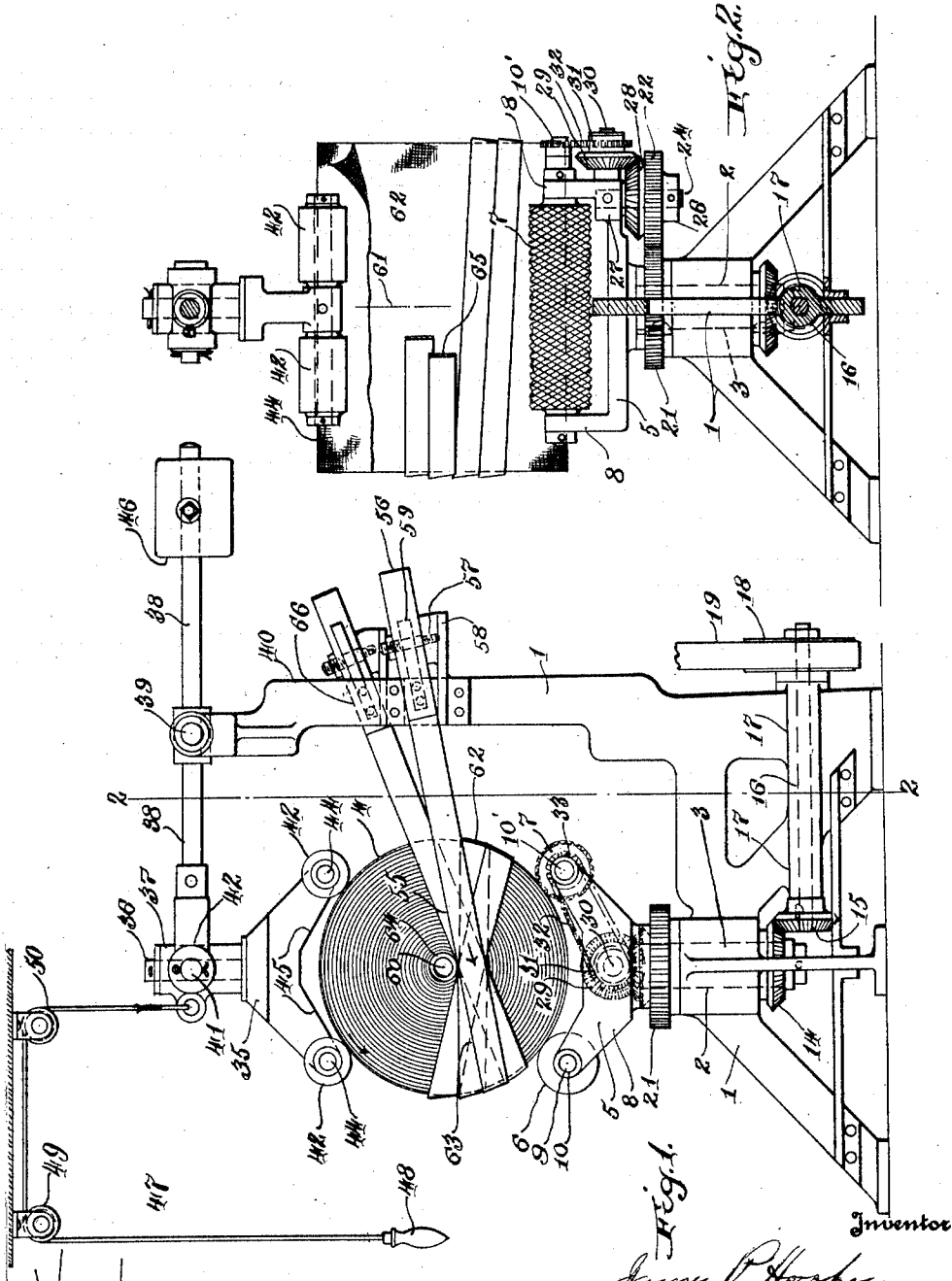


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J. P. HOOPER
WRAPPING MACHINE

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WITNESSES
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WRAPPING MACHINE.

