March 25, 1958 G. W. BELL 2,828,091

GUIDE MEANS FOR REMOVING WIRE FROM STATIONARY REEL

Filed Sept. 21, 1956 2 Sheets-Sheet 1

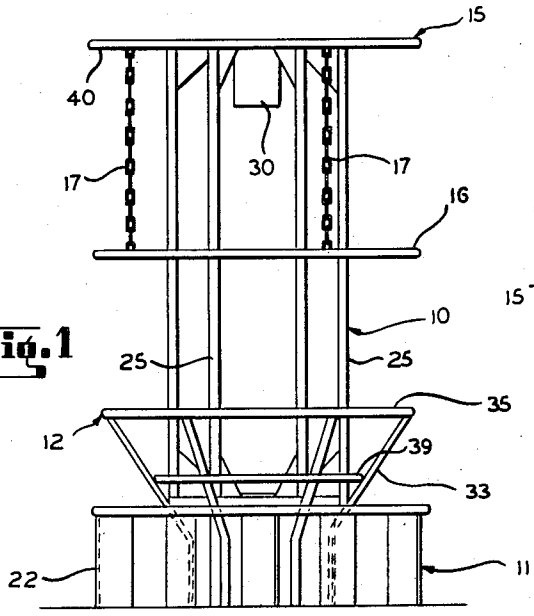


Fig. 1

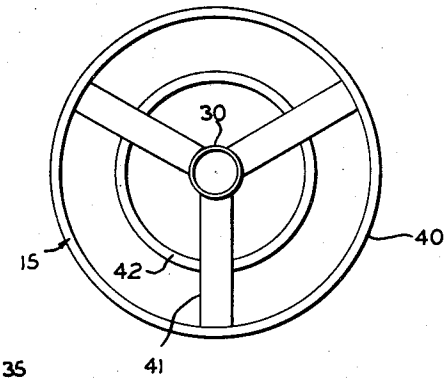
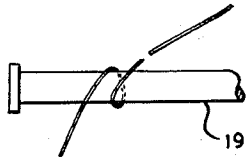


