United States Patent [19]

Newman

[11] **3,745,624**

[45] **July 17, 1973**

[54] **EXTENSIBLE PAINT ROLLER FRAME**

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[22] Filed: **Jan. 27, 1972**

[21] Appl. No.: **221,339**

[52] **U.S. Cl.** ..... **29/116 R,** 15/230, 15/11, 242/73

[51] **Int. Cl.** **B05c 1/08,** B44d 3/28

[58] **Field of Search** ..... 15/27, 230.11, 248 A; 29/110.5, 116 R; 242/118.5; 401/147, 208, 218, 220

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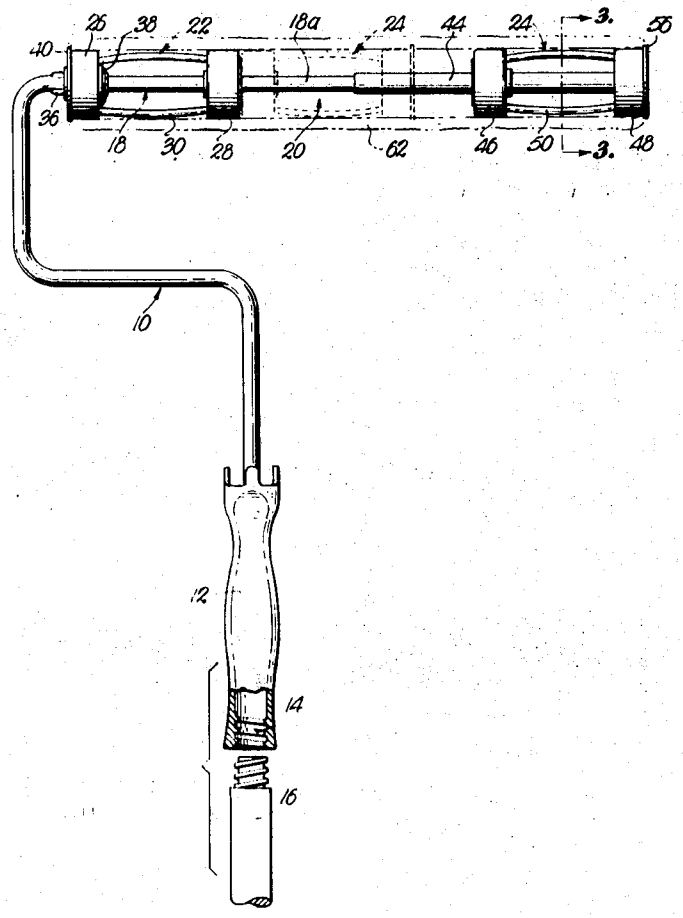
Primary Examiner—Daniel Blum

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[57] **ABSTRACT**

An extensible paint roller frame has a pair of independent frame units rotatable on a spindle of the paint roller, one of the units being confined against other than rotative motion and the other being supported entirely by the spindle for sliding movement in alternate directions along the unobstructed remaining length of the spindle to vary the effective length of the frame. Freedom from abutments and fasteners on the remaining length of the spindle and elimination of the need for a supporting connection between the two units allows the shiftable unit to be completely removed from the spindle and replaced thereon with ease to facilitate installation of a paint applicator sleeve.

9 Claims, 4 Drawing Figures



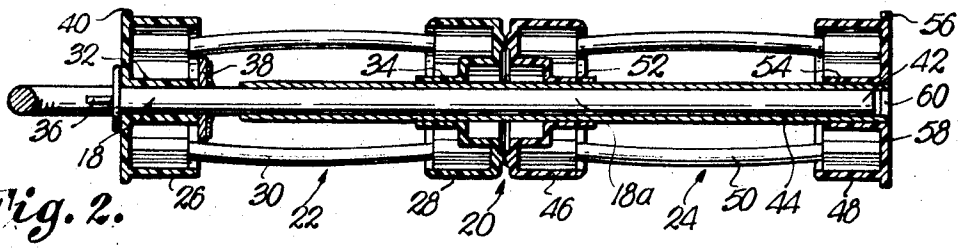
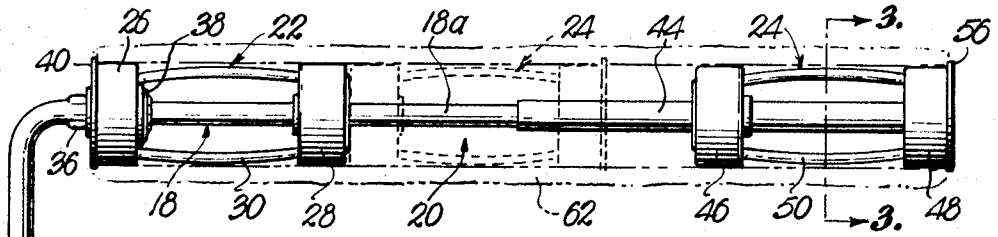


Fig. 2.



