July 21, 1942. K. W. DILLMAN ET AL 2,290,803

ADHESIVE APPLICATOR

Original Filed Dec. 16, 1938 3 Sheets-Sheet 1

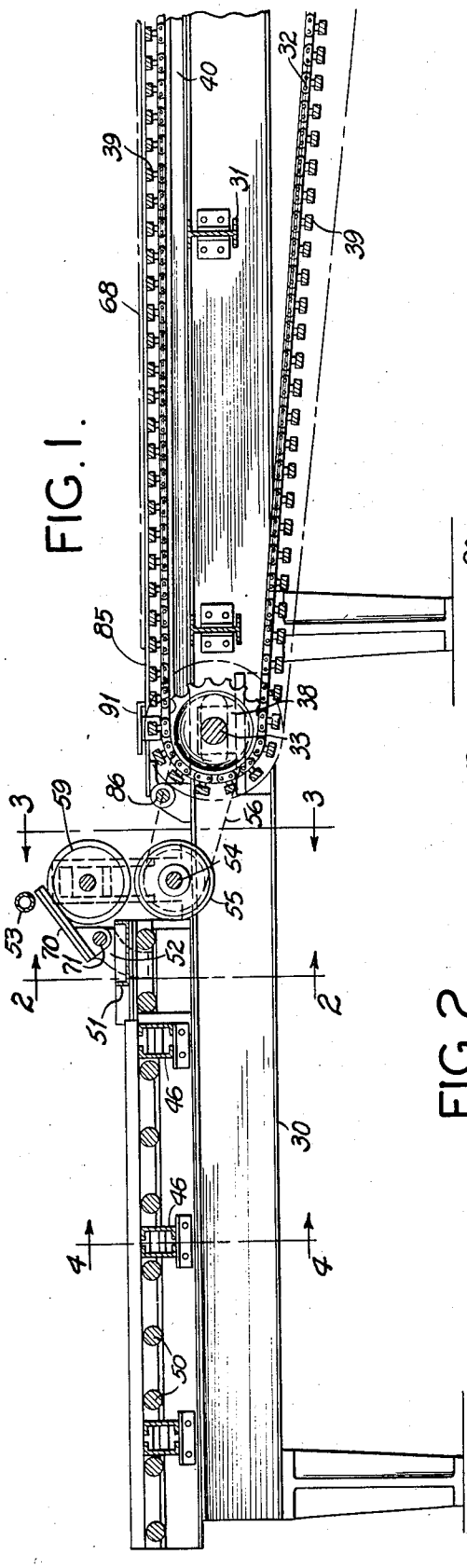


FIG. 1.

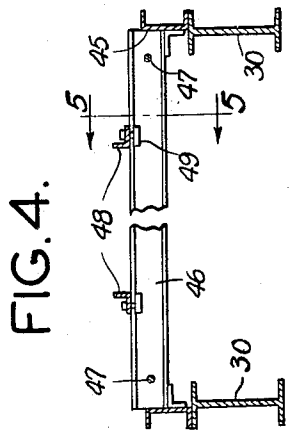


FIG. 4.

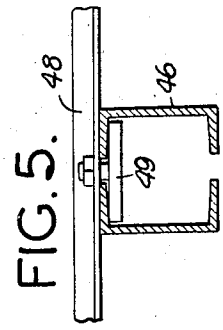


FIG. 5.

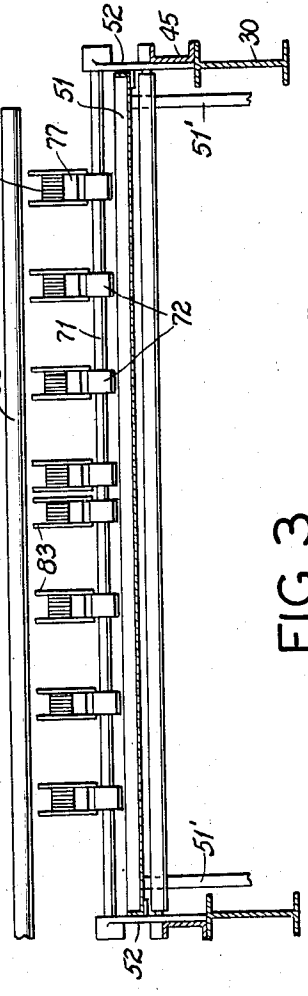


FIG. 2.

