Nov. 12, 1968 S. FISHER 3,409,929

PAINT ROLLER SPRAY SHIELD AND LEVELLER

Filed Nov. 13, 1967 2 Sheets-Sheet 1

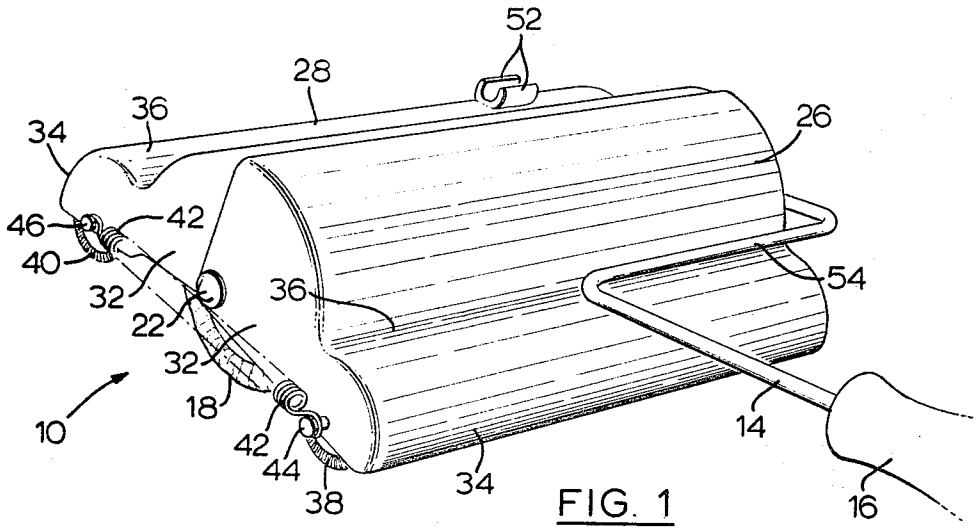


FIG. 1

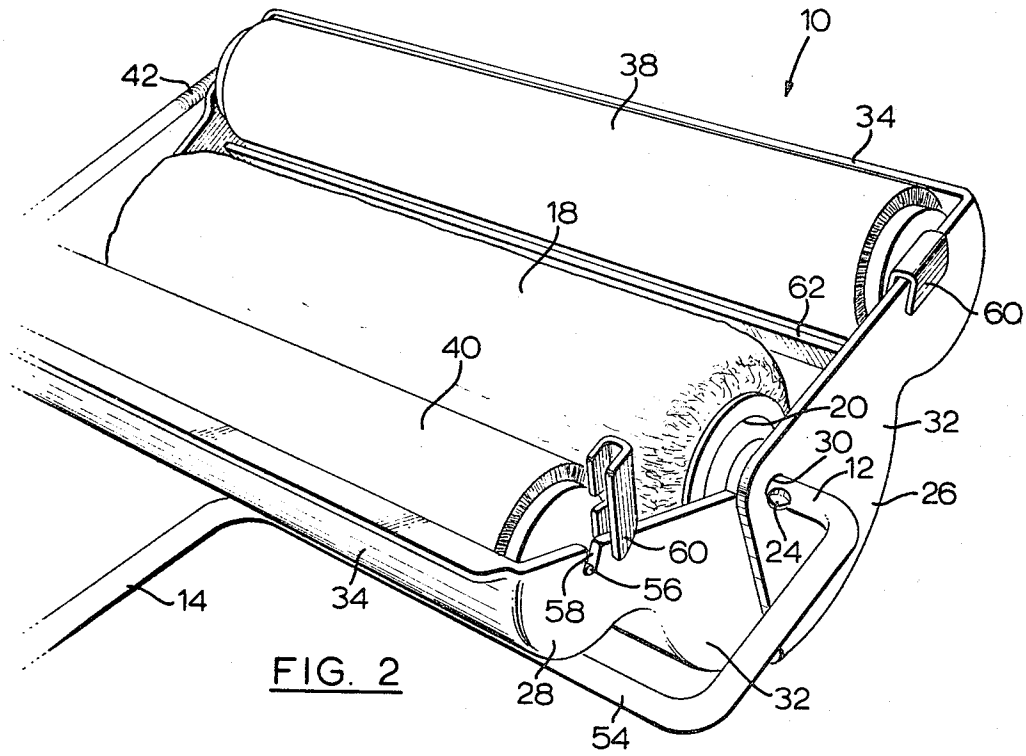


FIG. 2

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PAINT ROLLER SPRAY SHIELD AND LEVELLER

