

A. E. F. MOONE.

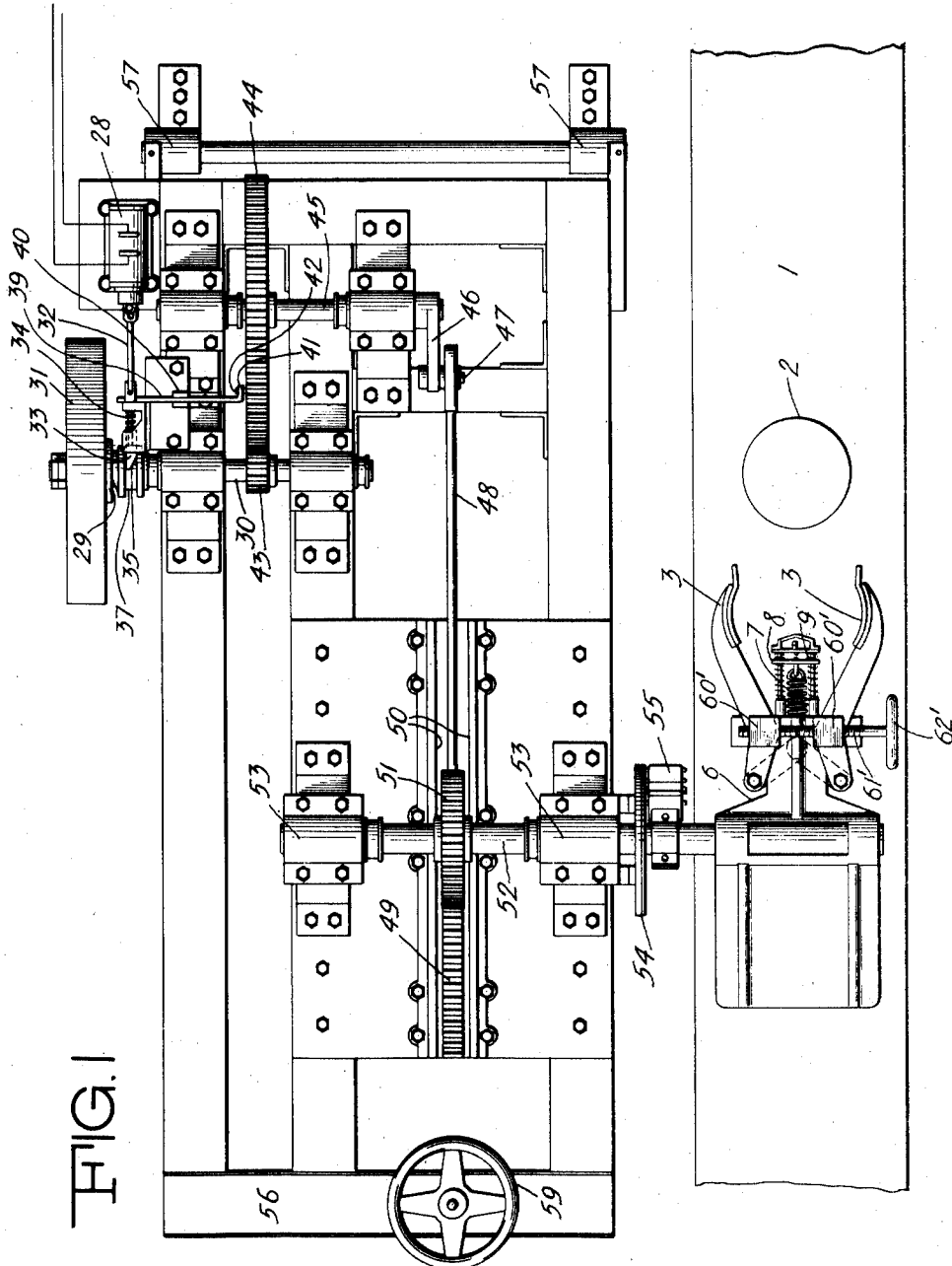
APPARATUS FOR HANDLING ROLLS OF ROOFING, BARRELS, BOXES, AND SIMILAR ARTICLES.

APPLICATION FILED MAY 24, 1919.

1,401,429.

Patented Dec. 27, 1921.

