Sept. 27, 1966 L. R. CROW 3,275,264

WIRE UNREELING AND TENSIONING DEVICE

Filed Sept. 24, 1964 2 Sheets-Sheet 1

Fig. 1.

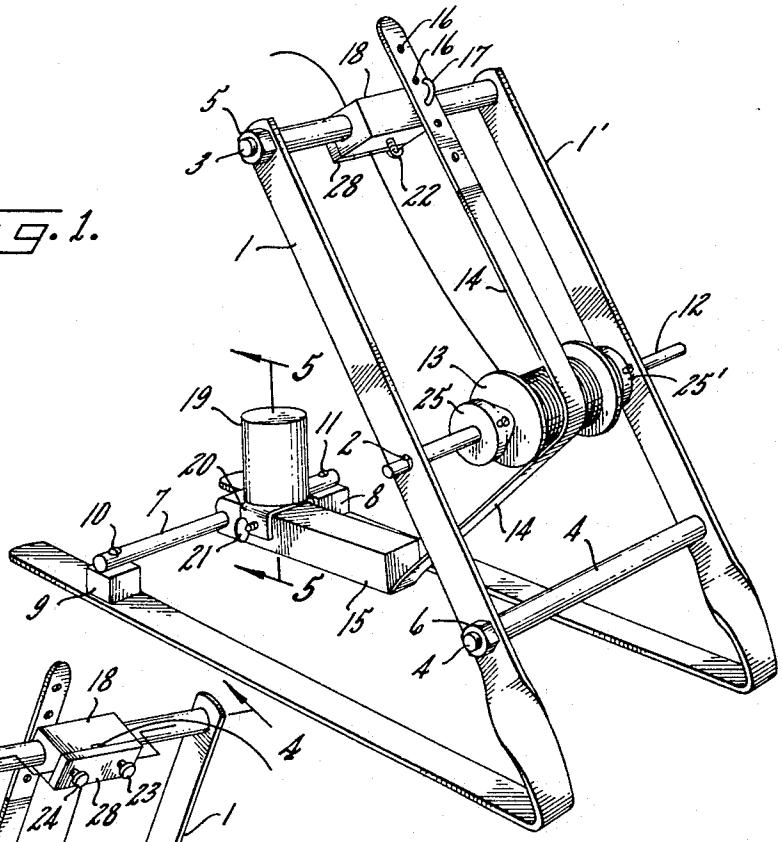
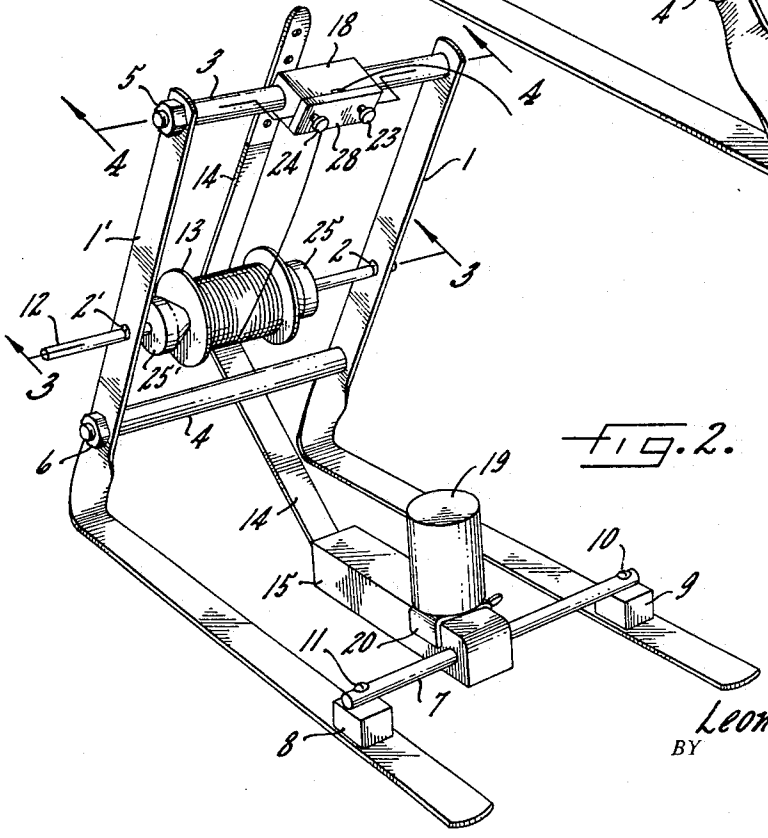


Fig. 2.