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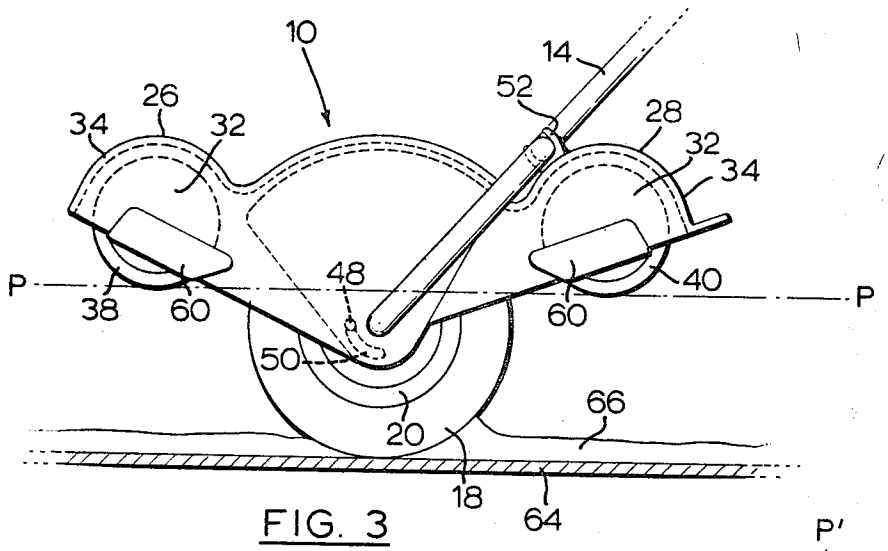


FIG. 3

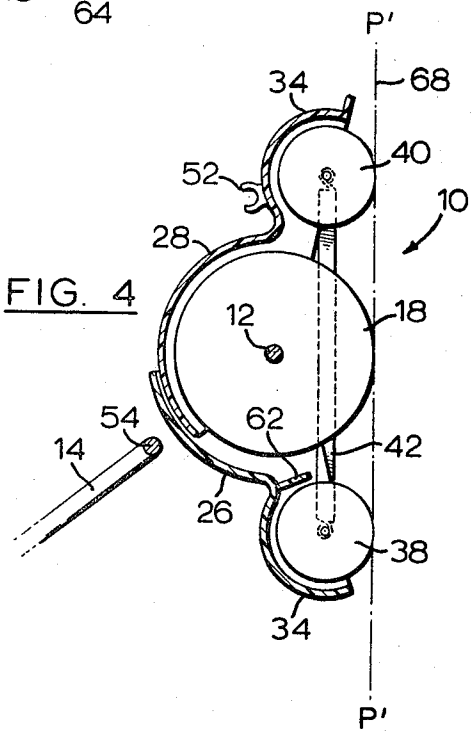


FIG. 4

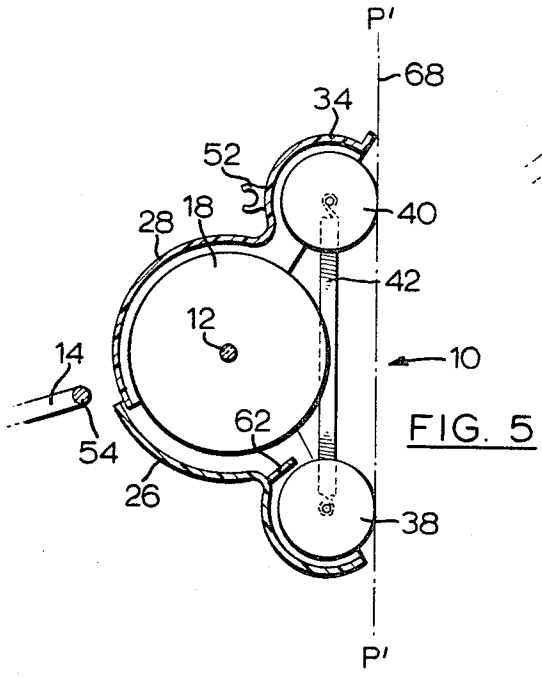


FIG. 5

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PAINT ROLLER SPRAY SHIELD AND LEVELLER

