

1 600 070

- (21) Application No. 25323/78
- (22) Filed 31 May 1978
- (31) Convention Application No. 68265
- (32) Filed 2 June 1977 in Italy (IT)
- (44) Complete Specification published 14 Oct. 1981
- (51) INT. CL.³ B65H 17/02
- (52) Index at acceptance B8R 8F8 8H2 RW3



(54) WEB FEEDING OR WINDING-UP APPARATUS

(71) I, ALDO BUGNONE, an Italian subject of: Via Bellini 2, 10121 Turin, Italy, do hereby declare the invention, for which I pray that a patent may be granted to me and the method by which it is to be performed, to be particularly described in and by the following statement:—

The present invention relates to a web feeding or winding up device suitable for use with machines working on web as for example, printing machines, painting machines, coating machines, laminating machines or the like.

One known type of web feeding or winding up device has two lateral upright supports between which there is rotatably mounted for rotation about a horizontal axis, at least one pair of arms, the ends of which are provided with means for supporting a core onto which a roll of web is to be wound or from which it is to be unwound.

According to the present invention there is provided a web feeding or winding up device for use with machines operating on a web, said device comprising two lateral uprights, a pair of arms carried rotatably about a substantially horizontal axis between said two lateral uprights, support means provided at the ends of said arms for supporting a hollow tubular core for winding up or feeding off a roll of web, and a motor mounted on one said arm adjacent the free end thereof and serving to rotatably drive a web core carried by the support means, said support means comprising an internally splined sleeve mounted on one said arm, a bearing mounted in a bearing housing carried by the other said arm, and a bar which in use of the device extends through a hollow web core and has its ends respectively supported in said sleeve and said bearing, the bar being provided both with radial support blocks for engaging the interior of a core traversed by the bar and with a plurality of radial teeth engageable in the splines of said sleeve, and the bearing housing being displaceable axially of the bar to permit removal and replacement of the bar from between said sleeve and bearing.

Two embodiments of the present inven-

tion will now be more particularly described by way of example, with reference to the accompanying drawings, in which:

Figure 1 is a perspective and diagrammatic view of a winding or unwinding device formed as an embodiment of the invention;

Figure 2 is a diagrammatic plan view from above of the device shown in Figure 1 illustrating one type of positional adjustment;

Figure 3 is a longitudinal section, on an enlarged scale of the lower part of the device which is movable upon a pair of wheels;

Figure 4 is a longitudinal section showing the supports for a web-roll core; and

Figure 5 is a cross section taken on the line V-V of Figure 4.

Referring now to the drawings, there is shown a device 10 formed as an embodiment of the invention which can serve either as a web feeding device or as winding up apparatus for any web working machine, for example a coating or painting machine or one which spreads liquids, pastes or powders, or a machine for treatment of any material in web form such as embossing, cutting, laminating, tapering etc.

The web feeding or winding up device 10 illustrated in Figure 1 is provided with two lateral upright supports 12 between which there is carried a rotatable shaft 14, on which are mounted two arms 16. The shaft 14 also carries at spaced points intermediate its two ends a pair of smaller arms 18 extending orthogonally in relation to the main arms 16 and bearing at their ends a deflection roller 20.

The upright supports 12 are boxed in and connected together by a crosspiece 22 within which is housed a shaft 24 which couples wheels 26 (See Figure 3). The wheels 26 roll on two parallel rails 28 carried on a base 46 for the purpose of effecting movement of the device 10 in the direction of the double arrow A of Figure 1. The base 46 in fact comprises a fixed lower part and a movable upper part mounting the rails 28.

The device 10 is moved along rails 28 by the threaded engagement of the crosspiece

22 with a threaded shaft which is itself driven by a motor 30 provided with a reduction gearbox 32. Thanks to this displacement system it is possible to adjust the position of a roll 34, for web feed or for winding up, to the desired distance from the first or last working unit of the machine operating on the web.

The device 10 shown in Figure 1 can be turned about a vertical axis 36 passing through the centre of the device 10 by movement of the upper part of the base 46 relative to the lower part. This turning movement is effected by displacement devices 38 known per se; these devices 38 may comprise for example a threaded pin 40 which engages in two bushes carried on a block 42 fixed to the upright 12 and a block 44 fixed to the lower part of the base 46. Because it is possible to adjust the orientation of the whole device 10, the roll 34 can be lined up with its axis exactly perpendicular to the direction of travel of the web through the machine which is to work, or which has worked, on the web.