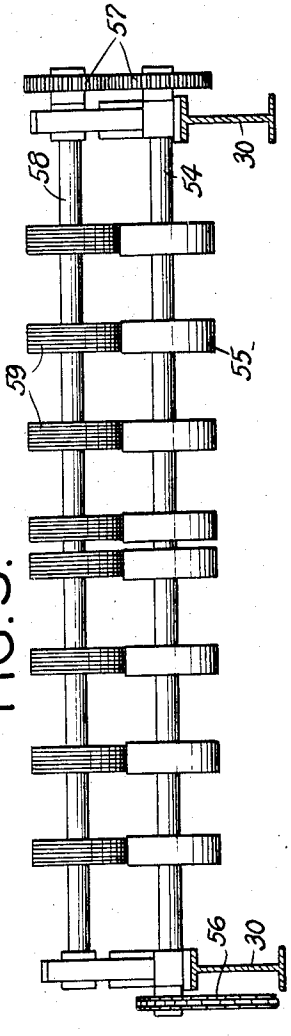


FIG. 3.

Kennett W. Dillman,
Robert W. Barbee,
Inventors.
Haynes and Koenig
Attorneys.

July 21, 1942. K. W. DILLMAN ET AL 2,290,803

ADHESIVE APPLICATOR

Original Filed Dec. 16, 1938 3 Sheets-Sheet 2

FIG.6.

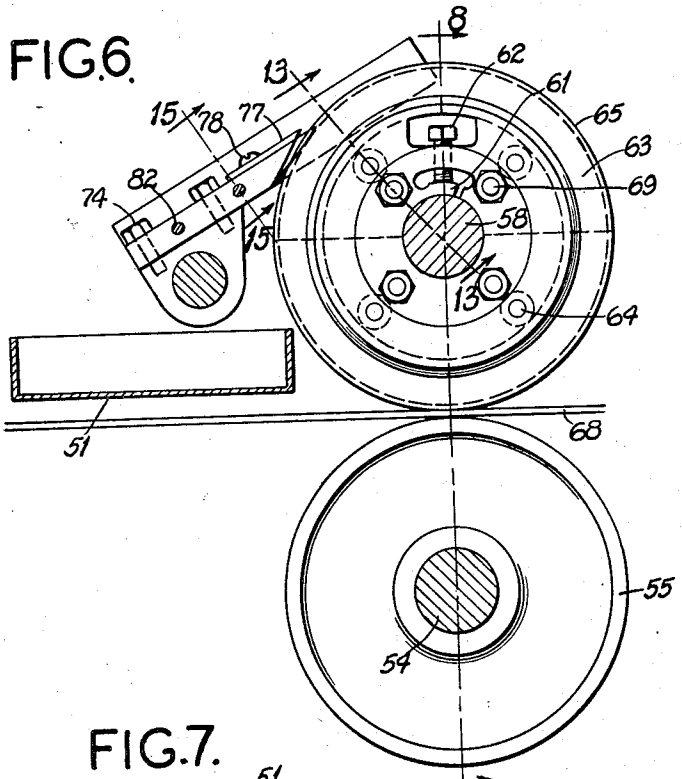



FIG.8.

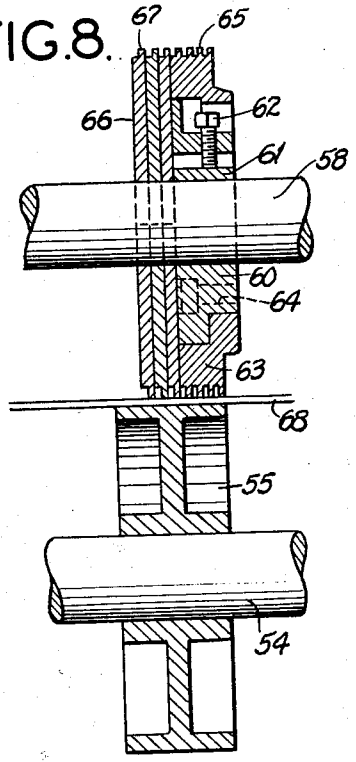



FIG.7.

