Dec. 4, 1962 C. B. HAVENS ET AL 3,066,882

ROLL STARTING METHOD AND MECHANISM FOR A REWINDER

Filed March 21, 1960

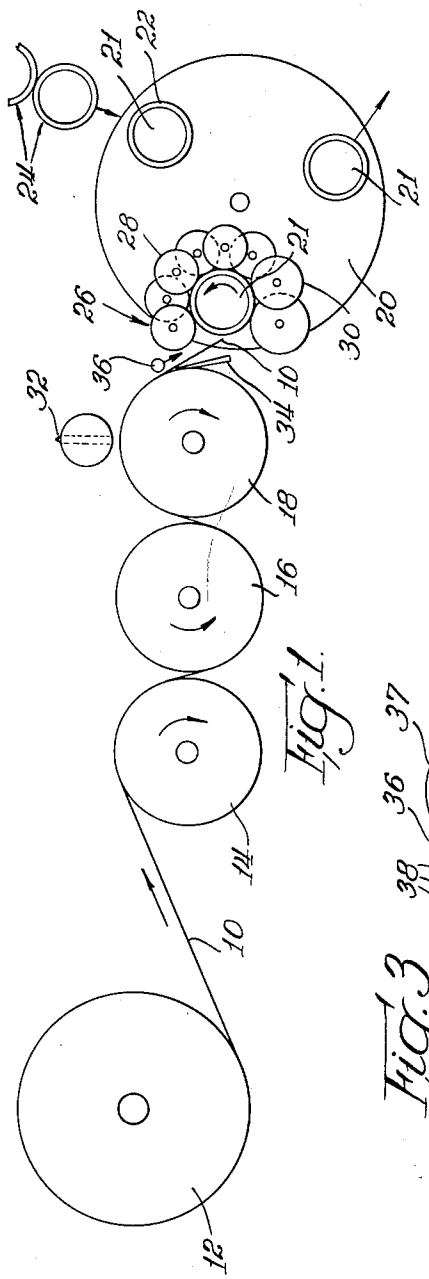


Fig. 1

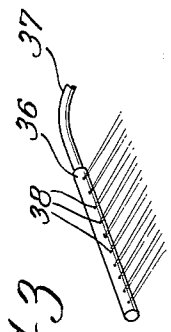


Fig. 3

Fig. 2

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United States Patent Office

3,066,882

Patented Dec. 4, 1962

3,066,882

ROLL STARTING METHOD AND MECHANISM FOR A REWINDER

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Filed Mar. 21, 1960, Ser. No. 16,421
3 Claims. (Cl. 242—56)

This invention relates to film rewind apparatus, and more particularly to a method and means for starting a film upon a core in a rewind machine.

Standard film rewind machines generally include a reel having multiple spindles arranged for receiving unwound cores, winding said cores, and releasing the wound cores, which operations are automatically performed in a sequential manner. For example, an automatic rewind machine of the type under consideration herein, is disclosed in Patent 1,966,525, dated July 17, 1934. A cutoff means, such as a rotatable knife, is arranged for severing the film after a core has been wound, while a stripper blade is arranged for lifting the end of the severed film from the last metering, or tensioning roll, and directing the film unto a new core for winding thereon. Many film materials may be lifted from the metering roll with little difficulty, however, certain plastic films, such as those of the polyolefin type which are soft and limp, tend to jam, or buildup between the roll and the stripper blade, causing jamming of the rewind machine, and/or breaking of the blade. In addition, when rewinding film of the polyolefin type, it is often difficult to properly guide, or direct the end of the cut film unto the core to be wound.

The method and means of the present invention solves in a simple and satisfactory manner the problems encountered when attempting to start windup of soft and limp film on a core in a standard film rewind machine. Briefly, the invention comprises the use of a manifold which is arranged to jet compressed air somewhat tangentially past the last metering roll, which jetted air creates an aspiratory effect to lift the cut end of the film from the roll and direct it unto the core to be wound. While the method and means of the invention will conveniently handle film of the polyolefin type up to 0.75 mil in thickness, it is especially beneficial for handling such film in a thickness range of 0.15 to 0.5 mil.

The main object of this invention is to provide a method and means for starting a film on a core in a rewind machine.

A more specific object is to provide a method and means for starting a soft and limp film on a core in a rewind machine.

Another object is to provide a method and means to lift the cut end of a soft and limp film from a metering roll in a rewind machine.

Still another object is to provide a method and means to direct the cut end of a soft and limp film from a tensioning roll unto a core to be wound in a rewind machine.

These and further objects and features of the invention will become more apparent from the following description and accompanying drawings wherein:

FIG. 1 is a schematic view illustrating a roll starting arrangement for a rewind machine illustrative of an embodiment of the invention;

FIG. 2 is the same but illustrating a different stage of operation; and

FIG. 3 is a perspective view of an air jet manifold used in the arrangement of FIG. 1.

