Dec. 2, 1941. C. M. McCARTHY 2,264,992

REEL FOR ROPE AND SIMILAR MATERIAL

Original Filed May 31, 1938 3 Sheets-Sheet 1

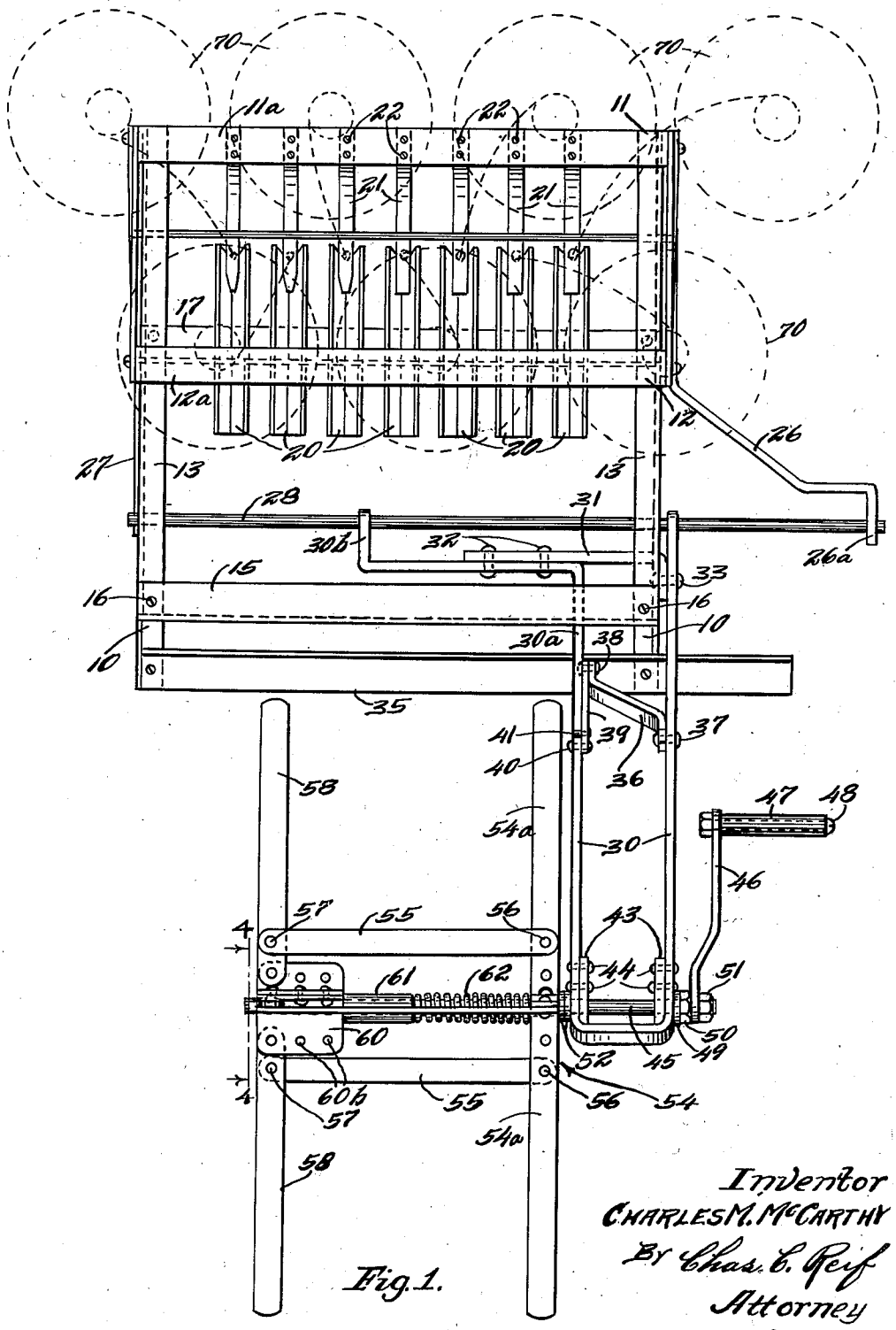


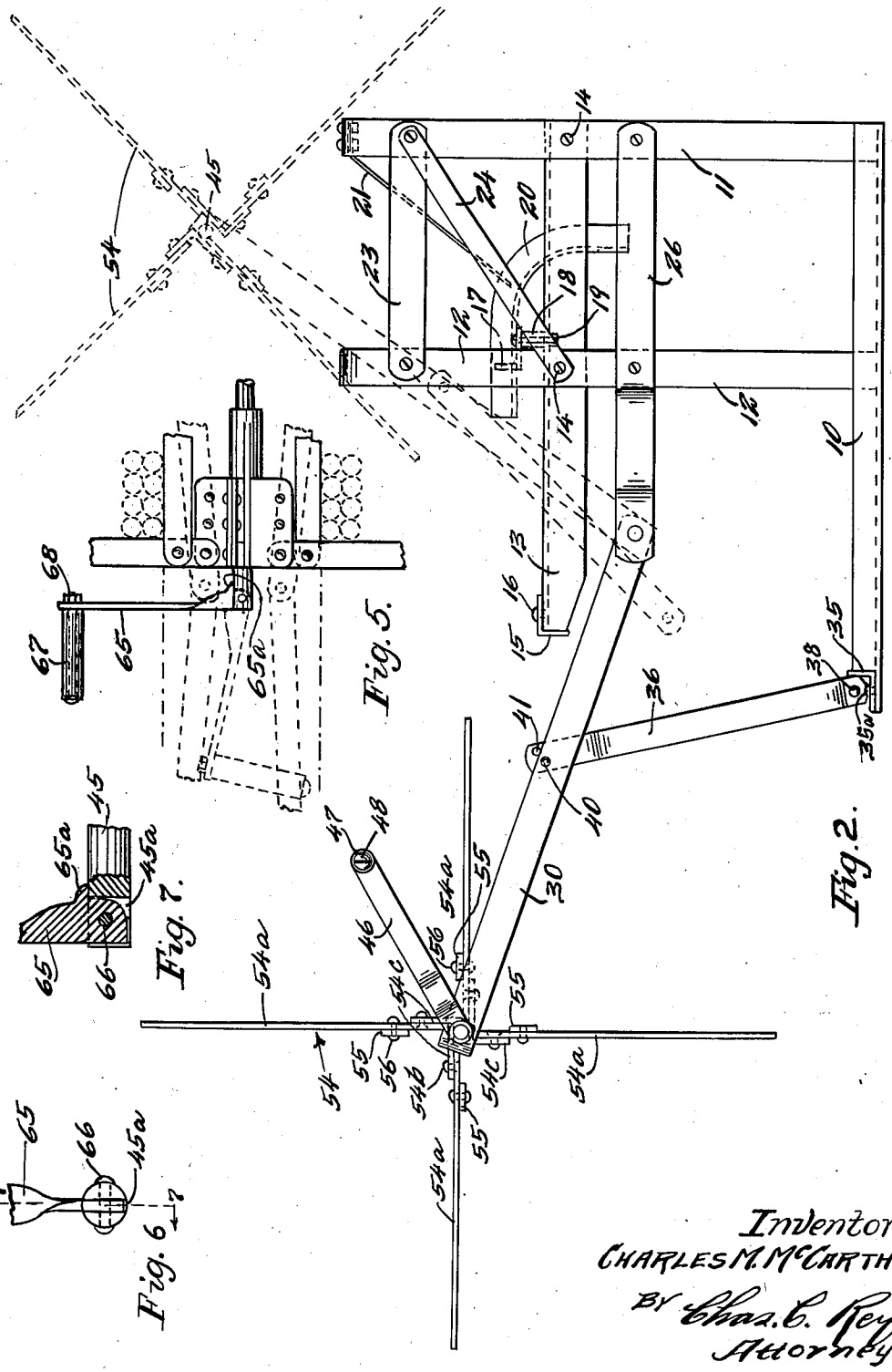
Fig. 1.

