R. LEUMANN.

APPARATUS FOR UNWINDING PAPER STRIPS FROM ROLLS OF PAPER IN WRAPPING MACHINES.

APPLICATION FILED APR. 7, 1921.

1,400,827.

Patented Dec. 20, 1921.

2 SHEETS—SHEET 1.

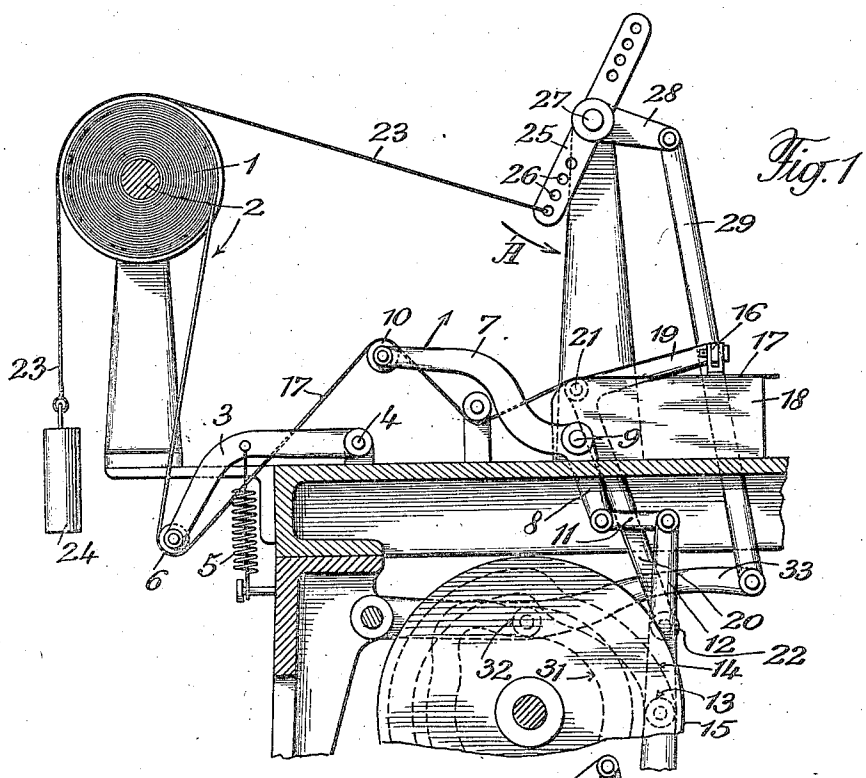


Fig. 1

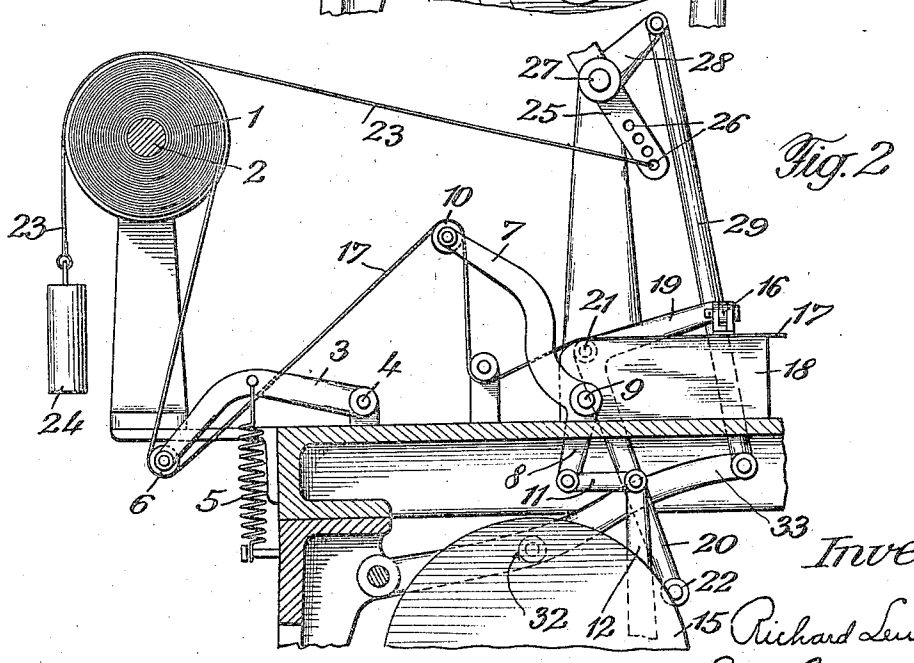


Fig. 2

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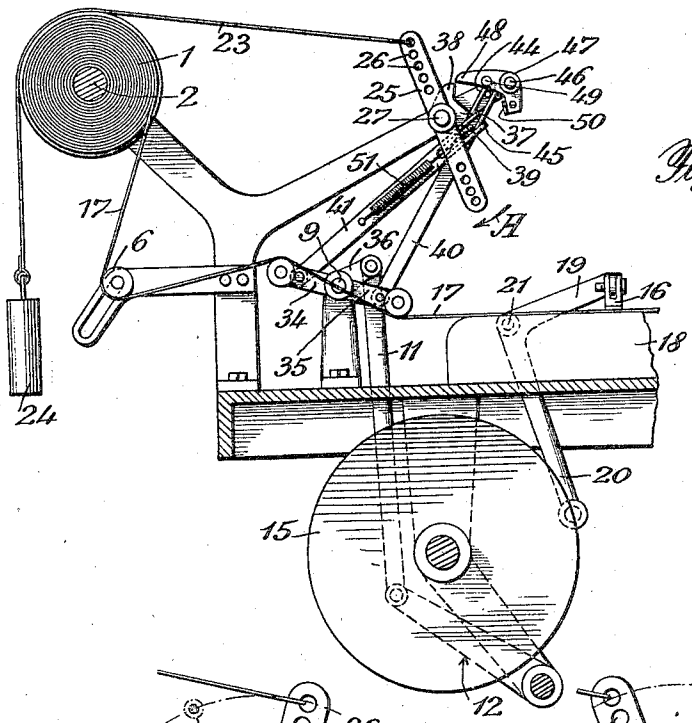


