

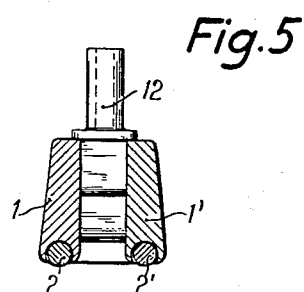
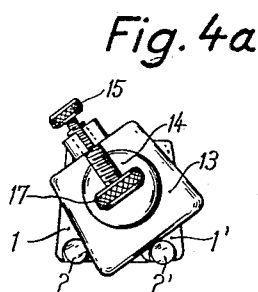
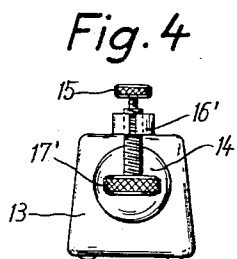
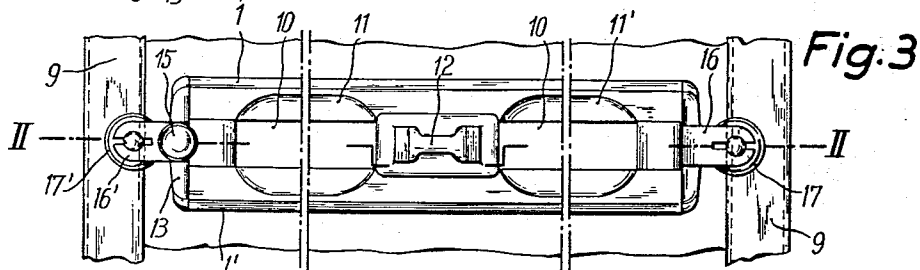
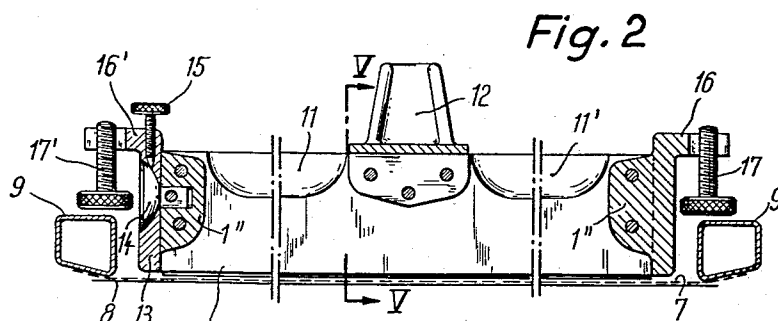
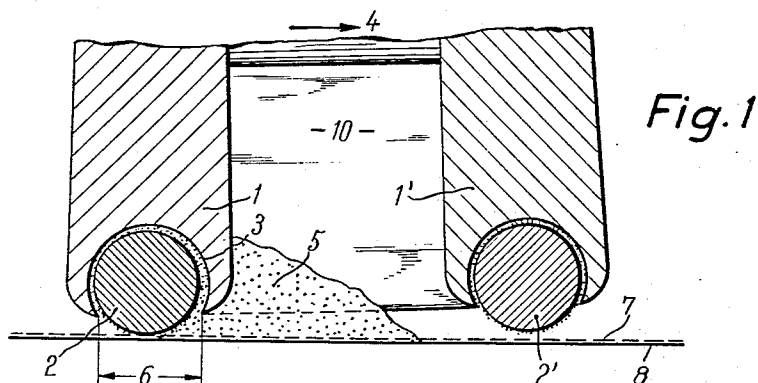
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PRINTING TEXTILES AND LIKE MATERIALS

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PRINTING TEXTILES AND LIKE MATERIALS

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8 Claims. (Cl. 101—123)

My invention relates generally to mountings of a roller for applying a viscous material to a surface, in particular for applying colour in a screen printing process.

Hitherto it was usual to employ printing blades—doctor blades for applying the colour in a stencil or screen printing process, the doctor blade having an edge of wood, rubber or metal which applied the colour through the screen to the surface to be printed. These doctors were generally moved to and fro upon the screen in order to get enough colour through it. This took time and led to rapid wearing off the doctor edge and of the screen.

The rollers used for applying the colours were usually mounted with their reduced ends in bearings at the ends of the printing arrangement. But difficulties arose with this type of roller mounting in screen printing when the width of the material to be printed was large up to 6.6'.

For various reasons the diameter of the rollers cannot be made large enough to obviate the bending of the rollers, under the printing pressure.

It was already suggested to support the colour applying rollers or the doctor rollers in these cases by one or more support rollers in order to prevent their bending.

It is an object of the present invention to simplify the means for preventing the bending of the doctor rollers. In accordance with the present invention the doctor roller is supported not by end bearings but by a non-rotating support comprising a recess of nearly circular cross section, open on the side facing the printing screen, the support enclosing the printing roller in such a manner that a clearance is left between them at least on a part of their length.

Another object of the present invention is to provide a recess having a cylindrical surface open on the side facing the printing material and having a diameter somewhat larger than that of the doctor roller. Said opening having preferably a width smaller than the diameter of the roller, so that the recess forms a cage-shaped support for the roller.

