

J. McCLAIN.
MACHINE FOR CLEANING AND PACKAGING BUGS.
APPLICATION FILED JAN. 31, 1910.

1,009,432.

Patented Nov. 21, 1911.

5 SHEETS—SHEET 1.

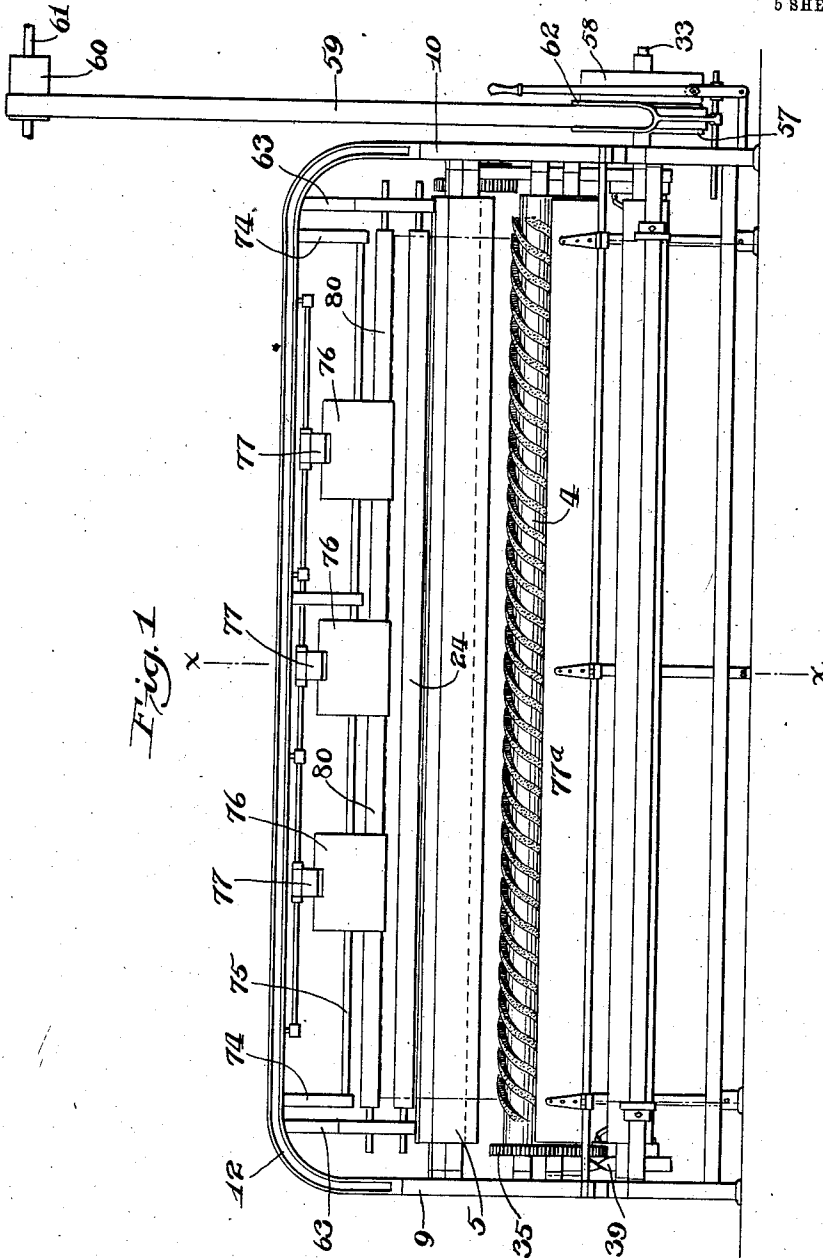


Fig. 1

WITNESSES

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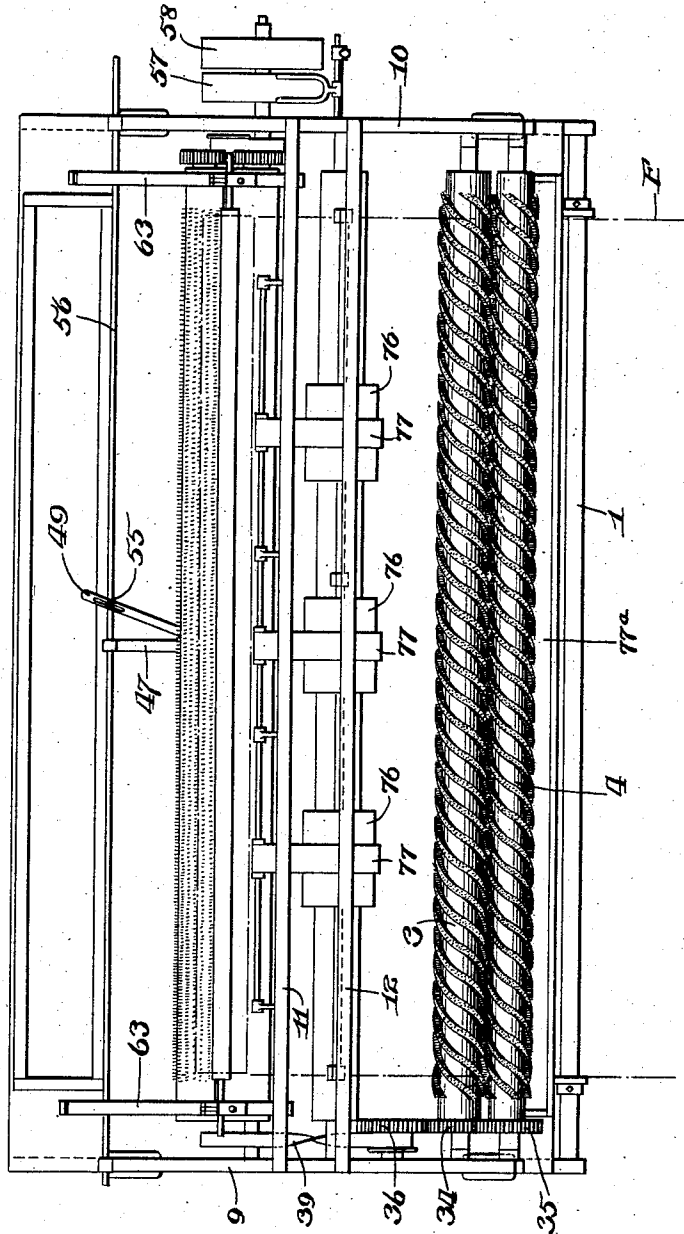