4 SHEETS—SHEET 1.



INVENTOR

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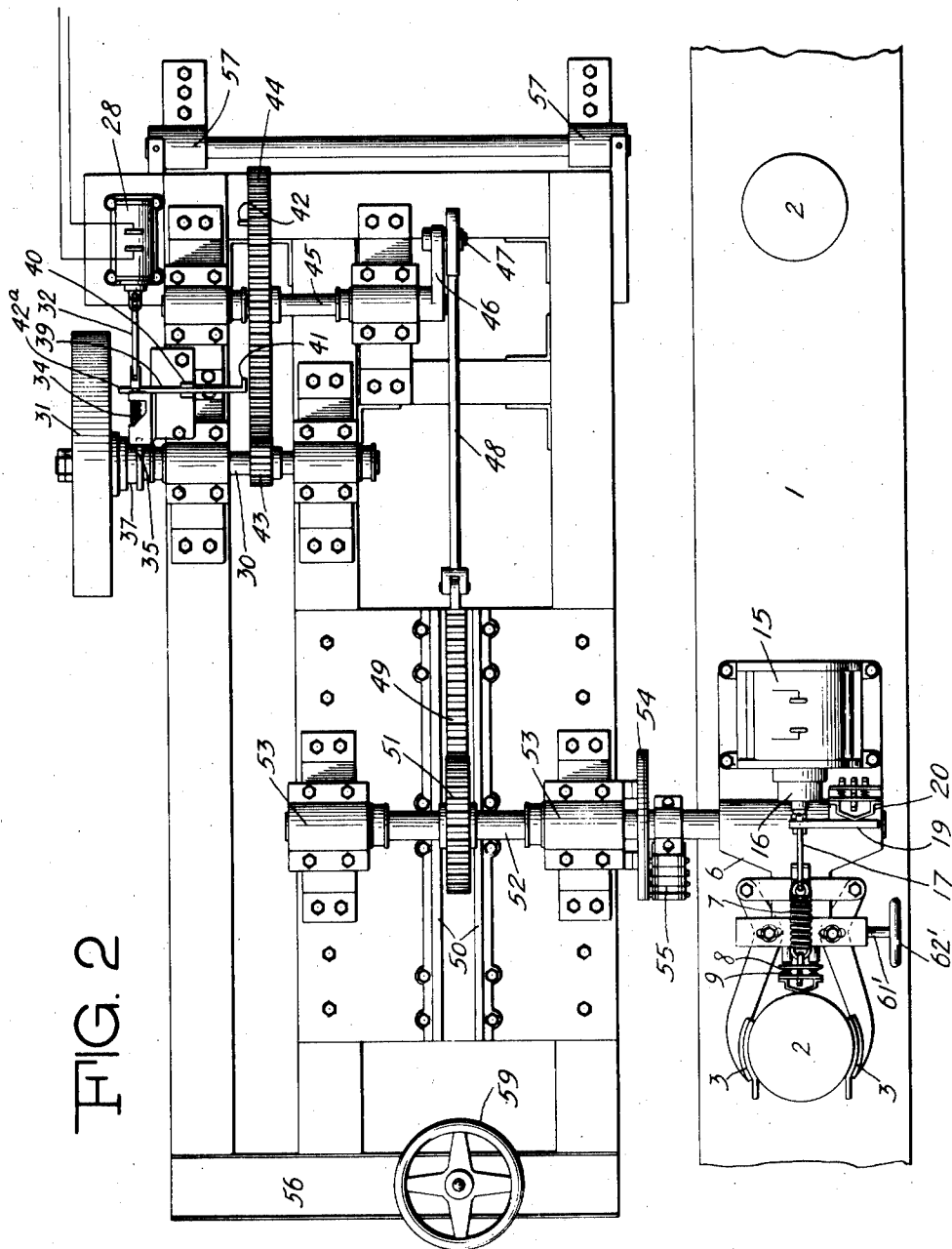


