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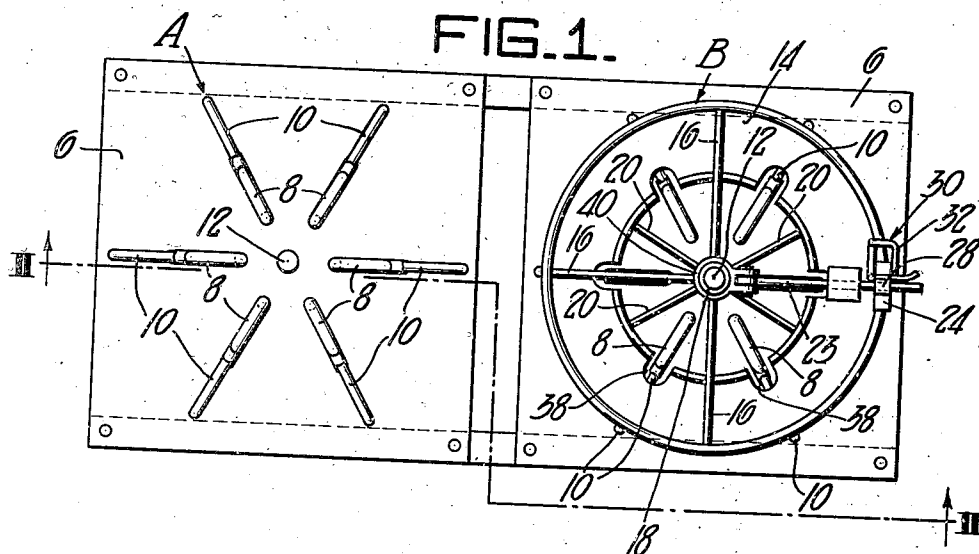
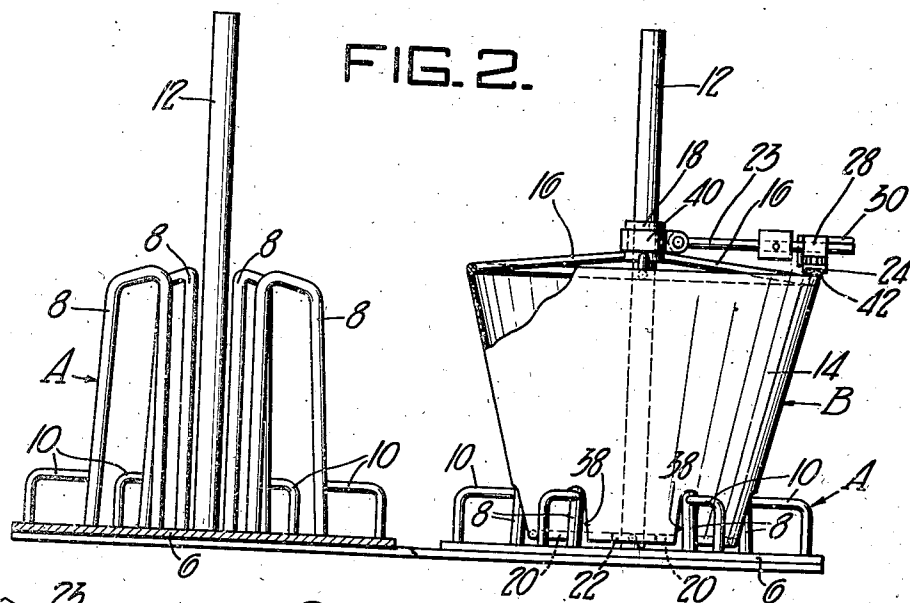
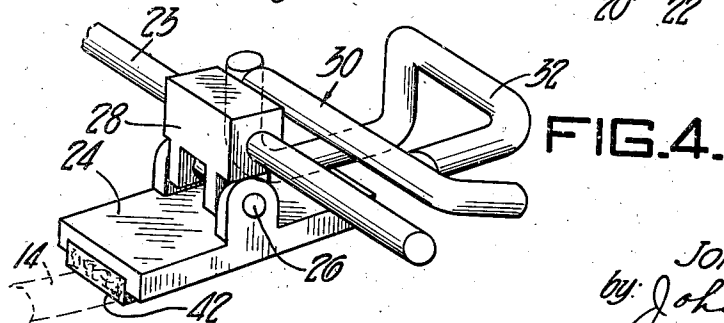
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2,390,158

