Fig. 5
My invention is directed to an improvement in margin or edge gluing machines.

This type of machine is used to glue or coat with adhesive substances the edges of materials which by nature of their size or variations in thickness or irregular contour cannot be handled on the ordinary type of coating machine, such as described for example in Adolph Potdevin Patent No. 1,497,196.

There are numerous articles which require coating along or adjacent the edge, varying from carton flaps of uniform thickness and considerable stiffness to edges of insert forms of thin paper. Both of the above articles are of uniform thickness and serve only to illustrate a range of materials. In between are luggage components and leather and paper novelties which vary in thickness from one end to the other as they are passed through the machine. Some articles to be glued may consist of one thin piece of leather or fabric mounted on a stiffer piece of material, such as cardboard, which in turn may already have a third piece, such as a pocket found in the inside of a suitcase.

One of the objects of my invention is to provide a machine which is so constructed as to be able to apply an even adhesive coating along or adjacent the edge of materials such as those above mentioned and similar materials.

The machines now used in this art are not mechanically adapted to give the desired results. The feed rollers that guide and feed the material over the glue roller are mounted in bearings which are slidably mounted on the machine frame, but, due to the necessity of having an open side to the machine so that wide or irregularly shaped pieces may be held by the operator, as is quite customary, the rollers and bearings are subjected to an eccentric loading. Due to this eccentric loading, a binding action takes place between the bearing housings of the feed rollers and that portion of the frame upon which they are intended to slide.

It will be apparent from the above explanation that this type of mounting for the feed rollers does not provide a sufficiently uniform pressure between the work piece and the coating or gluing roller, particularly when the work consists of an article of varying thickness. It will be appreciated also that if the feed roller bearing housings do not slide as intended on the frame of the machine, then the result is a relative misalignment of the gluing roller and feed rollers, which in time results in an uneven coating, too great a pressure adjacent the bearing side, and an insufficient pressure on the free end of the rollers.

It is the purpose of my invention to provide means for mounting and driving the feed rollers in such a fashion that they remain parallel to the coating roller and maintain a substantially uniform pressure on the coating roller regardless of variation in thickness of the material to be coated.

In the accompanying drawings,

Fig. 1 is an isometric view of a gluing machine embodying my invention;

Fig. 2 is a somewhat schematic view of the drive therefor;

Fig. 3 is a view similar to Fig. 1 of a slightly different type of gluing machine embodying my invention;

Fig. 4 shows schematically the drive therefor; and

Fig. 5 is a fragmentary elevational view of a further embodiment of the invention.

Referring to the drawings in detail, and first of all to Figs. 1 and 2:

2 designates the gluing or coating roller 4 and 6 the feed rollers. The glue pan is designated 8 and contains the adhesive which is picked up by the coating roller 2 and applied to the edge of a sheet of material which is fed between the rollers 4 and 6 and the coating roller. As is customary, the machine is opened-sided, that is, the roller 2, 4 and 6 are mounted in bearings at their inner ends, so that strips or sheets of any width may be passed through the machine and adhesive applied to the edge thereof.

As above explained, these machines are intended to accommodate sheets or strips of different thicknesses, and also sheets which may not be and often are not of uniform thickness. It is an object of my invention so to mount the feed rollers 4 and 6 that the pressure on the sheets being treated will be substantially constant. This necessitates relative movement, bodily movement, between the feed rollers and the coating roller. I have already explained the inherent defects of this general type of machine as conventionally constructed.

According to the present invention, the supporting shaft 10 for the feed roller 4 is mounted in suitable bearings in an arm 12, which is pivoted at 14 to a suitable bracket 16, carried by the machine frame.

The supporting shaft 18 for the feed roller 6 is mounted in suitable bearings in an arm 18, pivoted at 22 to a suitable bracket 24, carried by the
machine frame. The pressure of the feed rollers is regulated by a pressure spring 26, which is adjustable.

From the description thus far given it will be apparent that, as strips of different thicknesses are fed through the machine between the feed rollers 4 and 6 and the coating roller 2, the feed rollers will move bodily toward or away from the coating roller automatically, pivoting about the pivots 14 and 22, so that the pressure on the strip or sheet being operated upon is substantially constant. It will be appreciated also that the pressure on the strip or sheet will be substantially constant even though the strip or sheet is not of uniform thickness.

It will be appreciated furthermore, that there can be no binding of the rollers, as in the conventional machines above referred to, bodily movement of the feed rollers away from or toward the coating roller merely requiring pivoting of the feed roller supporting arms 12 and 20 about their respective pivots. It is to be noted also that the feed rollers pivot independently of each other, a further safeguard against any binding or other undesirable action.

