Nov. 10, 1931. C. D. DALLAS 1,831,526

PORTABLE WINDER

Filed Jan. 14, 1929 3 Sheets-Sheet 1

Fig. 1.

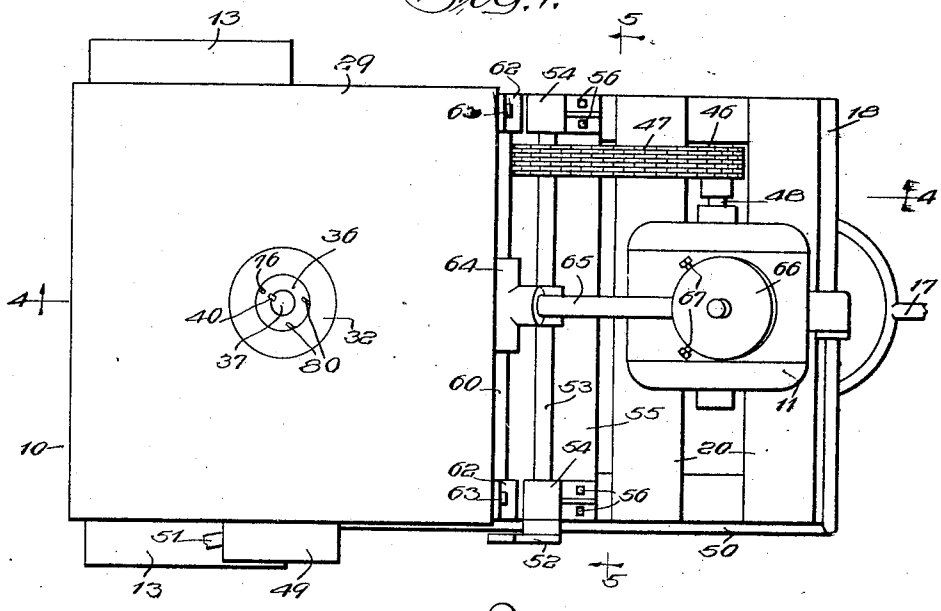
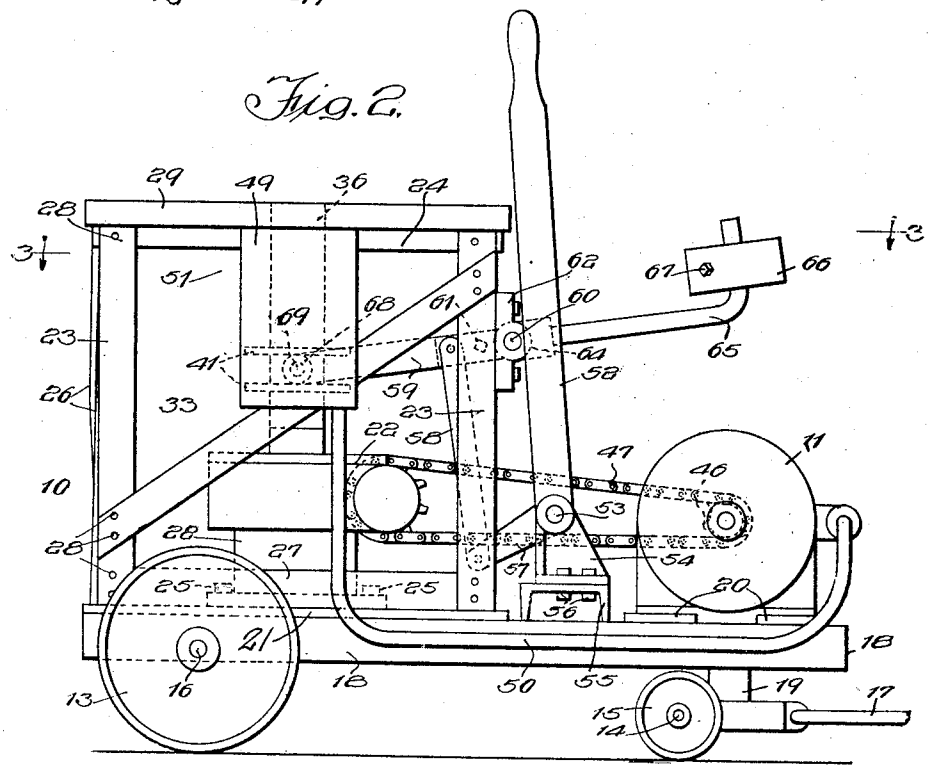


Fig. 2.



