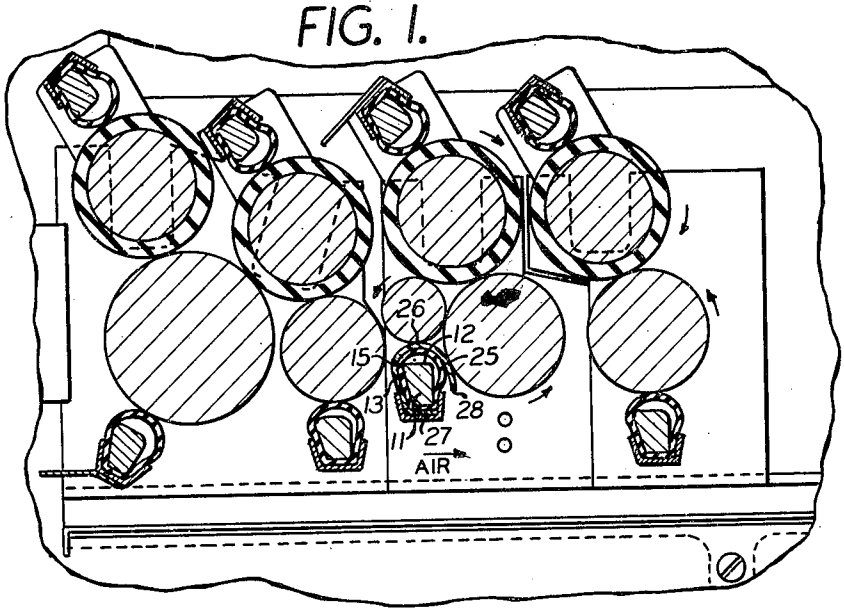
Aug. 10, 1965 A. C. MORROW ETAL 3,200,013

MULTIPLE ROLL CLEARING

Filed Aug. 22, 1963

FIG. 1.



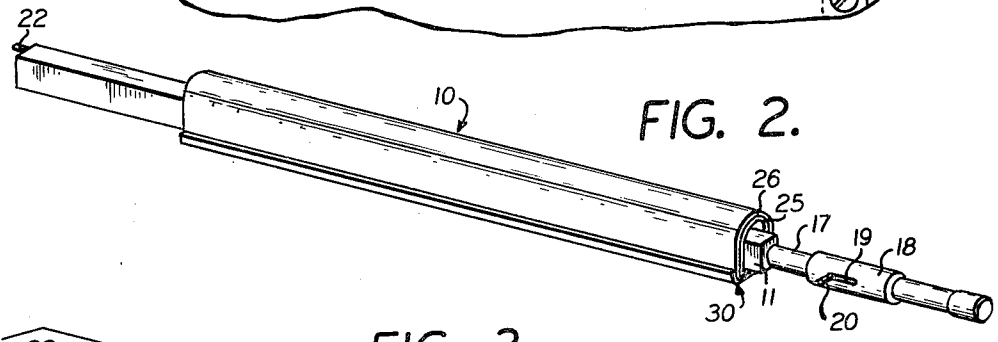
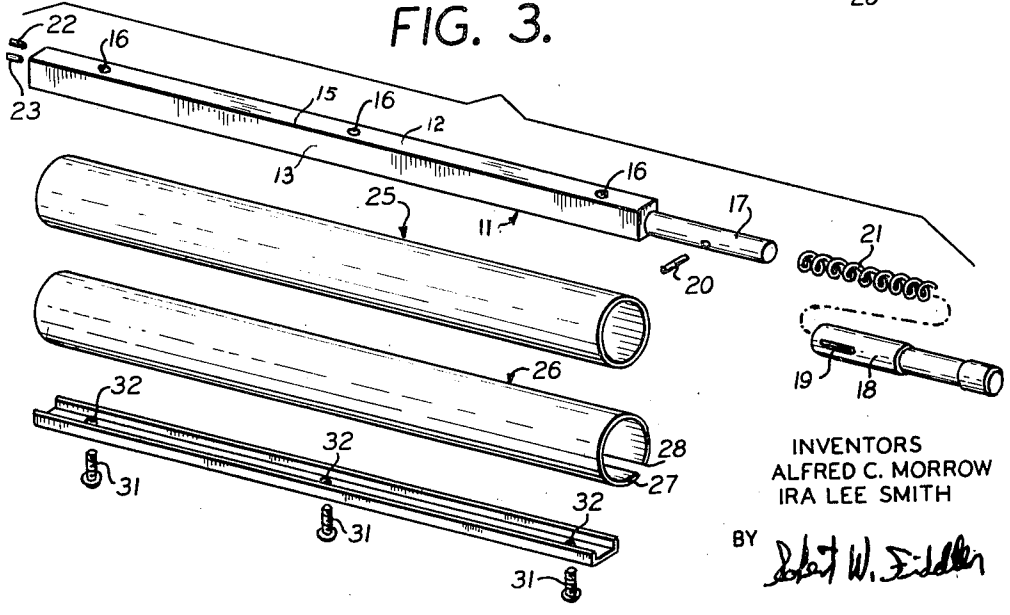


FIG. 2.