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5 SHEETS—SHEET 2.

Fig. 2.



WITNESSES

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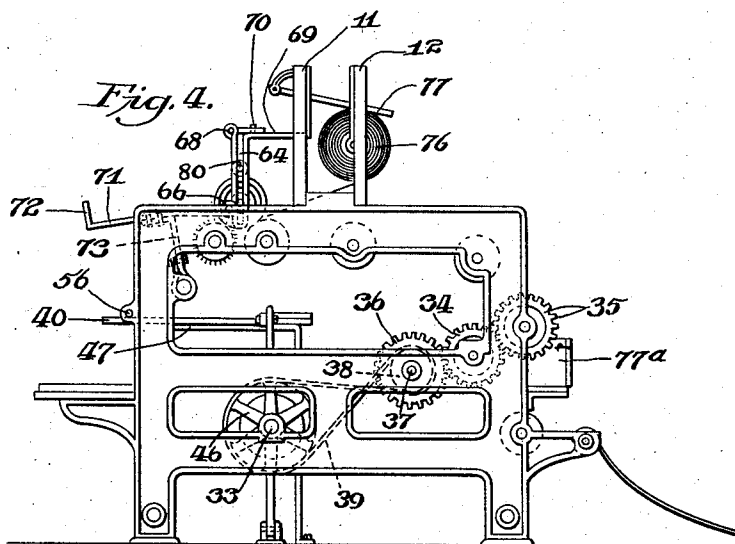
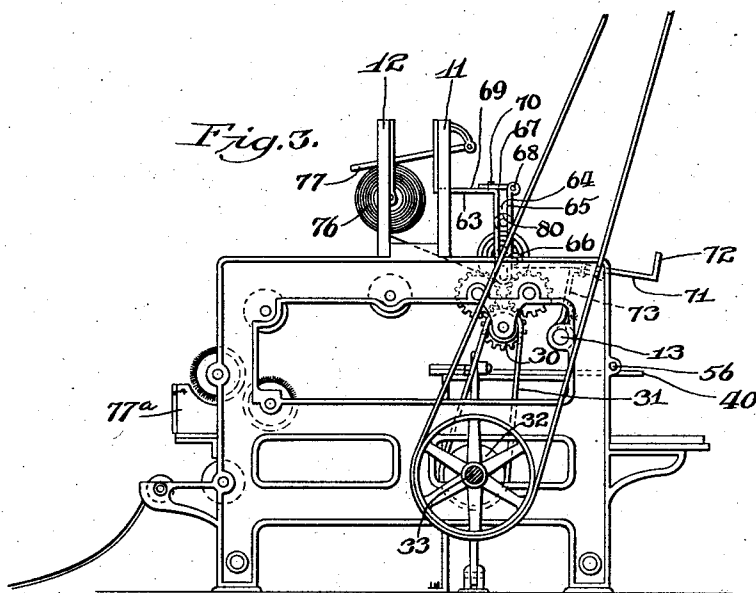
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5 SHEETS-SHEET 3.