FIG. 2

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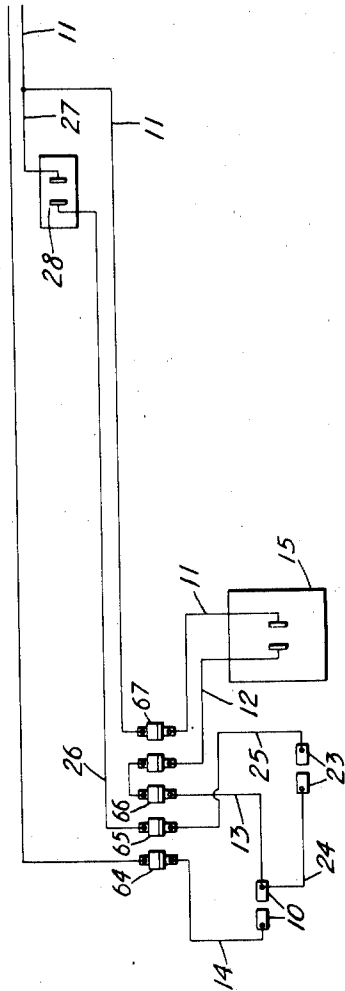
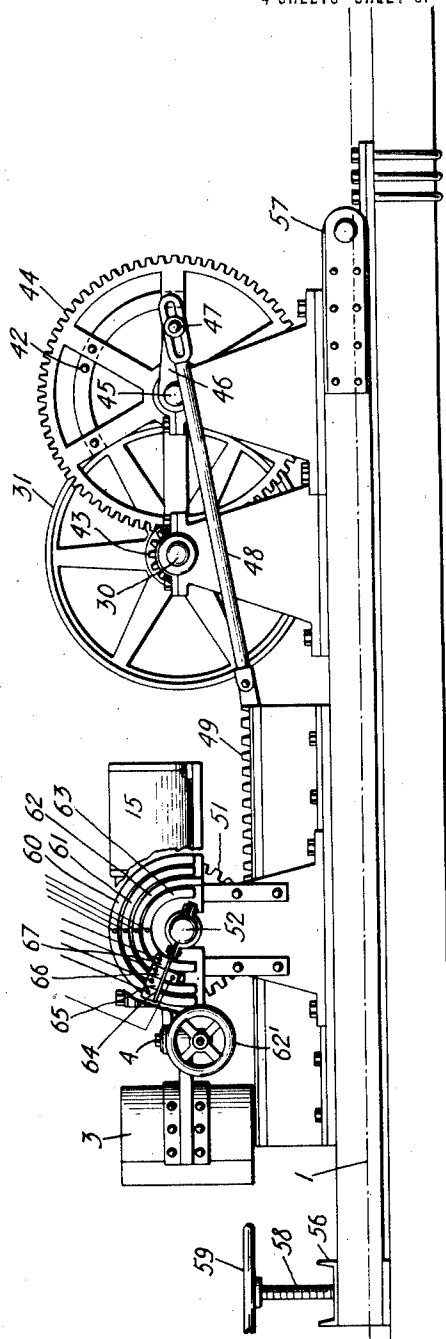


FIG. 4

FIG. 3



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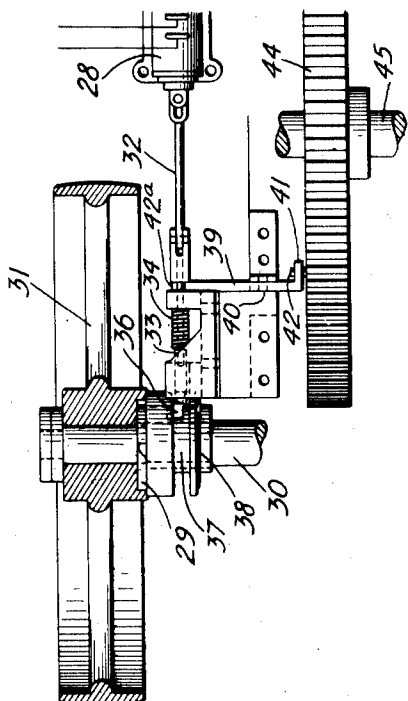


FIG. 7

FIG. 8

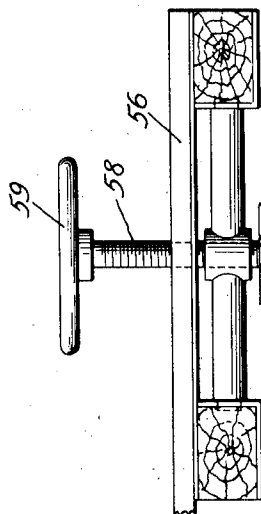
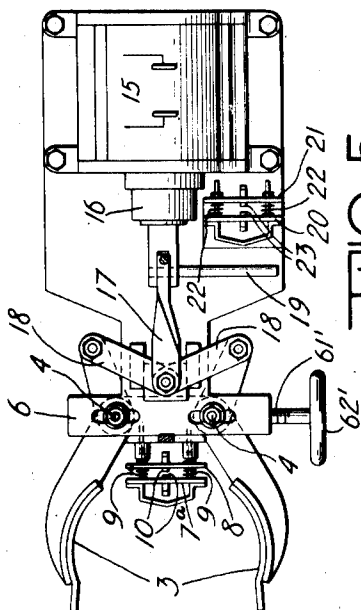


FIG. 5

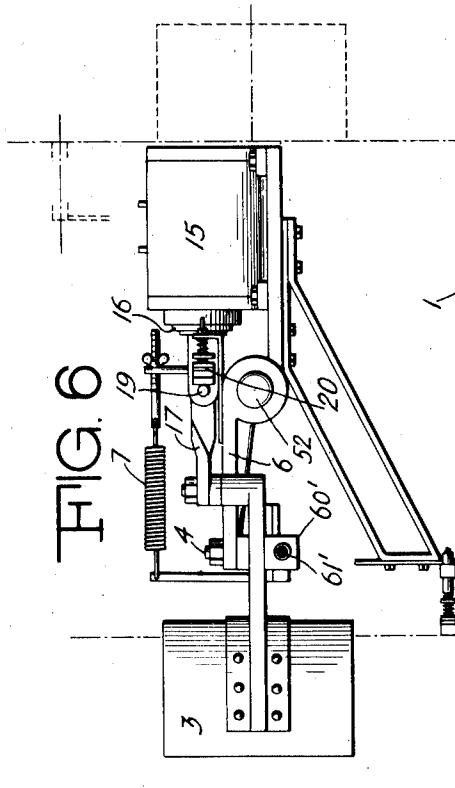


FIG. 6

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UNITED STATES PATENT OFFICE.