As shown diagrammatically in Figure 2, the axis 36 about which the device 10 is turnable can also be situated at a corner of the device 10, in this case the other three corners of the device are provided with arcuate guides.

The crosspiece 22 of the device 10 provides a housing for cables and pipes for electric, hydraulic or pneumatic connections between the two boxed-in uprights 12.

Preferably the two arms 16 are also encased or boxed in and the central shaft 14 of the device 10 is hollow inside, this hollow interior space being in communication via two openings, not shown, with the interior of the casings for the arms 16. Within the end of one of the arms 16 there is housed an electric motor 50 and brake 52. The interiors of both arms 16 also provided with means, not illustrated, for the circulation of cooling air; this ensures that good cooling of the motor 50 and the brake 52 is effected, as well as continuously washing with clean air, for flame-proofing purposes, all the electrical, hydraulic or pneumatic connections within the interior of the central shaft 14 and the boxed-in arms 16.

As shown in Figure 4, the core 54 of the web roll 34 consists of a hollow tubular body. The core 54 is carried by a central bar 62. This bar 62 is provided with two sets of support blocks 64 which extend radially outwardly for engaging the core 54 onto the bar 62. One end 66 of the bar 62 has a plurality of radially outwardly projecting teeth 66a while the opposite end 68 of the bar 62 carries a bearing 70.

When the bar 62, carrying the core 54, is being connected to the end of the right hand arm 16 (as viewed in Figure 4) carrying the

motor 50, the end of the bar 62 having the teeth 66a rests upon a support 72 having a V-section recess and situated close to the said arm. The other end 68 carrying the bearing 70 is inserted into a housing 74 into which the bearing 70 is then secured, for example by means of a clamping screw 77 as shown in Figure 4. After this the housing 74, and with it the bar 62, is thrust towards the opposite arm 16b which carries an internally splined sleeve 76 for coupling with the teeth 66a of the end 66 of the bar 62. In order to accommodate possible small misalignments of the sleeve 76 in relation to the housing 74 which carries the end 68, the teeth 66a of the toothed end 66 have a barrel shape in section.

Movement of the end 68 in the direction of the double arrow B serves both for introducing the end 66 of the bar 62 into the sleeve 76, which is connected to the motor 50, and also for adjusting the transverse position of the core, making use of the length of the splines in the sleeve 76 in order to position the core 54 transversely in relation to the path of the web in the machine operating on the web. Likewise displacement of the end 68 to the left in Figure 5 serves to unload the bar 62 and hence the roll 34 from the arms 16.

The transverse positioning of the core 54 carrying the roll 34 can be adjusted automatically by means of a signal emitted by a photocell or the like device positioned for detecting any possible lateral displacement of the web during operation of the machine.

WHAT WE CLAIM IS:—

1. A web feeding or winding up device for use with machines operating on a web, said device comprising two lateral uprights, a pair of arms carried rotatably about a substantially horizontal axis between said two lateral uprights, support means provided at the ends of said arms for supporting a hollow tubular core for winding up or feeding off a roll of web, and a motor mounted on one said arm adjacent the free end thereof and serving to rotatably drive a web core carried by the support means, said support means comprising an internally splined sleeve mounted on one said arm, a bearing mounted in a bearing housing carried by the other said arm, and a bar which in use of the device extends through a hollow web core and has its ends respectively supported in said sleeve and said bearing, the bar being provided both with radial support blocks for engaging the interior of a core traversed by the bar and with a plurality of radial teeth engageable in the splines of said sleeve, and the bearing housing being displaceable axially of the bar to permit removal and replacement of the bar from between said sleeve and bearing.

2. A device as claimed in Claim 1, in

which adjacent the said splined sleeve at one end of the bar, or the bearing housing at the other, there is provided a support having a V-shape recess for receiving and supporting the bar whilst it is being fitted between said sleeve and bearing.

3. A device as claimed in Claim 1 or Claim 2, in which the said radial teeth at the said one end of the bar have a barrel shape cross section.

4. A device as claimed in any one of the preceding claims, in which the arm carrying the motor is hollow and the motor is located within the interior thereof, said device further comprising cooling means for circulating cooling air within the interior of the arm mounting the motor whereby to effect cooling of the motor.