FIG. 3.



INVENTORS
ALFRED C. MORROW
IRA LEE SMITH

BY Robert W. Fiddler

ATTORNEY.

United States Patent Office 3,200,013 Patented Aug. 10, 1965

3,200,013

MULTIPLE ROLL CLEARING

Alfred C. Morrow, Lowell, and Ira L. Smith, Gastonia, N.C., assignors to Pneumafil Corporation, Charlotte, N.C., a corporation of Delaware

Filed Aug. 22, 1963, Ser. No. 303,884
9 Claims. (Cl. 134—6)

This invention relates to the clearing of lint, fly and the like foreign matter from the moving components of textile machinery, and is particularly directed to means for clearing the processing rolls of draw frames, spinning frames, roving frames, and the like. The invention has specific utility in effecting simultaneous clearing of two or more adjacent bottom rolls of a draw frame.

In the processing of textile materials, the textiles or textile fibers are passed between pairs of rolls serving to draw out, attenuate, or otherwise affect the relationship between the processed fibers. Where cotton or the like yarns are being fabricated, the rolls of the drawing and spinning frames have a propensity for the collection of fly lint and the like material which interferes with the action of the rolls. To obviate this difficulty clearers have been employed, positioned adjacent the rolls so as to wipe away the material accumulating on the surface of the roll. Problems arise in positioning of the clearers with respect to the rolls of the conventional roll stand customarily employed in textile fabricating equipment such as draw frames or the like due to the proximity of adjacent rolls. This roll proximity prevents arrangement of the clearer in desired operative position with respect to the roll surface. Where a single clearer is employed to wipe the surface of a plurality of rolls to overcome the space requirements of individual clearers for each roll, it is found that the relatively different speeds and different diameters of the cleared rolls, tends to move the clearer so as to displace same with respect to one or the other of the rolls contacted by the clearer, thereby interfering with the desired efficiency of clearing.

It is with the above problems and desiderata in mind that the present means, including both method and apparatus, has been evolved. The novel means implement the clearing of the roll employed in the processing of textile fibers so as to permit the clearing of a multiplicity of rolls with a single wiping element, thus minimizing the space required for the installation of clearing equipment.

Accordingly, it is among the primary objects of this invention to provide improved means for clearing the moving surfaces of textile machinery of lint, fly, or the like material.

Another object of the invention is to provide an improved roll clearer for textile machinery in which the space required for the installation of clearing equipment is kept relatively small.

A further object of the invention is to provide improved roll clearing means in which the wiping elements are substantially self-cleaning, minimizing the required care of an operator.

It is also an object of the invention to provide an improved clearer for the rolls of textile processing machinery in which the wiping element is substantially self adjusting, assuming the desired clearing position with respect to the surfaces to be cleared.

Another important object of the invention is to provide a roll clearing means for simultaneously clearing two relatively moving roll surfaces.

These and other objects of the invention which will become hereafter apparent are achieved by provision of an improved clearer comprising a clearer body member in the form of a block arranged adjacent the surface to be cleared. Surrounding this clearer body is a flexible backing sleeve formed of a resilient walled tube of rubber, or

the like natural or synthetic material. The interior dimensions of the backing tube or sleeve are such as to accommodate the body member with spacing between the interior wall of the sleeve and the body member, thereby permitting the sleeve to flex. Arranged to lie over the backing tube is a wiping element of sheet material of rubber, neoprene, or similar synthetic or natural materials having desired clearing properties with respect to the surfaces of the rolls to be cleared. The wiping element is formed from sheet material and arranged with one edge of the element secured to the block, and the other edge free. A channel shaped plate is arranged over the fixed edge of the wiping element and the backing sleeve to sandwich same between the plate and the clearer body. By virtue of the U-shaped configuration of the plate, pressing up against the backing sleeve, the backing sleeve is given a desired contour, serving to billow same against the under surface of the wiping element and force the upper surface thereof against the surfaces to be cleared. In use the assembled body block, backing sleeve, and wiping element are positioned so that the wiping element contacts the surfaces to be cleared. It is intended that the novel arrangement be used to permit simultaneous clearing of two or more relatively moving surfaces such as would be encountered on a roll stand, in which case the clearer body block is supported so that the wiping element contacts two or more of the roll surfaces to be cleared. It is thus seen that a single clearer assembly may be utilized to effect simultaneous clearing of two or more relatively moving surfaces.