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The invention provides a machine for wrapping cylindrical and similar packages, the wrapping material being formed of a relatively narrow strip passed around the cylindrical body being wrapped in a series of loops, each loop crossing the head of the cylinder substantially on a long diameter and lying on the curved side surface of the cylinder parallel to the axis. The angle of each loop is varied from the plane of the preceding loop to distribute the material over the sides of the package, the material being preferably so placed that the longitudinal edges of the portions of the strip covering the sides are slightly overlapped. While the machine disclosed best illustrates wrapping by means of a single strip, such a limitation is obviously not essential to the invention.

In the preferred form of the invention each loop is spaced slightly away from the center of the cylinder, leaving a hole in the wrapping at each end for the admission of a pole or shaft which may be used to support the package, which is ordinarily a bolt or roll of sheet material, as fabric, the wrapping being left in position until the material is used.

In the accompanying drawings I have shown a machine for wrapping a cylindrical package by means of strip material, the same embodying the features of the invention in the preferred form.

In the drawings:

Figure 1 is a side elevation.

Figure 2 is a section of the machine on the line 2—2 of Figure 1.

Referring to the drawings by numerals, each of which is used to indicate the same or similar parts in the different figures, the machine, as shown, comprises a frame 1 provided with a bearing 2 for a vertical shaft 3 on which is a rotary carriage 5 provided with rollers 6, 7 for supporting the cylindrical bodies, preferably comprising rolls or bolts of cloth 4.

To support the rollers 6, 7 the carriage 5 is provided with four arms 8 supporting the roller shafts 9, each of which has a bearing 10 at each end, one said bearing being located in each of the four arms 8.

The rotary carriage 5 is secured at its center to the upper end of the shaft 3 and the carriage and shaft are, in the form of the invention shown, driven by a bevel gear 14

secured to the shaft 3 and meshing with a second bevel gear 15 mounted on a horizontal shaft 16 which turns in suitable bearings 17 in the frame, the said shaft being driven in any suitable manner, as by means of a pulley 18 thereon engaged by a drive belt 19 from any suitable source of power.

The bearing 2 carries secured thereto a stationary toothed gear 21, which stationary gear 21 meshes with a planetary gear 22 which rotates on a stud 24 mounted in suitable bearings 26, 27 carried by the rotary carriage 5. The bevel gear 28 is carried by and secured to the planetary gear 22 on the top thereof and coaxially placed in relation thereto. The stationary gear 21, planetary gear 22 and the bevel gear 28 are all in horizontal planes, their axes being vertical.

The bevel gear 28 meshes with a second bevel gear 29 on a horizontal shaft 30 mounted in suitable bearings in the carriage 5 and carrying thereon a toothed sprocket 31 which drives a chain 32 meshing with a second sprocket 33 secured to the shaft 10' of the roller 7, the same being knurled or roughened to engage the package which is thus slowly rotated about its axis to provide for variation of the angles of the respective successive loops of the paper strip as it is wound on the cylinder.

The cylindrical body being wrapped may be held in position on the carriage 5 by gravity or in any suitable manner, but in the form illustrated a weight or presser foot 35 is shown, the same being pivotally mounted to rotate in a horizontal plane on a vertical shaft 36 in an upright bearing 37 carried on a horizontal arm 38 intermediately supported on journals and journal bearings 39, the latter being carried by an upright 40 forming part of the frame of the machine.

The upright bearing 37 is, in the form of the invention shown, provided with horizontal journals 41 engaging suitable bearings 42 on said arm 38 so that the presser foot or weight 35 which, in the form shown, engages the cylindrical package from above by means of four rollers 42, may not only be rotated about a vertical axis in a horizontal plane, but rocked about the arm 38 to permit the rollers to conform to the position of the package. The rollers 42, as shown, are mounted one on each end of two shafts 44 mounted in fore and aft arms 45 of the presser foot 35 and the presser foot 35 is

shown as counter balanced by means of a weight 46 mounted for adjustment along the arm 38 on the opposite end thereof from the presser foot and on the opposite side of the bearing 39.