Fig. 8



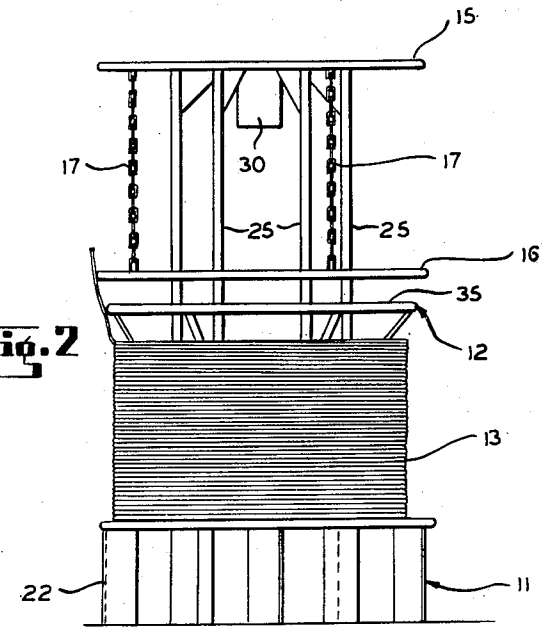


Fig. 2

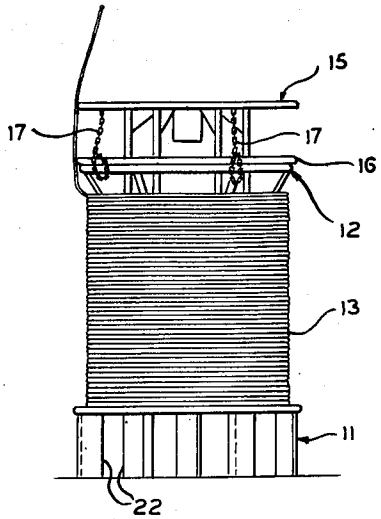


Fig. 3

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GUIDE MEANS FOR REMOVING WIRE FROM STATIONARY REEL

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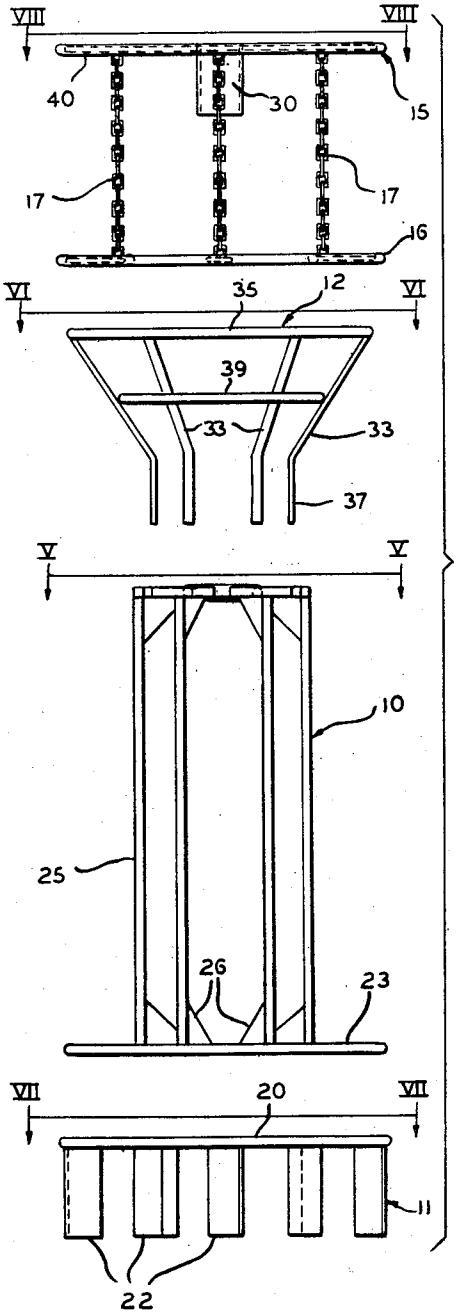


Fig. 4

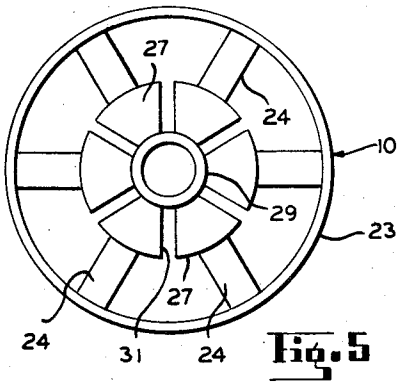


Fig. 5

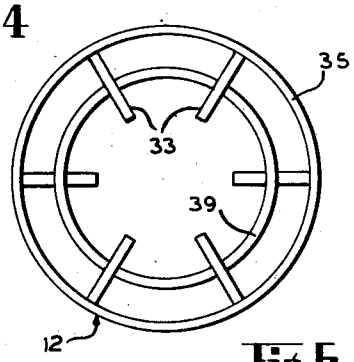


Fig. 6

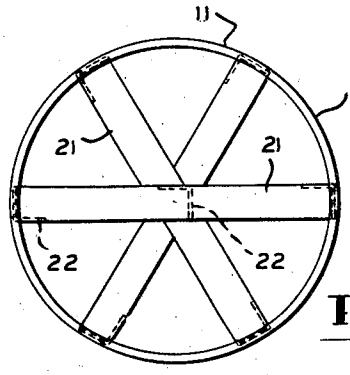


Fig. 7

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GUIDE MEANS FOR REMOVING WIRE FROM STATIONARY REEL

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Application September 21, 1956, Serial No. 611,150
3 Claims. (Cl. 242—128)

This invention relates to improvements in guiding devices for guiding wire for unwinding from a stationary reel.