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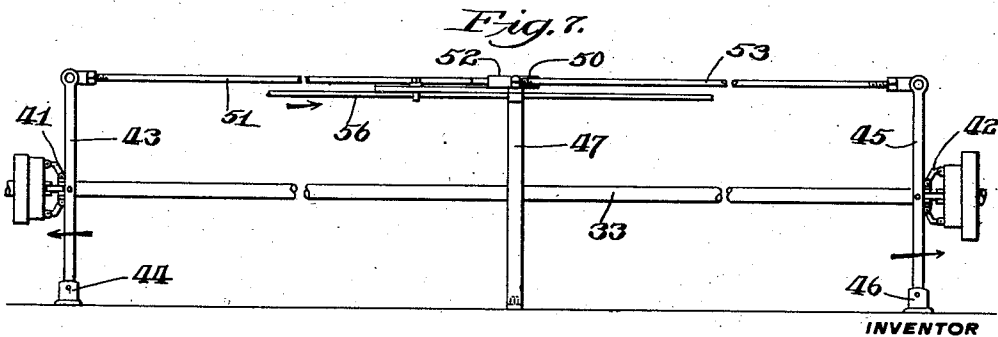
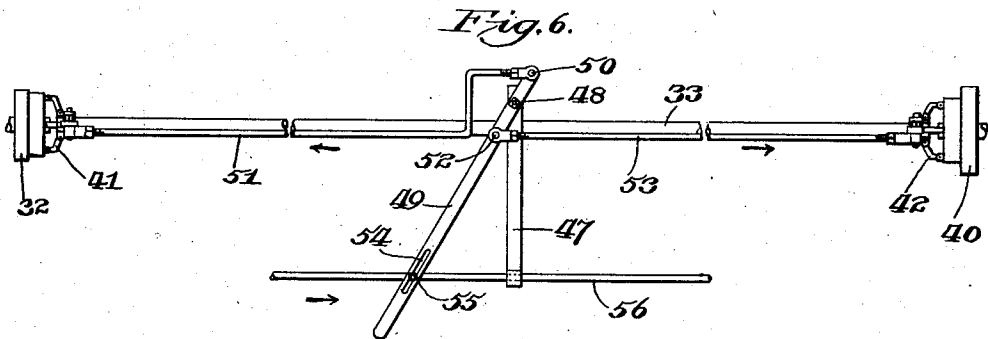
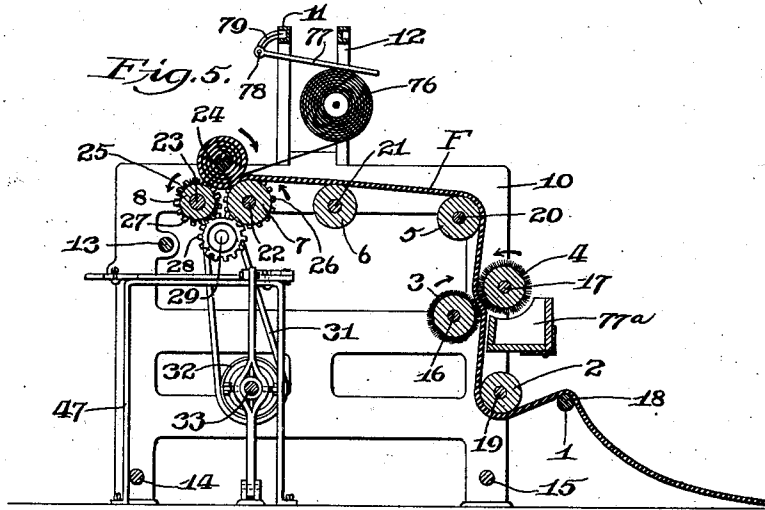
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6 SHEETS-SHEET 4.



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5 SHEETS—SHEET 5.

Fig. 8.

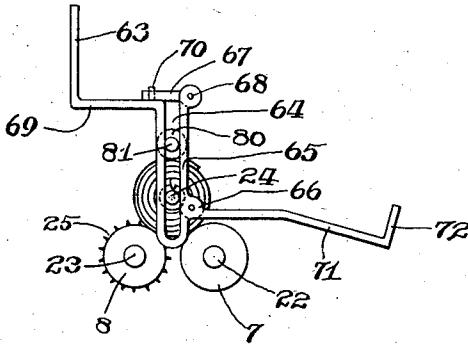


Fig. 9.

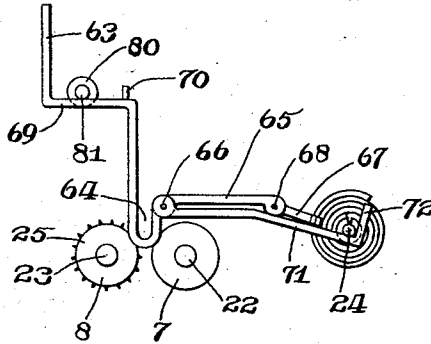


Fig. 10.

