No. 875,941. PATENTED JAN. 7, 1908.

F. MEISEL.

WINDING MACHINE.

APPLICATION FILED DEC. 11, 1902. RENEWED JUNE 1, 1907.

2 SHEETS—SHEET 1.

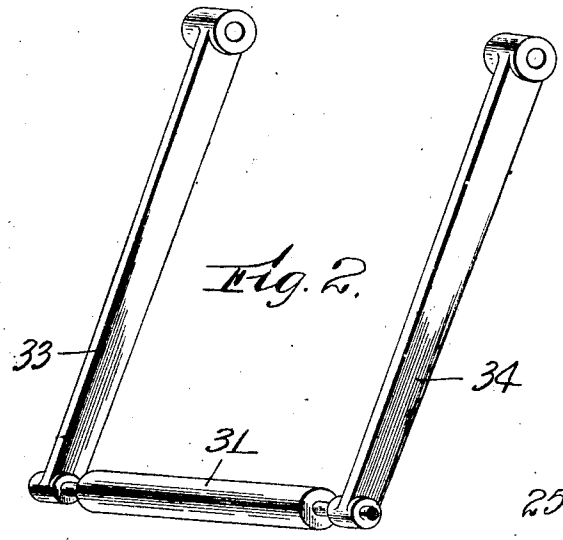


Fig. 2.

Fig. 1.

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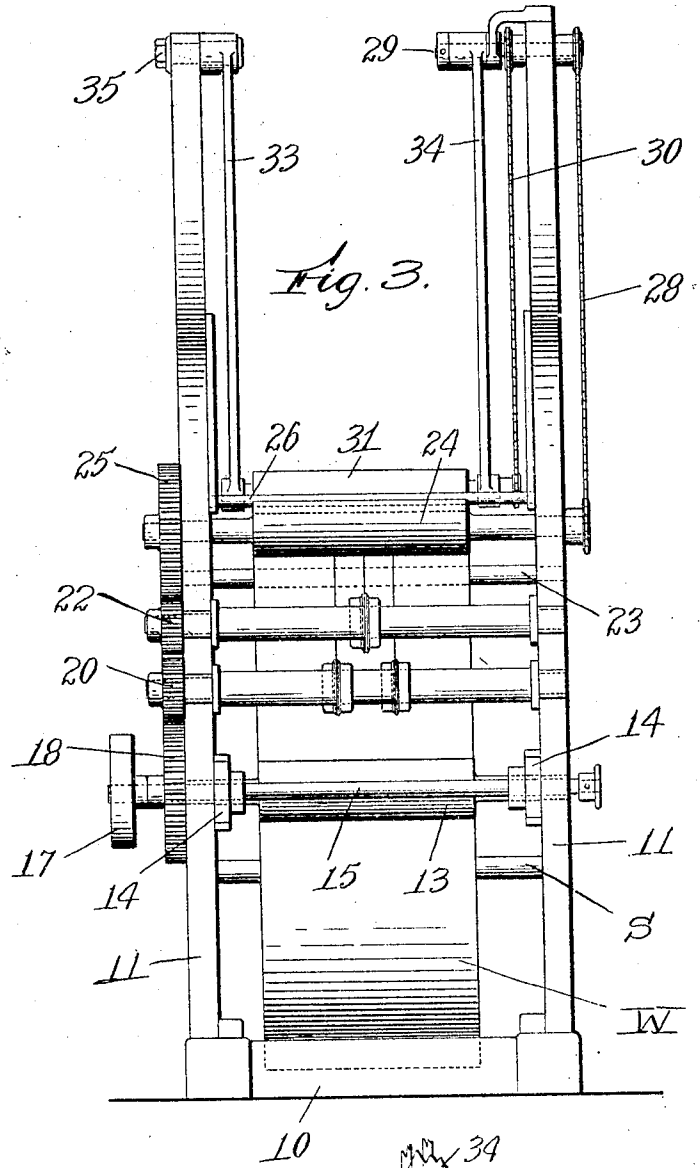


Fig. 3.

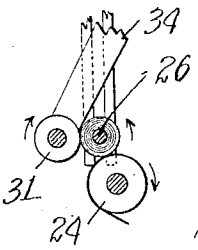


Fig. 4.