Wire drawing machines are usually provided with coiling blocks at the discharge end of the machine upon which the finished wire is coiled. The coiled wire is usually removed from the block which rotates about a horizontal axis and is usually placed on a vertical axis reel from which it is unwound for further processing. Due to the necessity of removing the coil of wire from the coiling block and transferring it to an unwinding reel, the height of the coil has been limited. In order to avoid this transferring and to enable the coiling of wire into coils by relatively great length or height, the practice has developed of laying the wire onto a stationary coiling block, which is usually horizontal, and then directly transferring the wire from the stationary coiling block onto a vertically extending open stake reel, which is removed from the wire drawing machine and coiling device for further processing as in my Patent No. 2,629,564 dated February 24, 1953. The wire is then unwound from the stationary reel. While this process of coiling wire enables the wire to be coiled into far larger coils than has heretofore been possible, difficulty has been encountered in unwinding the wire from the stationary reel without kinking or snarling of the wire.

A principal object of the present invention is to remedy the foregoing difficulties by providing a simple form of wire guiding device forming a core for the coil of wire on its reel and maintaining the coil of wire in its coiled form, and guiding the wire to promote orderly uncoiling thereof, and to avoid kinking and snarling of the wire during uncoiling.

A further object of the invention is to provide a guiding device for guiding wire for unwinding from coils on stationary reels of relatively great vertical height by providing a movable core and guide for the coil of wire, progressing downwardly with the coil, as the wire is unwound therefrom and guiding the wire to be uniformly unwound from the reel without kinking or snarling.

A still further object of the invention is to provide a guiding device for guiding wire for unwinding from a stationary reel in which an open core and guide is provided, which is detachable from the reel, for mounting within the coil of wire wound thereon to form a core therefor, and to move downwardly with the coil of wire during unwinding thereof, and in which a series of wire guides are disposed above the open core and guide, the upper of which is stationary and the lower of which is movable downwardly with the open core and guide for a portion of downward travel thereof, to provide a guide for the wire to assure uniform guiding of the wire during the unwinding operation of the entire coil therefrom, the distance between adjacent guides of which is maintained sufficiently short to prevent kinking and snarling of the wire.

These and other objects of the invention will appear from time to time as the following specification proceeds and with reference to the accompanying drawings wherein:

Figure 1 is a view in side elevation of a reel and guiding device constructed in accordance with the invention showing the reel as being empty;

Figure 2 is a view in side elevation of the reel and guiding device shown in Figure 1, showing the reel partially full;

Figure 3 is a view in side elevation of the reel and guiding device shown in Figure 1, drawn to a reduced scale and showing the wire trained up from the reel and turned about an unwinding drum;

Figure 4 is an exploded view of the reel and guiding device shown in Figure 1;

Figure 5 is a plan view of the reel with the guiding device removed therefrom;

Figure 6 is a plan view of the guide and core for the reel;

Figure 7 is a plan view of the base for the reel; and

Figure 8 is a plan view of the top guide for the wire.

In the embodiment of the invention illustrated in the drawings, I have shown a reel 10 of the open stake type, mounted on a base 11 spacing the reel above the ground. I have also shown a guide and core 12 for a coil of wire 13, detachable from the reel and slidably placed on the reel after the coiling of the wire thereon, to engage within the coil of wire and form a core therefor and to move downwardly with the coil, as the wire is unwound therefrom, to provide a continuously downwardly moving core and guide for the wire during the entire uncoiling operation of the wire.

I have also shown a top guide ring 15 placed on the top of the reel after the operation of coiling the wire thereon, and have shown a guide ring 16 resting on the top of the core and guide 12 when the reel is full and moving downwardly with the core and guide 12 as the wire is unwound from the reel. Downward movement of the guide ring 16 is limited by chains 17 secured between the rings 15 and 16 to assure that the length of the wire guided during the unwinding operation will be sufficiently short to prevent kinking and snarling of the wire.