Fig. 3

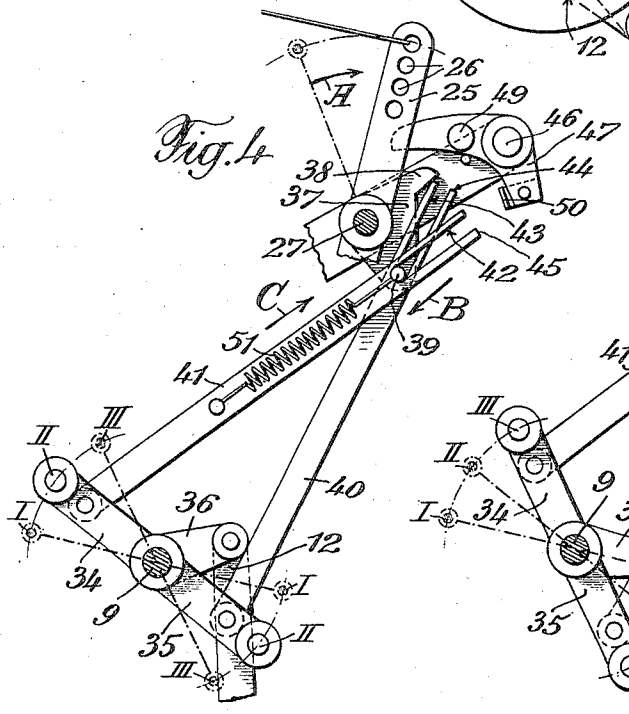


Fig. 4

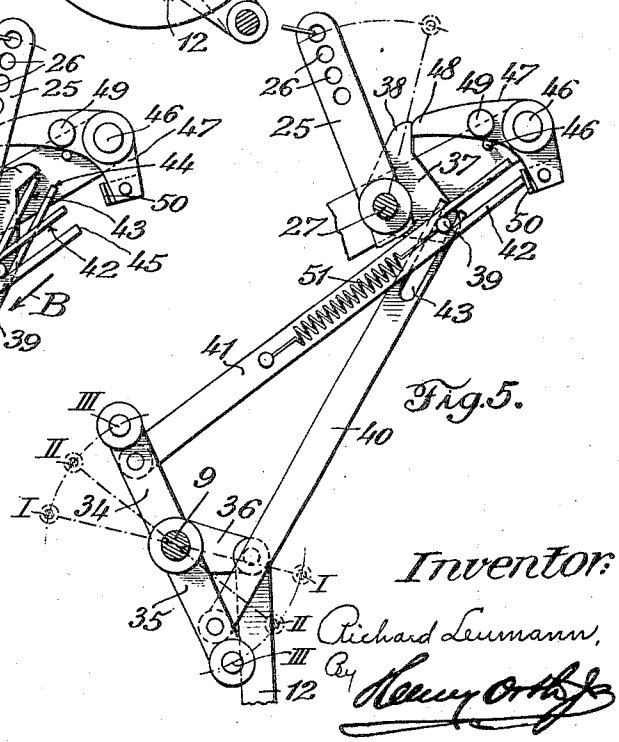


Fig. 5.

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UNITED STATES PATENT OFFICE.

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APPARATUS FOR UNWINDING PAPER STRIPS FROM ROLLS OF PAPER IN WRAPPING-MACHINES.

1,400,827. Specification of Letters Patent. Patented Dec. 20, 1921.

Application filed April 7, 1921. Serial No. 459,255.

To all whom it may concern:

Be it known that I, RICHARD LEUMANN, a citizen of the Republic of Switzerland, residing at Chailly-sur-Lausanne, Switzerland, have invented certain new and useful Improvements in Apparatus for Unwinding Paper Strips from Rolls of Paper in Wrapping-Machines; and I do hereby declare the following to be a clear, full, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters or figures of reference marked thereon, which form a part of this specification.

The present invention relates to a device for unwinding the strips of paper from a roll of paper in wrapping machines, in which the motion of the roll is braked by a braking member. According to this invention, every time the roll begins to unwind, the braking member is positively carried forward in the same direction as the roll, driving the latter with it; this braking organ thus assists in overcoming the inertia of the roll.

In the drawing two constructional forms of the invention are shown.

Figures 1 and 2 represent vertical sections of the first constructional form in two different operating positions.

Fig. 3 is a vertical section of the second constructional form, and

Figs. 4 and 5 show parts of the latter, in different operative positions and on a larger scale.

The roll of paper 1 (Figs. 1 and 2) is journaled on a freely rotatable shaft 2. 3 denotes a tension-adjuster, provided with the guide roller 6, and capable of being deflected about the axis 4, and loaded by the spring 5. 7, 8 denote a double-armed lever pivotally mounted on the axis 9 and constituting the drawing-organ, which at one end is provided with the roller 10 and at the other is joined to the rod 11. The latter is connected with the rocking lever 12 which is mounted on a pivot, not shown, and is free to execute an oscillatory motion to right and left by means of the anti-friction roller 13, which is moved in the cam groove 14 of the mechanically driven cam disk 15.

16 denotes the pressure member for the paper strip 17, which presses the latter down on the table 18, when the unwinding from the roll 1 is to take place. For this purpose, the member 16 is fixed on the arm 19 of the bent lever 19, 20, which pivots about the axis 21 and carries, on its arm 20, the roller 22 which is actuated by a cam disk similar to cam disk 15, not shown in the figure.

23 is the brake band, which slips on the paper roll 1 and carries at one end the weight 24, being at the other, detachably secured to the double-armed lever 25. This lever is provided with holes 26, in which the end of the brake band can be inserted by means of a hook.