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UNITED STATES PATENT OFFICE.

FRANCIS MEISEL, OF DOVER, NEW HAMPSHIRE.

WINDING-MACHINE.

No. 875,941. Specification of Letters Patent. Patented Jan. 7, 1908.

Application filed December 11, 1902, Serial No. 134,798. Renewed June 1, 1907. Serial No. 376,846.

To all whom it may concern:

Be it known that I, FRANCIS MEISEL, a citizen of the United States, residing at Dover, in the county of Strafford and State of New Hampshire, have invented a new and useful Winding-Machine, of which the following is a specification.

This invention relates to that class of machines which are employed for winding paper, cloth, or other long strips of material into rolls.

The especial object of this invention is to provide a strong, simple and inexpensive winding machine which will produce firmly, evenly-wound web-rolls.

A machine constructed according to this invention may be provided with slitting wheels for dividing a web into two or more smaller webs.

To these ends, this invention consists of the winding machine, and of the combinations of parts therein as hereinafter described and more particularly pointed out in the claims at the end of this specification.

In the accompanying two sheets of drawings, Figure 1 is a side view of a winding machine constructed according to this invention. Fig. 2 is a perspective view showing the independently swinging arms preferably employed for supporting one of the winding drums. Fig. 3 is a front view of the machine, and Fig. 4 is a detail view showing the relation of the winding drums to a partially completed web-roll.

In placing long strips of web-like material upon the market, such for example, as cloth or paper, and especially the paper on which newspapers are printed, it is essential that the material should be wound in compact, even web-rolls. Paper, as at first manufactured, is not ordinarily wound with sufficient uniformity to adapt the web-rolls for use on newspaper presses. To secure a more perfect winding of the paper, a number of different winding machines are now employed. Most of these winding machines are also provided with slitters for dividing the web into two or more sections, if desired.

One especial object of my present invention is to provide a winding machine of this class which will produce compact, firmly-wound web-rolls even when the paper or other material is somewhat thicker along one edge than along the other edge. I attain this object by employing a construction comprising two driven winding drums. One of the winding drums is mounted in stationary bearings, and sustains the weight of the web-roll as the same is formed upon a rewinding shaft. The rewinding shaft is guided at its ends in slots or bearings preferably arranged vertically. The second winding drum is journaled in movable bearings so as to be automatically moved back as the web-roll increases in size. For this purpose the shaft of the supplemental winding drum is preferably hung in independent swinging arms. This second winding drum is driven by an arrangement of driving chains, although for some purposes, the driving connections for this drum may be omitted.

The cutters for slitting the web are driven by a direct and simple arrangement of gearing, and one of the feed rolls which draw the material from the parent or web-supplying roll, is preferably mounted in movable boxes, so that the feed rolls may be separated when the machine is being threaded up.

Referring to the accompanying drawings for a detail description of a winding machine constructed according to my invention, as shown most clearly in Fig. 1, 10 designates a base-piece or plate. Extending up from the base-piece 10 are side frames 11 which are provided with open bearings for receiving the ends of the shafts S of the supply web-roll W. From the web-roll W the paper or other material passes between the feed rolls 12 and 13. The feed roll 13 is journaled in sliding boxes 14, which may be adjusted by a clamping shaft 15 having a handle or knob at its end, and having cams 16 which engage slots or rectangular openings in the sliding boxes 14. By means of this construction, the feed roll 13 may be clamped in operative position, or may be drawn back from the feed roll 12 when the machine is to be threaded up.

Secured on the shaft of the feed roll 12 is a drive-pulley 17, which may be belted to any suitable source of power, and turning with the shaft of the feed roll 12 is a driving gear 18 which meshes with and drives an intermediate gear 19, which intermediate gear 19 meshes with and drives one of the gears 20 which are secured on the shafts of the first

set of slitting cutters. One of the gears 20 meshes with and drives an intermediate gear 21, which intermediate gear 21 meshes with and drives one of the gears 22, which gears 22 are secured on the shafts of the second set of slitting cutters. After having passed the slitting cutters, the web passes around a guide roll 23, and around a winding drum 24 journaled in stationary bearings in the side frames. Secured on the shaft of the winding drum 24 is a gear 25, which meshes with and is driven from one of the gears 22. The gears 18 and 25 are preferably of about the same diameter, while the gears 20 and 22 are about half the size, so that the slitting cutters will be driven twice as fast as the winding drum 24. A rewinding shaft 26 is arranged to bear upon the winding drum 24, and is guided at its ends in vertical slots or guideways. To assist the operation of the winding drum 24, I preferably provide a second winding drum which is mounted in movable bearings, and which is also preferably positively driven.

