

Jan. 2, 1940.

R. C. PIERCE
WINDING APPARATUS

2,185,309

Filed Sept. 29, 1938

2 Sheets-Sheet 1

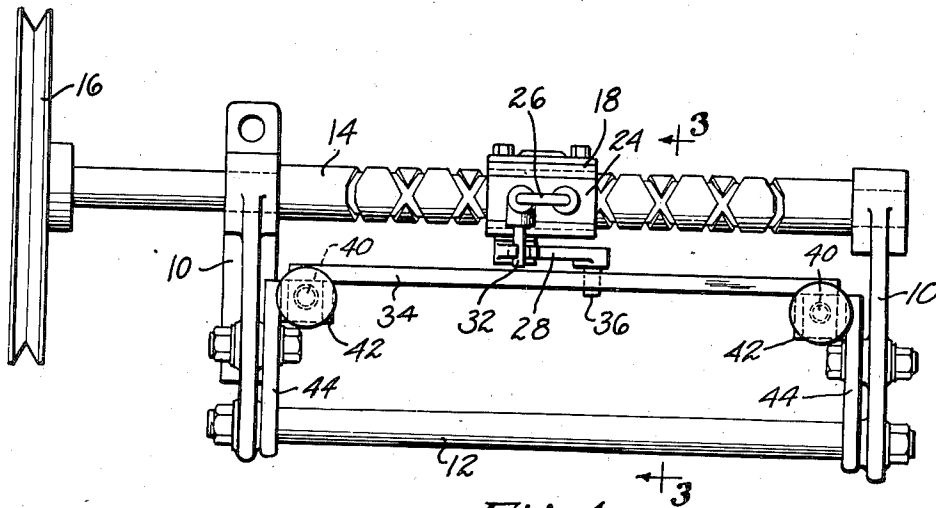


Fig. 1

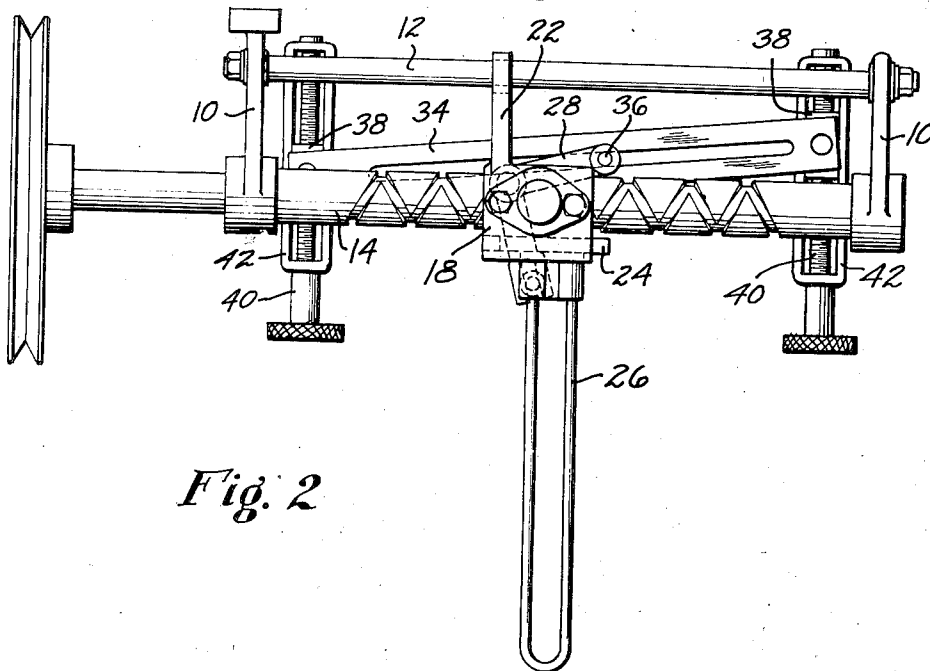


Fig. 2

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2 Sheets-Sheet 2

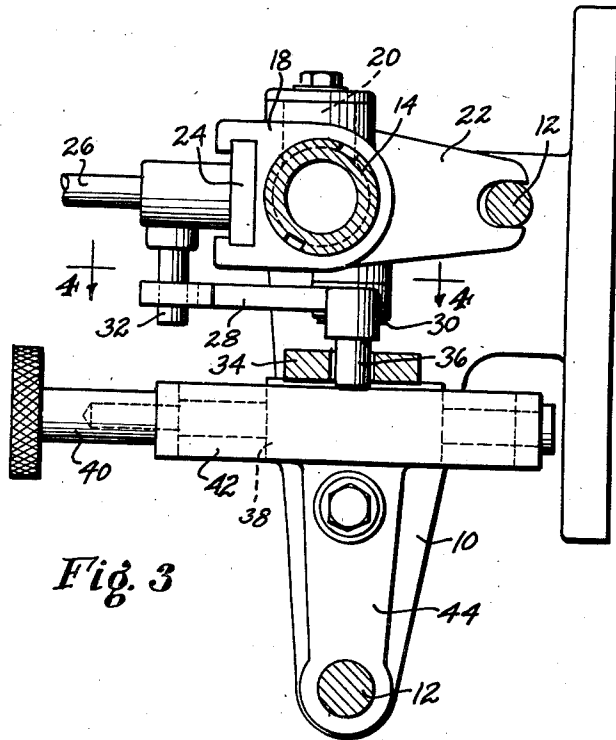


Fig. 3

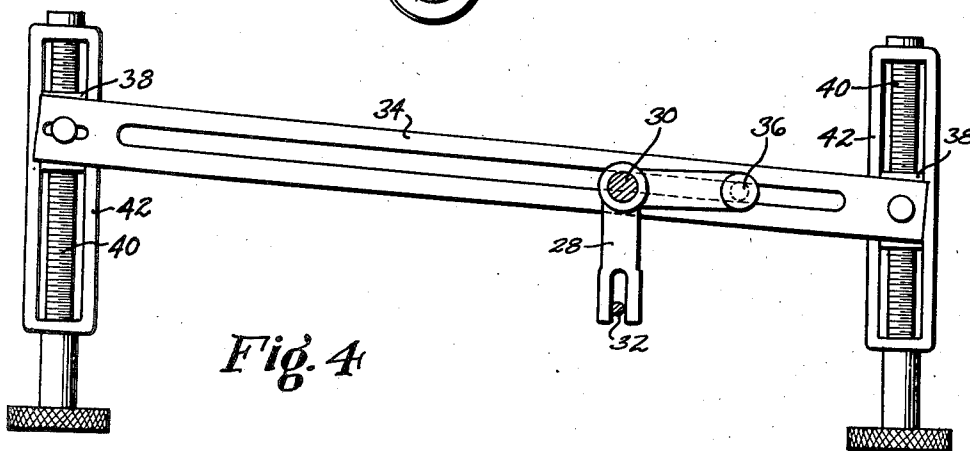


Fig. 4

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UNITED STATES PATENT OFFICE

2,185,309

WINDING APPARATUS

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Application September 29, 1938, Serial No. 232,266

3 Claims. (Cl. 242—158)

This invention relates to level winding apparatus and more particularly to apparatus for guiding wire or like strand material onto a reel.

One of the objects of the invention is to provide a level winder which will guide strand material evenly onto a reel and which may be adjusted for use with reels of different sizes. According to one important feature the device will guide the material evenly onto the reel regardless of the width of reel for which it is set.

Another object of the invention is to provide a level winder in which the strand guide means moves in a straight line at all times. The movement is even and regular throughout the stroke so that the strand material will be wound smoothly on the reel.

Other objects, advantages and novel features of the invention will be apparent from the following description of the accompanying drawings, in which:

Figure 1 is an elevation of a level winder embodying the invention;

Figure 2 is a plan view;

Figure 3 is a section on the line 3—3 of Figure 1; and

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

The illustrated level winder comprises a pair of end plates 10 spaced by rods 12 and rotatably carrying a right and left hand threaded shaft 14. The shaft 14 may be driven by any suitable power means such, for example, as a belt or the like engaging a pulley 16 on an extension of the shaft 14.