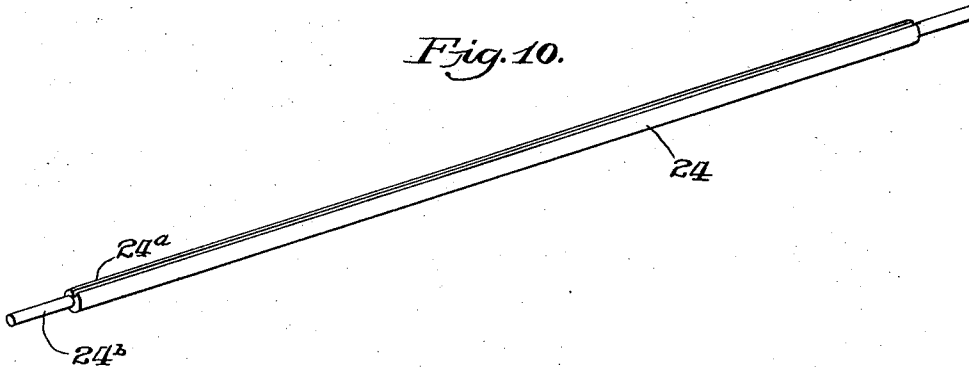
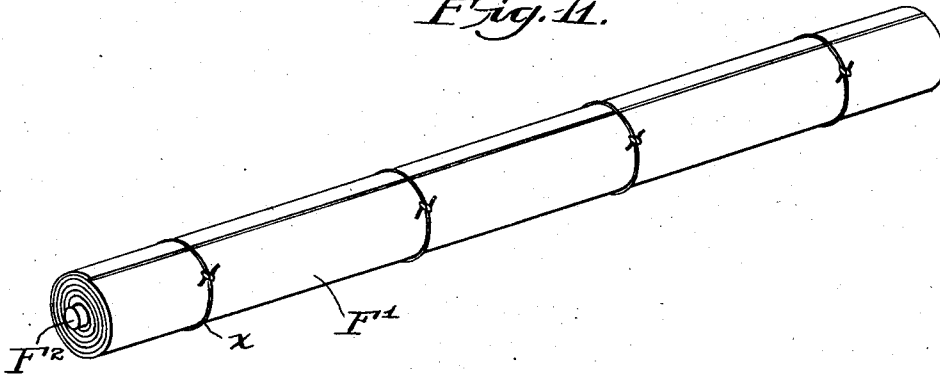


Fig. 11.



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UNITED STATES PATENT OFFICE.

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MACHINE FOR CLEANING AND PACKAGING RUGS.

1,009,432.

Specification of Letters Patent. Patented Nov. 21, 1911.

Application filed January 31, 1910. Serial No. 540,989.

To all whom it may concern:

Be it known that I, JAMES McCLAIN, citizen of the United States, residing in the city of Philadelphia, State of Pennsylvania, have invented certain new and useful Improvements in Machines for Cleaning and Packaging Rugs, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming a part of this specification.

My invention relates to a machine for cleaning and packaging new carpets and rugs, the machine including a means for cleaning one or both faces of a carpet or rug and rolling the same into a package, and, in case of a sewed or carpet rug, means for spreading strips of paper over the seams between each convolution of the roll; these several functions being successively performed in a continuous operation; and my invented machine I believe to be not only broadly new as a unitary mechanism but generically new as to functions and results. Rugs with woven borders, and rugs made from body and border strips, usually pile-surface fabrics, after weaving, sizing and stretching, are otherwise prepared for the market by a thorough brushing or cleaning of the nap or pile surface, or both surfaces, and each rug is then rolled on a permanent wooden shaft or holder. These two steps, commonly effected by manual operation, are slow and costly for the labor involved.

The object of my invention is to provide a single mechanism by which the cleaning and the rolling or packaging can be effected, and in a continuous operation, resulting not only in a great saving of labor for each of the two steps involved, but in better and more marketable goods, the brushing or cleaning being more thoroughly done and the rolling or packaging being more even and compact. Moreover, in the case of sewed rugs, rolled or packaged as other rugs for the market, it has been found that the heavy longitudinal seams indent the contacting surface in each convolution of the roll, the indentation being more or less permanent and disfiguring.

My machine, in its best form, comprises, in addition to the means for brushing or cleaning the fabric and rolling or packaging the same, a means for spreading strips of paper over the sewed seams, in case of sewed fabrics, coincident with the rolling, the several functions of cleaning, spreading the strips of paper over the sewed seams and rolling the fabric into a package being performed by the machine in appropriate relative sequence.

In the drawings illustrating my invention: Figure 1 is a front elevation of my improved cleaning and packaging machine. Fig. 2 is a plan view thereof. Fig. 3 is an elevation of the right hand end of the machine. Fig. 4 is an elevation of the left hand end of the machine. Fig. 5 is a vertical section on line $x-x$ of Fig. 1. Fig. 6 is a plan view of a portion of the main driving shaft of the machine, including two pulleys thereon, their clutch devices and the operating means for the clutch devices. Fig. 7 is an elevation of the parts shown in Fig. 6. Fig. 8 is an elevation of one of the brackets for supporting and guiding the shaft upon which the fabric is rolled, and adjuncts, showing the position of the shaft during the packaging operation. Fig. 9 is a view similar to Fig. 8, showing the position of the shaft, with the fabric rolled, after the shaft has been removed from operative or packaging position in the machine, to inoperative position on the supporting bracket frame for the purpose of withdrawing the removable shaft from the roll. Fig. 10 is a perspective view of the removable grooved shaft upon which the fabric is rolled in the machine; and Fig. 11 is a perspective view of the rolled and tied fabric after the removable machine shaft upon which the fabric was rolled has been withdrawn therefrom and the permanent wooden shaft substituted therefor.

