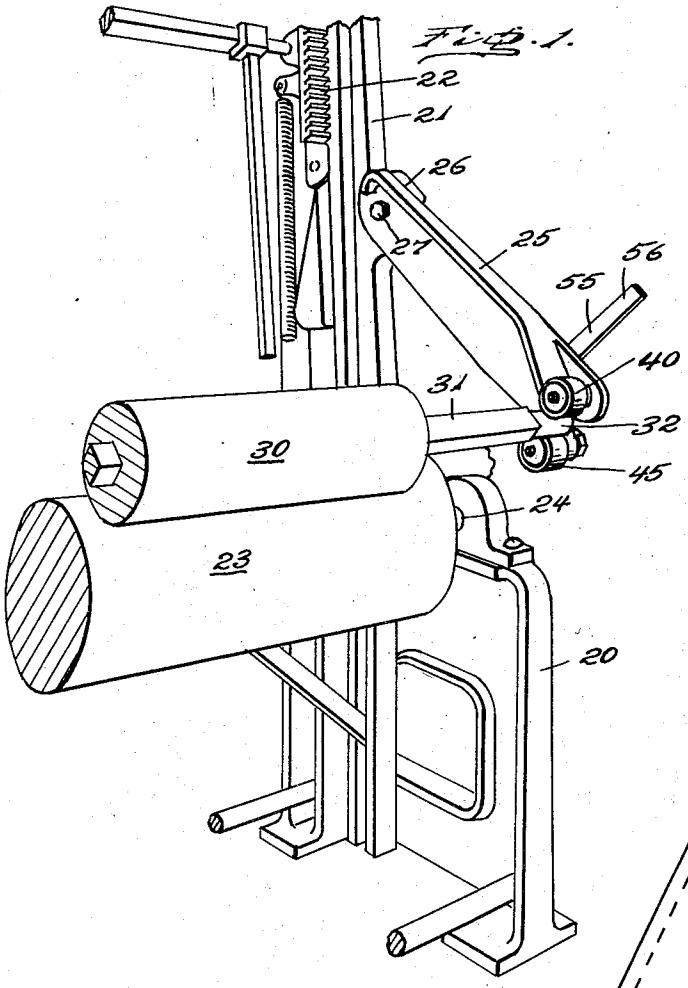
July 21, 1953 W. E. AULEN 2,646,230

JAW ARM FOR WINDING MACHINES

Filed Aug. 20, 1951 2 Sheets-Sheet 1

Fig. 1.



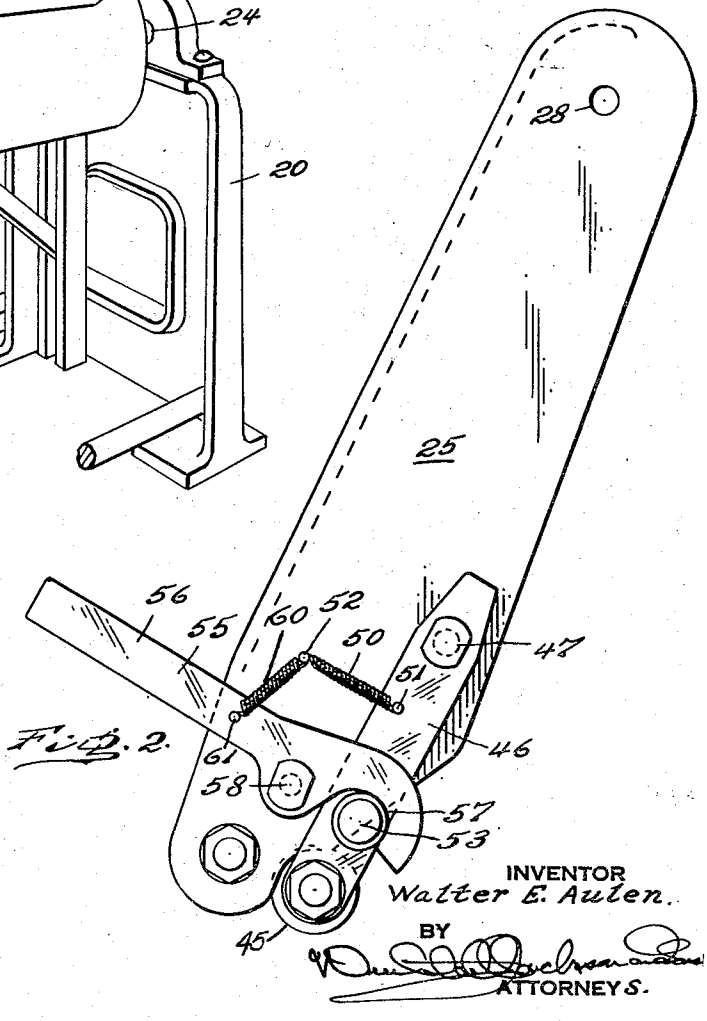


Fig. 2.