As shown most clearly in Fig. 3, the shaft of the winding drum 24 is provided with a sprocket-wheel, mounted on which is a driving chain 28 for driving a sprocket-wheel secured on a stub shaft 29 journaled in one of the side frames. Also secured on the stub shaft 29 is a sprocket-wheel connected by a drive chain 30 to turn a sprocket-wheel secured on the shaft of the second winding drum 31. The shaft of the winding drum 31 is journaled in swinging-arms 33 and 34. The swinging arms 33 and 34 are independently pivoted at their upper ends, the arm 33 being pivoted on a stud 35, and the arm 34 being pivoted on the stub shaft 29. By means of this construction, the second winding drum may be slightly tipped or turned so that it will bear evenly on the web-roll for its entire length, even when the web-roll is not exactly uniform in diameter, as for example, when one edge of the paper or other material is slightly thicker than the other edge.

In the operation of a winding machine as thus constructed, the feed rolls are first separated to permit the machine to be threaded up. The slitting cutters may be used, if desired, to divide the web into two or more sections, and as the web-roll produced increases in size, as shown most clearly in Fig. 4, the movable winding drum will be forced or swung outwardly, and an exceedingly compact and evenly-wound web-roll will be produced.

I am aware that changes may be made in the construction of my winding machine by those who are skilled in the art, without departing from the scope of my invention as expressed in the claims. I do not wish, therefore, to be limited to the construction I have herein shown and described, but

What I do claim and desire to secure by Letters Patent of the United States is:—

1. In a machine of the class described, the combination of a driven drum, means for supporting a web-roll so that it will rest on the driven drum, and the shaft thereof will rise as the web-roll increases in size, and a second drum engaging the side of said web-roll.

2. In a machine of the class described, the combination of a driven drum, means for supporting a web-roll so that it will rest on the driven drum and its shaft will rise as the web roll increases in size, a second drum engaging the side of the web-roll, and means for supporting the second drum so that it will swing outwardly as the web-roll increases in size.

3. In a machine of the class described, the combination of a driven drum, means for supporting a web roll so that it will rest on the driven drum and so that its shaft will rise as the web roll increases in size, a set of swinging bearings, and a drum mounted in the swinging bearings and engaging the side of the web roll.

4. In a machine of the class described, the combination of a driven drum, means for supporting the web roll so that it will rest on the driven drum and its shaft will rise as the web-roll increases in size, a set of swinging arms, a drum journaled in the swinging arms and engaging the side of the web roll, and means for driving said last named drum.

5. In a machine of the class described, the combination of a driven drum, means for supporting a web-roll so that it will rest on the driven drum and so that its shaft will rise as the web roll increases in size, a pair of swinging arms, a second drum mounted in said swinging arms, and a chain and sprocket connection for driving said second drum while the same engages the side of the web roll as it is being wound.

6. In a machine of the class described, the combination of a driven winding drum, a rewinding shaft mounted in vertical guides to coöperate with the winding drum, a supplemental drum journaled in independently swinging-arms in position to engage the side of the web-roll as the same is being formed, and means for turning the supplemental drum.

7. In a machine of the class described, the combination of a driven winding drum journaled in stationary bearings, a rewinding roll mounted in guideways to coöperate with the winding drum, a supplemental drum journaled in independently pivoted arms in position to engage the side of the web-roll as the same is formed, and two sets of drive

chains for turning the supplemental drum independently of the position to which the same may be swung.

8. In a winding machine for making web-rolls, the combination of a pair of rolls for drawing the material from its source of supply, and means for separating the rolls to permit the machine to be threaded up.

In testimony whereof I have hereunto set my hand, in the presence of two subscribing witnesses.

FRANCIS MEISEL.

Witnesses:
ARTHUR G. WHITTEMORE,
WM. LEROY QUINBY.