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Filed Nov. 13, 1967, Ser. No. 682,426
8 Claims. (Cl. 15—248)

ABSTRACT OF THE DISCLOSURE

This disclosure relates to a spray shield and paint-levelling accessory for paint rollers and includes a pair of levelling rollers rotatably mounted on opposite sides of a main roller within a two-piece pivotally connected shield structure.

BACKGROUND OF THE INVENTION

The present invention relates to a spray shield and paint-levelling accessory for paint roller applicators. The invention also relates to improved paint roller applicators incorporating such accessories.

The use of roller applicators for the application of paint or other liquid coating materials to surfaces has become widely accepted in recent years. Although such roller applicators have many advantages compared to the use of brushes particularly with respect to the speed of application and to the uniformity of the coating applied to a surface, they have several disadvantages.

One well known disadvantage of such roller applicators is that they have a tendency to spray paint in a rearward direction due to the effects of centrifugal force. It will be appreciated that this problem is most serious at high application rates or if the applicator roller is excessively heavily loaded with paint and particularly if the paint is one having a thin consistency.

A primary object of the present invention is to provide a spray shield accessory for use with a paint roller applicator, by the use of which the extent to which paint is "sprayed" in a rearward direction is substantially reduced.

A further object of the present invention is to provide a paint-levelling accessory for use with a paint roller applicator in order to provide improved uniformity of paint application to a surface being painted.

SUMMARY OF THE INVENTION

These and other objects are achieved in accordance with the invention by the use of a spray shield and paint-levelling accessory which comprises (a) two co-operating and overlapping cover portions, each of which has an open front face defined by two side walls and an end wall, said cover portions being provided in their side walls with axially aligned openings for receiving the roller shaft of a paint applicator roller and about which roller shaft said cover portions are relatively rotatable, (b) two paint spreading and levelling rollers, each of which is mounted in a separate one of said cover portions for rotation about an axis parallel to said roller shaft, said axes of said paint-spreading and levelling rollers being so disposed that the peripheral surfaces of said paint-spreading and levelling rollers project through said open front faces of said cover portions and (c) spring bias means by means of which said cover portions are normally disposed so that said paint applicator roller is normally disposed completely rearwardly of a plane defined by the forwardmost peripheral surfaces of said paint-spreading and levelling rollers except that, on the application of a forwardly directed force to said roller shaft, said cover portions are relatively rotated so that said paint applicator roller moves relatively forwardly against the action of said spring bias means at least to the extent that its forwardmost peripheral surface is disposed in said plane defined by said forwardmost peripheral surfaces of said paint-spreading and levelling rollers.

In accordance with a preferred construction, an accessory in accordance with the invention is constructed with its cover portions interconnected across at least one corresponding pair of their side walls by a helical tension spring so as to provide a snap-action double-toggle type linkage therebetween whereby said cover portions are normally biased into one of two relative positions, namely either into said rearward position in which said paint applicator roller is disposed completely rearwardly of said plane defined by the forwardmost peripheral surfaces of said paint-spreading and levelling rollers, or into a forward position in which the forwardmost peripheral surface of said paint applicator roller is disposed forwardly of said plane defined by said forwardmost peripheral surfaces of said paint-spreading and levelling rollers.

In accordance with yet another preferred constructional feature, one of said cover portions contains in at least one of its side walls a two-ended arcuate slot adapted to receive a co-operating pin provided on the corresponding side wall of the other of said cover portions, engagement of said pin with the ends of said slot determining limits for the relative rotation of said cover portions.

In order to facilitate application of paint or other coating liquid to the paint applicator roller, at least one of the cover portions can be provided with a releasable locking means for releasably securing said cover portion to a handle shaft of said paint roller applicator.