I have also diagrammatically shown in Figure 3, a fragment of a drum 19, spaced above the reel and the top guide ring 15, about which the wire may be turned and unwound from the reel, for further processing. It should here be understood that the drum 19 may serve as a guide for the wire from the reel or may be power driven to uncoil the wire from the reel, and that the wire may be wound on said drum or may be turned about said drum with one turn, and from there may pass through annealing, pickling, galvanizing or further stages.

The base 11 is herein shown as being in the form of a ring 20 formed from a rod bent and welded at its ends and braced by radially extending slats 21, which may be welded to said ring at their ends. The ring 20 is spaced above the ground on legs 22, shown as being in the form of angles and welded or otherwise secured to the slats 21 at their upper ends.

The reel 10 includes a ring 23 which may be placed on the ring 20 and may either be detachable from the ring 20 or may be welded thereto, if desired. The ring 23 is braced by radially extending slats 24, like the slats 21 and having vertically extending rods 25 extending upwardly therefrom and welded or otherwise secured thereto. The rods 25 are braced by gusset plates 26, welded or otherwise secured to said slats and the inner sides of said rods.

The reel 10 also includes a cap in the form of segments 27 welded to the upper ends of the rods 25 and extending radially inwardly therefrom to a collar 29, coaxial with the center of the reel, to which said segments are welded or otherwise secured. The inside of the collar 29 forms a guide for a sleeve 30 depending from the upper guide ring 15 and coaxial with the center thereof.

The spaces between the segments 27 form radially extending slots 31 for receiving spaced legs 33 of the core and guide 12, to accommodate said core and guide

to be placed within the coil of wire on the reel **10** and to move downwardly therewith, during uncoiling thereof.

The core and guide **12** is in the form of an open spider having a top guide ring **35** slightly smaller in diameter than the intermediate guide ring **16** and having the legs **33** welded or otherwise secured thereto and extending downwardly therefrom. The legs **33** are inclined inwardly from the periphery of the ring **35**, as they extend downwardly therefrom, to form a generally frusto-conical open spider engaging within the open top portion of the coil of wire, as shown in Figures 2 and 3, and also have vertically extending lower end portions **37** forming a core for the coil of wire and extending downwardly along the center thereof, when fully coiled on the reel, and maintaining a uniform core for the coil of wire during the entire unwinding operation. The sloping parts of the legs **33** are braced by an intermediate ring **39**, extending within the outer legs **33** and having the inner legs **33** extending inwardly thereof.

The top guide ring **15** is shown in Figure 8 as including a ring **40** having three radially extending slats **41** extending inwardly from the periphery thereof and welded or otherwise secured thereto. The radially extending slats **41** terminate at their inner margins at the sleeve **30** and are welded or otherwise secured thereto. The slats **41** are shown as being reinforced by an intermediate ring **42**.

The top guide ring **15** may thus be placed on the top of the cap or top of the reel with the sleeve **30** in registry with the collar **29** after the placing of the core and guide **12** within the coil of wire coiled on the reel **10**, as previously described, it being understood that when placing the top ring **15** on the top of the reel that the intermediate ring **16** is first placed on top of the core and guide **12**, for lowering movement therewith to the limit of the chains **17**. The chains **17** may be welded or otherwise secured at their opposite ends to the rings **15** and **16**, and may be of such a length as to space the intermediate guide ring **16** between the rings **35** and **15** sufficiently close to said rings to prevent kinking and snarling of the wire during the entire unwinding operation.

In operation of the unwinding device, assuming the reel **10** is carrying a full coil of wire extending from the base to substantially the top thereof, the core and guide member **12** is first placed on the top of the coil, with the legs **37** thereof in registry with the slots **31** and extending within the interior of the coil of wire and resting thereon. The intermediate guide ring **16** may then be placed on top of the core and guide **12** and the top guide ring **15** may be positioned on the top of the reel with its center sleeve **30** in registry with the collar **29**.