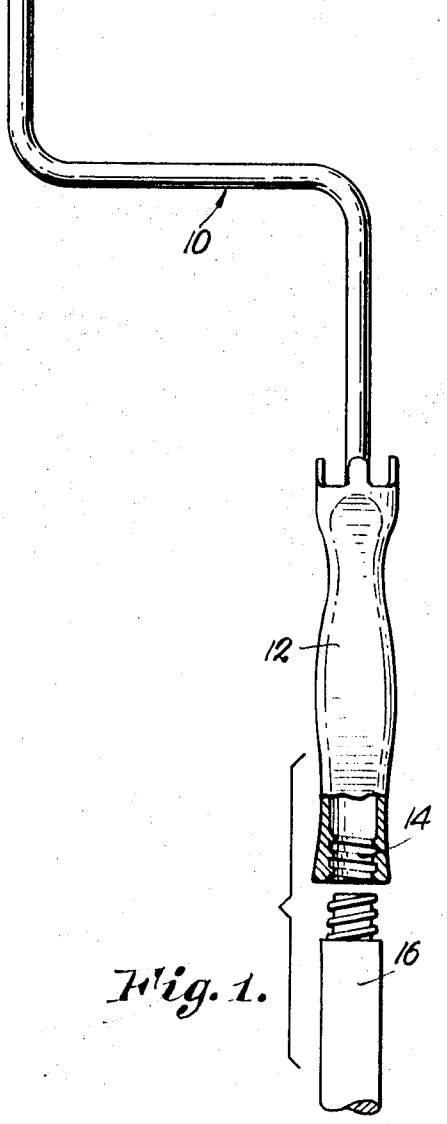


Fig. 1.

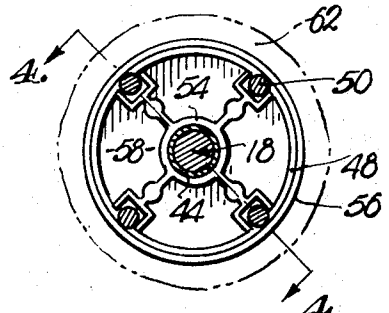


Fig. 3.

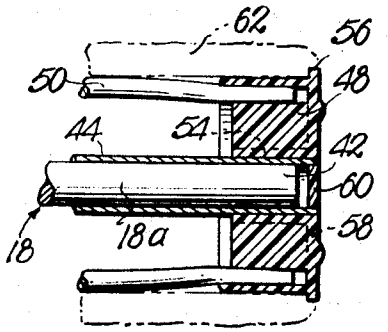


Fig. 4.

EXTENSIBLE PAINT ROLLER FRAME

This invention relates to an improved paint roller having a frame which may be extended and retracted to change its effective length an amount necessary to adapt the frame for universal support of applicator sleeves of various lengths.

While paint rollers per se are not new in view of their successful use in the past by both professional painters and "do-it-yourself" handymen, the problem of providing a simple expedient which adapts a single paint roller for universal use with different paint applicator sleeves of various lengths has been largely unresolved. While attempts to provide such a paint roller have been made, to date such efforts have been less that satisfactory for several reasons.

For example, previous paint rollers utilized a pair of rotatable yet relatively shiftable frame cores in which the shiftable core of the pair required the combined support of both the spindle of the roller and of the non-shiftable core. Because of this dependence and resulting connection between the two cores, the shiftable core could not be completely removed from the roller such as to facilitate mounting of a selected applicator sleeve. Other problems included lack of support of the relatively thin-walled sleeve in the area of the latter encompassing the extended shiftable core permitting inward deflection and/or possible buckling of the sleeve in such area, and limitation of the shiftable core to definite invariable positions in which the extensible core was locked in place such that slight variations in sleeve length could not be accommodated.

Other paint rollers utilized relatively complex and necessarily expensive frameworks in which one of two frame members was rotatably and extensively supported by the other member for movement to an extreme position in which further extension was blocked. The extensible member could only be removed upon disassembly of the extensible member and its attendant blocking structure, thereby greatly hampering installation of an applicator sleeve on the framework. Moreover, the use of outwardly shiftable, inclined fingers on the framework to frictionally retain the selected sleeve further complicated the construction and use of the roller, as well as making the cost thereof prohibitive in many instances for those individuals not requiring the frequent services of a paint roller.

