads. Roll 29 is movable on its threaded stem 25^a, to regulate the space between the belts 22 and 25.

Upon a rod 35, supported upon the machine frame, a roll of paper is mounted and a sheet thereof is led under the roll 36, and over the roll 37, and then is carried along upon the endless belt 38, which belt runs around rolls 39 and 40, it receiving near the roll 40, the filling material for producing the pad. The roll 39 can be driven by a belt around its pulley 41, from a convenient source of power. Previous to the filling being deposited upon the paper sheet, glue or paste is applied in a plurality of places longitudinally of the sheet. This gluing apparatus consists of a tank 42, in which to melt and hold the glue. Supported upon a table 43, or under it, a burner (not shown), may be arranged under the tank, in a well known manner for melting and keeping the glue hot. For delivering the glue to the paper sheet, a shaft 44, is mounted for revolution in stands 45, it being arranged to be revolved by its pulley 46, from a smaller pulley on the slow running counter shaft 15. Mounted for easy adjustment and for being secured with set screws 47, along the shaft 44, are a plurality of glue wheels 48, which are arranged to dip into the glue slightly, and as they revolve to deliver a small quantity continuously to the slides 49, of which there is a slide to each wheel. The slides are movable for suiting position of the wheels. For spreading the glue into a thin layer I employ in some cases a brush 50, which is arranged just at the foot of a slide. The slides are attached to the side edge of the tank as is shown in Fig. 16, by means of a clamp 51, the clamp inclosing the side edge of the tank and being retained thereon by its friction only. The same style of clamp is used also for the brush holder 52, as for the slides, so that it can be moved easily for applying the glue upon the surface required. With the glue wheels movable longitudinally of their shaft, and removable from it, and the slides and brush also movable and removable, it will be evident that any number of lines of glue can be applied to the paper sheet, and in such places as may be required. The belt 38 is supported by a table 53, so that there is a firm support upon which the filling for the pad is deposited. The paper sheet 54 and its filling 55, now coming together, and the paper being glued both for securing its two edges together and for retaining the filling, it is carried along with the filling thereon between rolls 39 and 56, the latter roll being mounted for revolution in journal boxes 57, and having vertically adjusting screws 58 and springs 59 under said boxes, the latter roll serving to press

the filling down upon the glued surface of the paper sheet. The paper strip is now to be entered and drawn by the operator through the pad formers 60 and 61, of which there are several arranged on the table 62 of the machine, two of said formers being shown in Fig. 3, and in Figs. 6 and 7, in plan and left hand end view respectively. These formers may be of different widths and forms for making pads of different widths, they acting one after the other for turning the edges of the strip of paper over the filling, the first one entered by the paper strip being the widest and the succeeding ones narrower and closing the edges of the paper over the filling, and the last one lapping the edges one upon the other. The pad 54^a, having been formed by its passage through the required number of forms, its end is entered between the rolls 63 and 64, the roll 64 being driven by its pulley 65, the pad being once entered it will be pulled along continuously. It is now of sufficient rigidity to pass along to the cutters 66 and 67, upon the frame 1^a. These cutters are of a rotary type and consist of two wheels each composed of two pairs of spiders 68 and 69, mounted upon shafts 70 and 71, respectively, the two pairs upon each shaft having secured to each pair one end of one or more cutter holders, two or more being preferable for the proper balancing of the wheels when the holders are spaced apart equally. These spiders are best shown in Fig. 11, in a transverse section thereof, they having at the inner side of the pair near their circumference a shoulder 72, for retaining a bolt head against, the bolt 73, passing out between the spiders for securing the cutter holder upon the wheels, the two pairs of spiders upon each wheel being first turned off to a uniform diameter. A knife holder, 74, is bolted to the two pairs of spiders of each wheel by means of bolts 73^a.

The cutter holders each consist of a T shaped casting having its inner side fitted to the circumference of the spiders and a groove 75, cut in the stem of the T for receiving the cutter or knife which is held therein by clamping bolts 76. The cutters can be adjusted in the direction of their width by means of set screws 77, tapped into the holder. These spiders and holders being accurately fitted together and the holder properly spaced and bolted in position, clean cuts of the pads can be made at such intervals as the rate of speed of the cutter wheels and of the pad are arranged for. The two wheels are to be revolved in opposite directions by means of cut gears 78 and 79, upon the shafts 70 and 71, respectively. The gear wheel 79 is revolved by means of a pinion 80, and that pinion by one of similar size, 81, on the end of the cone pulley shaft 82. A cone pulley 83, is secured upon the shaft