These and other objects of the present invention will be made apparent as the disclosure proceeds with reference to the accompanying drawings. In the drawings, forming part of this disclosure:

Fig. 1 is a cross section through a support or bearing for one or two doctor rollers.

Fig. 2 shows a longitudinal section through a bearing for two doctor rollers along the line II—II of Fig. 3.

Fig. 3 is a plan view of the arrangement shown in Fig. 2.

Figs. 4 and 4a are side elevations of the bearing looked upon from the left hand side, of the bearing shown in Figs. 2 and 3 in two different positions of the closure.

Fig. 5 shows a cross section of the bearing for two doctor rollers.

The left hand part of Fig. 1 shows the bearing 1 for the doctor roller 2, the doctor roller being disposed in a recess 3 in the bearing, which recess has an opening at

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its bottom part, facing the printing material. The recess is of approximately circular cross section and may extend over the whole length of the roller 2 or over a part of it only. In the modification of the present invention shown in the drawings, the recess is shown having a cylindrical surface the diameter of which is somewhat larger than the diameter of the doctor roller 2 so that a certain clearance is left between the roller and the bearing surface. The opening 6 in the recess should be preferably of a smaller width than the diameter of the roller 2 so that the roller cannot fall out of said opening and the recess forms a cage-shaped support for the doctor roller. With this arrangement the roller must be introduced into the recess in axial direction from one of the sides and similarly taken out. The open ends of the recess are preferably closed by plates one of which plates can be made removable. The ends of the roller may be conically tapered.

The body of the bearing 1 is preferably made in form of a supporting ruler which takes over the printing pressure of the roller.

The material to be printed is indicated at 8 with the printing screen 7 shown above the material. A colour mixture 5 is supplied to the screen, and the bearing 1 with the roller 2 is moved in the direction of the arrow 4, either by hand or mechanically over the surface of 7 and 8. The colouring material gets into the gap between the roller 2 and the recess 3, because the roller tends to lag relatively to the bearing, as indicated in the left hand side of Fig. 1. Thus the roller becomes coated with a film of colour over its whole surface and experience shows that this film of colour provides a sufficient lubrication in order to enable the roller to rotate with very little friction.

The bearing according to the present invention makes it possible to employ, according to the practical requirements of the respective printing processes, rollers of relatively small diameter and of substantial length without a risk of the rollers bending during the printing operation. The present invention has enabled screen printing to be carried out with printing rollers of diameter as small as 0.32" and of a length up to about 6.6'. As shown in dotted lines in Fig. 1 the above described doctor supporting arrangement can be constructed in twin form. The bearing 1 can be structurally united with a further bearing 1' which supports a second roller 2'. A space 10 is provided between the two rollers into which space the colour can be poured. When such a twin device is in operation it is tilted a little, as indicated in Fig. 1 when the arrangement is moved in the direction of the arrow 4, so that the front roller 2' is not in action and only the roller 2 is applied to the printing surface. When the device is moved in opposite direction, backwardly, it is tilted in the opposite direction so that only the roller 2' is in operation and the roller 2 is no longer in action.

The doctor roller 2 may be made of wood, rubber, metal or the like material. For many purposes a roller made of a solid synthetic plastic, i.e. of a plastic without a core of any other material, has proved to be satisfactory. But it is also possible to provide rollers consisting of a cylindrical solid or hollow core covered with a coating of plastic material, for instance soft rubber or similar material.

Figs. 2 and 3 are two views of a twin device, according to the present invention and the Fig. 5 is a cross section of the bearing for the two doctor rollers. In the middle of the device is provided a lug 12 or 12' upon which a suitable handle may be fastened or to which a mechanical drive may be connected in order to impart the desired movement to the device. The colour is filled into the space 10 through the provided openings 11 and 11' on opposite sides of the attachment 12. At the right hand end of Figs. 2 and 3 the recesses which receive the rollers are permanently closed. At the left hand end of

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same there is provided a pivoted end plate 13 which can rock upon a partially spherical head 14 of a pin secured in the part 1". This pivoted plate can be held in the closed position as shown in Fig. 4 or in the open position as shown in Fig. 4a by means of a clamping screw 15. As shown in Fig. 4a in its open position the end plate leaves free both recesses, so that the rollers 2 and 2' can be easily taken out of the supports.

Lugs 16 and 16' projecting from the ends of the structure or from the end plate carry adjustable crews 17 and 17' which can abut upon the screen frame 9 so that in case the frame 9 is lifted, the doctor device will be lifted with it.

The present invention can be used generally for applying any kind of fluid or semi-fluid substances of various compositions in similar way as described above for applying colours for printing textiles; it is particularly useful in application of substances of high viscosity such as printing inks, adhesives, emulsions and the like which can be spread by means of a roller on surfaces or webs of all kinds, such as, for instance, textiles, foils, glass plates, paper and the like.

The present invention is not limited to the applications and constructions described above and shown in the accompanying drawings, but numerous modifications of same are possible within the scope of the present invention, and the appended claims.