Witness:

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Fig. 3.

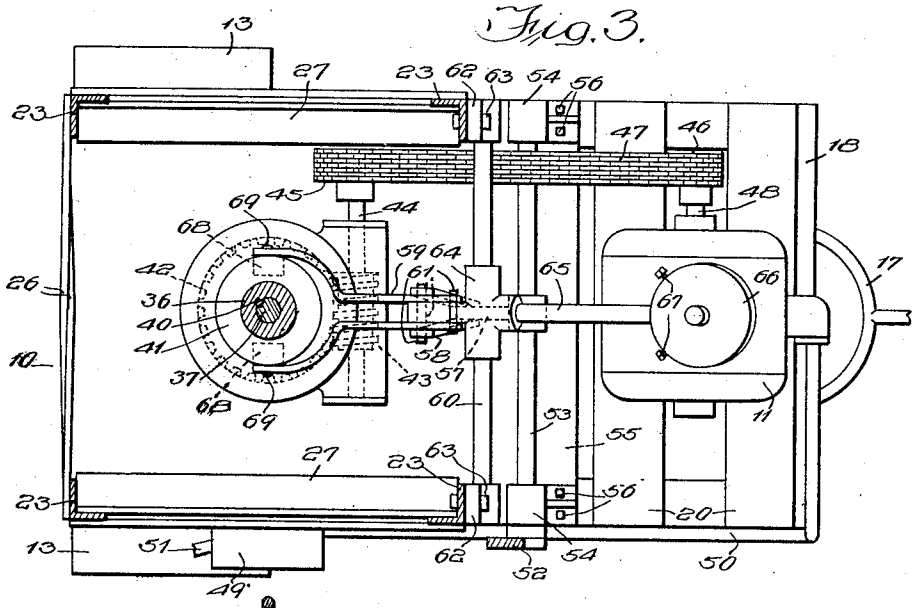
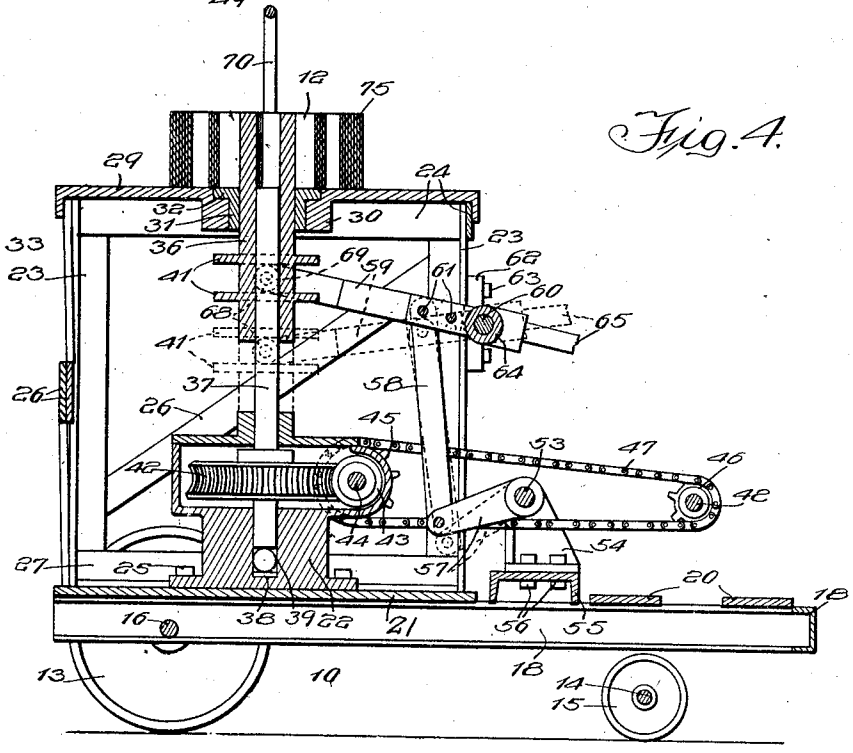


Fig. 4.