So as to facilitate insertion and removal of the paint-spreading and levelling rollers for the purpose of cleaning and replacement, the latter are preferably removably mounted in the respective cover portions, for example, the paint spreading and levelling rollers can be provided with stub shafts which are received in pivot openings provided in the side walls of said cover portions, at least one of said pivot openings in each of said cover portions being in the form of an open-ended slot provided with a pivoted closure member.

In accordance with yet another preferred feature of the invention, an accessory according to the invention is usefully provided internally with a drip shield integral with one of said cover portions intermediate said paint applicator roller and the respective paint-spreading and levelling roller for the purpose of directing paint dripping downwardly from said paint applicator roller onto the respective paint-spreading and levelling roller.

As hereinbefore stated, the invention also embraces improved paint roller applicators which incorporate the aforementioned accessories. In its broadest scope, such an improved paint roller applicator comprises (a) a paint applicator roller carried by a roller shaft connected by a handle shaft to a handle, (b) two co-operating and overlapping cover portions, each of which has an open front face defined by two side walls and an end wall, said cover portions being provided in their side walls with axially aligned openings receiving said roller shaft and about which said cover portions are relatively rotatable (c) two paint-spreading and levelling rollers, each of which is mounted in a separate one of said cover portions for rotation about an axis parallel to said roller shaft, said axes of said paint-spreading and levelling rollers being so disposed that the peripheral surfaces of said paint-spreading and levelling rollers project through said open front faces of said cover portions, and (d) spring bias means by means of which said cover portions are normally disposed so that said paint applicator roller is normally disposed completely rearwardly of a plane defined by the forwardmost peripheral surfaces of said paint-spreading and levelling rollers except that, on the application of a forwardly directed force to said roller shaft, said cover portions are relatively rotated so that said paint applicator roller moves relatively forwardly against the action of

said spring bias means at least to the extent that its forwardmost peripheral surface is disposed in said plane defined by said forwardmost peripheral surfaces of said paint-spreading and levelling rollers.

BRIEF DESCRIPTION OF THE DRAWINGS

The invention will now be described merely by way of illustration with reference to the accompanying drawings, in which:

FIGURE 1 is a perspective view generally from the rear of an improved paint roller applicator incorporating a spray shield and paint-levelling accessory in accordance with the present invention;

FIGURE 2 is a partial front perspective view of the paint roller applicator of FIGURE 1;

FIGURE 3 is a side elevation of the paint roller applicator of FIGURE 1 with the paint applicator roller in its "forward" position;

FIGURE 4 is a partial vertical section through the paint roller applicator of FIGURE 1 with the paint applicator roller in the "paint-applying" position; and

FIGURE 5 is a section similar to that of FIGURE 4 with the paint applicator roller in its "rearward" position.

DESCRIPTION OF THE PREFERRED EMBODIMENT

In order to simplify the description, the face of the applicator which is applied to the surface to be painted is referred to herein and in the appended claims as the "front" surface and the direction perpendicularly from such face towards the surface to be painted will be considered to be the "forward" direction. Similarly, the opposite direction will be referred to as the "rearward" direction. It will be appreciated that the adoption of this terminology is in no way intended to introduce any restriction into the description of the claims.

Referring now to the drawings and particularly to FIGURES 1 to 3 thereof, it will be seen that the paint roller applicator illustrated comprises a paint applicator roller generally indicated at **10** mounted for free rotation on a roller shaft **12** integrally formed with a handle shaft **14** to which a handle **16** is secured in any convenient manner.

The paint applicator roller **10** may be of any suitable construction and may, for example, comprise a fleece-like sleeve **18** secured to a spirally wound cardboard tube former (not shown). In such a construction, the tube former is provided at each end with a male boss **20** and these bosses are provided with axial openings through which the roller shaft **12** passes. The roller shaft **12** is provided at its free end with a suitable clip **22** for retaining the roller **10** thereon and, at its opposite end, with a radial projection **24** for preventing undesirable axial movement of the roller **10** on the roller shaft **12**.

