

Feb. 19, 1924.

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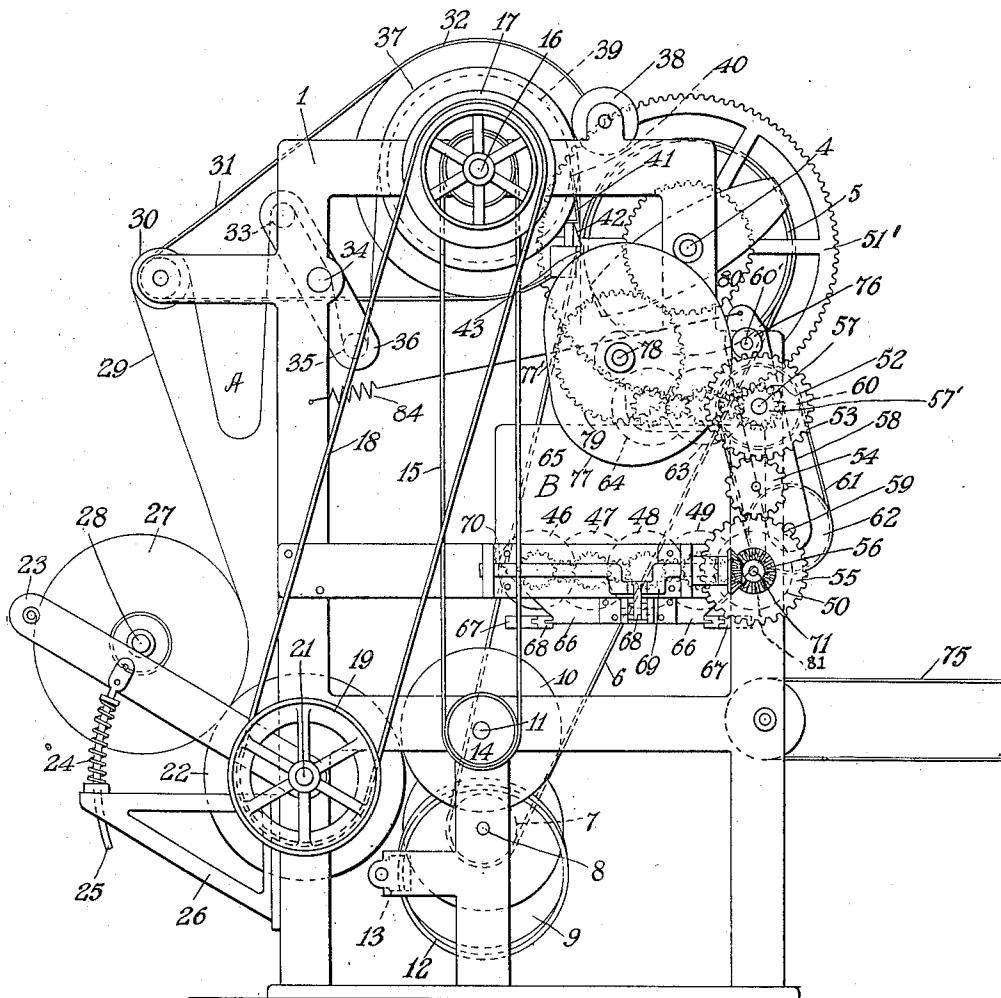
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CUTTING AND COILING GRAPE PAPER

