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SPACESAVER SWIVEL CASTERED ROVING CAN

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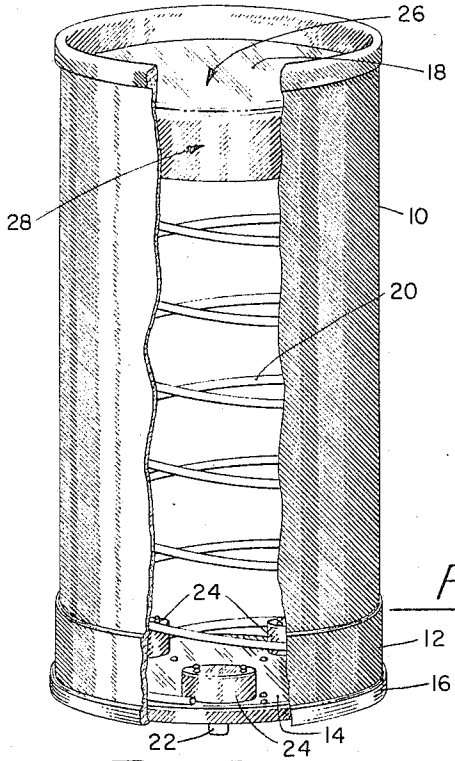


Fig. 1

Fig. 2

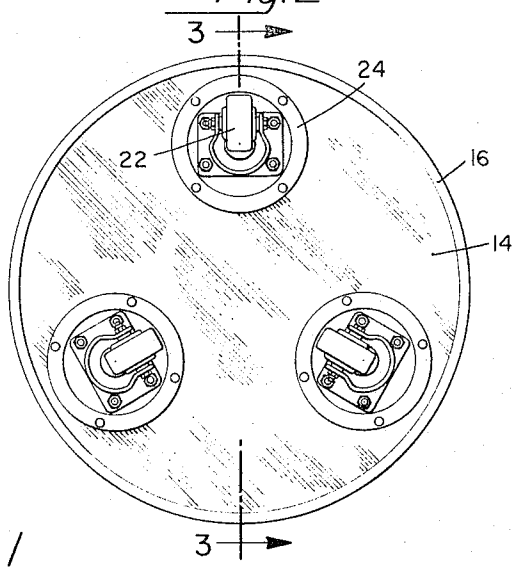


Fig. 3

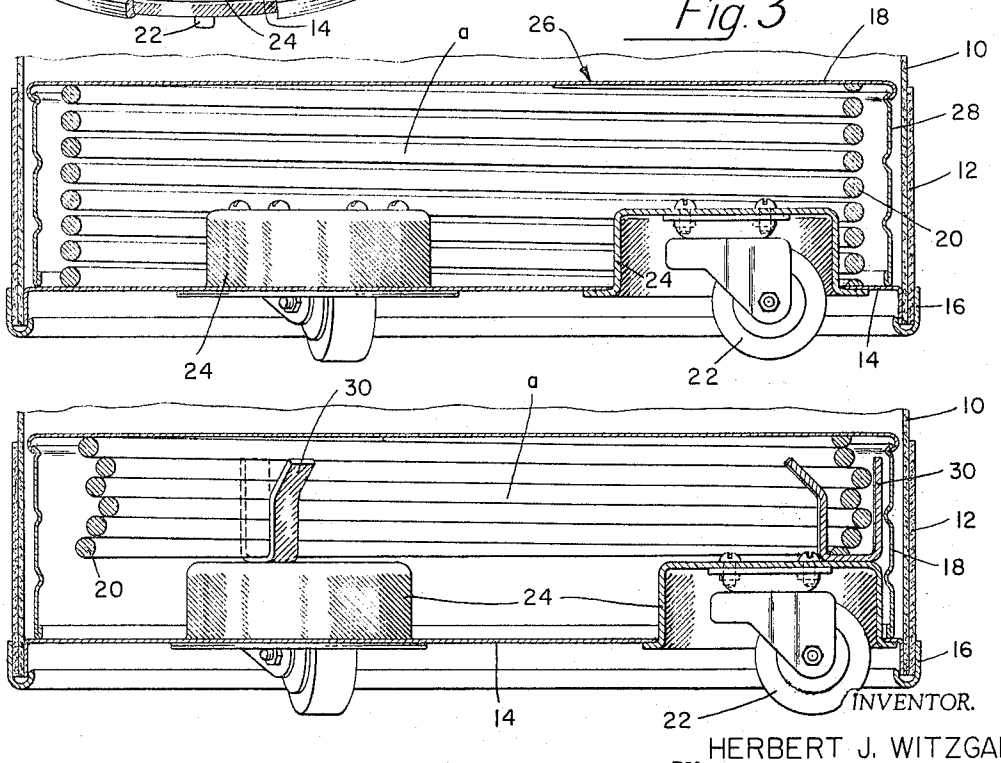


Fig. 4

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SPACESAVER SWIVEL CASTERED ROVING CAN

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This invention relates to a novel container mounted on wheels. More particularly, it concerns a roving can mounted on casters having increased usable capacity.

Roving cans are used in textile mills to receive and hold the product of the carding machines which is called "sliver." Sliver is a very loose rope of fibers from which yarn is produced. In the past, relatively small diameter roving cans have been used, 8 to 12 inch diameter cans being common. As the speed of the textile machines increased and the cost of labor increased, the diameters of the roving cans were increased to compensate for these other factors. The benefits achieved by use of the larger cans were two-fold. The larger cans did not have to be changed as often lowering labor costs. In addition, the cans held longer lengths of sliver and a more uniform product resulted because there were fewer ends to join.

The benefits obtained by changing to larger cans were accompanied by problems. The cans, because they were larger and held more material, were more difficult to move when fully loaded. In addition, because of the increased weight, the cans damaged the floors of the mills increasing maintenance costs.

To overcome the problems encountered with the use of the larger cans, the prior art installed a plurality of casters on the base of the roving can. The casters had to be protected from the accumulation of threads and dirt on the wheels and low enough for the rim to rest on the platform of the carding machine. To correct these problems the prior art raised the base of the container making a false bottom container. The wheels were mounted on the lower side of this base. The walls of the container extended past the base almost to the floor acting as a shield to protect the wheels and permitted the rim to