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PORTABLE WINDER

Filed Jan. 14, 1929 3 Sheets-Sheet 3

Fig. 5.

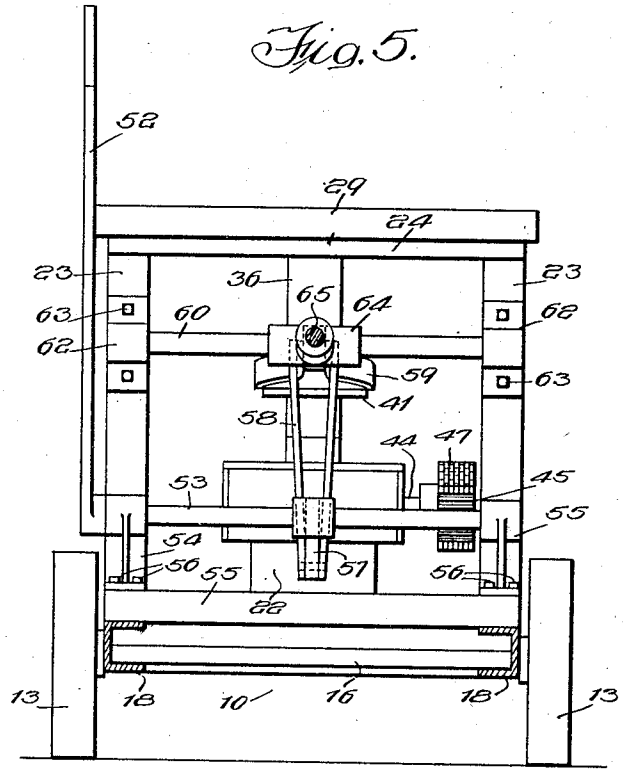


Fig. 6.

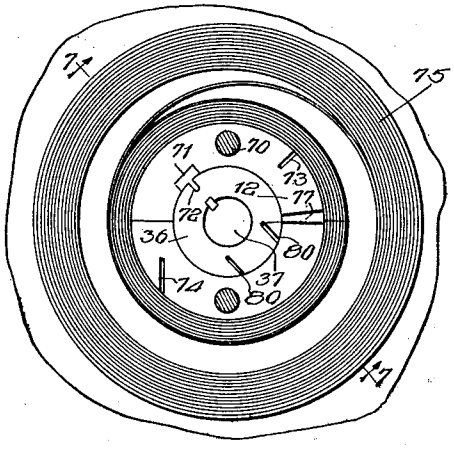
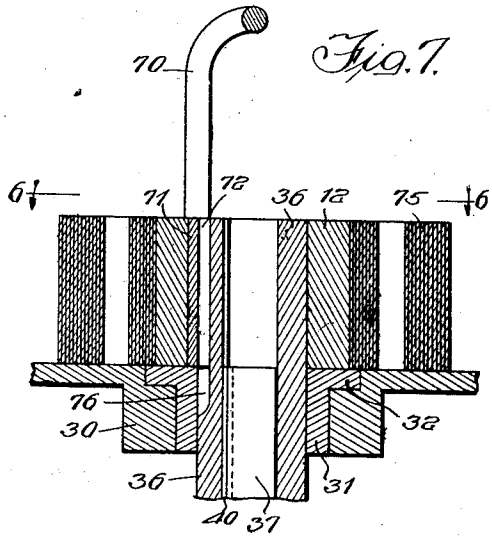


Fig. 7.



Witness:
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UNITED STATES PATENT OFFICE

CHARLES D. DALLAS, OF CHICAGO, ILLINOIS, ASSIGNOR TO REVERE COPPER & BRASS INCORPORATED, OF ROME, NEW YORK, A CORPORATION OF MARYLAND

PORTABLE WINDER

Application filed January 14, 1929. Serial No. 332,365.

My invention relates to winding devices for sheets of metal and the like and more particularly it relates to portable winders adapted to wind such sheets compactly into coils.