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4 Sheets-Sheet 1

*Fig. 1.*



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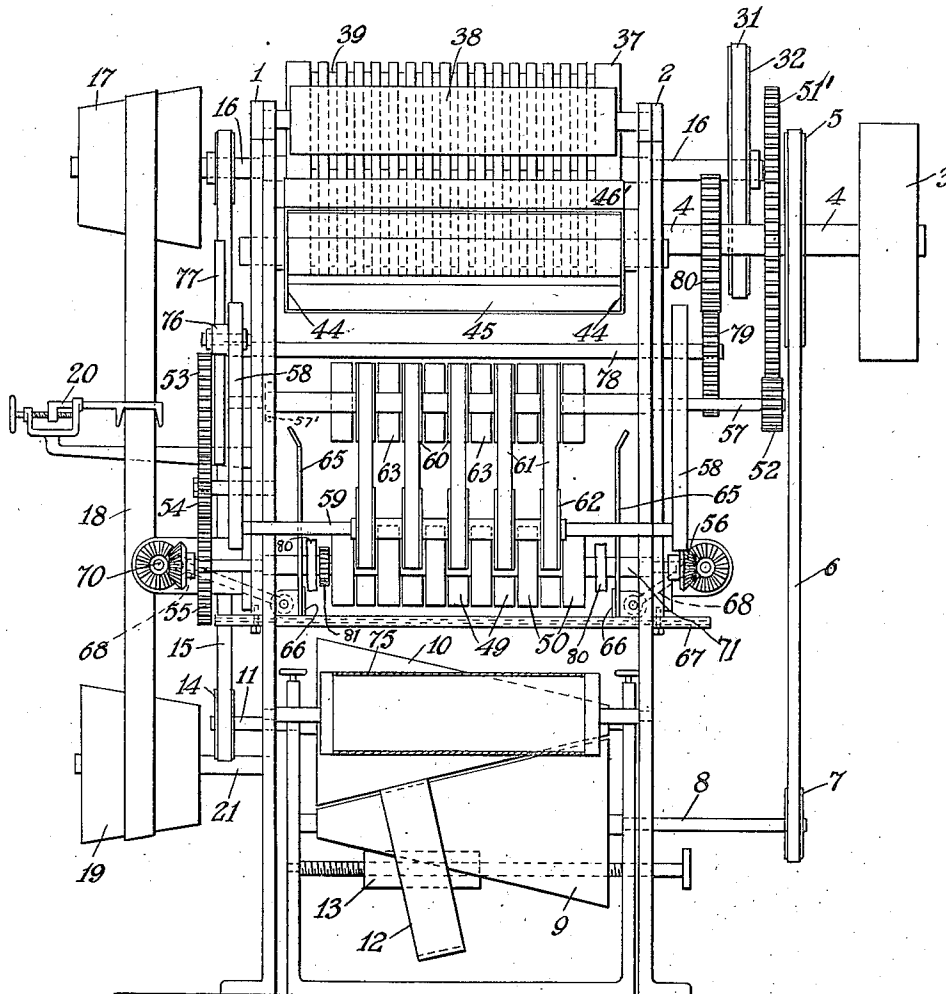
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*Fig. 2.*