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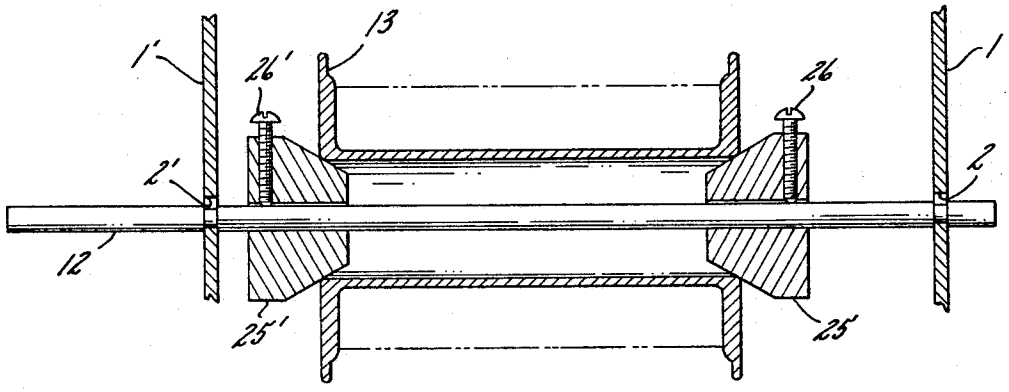


Fig. 3.

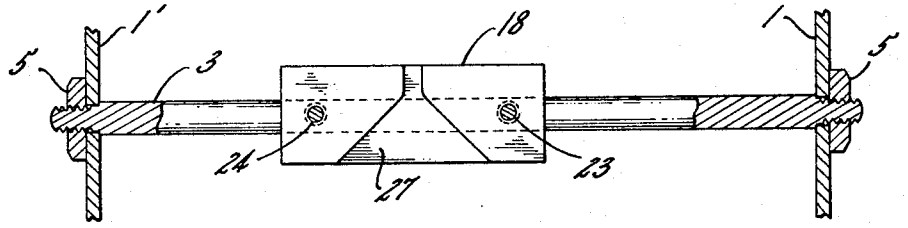


Fig. 4.

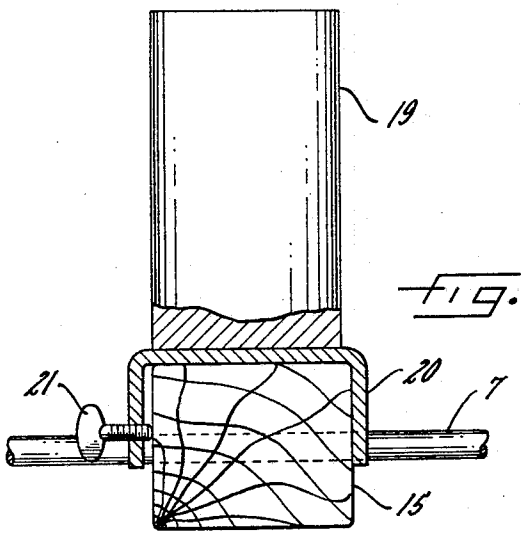


Fig. 5.

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3,275,264

WIRE UNREELING AND TENSIONING DEVICE

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Filed Sept. 24, 1964, Ser. No. 398,927
9 Claims. (Cl. 242—129.8)

The present invention relates to a wire unreeling device and particularly to a device for unreeling magnet wire or other insulative wire as it is being fed into a coil winding device or machine. The instant invention applies especially to and meets requirements of small coil winding shops; school electrical training shops; physical science laboratories of schools having a somewhat limited number of coils to wind; industrial experimental laboratories having requirements for various types, styles and sizes of coils in experimental quantities; as well as the fact that the invention will find many other applications almost too numerous to mention. This device meets the needs in which a simple inexpensive coil or bobbin holding, unreeling and tensioning outfit is needed.

By virtue of the instant invention, the applicant has provided for a novel wire unreeling and tensioning means having only a few simple inexpensive components that achieve the desired results conveniently and inexpensively.

The applicant's invention not only comprises a small number of individual parts but the entire unit consists of conveniently arranged grouping of components making for a compact device requiring a minimum of space in a shop or laboratory.

Accordingly, the principal object of the present invention is to provide for a compact, inexpensive, foolproof means of unreeling wire, and more specifically, magnet wire, and at the same time provide adequate means of applying the necessary tension on the spool of wire being unreeled and to also provide the necessary desired tension on the wire to the winding device using the wire.

Other objects and a better understanding of the invention will become more apparent from the following description taken in conjunction with the accompanying drawings wherein:

FIGURE 1 is a rear perspective view of the invention.

FIGURE 2 is a front perspective view of the invention.

FIGURE 3 is an enlarged horizontal section taken on the line 3—3 of FIGURE 2.

FIGURE 4 is a fragmentary enlarged horizontal section taken on the line 4—4 of FIGURE 2; and

FIGURE 5 is an enlarged vertical section taken on the line 5—5 of FIGURE 1.

Other objects and a still better understanding of the invention will become more apparent from the following description taken in conjunction with the accompanying drawings.

FIGURES 1 and 2 disclose the principal features of the invention in which FIGURE 1 is a back side elevation view while 2 is a front elevation view of the device. These figures show the general features of the instant invention in which the main holding or supporting structure consists of two side brackets **1** and **1'** formed of any suitable material such as strap iron. The side brackets **1** and **1'** are bent so that a portion of the strap of each becomes a foot projecting in a manner to act as a base for the unreeler.