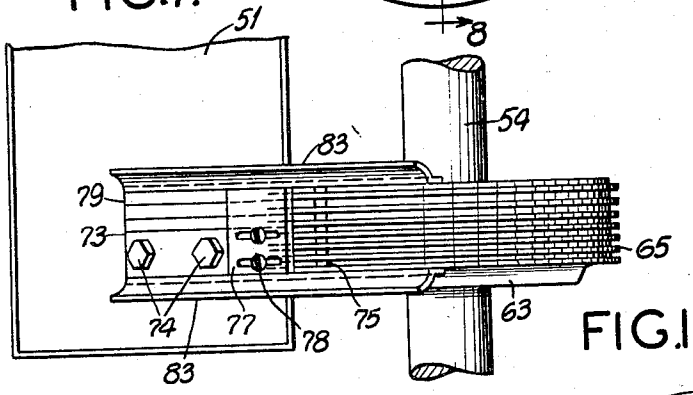



FIG.10.

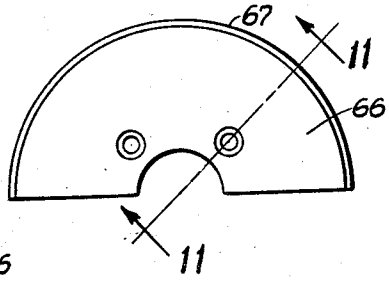
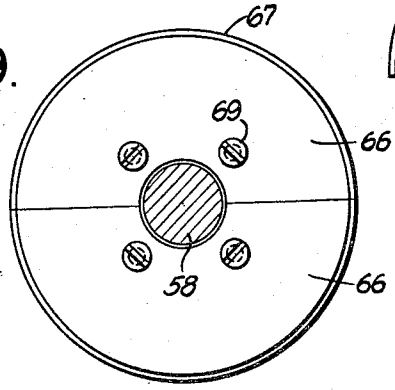



FIG.11.




FIG.9.




Kenneth W. Dillman,
Robert W. Barbee,
Inventors.
Haynes and Thenig
Attorneys.

July 21, 1942. K. W. DILLMAN ET AL 2,290,803

ADHESIVE APPLICATOR

Original Filed Dec. 16, 1938 3 Sheets-Sheet 3

FIG. 12.

