Sept. 20, 1971 E. ANDERSSON 3,605,382

MACHINE FOR WRAPPING ROLLS

Filed May 6, 1969 3 Sheets-Sheet 1

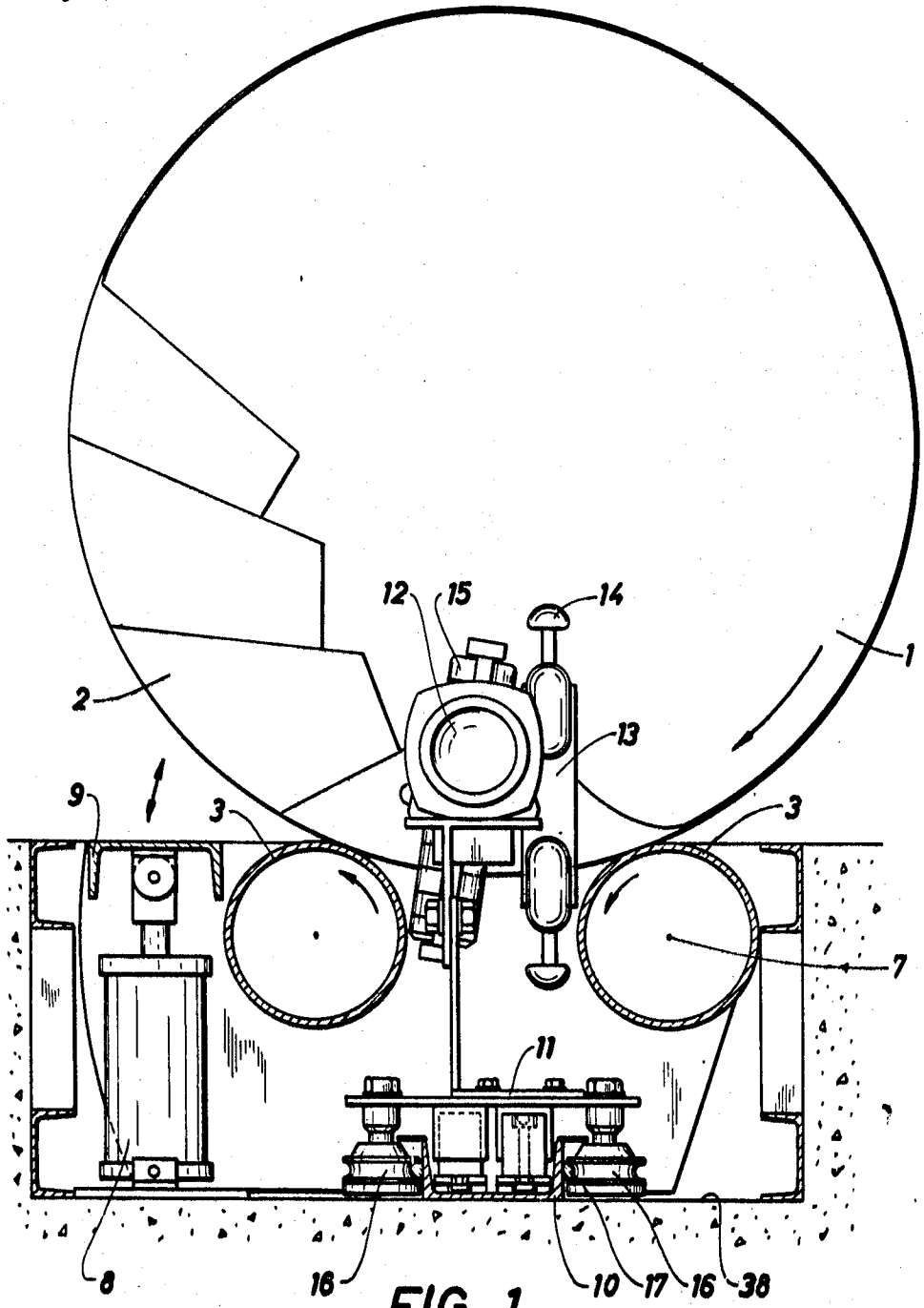


FIG. 1

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Filed May 6, 1969 3 Sheets-Sheet 2