ALBERT E. F. MOONE, OF CINCINNATI, OHIO, ASSIGNOR TO THE PHILIP CAREY MANUFACTURING COMPANY, A CORPORATION OF OHIO.

APPARATUS FOR HANDLING ROLLS OF ROOFING, BARRELS, BOXES, AND SIMILAR ARTICLES.

1,401,429.

Specification of Letters Patent. Patented Dec. 27, 1921.

Application filed May 24, 1919. Serial No. 299,497.

To all whom it may concern:

Be it known that I, ALBERT E. F. MOONE, a citizen of the United States, and a resident of Cincinnati, in the county of Hamilton and State of Ohio, have invented a new and useful Improvement in Apparatus for Handling Rolls of Roofing, Barrels, Boxes, and Similar Articles, of which the following is a specification.

My invention relates to an apparatus adapted for handling articles, and particularly for reversing or turning rolls, barrels, boxes and similar articles so that work may be performed first on one end of the roll, barrel, box, etc., and then upon the other end, without the necessity of the workmen handling the roll, box, barrel, etc. I will instance one use of it as an apparatus for handling roll roofing, in which, after the roofing has been rolled and labeled, it is necessary to put the heads on each end. In the accompanying drawings—

Figure 1 is a plan view before the roll is turned;

Fig. 2 is a similar view after the roll has been turned;

Fig. 3 is a side view with portions cut away;

Fig. 4 is a diagram of the electric circuits operating the apparatus;

Fig. 5 is a plan view of the gripping means and part of the operating mechanism.

Fig. 6 is a side view of Fig. 5.

Fig. 7 is an enlarged detail view of a portion of Figs. 1 and 2 showing the means for engaging the apparatus with the source of power.

Fig. 8 is an end view of Fig. 1 showing the means of raising or lowering the base.

In the drawings, in which like numerals refer to like parts, 1 is a conveyer upon which the rolls 2 are stood upon end and moved toward the apparatus. As the roll 2, on the conveyer 1, approaches a workman the first head is placed in position, then the conveyer 1 moves the roll 2 to the reversing apparatus, which consists of a pair of jaws, 3, 3, pivoted at 4, 4 in slots 5, 5 in the frame 6. These jaws are normally held open by spring 7 but are so arranged that when the roll 2 passes between the jaws 3, 3, it operates a switch, by pressing the movable plate 7^a of the switch against the plate 8 in opposition to the springs 9, 9, thereby bring-

ing the contact points 10, 10 together and closing an electric circuit, 11, 12, 13, 14, in which is located a magnet 15. The movable member 16 of this magnet is connected by a link 17 with suitable toggle arms 18, 18, so that as the circuit through the magnet 15 is closed it pulls the toggle arms 18, 18 which are pivoted at their outer ends to the jaws 3, 3 and at their adjacent ends are pivoted to link 17, in opposition to the spring 6, thereby causing the free end of the jaws 3, 3 to move toward each other by rocking on the pivots 4, 4, thereby closing the jaws around the roll 2 gripping it firmly.

As the magnet 15, closes the jaws 3, 3, gripping the roll 2, an outwardly extending arm 19, extending from the connection between the movable member 16 of the magnet and the link 17, strikes another switch causing the movable plate 20 to move toward the plate 21, in opposition to the springs 22, 22, thereby bringing the contact points 23, 23 together, and which, in turn, operates a second magnet 28 in the circuit 14, 24, 25, 26, 27, in which circuit is located the previously described switch having contacts 10, 10. This magnet 28 releases a clutch 29, fixed upon a shaft 30, from disengagement with the driven pulley and permits the clutch to engage itself with the pulley as follows:

The movable member 28^a of the magnet 28 is connected by a link 32 with the clutch key 33. The clutch key 33 normally holds the clutch disengaged from the pulley by means of spring 34. The key 33 is provided with a level surface 35 permitting it to easily move into the key recess 36. 37 is the movable member of the clutch 29 and is normally held in engagement with the pulley 31 by the spring 38. In this movable member 37 is arranged the key recess 36 so that as the key is withdrawn the spring 38, acting upon the movable member 37, of the clutch, moves it forward into engagement with the pulley 31. When the magnet 28 has operated to withdraw the key 33 from the clutch 29, in opposition to the spring 34, the key is locked out of engagement by a rocking lever 39, pivoted at 40, which engages with a recess 42 on the key arm. This rocking lever 39 is preferably provided with an extension 41, adapted to be contacted with

a pin 42 hereafter described. The lever 39 is normally held so that it will readily lock the key 33 out of engagement with the clutch by having the end where the extension 41 is attached of greater weight than the opposite end.