Referring now to the drawing, the numeral 10 identifies a web, or film of material, which is being unwound from a mill roll 12, and directed over a plurality of supporting, or metering rolls 14, 16 and 18, for winding on a

core supported by a reel assembly 20. The latter is arranged for rotary movement and is provided with a plurality of spindles 21 adapted for receiving an unwound core 22 from a supply of unwound cores 24, moving the unwound core into winding position, and moving the wound core into ejecting position, which operations are performed in an intermittent and sequential manner. A cage assembly 26, including a plurality of disc members longitudinally spaced on parallel rods, is formed to provide an upper cage assembly 28, and a lower cage assembly 30. When in closed position (FIG. 1) the cage assemblies 28 and 30 engage a core along its length so that the film being wound thereon is wrapped in a snug and smooth manner upon the core. The arrangement so far described forms part of the prior art, and is well known to those skilled in the art of rewind machines.

In using the equipment described above for rewinding certain plastic materials on paper cores, such as for household use, the web 10 is severed by a rotatable knife means 32, and the rolls 12, 14, 16 and 18 are stopped while the cage assembly 26 is opened and the reel assembly 20 is rotated so that the wound core is removed, and an unwound core is indexed into winding position. To lift the severed end of the web 10 from the metering roll 18 to begin winding operations, a stripper blade 34 is arranged in contact with the roll 18 as shown. The lifted end of the web is thus directed into the region between the lower cage assembly 30 and the unwound core clamped thereby; upon rotation of the said core, web winding thereon will take place, which winding will continue until the core is wound in the amount desired, after which the series of actions to eject the wound core and position an unwound core, will take place in an automatic manner.

When winding cores with a plastic web of the polyolefin type, and of certain thickness, say in a range of 0.15 to 0.5 mil, no difficulty is generally experienced in cutting the film by the knife 32. However, such film has a tendency to jam, or buildup between the stripper blade 34 and the roll 18, resulting in jamming of the machine, or breaking of the blade. The method and means of the invention which avoids such difficulties, consists in the use of an air jet manifold 36, served by an air hose 37, which manifold is formed to provide a line of 1/16" diameter holes 38 spaced approximately 1/2" apart. The manifold is positioned parallel with and near the surface of the roll 18. Compressed air jetted through the holes 38 of the manifold, and somewhat tangentially to the roll 18, forms a sheet of air which creates an aspiratory effect tending to lift the end of the cut web from the roll 18, and drive it toward the unwound core 22. The sheet of air is arranged to flow in a plane passing between the surface of the roll 18 and the surface of the unwound core 22. Air flow from the manifold 36 is synchronized with reel operation and is caused to flow just prior to, or simultaneous with, clasping of a core by the cage assembly 30 for winding the web on the core. Closure of the cages 28 and 30 clamps the end of the cut film against the core 22 in preparation for winding of the film thereon. The air manifold 36 thus eliminates use of the stripper blade 34 when the winder is handling film of the type described, and hence, avoids difficulties such as jamming of the machine, or breakage of the blade caused by such jamming. It may be pointed out that the air manifold 36, as well as the stripper blade 34, can be permanently arranged on a rewind machine, and selectively used for proper handling of the film being rewound.

The method and means of the invention thus enlarges the operational capabilities of a rewind machine, and provides a simple means for handling thin and limp film in an effective manner.

The foregoing description has been given in detail without thought of limitation since the inventive principles involved are capable of assuming other forms without departing from the spirit of the invention or the scope of the following claims.

What is claimed is:

1. In a rewind machine having a rotatable reel for supporting a plurality of cores for winding a web of thin and limp material selectively on said cores, a plurality of metering rolls on which the web moves on its way to the reel, and a cutoff means adjacent the metering roll nearest the reel for severing the web; a manifold arranged between the reel and the closest metering roll thereto, said manifold being formed to provide a plurality of holes spaced along a line parallel with the axis of said closest metering roll, and means to supply compressed air to the manifold for ejection from said holes to form a sheet of air moving in a plane passing between the surface of said closest metering roll and the surface of a core in position for winding, said air sheet being arranged to flow in the direction in which the web will move over said closest metering roll.

2. A method for starting a thin and limp film upon a core in a rewind machine having at least one supporting roll over which the film moves on its way for rewinding on a core comprising the steps of, cutting off the film while it is in engagement with the supporting roll, and directing a stream of medium in the direction of film movement and in a plane passing between the surface of said roll and the surface of said core and adjacent the surface of the web which will contact the core to create an aspiratory effect whereby the end of the cut film will be lifted from the roll and directed toward engagement with the core.

3. A method for starting a thin and limp film upon a core in a rewind machine having at least one supporting roll over which the film moves on its way for rewinding on a core comprising the steps of, stopping rotation of the supporting roll, severing the film so that the end thereof is in engagement with the supporting roll, rotating the supporting roll so that the film is carried in the direction of the core, and directing a substantially flat stream of compressed air in the direction of film movement and in a plane passing between the surface of said roll and the surface of said core and adjacent the surface of the web which will contact the core to create an aspiratory effect whereby the end of the cut film will be lifted from the roll and directed toward engagement with the core.

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