82, which is to be driven by a companion cone pulley, (not shown,) for the purpose of timing the revolutions of the cutter wheels to correspond with the rate of travel of the pad. The pinion end of the cone pulley shaft is mounted for revolution upon the journal box stand 84, and the cone pulley end upon the standard 85 of Fig. 13. The cutter wheel shafts 70 and 71, are revoluble in boxes 70^a and 71^a. A clutch lever 86, is mounted upon the pinion end of shaft 82, near the pinion 81, and is arranged for disconnecting and connecting the gear wheel 79 and pinion 80, by means of moving the lever handle 87, to the right and left. Fig. 9 shows the manner in which the two large gear wheels, the lower one and upper pinion and the two pinions are connected. The cutter wheels shafts are arranged to revolve in bearings 70^a and 71^a, respectively. As the revolutions of the cutter wheels are uniform in speed, if they are a little faster than the travel of the pad, the grip of the cutters upon the pad may pull the pad strip apart. For providing for this result, a spring leaf 88, is fixed upon the standard 89, over which the pad strip is carried for providing slack to the strip between the rolls 63 and 64 and the cutters, and thereby preventing the pulling of the strip apart. After the cutting of the pad it is taken along by an endless belt 90, which belt is mounted upon the rolls 91 and 92. The roll 91 is supported in bracket arms 93, extending out from the frame 1^a, and the roll 92 is arranged to be revolved by its pulley 94, in the standards 95. The pad is taken between the rolls 92 and 96, and dropped upon an endless belt for being carried away from the machine. The roll 96 is made with a soft surface so that its weight will not injure the pad. This soft surface is made by making the body of the roll, 97, of less diameter than its ends 98, and covering the entire length of the roll with a fabric 99. This allows the pads to pass between the rolls 92 and 96, without injury to them. Upon the pads being dropped from said rolls they are received upon an endless belt 100, which is arranged to run transversely of the frame 1^a. It is arranged upon rolls 101, and is operated from a worm wheel 102, on the end of one of said roll shafts, which wheel is turned by a worm 103, upon a shaft 104, which is mounted in bracket journal boxes 105, attached to the frame 1^a. This endless belt mechanism is mounted upon a wood frame 106.

Having described my invention, what I claim and desire to secure by Letters Patent, is,—

1. In a pad forming machine, a filling material conveyer consisting of an endless belt running upward upon an incline, and operating to deliver said filling material to a

picker cylinder, a roll revolubly mounted above the delivery end of said conveyer, a picker cylinder rotatably mounted and receiving said filling material between it and said roll, a series of short spurs arranged opposite each other in alternate rows around the cylinder for engaging with said filling material, a curved cover inclosing a portion of the circumference of the upper half of said cylinder with its concave side toward the cylinder and arranged to direct said filling material downward as it leaves the spurs of said cylinder, an endless belt arranged for running substantially in a vertical direction downward and against which said filling material is thrown by its centrifugal movement as it is thrown from said spurs, a second endless belt arranged below said cylinder upon an inclination with its lower end arranged for providing but a narrow space between it and the lower end of said vertical running endless belt, and hopper side boards adjustably secured to the machine frame between said vertical and inclined endless belts and arranged for being secured at different distances apart from the center of the length of said picker cylinder for depositing the filling material upon its envelop in narrow or wider bodies for pads of different widths, as may be desired.

2. In a pad forming machine, a filling material conveyer consisting of an endless belt for feeding and carrying said material in an inclined upward direction to a picker cylinder, a roll revolubly mounted above the delivery end of said conveyer, a picker cylinder rotatably mounted and receiving said filling material between it and said roll, a series of short spurs arranged opposite each other in alternate rows around the cylinder for engaging with the filling material, said spurs being inclined backward from a radial direction as the cylinder is revolved, a strip of paper arranged to be drawn lengthwise of the machine below said picker cylinder, a plurality of glue distributing wheels arranged for applying glue lengthwise of said strip, and means for delivering the picked filling material from said cylinder spurs in a vertical direction through a variable contracted space upon said paper strip.

3. In a pad forming machine, a filling material conveyer consisting of an endless belt for feeding and carrying said material

in an inclined upward direction to a picker cylinder, a roll revolubly mounted above the delivery end of said conveyer, a picker cylinder rotatably mounted and receiving said filling material between it and said roll, a series of short spurs arranged opposite each other in alternate rows around the cylinder for engaging with the filling material, a strip of paper arranged to be drawn lengthwise of the machine frame below said picker cylinder, a plurality of glue distributing wheels arranged for applying glue lengthwise of said strip, means for delivering the picked filling material from said cylinder spurs in a vertical direction through a variable contracted space upon said paper strip, a pair of rolls, and an endless belt for feeding the glued strip between said rolls, a continuation of said variable contracted space arrangement above said last named endless belt to near said last named pair of rolls, a plurality of pad formers arranged one after another upon the machine table, each pad former having a narrower outlet than its predecessor, a pair of rolls between which the pad is drawn after passing through said formers and the glued parts thereby compressed together, a rotary cutting device for cutting the pads into lengths, a slack producing device, such as a spring leaf, arranged under the pad strip between said compression rolls and the cutting device for producing slack in the pad strip, an endless belt upon which the pad is received after being cut to the desired length, a pair of rolls for receiving and ejecting the cut pads and an endless belt arranged for receiving the finished pads and delivering them in a transverse direction at one side of the machine.

4. In a machine for making packing pads, the combination of two rolls for feeding the finished pad between, one roll of which consists of solid ends of substantially the diameter of the finished roll, a smaller intermediate portion between said ends, and a covering, consisting of a single thickness of suitable fabric secured upon the solid ends and forming the gripping surface of said roll.

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Witnesses:

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