The lever 25 pivots about the axis 27 and consists of a member having the arm 28, which, by means of the link 29, is connected with the end of a lever 33, which turns about 30 and is actuated by means of the antifriction roller 32, which runs in the cam groove 31 of the cam-disk 15.

The mode of operation of the apparatus illustrated is as follows:

After the paper strip 17 has been pulled forward by the organs of the wrapping machines, the pressure member 16 descends and clamps the paper strip 17 to the table 18. When the lever 7, 8 is, by the turning of the disk 15, deflected in the direction of the arrow, so that the roller 10 is raised, the paper strip 17 is drawn from the roll of paper 1. At the same time the lever 33 and the link 29 begin to swing so that the lever 25 is deflected in the direction of the arrow A. The motion of the brake band 23 thus produced, communicates to the paper roll, which is to be set in rotation in the direction of the arrow by the pull of the paper strip, a certain driving impulse by which the inertia of the paper roll is overcome and it begins to rotate without material tensioning of the paper strip.

The grooves 31 and 14 are so formed that the lever 7, 8 executes approximately one half of its travel, while the lever 25 has arrived at the end of its stroke and moves in a direction contrary to that of the arrow, while the lever 7, 8 is accomplishing the second half of its travel in the same direction. During the second part of the process of pulling the paper strip, the brake band acts therefore as a brake under the action of the weight and retards the motion of the paper drum with the momentum now ac-

quired, so that too much material is not unwound from the latter, so as to become crumpled, as too readily happens when the material is paper.

In the constructional form according to Figs. 3 to 5, the drawing member is constructed in the form of a two-armed lever 34, 35, which can turn about the axis 9 and is rigidly attached to the arm 36. The latter is, by the link 11, connected to the rocking lever 12, which is impelled to and fro by means not shown.

To the lever 25, which effects the motion of the brake band, is secured an arm 37, provided with a nose 38 and a projecting pivot 39. The latter is connected by means of the spring 51, which is more powerful than the weight 24, with the rod 41. To the two arms 34, 35 are joined rods 40, 41, which are guided on the pivot 39, by means of their extremities 44, 45 which cross each other and are provided with slots 42, 43. On the axis 46 is pivoted the pawl 47, which is provided with a blocking-arm 48 and the stops or projections 49, 50.

The rocking lever 12 moves the lever 34, 35 out of the position shown in Fig. 3 to which corresponds position I in Fig. 4, into the position II of Fig. 4. In the position shown in Fig. 3 the drawing of the paper strip is just about to commence; the pawl 47 is kept out of engagement with the nose 38 by the end 44 of the link 40 bearing against the projection 49, and the spring 51 presses the pivot 39 against the base of the slot 43 so that the lever 25 is thereby prevented from rotating in the direction of the arrow A in obedience to the spring 51.

While the link 40 is moving from position I to position II (Fig. 4), the pivot 39, resting on the base of the slot 43, moves in the direction of the arrow B, so that the lever 25 can become deflected in the direction of the arrow A and the inertia of the paper roll 1 can be overcome. In position II the base of the slot 42 has come into contact with the pivot 39 and impels the latter in the direction of the arrow C, while lever 34, 35 turns from position II to position III. By this means, a motion in the direction opposite to that of arrow A, is imparted to the lever 25 and the brake band 23, this motion producing results similar to those in Figs. 1 and 2.

In position III (Fig. 5), the nose 38, after having previously raised the blocking projection 48 of the pawl 47, has come behind the latter, so that the lever 25 is arrested. The extremity 45 strikes against the projection 50 and deflects the pawl, when the latter does not, by its own weight, settle down securely in front of the nose 38. The unlocking of lever 25 is effected during the backward motion of the lever 34, 35 from position III to position I, by the extremity 44, which strikes against the projecting part 49 (Fig. 3).

By inserting the end of the brake band 23, in one or other of the holes 26, the magnitude of the driving impulse may be controlled.

