Aug. 9, 1932. E. E. BERRY 1,870,224

APPARATUS FOR HANDLING ROLLS

Filed Sept. 15, 1928 3 Sheets-Sheet 1

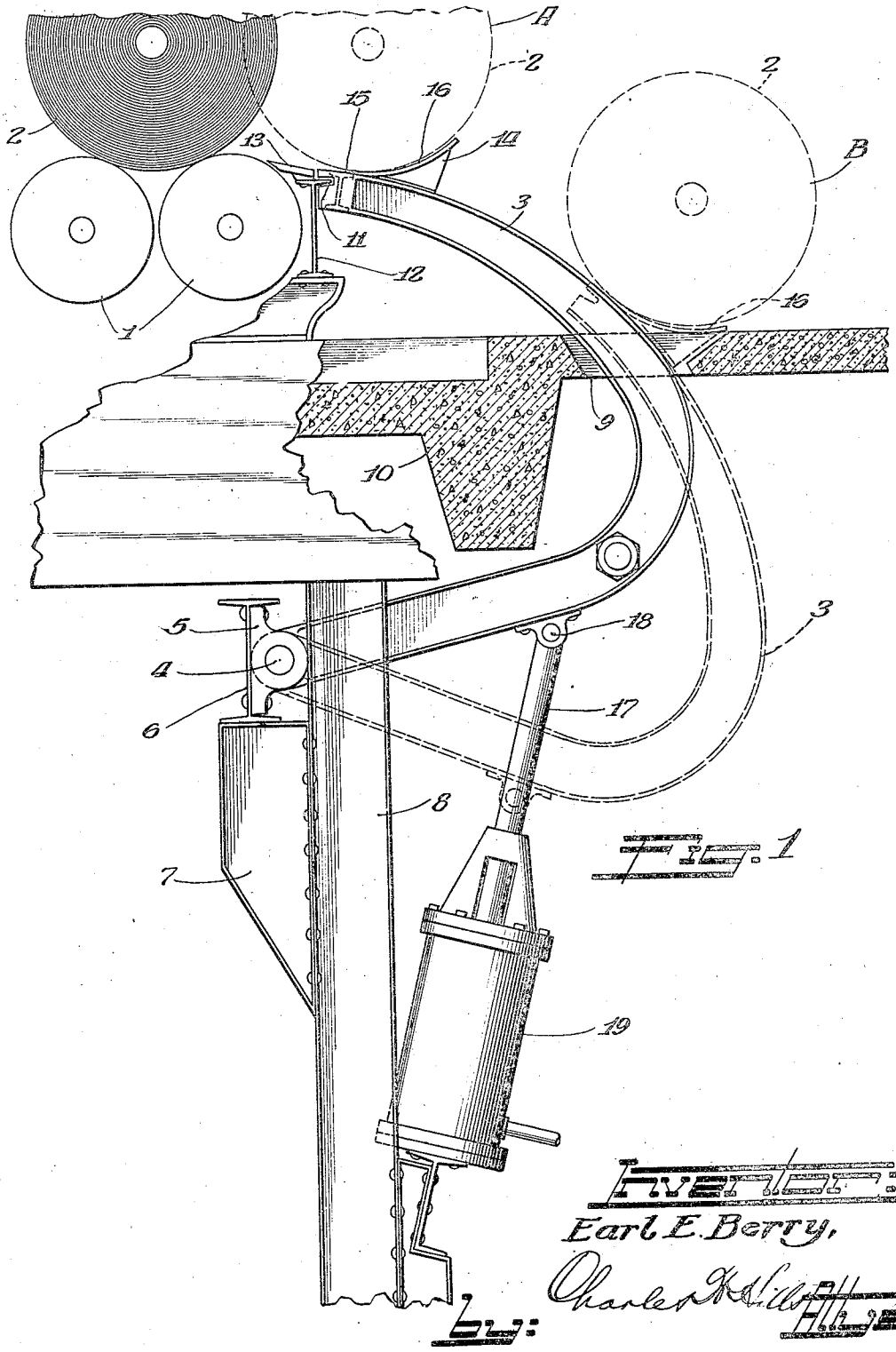