The presser foot may be raised at the will of the operator in any suitable manner as by means of a flexible tension member 47 having at its end a suitable grip 48, the tension member being passed over pulleys 49 and 50 suspended from the ceiling, or any suitable support.

The strip wrapping material 55 is fed to the cylindrical package 4 from a spool 56 mounted on the frame of the machine on a suitable stud 57 seated in a bracket 58 and controlled by any suitable tension member, as the plate spring 59. If it is desired to wrap by means of two strips fed simultaneously this may be done by feeding a second strip of wrapping material from a second spool 66, the same being on a stud 67.

In the operation of the machine the body 4 to be wrapped, which is ordinarily a cylindrical bolt or roll of fabric or other sheet material, is first placed on the rollers 6, 7 of the rotary carriage 5 and the strip material 55, which is preferably in the form of a single strip, though this is not essential to the invention, is led from the spool 56 to the package 4 and the end 65 of the material is fastened to the package or connected to the package in any suitable manner. The driving mechanism, which is preferably at rest when the package is placed, is then started causing the package or cylindrical article to rotate about a vertical axis which is at right angles to the axis of the cylinder and preferably intersects it intermediately or substantially at the center.

The rotation of the cylindrical body or bolt being wrapped, in this direction causes the strip material 55 to be rolled about the cylinder on the line of the intersection of a plane parallel to and near or at the axis with the curved sides and flat ends of the cylinder.

The rotation of the carriage 5 also causes a planetary motion of the gear 22 about the stationary gear 21 with which it meshes, rotating the gear 22, also the bevel gear 28 carried thereby, which in turn meshes with the bevel gear 29 carrying the sprocket 31 which drives a chain 32 which in turn meshes with sprocket 33 driving the friction roller or knurled roller 7 which is in engagement with the bolt of cloth or body 4. This causes the body being wrapped to rotate about its central axis 60 with a motion which is very slow in comparison with the rotation about the vertical axis 61 already described. This rotation, which may be referred to as the secondary motion, causes the angle at which the loops of material are laid on the cylinder, as described, to be varied at each turn preferably by an angle which, at the cylindrical

surface, encloses an arc substantially equal to the width of the strip or strips so that the strip material forming each turn overlaps as to one longitudinal edge, the adjacent longitudinal edge of the next preceding strip, giving a continuous layer of material covering the curved sides 62 of the cylinder. The ends of each package are covered by the end portions of the loops of material described, which overlap to a much greater extent near the centers of the ends than at the sides.

In the operation of the machine, as shown, the spool 56 is so placed that the plane of the side edge 63 of the paper strip 55 forming each loop is spaced slightly away from the center leaving a central opening 64 which is coaxial with the cylinder 4. This makes it possible to mount the bolt of cloth on a pole or shaft passed through the center to support the cloth without first unwrapping. By this arrangement the paper wrapping may be left on the sheet material or cloth until it is used. By use of the machine most satisfactory, quick and cheap wrapping of this type of package is accomplished.

I have thus described specifically and in detail a machine embodying my invention in the preferred form in order that the nature and operation of the same may be clearly understood, however, the specific terms herein are used descriptively rather than in a limiting sense, the scope of the invention being defined in the claims.