The wire may then be trained from the coil along the rings **35**, **16** and **15** and may be turned about the drum **19** as illustrated in Figure 3. During the uncoiling of the wire, the wire will move around the guide rings **35**, **16** and **15**, so spaced during the entire unwinding operation to uniformly guide the wire and prevent snarling and kinking thereof. At the same time the core and guide **12**, forming a core for the wire coil and maintaining the coil of the proper uniform form as the wire is uncoiled therefrom will drop with the coil during the unwinding operation to form a continuous downwardly moving core and guide for the wire to promote orderly unwinding from the coil. As the limit of downward movement of the intermediate guide ring **16** is reached, and the core and guide **12** continues on its downward travel, the intermediate guide ring **16** will then come into operation to guide the wire between the rings **12** and **15**, and assure guiding surfaces for the wire, spaced uniformly apart, and preventing any long unguided portions between the rings **12** and **15**, and thus facilitating the unwinding of the wire and preventing tangling thereof.

It will be understood that modifications and variations in the present invention may be effected without departing from the spirit and scope of the novel concepts thereof.

I claim as my invention:

1. In a wire guiding device for guiding wire taken off large horizontal stationary coils or wire from a position above the coil of wire, a stationary reel adapted to rest on the ground and having a plurality of spaced vertically extending stakes carrying a coil of wire for substantially the length thereof, a guide and core member having a core portion adapted to fit within the center of a coil of wire on said reel and forming a downwardly moving core therefor and having a guide ring spaced outwardly of said stakes and engaged by the wire and forming a guide therefor as the wire is unwound from the top thereof, a second guide ring at the top of the reel spaced outwardly of the stakes thereof, a third guide ring between said guide rings and movable downwardly along the reel upon downward movement of said core and guide, and means limiting downward movement of said third guide ring to provide a series of vertically spaced guides about which the wire is guided upon unwinding from the coil.

2. In a wire guiding device for guiding wire taken off large horizontal vertically extending coils of wire from a position spaced above the coil of wire, a stationary reel having a base adapted to rest on the ground and having a plurality of spaced upright stakes extending upwardly therefrom, a cap for said reel joining said stakes together and having radial slots extending inwardly therealong and having a central guide collar, a guide and core in the form of a generally frusto-conical spider having an upper guide ring and converging legs depending therefrom and fitting within said slots for insertion within the center of a coil of wire on said reel to rest thereon and form a core therefor, a top guide ring having a central depending sleeve fitting within said collar and cooperating with said guide ring of said core to guide the wire as it is drawn vertically therefrom, and a movable guide ring between said rings, moving downwardly with said guide and core and limited in downward movement therewith to provide an intermediate guide between said upper guide ring on said spider and said top guide ring, at least halfway between said top guide ring and said upper guide ring on said spider.

3. In a wire guiding device for guiding wire taken vertically from horizontally disposed coils of wire from above the top thereof, a stationary reel having a base adapted to rest on the ground and having a plurality of spaced upright stakes extending vertically therefrom, a cap joining said stakes together at the top thereof and having a central collar and segment pieces joining said stakes with said collar and spaced apart to form a plurality of radial slots extending inwardly to said collar, a guide and core movable downwardly along said stakes and formed of a generally frusto-conical spider having an upper guide ring and a plurality of legs converging and depending therefrom adapted to fit within said slots for engagement within a coil of wire on said stakes, to form a core and guide for the wire movable downwardly with the coil upon unwinding of the wire therefrom, a top guide ring having a central sleeve registerable within said collar to detachably hold said ring thereto and an intermediate guide ring resting on said guide ring of said guide and core and movable downwardly therewith, and means limiting downward movement of said intermediate guide ring to provide spaced guides for unwinding the wire vertically from said coil, spaced sufficiently close together to avoid kinking and snarling of the wire.

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