Jan. 19, 1937. L. KAY 2,068,183

MEANS FOR APPLYING ADHESIVE TO FABRICS AND THE LIKE

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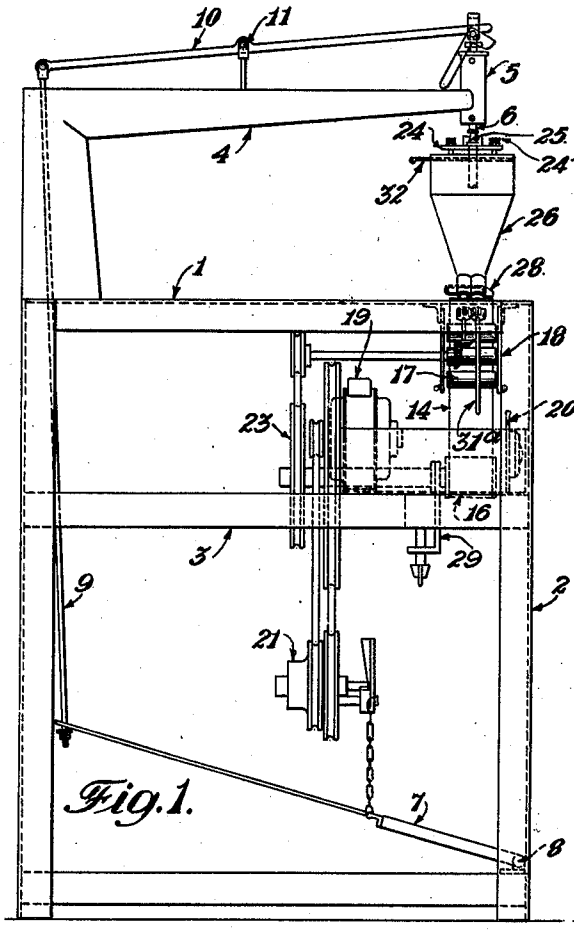


Fig. 1.

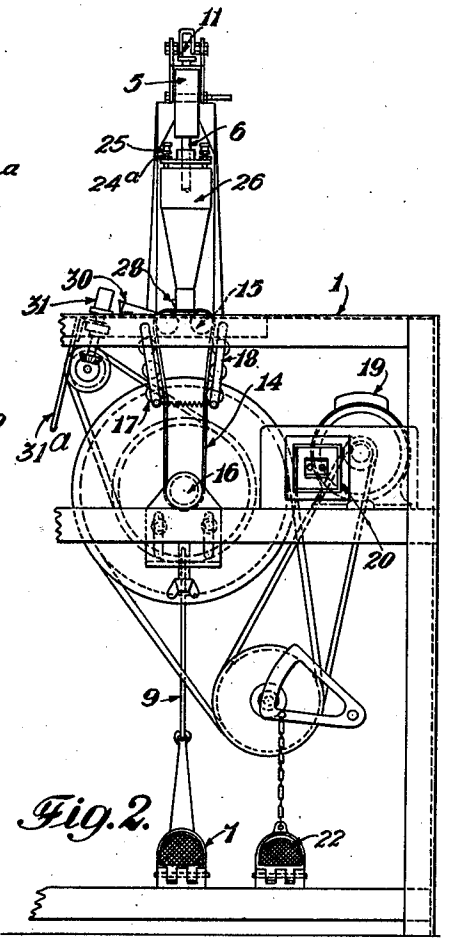


Fig. 2.

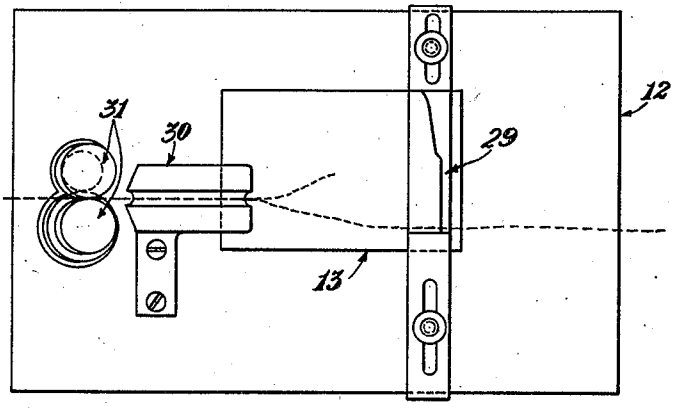


Fig. 3.