rest on the platform of the carding machine. This corrected the problem of protecting the wheels but it was a relatively costly solution. The total height of the cans is limited to between 40 and 48 inches by the design of the carding machine and 6 to 8 inches of this height is taken up by the piston head platform. The false bottom wasted approximately 2 to 4 inches of the remaining height. Therefore, between 5 and 10% of the usable capacity of the cans was wasted because of the false bottom. This increased the initial cost 5 to 10% because more containers had to be purchased. In addition, the use of the false bottom resulted in a weak construction limiting the weight of material that could be loaded into the can. In addition to being weaker, the false bottom was expensive to install.

The textile industry is an extremely cost conscious industry and was well aware of the loss of capacity due to the false bottom. It advised manufacturers of roving cans that it desired a solution to this problem but the false bottom cans existed in the art for many years before the present invention.

Accordingly, it is one of the objects of this invention to provide a container mounted on wheels with increased usable capacity.

It is a further object of this invention to provide a roving can of the type mounted on casters in which greater utility is made of the volume of the roving can.

It is a further object of this invention to provide a roving can of the type mounted on wheels which is more economical to manufacture and of a stronger construction.

Other objects and advantages of this invention will become more apparent in the description and in the drawings in which:

FIG. 1 is a pictorial representation of a roving can mounted on casters with a partial section removed and in which the piston head platform is illustrated at the high point of its reciprocal stroke.

FIG. 2 is a bottom view of a roving can showing the mounting of casters.

FIG. 3 is an illustration of a cross-section of the base section of the roving can taken along the line 3—3 of FIG. 2 illustrating the novel mounting of the casters.

FIG. 4 is an illustration of an alternative embodiment of the invention taken in cross-section of the base of a roving can.