5. A device as claimed in any one of the preceding claims, in which the free end of one arm is provided with a brake for braking

the rotation of a core supported by the arms.

6. A device as claimed in any one of the preceding claims, in which there are provided means for adjusting the angular orientation of the device as a whole about a vertical axis.

7. A device as claimed in Claim 6, in which the substantially vertical axis about which the device is turnable is situated in one corner of the device.

8. A device as claimed in any one of the preceding claims, in which the base of each lateral upright is provided with wheels for the horizontal displacement of the said device, these wheels rolling on parallel rails.

9. A web feeding or winding up device, substantially as hereinbefore described with reference to, and as shown in the accompanying drawings.

M. J. STEPHENS & CO.,
Agents for the Applicants.

FIG. 1

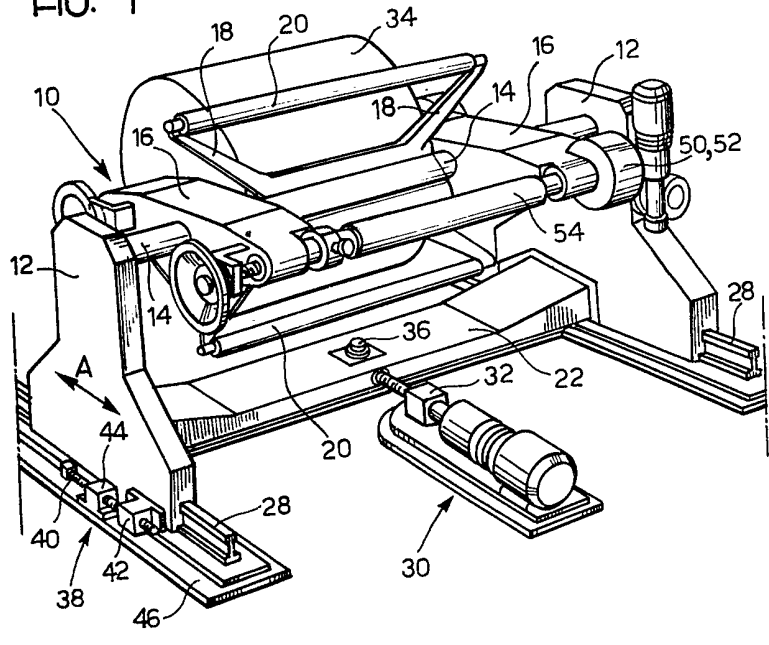


FIG. 2

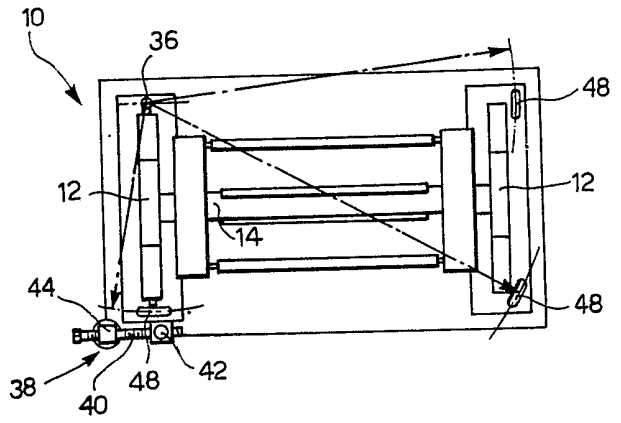


FIG. 3

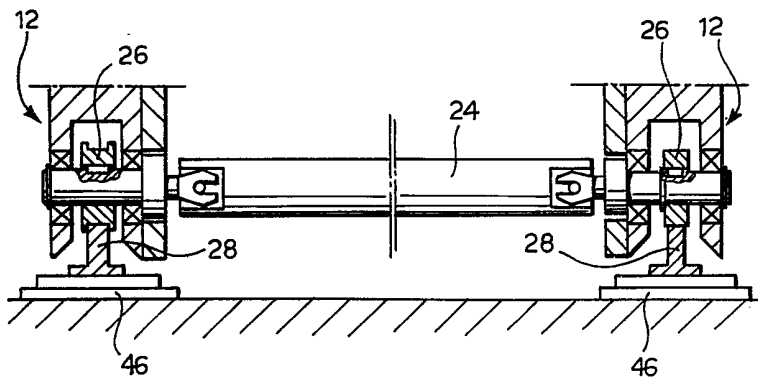


FIG. 5