I claim:

1. In means for applying viscous materials to surfaces, particularly for applying printing colors to surfaces in a screen printing process, a bearing for a doctor roller comprising supporting means having a recess of approximately circular cross-section in which the roller is guided, said recess extending along the whole length of the bearing and being provided at least at one end with a removable closure in form of a pivoted plate, whereby lugs are provided on said plate and at the opposite end of the supporting guide, the lugs comprising adjustable screws adapted to abut against the frame of the printing screen.

2. In means for applying viscous material to surfaces, particularly for applying printing colors to surfaces in a stencil-screen printing process, a rigid bearing for a doctor roller comprising supporting means having a recess of approximately circular cross-section in which the roller is guided with a clearance between the doctor roller and said supporting means, said recess extending along the whole length of the bearing and being provided at least at one end with a swinging closure in form of a pivoted plate, having a clamping screw which fastens the closing plate respectively in its closed and open positions, said printing colors being simultaneously used for lubricating the doctor roller in said supporting means.

3. In means for applying viscous materials to surfaces, particularly for applying printing colors to surfaces in a stencil-screen printing process, a rigid bearing for a doctor roller comprising supporting means having a recess of approximately circular cross-section in which the roller is guided with a clearance between the doctor roller and said supporting means, said recess extending along the whole length of the bearing and being provided at least at one end with a swinging closure in form of a pivoted closing plate, the pivoted end of which is rotatably fastened to a spherical calotte-shaped head of a journal which is securely fastened to the bearing support.

4. In means for applying printing colors to surfaces in a stencil-screen printing process, using a printing roll, a supporting device comprising two elongated bearings, each of said bearings being provided with an approximately cylindrical recess for a printing roller, the bearings being combined to a rigid structural unit and having an intermediate space between them, open at its upper end through which end the material for processing is introduced, a slot in the supporting structure extending in longitudinal direction of recess on the side facing the printing surface, the inner wall of said recess for the rest

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of its extension being continuous and substantially enclosing the printing roller with a clearance between said roller and said supporting device along at least a part of its length, said printing colors being supplied to the screen, thereby entering said slot and said clearance to lubricate the roller for rotation in said recess.

5. In means for applying printing colors to surfaces in a stencil-screen printing process using a printing roll, a supporting device comprising two bearings, each of said bearings being provided with an approximately cylindrical recess for a printing roller, the bearings being combined with their lateral parts and a middle lug into a rigid structural unit providing an intermediate space with openings at its upper end, on both sides of said lug, through which opening the material for processing is introduced, a slot in the supporting device extending in the longitudinal direction of said recess on the side facing the printing surface, the inner wall of said recess for the rest of its extension being continuous and substantially enclosing the printing roller with a clearance between said roller and said supporting device along a part of its length, said printing colors being supplied to the screen, thereby entering into said slot and said clearance to lubricate the roller for rotation in said recess.

6. In means for applying printing colors to surfaces in a stencil-screen printing process using a printing roll, a supporting device comprising two bearings, each of said bearings being provided with an approximately cylindrical recess, for a printing roller, the bearings being combined with their lateral parts and a middle lug into a rigid structural unit providing an intermediate space with openings at its upper end, on both sides of said lug through which opening the material for processing is introduced, a slot in the supporting device extending in the longitudinal direction of said recess on the side facing the printing surface, the inner wall of said recess for the rest of its extension being continuous and substantially enclosing the printing roller with a clearance between said roller and said supporting device along a part of its length, said printing colors being supplied to the screen, thereby entering into said slot and said clearance to lubricate the roller for rotation in said recess, and lugs projecting from the ends of the unit and carrying adjustable means, which can abut the screen frame in said means.

7. In means for applying printing colors to surfaces in a stencil-screen printing process using a printing roll, a supporting device comprising two bearings, each of said bearings being provided with an approximately cylindrical recess for a printing roller, the bearings being combined with their lateral parts and a middle lug into a rigid structural unit providing an intermediate space with openings at its upper end, on both sides of said lug, through which opening the material for processing is introduced, a slot in the supporting device extending in the longitudinal direction of said recess on the side facing the printing surface, the inner wall of said recess for the rest of its extension being continuous and substantially enclosing the printing roller with a clearance between said roller and said supporting device along a part of its length, said printing colors being supplied to the screen, thereby entering into said slot and said clearance to lubricate the roller for rotation in said recess, and being provided at least at one end with a swinging closure in form of a pivoted plate, said plate being pivoted on a pin and designed to close both recesses, and when swung aside to free both said recesses.

8. In means for applying printing colors to surfaces in a stencil-screen printing process, a rigid bearing for a doctor roller comprising means having a recess of approximately circular cross-section in which the roller is guided with a clearance between the doctor roller and said supporting means, said recess extending along the whole length of the bearing and being provided at least at one end with a swinging closure in form of a pivoted

plate pivoting on a pin, the pivoted end of which is rotatably fastened to a spherical calotte-shaped head of a journal which is securely fastened to the bearing support, and being designed to close both recesses and when swung aside to free both said recesses.

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