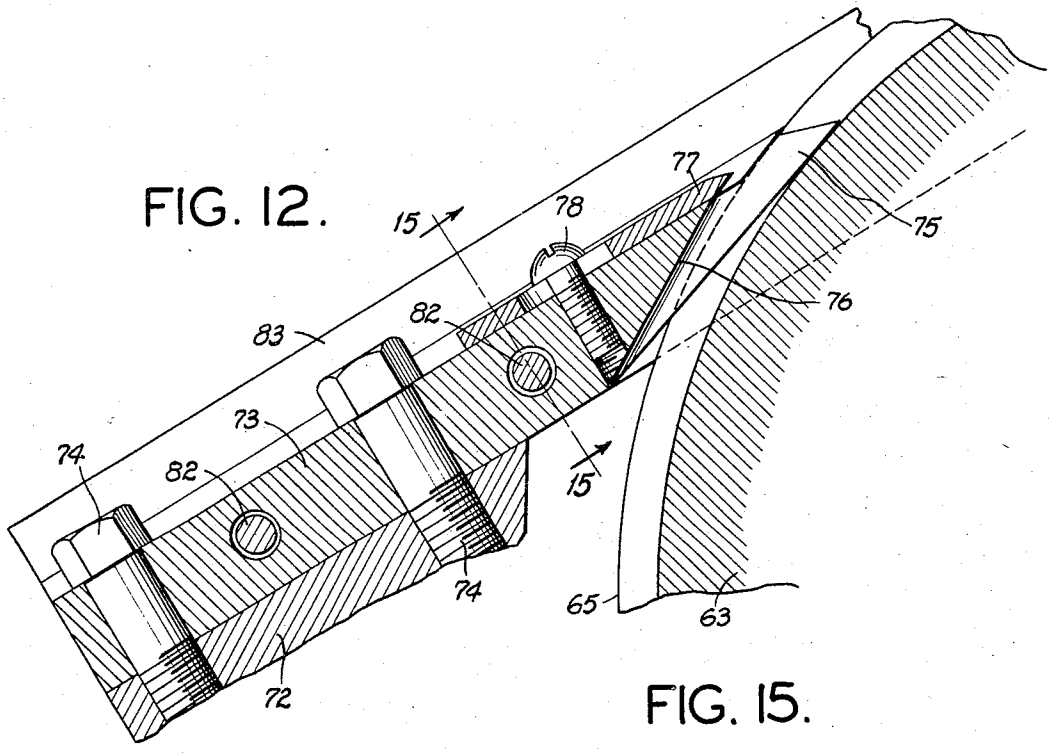



FIG. 15.

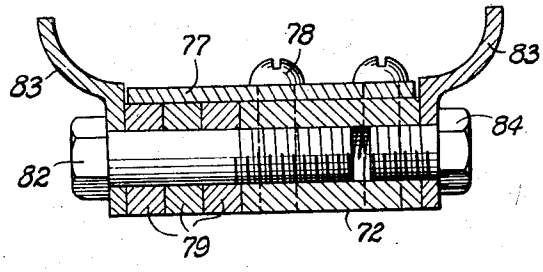



FIG. 13.

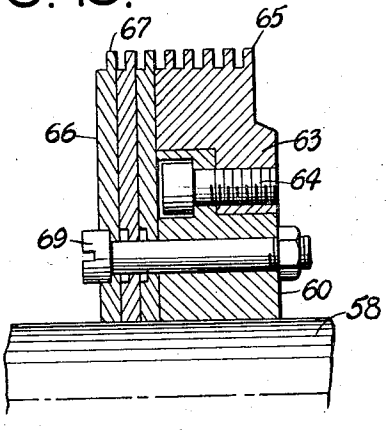



FIG. 16.

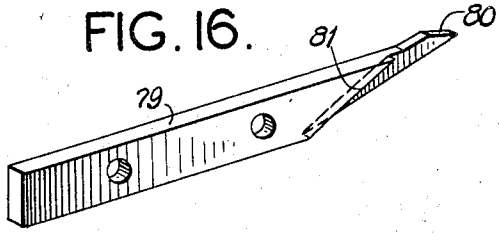
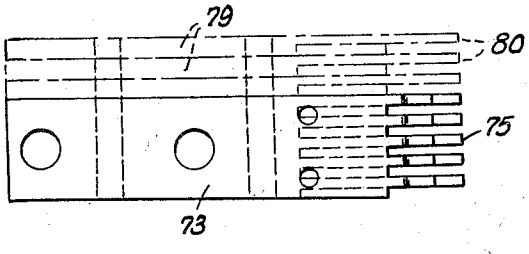



FIG. 14.




Kennett W. Dillman,
Robert W. Barbee,
Inventors.
Haynes and Koenig
Attorneys.

Patented July 21, 1942 2,290,803

# UNITED STATES PATENT OFFICE

2,290,803

## ADHESIVE APPLICATOR

Kennett W. Dillman, Caruthersville, Mo., and Robert W. Barbee, Memphis, Tenn.; said Barbee assignor to said Dillman

Original application December 16, 1938, Serial No. 246,242. Divided and this application October 7, 1940, Serial No. 360,108

5 Claims. (Cl. 91—12)

This invention is a division of the invention disclosed in United States patent application of Kennett W. Dillman and Robert W. Barbee, Serial No. 246,242, filed December 16, 1938, for Apparatus for making reinforced sheets, this division relating particularly to the means for applying adhesive or glue.