The device is especially adapted for use in winding and rewinding strips of metal, such, for example, as brass, copper, or the like, such strips in many cases being of great length and also very narrow and thin, whereby their handling requires their being wound into coils. In practice, such strips are usually given a preliminary winding which results in loosely formed coils.

Close and uniform winding and rewinding of elongated thin strips of metal, such as brass and the like, is desirable, among other reasons, to provide a coil having uniform flush edges in order that damage resulting from bending and marring the edges may be minimized, and one of the objects of the invention is the provision of a device for coiling or rewinding strips of metal compactly into coils for convenience and to minimize damage in handling.

Close winding of such coils of metal is also desirable in order that the metal may occupy a minimum amount of space and may be shipped or stored in spaces of restricted dimensions and another object is to provide a device adapted to wind sheets of metal of the class described into rolls of as small volume as possible whereby the space occupied in storage or shipment is minimized.

The winding, under uniform conditions of pull on the sheets, is likewise desirable when the sheets are made of uniform sizes and lengths in order that the rolls may be of the same size and thereby adapted for storage or shipment in containers, and still another object is to provide a device which is operable to form standard sized sheets of metal into substantially identical sized rolls whereby standard sized containers may be provided if desired for the more expensive metals, such, for example, as brass, copper and the like.

A further object is the provision of a device operable to shape coils of metal for storage or shipping in spaces of restricted dimensions.

The device is adapted to be mounted upon a vehicle and moved from place to place in a factory or plant wherein the coils are stored after rolling and preliminary winding, and one of the objects of the invention is to provide a device of the class described, which is capable of being mounted upon a truck or other vehicle and moved from place to place. The device includes a shaft operable to rotate a spool about which the coil is wound. The shaft may also be utilized as a winding device independently of the spool.

The vehicle is equipped with a platform positioned at a convenient height above the floor to enable the operators to position the winding spool and metal thereon. The spool is shown as standing on end and the loosely wound roll awaiting rewinding as standing on one end. Means are provided for revolving the spool rapidly after attaching the inner end of the sheet thereto. By thus standing the coils on end and rewinding them upon a spool rapidly revolving about a vertical axis, the metal is stretched tightly by reason of the resistance occasioned by its static inertia. This resistance is augmented by the frictional resistance of the lower edges of the coil in contact with its support. This combined static inertia and frictional resistance is sufficient to make unnecessary the provision of any holding or retarding device in order that the metal be wound with the desired degree of compactness, and still another object is the provision of a winder which is adapted for attaching one end of an elongated strip of metal thereto for the purpose of winding the metal into a compact coil having flush edges without the necessity of any retarding or holding devices being attached to the coil during either the initial or rewinding process.

Still another object of the invention is the provision of a winder of the class described, that is compact, strong, and light in weight.

Many other objects and advantages of the construction herein shown and described will be obvious to those skilled in the art from the disclosure herein given.

To this end my invention consists in the novel construction, arrangement and combination of parts herein shown and described,

and more particularly pointed out in the claims.

In the drawings, wherein like reference characters indicate like or corresponding parts:

Fig. 1 is a plan view of the device;

Fig. 2 is a side elevational view;

Fig. 3 is a sectional view along the line 3—3 of Fig. 2;

Fig. 4 is a sectional view along the line 4—4 of Fig. 1;

Fig. 5 is a view along the line 5—5 of Fig. 1;

Fig. 6 is a view along the line 6—6 of Fig. 7; and

Fig. 7 is a sectional view along the line 7—7 of Fig. 6.

Referring to the drawings, the numeral 10 generally denotes a portable truck upon which the device is mounted for the purpose of moving the winder from point to point in a plant as desired. The truck 10 comprises a bottom frame 18 suitably supported on front and rear axles 14 and 16, respectively. A pair of relatively high wheels 13 support the axle 16. The front axle 14 is pivotally connected to the front end of the truck 10 by a mounting 19. Front wheels 15 support the axle 14. The wheels 15 are sufficiently low to move under the frame 18 and enable short turns of the truck to be made. A tongue 17 provides means for pulling and guiding the truck from place to place.