What I claim as new and desire to secure by Letters Patent is:

1. A machine for wrapping cylindrical packages which consists of a rotary carriage and means for driving the same with means for supporting the cylindrical body to be wrapped thereon with the axis of said cylindrical body substantially at right angles to the axis of rotation, the center of the cylinder being substantially in alignment with the axis of rotation, means for rotating the cylindrical body about its own axis simultaneously with the rotation of the carriage, and means for feeding a narrow strip of wrapping material to the package in a plane substantially in the direction of the axis and intersecting the cylinder near the center.
2. A machine for wrapping cylindrical packages which consists of a rotary carriage and means for driving the same, means for supporting the cylindrical body to be wrapped thereon with the axis of said cylindrical body at right angles to the axis of rotation, the center of the cylinder being substantially in alignment with the axis of rotation, means for rotating the cylindrical body about its own axis simultaneously with the rotation of the carriage, means for feeding a narrow strip of wrapping material to the package in a plane substantially parallel to the axis and intersecting the cylinder near the center, and means for engag-

ing the cylindrical body from above to hold it in position on the carriage.

3. In a machine for wrapping packages, the same consisting of a carriage having rollers spaced apart to support the package, means for rotating the carriage about an axis substantially at right angles to the roller axis, the axis of rotation extending through the carriage near the center so that when the package is in place said axis may intersect the same near the center at right angles to the axis of the package, means for rotating one of said supporting rollers simultaneously with the rotation of the carriage and means for feeding a long narrow strip of wrapping material to the surface of the package being wrapped, in the direction of the axis.

4. In a machine for wrapping packages, a rotary carriage, means for rotating the same, means for supporting the package to be wrapped on said carriage with the axis at right angles to the axis of rotation, a roller on the carriage engaged by the package, a stationary gear concentric with the axis of the carriage, a planetary gear carried by the carriage and meshing with said stationary gear, means connecting said planetary gear to said roller to drive the same simultaneously with the rotation of the carriage and means for feeding a long narrow strip of wrapping paper to the surface of the package in a plane intersecting the same substantially in the direction of the axis.

5. In a machine for wrapping cylindrical bodies, a rotary carriage, means for rotating the same, means for supporting the cylindrical body to be wrapped on said carriage with the axis at right angles to the axis of rotation, a roller on the carriage engaged by the cylindrical body thereon, a stationary gear concentric with the axis of the carriage, a planetary gear carried by the carriage and meshing with said stationary gear, means connecting said planetary gear to said roller to drive the same simultaneously with the rotation of the carriage and means for feeding a long narrow strip of wrapping paper to the surface of the cylindrical body in a plane intersecting the same substantially in the direction of the axis, and means comprising anti-friction members engaging the cylinder from the

side opposite to that which engages the carriage.

6. In a machine for wrapping cylindrical bodies, a rotary carriage, means for rotating the same, means for supporting the cylindrical body to be wrapped on said carriage with the axis at right angles to the axis of rotation, said means including a roller on the carriage engaged by the cylindrical body thereon, a stationary gear concentric with the axis of the carriage, a planetary gear carried by the carriage and meshing with said stationary gear, means connecting said planetary gear to said roller to drive the same simultaneously with the rotation of the carriage, means for feeding a long narrow strip of wrapping paper to the surface of the cylindrical body in a plane intersecting the same substantially parallel to the axis, holding means comprising anti-friction members engaging the cylinder from the side opposite to that which engages the carriage, and means for supporting said member for rotation in a horizontal and a vertical plane.

7. In a machine for wrapping cylindrical bodies, a rotary carriage, means for rotating the same, means for supporting the cylindrical body to be wrapped on said carriage with the axis at right angles to the axis of rotation, said supporting means including a roller on the carriage engaged by the cylindrical body thereon, a stationary gear concentric with the axis of the carriage, a planetary gear carried by the carriage and meshing with said stationary gear, means connecting said planetary gear to said roller to drive the same simultaneously with the rotation of the carriage, means for feeding a long narrow strip of wrapping paper to the surface of the cylindrical body in a plane intersecting the same substantially parallel to the axis, means comprising anti-friction members engaging the cylinder from the side opposite to that which engages the carriage, means for supporting said member for rotation in a horizontal and a vertical plane and means for counter balancing and for wrapping and lowering said pressing means.

Signed by me at Baltimore, Maryland, this 20th day of April, 1927.

JAMES P. HOOPER.