REEL FOR WIRE DRAWING MACHINES

Filed June 26, 1944

2 Sheets-Sheet 1



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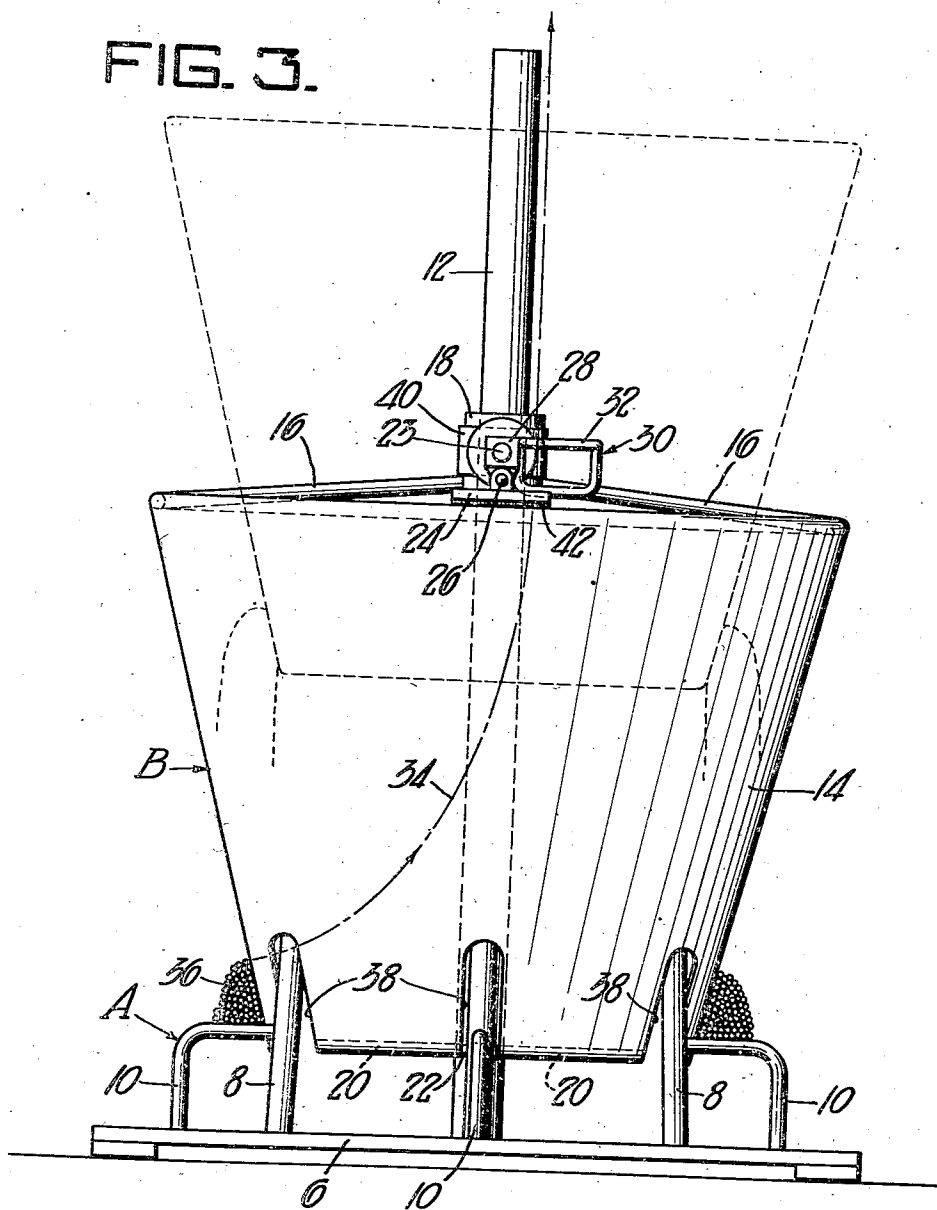
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FIG. 3.



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UNITED STATES PATENT OFFICE

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REEL FOR WIRE-DRAWING MACHINES

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3 Claims. (Cl. 242—128)

In accordance with the present invention, there are provided certain improvements in a pay-off reel for metal wire, which is particularly advantageous for use in connection with high speed wire drawing machines.