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REEL FOR ROPE AND SIMILAR MATERIAL

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REEL FOR ROPE AND SIMILAR MATERIAL

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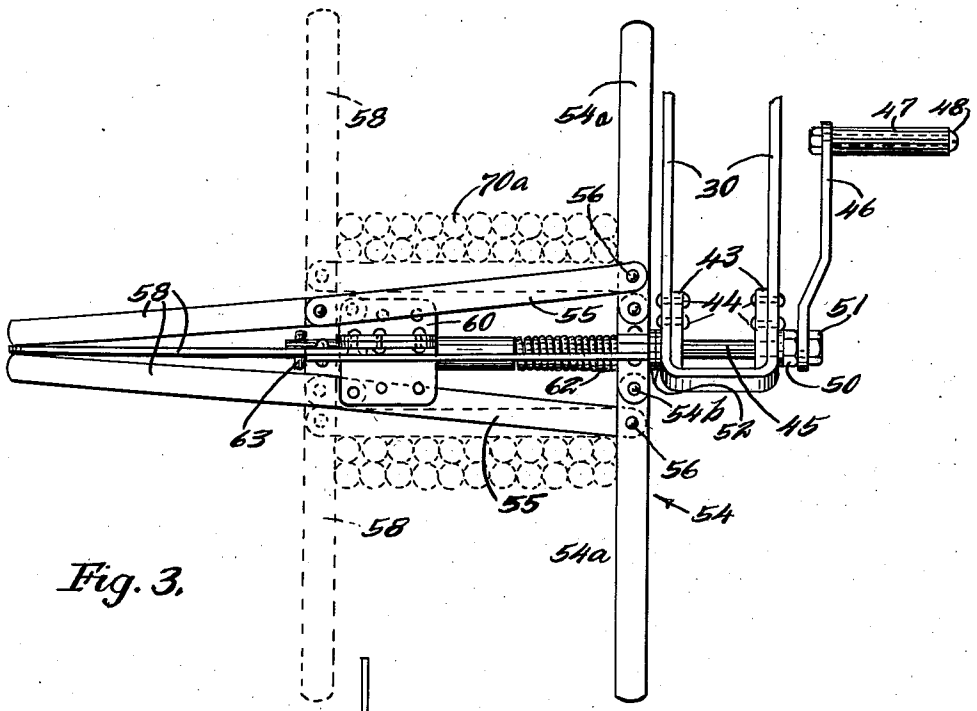


Fig. 3.

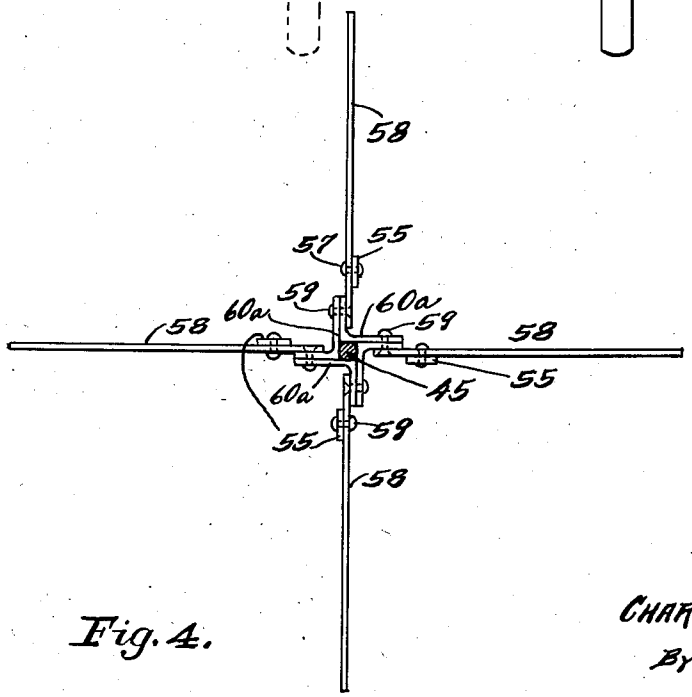


Fig. 4.