FIG. 1

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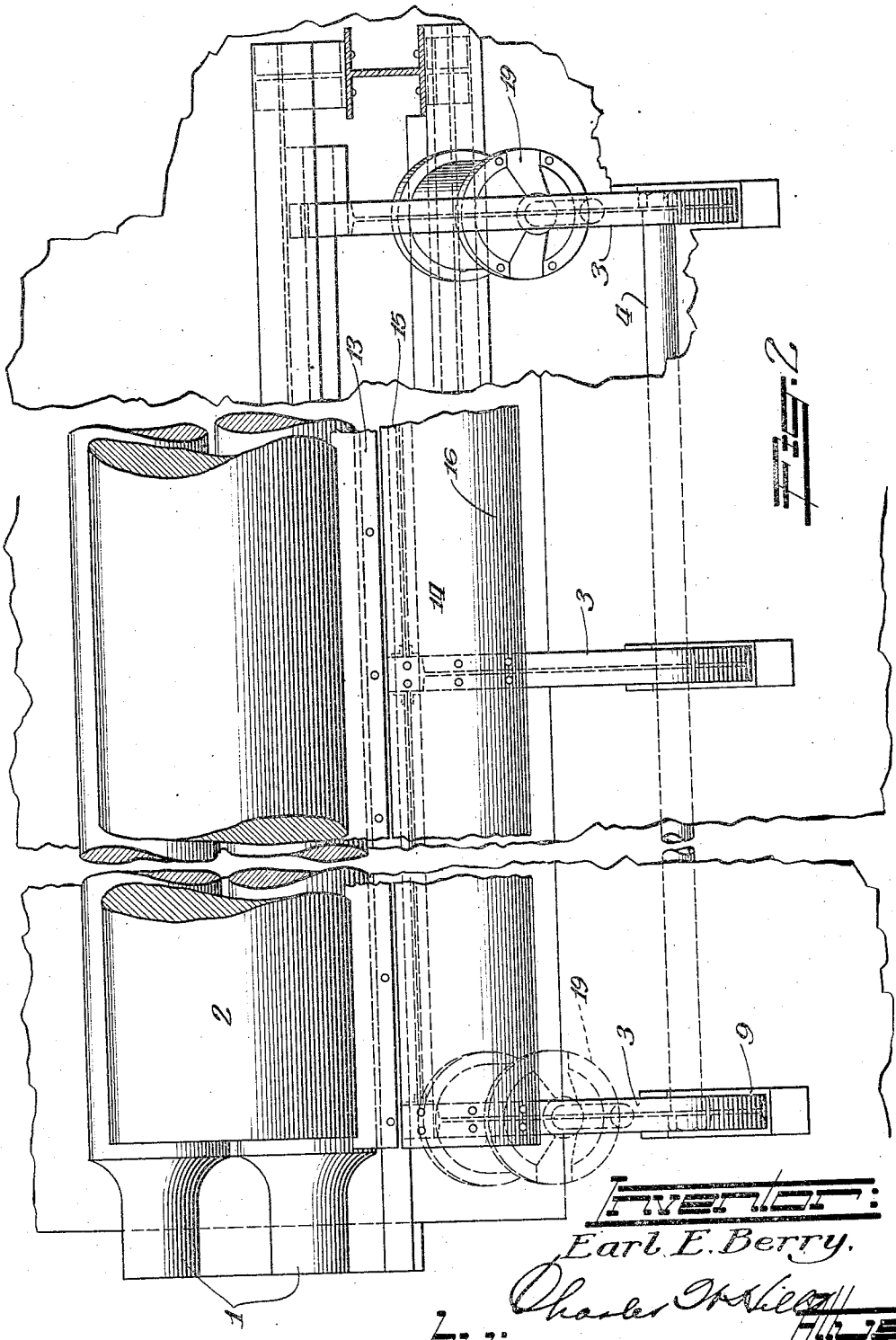


Fig. 2.