I claim:

1. In an apparatus for unwinding the strip of paper from a roll of paper in wrapping machines, in combination, a braking member acting on the roll of paper from which the paper is to be unwound, means for causing the unwinding of the strip of paper, and means to move the braking member positively forward in the direction of rotation of the roll in order to assist the motion of the roll by overcoming its inertia during the first stage of operation of said means for causing the unwinding of the paper.

2. In an apparatus for unwinding the strip of paper from a roll of paper in wrapping machines, in combination, a brake band loaded at one end and coöperating with the roll of paper, drawing means for effecting the unwinding of the strip of paper, and a driving member operatively connected to the brake band and simultaneously actuated with said drawing means for drawing the brake band first forward against the action of the load thereon and moving the roll of paper in the unwinding direction and then allowing the load on the brake band to produce its effects uncounteracted so that the brake band comes into operation.

3. In an apparatus for unwinding the strip of paper from a roll of paper in wrapping machines, in combination, a brake band loaded at one end and coöperating with the roll of paper, drawing means for effecting the unwinding of the strip of paper, and a rocking lever connected to the other end of the brake band and simultaneously actuated with said drawing means for drawing the brake band first forward against the action of the load thereon and moving the roll of paper in the unwinding direction and then allowing the load on the brake band to produce its effects uncounteracted so that the brake band comes into operation.

4. In an apparatus for unwinding the strip of paper from a roll of paper in wrapping machines, in combination, a brake band loaded at one end with a weight and coöperating with the roll of paper, drawing means for effecting the unwinding of the strip of paper, a driving member operatively connected to the other end of the brake band, a spring operatively connected to said driving member and counterbalancing the weight on the brake band, and a positive connection between said driving member and said drawing member which allows the spring to act during the first part of the forward stroke of the drawing member which causes the unwinding.

5. In an apparatus for unwinding the strip of paper from a roll of paper in wrapping machines, in combination, a brake band loaded at one end with a weight and coöperating with the roll of paper, a drawing member consisting of a two-armed lever with which the strip of paper is operatively connected so that a turning motion of said lever causes an unwinding of the paper, two rods each connected at their one ends to an arm of said two-armed lever and provided at their other ends with slots, a driving member operatively connected to the other end of said brake band, a spring operatively connected to said driving member and adapted to counterbalance the weight on the brake band, a pivot fixed to said driving member and carried in the slots of said rods so that during the forward stroke of the drawing member the said pivot rests on the one rod and yields to the action of the said spring only so far as to allow approximately half the forward stroke to be executed, whereupon the other rod takes over and carries the pivot displacing it in the other direction, and a pawl adapted to arrest and hold the driving member when the last mentioned motion is accomplished.

6. In an apparatus for unwinding the strip of paper from a roll of paper in wrapping machines, in combination, a brake band loaded at one end with a weight and coöperating with the roll of paper, a drawing member consisting of a two-armed lever with which the strip of paper is operatively connected so that a turning motion of said lever causes an unwinding of the paper, two rods each connected at their one ends to an arm of said two-armed lever and provided at their other ends with slots, a driving member operatively connected to the other end of said brake band, a spring operatively connected to said driving member and adapted to counterbalance the weight on the brake band, a pivot fixed to said driving member and carried in the slots of said rods so that during the forward stroke of the drawing member the said pivot rests on the one rod and yields to the action of the said spring only so far as to allow approximately half the forward stroke to be executed, whereupon the other rod takes over and carries the pivot displacing it in the other direction, and a pawl adapted to arrest and hold the driving member when the last mentioned motion is accomplished and brought in its operative position by the ends of said rods coacting with the pawl so that one rod brings the pawl into its blocking position and the other rod puts the pawl out of engagement with the driving member.

In testimony that I claim the foregoing as my invention, I have signed my name.

RICHARD LEUMANN.

Witnesses:
ALFRED MASDER,
EDGAR ANDREY.