Briefly, the objects of this invention are obtained by joining the shell, base and rim at the lower edge of the shell. The wheels are mounted to the base and extend upward into the interior of the can and into a compartment formed by the piston head platform and the base.

Referring to FIG. 1, the shell of the container **10**, and the kickband **12** and attached to the base **14**. The rim **16** covers, protects and reinforces this joint. In the interior of the container, the piston head platform **18** moves reciprocally being urged upward by the helically wound compression spring **20** and downward by the weight of the sliver in the can. The casters **22** has a major portion of their height extending through the base and held in position by the mounting means **24**.

In FIG. 2 the wheels are shown spacially related to each other. The number of wheels that are used may vary with a particular application. In general, three wheels have been found to give the optimum results. The height of the wheels varies according to the load in the can and the nature of the force required to move the can. Larger wheels make it easier to move the can than smaller wheels but they are more expensive and take up considerably more room. It has been found that for roving cans up to 36 inches in diameter the optimum size wheel is between 2 and 4 inches in diameter.

In FIG. 1 the platform **18** is shown in the unloaded state to illustrate the nature of the movement of the platform. The piston head platform **18** is so called because of its characteristic shape and movement. The piston head platform **18** is a relatively short cylinder having one closed end **26**. The wall of the cylinder **28** is between 6 and 8 inches in height and acts as a guide to hold the surface of the platform **26** in a perpendicular relationship with respect to the wall of the shell **10**.

The piston head platform **18**, as inserted in the roving can, resembles an inverted cup having an interior cavity defined therein. The platform moves reciprocally within the interior of the shell **10**. The platform **18** is urged downwards by loading of the can. If sufficient amount of sliver is loaded on the platform **18** the platform will bottom on the base **14** and in combination with the base **14** the piston head platform **18** forms a compartment *a*. According to the teachings of this invention, it is in this compartment *a* that the casters **22** are mounted.

Referring to FIG. 3, it can be seen that the piston head platform **18** at the lower limit of its reciprocal movement contacts the base **14**, and in combination, the two

form the aforementioned compartment. The helically wound compression spring **20** is compressible and containable within this compartment. In the embodiment of FIG. 3 the wheels **22** are mounted inside the circumference defined by the spring **20**. This is a relatively uncomplicated method of mounting the wheels but the spread between the wheels is restricted by the diameter of the spring coil.

FIG. 4 is an alternate embodiment wherein a spring guide **30** is attached to an upper portion of the wheel mountings **24**. The guide **30** is adapted so that when the piston head platform **18** is urged downward toward the base **14**, the spring **20** collects the guide. This guide **30** can be mounted on the upper edge of the wheel mounting making it possible to obtain maximum spread between the wheels. Aside from a slight cost differential, the embodiment of FIG. 4 is preferred in that superior balancing of the roving can is obtained due to the wider spread between the wheels.

The wheels may be mounted in various ways. For example, apertures can be punched through the base and U-brackets attached to the base over the apertures. The casters can then be mounted onto the brackets. This is a relatively inexpensive type of mounting but it leaves a portion of the base open.

An alternate method is to stamp upward extending mounting means into the base. This requires the use of deep drawing steels and special stamping equipment. This structure is strong and provides excellent sealing.

The preferred method is to punch apertures into the base and attach upward extending cups to the base. The caster is then attached to the cup. This provides strong mountings, seals the base of the can and is economical.

In addition to mounting the wheels onto the mounting means attached to the base the wheels may be mounted on brackets that are attached to the rim. The base can be eliminated and the platform permitted to bottom on these brackets. For the purposes of this specification, since the function of these brackets is similar to the function of the base, the brackets of this type are included within the scope of this invention.