When a carpet fabric is being acted upon by the machine it is fed to the machine and drawn therethrough in a continuous strip; and this method is equally desirable in case of rugs, hence they are preferably fed

through the machine in a continuous strip, effected by arranging the rugs in a continuous end to end series and sewing together the meeting edges or ends of adjacent rugs in the series, by coarse stitches, which are removed after the packaging operation, as will be hereinafter described. The strip of fabric F, either carpets or rugs sewed together end to end in series, is first passed over a guide-roller 1 (see Fig. 5) then under a guide-roller 2, then up and between suitable cleaning devices, preferably a pair of gear-driven cylindrical brushes 3 and 4, and then over two guide-rollers 5 and 6 to a pair of driven rollers 7 and 8, over which is operatively superposed the removable and rotatable shaft 24 upon which the fabric is rolled for packaging, the forward end of the strip being inserted in the longitudinal groove 24^a of said shaft.

The main frame of the machine comprises the end standards 9 and 10, connected by the upper longitudinal bars 11 and 12 and also by tie rods 13, 14 and 15.

The cleaning mechanism is shown as a pair of brushes 3 and 4 mounted on shafts 16 and 17, respectively, which are journaled in suitable bearings in the end standards 9 and 10; and the rollers 1, 2, 5, 6, 7 and 8 are mounted on shafts 18, 19, 20, 21, 22 and 23, respectively, which are also journaled in suitable bearings in the end standards 9 and 10.

Arranged directly above the pair of rollers 7 and 8, is a detachable and removable shaft 24, upon which the fabric is rolled during the packaging operation, and it is preferably grooved longitudinally, as at 24^a, to receive thereon the forward edge of the strip to supply a better starting grip thereon. The shaft 24 during its operative rotation is freely movable toward and from the rollers 7 and 8, and the roll of fabric, during the packaging operation, rests upon the rollers 7 and 8, and is actuated thereby to turn the roll of fabric in the direction indicated by the arrow in Fig. 5 and at the same time to draw the fabric through the machine while it is being guided in its travel by the rollers 1, 2, 5 and 6. The roller 8 is provided with projecting pins 25 which engage the roll of fabric supported thereby and insure the turning thereof during the rolling operation.

The shafts 22 and 23 of the pair of actuating rollers 7 and 8 are provided with gear wheels 26 and 27, respectively, which coast with a gear wheel 28 on a short shaft 29 which is journaled in a suitable bearing on the end standard 10. The shaft 29 is provided with a pulley 30 which is driven by a belt 31 passing over the pulley 30 and under a pulley 32 on the main driving shaft 33 of the machine, the driving shaft 33 being mounted to rotate in suitable bearings

in the end standards 9 and 10. It will thus be seen that the pair of rollers 7 and 8 may be turned in the direction indicated by the arrows in Fig. 5 to actuate the roll of fabric being rolled upon the shaft 24.

The shafts 16 and 17 carrying the brushes 3 and 4 are provided with coasting gear wheels 34 and 35, respectively. The gear wheel 34 coacts with a gear wheel 36 on a short shaft 37 which is journaled in a suitable bearing on the end standard 9. The shaft 37 is provided with a pulley 38 around which passes a cross belt 39 which also passes around a pulley 40 on the main driving shaft 33. It will thus be seen that the brushes 3 and 4 may be rotated from the main driving shaft 33, and in opposite directions to each other, as indicated by the arrows in Fig. 5.

The pulley 32 for actuating the pair of rollers 7 and 8, and the pulley 40 for actuating the brushes 3 and 4, are usually mounted on the driving-shaft 33; and the pulleys 32 and 40 are provided with suitable clutch devices 41 and 42, respectively, by means of which the pulleys may be clutched to and unclutched from the driving shaft 33. The clutch device 41 is adapted to be operated by a vertical lever 43, the lower end of which is pivoted to a bracket 44 on the floor supporting the machine; and the clutch device 42 is adapted to be operated by a vertical lever 45, the lower end of which is pivoted to a bracket 46 on the base of the machine frame or adjacent thereto on the floor supporting it. The clutch devices 41 and 42 may be of any approved type, and they are adapted to clutch the pulleys 32 and 40 to the driving shaft 33 when the levers 43 and 45 respectively are moved in the directions indicated by the arrows in Fig. 7, and to unclutch the pulleys from the shaft 33 when the levers 43 and 45 are moved in reverse directions. In order to operate the clutch devices 41 and 42 simultaneously to clutch the pulleys 32 and 40 to the shaft 33 to simultaneously start the actuation of the rollers 7 and 8, and brushes 4 and 5, and to unclutch the pulleys 32 and 40 from the shaft 33 to simultaneously stop the actuation of the rollers 7 and 8 and brushes 45, I provide the following preferred means.