Accordingly, with these problems in mind, it is an important object of the present invention to provide a paint roller having a sturdy,extensible frame of simplified, yet highly functional design which is capable of accommodating applicator sleeves of several different lengths with ease, yet which is inexpensive to produce and is extremely easy to use and adjust.

Another important object of the present invention is to provide an extensible paint roller frame having a pair of mechanically and structurally independent frame units rotatable on a common spindle with one of the units being freely shiftable along the spindle without obstruction from either the spindle or the other unit so that the shiftable unit may be readily disposed in any of a number of selected positions on the spindle or may even be completely removed from and replaced upon the latter with extreme ease.

Another important object of this invention is to provide an extensible paint roller frame which, in addition to being extremely easy to use, non-complex in design and inexpensive to produce, provides an abundance of support for a sleeve on the frame, even those sleeves of greater than normal lengths which require the frame to be in an extended condition.

In the drawing:

FIG. 1 is an elevational view of a paint roller utilizing an extensible frame constructed in accordance with the principles of my present invention, the shiftable unit of the frame being shown in an extended position with the normal retracted position thereof indicated in phantom;

FIG. 2 is an enlarged, fragmentary cross-sectional view of the frame;

FIG. 3 is an enlarged, fragmentary cross-sectional view taken along line 3—3 of FIG. 1; and

FIG. 4 is an enlarged, fragmentary cross-sectional view taken along line 4—4 of FIG. 3.

The paint roller **10** is provided at one end with a hollow grip **12** having interior threads **14** for receiving the complementally threaded end of pole **16** which may be used, if needed, to add further reach to the roller **10.** A solid spindle **18** at the opposite end of roller **10** carries the extensible frame **20** which basically comprises a pair of separate, mechanically independent frame units **22** and **24.**

Unit **22** has a pair of essentially hollow rollers **26** and **28** which are interconnected by a series of outwardly bowed rods **30** for rotation in unison on spindle **18.** Hubs **32** and **34** of rollers **26** and **28** respectively rotatably mount the same on spindle **18** which extends substantially beyond roller **28,** and outwardly projecting retaining nibs **36** on spindle **18** cooperate with retaining washers **38** to confine roller **26** against travel axially of spindle **18.** Rollers **26** and **28** are of substantially identical diameters with the outer peripheries thereof coinciding with the outermost regions of rods **30** as shown in FIG. **1.** In contrast to roller **28,** roller **26** has an outwardly projecting, circumferentially extending lip **40** at its left end.

Spindle **18** has a completely unobstructed stretch **18a** which extends from washers **38** to the outermost free end **42** of spindle **18** to telescopically support the shank **44** of unit **24.** In like fashion to unit **22,** unit **24** has a pair of rollers **46** and **48** and outwardly bowed rods **50** which interconnect rollers **46** and **48** in spaced relationship. Hubs **52** and **54** of rollers **46** and **48** respectively fixedly secure the latter to shank **44** which extends substantially beyond roller **46,** and the diameters of rollers **46** and **48** are equal to those of rollers **26** and **28** with roller **48** having a circumferential lip **56** at its right end.

The telescopic relationship between spindle **18** and shank **44** is provided by virtue of the tubular nature of shank **44** and the sliding fit therebetween. As shown best in FIG. **2,** hub **34** of roller **28** is enlarged with respect to spindle **18** a sufficient extent to shiftably accommodate shank **44** when unit **24** is in its normal position abutting unit **22.** The outer end wall **58** of roller **48** has an essentially permanent plug **60** which closes an opening which would otherwise be presented by the end of shank **44.**

Thus, it should be clear that unit **24** may be freely displaced to any desired position along spindle **18** between the extreme innermost position illustrated in full lines in FIG. **2** and in phantom in FIG. **1,** and an extreme outer position in full lines in FIG. **1.** This allows frame **20** to accommodate applicator sleeves, such as **62,** of many different lengths, instead of requiring the

use of a separator roller **10** for each length of sleeve **62.**

Note particularly that shank **44** is supported entirely by spindle **18** with no connection whatsoever between units **22** and **24.** This factor, coupled with the fact that stretch **18***a* on the exterior of spindle **18** is completely free of all obstructions, means that unit **24** may be completely removed from spindle **18** in addition to being easily positioned at any point along the latter. Thus, installation of a selected sleeve **62** is easily carried out by first removing unit **24,** forcing the sleeve **62** over unit **22** until lip **40** abuts the corresponding end of sleeve **62,** and then replacing unit **24** by pushing the latter into the open end of sleeve **62** as spindle **18** is received within shank **44** until lip **56** abuts the corresponding outer end of sleeve **62.** In this manner, frame **20** may be properly sized to conform exactly to the dimensions of sleeve **62** without guesswork, and without extensive removal and replacement of several fastening components which may be easily misplaced, may become easily over-tightened to frustrate removal thereof, and would necessarily increase the overall cost of the roller.

