Nov. 3, 1959 O. HAUGWITZ 2,911,166

SYSTEM FOR CONTINUOUSLY REELING WIRE FROM DRUM CONTAINERS

Filed July 23, 1956 2 Sheets-Sheet 1

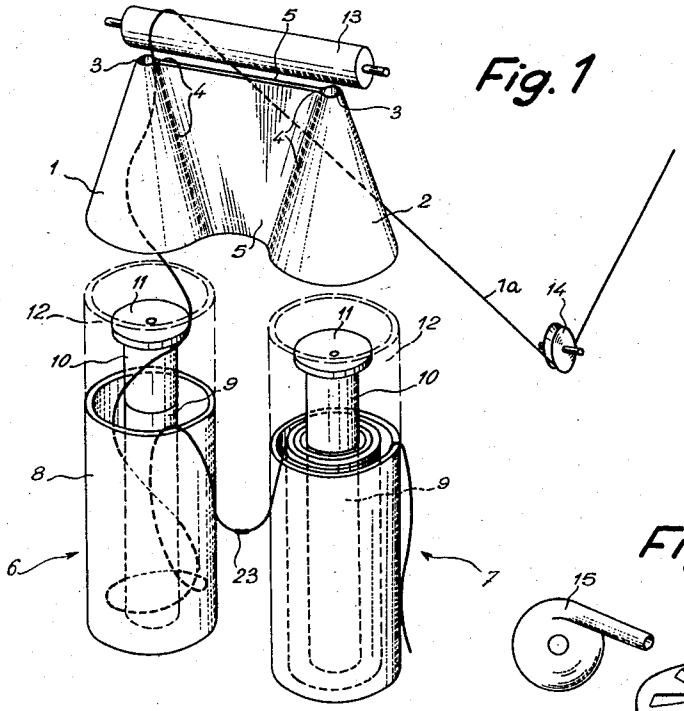

Fig. 1

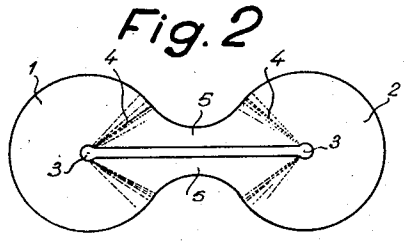

Fig. 2

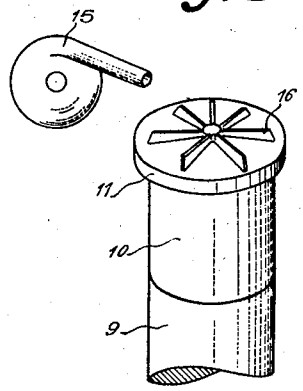

Fig. 3

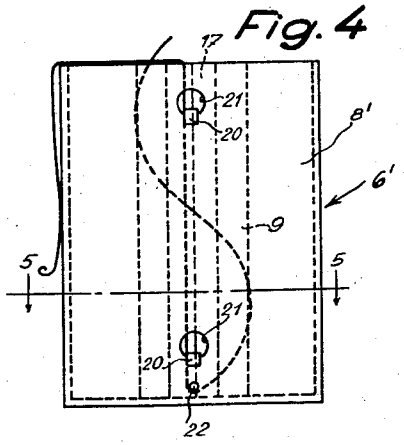

Fig. 4

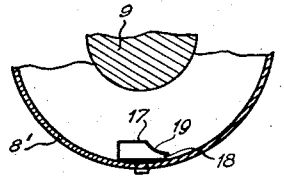

Fig. 5

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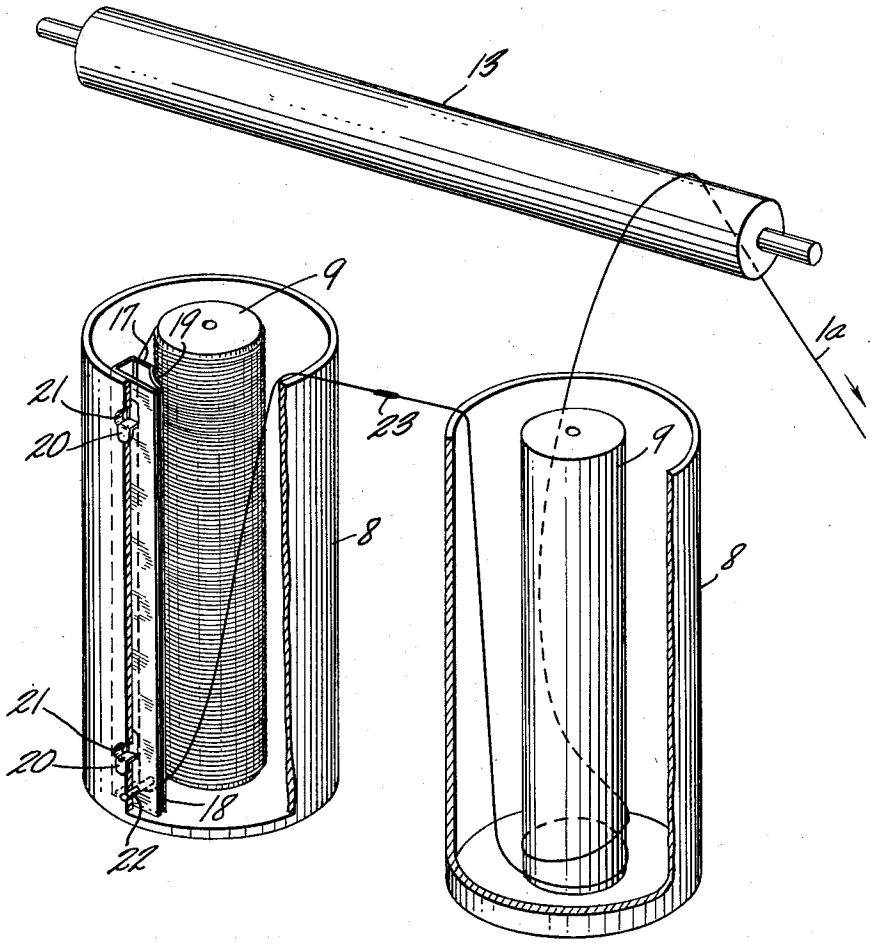

FIG. 6.

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SYSTEM FOR CONTINUOUSLY REELING WIRE FROM DRUM CONTAINERS

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2 Claims. (Cl. 242—128)

This invention relates to systems for reeling wire and the like from drum containers in which the wire is stored. While it has been possible heretofore to receive wire in a continuous unbroken manner into storage drums or containers, no system has so far been devised to the applicant's knowledge for reeling the stored wire from such drums towards some point of use, without having to interrupt the reeling process on exhaustion of each reel in order to effect a connection, as by welding, with the wire stored in the succeeding reel. This resulted in a loss of time and was particularly objectionable in cases where the wire was to be subjected to some continuous processing such as continuous vulcanization, since each shutdown will then entail a scrapping of material and inefficient operation of the vulcanizing apparatus.

It is an object of this invention to permit a continuous and uninterrupted reeling of wire, thread, or the like, from a succession of storage reels. Another object is to provide an improved wire reeling system for use in connection with reels of wire stored in drum containers. A further object relates to the prevention of kinks and loops in the wire during reeling operations.

In one aspect, the invention provides a wire reeling system comprising a guide casing in the form of a pair of spaced cones each slotted down from its apex along a generatrix thereof, with a channel interconnecting the slots in both cones to provide a continuous passage therebetween, each cone being arranged to overlie in coaxial relationship a drum containing a reel of wire, and the two cones being adapted for alternate use in cooperation with the respectively related reels of wire to permit a continuous reeling of the wire from each reel through said cone, the wire being adapted to shift of its own accord from one cone through said passage and to the other cone as the reeling operation is transferred from an exhausted reel to a full reel.