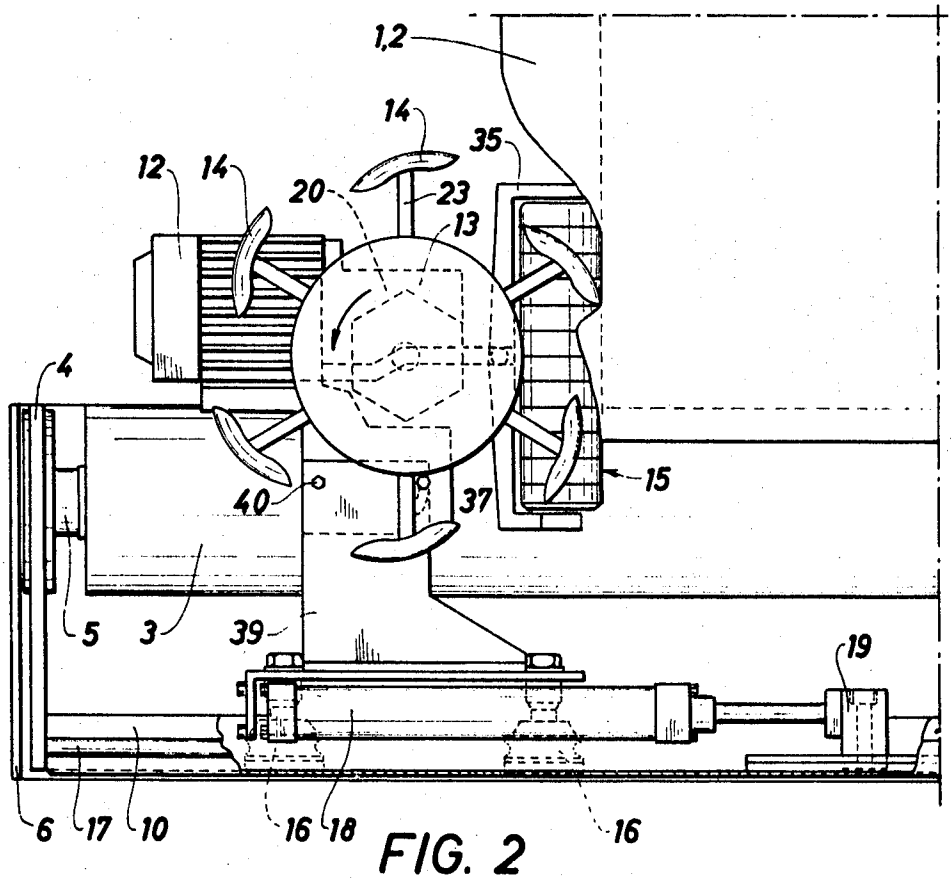


FIG. 2

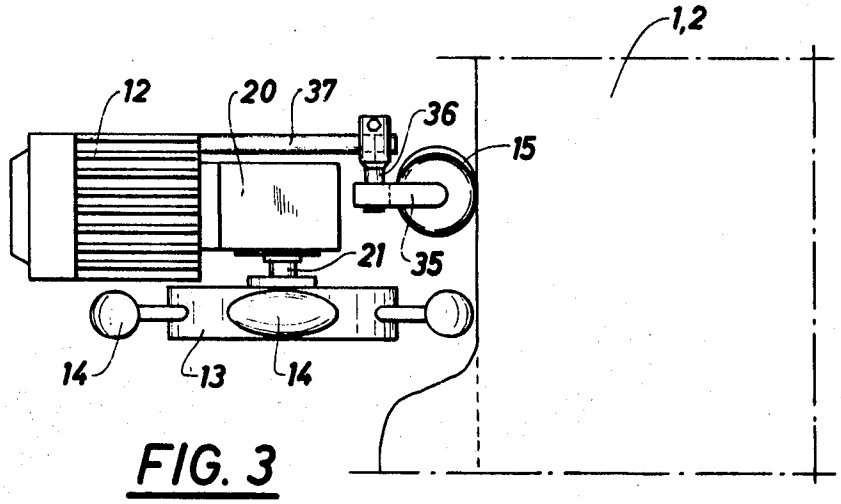


FIG. 3

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Sept. 20, 1971 E. ANDERSSON 3,605,382