The improved reel of the present invention can be used in pairs, or it can be used singly. The reels are used in pairs in order to make it possible to operate a wire drawing machine continuously without necessitating the shut down of the machine when one bundle of wire becomes exhausted. When using a pair of reels it is possible to weld the last end of the bundle of wire being paid-off to the leading end of a second bundle, so that when the last end of the first bundle is reached, the second bundle will start to pay-off automatically without the necessity of stopping the wire drawing machine.

Revolving reels have been used for the purpose of holding the bundles of wire being drawn, but such revolving reels are open to the objection that they must be braked to prevent the reel from traveling at a faster rate of speed than the wire drawing machine, and even when suitably braked, snarls and kinks of wire occur very frequently because of the freedom with which the convolutions of the coil are allowed to remove themselves from the top of the bundle.

The present invention has for one of its objects the provision of an improved pay-off reel which will receive and support a coiled bundle of wire, the improved reel embodying a construction wherein the top convolutions of the bundle are restrained continuously as the wire is paid-off from the bundle, this wire being unwound smoothly from the bundle under a controlled tension which provides uniformly smooth unwinding of the wire from the bundle, and delivers the wire free from kinks and snarls to the processing machine.

The invention will be understood more readily by reference to the accompanying drawings, in which

Figure 1 is a plan view of the apparatus embodying the features of the present invention, the view showing a pair of reels of the improved construction, the left hand reel as viewed in Figure 1 being shown in condition for receiving the bundle of wire, while the right hand reel as viewed in Figure 1 is shown in assembled position;

Figure 2 is a sectional elevation taken on the line II—II of Figure 1, a portion thereof being shown broken away;

Figure 3 is an enlarged elevation of one of the

improved reels of the present invention, showing a bundle of wire on the reel with wire being withdrawn therefrom; and

Figure 4 is a perspective view showing wire distributor instrumentalities employed in conjunction with the reel.

Referring more particularly to the drawings, it will be seen that each reel consists essentially of two units, A and B. Unit A consists of the following parts, arranged as shown:

A base plate 6 of unit A is provided, and for each reel there are provided as shown, six inverted U-shaped uprights 8. L-shaped members 10, which serve as supports for the bundles of wire, have their extremities welded to the base plate 6 and the outer legs of the inverted U-shaped uprights 8. Positioned in the center of base plate 6 and equidistant from the inverted U-shaped uprights 8, is a rod member 12 which extends upwardly from the base plate 6.

Unit B consists of an open cone-shaped member 14 made from sheet steel, across the open top of which are arranged spokes 16, which carry a hub 18 at their inner ends, the outer ends of which spokes are welded to the top edge of the cone 14. The bottom portion of the cone carries spokes 20 and a hub 22.

Rotatably mounted on upper hub 18 is a pay-off arm 23 adjacent to the outer end of which is a shoe 24, which is pivoted at 26 to a bracket 28. Also mounted in bracket 28 is the looped wire guide 30 through the loops 32 of which passes the wire 34 from the bundle 36.

The bottom of the cone 14 is provided with slots 38 corresponding to the uprights 8 into which these uprights are received when the cone is placed upon the unit A. The bottom of the cone 14 is the small end, and the upwardly flaring side of the cone retains the turns of the bundle of wire 36 against uncontrolled movement, and prevents snarling and kinking of the wire being unwound from the bundle.

The operation of the reel is as follows:

A loosely coiled bundle of wire 36 is positioned over the inverted U-shaped uprights 8 of unit A, and the unit B composed of the cone 14 and the pay-off arm assembly turnably mounted on the upper hub 18 of the cone 14, is placed on the bundle of wire as is indicated by the dotted lines in Figure 3. The small end of the cone member 14, provided with the slots 38, is placed downward and enters into the coiled bundle 36, engagement of the coil 36 with the outwardly flaring side of the cone member 14 supporting the cone member while the turns of wire in the coil 36 are re-

strained against uncontrolled movement by the outwardly flaring side of the cone member 14. The cone member 14 is placed on the coiled bundle of wire with the slots 38 aligned with the U-shaped uprights 2. The L-shaped members 10 form seats for the coil 36 upon which the coil 36 rests.

The leading end of the wire from the coil 36 is threaded through the loop 32 of the wire guide 38, and thence over a guide sheave (not shown) and thus into the wire drawing machine (not shown).