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July 21, 1953 W. E. AULEN 2,646,230

JAW ARM FOR WINDING MACHINES

Filed Aug. 20, 1951 2 Sheets-Sheet 2

Fig. 3.

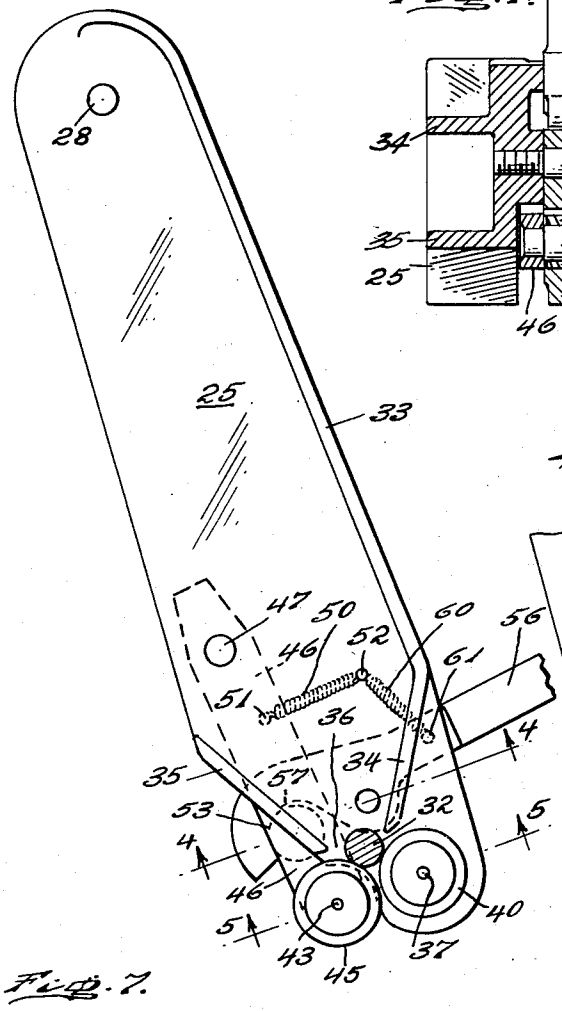


Fig. 4.

Fig. 5.

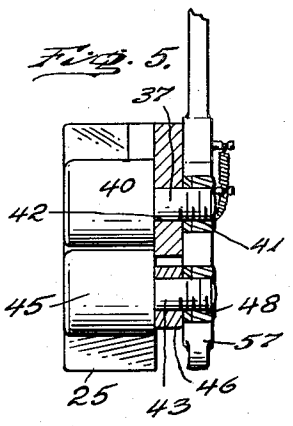


Fig. 6.

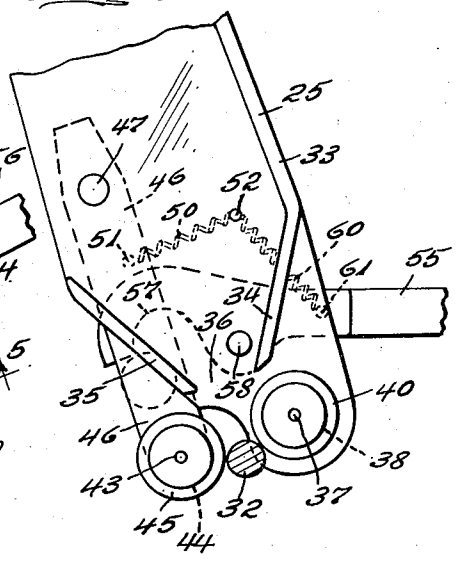
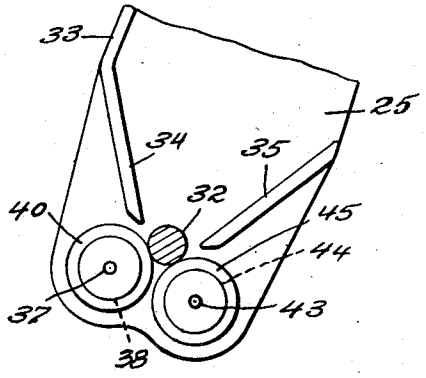


Fig. 7.



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JAW ARM FOR WINDING MACHINES

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Application August 20, 1951, Serial No. 242,760

3 Claims. (Cl. 242—66)

1

The present invention relates to winding machines and particularly to the construction of jaw arms thereof.

A purpose of the invention is to reduce the skill and labor incident to discharge of a wound roll of sheet material from a winding machine.

A further purpose is to add to the safety of operation of winding machines.

A further purpose is to reduce the friction encountered by the shell in winding on the forward drum of a winding machine, and make the shell turn with the forward drum without slippage.