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Filed May 6, 1969 3 Sheets-Sheet 3

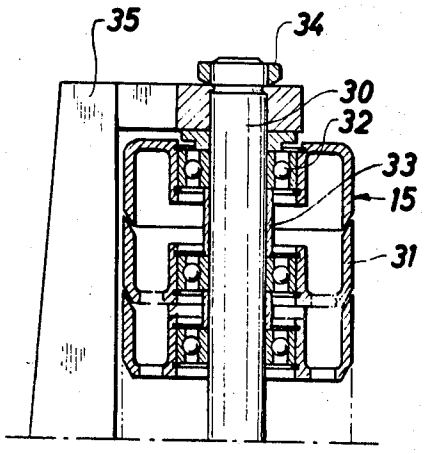


FIG. 5

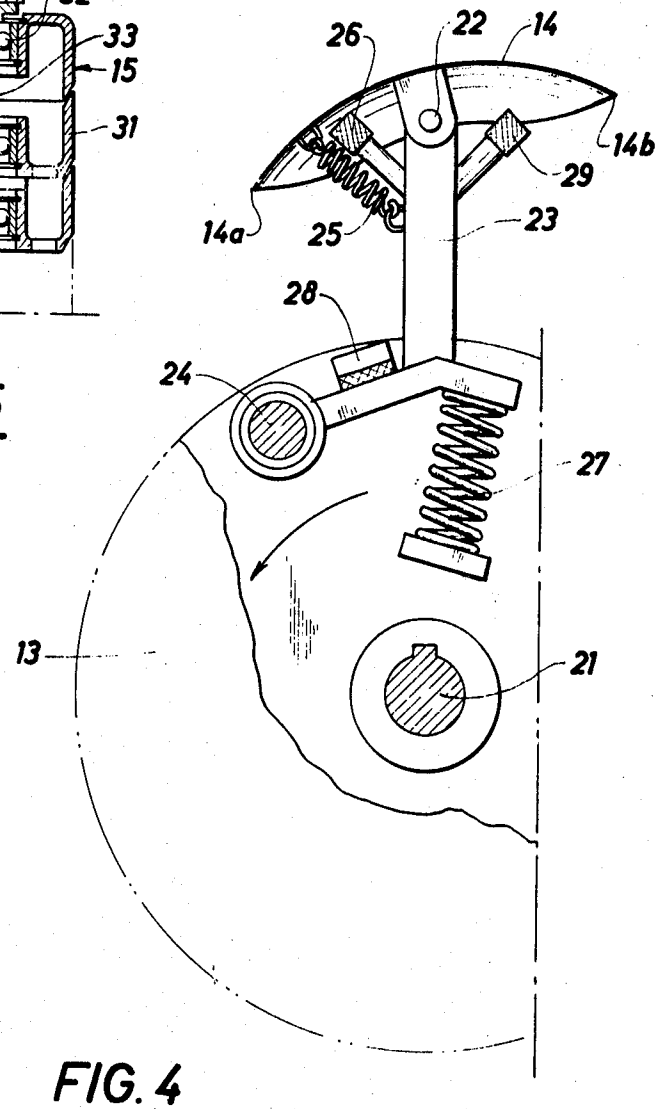


FIG. 4

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MACHINE FOR WRAPPING ROLLS

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U.S. Cl. 53—380 3 Claims

ABSTRACT OF THE DISCLOSURE

A machine for wrapping rolls of, for example, paper in a wrapper, rotatably supports each roll with portions of the wrapper extending from end of the roll and folding means rotating about an axis at right angles to the axis of the roll engage and fold the wrapper extending portions against the end of the roll after which a flattening member flattens said folds.

The present invention relates to machines for wrapping rolls of paper and the like.