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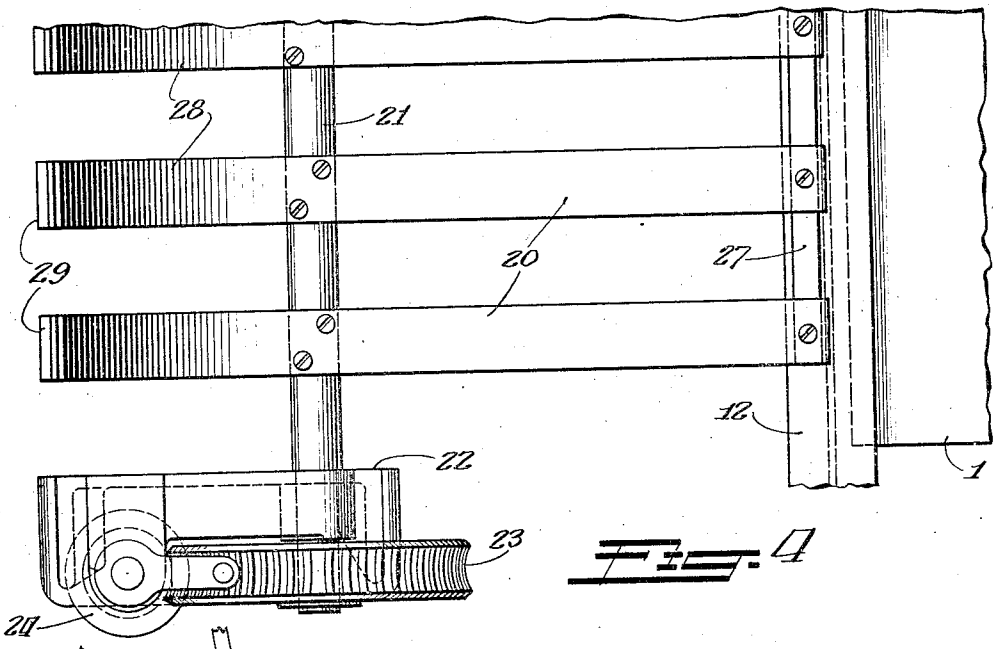


Fig. 4

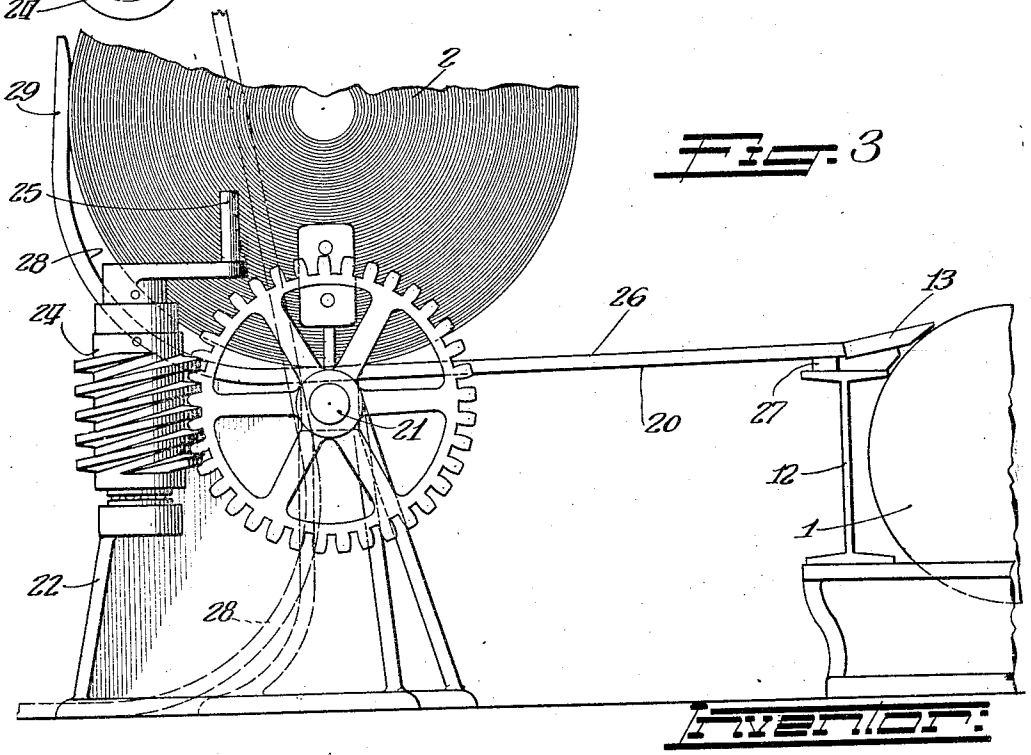


Fig. 3

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UNITED STATES PATENT OFFICE

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APPARATUS FOR HANDLING ROLLS

Application filed September 15, 1928. Serial No. 306,250.