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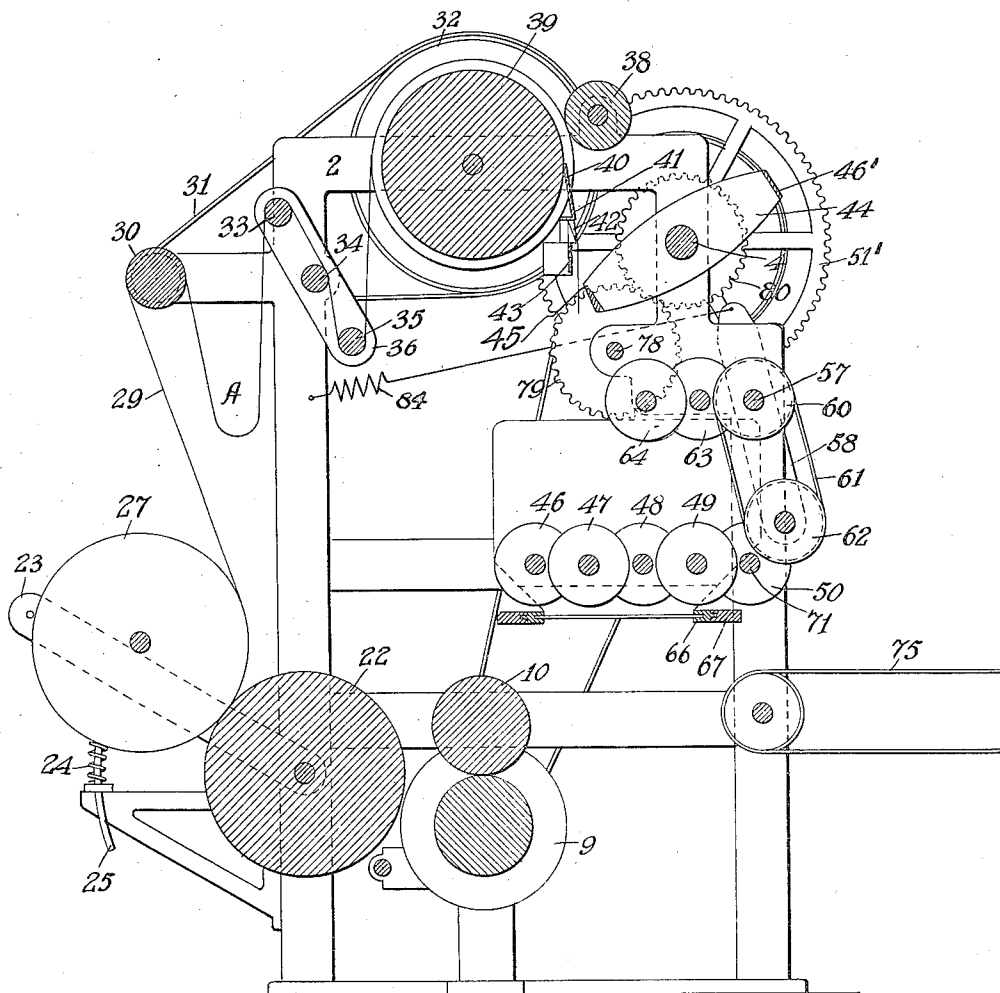
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*Fig. 3.*



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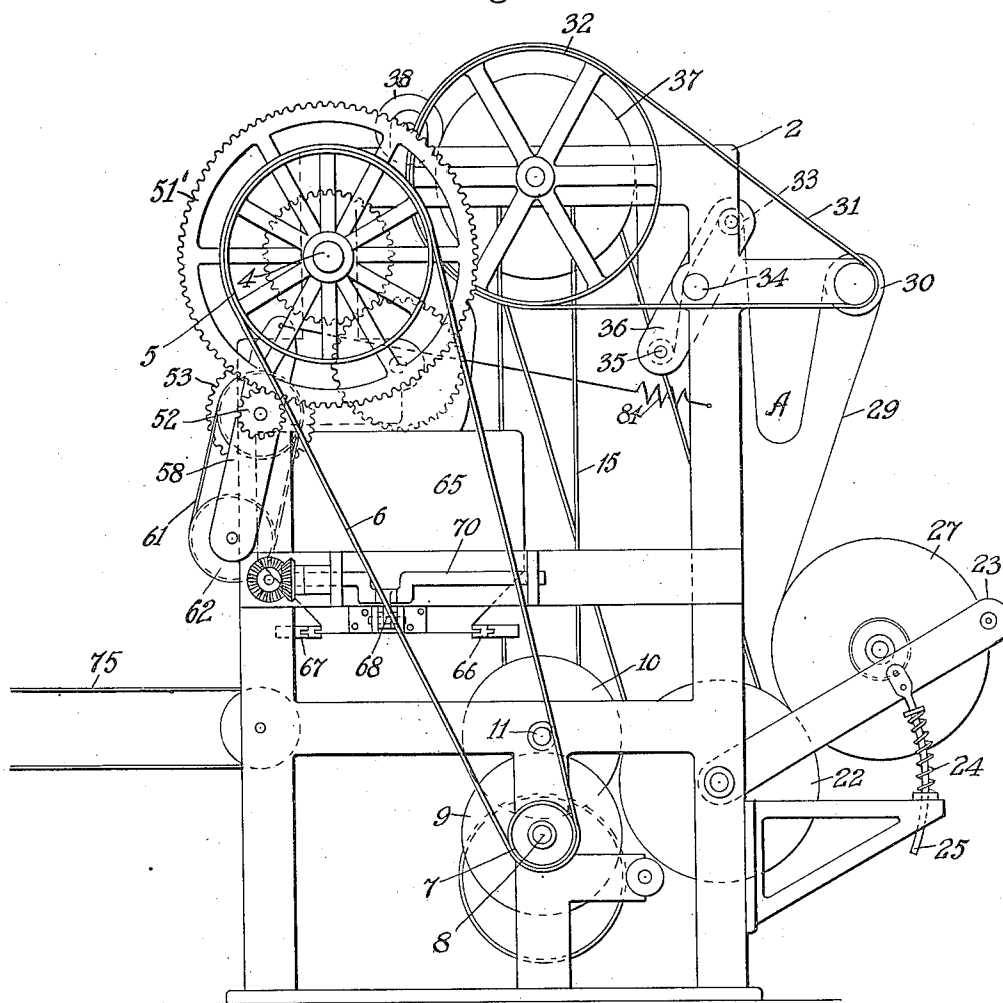
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4 Sheets-Sheet 4