Generally, our invention relates to a method and apparatus for making reinforced sheets of material such as may be used in the manufacture of shipping containers, and it is an object of the same to provide a simple, economical and efficient mechanism for making up stock of this kind.

Another object of the invention is to provide means for applying adhesive material, such as glue, in spaced streaks to sheets of material.

Another object of the invention is to provide means whereby streaks of adhesive of variable width may be applied to a sheet of paper or the like.

The invention accordingly comprises the elements and combinations of elements, features of construction, and arrangements of parts which will be exemplified in the structures hereinafter described, and the scope of the application of which will be indicated in the following claims.

In the accompanying drawings, in which is illustrated one of various possible embodiments of the invention:

Fig. 1 is a longitudinal section of the receiving portion of a machine showing parts relating to the subject of this divisional application;

Fig. 2 is a vertical section taken on line 2—2 of Fig. 1;

Fig. 3 is a vertical section taken on line 3—3 of Fig. 1;

Fig. 4 is a vertical section taken on line 4—4 of Fig. 1;

Fig. 5 is a vertical section taken on line 5—5 of Fig. 4;

Fig. 6 is an enlarged view of a portion of Fig. 11;

Fig. 7 is a plan view of Fig. 6;

Fig. 8 is a vertical section taken on line 8—8 of Fig. 6;

Fig. 9 is an elevation of the upper part shown in Fig. 8, viewed from the left of Fig. 8;

Fig. 10 is a side elevation of one of the members shown in Fig. 9;

Fig. 11 is a section taken on line 11—11 of Fig. 10;

Fig. 12 is a vertical section through parts shown in Fig. 6;

Fig. 13 is a section taken on line 13—13 of Fig. 6;

Fig. 14 is a plan view of certain parts shown in Figs. 7 and 12;

Fig. 15 is a section taken on line 15—15 of Figs. 6 and 12; and,

Fig. 16 is a perspective view of a scraper shown in Figs. 6 and 12.

Similar reference characters indicate corresponding parts throughout the several views of the drawings.

The machine consists broadly of an endless conveyor, a roller table or magazine for supporting a plurality of sheets of material such as fiberboard, means for feeding such sheets to the conveyor, and means for applying spaced streaks of adhesive to the sheets as they pass to the conveyor.

In the drawings, reference character 30 indicates generally longitudinal frame members forming parts of the supporting mechanism of our machine, said members being connected by transverse beams 31. An endless conveyor, indicated generally by reference character 32, is trained about shaft 33 and mounted in the machine frame. Portions of the chain 32 beyond those shown in Fig. 1 are not necessary to the present description and have therefore not been shown. The conveyor 32, driven from a suitable motor, is supported on sprockets 38 (Fig. 1) and provided with slats 39. The upper reach of the conveyor is supported by beams 40 and mounted on cross beams 31. The numerals shown in Fig. 1 and not specifically referred to here correspond to those shown in the parent case.

At the end of the machine shown in Fig. 1, there is located on the frame 30 a roller table or magazine providing a support for sheets of material. This support comprises side rails 45 mounted on the frame members 30 and having mounted thereon cross rails 46, here shown as mounted in pairs with flanges facing toward each other, the pair of rails being connected by bolts 47 (Fig. 4). Guide rails 48 for the sheets are mounted on the cross rails 46 and secured thereto by bolts having enlarged heads 49 (Fig. 5), whereby each guide rail is clamped to each of a pair of cross rails. The flanges of cross rail 46 being spaced apart, it will be seen that provision is thus made for adjustment of the guide rails 48 crosswise of the machine according to the width of the sheets on the table. Between the cross rails 46 rollers 50 are provided, these rollers being journaled in suitable brackets on longitudinal rails 45, or in other suitable manner.

At the forward end of the sheet-supporting means a glue pan 51 is mounted on brackets 52 (Figs. 1 and 2). This pan may be connected at its ends by pipes 51', 51' to a glue mixer (not shown) whereby the glue is mixed and pumped to a pipe 53 (Fig. 1) from which it is discharged on glue-applying rolls on a shaft forming part of a glue-applying apparatus.