A further purpose is to permit the operator to release the wound roll more quickly at the time desired and without the requirement of special skill or unusual strength or agility.

Further purposes appear in the specification and in the claims.

In the drawings I have chosen to illustrate one only of the numerous embodiments in which the invention may appear, selecting the form shown from the standpoints of convenience in illustration, satisfactory operation and clear demonstration of the principles involved.

Figure 1 is a fragmentary diagrammatic perspective of a winding machine to which the invention has been applied.

Figure 2 is an end elevation of the jaw arm of the invention at the side having the releasing latch, viewed from the side opposite to that which engages the end of the center bar.

Figure 3 is an elevation of the jaw arm of Figure 2 from the inside with the rollers in closed position, with the center bar in place and sectioned.

Figure 4 is a section on the line 4—4 of Figure 3.

Figure 5 is a section on the line 5—5 of Figure 3.

Figure 6 is a fragment corresponding to Figure 3 showing the rollers in release position.

Figure 7 is a fragmentary elevation showing the inside of the jaw arm at the opposite end from that of Figures 2 to 6, with the center bar in place, and sectioned away.

Describing in illustration but not in limitation, and referring to the drawing:

In the textile, plastic and related industries, wide use has been made of winding machines of the Simpson type, as shown in Simpson U. S. Patent 670,187, granted March 19, 1901, for Winding Machine. In machines of this type, the sheet material such as cloth or plastic is first wound on a shell which is turning with the

2

rear drum, and then the shell with the partially wound roll thereon is transferred to the front drum. The gate is raised and the knife cuts off the sheet material at a position corresponding to the space between the front and rear drums and the forward edge at the cut is wound on a new shell on the rear drum. The completed wound roll at this time is turning on a shell which is pivotally supported in jaw arms, and turns with the forward drum. In order to remove the wound roll from the machine it is necessary to release the pivotal support of the center bar of the shell on the jaw arms.

In the past this has been done by raising one of the jaw arms so as to detach the end of the center bar from the pivot support, and cause the wound roll to drop. This presents the difficulty that the operator must exert considerable strength to raise the jaw arm at one end. At the same time since the roll will fall as soon as released, the operator must keep out of the way for safety reasons. There have been cases where considerable danger to operators has been created by releasing the jaw arm. This problem has greatly increased as the sizes of rolls has gone up, so that now rolls of the order of 1000 pounds or more in weight are not exceptional.

The present invention is designed to reduce the frictional drag on the pivots of the center bar of the shell, facilitate the release of the wound roll and avoid danger to the operator. The invention is also designed to permit the use of comparatively unskilled operators, who otherwise might not be capable of releasing the wound roll.

Considering first the showing of Figure 1, I there illustrate a Simpson-type winding machine having a frame 20 with upstanding standards 21 at the ends which support the usual pivot jaws, the upper ones of which are operated by racks 22 as well known. The forward drum 23 is journalled on the frame at 24. Above the forward drum and extending forward at each end of the machine is a jaw arm 25 which is pivotally mounted from a lug 26 on the upright by a bolt 27 extending through a pivot opening 28 in the jaw arm near its upper end. A forward shell 30 having a center bar 31 is supported and turned on the forward drum, and carries a roll of sheet material on the shell, not shown. Each end of the center bar is circular at 32, and journals in a pivotal support on the jaw arm which will shortly be described. The jaw arm has at the inside edge toward the shell, an upper guiding

surface 33 (Figures 3 and 6) which extends along the top edge of the jaw arm and then converges near the lower end at 34 with respect to a lower guiding surface 35. The converging surfaces 34 and 35 create a mouth 36 at the lower end through which the pivot end of the center bar passes as the shell moves from the rear drum to the forward drum and is pivotally supported on the jaw arm.

Suitably the extension of the guiding surfaces 33, 34 and 35 toward the center of the machine increases as the guiding surfaces move downward as shown in Figure 1.

Positioned below the mouth 36 (Figures 3 and 6) and suitably adjacent the bottom of guiding surface 34 extending transversely to the length of the jaw arm, I provide a pivot pin 37, which forms the inner race of a bearing having antifriction elements 38, suitably rollers although permissibly balls, interposed between the inner race and an outer roller or race 40. The pin 37 is suitably shouldered (not shown) on the inside of the jaw arm and locked in place by a nut 41 applied to a threaded end on the back of the pin after the pin has passed through an opening 42 in the jaw arm.

At one end of the shell 30 as shown in Figure 7, a cooperating pivot 43 is provided, side by side with respect to the pivot 37, and extending out from the jaw arm transversely to the length adjacent the lower converging end of guide 35. Pivot 43 forms the inner race of a bearing having antifriction elements 44 (suitably rollers, but permissibly balls) interposed between the inner race and an outer roller or race 45.

