Feb. 25, 1936. J. WEINBRENNER 2,032,076

LAP FORMING APPARATUS

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Fig. 2

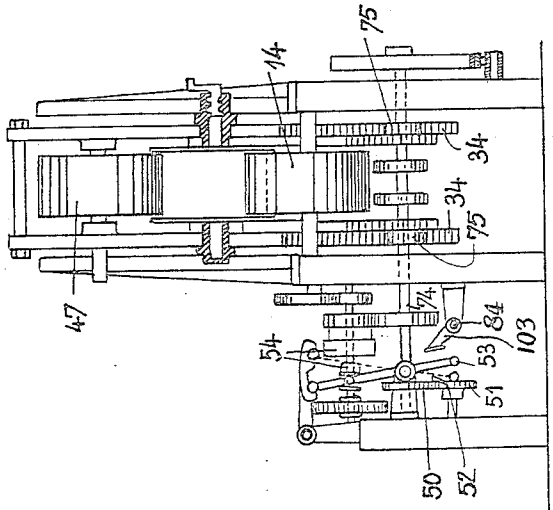
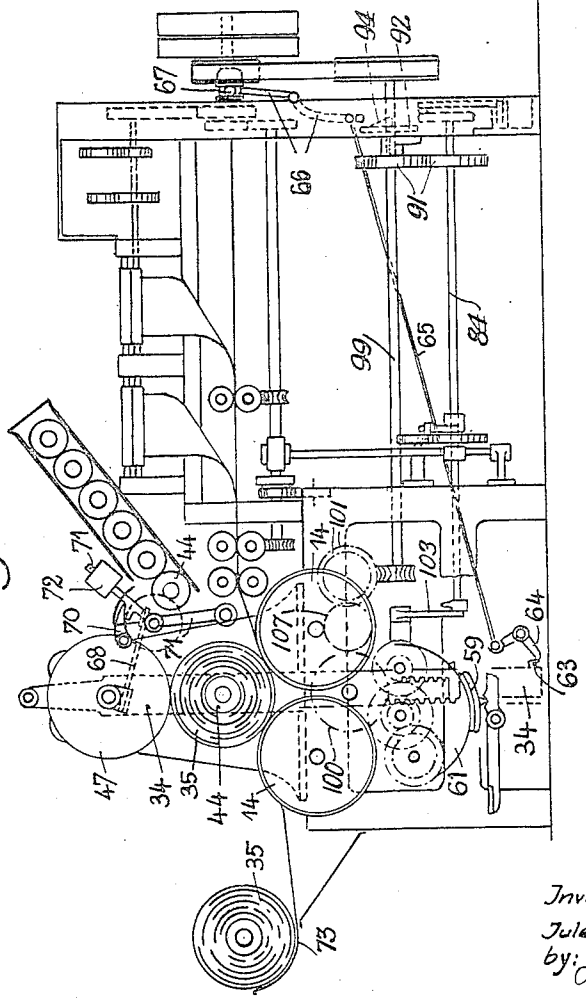