Mounted on the base of the machine frame or adjacent thereto on the floor supporting the machine, between the end standards 9 and 10, is a bracket 47, on which is fulcrumed as at 48, a lever 49. Pivoted to the lever 49, as at 50, on one side of its fulcrum 48, is one end of a bent rod 51, the other end of which is pivoted to the upper end of the lever 43; and pivoted to the lever 49, as at 52, on the other side of its fulcrum 48, is one end of a straight rod 53, the other end of which is pivoted to the upper end of the lever 45. The lever 49 is provided with a

slot 54 into which extends a pin 55 projecting from a horizontally-arranged hand-operated rod 56 which is mounted to slide longitudinally in bearings in the end standards 9 and 10 and in the bracket 47. It will thus be seen that by manually shifting the rod 56 in the direction indicated by the arrows in Figs. 6 and 7, the levers 43 and 45 may be moved away from each other, as indicated by the arrows in Fig. 7, to clutch the pulleys 32 and 40 to the shaft 33; and that by moving the rod 56 in the opposite direction, the operation may be reversed, to unclutch the pulleys 32 and 40 from the shaft 33.

One end of the driving shaft 33 extends outwardly beyond the end standard 10, and is provided with a fast pulley 57 and a loose pulley 58, adapted to be actuated by a belt 59 extending from a pulley 60 on a suitably located outside power-shaft 61. The machine is provided with a suitable belt-shipper 62 by means of which the belt 59 may be shifted into engagement with either the fast pulley 57 or the loose pulley 58, to start or stop the actuation of the main driving shaft 33, as desired.

During the rolling of the fabric into a package form upon the shaft 24, by the operation of the rollers 7 and 8, the package increases in diameter and the shaft 24 must be free to move upwardly from the rollers 7 and 8 during such increase in diameter; and it must be detachable from operative position after the roll is completed, but in order to guide the shaft 24 during the rolling and during its consequent upward movement, I provide a pair of oppositely-disposed brackets 63, 63, (see Figs. 8 and 9), one located on one side of the path of movement of the fabric and adjacent the end standard 9, and the other located on the other side of the path of movement of the fabric and adjacent the end standard 10. Each bracket 63 is supported by the upper bar 11 of the main frame, and each bracket is constructed to provide, in operative position, a vertical slot 64 into which the reduced ends 24^b of the shaft 24 extend. The front wall of the upper portion of the slot 64 of each bracket is formed by a vertical bar 65, the lower end of which is pivoted, as at 66, to the main body of the bracket 63, and the upper end of which is provided with a latch 67 pivoted to the bar 65, as at 68. The latch 67 is adapted to extend over the top of the slot 64 and rest upon a horizontal portion 69 of the bracket 63, and the latch 67 is provided with a perforation into which a pin 70 is adapted to extend when the latch arm rests upon the horizontal portion 69 of the bracket. The engagement of the latch arm 67 with the pin 70 serves to maintain the bar 65 in operative vertical position. Each bracket 63

includes an outwardly extending arm 71 provided with an upwardly-extending end 72, as shown, for a purpose hereinafter explained. Each bracket 63 is braced by an arm 73 extending from the arm 71 of the bracket to the tie rod 13 of the main frame (see Fig. 3).

When sewed fabrics or sewed rugs are passed through the machine to be cleaned and packaged, the seams extend longitudinally of the strip of fabric; and, in order to feed into the roll of fabric, between each convolution of the roll, during the packaging operation, strips of paper, as interposed strips extending over the seams of the fabric, I provide the following preferred means:—Supported by brackets 74 projecting from the upper bar 12 of the main frame, is a longitudinally-extending shaft 75 on which are mounted rolls of paper 76 which may be adjusted toward and from each other to occupy positions directly over the seams in the fabric passing over the rollers 5 and 6. The shaft 75 is located to permit the ends of the strips of paper 76 to be inserted between the main body of the fabric F and the shaft 24, and to permit the roll of fabric to draw the strips of paper from the rollers 76 and draw the strips by frictional contact into the roll of fabric between each convolution thereof. To prevent the strips of paper from unrolling too rapidly from the rolls 76, I provide arms 77, one located above and resting upon each roll of paper 76. These arms 77 are pivoted to a shaft 78 which is supported by brackets 79 on the upper bar 11 of the machine. The strips of paper thus inserted prevent the seams, projecting slightly from one face of the fabric, from indenting the opposite face of the fabric in each convolution of the roll; and the insertion of the strips of paper from the rolls 76 is especially desirable when pile fabric is being cleaned and packaged by the machine, for in such sewed fabrics the projecting seams on the back thereof indent the pile face of the fabric and result in a more or less permanent disfiguration thereof.

The brushes 3 and 4, rotating in the direction of the arrows in Fig. 5 during the operation of the machine, act upon the fabric F and brush the dirt downwardly therefrom; and when a pile fabric is being cleaned and packaged by the machine the pile face of the fabric passes through the machine adjacent the roller 4; therefore I provide a long receiver or box 77^a, directly beneath the brush 4 to receive the dirt &c. brushed from the pile face of the fabric F by the brush 4. The box or receiver 77^a extends the full length of the brush 4, and is suitably supported by the end standards 7 and 10 of the machine. The front wall of the box 77^a is hinged to the bottom of the

box to permit the front wall to be lowered for the purpose of removing the dirt from the box.