It should here be noted that the paint roller applicator hereinbefore specifically described does not differ significantly from well known commercially successful paint roller applicators. One important difference concerns the relative lengths of the roller **10** and the shaft **12**. As will be more readily understood as the description proceeds, the roller **10** will be shorter than in conventional paint roller applicators in order to permit the cover portions to be mounted on the roller shaft **12** in a manner now to be described.

It will further be seen that the paint roller applicator is provided with two overlapping cover portions **26** and **28**. These cover portions **26** and **28** are provided with axially aligned openings **30** in which the roller shaft **12** is received. It should here be noted that the openings **30** should be sufficiently large to permit free rotation of the cover portions **26** and **28** about the roller shaft **12**.

It should further be noted that the cover portion **26** is generally larger than the cover portion **28** and that these cover portions **26** and **28** are dimensioned and shaped so that they overlap and are free to rotate relative to each other about roller shaft **12** without interfering with each other. Each of the cover portions **26** and **28** comprises an open front face defined by two side walls **32** and an end wall **34** integrally formed with a rear wall **36**.

Two paint-spreading and levelling rollers **38** and **40** are also provided. Each of these is mounted in a separate one of said cover portions **26** and **28** respectively for free rotation about an axis generally parallel to the roller shaft **12**. It should be noted that the rollers **38** and **40** are disposed so that their peripheral surfaces project through the open front faces of the cover portions **26** and **28** respectively. The preferred manner for mounting the rollers **38** and **40** will be described in greater detail hereinafter.

The paint-spreading and levelling rollers **38** and **40** can be formed of any suitable material and, in the embodiment illustrated, each of these rollers comprises a spirally wound cardboard tube former (not shown) covered with a heavy-nap suede-like material.

As hereinbefore indicated, the cover portions **26** and **28** are spring-biased so that the paint applicator roller **10** is normally disposed completely rearwardly of a plane P'—P' defined by the forwardmost peripheral surfaces of the paint-spreading and levelling rollers **38** and **40**, as particularly shown in FIGURES 2 and 5. If, however, a forwardly directed force is applied to the roller shaft **12**, as will be explained in greater detail hereinafter, the cover portions **26** and **28** are relatively rotated so that the paint applicator roller **10** moves relatively forwardly against the action of the spring bias means at least to the extent that its forwardmost peripheral surface is disposed in the plane P'—P' defined by the forwardmost peripheral surfaces of the paint-spreading and levelling rollers **38** and **40** as shown in FIGURE 4.

One suitable form of spring bias means comprises, as shown in the drawings, a helical tension spring **42** interconnecting the cover portions **26** and **28**. The spring **42** is stretched between studs **44** and **46** provided on the side walls **32** of the cover portions **26** and **28** respectively. It will be appreciated that the spring **42** can serve to maintain the paint applicator roller **10** normally in its rearward position as shown in FIGURES 2 and 5.

In the preferred embodiment of the invention shown in the drawings, the cover portions **26** and **28** are interconnected to provide a snap-action double-toggle type linkage therebetween, whereby the cover portions **26** and **28** are normally biased into either of two relative positions, namely into the positions shown in FIGURES 3 and 5. This operation will be more fully described hereinafter with reference to the use of the paint roller applicator.

Relative rotation of the two cover portions **26** and **28** is restricted by the engagement of a pin **48** provided in at least one side wall **32** of the cover portion **26** with the two ends of a co-operating arcuate slot **50** provided in the corresponding wall **32** of the cover portion **28** and in which the pin **48** is free to move on relative rotation of the cover portions **26** and **28**.

Reference to FIGURES 1 and 3 will show that the cover portion **28** is provided with a releasable locking means for releasably securing the cover portion **28** to the handle shaft **14** of the paint roller applicator. In the embodiment illustrated, the releasable locking means comprises a pair of co-operating resilient tongues **52** which snap partially around the section **54** of the handle shaft **14**.

As previously indicated, the paint-spreading and levelling rollers **38** and **40** are preferably removable for the purpose of facilitating cleaning and replacement. One particularly convenient way of doing this is shown in the drawings. It will be noticed that each of the rollers **38** and **40** is provided with axial stub shafts **56**. The first stub shaft **56** of each roller is received in a pivot opening in the side wall **32** of the respective cover portion and the second stub shaft **56** of each roller is received in an open-

ended slot **58** in which it is removably retained by a pivoted closure member indicated at **60**.