This invention relates to an apparatus for handling rolls and more particularly to a device for transferring wound rolls of paper and the like from winding machines.

In the usual type of paper winding or rewinding apparatus, the paper is wound upon a shaft by surface contact with one, or a pair of driven drums. Where the rolls of paper are very wide, as is the case on modern machines, they are correspondingly heavy and difficult to handle.

It is therefore an object of this invention to provide a device for transferring the wound rolls of paper from a winding apparatus without the necessity of manually lifting or rolling the rolls off of the winding drum or drums onto a receiving platform or flooring at a lower elevation.

Other and further important objects of this invention will be apparent from the disclosures in the specification and the accompanying drawings.

This invention (in a preferred form) is illustrated in the drawings and hereinafter more fully described.

On the drawings:

Figure 1 is an elevational, partly diagrammatic view of an apparatus for handling rolls with parts broken away and in section, and parts dotted to show the operation;

Figure 2 is a broken top plan view of the apparatus;

Figure 3 is a side elevational view of a modified form of my device, and;

Figure 4 is a top plan view of the same with parts removed.

The reference numeral 1 indicates a pair of rotatable under drums upon which a roll of paper 2 is adapted to be wound by surface contact therewith. While this invention is illustrated in connection with a winding machine of the type employing a pair of driven under drums, it will be understood that the invention is equally applicable to other types of winding apparatus and to any situation wherein it is desired to transfer a roll of material from one position to another of lower elevation.

The roll handling apparatus, as shown in Figs. 1 and 2, comprises a plurality of arcuate shaped arms 3 pivotally mounted at their lower ends upon a transverse shaft 4. Said shaft 4 is supported at its ends in brackets 5 secured to an I-beam 6, which in turn is supported upon a bracket 7 from a supporting column 8. The arms 3 extend through an opening 9 formed in the flooring or support 10 upon which the winding apparatus is mounted and at their upper ends are provided with slots 11 for receiving the upper flange of an I-beam 12. Said I-beam 12 extends parallel to the drums 1 and forms a part of the frame of the winding apparatus. A narrow strip or board 13 is mounted upon the top of said I-beam 12 to bridge the space between the front under drum 1 and the ends of the arms 3.

Said arms 3 are all provided with cradles 14 for receiving the roll 2 after it has been rolled over the surface of the foremost under drum 1 and bridge member 13. Each of said cradles 14 is formed with a substantially plane surface 15 for receiving the roll 2, position A, and an upwardly extending curved surface 16 for retaining the roll 2 during its transfer to its lower discharge position B.

The means here illustrated for moving the arms 3 about the pivoted shaft 4 comprise a plunger rod 17 swivelly connected at its upper end as at 18 to one of said arms 3 and connected at its lower end to a plunger (not shown) reciprocally mounted in a cylinder 19. The plunger rod 17 may obviously be reciprocated by hydraulic means applied within the cylinder 19 or may be operated by steam or air pressure.

In operation, after a roll of paper has been fully wound, the roll is rolled off the winding drums onto the bridge member 13, which is at a sufficient incline to cause the roll to advance over the ends of the arms 3 into position A. The curved retaining surface of the cradles 14 prevent the displacement of the roll 2 from the position assumed on the cradles 14. The plunger rod 17 is then operated to lower the arms 3 and cause the roll to be lowered into position B. In this position the cradles 14 lie partly within the floor opening 9 and the curved retaining walls

16 lie tangentially with respect to the surface of the floor or other support 10.