Because of the frictional contact of sleeve **62** with rollers **26** and **28, 46** and **48,** and rods **30** and **50,** the sleeve **62** is not allowed to rotate relative to frame **20** during use of roller **10,** and such frictional contact is sufficient to retain unit **24** against escape from sleeve **62.** Moreover, the use of at least two rollers for each unit **22** and **24,** along with the attendant bowed rods **30** and **50,** assures that sleeve **62,** regardless of its length, will be structurally supported to a greater extent than has heretofore been possible with prior extensible paint rollers. Similarly, the substantial projection of spindle **18** beyond roller **28** of unit **22** assures that unit **24** will be supported to a great extent even when unit **24** is fully extended as shown in FIG. **1.**

Having thus described the invention, what is claimed as new and desired to be secured by Letters Patent is:

1. In a paint roller having an extensible frame for applicator sleeves of various lengths:
- an elongated spindle having an outermost free end;
- a first frame unit rotatable on said spindle;
- retainer means on said spindle remote from said free end and confining said first unit against movement axially of the spindle,
- said spindle having an unobstructed longitudinal stretch thereof extending from its free end inwardly toward said retainer means; and
- a second frame unit having an elongated shank rotatably and telescopically supported by said unobstructed stretch independently of said first unit for free, uninhibited displacement of the second unit along said stretch from a normal position in which the second unit is proximal to the first unit to any one of a number of other selected position in which the units are spaced apart or in which the second unit is completely removed from the spindle,
- each of said units including a pair of axially spaced-apart, interconnected rollers having outer peripheries disposed for frictionally engaging and retaining a sleeve placed over the units,
- the two most spaced-apart rollers of said units each having a lip for engaging a corresponding end of the sleeve.

2. The invention as claimed in claim **1,**
- said shank being tubular and slidably receiving said spindle,
- said unobstructed stretch being on the exterior of said spindle.

3. The invention as claimed in claim **2,**
- said first unit having an opening therein for said spindle and enlarged with respect to the latter a sufficient extent to shiftably accommodate said shank during displacement of the second unit in either direction along said stretch.

4. The invention as claimed in claim **1,**
- said first unit being spaced inwardly from said end of the spindle,
- said second unit having a closed end wall outboard of said end and intersecting the axis of said spindle to preclude access to said end when the second unit is on the spindle.

5. In a paint roller having an extensible frame for applicator sleeves of various lengths:
- an elongated spindle having an outermost free end;
- a first frame unit rotatable on said spindle;
- retainer means on said spindle remote from said free end and confining said first unit against movement axially of the spindle,
- said spindle having an unobstructed longitudinal stretch thereof extending from its free end inwardly toward said retainer means; and
- a second frame unit having an elongated shank rotatably and telescopically supported by said unobstructed stretch independently of said first unit for free, uninhibited displacement of the second unit along said stretch from a normal position in which the second unit is proximal to the first unit to any one of a number of other selected positions in which the units are spaced apart or in which the second unit is completely removed from the spindle,
- each of said units including a pair of axially spaced-apart, interconnected rollers having outer peripheries disposed for frictionally engaging and retaining a sleeve placed over the units,
- the rollers of each unit having central hubs for the spindle and the shank respectively,
- the hubs of the first unit rotatably receiving said spindle and those of the second unit fixedly receiving said shank.

6. The invention as claimed in claim **6,**
- said shank being tubular and slidably receiving said spindle,
- said unobstructed stretch being on the exterior of said spindle.

7. The invention as claimed in claim **7,**
- the roller of the first unit which is nearest said end of the spindle having the opening in its hub enlarged with respect to said spindle a sufficient extent to shiftably accommodate said shank between said hub and the spindle.

8. The invention as claimed in claim **1,**
- said shank extending substantially beyond the rollers of the second unit for disposition within said first unit when said second unit is in the normal position thereof,
- said unobstructed stretch extending into said first unit at least to the point at which the extremity of said shank is located when said second unit is in said normal position.

9. The invention as claimed in claim **9,**
- said first unit being spaced inwardly from said free end of the spindle whereby said shank may be shifted from disposition within said first unit when the second unit is in its normal position to disposition outside of the first unit when the second unit is displaced out of said normal position.

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