An important feature of the invention resides in the fact that by virtue of the lack of restraint of the free end of the wiping element, the action of a surface to be cleared in moving against this free end does not tend to distort the wiping element to move same from a position in contact with another surface to be cleared.

An additional feature of the invention resides in the fact that the freedom of movement provided by the free end of the wiping element permits ready discharge of any accumulated material between the cleared surfaces and the wiping element to provide a substantial self-cleaning effect.

A further feature of the invention resides in the fact that the free end of the wiping element permits a range of movement for the wiping element providing for substantial self-adjustment of the element with respect to the surfaces to be cleared.

Another feature of the invention flows from the formation of the wiping element from a split tube, thereby contouring the wiping element against the backing tube.

The specific details of a preferred embodiment of the invention, and their mode of functioning, will be made most manifest and particularly pointed out in clear, concise, and exact terms in conjunction with the accompanying drawings, wherein:

FIG. 1 is a schematic elevational view of a typical roll stand of a draw frame showing a roll clearer embodying the inventive concept applied as a bottom roll clearer for simultaneously clearing the roll surfaces of the slip roll, and third bottom roll; and

FIG. 2 is a perspective view of the roll clearer made in accordance with the teachings of this invention shown removed from the roll stand; and

FIG. 3 is an exploded perspective view of the components of the roll clearer shown in FIG. 2.

Referring now more particularly to the drawings, like numerals in the various figures will be employed to designate like parts.

As best seen in FIGS. 2 and 3, a roll clearer assembly 10 is formed with a supporting body or block 11. Block 11 is of a quadrilateral configuration in cross-section, as best seen in FIG. 1, with a top wall 2, as viewed in FIG.

1 and a side wall 13 forming an acute interior angle between themselves and a nose 15 at the corner of the block. A plurality of tapped spaced screw receiving holes 16 are formed in block 11. Though holes 16 are shown as extending entirely through block 11, it will be understood by those skilled in the art that they may be made of any desired depth. In order to implement mounting of the roll clearer with respect to the rolls to be cleared, block 11 is formed with mounting extension 17 on one end thereof (to the right as viewed in FIGS. 2 and 3) of a cylindrical configuration. A hollow plunger cylinder 18 is arranged over extension 17, and cylinder 18 is formed with a slot 19 through which pin 20 extending laterally from extension 17 protrudes. Between the free end of extension 17, and the closed end of cylinder 18, a compression spring 21 is arranged. At the end of block 11 opposite to that of extension 17, locating pins 22 and 23 are arranged for positioning in an appropriate recess formed in the roll stand. Insertion of pins into their recesses in the stand is accomplished by shifting block 11 against spring 21.

Backing sleeve 25 is formed of a tube of resilient material such as rubber, neoprene, or any similar organic or synthetic material. Sleeve 25 is arranged to encompass block 11, and has a cross-sectional interior area larger than the cross-sectional area of the block.

Wiping element 26 is formed from sheet material such as rubber, neoprene, or the like synthetic or organic material having desired clearing properties with respect to the surfaces to be cleared. In the illustrated preferred embodiment of the invention, this wiping element 26 is formed by slitting a tube of the type used in forming backing sleeve 25. The sleeve 26 is mounted with respect to block 11 by securing one edge 27 thereof with respect to the block and permitting the other edge 28 to remain free.

Assembly of the wiping element 26, backing sleeve 25 and block 11 is obtained by use of a channel-shaped plate 30 contoured to receive the lower end of block 11, as viewed in FIGS. 1 and 2. Channel-shaped plate 30 is secured to the block by means of fastening members in the form of screws 31 extending through apertures 32 in the plate 30 and anchored in tapped holes 16 of block 11. It will be apparent to those skilled in the art that screws 31 extend through wiping element 26, and sleeve 25. In operative assembled relationship, it is preferred to arrange the sleeve 25, and wiping element 26 in the orientation showed in FIGS. 1 and 2 so that the fixed edge 27 and wiping element 26 lie along the bottom surface of block 11, and the channel-shaped configuration of plate 30 contours the wiping element 26 up over the top surface of block 11, as viewed in FIGS. 1 and 2. By virtue of the relatively larger cross-section of the interior of backing tube 25 with respect to the cross-section of block 11, plate 30 billows the tube 25 against the wiping element as seen in FIG. 1.

Operation

In use, the novel clearer 10 is arranged with respect to the surfaces to be cleared by mounting block 11 in appropriate supporting brackets on the equipment to be cleared.