The above and further objects, features and advantages of the invention will appear from the ensuing disclosure with reference to the accompanying drawings, given by way of illustration but not of limitation, and wherein:

Fig. 1 is a general perspective view of an improved reeling system;

Fig. 2 is an overhead plan view thereof;

Fig. 3 shows a detail of an embodiment of the invention;

Fig. 4 illustrates a front view of a drum provided with a kink preventing device according to the invention;

Fig. 5 is a partial cross sectional view of the device on line 5—5 of Fig. 4; and

Fig. 6 is a perspective view of the general arrangement shown in Fig. 1 but with the storage units in reversed relationship with exterior parts omitted to show details of construction of the sleeve 17 and the associated elements shown in Figs. 4 and 5.

Referring to Figs. 1 and 2, it will be seen that the invention relates to the type of wire storage means exemplified by the two storage units 6 and 7. Each storage unit comprises an outer cylindrical casing or drum 8 coaxially surrounding a cylindrical post 9, the reel of wire being stored between the post 9 and the drum 8.

In accordance with the invention, there is provided a guide system which is shaped to provide a pair of spaced parallel upstanding cone portions 1 and 2, each having a perforated top as shown at 3 and having a slot extending from the top perforation down a generatrix of the cone. The slotted generatrices of the two cone portions are face to face and their sides are interconnected by wall portions 5 merging smoothly at 4 with the cone surfaces and defining a continuous passage between the recesses of the two cone portions. The upper side of this passage is formed with a straight slot leading from one apical perforation 3 to the other.

Extending above the guide casing is a rotatable idler roller 13 which extends a short distance above and parallel to the upper slot in the casing, and in such a position that the vertical plane passing through said slot is substantially tangent to said roller.

Preferably the inner post 9 of each storage unit 6, 7 is provided with an upper extension 10 carrying a rotatable head 11 of increased diameter; if desired the outer casing 8 may be extended by a portion 12 surrounding said head.

The system operates as follows:

The upper end of the wire 1a from the left-hand reel is led upwards out of the drum 8 and up through the related cone 1, and is then led out through the top perforation 3 therein, around the idler roller 13, and thence over a guide pulley 14 to the point of use, not illustrated. As the wire is drawn out of the storage unit it frictionally engages the rotatable head 11 and drives it in rotation; thus, in case of abnormal tension in the wire the inertia of the revolving head 11 will contribute to the ready withdrawal of the wire by a flywheel effect. The outer extension 12 of the drum casing may be useful in preventing a tendency of the wire to balloon out.

During the reeling of storage unit 6, a full unit 7 is positioned under the other cone, and the upper end of the wire stored in unit 7 is joined with the lower end of the wire stored in unit 6, as by a weld or the like 23.

After the bottommost turn of wire has been withdrawn from the left-hand reel 6, the topmost turn of the wire in the right-hand reel 7 is drawn out, and it will be apparent that owing to the inherent geometry of the system the length of wire passing through the guide casing will automatically be transferred from the left to the right-hand cone through the intermediate passage 5. The reeling process will then continue in a similar way for the right-hand reel 7, and during this stage of the cycle there is ample time for substituting a fresh reel for the exhausted reel 6 and connecting the topmost end of the wire in this fresh reel with the bottommost end of the wire in the reel 7.

It is sometimes found expedient in order to promote smooth withdrawal of the wire, to impart a positive rotational drive to the rotatable heads 11 at a rate somewhat higher than the tangential velocity of the wire withdrawn from the reel. Any suitable means may be used for driving the head 11, as by an electric motor which may be conveniently housed in the cylindrical extension 10. However, an advantageous means for driving the head is illustrated in Fig. 3, and comprises a small blower fan 15 adapted to discharge a small jet of high-velocity air against a number of radial vanes 16 projecting from the upper surface of the head 11.