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MEANS FOR APPLYING ADHESIVE TO FABRICS AND THE LIKE

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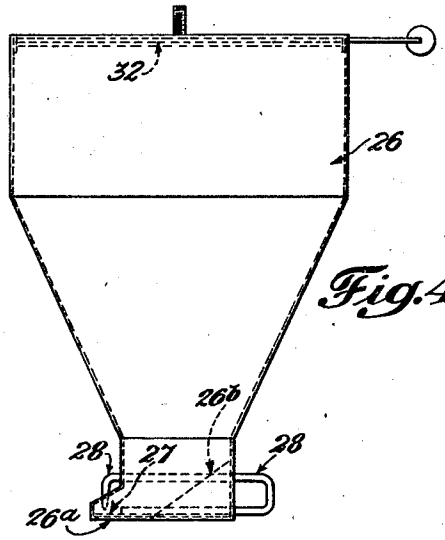


Fig. 4.

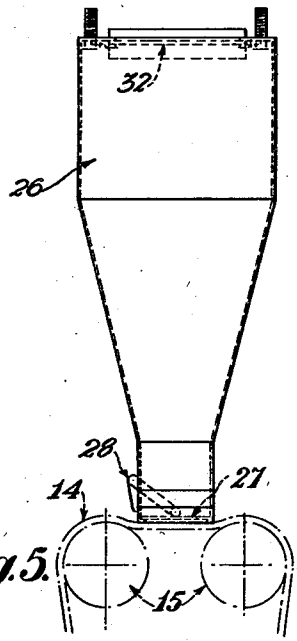


Fig. 5.

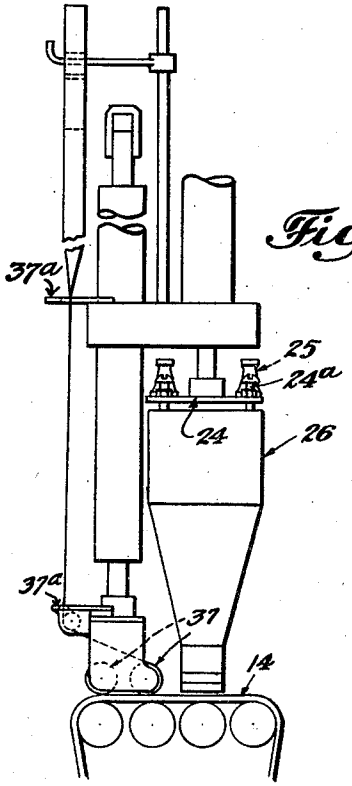


Fig. 7.

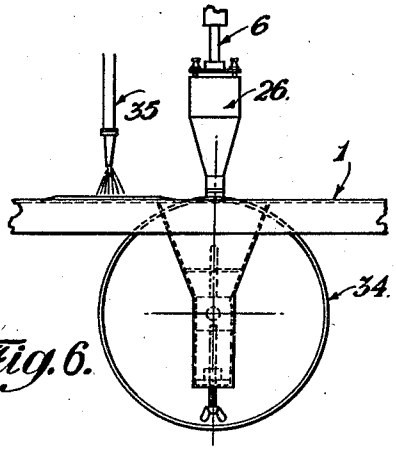


Fig. 6.

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UNITED STATES PATENT OFFICE

2,068,183

MEANS FOR APPLYING ADHESIVE TO FABRICS AND THE LIKE

Lazarus Kay, Cheetham, Manchester, England

Application February 8, 1936, Serial No. 62,980
In Great Britain February 6, 1935

3 Claims. (Cl. 91—43)

This invention is concerned with the application of an adhesive in paste or liquid form to textile fabrics and the like for the purpose of making joints, and is primarily concerned with the application of rubber solution or like quick-drying adhesive to waterproofed fabrics in the manufacture of garments, or ground sheets or the like, a process which hitherto has usually been carried out by the fingers of the operative, and then known as "smearing".

Machines for the application of adhesive to fabrics are already known, in which a container for adhesive has been movable towards and away from an endless conveyor for feeding fabrics below the same, the container having interchangeable feet, each with an orifice controlled by a plug valve.

It is necessary in these machines however that when the orifice is closed, there be the least possible residue of adhesive below it, and also that means be provided for removing any adhesive which might inadvertently be placed on the endless conveyor from such residue.

The main object of this invention is to provide for the smearing process being carried out by means of a tool or machine, whereby when the solution container is closed there is little likelihood of solution being accidentally put on the fabric, and whereby also (in some cases) means is provided for removing any solution inadvertently placed by the closed container on to the fabric feeding means.