The roll 2 may thus be moved out onto the floor 10 or onto another supporting surface without any drop. A very slight amount of manual labor is required, since all that is necessary is to guide the roll into its final resting place.

In Figs. 3 and 4 is shown a modification of my invention, wherein the roll handling apparatus is controlled through a gear and worm device rather than by a fluid operated means. The roll handling apparatus here illustrated comprises a plurality of slats 20 secured intermediate their ends to a rotatable shaft 21. Said shaft 21 is journaled at its ends in a supporting frame 22 and extends in parallel spaced relation to the drums 1. At one end of said shaft 21 there is mounted a gear 23 adapted to be rotated by a manually operable screw or worm 24 provided with a handle 25 and also mounted from the supporting stand 22.

The slats 20, which are preferably formed of metal, are provided with straight portions 26 joined at their free ends by an understrip 27 which is adapted to rest upon the I-beam 12. The other ends of said slats 20 are bowed as at 28 to form roll retaining walls 29.

As before, the roll of paper 2 is rolled over the surface of the forward drum 1 and over the bridge member 13 onto the plane receiving surfaces 26 of the slats 20 and into the position shown in Fig. 3 against the retaining walls 29. The worm 24 is then manually turned to lower the bowed ends 28 of said slats 20 and thus effect the lowering of the roll 2 to the floor or other supporting surface. The friction between the worm and gear device is sufficient to prevent a too rapid lowering of the roll and at the same time a greater length of the portions of the slats 20 which extend to the drums 1 more than counterbalances the bowed ends of said slats to facilitate the raising of the slats into normal position.

This modified form of my invention has the advantage over hydraulic or fluidly operated mechanisms such as above described in that it is slower acting and therefore less likely to cause an accident to the operators.

I am aware that many changes may be made and numerous details of construction may be varied through a wide range without departing from the principles of this invention, and I, therefore, do not purpose limiting the patent granted hereon otherwise than necessitated by the prior art.

I claim as my invention:

1. Apparatus for transporting a roll from a plane at one elevation to a lower plane, comprising a plurality of arcuate shaped arms pivoted at one end to a fixed support, a curved roll receiving and supporting cradle at the opposite end of said arms joining said arms together, means for swinging said arms about their pivot to raise and lower the same and a flanged support adjacent the higher plane adapted to receive the edge of said cradle and maintain the same in position to receive a roll from said higher elevation.

2. Apparatus for transporting a roll from a plane at one elevation to a lower plane comprising a plurality of substantially U-shaped arms pivoted to a fixed support, a cradle at the opposite end of said arms for receiving a roll from said higher plane and supporting it during its movement to said lower plane, said cradle joining one end of said arms, a flanged support adjacent said higher plane and a plunger pivoted to one of said arms between the ends thereof for swinging the arms to position the edge of said cradle in said notched support to receive a roll from said higher plane and then lower the arms to move the roll to said lower plane.

3. In combination with a pair of winding drums, a plurality of substantially U-shaped arms pivoted to a fixed support, a roll supporting cradle secured to the opposite end of said arms, a support adjacent the winding drums having a flange thereon for supporting the edge of said cradle when in position to receive a roll from said winding drums, and means for moving said arms to move a roll from the plane of said winding drums to a plane at a lower elevation.

4. A device for association with an under drum of a paper rewinder, comprising a stationarily mounted shaft positioned beneath said drum, arms pivoted at one end about said shaft, a cradle carried by said arms at the other end and having a plane roll receiving surface and an arcuate roll retaining surface and means for swinging said arms to elevate said roll receiving surface to position adjacent said drum to receive a roll therefrom and to lower said cradle to automatically discharge said roll over said arcuate surface.

5. In combination with an under drum of a paper rewinder, a pivotally mounted cradle having a plane roll receiving surface and an arcuate roll retaining surface, a support at the front of and below the crown of said drum and means for swinging said cradle about its pivot point to rest the plane receiving surface portion of said cradle on said support to receive a roll from said under drum and subsequently to lower said arcuate roll receiving surface to automatically discharge said roll thereover.

In testimony whereof I have hereunto subscribed my name at Beloit, Rock County, Wisconsin.

EARL E. BERRY.