The feed rollers as well as the coating roller are positively driven, and hence it becomes necessary to provide driving mechanism which is of such a nature as to permit of the bodily movement of the feed rollers above described, without disrupting the driving mechanism and without requiring any adjustment of the same other than an automatic one.

One form of driving mechanism suitable for my improved machine is shown schematically in Fig. 2, to which reference will now be made. 28 designates the main drive pulley, which, through chain or belt 30, drives pulley 32. This pulley 32 is mounted on the same shaft as reduction gear 34, which is in constant mesh with gear 35. The gear 35 is on the shaft 38, which carries the coating roller 2. The shaft 38 also carries a gear 40 which meshes with a gear 42 in turn in mesh with gear 44, the latter being in constant mesh with gears 46 and 48 carried respectively by the shafts 10 and 18 of the feed rollers 4 and 6.

It will be apparent that this gear train will effect the desired drive of the coating roller 2 and the feed rollers 4 and 6, and also permit of bodily pivoting of the feed rollers about their respective pivots toward and away from the coating roller without disrupting the driving mechanism.

From the foregoing it will be appreciated that I have provided a coating machine, more particularly an edge gluing or coater which will accommodate strips or sheets of different thicknesses and which strips or sheets may be non-uniform in thickness, the pressure of the feed rollers upon the sheets or strips being substantially constant. It will be apparent too that all danger of binding or the feed rollers is eliminated.

Certain thin materials require a smaller diameter feed roller than the machine just described, placed lower down on the periphery of the coating roller.

In Figs. 3 and 4 I have illustrated an embodiment of such a machine.

In this embodiment of the invention, 2 designates the coating roller, 6 one of the feed rollers, and 56 the other feed roller, which as shown is relatively small in diameter. The feed roller 6, as before, is mounted on shaft 10, in turn mounted in bearings in arm 20, pivoted at 22 to bracket 26, carried by the machine frame. The pressure of this feed roller is regulated by pressure spring 58.

Feed roller 56 which is considerably lower down on the periphery of the coating roller 2, than feed roller 4 of Fig. 1, is mounted on shaft 60, carried in bearings in arm 62, pivoted at 64 to a bracket 66, carried by the machine frame. The pressure of this roller is regulated independently of feed roller 6 by adjusting wheel 68. This machine has the same advantages as that of Fig. 1 in that, the feed rollers being carried by the pivoted arms 20 and 62, their pressure upon the material, despite variations in the material thickness, will be substantially constant.

The drive for this machine has been shown as comprising pulley 20 driving pulley 22 through chain or belt 30. The pulley 32 is on the same shaft as a gear 34 which constantly meshes with a gear 36 on the shaft 38 of the coating roller 2. The shaft 38 also carries a gear 40 in mesh with gear 42. This gear meshes with gear 46 in constant mesh with gear 48 on the shaft 10 of the feed roller 6. This permits this feed roller to move bodily toward or away from the coating roller 2 without interrupting its operation.

The feed roller 56 is carried on the shaft 60, as above pointed out. This shaft carries gear 70 in mesh constantly with the gear 36 carried by the shaft of the coating roller 2. The feed roller 56, therefore, can be moved bodily toward and away from the coating roller without interrupting its operation.

In the embodiment of the invention illustrated in Fig. 5 I mount the feed rollers 4 and 6 on arms 70 and 72, respectively, and pivot these arms for independent pivotal movement on a single pivot pin 74, so that each roller is free to move independently of the other. The drive illustrated comprises gears 34 and 36, 40, 42, 44, 48, the latter being on shaft 18 of feed roller 6, gear 76 and gear 46 on shaft 10 of feed roller 4.

This embodiment of my invention gives a cleaner construction to the machine and better accessibility to the feed end. This machine has another advantage in that the pivot pin 74 is removable, and when it is desired to use the machine for a wide range of uses it is a simple matter to convert the machine from a double feed roll machine to a single feed roll merely by removing this pin and substituting a single roller arm for the arms 70 and 72.

It will be apparent from all of the foregoing that I have provided a machine for applying adhesive to the edges or margins of sheets and strips, particularly those of varying thickness wherein the feed roller pressure is substantially constant despite variations in thickness of the material being handled. It will be apparent also that by reason of my improved construction danger of binding of the feed rollers or their bearings has been eliminated.