Further objects of the invention are to provide such tools or machines with improved means whereby the "smearing" process may be combined with or may incorporate the folding or hemming of the smeared parts, the heat-drying of the joint, the pressing together by rollers of the smeared parts with or without heating means, and the application of a tape to the smeared parts say to cover a seam or for a like purpose.

According to the basic feature of this invention, a smearing tool is provided, comprising a container for a quantity of rubber solution or like adhesive, means for permitting or producing guided relative movement between the container and the fabric to be smeared, and means for bringing the adhesive continuously into pressed contact with the fabric during such movement.

The means for bringing the adhesive into contact with the fabric will be a normally-closed orifice in the container or in an extension thereof, against which orifice the fabric may be guided, means being provided to open the orifice when desired. Further means may be provided for varying the thickness of the deposited film of adhesive, this, taking the form of spacing means to regulate the distance of the moving fabric from the orifice. Further, for the smearing of seams or hems already folded, or of other upstanding parts, the said spacing means, or roller, or the walls of the orifice may be grooved to accommodate such upstanding part.

The tool may be a small portable hand tool, or may be adapted for fixing on a bench or table, or, as hereinafter set forth, may be embodied in a machine. When constructed as a hand tool, small wheels or runners may be added to facilitate its being traversed over the fabric.

According to a further feature of the invention, the tool is embodied in a machine so as to be movable towards and away from a table top or like part of the machine, by manual or pedal operation, which operation, when the tool is being raised from the work, may first close the orifice in the container, where that form of feeding the adhesive is used, and re-open it when it returns to the work. In these forms of the invention, the means for permitting relative movement between the tool and fabric may comprise a freely moving roller or conveyor band projecting above the table top below the adhesive-feeding means, and the means for producing such relative movement may comprise a positive drive for such roller or conveyor band.

According to still further features of the invention, and particularly when embodied in a machine, the tool has attached to it, or otherwise in fixed association with it, and either before or beyond it, sheet metal or like folding or hemming means for guiding the fabric into predetermined positions, and so that the fabric may be immediately hemmed, folded, or otherwise jointed, in the same machine or tool, with or without the intervening application of heat to dry the adhesive. In all cases where the adhesive used is rubber latex, or other slow-drying substance, heat will be employed between the smearing and joining or folding stages of the process, and may also be used after the jointing has been effected. When however the adhesive used is rubber solution or like viscous, quick-drying material, the application of heat may be omitted.

In addition to, or in place of the folding or hemming means (the alternatives being selected according to the particular work to be done), means for attaching a tape to the smeared parts may be provided, comprising guiding and tensioning means for the tape, and a pressure roller or rollers, with or without heating means, for

pressing the tape on to the smeared surface as the fabric advances. Here again such roller may be grooved to accommodate a seam or other upstanding part.

In the accompanying drawings various forms of the invention are illustrated by way of example:—

Fig. 1 is a side elevation of a power driven machine with one form of fabric-advancing mechanism, and one form of smearing tool, some of the details of the drive being omitted as not being themselves a part of the invention;

Fig. 2 is a front elevation of the same machine;

Fig. 3 is a plan, on a larger scale of the fabric feeding means, and also showing one form of guiding and folding mechanism;

Figs. 4 and 5 are side elevation and plan respectively of the smearing tool shown in Figs. 1 and 2, but on a larger scale;

Fig. 6 is a front elevation of a part of a machine similar to that shown in Fig. 2, but showing a further form of fabric-advancing mechanism, and also showing heating means to dry the folded and joined fabric when latex or like adhesive is used.

Fig. 7 is a front elevation, partly diagrammatic of one arrangement of taping mechanism.

Referring to Figs. 1, 2, and 3, the smearing machine comprises a table having a flat top **1**, legs **2**, and cross rails **3**. Standing up from the table top **1** is an L-shaped arm **4** with a vertical boss **5** at the front end, in which boss slides a rod **6**. At the base of the machine is a treadle lever **7** pivoted at **8** which connects by means of the member **9**, to the rear end of a lever **10** pivoted on the arm **4** at the point **11**. At its front end, the lever **10** is pivotally connected to the rod **6**, so that on depressing the treadle **7**, the rod **6** is raised. A spring or weight (not shown) is provided to return the treadle to the uppermost position.