The pull exerted by the wire drawing machine causes the wire to rotate the arm 22, which is turnably mounted on hub 18 of the cone 14 through a bracket 40. The arm 22 carries the shoe 24, which is provided with a friction surface 42, made from brake lining, engaging the top edge of the cone 14, and rides on this top edge, convolutions of wire thus being unwound smoothly from the top of the coiled bundle 36.

As the wire is unwound from the coiled bundle 36, and the bundle thus diminishes in size, the cone member 14, due to its own weight, drops as the coiled bundle thus diminishes in size, and maintains a constant uniform pressure on the upper convolutions of the bundle, thereby preventing snarls from forming in the wire as it is withdrawn.

I claim:

1. a reel adapted to hold a coiled bundle of wire and to supply wire from the said coiled bundle to a wire processing machine, which comprises in combination, a holding unit for receiving the coiled bundle of wire, and a compression unit for retaining the coiled bundle of wire against unrestrained movement tending to produce snarls and kinks in the wire, the holding unit including a base plate, a plurality of upstanding bundle-receiving members adapted to hold and to support a coiled bundle of wire placed thereon, and an upstanding guide member, and the compression unit including a compression member slidably mounted on the upstanding guide member of the holding unit, the said compression member being adapted to enter into the coiled bundle of wire on the holding unit and to exert a restraining pressure thereon for holding the wire in the bundle against uncontrolled movement and also being adapted to continuously follow the said bundle as it recedes responsively to wire being unwound therefrom for continuously exerting uniform restraining pressure on the wire, and means for unwinding the wire from the coiled bundle responsively to tension exerted on the wire by the wire processing machine.

2. A reel adapted to hold a coiled bundle of wire and to supply wire from the said coiled bundle to a wire processing machine, which comprises, in combination, a non-rotative holding unit for receiving the coiled bundle of wire, and a compression unit for retaining the coiled bundle of wire against unrestrained movement tending to produce snarls and kinks in the wire, the holding unit including a plurality of upstanding inverted U-shaped bundle-receiving members adapted to hold and to support a coiled bundle of wire placed thereon, a base for mounting the said members in spaced relation, and an up-

standing guide member mounted on the said base equidistant from the inverted U-shaped bundle-receiving members, the compression unit including an inverted frusto-conical non-rotative compression member slidably mounted on the upstanding guide member of the holding unit, the said inverted cone-shaped compression member being adapted to enter into the coiled bundle of wire on the holding unit and to exert a restraining pressure thereon for holding the wire in the bundle against uncontrolled movement, and also adapted to continuously follow the said bundle as it recedes responsively to wire being unwound therefrom for continuously exerting uniform restraining pressure on the wire, there being slots in the lower end of the inverted frusto-conical compression member for registering with the inverted U-shaped bundle-receiving members for enabling the compression member to seat on the said bundle receiving members during unwinding of last portions of the coiled bundle of wire, and rotary means mounted on the compression member for unwinding wire from the coil responsively to tension imparted by the wire processing machine.

3. A reel adapted to hold a coiled bundle of wire and to supply wire from the said coiled bundle to a wire processing machine, which comprises, in combination, a non-rotative holding unit for receiving the coiled bundle of wire and a compression unit for retaining the coiled bundle of wire against unrestrained movement tending to produce snarls and kinks in the wire, the holding unit including a plurality of upstanding inverted U-shaped bundle-receiving members adapted to hold and to support a coiled bundle of wire placed thereon, a base for mounting the said members in spaced relation, means associated with the said U-shaped bundle-receiving members for forming seats for the said coiled bundle of wire for elevating the bundle from the said base, and an upstanding guide member mounted on the said base equidistant from the inverted U-shaped bundle-receiving members, the compression unit including an inverted frusto-conical compression member slidably mounted on the upstanding guide member of the holding unit, the said inverted frusto-conical compression member being adapted to enter into the coiled bundle of wire on the holding unit and to exert a restraining pressure thereon for holding the wire in the bundle against uncontrolled movement, and also adapted to continuously follow the said bundle as it recedes responsively to wire being unwound therefrom for continuously exerting uniform restraining pressure on the wire, an upper hub on the inverted frusto-conical compression member, slots in the lower end of the said compression member for engaging the inverted U-shaped bundle-receiving members for enabling the compression member to seat on the said bundle-receiving members during unwinding of last portions of the coiled bundle of wire, and an unwinding arm rotatably mounted on the hub and actuated by tension applied to the wire by the wire processing machine for unwinding wire from the coiled bundle.

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