The machine according to the invention is characterized by the combination of at least two rotatable rollers for supporting the paper rolls, and folding means which are movable in the longitudinal direction of said rollers between an operative position adjacent the ends of a paper roll placed upon said table and provided with a wrapper having portions projecting outside the ends of said roll and being folded by said folding means against the ends of the paper roll, and an inoperative position removed from the ends of the paper roll.

The machine according to the invention will be described herebelow with reference to the accompanying drawings, wherein FIG. 1 is an end view of a machine according to the invention during the folding operation, FIG. 2 is a side view of the end portion shown in FIG. 1, FIG. 3 is a view from above of said end portion, FIG. 4 illustrates a detail of the machine and FIG. 5 is a cross section through a further detail of the machine.

In the drawings, numeral **1** indicates a roll of paper or the like which is to be wrapped and the wrapping paper is indicated at **2**. Numeral **3** indicates two rotatable rollers on which the paper roll **1** is supported during the wrapping operation. The rollers **3** extend between two walls **4** in which the rollers are rotatably journalled by means of shafts **5**. The walls **4** are mounted in such a manner in a frame **6** sunk into a pit **38** that they may be swung about the rotational axis **7** of one of the rollers **3** by means of a jack **8** which extends between the bottom of the pit **38** and a beam **9** extending between the walls **4** at the upper edges thereof. A U-shaped beam **10** likewise extend between the walls **4** and has its ends attached thereto. A carriage **11** is displaceable along the beam **10**. The carriage **11** supports means for folding the wrapping paper against the end of the paper roll. These means comprise a wheel-like carrier **13** driven by a motor **12** and carrying a number of folding elements **14** which during rotation of the carrier **13** are moved into contact with the end of the roll **1** and fold the wrapping paper projecting outside the ends of the roll **1** in a direction towards the center of the paper roll **1**, and a rotatable roller **15** which is provided behind said folding elements, as seen in the direction of rotation of the roll **1**, and which is movable against the end of the roll **1** for flattening the folds formed between the flaps of the wrapping paper folded up towards the end of the roll **1**. The machine is provided with similar folding means at the opposite end of the roll **1**.

The carriage **11** is provided with wheels **16** arranged on opposite sides of the beam and guided by means of rails **17** provided on the sides of the beam **10**. Movement of the carriage **11** is obtained by means of a jack indicated

at **18** in FIG. 2 and extending horizontally between the carriage and attachement **19** which is movable in the longitudinal direction of the beam **10** and which may be clamped in position on the beam. The direction of rotation of the carrier **13** is indicated by an arrow in FIG. 2. A reduction gear **20** shown in FIG. 3 is provided between the driving motor **12** and the carrier **13**. The outgoing shaft of the reduction gear is indicated at **21**. The carrier **13** with the folding elements **14** are shown in greater detail in FIG. 4. For the sake of clarity only one of the folding elements **14** is shown and certain portions of the carrier are broken away. The folding element **14** is pivoted on a shaft **22** provided at one end of an arm **23** which has its other end pivotally connected to a shaft **24** mounted on the carrier **13**. The shafts **22** and **24** are directed in parallel with the rotational axis **21** of the carrier. In the unloaded position of the folding element **14** illustrated in FIG. 4 the folding element is maintained by means of a spring **25** in the position shown in which it has been swung counter clock-wise against an abutment **26** which is carried by the arm **23**. The direction of rotation of the carrier is indicated by an arrow. In this unloaded position the leading edge **14***a* (as seen in the direction of rotation of the carrier **13**) of the folding element **14** is disposed nearer to the rotational axis **21** of the carrier than the lagging edge **14***b* of the folding element. The folding element **14** is in the form of a convex blade curved in two directions. In the unloaded condition of the folding element **14** the arm **23** will be maintained by the compression spring **27** in the position shown in FIG. 4 in which it abuts against a projection **28** on the carrier. When the folding element **14** is brought into contact with the paper roll **1** the folding element will be swung in clock-wise direction according to FIG. 4 against the action of the draw spring **25** towards a second abutment **29** provided on the arm **23**, whereupon the folding element **14** together with the arm **23** will be swung clock-wise around the shaft **24** against the action of the compression spring **27**. The abutments **24**, **26** and **29** are provided with impact-cushioning pads of rubber or the like.