Fig. 1



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Fig. 3

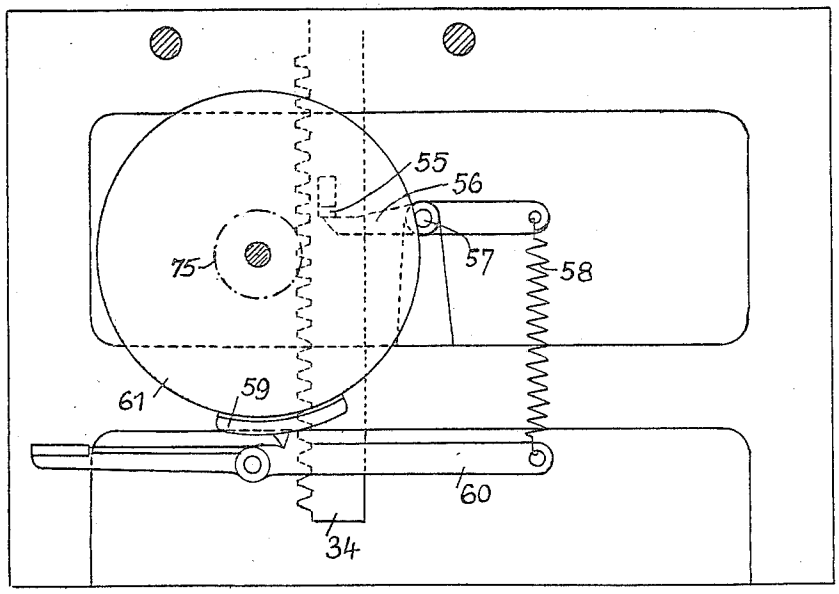
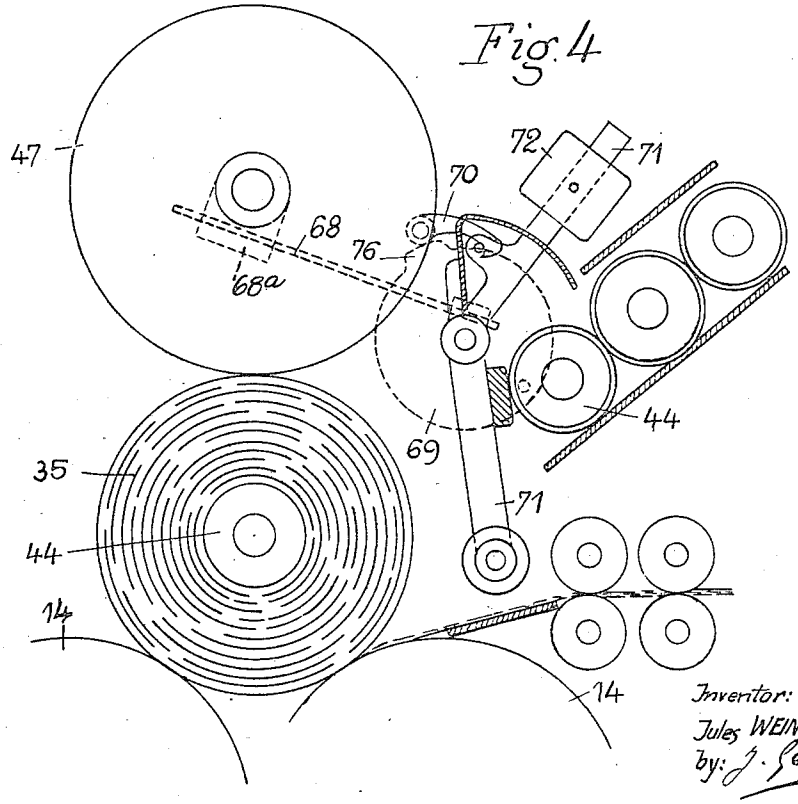


Fig. 4



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UNITED STATES PATENT OFFICE

2,032,076

LAP FORMING APPARATUS

Jules Weinbrenner, Thann, France

Application June 23, 1934, Serial No. 732,138
In Germany June 28, 1933

1 Claim. (Cl. 19—162)

In the U. S. patent application Serial No. 640,232 filed Oct. 29, 1932, has been described an apparatus for automatically preparing lap rollers in winding machines, deflecting frames and the like. According to said invention, the machine is stopped as soon as the lap roller reaches the desired size, and simultaneously a pair of rack bars **34** are lifted for the purpose of freeing the lap roller and expelling same with appropriate means. The clutching of the machine is again performed by dropping down the rack bars and the pressure roller **47** under the action of their proper weight.

It has been found that this starting of the machine, by means of the transmission described in the aforesaid specification, is produced in a very rough manner and that the roller **47** badly hurts the new wooden core **44** introduced in the machine for a new winding. This rough starting of the machine has for result that the upper feeding rollers, which are not positively driven as is well known, are subjected to delaying and gliding, so as to produce cuttings in the slivers and fleece with a subsequent detrimental effect in the manufacture of yarns.

The object of the present invention consists in a starting mechanism with braking device for the downwardly dropping rack bars, in order to eliminate the aforesaid drawbacks.