In the illustrated embodiment of the invention, as viewed in FIG. 1, the clearer 10 is employed as a bottom roll clearer on a draw frame to effect simultaneous clearing of two or more relatively moving rolls. As illustrated, the clearer 10 is employed to clear a slip roll, and a fourth bottom roll of a draw frame. The top surface of wiping element 26 is arranged to contact the surfaces of the rolls to be cleared, and the block 11 is so positioned as to bias the backing sleeve 25 against the lower surface of wiping element 26 to thereby force the wiping element against the roll surfaces. As a result of movement of the roll surfaces with respect to the wiping element, as viewed in FIG. 1, it will be seen that the free end 28 of the wiping element is drawn by the frictional engagement with the surface of the fourth bottom roll to the position illustrated in FIG. 1. This frictional engagement however, does not overcome the forces exerted by the backing sleeve 25 urging the wiping element against the slip roll so that both rolls are simultaneously cleared by the single wiping element. It has been found that the novel clearer functions most efficiently in cleaning rolls with different surface properties when the free end of the clearer is arranged against the coarser surfaced roll, which then pulls the waste from the clearer surface into the air-stream, as shown in FIG. 1.

The nose 15 on block 11 acts on the backing tube and on the wiping element to resist the forces applied thereto by the movement of the rolls, thereby urging the wiping element in a direction opposed to the direction of movement of the rolls.

It is thus seen that a simple clearer 10 has been provided which may readily be utilized to effect simultaneous clearing of two relatively moving surfaces, and that the action of the moving surfaces tending to displace the wiping element from the other moving surfaces is overcome by the utilization of the backing element arranged to insure desired biasing of the wiping element against the surfaces to be cleared.

The above disclosure has been given by way of illustration and elucidation, and not by way of limitation, and it is desired to protect all embodiments of the herein disclosed inventive concept within the scope of the appended claims.

What is claimed is:

1. Means for simultaneously clearing foreign matter from two relatively moving surfaces moving about separate axes of rotation, said means comprising: elongated wiping means contacting the relatively moving surfaces; supporting means fixedly retaining one end of said wiping means with respect to said axes of rotation, while permitting the other end to move freely; and resilient urging means pressing against a portion of said wiping means to bring same against said surfaces.

2. Means for simultaneously clearing foreign matter from two relatively moving surfaces as in claim 1 in which said supporting means carry said resilient urging means to orient same to urge said wiping means in a direction opposed to the direction of movement of the surfaces to be cleared.

3. A method for simultaneously clearing foreign matter from two relatively moving surfaces moving about separate axes of rotation, said method comprising the steps of arranging an elongated wiping element to contact the relatively moving surfaces; supporting one end of the element in a fixed position with respect to said axes of rotation, while permitting the other end to move freely; and resiliently urging a portion of said element to bring same against said surfaces.

4. A method for simultaneously clearing foreign matter from two relatively moving surfaces as in claim 3 in which said step of resiliently urging said element is performed in a direction opposed to the direction of movement of the surfaces to be cleared.

5. Apparatus for clearing the surfaces of two adjacent rolls rotating about separate axes of rotation, said apparatus comprising: a wiping element of a dimension to extend with a face thereof in contact with the surfaces of the rolls to be cleared; a supporting member fixed with respect to said axes of rotation to which one end of said wiping element is secured, while permitting the other end of said element to move freely; a resilient backing member on said supporting member in contact with a face of said wiping element opposed to the face thereof in contact with the rolls, to urge the wiping element against the rolls.

6. Apparatus as in claim 5 in which said supporting member comprises a block; and a plate member overlying a surface of the block between which the secured end of said wiping element is sandwiched along with said back-

ing member, said plate member lying on a side of said block remote from the rolls, whereby said element will be biased toward the rolls in a direction opposed to the direction of rotation of the rolls.

7. A roll clearer comprising: a flexible wiping element of sheet material; a block to which one edge of said wiping element is secured, while permitting the other end to move freely; and a resilient walled backing member supported between said block and said wiping element urging said wiping element away from said block, said resilient walled backing member comprising a tubular sleeve secured to said block.

8. A roll clearer as in claim 7 in which a channel-shaped plate is arranged so that the block lies within said channel member with a part of said plate sandwiching

said secured edge of said wiping element and said sleeve between the plate and a surface of said block.

9. A roll clearer as in claim 8 in which said block is of a quadrilateral cross-section with a corner thereof remote from the free end of said wiping element forming an acute angle.

References Cited by the Examiner

UNITED STATES PATENTS

618,992	2/99	Morrow	15—97 X
2,648,875	8/53	Gibson	15—256.51
2,838,575	11/58	Dudley	15—256.51

CHARLES A. WILLMUTH, *Primary Examiner.*

WALTER A. SCHEEL, *Examiner.*