A sleeve member 18 is mounted on the shaft 14 and has a tongued member 20 (Figure 3) rotatably mounted therein and engaging the threads in the shaft to cause the sleeve member to reciprocate as the shaft is rotated. The sleeve member is prevented from rotating with the shaft by a forked projection 22 engaging one of the rods 12.

The sleeve member 18 is formed with ways in its front surface slidably supporting a guide block 24 which rigidly carries a loop or the like 26 forming a guiding means for the strand. The guide block and sleeve member are connected by a bell crank lever 28 pivoted at its center on a fixed pin 30 on the sleeve member 18 and having one of its arms forked to receive a pin 32 rigidly carried by the guide block.

The sleeve member 18 is moved with a fixed stroke and in order to vary the effective stroke of the guide means there is provided according to the present invention an elongated cam bar

34 formed with a straight cam slot receiving a pin or roller 36 carried by the other arm of the bell crank lever 28. The bar 34 is pivoted at its ends to screw blocks 38 threaded on adjusting screws 40 and slidable in frames 42 which rotatably support the adjusting screws. The frames 42 are carried by brackets 44 which are rigidly secured to the end plates 10.

In use the screws 38 may be turned to move the cam bar into a position parallel to the shaft 14 if it is desired that the guide means have the same movement as the member 18. At this time the bar will hold the pin 36 in the same position relative to the member 18 and the guide block 24 will reciprocate with the member 18 throughout the same stroke. By shifting the cam bar bodily the limits of movement of the guide means are both shifted to the right or the left.

If the screws 38 are turned to tilt the bar 34 at an angle as shown in Figure 2 the lever 28 will be rocked as the member 18 reciprocates to move the guide block to the right as the member moves to the right and to the left as the member moves to the left, thus increasing the effective stroke of the guide block and the guide means 26. If the cam bar is tilted in the opposite direction as in Figure 4 the effective stroke of the guide means will be shortened. Thus the same level winder can be utilized on reels of various sizes merely by making a simple adjustment.

It will be noted that movement of the guide block and the guide means is always in a straight line with no swinging or rocking and that it is produced by a straight line cam through a direct linkage. Therefore, all angle effects are substantially eliminated or cancel themselves out and any movement of the guide block 24 relative to the member 18 is very nearly uniformly distributed throughout the whole stroke. Thus the strand material will be fed evenly across the reel at all times with no tendency toward bunching or piling.

A particular feature of this device resides in the fact that the guiding means always occupies successively parallel positions. As a result the wire is wound uniformly irrespective of whether it contacts the guiding means near the guide block 24 when, e. g., the reel upon which the wire is being wound is nearly full, or whether it contacts the guiding means near its outer end when, e. g., the reel is nearly empty.

This application is a continuation in part of my copending application Serial No. 68,856, filed March 14, 1936, now Patent No. 2,162,357.

While only one embodiment of the invention 55

has been shown and described in detail it will be understood that various changes might be made therein and it is not intended to limit the scope of the invention to the exact form shown nor otherwise than by the terms of the appended claims.

What is claimed is:

1. A level winder for wire drawing machines or the like comprising a member adapted to move across a reel, means for reciprocating said member throughout a constant stroke, guide means slidably mounted on said member for guiding a strand onto the reel, and means operated by the reciprocation of said member for causing said guide means to slide on said member as the member reciprocates, and means for varying the position of the last named means to vary the effective stroke of the guide means.

2. A level winder for wire drawing machines or the like comprising a member adapted to move across a reel, means for reciprocating said member throughout a constant stroke, a guide block mounted for straight line reciprocation and rig-

idly carrying guide means for guiding a strand onto the reel, a movable connection between said member and said guide block for reciprocating the guide block with the member, and means operated by the reciprocation of said member for moving said connection to move the guide block relative to the member, and means for varying the position of the last named means thereby to vary the effective stroke of the guide block and guide means.

3. A level winder for wire drawing machines or the like comprising a member adapted to move across a reel, means for reciprocating said member throughout a constant stroke, guide means slidably mounted on said member for guiding a strand onto the reel, a bell crank lever pivoted at its center on said member and having one of its arms connected to said guide means, an elongated cam bar adjustably mounted beside the path of movement of said member, and a part on the other arm of said bell crank lever engaging said cam bar.

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