The object of the invention differs from the known devices used for braking rack bars such as they are used at present in such machines, by the fact that, for the purpose of reducing to a minimum the stopping period of the machine after freeing the rack bars, the latter drop down freely during the main portion of their downward stroke, and that afterwards occurs a braking which is starting smoothly, however rapidly increasing, said braking action being cancelled again before the end of the stroke, whereas simultaneously a smooth starting of the machine by means of a clutching device occurs during the terminal portion of the stroke of the rack bars.

The object of the invention has been illustrated in four figures in the accompanying drawings.

Figs. 1 and 2 show diagrammatically front and lateral elevations of a lap-forming and deflecting frame.

Fig. 3 illustrates, on somewhat larger scale than on Fig. 1, the braking device for the downwardly dropping rack bars.

Fig. 4 illustrates, on larger scale than on Fig. 1, the device for expelling the finished lap roller.

The expelling of the finished lap roller is performed by the lifting of the rack bars **34** as described in the aforesaid specification.

Referring more particularly to Figs. 1 and 4 in this connection, as the pressure roller **47** rises due to the increase in the size of the lap roller being formed, a bar **68** slidable in a housing **68a** freely mounted on the shaft of the pressure roller **47** also rises. Sufficient play is left to the bar **68** in its housing **68a** to avoid wedging. When the roller **35** reaches the desired size, the other end of the bar **68** which is fixed to the disc **69** causes a partial rotation of the latter about its axis, so that a projection **76** (Fig. 4) provided on the disc **69** frees a catch pawl **70** and thus releases the lever **71**.

The lever **71** acted upon by the counterweight **72**, presses the finished roller to the collecting container **73**. The rotation of lever **71** also frees the fresh wooden core **44**, which drops intermediate the winding rollers **14**.

The clutch element **54** remains disconnected during the normal running of the machine. As said herebefore, the rack bars are raised by accumulation of material on the lap roll, and after the required amount is wound up, the clutch **54** is thrown in by the shaft **84** and levers **103, 53** (Fig. 2). This throwing in secures connection with the auxiliary drive of the machine **99, 101, 107, 100** (Fig. 1) of said rack bars and of the rollers **14**. Simultaneously, the clutch **67** is disconnected by the shaft **84**, the gears **91**, the disc **92**, the cam **94** and the lever **66** as described in my co-pending application Ser. No. 732,137, filed June 23, 1934, for "Lap-forming apparatus".

The throwing in of clutch **54** secures a rapid raising of the rack bars and the required rotation of rollers **14** for the expelling of the wound lap.

The lifting of the rack bar **34** causes the rotation of the pair of gears **50, 51**; the pinion **50** is mounted upon the shaft **74**, which is rotated by the pinion **75** meshing with the rack bar **34**, so as to be rotated by the lifting of said rack bar.

The pinion **51** has a catch **52**, which disconnects the coupling **54** by means of the lever **53** after the expelling of the lap roller, the rack bar **34** becoming thus freed. The rack bar **34** and the pressure roller **47** now drop down under their own weight, so that said pressure roller falls upon the newly introduced wooden core **44**.

In order to prevent a violent fall, the rack bar is braked by means of a braking device as illustrated in Fig. 3. The catch **55** provided upon the rack bar engages with the lever **56**, which swings about its pivot center **57**, pulls upon the spring **58**, so that the brake-shoe **59** is pressed

against the brake-disc 61 by means of the lever 60, and thereby the dropping rack bar 34 is braked by means of the pinion 75.

By the now smooth downward movement of the rack bar 34, the catch 63 provided on same engages the crank lever 64 (Fig. 1), so that the coupling 67 is thrown in by means of the rod 65 and the double-armed lever 66, and the machine is again started.

I claim:

In an automatic lap-forming apparatus of the type described in which the finished lap roller is expelled under the action of ascending rack-bars, a device for a mechanical braking of the free dropping movement of said rack bars towards the end of the stroke and comprising a pinion meshing with the rack bar, a disc coaxial with said pinion, a brake-shoe acting upon said disc, a spring-controlled lever system operating the brake-shoe, a catch upon the rack bar timely engaging the lever system, and a second lever system, a second catch upon the rack bar engaging said second lever system for throwing in the main movement transmission of the machine, substantially as described.

JULES WEINBRENNER.