*Fig. 4.*



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Patented Feb. 19, 1924.

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# UNITED STATES PATENT OFFICE.

FRANK P. HILDEBRANDT, OF SAUGERTIES, NEW YORK.

CUTTING AND COILING CRÊPE PAPER.

Application filed December 14, 1921. Serial No. 522,208.

*To all whom it may concern:*

Be it known that I, FRANK P. HILDEBRANDT, a citizen of the United States, and a resident of Saugerties, in the county of Ulster and State of New York, have invented certain new and useful Improvements in Cutting and Coiling Crêpe Paper, of which the following is a specification.

My invention relates to the process and apparatus for cutting and coiling crêpe paper.

My invention is directed to apparatus and process for severing sections of crêpe paper from a large roll and coiling those sections into small rolls, a particular object being to avoid distortion of the paper during the handling and to carry out the operations rapidly.

This application constitutes a continuation of my Patent Number 1,403,246, filed December 18, 1916, granted Jan. 10, 1922 for paper rolling machine.

Other further objects and advantages of my invention will appear from the following description taken in connection with the accompanying drawings forming a part of this application in which—

Fig. 1 is a side view of a machine embodying my invention and adapted to carry out my process.

Fig. 2 is a view taken from the right hand side of Fig. 1.

Fig. 3 is a diagrammatic view of the construction shown in Fig. 1, and

Fig. 4 is a view from the right hand side of Fig. 2.

Referring to the drawings it will be seen that the machine involving my invention comprises frame members, 1 and 2 suitably interconnected and braced together upon which are mounted various shafts and parts making up the machine.

Power is delivered to the machine at the pulley 3 (Fig. 2) which drives the shaft 4. On this shaft is a pulley 5 which, through the belt, 6, drives the pulley 7 on shaft 8, which carries one of the cones 9 of a variable speed mechanism. The other cone 10 is carried by the shaft 11 and power is transmitted from one cone to the other by the member 12 which is shifted along the cone by the adjusting device 13. The shaft 11 carries the pulley 14 which, through a belt 15, drives the shaft 16 on which is mounted a cone 17 over which belt 18 runs to the cone 19, the belt being

shifted by an adjustable guiding device 20. The cone 19 drives the shaft 21, upon which is positioned the roller 22. Swinging freely on the shaft 21, are arms 23 which are yieldingly pressed upwardly by the spring 24 which surrounds curved guide members 25 which pass through the brackets 26 on the frame. A roll of crêpe paper 27 is supported upon a shaft 28, which rolls upon the arms 23, so that the roll of crêpe paper 27 will come down into contact with the roller 22 and be driven thereby. As the weight of the roll of paper decreases, it is raised by the arms 23 so that it is brought more firmly into contact with the roller 22, whereby a regular feeding is effected. At this point I call attention to the fact that my invention relates primarily to the handling of crêpe paper, which by reason of its lack of body and tendency to become distorted under tension must be handled with great care, and with strict avoidance of tension in every operation.