The operation of the machine is as follows:—The strip of fabric F to be cleaned and packaged is drawn over the roller 1, under the roller 2, up between the brushes 3 and 4, and then over the rollers 5 and 6 to a position above the pair of rollers 7 and 8. The forward edge of the fabric is then inserted into the longitudinal groove 24^a in the shaft 24, and the paper strips from roll 76 are then led thereto, if the rug being packaged is a sewed fabric, otherwise that element of the machine is not put into operation. The shaft 24 is then turned one or two revolutions to roll one or two convolutions of the fabric upon the shaft; whereupon the roll of fabric thus started upon the shaft 24 is lowered to rest upon the rollers 7 and 8. This being done the belt 59 is shifted into engagement with the fast pulley 57 to cause the continual rotation of the main driving shaft 33, and the rod 56 is shifted to operate the clutch devices 41 and 42 to clutch the pulleys 32 and 40 to the driving shaft 33, thereby starting the actuation of the brushes 3 and 4 and the pair of rollers 7 and 8. The rotation of the rollers 7 and 8 rotates the roll of fabric started upon the shaft 24 and draws the fabric F through the machine while the same is being rolled upon the shaft 24. As the fabric thus being drawn through the machine passes the brushes 3 and 4, the brushes, rotating in the direction of the arrow in Fig. 5, brush from both sides of the fabric all dirt &c. and thoroughly clean the same, before it passes to the shaft 24 upon which it is rolled in package form. Prior to beginning the operation of the machine, or before the rearward edge of the rug or strip of fabric F being cleaned and packaged passes the guide-roller 1, the forward edge of the next succeeding rug or strip of fabric to be cleaned and packaged is sewed by coarse stitches to the rearward edge of the preceding strip, and so on for a series of such rugs or strips of fabric, hence the rug or strip next succeeding that which is being cleaned and packaged is drawn thereby into the machine to the rollers 7 and 8. When the rearward edge or end of any rug or strip of fabric in the series being cleaned and rolled upon the shaft 24 reaches the rollers 7 and 8, and is thus cleaned and packaged, the rod 56 is shifted by hand to operate the clutch devices 41 and 42 to unclutch the pulleys 32 and 40, respectively, from the shaft 33, thereby stopping the actuation of the brushes 3 and 4 and the rollers 7 and 8. This being done the coarse stitches uniting the strip of fabric rolled upon the shaft 24 with the next succeeding strip are cut, the pieces of cut strings forming the stitches

are removed from the edges of the fabric, the latches 67 are disengaged from the pins 70, and the bars 65 and latches 67 are lowered upon the arms 71 of the bracket 63, as shown in Figs. 8 and 9. The removable packaging shaft 24 is then moved from its position above the rollers 7 and 8 to the position, resting upon and against the previously lowered arms 71 and 72, shown in Fig. 9, and the pieces of cord or twine X previously forming the stitches uniting the rolled strip of fabric upon the shaft 24 with the next and succeeding unrolled strip of fabric drawn into the machine, are tied in the form of bands around the rolled strip F' of fabric upon the shaft 24 at suitable intervals throughout the length of the roll, as illustrated in Fig. 11; whereupon the removable packaging shaft 24 is withdrawn from the roll and the usual permanent wooden shaft F² substituted therefor. The packaging shaft 24 of the machine is then returned to its previous position above the rollers 7 and 8, the pivoted arms of the bracket 63 restored to operative position, and the forward edge of the next succeeding strip of fabric is inserted in the groove in the roller 24; the roller 24 is turned to roll one or two convolutions of the fabric upon the same; the roll of fabric thus started upon the shaft 24 is lowered to rest upon the rollers 7 and 8; and the rod 56 is shifted to operate the clutch devices 41 and 42 to clutch the pulleys 32 and 40 to the driving shaft 33 and start the actuation thereof for a succeeding operation.

In order that the rug being rolled upon the movable shaft 24 may be held with certainty in operative engagement with the rollers 7 and 8, I prefer to provide a movable rod or shaft 80, operating merely as a weight on the roll. This shaft or rod 80 has reduced ends 81 which are inserted into the slots 64 in the brackets 63 in a manner to permit the shaft 80 to rest upon the roll of fabric, as clearly shown in Fig. 8. When the bars 65 and latches 67 are lowered to the position shown in Fig. 9 for the purpose of removing the shaft 24 and packaged rug or fabric rolled thereon, the shaft 80 is raised and shifted manually to rest upon the horizontal portions 69 of the brackets 63, as indicated in Fig. 9.

While I have herein shown and described my invention in a desirable and practicable form, I do not limit myself to this particular construction of the elements, as the same may be greatly modified without departing from my invention, notably in the particular construction and character of the cleaning devices, and the particular construction and character of the actuating devices to rotate the packaging shaft, as equivalent devices may be employed in lieu thereof, the essence of the invention residing in a unitary mech-

anism adapted to act upon a rug fed to it and perform thereon, as a continuous operation the successive functions of cleaning and packaging it.