When the clutch is engaged with the driven pulley the shaft 30 rotates and with it a small gear 43, which, in turn, operates a large gear 44. Attached to the shaft 45, upon which this large gear is fixedly mounted, is an outwardly extending radial arm 46, to which at the end is pivoted by pivot 47 a link or pitman 48, to which is loosely connected a reciprocating or sliding sprocket plate 49, held in suitable slideways 50, 50. The connection of the large gear 44 with the sliding sprocket is so arranged that one revolution of the large gear moves the sliding or reciprocating sprocket plate 49 its entire length and back to its normal condition. Meshing with this reciprocating or sliding sprocket plate 49 is a gear wheel 51, fixedly mounted upon the shaft 52, upon which is also mounted the roll gripping jaws and mechanism operating them. The shaft 52 is mounted in suitable journal 53, 53, mounted on the frame of the apparatus. Mounted on the frame of the apparatus is a contact plate 54, so arranged that the contact members 55, fixed to the shaft 52 and rotating therewith, for each of the electric circuits may be held in contact the required time.

I provide means for bringing the gripping arms at the center of the article, irrespective of its height, as follows: The frame or bed 56 of the apparatus is attached to the floor or foundation by hinges 57, 57 at one end; the other end being loose. Mounted in the other end is a screw or jack 58, operated by a hand wheel 59, so that as the wheel is rotated the frame or bed of the apparatus is raised or lowered, as desired. As roofing, or other articles to be handled by my apparatus, are of many different sizes, it may be necessary to change the distance apart of the pivots 4, 4, so as to make changes in the distance apart of the jaws 3, 3 to provide for handling of articles of sizes which are outside the limits of the sizes which can be handled by the jaws in the positions shown, or it may be desirable to adjust the jaws so as to permit of greater or less gripping strain being applied to the articles handled—for this purpose I have fixed the lower ends of the pivots 4, 4 in heads 60', 60'. In heads are threaded passages, each having the thread arranged opposite to the other. Passing through these heads is a threaded shaft 61 having the threads on one half arranged opposite to the threads on the other half. Fixed to the end of this shaft is a hand wheel 62. As the hand wheel 62 is rotated, the shaft 61 through the means of the oppositely ar-

ranged threads on the shaft 61 and in the heads 60', 60' moves the heads toward or away from each other, thereby changing the relative positions of the jaws 3, 3.

In the circuits there is arranged suitable means for breaking the circuits through the magnet so as to release the roll when it has been reversed. As shown, I have provided four contact plates, 60, 61, 62, 63, fixedly arranged around the shaft 52. These contact plates have movable contact members 64, 65, 66, 67, fixedly attached to the shaft so as to rotate therewith. The contact plate 62 is arranged so that it extends below the other plates on one side of the shaft, and on the other side it ends at a point above the others, as shown in Fig. 3. The contact member 66 contacting with this plate is connected with the circuit in which is located the switch having contacts 10, 10. As the shaft rotates and the roll has been carried substantially about one half revolution and reversed, the movable contact member 66 passes beyond the end of plate 62, thereby breaking the circuit through contact points 10, 10 and the magnet 15 releases its pull on the arms 3, 3, whereupon the spring 6 returns the jaws to their normal position releasing the roll and leaving jaws ready to receive another roll. As the movable member 16 of magnet 15 pulls the link 17 toward the magnet the pin 19 presses against the switch member 20 and closes contact points 23, 23 thereby completing the circuit through plate 60, movable contact member 64, contacts 10, 10, wire 24, contacts 23, 23, movable member 65, contact plate 61, wire 26 to magnet 28, wire 27 to source thereby operating magnet 28. As the circuit through contact points 10, 10 is broken it also breaks the circuit through the magnet 28, releases its pull on the clutch key 33, which has, however, been locked out of engagement with clutch. When the large gear 44 has completed a revolution the pin 42 strikes against the rocking arm 39, releases the clutch key, whereupon it disengages the clutch from the pulley and the jaws 3, 3, having been brought back to position to receive another roll, the apparatus comes to a stop.

The operation of my machine for handling rolls, barrels, etc., is as follows: A roll 2, mounted on a conveyer 1, passes between the jaws 3, 3 of the machine, being guided in a central position by suitable guides mounted upon the frame of the machine. As the roll 2 is brought into position between the jaws 3, 3 its movement operates the jaws on the conveyer by pressing against the movable member 7 of the switch, thereby closing the circuit, operating the electromagnet 15 and closing the jaws around the roll.