The web of paper 29 passes over a smooth roller 30 which is driven at a higher peripheral speed than roller 22 by the belt 31 from the pulley 32 on the shaft 16. The web then drops down into a loop A provided to take care of differences in speed of operation, to avoid tension and to permit the paper to resume its normal state if it has been stretched. The web then passes over the rollers 33, 34 and 35 held in the guide frame 36 and thence up and over the grooved roller 37 against which it is pressed by the roller 38. Into the grooves 39 of the roller 37 extend the fingers 40 which lift the paper from the roller and it thence drops downward. The fingers 40 are part of a doctor 41 and just below the doctor 41 is a resilient doctor 42 and below that the bed knife 43, these parts being supported on the frame. The web drops down below the bed knife to the coiling mechanism B, hereinafter more fully described. During its descent it may be guided by fixed parts or moving tapes as conditions require.

Mounted upon the main shaft 4 (Fig. 2) are two arms 44 which carry between them a fly knife 45 at one end and a connecting member 46' at the other end. Once during each revolution of the main shaft 4 the fly knife 45 cuts the web by cooperation with the bed knife 43, and the spring doctor 42 draws the edge of the web away from the

bed knife to prevent any jamming up of the web by reason of adherence brought about through the cutting operation. The length of the strips into which the web is severed is controlled by varying the speed of the roller 32 by means of the cone pulleys 9 and 10 and the adjustable transmitting member 12. The end of the webbing comes downwardly until it contacts the series of interposed rollers 46, 47, 48, 49 and 50. These interposed rollers comprise shafts 51 on which are disks or rollers 52, the rollers on one shaft being interspaced with the rollers on the adjacent shaft. The main shaft 4 carries a large gear 51', which meshes with the gear 52 on the shaft of which is the gear 53, which meshes with the gear 54, which drives the gear 55, on the shaft of which is a gear 56 which drives the train of gears 81 which rotate the interposed rollers 46 to 50, and the train of gears 81. (See Fig. 1.) Shaft 71 passes through and supports one end of bars 80 which extend to the frame and support the shafts of rollers 46, 47, 48, 49. The upper surfaces of the interposed rollers are all moving to the right in Fig. 1 and carry the loose end of the web in that direction to be coiled. The coiling means is as follows:

Swinging loosely upon the shaft 57 which carries the gears 52 and 53 are two arms 58 connected together by the rod 59. On the shaft 57 there are mounted rollers 60 over which run tapes 61 to the rollers 62 which run loosely on the rod 59. (See Fig. 2.) These rollers 62 are interspaced between the rollers 50 and are in line with the rollers 49. The web is thus carried to the right until it strikes the tapes 61 when the end is raised and carried upward. If the end does not fall back upon the following portion of the web to start the coil it goes upwardly until it strikes the rollers 63 and 64, the rollers 63 being interspaced between the rollers 60 (see Fig. 2) and the rollers 64 being interspaced between the rollers 63. These rollers are driven by a train of gears 57' from the gear 52 on the shaft 57, as best shown in Fig. 1. The lower surfaces of the rollers 63 and 64 are moving to the left and when the edge of the web strikes them it will be turned back upon itself and as the web is fed along a coreless roll will be formed upon the rollers 46 to 50.

Referring now to Fig. 2 it will be seen that plates 65 are so positioned that the web in dropping from between the rollers 37 and 38 will fall between them. In order that the ends of the coil may be even these plates are constantly brought together and spread apart to jog the roll into shape. These joggers are mounted upon slides 66 which move in guides 67 and are actuated by connecting links 68 connected to crank arms 69 on the shafts 70 which are driven

from bevelled gears on the shaft 71 which carries the gear 55.