The glue-applying apparatus is shown in Figs. 1 to 3 and 6 to 16 and comprises a lower shaft 54 with enlarged roller feed portions 55 adjustably secured to the shaft, this shaft being driven by means of a sprocket chain 56 passing over suitable sprockets on shafts 33 and 54. The shaft 54 is connected by gears 57 to shaft 58 of the upper roller, which has enlarged roller feed portions 59 to which glue is supplied by the pipe 53. The glue-applying rollers indicated generally at 59 in Figs. 1 and 3 are shown in detail in Figs. 6 to 13. In the form at present preferred, each of these portions comprises a hub 60 having a resilient tongue 61 (Figs. 6 and 8) which may be clamped to the shaft 58 by a set screw 62. A detachable rim 63 is secured to the hub, as by screws 64, and this hub is shown as supplied with circumferentially extending raised and depressed portions constituting ridges 65 by means of which glue or other suitable adhesive is applied to the sheets of material in narrow stripes, providing what we call a streak of glue, preferably consisting of continuous narrow stripes which may merge into one another by the lateral flowing of the glue if sufficient glue is supplied thereto. It will be understood that these ridges can be arranged and spaced as desired and may also consist of discontinuous portions so as to form dots of glue on the sheet instead of continuous stripes or may otherwise be varied in detail. The upper and lower rolls may be adjusted lengthwise of their shafts, according to the desired position of the streaks of adhesive on the sheets used.

It will be obvious that the rims 63 may be exchanged for others having a larger or smaller number of circumferential ridges, as may appear desirable. For further varying the width of the streak of adhesive we provide semi-circular detachable segments 66 (Figs. 9, 10 and 11) which are also shown as having each peripheral raised and depressed portions constituting a ridge 67 for the application of an adhesive to a sheet of material such as shown at 68 in Figs. 6 and 8 and elsewhere. The detachable segments are applied in pairs as will be obvious, and any desired number may be so applied and secured to the hub 60 by means of bolts 69. The raised and depressed portions of the segments 66 correspond to those of the roller rims 63.

The excess of adhesive material which is applied to the upper glue roller is scraped off and returned to pan 51 as waste, or for further circulation as above stated. Details of the scraping means are shown in Figs. 7, 12, 14, 15 and 16, the scraper being indicated generally in Fig. 1 at 70 and being pivotally mounted at 71 on brackets 52.

The base 72 of the scraper is mounted on pivot 71 and a body member 73 is secured to the base by bolts 74 extending through holes in said body. At its forward end the body 73 is provided with a plurality of fingers 75 each shaped to fit between a pair of ridges 65 so as to remove adhesive material from between said ridges. Each finger has a shoulder portion at 76 which may serve to remove excess material from the top of the adjacent ridge, but for this purpose we prefer to rely on a blade 77 extending across the entire width of the adjacent glue roller, said blade being adjustable along the scraper to vary the permissible thickness of the glue on the ridges, by means comprising screws 78 passing through elongated slots in the blade and into the body 73.

It will be evident that the detachable body 73 can be exchanged for other bodies with fingers corresponding to the grooves in other rim members, such as may be substituted for rim 63 herein illustrated.

In case a glue roller is widened by the use of segments 66, the scraper may also be widened by attaching thereto separate blades 79 such as shown in Fig. 16, the blades having individual scraping fingers 80 and overhanging shoulders 81 such as above described. The additional blades are secured to the body 72 by screws 82. Since the fingers 75 and 80 and the blade 77 coact to remove the excess glue from the glue roller, which glue thereafter flows over the top of the scraper and so to the pan 51, it is desirable to prevent the glue from running over the sides of the scraper and for this reason we provide glue-guiding side pieces 83 which are secured to the sides of the scraper by screws 82 and 84 respectively, so as to form a trough-like construction for conveying the excess glue back to the pan 51. It will be evident that the width of the scraper may be changed to correspond to a change in the width of the glue roller by adding or removing blades 79, whose fingers 80 must of course correspond to the width of the grooves between ridges 67, and by replacing blade 77 by one of appropriate width. The left-hand trough member 83 is removed, together with its screws 82, to permit changes in blades 79.