As the jaws become closed a pin 19, car-

ried by the link 17 strikes the movable member 20, another switch, which closes a circuit through magnet 28, releases the key 33 from the clutch so that the clutch engages the power driven pulley, whereby the small gear 43 on the shaft 30 is rotated. The gear 30 rotates the large gear 44 meshing therewith, and through suitable connections operates the reciprocating or sliding gear bar 49, which operates the gear 51, mounted on the shaft 52, on which the jaws 3, 3, are mounted. As the reciprocating or sliding gear bar 49 is moved in one direction, it rotates the gear wheel 51, thereby rotating, one half revolution, the shaft 52, on which the roll gripping members are mounted. This results in the roll being taken from the end on which it was standing and set up on its opposite end, on the other side of the machine. When the jaws have completed one half a circle, the reciprocating gear bar 49 begins its return movement; in doing so it returns the roll gripping members to their normal position ready for the next roll. To disengage the roll from the gripping members when the roll has been moved to its desired position, that is, after it has been moved to the other side of the machine and deposited on its other end, the circuit which operates the magnet, operating the gripping arms, is broken, releasing the magnet, holding the gripping arms closed and permits these arms to open so as to release the roll; as the roll is released it is carried away from the apparatus by the conveyor. When the jaws are opened and the rolls released the circuit, through the magnet 28, that operated the clutch, is broken, releasing the magnet 28 from its engagement with the clutch key. The lock, however, is engaged with the clutch key so that it is held out of operative engagement with the clutch. When the gripping arms have reached their normal position ready for the next roll, the pin mounted on the gear wheel 44 releases the lock so that the clutch disengages itself from the power driven shaft and the operative mechanism comes to a stop.

Modifications and changes in various parts of the apparatus may of course be made without departing from the spirit of my invention.

What I claim is:

1. In an apparatus for moving rolls, boxes, barrels, and packages, means adapted to carry the article to be moved, comprising a pair of gripping arms pivotally mounted on a supporting frame, a magnet for operating said arms, means connecting the movable member of said magnet with the arms whereby the free end of said arms may be moved toward and away from each other depending upon the direction of the movement of the movable member of said

magnet, and a switch adapted to be operated by the article to be handled so as to make circuit through the magnet to operate the gripping arms.

2. In an apparatus for handling rolls, barrels, boxes, and packages, gripping arms adapted to carry the article to be moved, means for operating said gripping arms, a source of power, means for moving said gripping arms carrying the article to be moved until said article has reached the desired position, actuated by said article for operating said gripping arms.

3. In a machine of the character described for conveying articles from one point to another, means for carrying the article, operating means for said carrying means, a source of power, and means actuated by said article for operating said carrying means.

4. In a machine of the character described for conveying articles from one point to another, means for carrying the article actuated by the article, operating means for said carrying means, a source of power, and means for operatively connecting said operating means with the carrying means when the carrying means are ready to move the article, means for automatically releasing the article from said carrying means when it has reached the desired position.

5. In a machine of the character described for conveying articles from one point to another, means for carrying the article actuated by the article, operating means for said carrying means, a source of power, and automatic means for operatively connecting said operating means and said source of power when the carrying means have engaged the article to be moved, and automatic means for releasing the article from said carrying means when it has reached the desired position, and means for automatically returning said carrying means to its normal position adapted to receive the next article handled.

6. In a device of the character described, a shaft, means to carry the article carried thereby, a source of power, means actuated by the article for operating said carrying means, and means for automatically connecting said shaft with said source of power.

7. In a device of the character described, a shaft, means to carry articles carried thereby actuated by the article to be carried, means for automatically causing said shaft to rotate when the article to be carried has been engaged, means for automatically releasing said articles from said carrying means.

8. In a device of the character described, a shaft, means to carry articles carried thereby actuated by the article to be carried, means for automatically causing said shaft to rotate when the article to be carried has

been engaged, means for automatically releasing said article from said carrying means members, a means for automatically returning said carrying means to normal position after the article moved has been released therefrom.

9. In a machine of the character described, a rotating shaft, carrying means carried thereby adapted to engage articles to be moved, actuated by the article to be moved, a gear fixedly mounted on said shaft, a second gear meshing with said first mentioned gear, means for causing said second gear to rotate said shaft.

10. In a machine of the character described, a rotating shaft, carrying means carried thereby to engage articles to be moved, actuated by the article to be carried, a gear fixedly mounted on said shaft, a second gear meshing with said gear, means for operating said second gear to rotate said carrying means when said carrying means has engaged the article, and means for operating said second gear to return said carrying means to normal position ready to receive the next article to be moved.