FIG. 5 shows a portion of the flattening roller **15** drawn to a larger scale. This roller is divided into a number of separate elements **31** which are rotatable around a shaft **30**. The elements **31** are journalled on the shaft **30** each by means of a roller bearing **32** and are maintained by means of spaced sleeves **33** at such a distance from one another that they may individually rotate freely. The shaft **30** has its ends secured to a fork-like holder **35** by means of nuts **34**. As will appear from FIG. 3 the holder **35** may be clamped to one end of an intermediate shaft **36** the other end of which may be clamped to one end of a carrier arm **37** the opposite end of which is secured to the frame **39** arranged on the carrier and supporting the motor. The frame supporting the motor comprises two parts which may be swung relative to one another in a vertical plane parallel to the longitudinal direction of the rollers **3** around a point **40**.

Folding of the end of the wrapping paper by means of the above described arrangement takes place as follows. Prior to the folding operation the wrapping paper **2** has been wrapped around the roll **1** with portions of the wrapping paper projecting past the ends of the roll. The roll **1** is supported on the rotatable rollers **3** and the carriages **11** with the folding means are in the position removed from the ends of roll. By rotating the rollers **3** the roll **1** is caused to rotate as indicated by the arrows in FIG. 1, and the carriage **11** are moved by means of the jack **18** towards the ends of the roll **1** for moving the folding elements **14** against the roll ends. The folding elements **14** and their arms **23** are then swung rearwardly

in the manner described hereinbefore each folding element folding a portion of the wrapping paper towards the end surface of the roll **1**, the folds formed between such portions being flattened by means of the roller **15**. After completion of the folding operation the carriages **11** are moved away from the ends of roll **1** by means of the jack **18**. The roll **1** is then caused to roll off from the rollers **3** by raising the jack **8** which will cause the walls **4** to swing in clock-wise direction according to FIG. 1 around the axis **7**.

The invention is not limited to the embodiment which has been described hereinbefore and shown in the drawings as an example only, said embodiment being capable of modifications with respect to its details within the scope of the appended claims.

I claim:

1. A machine for wrapping rolls comprising at least two rotatably supported rollers capable of supporting a roll to be wrapped having a wrapper on the roll with portions of the wrapper extending beyond the ends of the roll, a carrier, means rotatably supporting said carrier for rotation around an axis extending at right angles to the axis of the roll and slideable for moving said carrier towards and from an end of the roll, a plurality of folding elements carried by said carrier in positions for engaging said wrapper extending portions and folding said portions towards the end of the roll, a flattening member connected to said supporting means and positioned for flattening the folds formed in the wrapper by said folding elements, each of said folding elements being pivotally connected to said carrier for movement in a direction towards the axis of rotation of said carrier, resilient means tending to retain each folding member from said carrier axis and means for rotatably driving said carrier.

2. A machine for wrapping rolls as claimed in claim **1** including a plurality of shafts carried by said carrier, a plurality of angular arms each pivotally mounted at one end on one of said shafts and having said resilient means bearing thereagainst, each of said folding elements being pivotally connected to the other end of one of said arms in a position such that during the folding of the wrapper each folding element will pivot, simultaneously with the pivoting of its angular arm towards said carrier axis.

3. A machine for wrapping rolls as claimed in claim **2** including a plurality of abutments each carried by one of said angular arms, further resilient means tending to pivot each folding element toward the abutment on its arm, further abutments each carried by one of said angular arms and positioned for engaging the folding element pivots upon engaging the wrapper, and the relative spring rates of both resilient means being such that each folding element when engaging the wrapper will first pivot from its first abutment to its second abutment and then its angular arm will pivot towards the axis of said carrier.

References Cited

UNITED STATES PATENTS

2,643,499	6/1953	Gerlach	53—380X
3,330,095	7/1967	Sandberg	53—380

FOREIGN PATENTS

176,024	7/1961	Sweden.
978,671	12/1964	Great Britain.

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