5 Having thus described my invention, I claim as new and desire to secure by Letters Patent:—

1. In a machine for packaging, in rolls, a strip of textile fabric, comprising in combination a supporting frame, a pair of driven rollers mounted in adjacent horizontal parallelism, one of which has a peripheral surface adapted to engage the fabric and advance it through the machine, a detachable winding-up shaft resting by gravity over and between said pair of geared rollers and adapted to be rotated by the movement of the fabric delivered to it to wind up the same thereon, and bearings for said winding-up shaft adapted to maintain it normally in operative parallelism with said pair of driven rollers but in varying horizontal planes during the formation of the roll, and to permit of its removal therefrom after the roll is completed.

2. In a machine of the character described comprising in combination a supporting-frame, a gear-driven feed-roller having a peripheral surface adapted to engage a strip of fabric and advance it through the machine, a winding-up shaft, with suitable bearings therefor, adapted to be operatively rotated by frictional contact therewith of the advancing fabric, a cleaning device adjacent the path traversed by the fabric, means to guide the fabric from the cleaning device to the feed-roller and winding-up shaft, a main driving shaft, connecting actuating devices between the driven feed-roller and the cleaning device, respectively, and the main driving shaft, and a duplex clutch mechanism, with a single operating lever therefor, adapted to simultaneously connect or disconnect the actuating devices of both the cleaning and packaging mechanism with the main shaft.

3. In a machine of the character described, the combination with a supporting frame, of a pair of driven rollers one of which is adapted to engage a strip of fabric and pull it through the machine; means for actuating said rollers; a removable shaft in operative parallelism with said driven rollers and adapted to be rotated by the movement of the fabric delivered to it; devices for cleaning the fabric on its passage thereto, guiding devices for the fabric between the cleaning devices and said winding-up shaft, a main driving shaft, clutch devices coacting therewith, and means to operate the same to actuate the cleaning devices and packaging mechanism.

4. In a machine of the character described, the combination with a supporting frame, of rotatable devices including a pair

of driven rollers in adjacent horizontal parallelism, one thereof having a peripheral surface adapted to engage and pull forward a strip of fabric, and the other operating to guide the fabric thereto; a removable winding-up shaft resting by gravity over and between said rollers and adapted to be rotated by movement of the fabric delivered thereto, said shaft having a longitudinal groove in its periphery adapted to engage the forward end of the strip of fabric to be wound thereon, and bearings for said shaft adapted to maintain it detachably in superposed parallelism with said rotatably-driven rollers but in varying horizontal planes.

5. In a machine of the character described, the combination with a supporting frame, of rotatable devices adapted to engage and roll a strip of fabric; a removable shaft upon which the fabric is rolled; bearings adapted to operatively support and guide said shaft during the rolling operation, said bearings comprising a part movable to a position to guide the shaft during the rolling operation and to a position to permit the removal of the shaft from said devices after the rolling is completed, and an arm projecting from such bearing and provided with an upturned end for holding the shaft when removed from said bearing.

6. In a machine of the character described, the combination with a supporting frame, of rotatable devices adapted to engage and roll a strip of fabric; a removable shaft upon which the fabric is rolled, bearings adapted to operatively support and guide said shaft during the rolling operation, said bearings comprising a pivoted arm and latch movable to a position to inclose the shaft and guide it during the rolling operation and to a position to permit the removal of the shaft therefrom, and another pivoted arm movable to a horizontal position to support the completed roll of fabric.

7. A cleaning and packaging machine comprising a frame, a winding shaft bearings carried thereby, said bearings including a removable side member and members for normally retaining the same in position to retain a shaft in said bearing, supports projecting from said bearings for holding a shaft when removed therefrom, a winding shaft vertically movable in said bearings and adapted to be removed therefrom by manipulating said side movable members and placed on said supports, means for feeding carpet to said shaft, and means for cleaning carpet while being fed to said shaft.

8. A machine of the class recited, for packaging, in rolls, a strip of textile fabric, and interposing a strip of paper between the several convolutions of the roll, comprising in combination the following organized instrumentalities, namely, a supporting frame, a pair of driven rollers in adjacent hori-

zontal parallelism, a detachable winding-up shaft resting by gravity over and between said rollers, bearings for said detachable shaft adapted to operatively maintain in
5 superposed parallelism with and over said driven rollers and during its movement into varying horizontal planes; means on one of said rollers adapted to engage the fabric to draw it to said winding-up shaft, means on
10 said shaft to engage the terminal end of the strip of fabric, and means to operatively

support a roll of paper and deliver a strip thereof to and between the convolutions of the roll during the formation of the roll.

In testimony whereof, I have hereunto
affixed my signature this 19th day of January, A. D. 1910. 15

JAMES McCLAIN.

Witnesses.

A. M. BIDDLE,

R. A. DUNLAP.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."