11. In an apparatus of the character described, a shaft, carrying means mounted on said shaft, a gear mounted on said shaft and reciprocating bar in mesh therewith, a second shaft, an arm extending radially out from said shaft and a lever connecting said arm and said reciprocating gear bar so arranged that the operation of said last mentioned shaft will cause said carrying means to be moved so as to transfer the article to be moved to its desired position, all so arranged as to be actuated by the article to be carried.

12. In an apparatus of the character described, a shaft, carrying means mounted on said shaft, a gear mounted on said shaft and a reciprocating bar in mesh therewith, a second shaft, an arm extending radially out from said second shaft, a lever connecting said arm and said reciprocating gear bar so arranged that the operation of said second shaft will cause said carrying means to be moved so as to transfer the article to be moved to its desired position, and after discharge of the article return said carrying means to normal position, all so arranged as to be actuated by the article to be carried.

13. In an apparatus of the character described, a shaft, carrying means mounted on said shaft, a gear mounted on said shaft and a reciprocating bar in mesh therewith, a second shaft, an arm extending radially out from said second shaft, a lever connecting said arm and said reciprocating gear bar so arranged that the operation of said second shaft will cause said carrying means to be moved so as to transfer the article to be moved to its desired position, a source of power, and means for engaging said last

mentioned shaft with said source of power, all so arranged as to be actuated by the article to be carried.

14. In an apparatus of the character described, a shaft, carrying means mounted on said shaft, a gear mounted on said shaft and a reciprocating bar in mesh therewith, a second shaft, an arm extending radially out from said second shaft, a lever connecting said arm and said reciprocating gear bar so arranged that the operation of said second shaft will cause said carrying means to be moved so as to transfer the article to be moved to its desired position, a source of power and means for engaging and disengaging said last mentioned shaft with said source of power, all so arranged as to be actuated by the article to be carried.

15. In an apparatus of the character described, a shaft, carrying means mounted on said shaft, a gear mounted on said shaft, and a reciprocating bar in mesh therewith, a second shaft, an arm extending radially out from said second shaft, a lever connecting said arm and said reciprocating gear bar so arranged that the operation of said second shaft will cause said carrying means to be moved so as to transfer the article to be moved to its desired position, a source of power and automatic means for engaging said last mentioned shaft with said source of power.

16. In an apparatus of the character described, a shaft, carrying means mounted on said shaft, a gear mounted on said shaft and a reciprocating bar in mesh therewith, a second shaft, an arm extending radially out from said second shaft, a lever connecting said arm and said reciprocating gear bar so arranged that the operation of said second shaft will cause said carrying means to be moved so as to transfer the article to be moved to its desired position, a source of power and automatic means for engaging and disengaging said last mentioned shaft with said source of power.

17. In an apparatus for handling rolls, barrels, boxes, and packages, automatic means adapted to carry the article to be moved, actuated by the article to be carried, automatic means for moving said carrying means after the article to be moved has been engaged by said carrying means, said last mentioned means being brought into operation by engagement of the article with said carrying means, and automatic means for releasing the article after it has been brought to the desired position, and means for returning the carrying means to its normal position.

18. In an apparatus for handling rolls, barrels, boxes, and packages, automatic means adapted to carry the article to be moved actuated by the article to be carried, automatic means for moving said carrying

means adapted to be operated by the article to be moved after said article has been engaged by said carrying means, and automatic means for releasing the article after it has been brought to the desired position, a conveyer adapted to bring the article to be moved into position adjacent to said carrying means, and means for moving said article away from said machine after it has been released therefrom.

19. In an apparatus for handling rolls, barrels, boxes, and packages, means actuated by the article to be carried adapted to grip the article to be moved composed of carrying members separately pivoted in operative relation to each other, means for regulating the size of the gripping space between said members so as to handle articles of varying sizes, and means for moving said gripping means after the article to be moved has been engaged by said gripping means.

20. In an apparatus for handling rolls, barrels, boxes, packages, means actuated by the article to be carried adapted to grip articles to be moved, means for conveying the articles to a position to be gripped by said gripping means, and means for moving said gripping means after the article to be moved has been engaged thereby, said last mentioned means being normally disengaged from operation.

21. In an apparatus for handling rolls, barrels, boxes and packages, means for gripping the article to be moved, said means being normally open, electrically controlled means for closing said gripping means around the article to be moved, means for moving said gripping means normally locked against operation, and automatic means operated by the article to be moved for disengaging said lock so as to permit the movement of said gripping means whereby the article handled is moved to the desired position.

22. In an apparatus for handling rolls, barrels, boxes and packages, means for gripping the article to be moved, said means being normally open, electrically controlled means for closing said gripping means around the article to be moved, means for moving said gripping means normally locked against operation, and electrically controlled means operated by the article to be moved for unlocking said lock so as to permit the movement of said gripping means whereby the article is moved to the desired position.