At the opposite end of the shell from that which is provided with the rollers shown in Figure 7, a lever 46 (Figures 3 and 6) is pivoted at 47 on the jaw arm remote from the lower end and near the upper end of the lever. The lever 46 at its lower end mounts pivot 43, suitably by nut 48 applied to the threaded end of the pivot on the outside with respect to roller 45. Pivot 43 is shouldered (not shown) on the inside of the jaw arm. Lever 46 is preferably urged toward closed position by spiral tension spring 50 acting between spring abutment 51 on the lever and stationary spring abutment 52 on the outside of the jaw arm.

Lever 46 between its pivot 47 and the lower end and suitably adjacent the lower end has a latching abutment 53, suitably a pivoted roller, which turns on pin 54 mounted on the lever as by riveting.

A latch 55, positioned on the outside of the latching lever arm, has a handle 56 at one end which manipulates the latch, a hook 57 at the opposite end which engages over latching abutment 53 in latching position, and a pivot 58 intermediate the ends which is pivoted on the jaw arm. The latch is urged toward latching position by spiral tension spring 60 acting between spring abutment 61 on the latch and spring abutment 52 on the outside of the jaw arm.

At both ends, the rollers 40 and 45 when in pivoting position are close enough so that they pivotally support the pivot end at the center bar as best seen in Figures 1, 3 and 7.

In operation it will be evident that the machine is manipulated in the well known manner, first cutting the sheet material, winding the forward edge of the sheet material on the new shell on the rear drum, removing the completed roll from the forward drum, transferring the partially wound roll to the forward drum, completing the winding on the forward drum and then cutting to separate the completed roll and start a new roll on the rear drum. During the transfer of the partially completed roll from the rear drum to the front drum, the center bar pivot ends become pivotally supported on the forward jaw arms, both of which are in the close or pivoting position. Due to the antifriction bearings on the rollers, very little frictional drag is encountered in winding on the forward drum, this being an improvement over the prior art.

When the operator is ready to remove the completed roll from the forward drum, he pulls on handle 56 of the latch 55, and since the weight of the shell tends to push rollers 40 and 45 apart, and especially since roller 45 pivotally mounted on lever 46 is the lowermost roller, the rollers separate as in Figure 6, allowing the center bar end 32 to drop and causing the entire roll to drop, pulling the center bar out longitudinally from the pivot at the opposite end (Figure 7) which does not require a latch. As soon as the center bar has dropped from between rollers 40 and 45, spring 50 pulls the rollers together at the end at which the latch is provided, and spring 60 pulls the latch into engagement with the latching abutment. The jaw arms are then ready to receive the next partially completed roll and have only to move down for this purpose, as well known in the art.

While it is believed that the invention finds its widest application in winding machines of the Simpson-type, it will be understood that it may be used in any character of winding machine where jaw arms are employed.

In view of my invention and disclosure, variations and modifications to meet individual whim or particular need will doubtless become evident to others skilled in the art, to obtain all or part of the benefits of my invention without copying the structure shown, and I, therefore, claim all such insofar as they fall within the reasonable spirit and scope of my claims.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent is:

1. In a jaw arm for a winding machine, a longitudinal portion, guiding surfaces on the longitudinal portion converging toward one end of the jaw arm and leaving an opening, a pair of adjacent pivots side by side beyond the opening between the converging guiding surfaces, antifriction bearings on the adjacent pivots, and rollers supported by the antifriction bearings on the pivots and at the circumference approaching close together to receive and pivotally support the center bar of a shell.

2. A jaw arm for a winding machine having a pivot extending transversely to the length of the jaw arm near one end, a roller surrounding the pivot, an antifriction bearing mounting the roller on the pivot, a lever swingably connected to the jaw arm at a point remote from the one end and extending to a position adjacent the one end, a pivot extending transversely from the lever and in one position of the lever adjoining the first mentioned pivot, a roller on the second pivot, an antifriction bearing supporting the roller on the second pivot, a latching abutment on the lever, and a latch swingable from a latching position in engagement with the latching abutment and holding the rollers in adjoining position.

3. In a winding machine, a jaw arm having converging guides near one end, a pivot extending transversely from the jaw arm beyond the

converging guides toward the end of the jaw arm, a roller surrounding the pivot, an antifriction bearing supporting the roller on the pivot, a lever pivotally mounted on the jaw arm at a position remote from the end and extending toward the end, a pivot on the lever extending transversely thereto adjoining the first pivot, a second roller surrounding the second pivot, an antifriction bearing supporting the second roller on the second pivot, spring means urging the lever into a position in which the rollers are adjacent, a latching abutment on the lever at a position toward the roller with respect to the pivot of the lever, a latch pivotally mounted on the jaw arm and engaging the latching abutment in latched position, and spring means urging the latch into latching position.

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