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REEL FOR ROPE AND SIMILAR MATERIAL

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Original application May 31, 1938, Serial No. 210,907. Divided and this application November 14, 1940, Serial No. 365,660

3 Claims. (Cl. 242—115)

This invention relates to a rope winding machine and particularly to a novel rope winding reel. While the novel reel could be used for winding various materials in various applications, it is illustrated as applied to a machine for dispensing a plurality of kinds of rope.

When a coil of rope is wound upon a member or reel it engages the portion at the center or the core with considerable friction. It is difficult to remove the wound coil from the member at the center thereof. In some cases it has been necessary to apply great force to the coil to remove it.

It is an object of this invention to provide a simple and efficient structure of reel for winding rope or similar material from which the wound coil can be easily and quickly removed.

It is another object of the invention to provide a reel for winding rope or similar material comprising a central portion or core on which a coil of rope may be wound, an end portion for holding said coil on said central portion, said end portion comprising members which are movable outwardly into alinement with said central portion so that the coil can be removed thereover.

It is another object of the invention to provide such a reel as set forth in the preceding paragraph in which the members forming the central portion and the members forming the end frame are moved into substantially alined positions in lines converging from the rear side of the reel, thus relieving any grip of the coil thereon so that the coil may be free and easily removed.

It is a further object of the invention to provide a reel for winding rope or similar material comprising a rear end frame, a central portion on which a coil of rope is wound comprising circumferentially spaced members pivotally secured to said rear end frame and a front end frame comprising circumferentially spaced members pivotally connected respectively to said last mentioned members, all of said members being swingable into position to form a frame tapering toward the front of said reel.

It is more specifically an object of the invention to provide a reel comprising a central shaft, a rear end frame comprising circumferentially spaced members secured to said shaft, a central portion on which a coil of rope may be wound comprising circumferentially spaced members pivotally secured to said first mentioned members, a front end frame comprising circumferentially spaced members pivotally secured to said last mentioned members respectively and normally disposed in a substantially vertical plane, means slidable on said shaft to which the last mentioned members are also pivotally connected and resilient means on said shaft for moving said first mentioned means to hold said last mentioned members in a substantially vertical plane, said last mentioned members being swingable outwardly from their outer ends against pressure of said spring to facilitate removal of said coil.

These and other objects and advantages of the invention will be fully set forth in the following description made in connection with the accompanying drawings in which like reference characters refer to similar parts throughout the several views and in which:

Fig. 1 is a plan view of said reel and a portion of the machine to which it is attached;

Fig. 2 is a view in side elevation, the reel being shown in a different position in dotted lines;

Fig. 3 is a view in front elevation showing the reel in discharging position, some parts being shown in dotted lines;

Fig. 4 is a vertical section taken on line 4—4 of Fig. 1 as indicated by the arrow;

Fig. 5 is a partial view in side elevation showing a modification, some parts being shown in different positions in dotted lines;

Fig. 6 is a partial view in front elevation of the structure shown in Fig. 5; and

Fig. 7 is a vertical section taken on line 7—7 of Fig. 6.