A pair of transversely extending plates 20 are positioned on the front end of the truck to support a motor 11. A base plate 21 positioned on the rear of the frame 18 provides a mounting for a gear box 22. The gear box 22 is fastened to the plate 21 by a plurality of bolts 25. A vertically extending frame 33 is mounted on the plate 21. The frame 33 includes angle members 23 forming corner posts tied together at their upper ends by horizontal bars 24 and at their lower ends by angles 27. Rigidity is imparted to the frame 33 by a plurality of diagonally extending plates 26. The various members comprising the frame 33 are fastened together by rivets 28. A casting or plate 29 is mounted on the top of the frame 33 and held in position by its downwardly turned flanged edges. The plate 29 has a downwardly extending annular projection 30 at its mid portion. A collar bearing member 31 is positioned in the annular projection 30 and supported thereon by means of a flange 32.

A vertically extending sleeve is normally supported upon the gear box 22 and slidably engages a vertical shaft 37 upon which the sleeve is mounted. The upper end of the shaft 37 terminates substantially flush with the top face of the plate 29. The lower end of the shaft 37 is positioned in a vertical recess 39 formed in the gear box 22. A ball 38 provides a bearing support for the lower end of the shaft 37.

The upper end of the movable sleeve 36 is normally flush with the top face of the plate 29. A pair of annular flanges 41 on the sleeve 36 are provided for a purpose hereinafter more particularly described.

A gear 42 positioned in the gear box 22 is mounted on the vertical shaft 37. A horizontal shaft 44 provides a mounting for a worm 43 which operatively engages the gear 42. A sprocket wheel 45 provides means for driving the shaft 44. A sprocket wheel 46 is mounted on the motor shaft 48. The wheel 46 has a driving connection with the sprocket wheel 45 through a sprocket chain 47. The motor 11 is connected with a switch box 49 by a conduit 50. A flexible conductor 51 is connected at one end with the switch box 49 and has its other end adapted for connection with any suitable source of power.

A key 40 provides a splined connection between the sleeve 36 and the shaft 37 on which the sleeve is slidably mounted. The slidable mounting of the sleeve 36 enables it to be moved to the dotted line position of Fig. 4 which position corresponds to the full line position of Fig. 7. For this purpose of manually actuating the sleeve 36 I have provided a lever 52 mounted on a rock shaft 53.

The ends of the shaft 53 are pivotally mounted on pedestal brackets 54. The brackets 54 are supported by a channel member 55 to which the brackets are connected by a plurality of bolts 56. An arm 57 is fastened to the central portion of the rock shaft 53 so as to be rotatable therewith. A pair of links 58 pivotally connect the free end of the arm 57 with yoke members 59. A rock shaft 60 is mounted at either end in bearing blocks 62. The bearing blocks 62 are fastened to the vertical angles 23 by means of a plurality of bolts 63. A member 64 is rigidly connected to the central portion of the shaft 60. One end of the member 64 is fastened to the yoke members 59 by means of a pair of bolts 61, one of the bolts extending through the upper ends of the link 58 and providing means pivotally connecting the links with the members 59 and 64. A counter weight arm 65 is suitably fastened to the other end of the member 64 and has its outer end turned upwardly to provide a mounting for a counter weight 66 which is fastened to the arm by a plurality of bolts 67.

The free end of the yoke members 59 engage the annular flanges 41, on the sleeve 36. For this purpose each of the members 59 is provided with an inwardly projecting pin 69 each forming a mounting for a roller 68. The rollers 68 are positioned between the flanges 41 and operate to respectively raise and lower the sleeve 36 when the lever 52 is pushed forwardly and rearwardly. The counter weight 66 substantially balances the

heavy sleeve 36 and enables the sleeve to be manually actuated with a minimum effort.