In the table top **1**, below the front end of the arm **4**, is a plate **12**, shown in Fig. 3, which plate has a rectangular opening **13**, through which projects an endless conveyor band **14** (see Fig. 2), mounted on two upper rollers **15** and a lower roller **16**, and kept in tension by cleaning rollers **17** in spring influenced levers **18**.

Below the table top **1** is an electric motor **19** with control switch **20** at the front of the machine, which drives the conveyor **14** by means of the friction clutch **21**, operated by treadle **22**, and by means of the large pulley **23** on the shaft of the roller **16**. The conveyor is driven when the treadle **22** is depressed to engage the clutch, and moves from right to left below the boss **5** of the arm **4**.

To the lower end of the rod **6** is secured an H-shaped member **24**, to the underside of which is attached by thumbscrews **25**, a sheet metal container **26**, the lower end of which is of smaller section, and has an opening in its floor part **26***a*, but is provided with a slidable closing plate **27** operated by means of the bar **28**. Normally the bottom of the container rests with substantial pressure on the conveyor. A scraper or doctor **26***b* serves to clean the plate **27** as it is moved to and fro.

To the right hand end of the plate **12** but overlying the opening **13** is a guide **29**, whilst at the left hand end is a folder **30**, followed by rotatable pressure rollers **31**, the front one of which may be moved forward against spring pressure by means of the pivoted lever **31***a*, to allow of the work being inserted. By means of screws **24***a* at the corners of the H-shaped member, the bottom of the container may be levelled to lie squarely on the conveyor.

In use, the motor is started, the treadle **7** is depressed to raise the container clear of the conveyor, and the end of the work to be smeared is placed in the guide **29** and under the container whereupon the container is released, the plate **27** moved backwards to open it, and the treadle **22** depressed to drive the conveyor and advance the work, on which is left a film of adhesive from the container, the edges of the orifice acting as spreaders. As the fabric is advanced forward by the conveyor, it is folded and pressed in the members **30** and **31**. These members, however, may be dispensed with, or replaced by others giving different numbers or sizes of folds or hems, according to the nature of the work being dealt with.

The container **26** is shown in greater detail in Figs. 4 and 5 and has a sliding cover **32** for the filling opening.

Adjustable or interchangeable spacing members may be secured to the side of the container, at the foot, to hold it a short distance away from the work, and thereby increase the thickness of the film of adhesive.

In Fig. 6, two further modifications are shown, one of which consists in a freely mounted roller **34**, in place of the conveyor **14**, the positive drive in this case being included or omitted, as desired, since the work may easily be pulled through by hand in this case. The second modification consists of a hot-air heater **35** for use when a slow drying adhesive is employed. Other heating means may be adopted, either above or below the fabric.

In Fig. 7 one form of mechanism for attaching a tape is shown, comprising pressure rollers **37**, which may be raised from the work against spring pressure by a further treadle (not shown). Suitable guides **37***a* for the tape are shown.

In carrying out this invention in the manufacture of belts for garments, the folding device may be arranged to fold a smeared strip of fabric twice, firstly along one edge and immediately following along the other edge, the second folded-over portion overlying the first.

When a tape is to be joined to the fabric, the smearing may be effected on the tape itself, instead of or in addition to the body of the fabric, and may consist in the application of adhesive to a plain tape, or the application of a solvent to a tape already coated with adhesive.

The mounting of the smearing tool on an arm, as shown, allows of smearing away from the edge of a piece of fabric.

What I claim is:—

1. In a machine for smearing fabrics with rubber solution, a solution container with a thin flat apertured floor part adapted to be pressed firmly on to the fabric, a thin sliding plate in the container, lying on and adapted to be moved to and fro over the floor part to open and close the aperture, means connected to such plate and extending through one side wall of the container whereby such movement may be imparted to it, and a scraper or doctor also within the container for cleaning the upper face of the sliding plate as it is moved to and fro.

2. A machine for smearing fabrics with rubber solution as claimed in claim 1, and also comprising a motor driven endless band for feeding the fabric below the container, and spring pressed

cleaning rollers carried by pivoted levers, acting to tension the band and also to remove any solution placed thereon by the closed container.

3. A machine for smearing fabrics with rubber solution as claimed in claim 1, and also comprising a table top on which the fabrics may be supported, an elbow-shaped arm rising from the table top and carrying at its free end a vertically slidable rod, an H-shaped plate at the bottom of said rod, screws extending upwards from the container to pass through and secure to the H-shaped member co-acting with the top of the container, and further screws in the H-shaped member, for levelling the bottom of the container with respect to the table top.

LAZARUS KAY.