In connection with some types of flexible wire or thread, kinks are apt to be formed and are objectionable since they are liable to cause breakage during some sub-

sequent stage of the processing of the wire. To prevent the formation of kinks during reeling it is simply necessary to ensure at all times that a small but definite tension is present in the wire. Normally, the tension produced by the friction of the wire against the walls of the casing 8 and the weight of the wire in the casing will be sufficient to prevent kinks from developing. However, a somewhat critical stage in the process occurs at the time one reel has been completely exhausted so that the remaining length of wire in the reel becomes approximately parallel to the vertical length that is joined with the upper end of the other reel. At this point the wire will readily form itself into an S or figure-eight loop and produce a kink.

This condition may be prevented by the means now to be described in connection with Figs. 4 to 6 which shown a modified construction of reel 6'. Prior to the storage of wire in drum 8', an end portion of said wire is threaded into a slotted sleeve 17, and the sleeve is secured in the drum so as to have one of its walls extending along an internal generatrix thereof, as by means of hole-and-hook connecting means 20—21. A slot 18 extends along one vertical side of the sleeve and the sleeve has a spring plate 19 defining one longitudinal wall thereof adjacent said slot. Near the lower end of the sleeve a cross pin 22 is arranged to be removably inserted. The wire is passed as shown in Fig. 4, first under the pin 22 then up through the sleeve and out the upper end thereof, and is pulled upwards so as to remove any slack in the wire between the receiver head of the wire storing system (not shown) and the pin 22. After the receiver head of the storage system has begun rotating and wire has commenced to be coiled up in the bottom of the storage unit, the cross pin 22 is pulled out. With this arrangement it will be apparent that during the subsequent reeling process, on withdrawal of the bottommost coil of wire from the drum, the wire will be constrained to rise up along the slot 18 of the sleeve 17 and will be subjected by the spring wall 19 thereof to a pressure which will maintain the requisite tension thereof to prevent the occurrence of kinks.

What I claim is:

1. A wire reeling system comprising a guide casing shaped to provide a pair of spaced cone portions each having a perforate apex and a slot along a generatrix of the cone portion to provide slotted generatrices disposed face to face, and a pair of wall portions at each side of each slot providing a continuous passageway between the inner recesses of both cone portions, the top of said passage being open to provide a continuous opening between the apices of the cone portions, a pair of storage units each comprising a cylindrical drum casing and an axial post, said units being disposed under the respective cone portions coaxially therewith, and each storage unit containing a reel of wire with the ends of the reels of both storage units interconnected, whereby wire drawn out from the reel of one unit and up through the related cone portion and out the perforate apex thereof will be guided by said wall portions to the other cone portion on exhaustion of said last-named reel, a vertical sleeve secured within the drum casing of at least one of said storage units, said sleeve having a slot and having a spring wall forming one side of said slot and normally tending to close said slot and adapted to exert pressure on wire reeled in said drum casing as a coil of said wire is drawn through said sleeve.

2. A wire reeling system comprising, a guide casing shaped to provide a pair of spaced cone portions each having a perforate apex and a slot along a generatrix of the cone portion to provide slotted generatrices disposed face to face, and a pair of wall portions at each side of each slot providing a continuous passageway between the inner recesses of both cone portions, the top of said passage being open to provide a continuous opening between the apices of the cone portions, a pair of storage units each comprising a cylindrical drum casing and an axial post, said units being disposed under the respective cone portions coaxially therewith, and each storage unit containing a reel of wire with the ends of the reels of both storage units interconnected, whereby wire drawn out from the reel of one unit and up through the related cone portion and out the perforate apex thereof will be guided by said wall portions to the other cone portion on exhaustion of said last-named reel, a vertical sleeve secured within the drum casing of at least one of said storage units, said sleeve having a slot and having a spring wall forming one side of said slot and normally tending to close said slot, and a cross pin removably extending through the lower portion of said sleeve adapted to receive a length of wire therearound.

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