A two section winding spool 12 is shown in position on the top plate 29. The spool may be constructed of any desired number of longitudinal sections. The two sections of the spool 12 are held together by a handle or bail 70. The spool 12 is easily manipulated by means of a handle 70 and when in operative position has its interior periphery aligned with the exterior periphery of the sleeve 36 which terminates at the top face of the plate 29. A key block 71 is rigidly mounted in one section of the spool 12 and has a projection 72 adapted to engage the sleeve 36 when the sleeve is moved to its elevated position by means of the lever 52. A groove 76 formed in the outer periphery of the sleeve 36 provides a splined connection with the projection 72 when the sleeve is in its elevated position. A loosely wound coil of metal 75 is shown as positioned about the exterior of the spool 12. The strip of metal from which the coil 75 is formed is given the preliminary operation of winding merely for convenience in handling.

The end of the strip of metal forming the coil 75 about which the winding of the roll 75 is started may be turned or bent for insertion in either a radial slot 73 or a diagonal slot 74. The insertion of the end of the coil in either the slot 73 or 74 insures compactness of the initial windings. In practice, however, it is found that the rewinding of the roll 75 is satisfactorily accomplished by merely bringing the inner winding in contact with the exterior periphery of the spool before starting the rewinding operation.

The spool 12 having been placed in its operative position and the inner end of the roll 75 having been fastened thereto, the operation of rewinding is as follows: The lever 52 is pushed forwardly to elevate the sleeve to its full line position of Fig. 4 wherein the upper end of the sleeve is in operative engagement with the spool 12, as shown in Fig. 7.

The cable 51 having been connected with a source of electrical energy through any convenient socket or other connection, the motor is started by actuating a switch (not shown). The resultant rotation of the shaft 37 and the elevated sleeve 36 causes the spool to revolve. The revolving of the spool with the sleeve 36 very compactly wraps or winds the metal forming the roll 75. The coils thus wound have the further advantage of occupying a minimum amount of space for storage or shipment.

Upon completion of the winding operation the spool 12 is contracted sufficiently to remove it from the roll. For this purpose the longitudinal sections comprising the spool 12 are so constructed as to be arranged to form a hollow cylinder having a predetermined inner diameter capable of being positioned to align with and operatively engage the elevated sleeve 36. When thus arranged, the longitudinal sections of the spool 12 do not form a complete cylinder but have a space 77 between two contiguous edges. The opposite longitudinal edges are positioned in contact and permit the sections to revolve as a unit notwithstanding the space 77. The spool 12 is collapsed sufficiently for its removal by actuating the bail or handle 70 to move the spaced apart longitudinal edges of the spool into contact.

The spool 12 is utilized only when coils having a relatively large inner diameter are to be formed. The coils are made still more compact by discarding the spool 12 and utilizing the sleeve 36 as a spool. The upper end of the sleeve 36 is provided for this purpose with slots 80 in either of which the end of the coil may be inserted after elevating the sleeve. Upon completion of the winding of the coil, the sleeve is disengaged from the coil by lowering the sleeve to its dotted line position of Fig. 4.

Having thus described my invention, it is obvious that various immaterial modifications may be made in the same without departing from the spirit of my invention; hence I do not wish to be understood as limiting myself to the exact form, construction, arrangement and combination of parts herein shown and described, or uses mentioned.

What I claim as new and desire to secure by Letters Patent is:

1. In a device of the kind described driving mechanism including a rotatable shaft, a winding spool having an axial bore, means providing a support for the spool in axial alignment with the shaft, a sleeve slidably mounted on the shaft, and means operable to move the sleeve vertically into operative engagement with the inner periphery of the spool.

2. In apparatus of the kind described, a winding spool comprising a plurality of longitudinal sections which when assembled form a spool having outer and inner cylindrical surfaces with a space between contiguous edges of said sections and a member forming a bail fastened to the ends of two oppositely positioned sections.

3. In apparatus of the kind described, a winding spool comprising a plurality of longitudinal sections which when assembled form a spool having outer and inner cylindrical surfaces with a space between contiguous edges of said sections, a member forming a bail fastened to the ends of two oppositely positioned sections, a frame providing a support for said spool, a shaft in axial alignment with said spool and means movable to operatively connect and discon-

nect said spool and shaft, said bail being operable to close the spaces between said sections to release the spool subsequent to a winding operation for the purpose described.

In witness whereof, I hereunto subscribe my name this 10th day of January A. D., 1929.

CHARLES D. DALLAS.