23. In an apparatus for handling rolls, barrels, boxes and packages, gripping means for engaging with the article to be moved to move it, a shaft for moving said gripping means, means for rotating said shaft 180 degrees, said last mentioned means being normally locked against operation, and means operated by the article to be moved for auto-

matically disengaging said locking means when the article to be moved is engaged by the gripping means.

24. In an apparatus for handling rolls, barrels, boxes and packages, means adapted to grip the article to be moved, said means being normally locked against movement, means operated by the article to be moved for disengaging said locking means when the article to be moved has been gripped by the gripping means, means for locking said locking means out of engagement until said gripping means has moved the article to be moved to the desired position, released it, and returned to receive the next article.

25. In an apparatus for handling rolls, barrels, boxes, and packages, a shaft, means adapted to be actuated by the article to be moved for gripping the articles to be moved fixedly mounted on said shaft, a gear fixedly mounted on said shaft, means engaging with said gear to rotate said shaft 180 degrees, and means for normally locking said shaft against rotation.

26. In an apparatus for handling rolls, barrels, boxes and packages, a shaft, means adapted to be actuated by the article to be moved for gripping the articles to be moved fixedly mounted on said shaft, a gear fixedly mounted on said shaft, means engaging with said gear to rotate said shaft 180 degrees, means for rotating said shaft in the reverse direction to return it to its normal position, and means for normally locking said shaft against rotation.

27. In an apparatus for handling rolls, barrels, boxes, and packages, a shaft, means for gripping the articles to be moved fixedly mounted on said shaft, a gear fixedly mounted on said shaft, means engaging with said gear to rotate said shaft 180 degrees, means for normally locking said shaft against rotation, and means adapted to be operated by the article to be moved for automatically disengaging said locking means when the article to be moved is engaged by the gripping means.

28. In an apparatus for handling rolls, barrels, boxes and packages, a shaft, means for gripping the articles to be moved fixedly mounted on said shaft, a gear fixedly mounted on said shaft, means engaging with said gear to rotate said shaft 180 degrees, means for rotating said shaft in the reverse direction to return it to its normal position, means for normally locking said shaft against rotation, and means adapted to be operated by the article to be moved for automatically disengaging said locking means when the article to be moved is engaged by the gripping means.

29. In an apparatus for handling rolls, barrels, boxes and packages, a shaft, gripping means located on said shaft to grip the

article to be moved, means for rotating said shaft, a pulley loosely mounted thereon, a clutch operated by the article to be moved adapted to fixedly engage said shaft and
5 said pulley, a gear fixedly mounted on said last mentioned shaft, a gear meshing therewith all so arranged so that the last mentioned gear will cause rotation of the shaft carrying the gripping means so as to move said
10 gripping means to convey the article from the place received to the place to be deposited, and return said gripping means to its normal position.

30. In an apparatus for handling rolls, barrels, boxes and packages, a shaft, gripping means located on said shaft to grip the article to be moved, means for rotating said shaft, a pulley loosely mounted thereon, a clutch operated by the article to be moved
20 adapted to fixedly engage said shaft and said pulley, a gear fixedly mounted on said last mentioned shaft, a gear meshing therewith all so arranged so that the last mentioned gear will cause rotation of the shaft
25 carrying the gripping means so as to move said gripping means to convey the article from the place received to the place to be deposited, and return said gripping means to its normal position, and means for disengaging said clutch from said pulley when
30 the gripping means have completed the cycle of motion and return ready to receive the next article to be moved.

31. In an apparatus for reversing the position of rolls, barrels, boxes and packages, means adapted to reverse the article, means set in motion by the article to be moved for operating said reversing means after the article to be moved has been engaged thereby, and means for releasing the article after
40 it has been brought to the desired position.

32. In an apparatus for reversing the position of rolls, barrels, boxes, and packages, means adapted to reverse the article, means set in motion by the article to be moved for
45 operating said reversing means after the article to be moved has been engaged thereby, and means for automatically releasing the article after it has been brought to the desired position.

33. In an apparatus for reversing rolls, barrels, boxes and packages, means adapted to automatically grip the article to be reversed, means set in motion by the article to be moved for moving said gripping means
55 after the article to be reversed has been engaged thereby, and means for automatically releasing the article after it has been reversed.

34. In an apparatus of the character described, a conveyer, carrying means adapted to engage an article carried by the conveyer, means for operating said carrying means so as to reverse the position of the article carried by the conveyer, all so arranged
65 that the said carrying means are put into operation by means of the article to be moved.

35. In an apparatus of the character described, a conveyer, carrying means adapted to engage an article carried by the conveyer, means for operating said carrying means so as to reverse the position of the article carried by the conveyer, all so arranged that the said carrying means are put into operation
75 by means of the article to be moved, and means for automatically releasing the article from said carrying means.

In testimony whereof I have signed my name to this specification.

ALBERT E. F. MOONE.