A drip shield **62** preferably integrally formed with the cover portion **26** is provided intermediate the paint applicator roller **10** and the paint-spreading and levelling roller **38** for a purpose which will become more apparent as the specific description proceeds.

It should be borne in mind that the present invention embraces improved paint roller applicators as well as spray shield and paint-levelling accessories for use with existing paint roller applicators. For instance, the accessory comprising the cover portions **26** and **28**, the paint-spreading and levelling rollers **38** and **40** and the spring **42** may be used with an existing paint roller applicator. It will be appreciated that such an accessory is fitted to an existing paint roller applicator merely by passing the roller shaft of the existing applicator first through the holes **30** in one pair of side walls **32** of the cover portions **26** and **28**, then through the applicator roller of the existing applicator, and finally through the holes **30** in the second pair of side walls **32** of the cover portions **26** and **28**. A suitable clip **22** is then secured to the free end of the roller shaft **12** to prevent accidental disassembly.

In use, the cover portions **26** and **28** are first "snapped" to the relative positions shown in FIGURE 3, being held in this position by the toggle action of the spring **42**. The paint applicator roller **10** is now in its "forward" position, i.e. it is disposed forwardly of the plane P—P (FIGURE 3) defined by the forwardmost peripheral surfaces of the paint-spreading and levelling rollers **38** and **40**. With the paint applicator rollers **10** in this "forward" position, paint may readily be applied thereto by rolling it in an appropriate container **64** containing a suitable depth of paint **66** (FIGURE 3). In order to prevent the cover members **26** and **28** rotating about the roller shaft **12** and so coming into contact with the paint **66** in the container **64**, the cover portions are preferably temporarily secured to the handle shaft **14** by means of the locking tongues **52** as previously described and as shown in FIGURE 3.

As soon as sufficient paint has been picked up by the paint applicator roller **10**, the applicator roller **10** is removed from the container **64** and the handle shaft **14** is released from the locking tongues **52**. The cover portions **26** and **28** are next "snapped" forwardly by pivoting them about the roller shaft **12** against the action of the spring **42** so that the paint applicator roller **10** is in its rearward position as shown in FIGURE 5. The paint roller applicator is then pressed against the surface to be painted, such as wall **68** (FIGURES 4 and 5). By the application of sufficient forward force to the handle **16**, the spring bias from the tension spring **42** is overcome and the cover portions **26** and **28** rotate relative to each other until the paint applicator roller **10** comes into contact with the wall **68** as shown in FIGURE 4. Vertical movement of the applicator then effects the desired transfer of the paint from the roller **10** to the wall or surface **68** in the conventional manner.

It will readily be seen from FIGURE 4 that the paint-spreading and levelling rollers **38** and **40** are always in contact with the wall **68** and so serve to reduce irregularities in the paint film applied to the wall. This in turn ensures that a smoother and more complete coating of the surface **68** is obtained. It will also be appreciated that, by reducing the forward pressure on the handle **16**, the cover portions **26** and **28** may be allowed to rotate relatively to each other so that the paint applicator roller **10** is rearwardly retracted under the influence of the tension spring **42** so that only the paint-spreading and levelling rollers **38** and **40** are in contact with the wall **68** (FIGURE 5). This is particularly useful, if sufficient paint has been applied to the surface **68** but it is still desired to effect further spreading and levelling by means of the rollers **38** and **40**.

It will also be noted that the rearwardly directed surfaces of all of the rollers **10**, **38** and **40** are at all times completely enclosed by the cover portions **26** and **28**. This ensures that any paint thrown rearwardly off the rollers by centrifugal force is not scattered indiscriminately around the painting area or even onto the operator. Any paint thrown off the paint applicator roller **10** or the paint-spreading and levelling roller **40** is collected within the cover portions **26** and **28** and settles under the influence of gravity downwardly onto the drip shield **62** from which it overflows onto the paint-spreading and levelling roller **38**. It will be appreciated that the major proportion of such "lost" paint will originate from the paint applicator roller **10** and that the paint lost by dripping from the paint-spreading and levelling roller **38** will be negligible.