I claim:

1. A roving can of the type mounted on wheels and having an internal reciprocally moving platform, said roving can comprising in combination a cylindrical hollow shell, a base, a plurality of wheels and a reciprocally moving platform, means for reciprocally moving said platform, said base being attached to a terminal end of said shell and forming in combination with said shell a cylindrical container, said base having defined therein a plurality of upwardly extending wheel mounting means, said reciprocally moving platform being a hollow cylindrical member having a depending cylindrical wall and a closed end, said platform being adapted for reciprocal movement within said shell, said platform contacting said base at the lower limits of its reciprocal movement and in combination with said base defining a compartment, said plurality of wheels being spacially related to each other and attached to said upward extending mounting means, a portion of the height of said wheels extending into said compartment.

2. A roving can of the type mounted on wheels and having an internal, reciprocally moving platform, said roving can comprising in combination: a cylindrical hollow shell, a base, a plurality of wheels and a reciprocable movable platform, means for reciprocally moving said platform, said cylindrical shell having a first inside diameter and a limited height, said base being integrally attached to an end of said shell forming in combination with said shell a closed end cylindrical container, said base having defined therein a plurality of mounting apertures, said reciprocally moving platform being a hollow cylindrical member having a cylindrical wall and a closed end, said wall and end defining an internal cavity, said wall guiding said platform within said container, said

platform having an outside diameter less than said first diameter, said platform being positioned within said shell and adapted for reciprocal movement therewithin, said cavity extending downward towards said base, said platform contacting said base at the lower limit of its reciprocal movement and in combination with said base defining a compartment having a given height, said plurality of wheels being spacially related to each other and attached to said base, said wheels having a substantial portion of their height but less than said given height extending through said aperture into said compartment.

3. The roving can in claim **2** wherein the platform is urged upward by a helically wound compression spring, said spring having a first end in contact with said platform and a second end in contact with said base, said spring being compressible to a height less than said given height and adapted to fit within said compartment.

4. A roving can of the type mounted on wheels and having an internally reciprocally movable platform, said roving can comprising in combination: a cylindrical shell, a reciprocally movable platform received within said shell, means for reciprocally moving said platform, a plurality of wheels, and means for mounting said wheels to the lower terminal end of said shell, said reciprocally movable platform including an end and a cylindrical wall portion depending therefrom, said cylindrical wall portion engaging the terminal end of said shell when said platform is moved downwardly, said platform being adapted for reciprocal movement within said shell and defining, in combination with said terminal end of said shell, a compartment, said wheels being mounted to said means in a manner to have a substantial portion of their height extending upward into said compartment.

5. A roving can of the type mounted on wheels and having an internal reciprocally moving platform said roving can comprising in combination a cylindrical hollow shell, a base, a plurality of wheels, a plurality of wheel mountings, a compression spring and guiding means, said base being attached to a terminal end of said shell and forming in combination with said shell a hollow cylindrical container, said reciprocally moving platform including an end and a cylindrical wall depending therefrom, said platform at a lower limit of its reciprocal movement contacting said base and in combination forming a compartment, said wheel mountings being attached to said base and extending upward into said compartment, said wheels being spacially related to each other and having a substantial portion of their height extending upward into said compartment and being attached to said wheel mountings, said spring having a first end in contact with said platform and a second end in contact with said guiding means, said spring urging said platform in an upward direction and being compressible and containable within said compartment said spring being guided and collected by said guiding means.

6. A roving can having a base and an open top comprising an outer cylindrical shell, a movable platform disposed within said can to receive material thereon, said movable platform including a cylindrical wall extending downwardly therefrom, biasing means for normally urging said platform upwardly within said shell, said platform being movable downwardly when said material is received thereon, a plurality of wheels mounted to said base and extending upwardly through said base into the interior of said shell, and said wheels being spaced from the interior of said shell to provide a recess between said wheels and the interior wall of said shell.

7. The invention as set forth in claim **6** wherein said recess is disposed to receive said cylindrical wall.

8. The invention as set forth in claim **7** wherein said biasing means comprises a spring.

9. The invention as set forth in claim **8** wherein separate mounting means are connected to said base to receive said wheels with said recess being provided between said separate mounting means and said base.

10. The invention as set forth in claim 9 wherein guide elements are provided on each of said mounting means to receive said spring when said movable platform is in a down position.

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