The web accumulates in a coil upon the rollers 46 to 50, in lengths varying according to the speed of the movement of the roller 37 and after the web is severed the roll is to be discharged upon the conveyor 75 as follows: The two arms 58 and the tapes carried thereby running over the rollers 60 and 62 constitute a guide to hold the coil upon the rollers 46 to 50. The upper end of one of the arms 58 carries a roller 76 (see Figs. 1 and 2) which rests against a cam 77 which is mounted on a shaft 78 which carries a gear 79 meshing with the gear 80 on the main shaft 4. The roller 76 is held against the cam 77 by the spring 84 and each time the flat portion 77' of the cam comes under the roller 76 the spring swings the lower end of the arms 58 to the right and the coil is carried out by the rollers 46 to 50, and dropped upon the conveyor 75.

It will be seen from the foregoing construction that I have provided against distorting the crêpe paper during the feeding and that inasmuch as it is coiled while it lies freely no tension is imparted to it during that operation. It will also be seen that the ends of the coil will be even and that the coil is discharged when completed.

While I have described my invention in considerable detail I do not wish to be limited to the constructional features described, but intend that the mechanism described shall be considered as exemplifying devices embodying my invention and carrying out my process.

Having thus described my invention, what I claim and desire to secure by Letters Patent of the United States is:

1. In a device of the class described, means for severing crêpe paper into lengths without imparting tension thereto and coiling said lengths into coreless coils without imparting tension thereto.

2. In a device of the class described, means for severing crêpe paper into lengths without imparting tension thereto, and means for coiling said lengths into coreless coils and discharging completed coils.

3. In a device of the class described, means for moving a web of crêpe paper without appreciably tensioning the web, means for coiling the moving web back upon itself and means for evening up the ends of the coil so formed.

4. In a device of the class described, means for moving a web of crêpe paper without appreciably tensioning the web, means for coiling the moving web back upon itself and members actuated to even up the ends of the coil so formed.

5. In a device of the class described, a support for a roll of crêpe paper, means for

withdrawing the web from the roll, a cutting device, means for feeding the web to said cutting device, means for varying the relative speeds of operation of said withdrawing and feeding means to maintain a tension preventing loop of web therebetween and means for coiling severed portions of the web without tension.

6. In a device of the class described, a roller rotatable to unwind a roll of paper and yieldable supporting means for bringing a roll of paper into contact with said roller, said means being automatically adjustable to maintain substantially constant the pressure of contact between the roll and roller as the weight of the roll decreases.

7. In a device of the class described, a roller rotatable to unwind a roll of paper, an arm supported at one end for swinging, a yielding support for the other end, and means movable along said arm for supporting a roll of paper, and bringing it into contact with said roller.

8. In a device of the class described, means for forming a coreless coil of paper by turning and coiling a severed length of paper upon itself without appreciably tensioning the paper while forming the coil and cooperating means for evening the ends of said coils.

9. In a device of the class described, means for forming a coreless coil of crêpe paper without imparting appreciable tension or compression thereto and cooperating means for evening up the ends of the coil so formed, during the coiling operation.

10. In a device of the class described, means for coiling paper into a coreless coil comprising parts having surfaces moving in substantially opposite directions and a part

having a plane surface moving from one of said first named parts toward the other.

11. In a device of the class described, means for coiling paper into a coreless coil comprising parts having surfaces moving in substantially opposite directions and a part having a plane surface moving from one of said first named parts toward the other, said last named part being movable to permit discharge of a coil.

12. The process of forming coils of paper from a roll which consists in withdrawing the web from the roll without appreciable tension, maintaining a loop in the web, cutting the web while without tension and forming it into a coreless coil without imparting tension thereto.

13. The process of forming coils of crêpe paper which consists in feeding the web horizontally, turning the web so fed back upon itself and discontinuing the turning back operation and permitting the horizontal feeding to effect a discharge of the coil.

14. In a device of the class described, means for moving a web of crêpe paper, means for turning the web back upon itself to form a coil and means for jogging the ends of the coil as it accumulates.

15. In a device of the class described, a support for a roll of crêpe paper, means for withdrawing the web from the roll, a cutting device, means for feeding the web to said cutting device, and means for varying the relative speeds of operation of said withdrawing and feeding means to maintain a tension preventing loop of web therebetween.

In testimony whereof, I have signed my name to this specification.

FRANK P. HILDEBRANDT.