Referring to the drawings a machine is shown having a frame comprising longitudinally extending parallel base members 10. While these members might be variously made, in the embodiment of the invention illustrated they are shown as made from angle bars having their horizontal flanges extending toward each other. Bars 11 are secured to the rear ends of members 10 at their outer sides and extend vertically therefrom, the same being joined by an integral portion 11*a* extending horizontally at some distance above members 10, the bars 11 and 11*a* thus forming one member. A similar member 12 is disposed some distance in front of member 10 also having a horizontal portion 12*a* and vertical portions secured at their lower ends to the member 10. Members 13 are secured to the vertical portions of members 11 and 12 at the inner sides thereof by the screws 14 and extend some distance forwardly of member 12. While members 13 might be variously made, they are also shown as formed of angle bars having their horizontal flanges at the top and extending towards each other. A bar 15 extends between the forward ends of members 13, the same being shown as an angle bar having its horizontal flange secured to the top of members 13 by the screws 16 and having its vertical flange extending downwardly over the ends of members 13. A bar 17 extends transversely above and between the bars 13, being supported on spacing blocks or thimbles 18 and secured by headed and nutted bolts 19, said thimbles resting on bars 13. Bar 17 is illustrated as in the form of an angle bar, the horizontal flange of which rests on thimbles 18 and the vertical flange of which projects upwardly forwardly of

said thimbles. Bar 17 is provided with a series of spaced V-shaped notches in which are disposed respectively rope guide members 20. Members 20 are formed of angle bars having their angles directed upwardly with the bisector of each angle extending vertically. Members 20 are secured by welding or otherwise in bars 17 and the same are curved at a right angle thus having a forwardly projecting horizontal portion and a downwardly directed rear portion. Pawl members 21 are secured to the underside of portion 11a by headed and nutted bolts 22 and extend downwardly into the angles of members 20 respectively at the curved portion thereof. A horizontal brace member 23 extends betwen the vertical portions of members 11 and 12 at each side of the frame and a diagonal brace member 24 extends between said vertical portions at each side of the frame. A bar 26 is secured to the vertical portions of members 11 and 12 at one side thereof and as shown in Fig. 1 is bent outwardly and has a forwardly extending terminal portion 26a. A bar 27 is secured to the vertical portions of members 11 and 12 at the side opposite bar 26, the same extending forwardly and being apertured to receive one end of a cylindrical rod 28 which also extends through an aperture in portion 26a. A reel-carrying frame is provided, the same being formed by a U-shaped bar 30 having one end apertured to receive and be slidable on bar 28. The other side 30a of member 30 is bent at a right angle to extend substantially parallel to rod 28 and has a terminal portion 30b again bent at a right angle and apertured to receive rod 28 on which it is slidable. The side portions of member 30 are connected by a bar 31 connected to portion 30a by the rivets 32 and being bent at a right angle and connected to the other side of member 30 by the rivet 33. The base members 10 are extended forwardly and the vertical flanges thereof are cut away and an angle member 35 is secured to members 10 by the rivets 35a, member 35 extending between members 10 and some distance beyond member 10 at the right as shown in Fig. 1. A bar 36 is provided pivotally connected by rivets 37 to the outer side of member 30 and extending downwardly in a diagonal direction, being bent to extend vertically at its lower portion and pivotally connected at said lower portion by a rivet 38 to the end of a bar 39, which bar 39 is pivotally connected at its other end by rivet 40 to member 30a. A pin 41 is secured in member 39 and adapted to engage the upper side of member 30a. Member 30 has short bars or blocks 43 connected to the inner sides thereof adjacent its bight portion by the rivets 44. A shaft 45 is journaled in member 30 and blocks 44, the same having an outer threaded end for receiving a crank arm 46 to which a handle 47 is secured by the headed and nutted bolt 48 passing therethrough. A washer 49 engages the outer side of member 30, being secured by a nut 50 and a nut 51 is placed on the outer end of shaft 45 to hold crank arm 46 in place. A pair of washers 52 are disposed at the inner side of member 30. A rear end frame 54 forming part of the reel proper is provided which comprises radially extending flat bars 54a and spaced 90 degrees apart. Bars 54a have secured thereto by rivets 54b short bars 54c, said bars 54a and 54c being formed to surround shaft 45 and being firmly secured thereto by welding or any other suitable means. Bars 55 are provided shown as of simple flat form having rounded ends and these bars are the same in number as bars 54a and are pivotally connected thereto by rivets 56 some distance from shaft 45. Bars 55 form the central portion or core of the reel on which the coil of rope or similar material will be wound. Bars 55 are pivotally connected by rivets 57 at their forward ends to radially extending flat bars 58 which normally extend substantially at right angles to bars 55 and thus substantially parallel to bars 54a. Bars 58 extend inwardly of bars 55 and are pivotally connected at their inner ends by rivets 59 to a frame member 60. Frame member 60 as shown in Fig. 4 comprises four short bars 60a being of right angle formation and arranged about shaft 45 with their arms projecting outwardly therefrom, said bars being connected by the rivets 59 and 60b. Frame 60 is constructed and arranged to slide longitudinally on shaft 45. A sleeve 61 is disposed on shaft 45 engaging the inner end of frame 60 and a compression coiled spring 62 also surrounds shaft 45 engaging sleeve 61 at one end and rear frame 54 at its other end. A pin or cotter 63 extends through the outer end of shaft 45 to retain frame 60 in proper position.