The sheets 68 may be placed one by one on the roller support or a stack of sheets may be placed thereon and fed off one by one. In either event the sheet to be treated passes underneath the pan 51 and between it and the adjacent rollers 50, then between the upper and lower glue rollers which feed the sheet forward. After this it is supported by pivoted members 85 extending for a substantial distance at each side of the upper run of the conveyor, these guides 85 being arranged at a level where they maintain the sheet out of contact with the slats 39, and being pivoted at 86 on the machine frame. The sheet is supported in such position temporarily, until it is engaged by driving lugs 91 on the conveyor, here shown as mounted on a slat of the conveyor.

As above noted, the rollers 53 are adjustably secured to the shaft 43. This may be accomplished in any of the usual ways, as by means of set screws on a device corresponding to 61, 62 used in connection with the upper glue-applying rolls.

The term "glue" is used herein generally for any adhesive or the like.

In view of the above, it will be seen that the several objects of the invention are achieved and other advantageous results attained.

As many changes could be made in the above construction without departing from the scope of the invention, it is intended that all matter contained in the above description or shown in the accompanying drawings shall be interpreted as illustrative and not in a limiting sense.

We claim:

1. In a device of the character described, means for feeding a sheet of fiberboard or the like, means for applying adhesive thereto in streaks, comprising a roller having circumferen-

tially arranged raised and depressed portions, and detachable sections for attachment to a side of the roller, each such detachable section having its periphery constructed with at least one raised and one depressed portion to correspond to the remainder of the periphery of said roller, a scraper for removing excess adhesive having fingers extending between said raised portions and having shoulder portions above said raised portions, and detachable side sections for said scraper, said last-named sections being each constructed with a finger portion and a shoulder portion to correspond to the remainder of the scraper to remove excess adhesive from detachable sections of said roller.

2. In apparatus of the class described, a lower feed roller, a cooperating upper glue-applying roller, said glue rollers each comprising a main body having peripheral grooves, means for making an extension from said body compirsing attachable discs being formed edgewise to provide additional peripheral grooves, a scraper, extensions from the scraper into the peripheral grooves in said body for clearing glue from said grooves, portions between the extensions spaced from the intermediate portions between grooves, and an adjustable member providing a common edge across said portions between extensions.

3. In apparatus of the class described, a lower feed roller, a cooperating upper glue-applying roller, said glue rollers each comprising a main body having peripheral grooves, means for making an extension from said body comprising attachable discs being formed edgewise to provide additional peripheral grooves, a scraper, extensions from the scraper into the peripheral grooves in said body for clearing glue from said grooves, portions between the extensions spaced from the intermediate portions between grooves, and attachable members for the scraper each of which consists of an extension into a groove and an adjacent portion spaced from the portions between grooves.

4. In apparatus of the class described, a lower feed roller, a cooperating upper glue-applying roller, said glue rollers each comprising a main body having peripheral grooves, means for making an extension from said body comprising attachable discs being formed edgewise to provide additional peripheral grooves, a scraper, extensions from the scraper into the peripheral grooves in said body for clearing glue from said grooves, portions between the extensions spaced from the intermediate portions between grooves, attachable members for the scraper each of which consists of an extension into a groove and an adjacent portion spaced from the portions between grooves, and an adjustable member providing a common edge across said portions between extensions.

5. In apparatus of the class described, a lower feed roller, a cooperating upper glue-applying roller, means for laterally adjusting said rollers, said glue rollers each comprising a main body having peripheral grooves, means for making an extension from said body comprising attachable discs being formed edgewise to provide additional peripheral grooves, a scraper, extensions from the scraper into the peripheral grooves in said body for clearing glue from said grooves, portions between the extensions spaced from the intermediate portions between grooves, attachable members for the scraper each of which consists of an extension into a groove and an adjacent portion spaced from the portions between grooves, an adjustable member providing a common edge across said portions between extensions, and attachable glue-guiding means at the edge of the scraper which accommodates itself to any scraper width desired.

KENNETT W. DILLMAN.
ROBERT W. BARBEE.