In practice, it has been found that, provided paint applicator roller **10** is not excessively loaded with paint, the amount of paint dripping from the lower paint-spreading and levelling roller **38** is negligible and that, with sensible utilization of the applicator, surfaces such as walls can be painted at a high speed with minimal risk of splashing adjacent areas to give an excellent surface finish.

It will be understood, of course, that modifications can be made in the preferred embodiments of the invention described and illustrated herein without departing from the scope and purview of the appended claims.

What I claim as new and desire to protect by Letters Patent of the United States is:

1. A spray shield and paint-levelling accessory for a paint roller applicator which comprises (a) two co-operating and overlapping cover portions, each of which has an open front face defined by two side walls and an end wall, said cover portions being provided in their side walls with axially aligned openings for receiving the roller shaft of a paint applicator roller and about which roller shaft said cover portions are relatively rotatable, (b) two paint-spreading and levelling rollers, each of which is mounted in a separate one of said cover portions for rotation about an axis parallel to said roller shaft, said axes of said paint-spreading and levelling rollers being so disposed that the peripheral surfaces of said paint-spreading and levelling rollers project through said open front faces of said cover portions and (c) spring bias means by means of which said cover portions are normally disposed so that said paint applicator roller is normally disposed completely rearwardly of a plane defined by the forwardmost peripheral surfaces of said paint-spreading and levelling rollers except that, on the application of a forwardly directed force to said roller shaft, said cover portions are relatively rotated so that said paint applicator roller moves relatively forwardly against the action of said spring bias means at least to the extent that its forwardmost peripheral surface is disposed in said plane defined by said forwardmost peripheral surfaces of said paint-spreading and leveling rollers.

2. A spray shield and paint-leveling accessory as claimed in claim **1** in which said cover portions are interconnected across at least one corresponding pair of their side walls by a helical tension spring so as to provide a snap-action double-toggle type linkage therebetween whereby said cover portions are normally biased into one of two relative positions, namely either into said rearward position in which said paint applicator roller is disposed completely rearwardly of said plane defined by the forwardmost peripheral surfaces of said paint-spreading and levelling rollers, or into a forward position in which the forwardmost peripheral surface of said paint applicator roller is disposed forwardly of said plane defined by said forwardmost peripheral surfaces of said paint-spreading and levelling rollers.

3. A spray shield and paint-levelling accessory as claimed in claim **1** in which one of said cover portions contains in at least one of its side walls a two-ended arcuate slot adapted to receive a co-operating pin provided

on the corresponding side wall of the other of said cover portions, engagement of said pin with the ends of said slot determining limits for the relative rotation of said cover portions.

4. A spray shield and paint-levelling accessory as claimed in claim 2 in which one of said cover portions contains in at least one of its side walls a two-ended arcuate slot adopted to receive a co-operating pin provided on the corresponding side wall of the other of said cover portions, engagement of said pin with the ends of said slot determining limits for the relative rotation of said cover portions.

5. A spray shield and paint-levelling accessory as claimed in claim 2 in which at least one of said cover portions is provided with a releasable locking means for releasably securing said cover portion to a handle shaft of said paint roller applicator.

6. A spray shield and paint-levelling accessory as claimed in claim 1 in which said paint-spreading and levelling rollers are removably mounted in said cover portions.

7. A spray shield and paint-levelling accessory as claimed in claim 6 in which said paint-spreading and levelling rollers are provided with stub shafts which

are received in pivot openings in the side walls of said cover portions, at least one of said pivot openings in each of said cover portions being in the form of an open-ended slot provided with a pivoted closure to facilitate insertion and removal of said paint-spreading and levelling rollers.

8. A spray shield and paint-levelling accessory as claimed in claim 1 in which a drip shield is internally provided integral with one of said cover portions intermediate said paint applicator roller and the respective paint-spreading and levelling roller for the purpose of directing paint dripping downwardly from said paint applicator roller onto the respective paint-spreading and levelling roller.

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