In the operation of the particular embodiment of the invention illustrated coils of rope 70 indicated by dotted lines in Fig. 1 are disposed beneath the machine and the rope from each coil is brought upward and extends around and within the guide members 20. The rope passes under the end of the spring pawls 21 and it will be seen that said pawls will prevent any backward movement of the strand of rope. When a particular rope is to be wound on the reel it is brought forward and the end wrapped around the central portion formed by bars 55 and secured in any suitable manner. The reel at this time is in the position shown in Figs. 1 and 2. The members 36 and 39 extend downwardly and are placed in the angle of member 35. Pin 41 engages the top of member 30 and the reel is thus firmly supported in the position shown, the weight thereof holding members 36 and 39 firmly in the angle of member 35. It will be seen that the frame 30 swings about rod 28. It may also be mentioned that the reel is slidable longitudinally of rod 28 or transversely of the machine, frame 30 as stated sliding on rod 28. The reel can thus be brought into position to receive a rope from any one of the guides 20. The operator now rotates shaft 45 and the reel by turning the crank formed by members 46 and 47. When the rope has been wound on the central portion of the reel as desired the coil of rope is held by the rear end frame 54 and the front end frame formed by bars 58. When the desired amount of rope is wound on the reel the rope will be severed and the loose end secured in the coil in any suitable manner. To remove the coil of rope from the reel the operator takes hold of the bars 58 and swings the outer ends thereof outwardly. The bars swing about pivots 57, the inner ends thereof acting on frame 60 and moving said frame and sleeve 61 inwardly against the pressure of spring 62. The bars 58 are swung down to the position shown in Fig. 3. It will be seen that in this position said bars are substantially alined with bars 55 which have also moved about their pivots 56 so that bars 55 and 58 extend in converging relation from rear frame 54. Bars 58 are moved slightly beyond dead center position and will thus retain their position as they form sort of a toggle with bars 55. It will be seen that when bars 55 are thus moved they move away from the inside of coil 70a which has been wound on the reel and

all pressure on the coil is relieved. The coil can now be easily removed from the reel by merely sliding the same over the bars **58**. When the operator wishes to restore the reel to normal position he merely moves the outer ends of bars **58** away from each other a short distance and spring **62** then moves sleeve **61** and frame **60** to bring bars **58** to their normal position. Heretofore it has often been a very difficult task to remove a coil of rope from a reel. The coil grips the core part or central part of the reel very firmly and extreme force is often necessary to remove the coil. With the present structure all friction or grip of the coil on the reel is relieved and the coil can be very easily and quickly removed.

When the machine is not in use the reel can be swung to a position over the frame as indicated in dotted lines in Fig. 2. The frame **30** is moved to the right as shown in Fig. 1 so that bar **30***a* at its outer portion is beyond the base member **10**. The frame **30** can then be swung upwardly and rearwardly about rod **28** and will take the position shown in dotted lines in Fig. 2.