It is to be understood that I am not to be limited to the gearing shown, inasmuch as I may employ chains or belts to drive the feed rollers, and that other changes may be made in the details of construction and arrangement of parts within the purview of my invention.

What I claim is:

1. In a margin gluing machine, the combination of a coating roller, a pair of feed rollers at the periphery of the coating roller, the axes of said feed rollers being parallel to the axis of the coating roller, an arm at the inner end of each
of said feed rollers providing a bearing for the feed rollers, the outer end of the feed rollers being free, said arms extending transversely of the axes of the feed rollers being parallel to the axis of the coating roller an arm at the inner end of each of said feed rollers providing a bearing for the feed rollers, the outer end of the feed rollers being free, said arms extending transversely of the axes of the feed rollers and a pivotal mount for each arm offset with respect to the axes of the said three rollers and extending transversely of the arm, for permitting bodily displacement of the feed rollers toward and away from the coating roller while preventing bodily movement of the feed rollers in any direction other than parallel to the axis of the coating roller, and driving mechanism for said feed rollers operative throughout the said bodily displacement of the feed rollers.

3. In a margin gluing machine, the combination of a coating roller, a pair of feed rollers at the periphery of the coating roller, the axes of said feed rollers being parallel to the axis of the coating roller, an arm at the inner end of each of said feed rollers, each of said arms providing a supporting bearing for the inner end of a feed roller, the outer end of each feed roller being free, said arms extending transversely of the axes of the feed rollers, and a pivotal mount for each arm offset with respect to the axes of the feed rollers and comprising a bearing pin which extends parallel to the axes of the feed rollers, whereby the feed rollers may be bodily displaced with respect to the coating roller while maintaining the parallelism of the rollers but are restrained against bodily displacement out of parallelism with the coating roller.

4. In a margin gluing machine, the combination of a coating roller, a pair of feed rollers at the periphery of the coating roller, the axes of said feed rollers being parallel to the axis of the coating roller, an arm at the inner end of each of said feed rollers, each of said arms providing a supporting bearing for the inner end of a feed roller, the outer end of each feed roller being free, said arms extending transversely of the axes of the feed rollers, and a pivotal mount for each arm offset with respect to the axes of the feed rollers and comprising a bearing pin which extends parallel to the axes of the feed rollers, whereby the feed rollers may be bodily displaced with respect to the coating roller while maintaining the parallelism of the rollers but are restrained against bodily displacement out of parallelism with the coating roller.

5. In a margin gluing machine, the combination of a coating roller, a pair of feed rollers at the periphery of the coating roller, the axes of said feed rollers being parallel to the axis of the coating roller, an arm at the inner end of each of said feed rollers, said arms extending transverse to the axes of the said rollers and in alignment with each other, the inner end of each arm providing a bearing for the inner end of a feed roller, the outer end of the feed rollers being free, and a pivotal mount for each arm at the outer end thereof, said mount comprising a bearing extending parallel to the axes of the feed rollers, whereby the feed rollers will be displaced bodily with respect to the coating roller while maintaining the parallelism of the rollers when a strip of non-uniform thickness passes between the coating roller and the feed rollers, and driving mechanism for all of said rollers.

6. In a margin gluing machine, the combination of a coating roller, a pair of feed rollers at the periphery of the coating roller, the axes of said feed rollers being parallel to the axis of the coating roller, an arm at the inner end of each of said feed rollers, said arms extending transverse to the axis of the said rollers and in alignment with each other, the inner end of each arm providing a bearing for the inner end of a feed roller, the outer end of the feed rollers being free, and a pivotal mount for each arm at the outer end thereof, said mount comprising a bearing extending parallel to the axes of the feed rollers, whereby the feed rollers will be displaced bodily with respect to the coating roller while maintaining the parallelism of the rollers when a strip of non-uniform thickness passes between the coating roller and the feed rollers, and driving mechanism of all of said rollers operative throughout the said bodily displacement of the feed rollers.

7. In a margin gluing machine, the combination of a coating roller, a pair of cooperating feed rollers disposed parallel thereto, a pair of pivoted arms each carrying one of said feed rollers, a removable pivot pin common to said arms and extending parallel to the axes of the feed rollers, said pivot pin being offset with respect to the axes of the three rollers, said arms pivoting about said pivot pin in response to varying thicknesses of material passing between the coating roller and the feed rollers, bodily to displace the feed rollers, said pivot pin maintaining the parallelism of the rollers, and driving mechanism for the feed rollers operative throughout the bodily displacement of the feed rollers.

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