In Figs. 5, 6 and 7 a modification is shown in which the handle for the reel is placed on the front end of shaft **45** or on the end opposite that in which it is shown in Figs. 1 to 3. Shaft **45** is provided with a slot **45***a* extending centrally therethrough and open at the front end of the shaft. A crank arm **65** is provided and while this might be variously made, in the embodiment of the invention illustrated it is shown as formed of a flat bar having one end thereof disposed in slot **45***a* and pivotally connected to shaft **45** by the headed pivot rivet **66**. Arm **65** normally extends at right angles to shaft **45** as shown in Fig. 5 and carries a small lug **65***a* which engages one side of shaft **45**. Arm **65** is shown as twisted through 90 degrees and the same has secured adjacent its outer end a handle member **67**. A headed and nutted bolt **68** extends through handle **67** and arm **65**, securing handle **67** in place.

When the rope is to be wound on the reel the operator will turn the reel by taking hold of handle **67** and rotating shaft **45**. When the coil of rope is to be taken from the reel members **58** will be swung as already described and the crank arm **65** will be swung to the position shown in dotted lines in Fig. 5. The said coil when taken from the reel can thus be readily moved over the crank arm and handle. One advantage of having the crank on the front end of shaft **45** is that the operator does not have to walk around the reel after winding the rope thereon. The operation is thus made more rapid.

From the above description it will be seen that I have provided quite a simple and very efficient structure of reel on which rope or similar material may be wound and from which a coil of the wound material may be easily and quickly removed. The reel is rugged in construction and made from simple structural material. The reel has been amply demonstrated in actual practice, found to be very successful and efficient and has been commercially marketed.

It will, of course, be understood that various changes may be made in the form, details, arrangment and proportions of the parts, without departing from the scope of applicant's invention, which generally stated, consists in a device capable of carrying out the objects above set forth, in the parts and combinations of parts disclosed and defined in the appended claims.

This application is a division of applicant's copending application for "Rope winding and measuring machine," filed May 31, 1938, Serial Number 210,907, now Patent No. 2,238,067, for all parts common thereto.

What is claimed is:

1. A reel for winding rope or similar material having in combination, a central shaft, a rigid rear frame extending about said shaft and disposed in a substantially vertical plane, a central portion for receiving a coil of rope comprising circumferentially spaced members pivotally connected to said rear frame, a front end frame comprising circumferentially spaced bars respectively pivotally connected intermediate their ends to said last mentioned members, means including a member slidable longitudinally of said shaft for holding said bars in position in a substantially vertical plane, said bars being pivotally connected at their inner ends to said member and swingable away from said rear frame to move said member toward said rear frame for bringing said bars and said circumferentially spaced members into substantial alignment in converging lines extending away from said rear frame.

2. A reel for winding rope or similar material having in combination, a central shaft, a rear end frame disposed in a substantially vertical plane, a central portion comprising circumferentially spaced members extending substantially at right angles to said frame and a front end frame comprising circumferentially spaced bars normally disposed in a substantially vertical plane and pivotally connected intermediate their ends respectively to the front ends of said spaced members, a member slidable on said shaft to which the inner ends of said bars are pivotally connected and a spring surrounding said shaft and engaging said member and said rear end frame to urge said member away from said rear frame to hold said bars in a vertical plane, said bars being swingable to move their free ends away from said rear end frame and move said member toward said rear end frame against the tension of said spring to discharge a coil of rope from said central portion.

3. A reel for winding rope or similar material having in combination, a central shaft, a rear end frame secured to said shaft, a central portion about said shaft on which a coil of rope may be wound comprising circumferentially spaced members pivotally connected at their ends to said rear end frame, a front end frame comprising circumferentially spaced bars pivotally connected intermediate their ends to the outer ends of said members respectively, a member slidable on said shaft to which the inner ends of said bars are pivotally connected and yielding means on said shaft normally holding said last mentioned member in position away from said rear end frame with said spaced bars in substantially vertical position, said bars being swingable outwardly away from said rear end frame about their pivotal connection to said members to move said last mentioned member toward said rear end frame and bring said members and bars into substantially aligned and converging position extending away from said rear frame for discharging a coil of rope wound on said central portion.

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