Brackets **1** and **1'** are each provided with holes **2** and **2'** as shown in FIGURES 1 and 2. Rods or studs **3** and **4** are each provided with threads at their ends and with shoulders thereon so that when the threaded ends of studs **3** and **4** are passed through and are in engagement with said holes that nuts **5** and **6** placed thereon together with similar nuts placed on the opposite ends of said studs **3** and **4** and tightened against

end brackets **1** and **1'** will pull said shoulders into secure engagement with the sides of end brackets **1** and **1'** as shown in FIGURE 4. Thus end brackets are made to become a rigid and secure supporting structure for the unreeler.

However, the frame structure is further secured more rigidly by a rod **7** which is mounted on blocks **8** and **9** and to the end brackets by machine screws **10** and **11** which pass through rod **7** and blocks **8** and **9** and into threaded engagement with the feet of the end brackets. A bar **12** is provided for holding the spool of wire which is to be unreeled so that said spool is rotatable thereon. The bar **12** engages with holes **2** and **2'** provided in each end bracket so that by such arrangement the coil of wire placed thereon is supported there between the two end brackets in a manner that it is free to rotate on said bar **12**. Bar **12** is provided with notches therein at a correct distance apart so that they engage with holes **2** and **2'** in a manner that the bar **12** will not slide out of the spool **13** as the spool turns or revolves thereon.

In unreeling a spool of wire it becomes necessary to provide some sort of braking arrangement of the spool to prevent the wire thereon from continuing to unreel if for any reason the pulling tension on the wire is suddenly stopped. Suppose, for illustration, the coil winder that is pulling the wire from the unreeler is stopped suddenly; then the spool of wire, under its own momentum, will continue to unroll of its own accord and unwind wire into a jumbled mess.

In order to provide a simple inexpensive means for this necessary braking effort on the spool of wire, applicant provides a braking means consisting of a flexible strap of cloth, leather or other suitable material **14** fastened to a block **15** of some appropriate material such as wood. The block **15** is provided with a hole drilled through the end opposite the one to which the strap is secured; said hole engages with rod **7** and is free to revolve or turn thereon. The other end of the strap **14** is provided with a number of holes **16**, any one of which can be slipped over the end of a hook **17**. Said hook **17** is secured to a block **18** of any suitable material. Block **18** is further provided with a hole therethrough; said hole being of proper size to engage with and slip over stud **3** and is freely rotatable thereon.

Block **15** is provided with a movable weight **19** thereon; said weight is provided with a U-shaped clamp **20** at its base so that the weight is slidable thereon and therealong on top of block **15**. Thumb screw **21** is provided in the U-shaped clamp **20** to securely fasten it at any desired position along block **15**. A spool of wire placed on bar **12** may have any desired degree of braking leverage applied to it by placing the flexible strap **14** under the spool of wire with the proper hole in its free end in engagement with the hook **17**. As the weight **19** is moved along the block **15** farther from the fulcrum hole in block **15** more leverage is exerted on the strap **14** thereby transferring more braking leverage on the spool of wire. In this manner, any desired degree of braking can be applied to various sizes of spools of wire by a choice of the correct holes selected at the end of the flexible strap **14** together with the correct adjustment of the weight **19** in relation to the fulcrum of the block as a lever.

As the wire is fed from the unreeler to a coil winding device or machine it becomes necessary to provide some means on the unreeler to adjust the tension of the wire between the unreeler and the winding machine. For this requirement, applicant provides an insulative strip **28** such as fibre or wood secured to the block **18**, which in turn is rotatably secured on stud **3** by use of thumb screw **22**. The insulative strip **28** is adjustably secured to block **18** by two knurled machine screws **23** and **24** which project

through holes in insulative strip **28** and in engagement with threaded holes in block **18**. The wire from the unreeler to the winding device is then placed between the insulative strip **28** and the block **18** and any desired degree of tension may be placed upon the wire by tightening or loosening the knurled screws **23** and **24**.

FIGURE 3 taken along line **3**—**3** of FIGURE 2 shows two cone-shaped or tapered round blocks **25** and **25'** of any suitable material such as wood and since the blocks are tapered they will fit and can be adjusted to fit snugly within various size spools of wire so that when properly adjusted they may be secured to shaft **12** by threaded machine screws **26** and **26'**.

FIGURE 4 taken along line **4** of FIGURE 2 shows the tensioning block **18** with a tapering thin groove **27** shown therein as a channel through which wire is to be fed through the necessary angle from end to end of the spool as the wire is unreeled, also this figure shows in detail how the stud **3** is secured to brackets **1** and **1'** by nuts **5**.

FIGURE 5 taken along line **5** of FIGURE 1 shows the rod **7** and the manner of placement of black **15** thereon and also the manner of securely fastening weight **19** to block **15** by tightening thumb screw **21** when the weight and clamp attached thereto are slid along block **15** to any desired position.

From the foregoing disclosure, applicant has shown how the unreeling device which is simple, inexpensive, and efficient, can be used to unreel spools of wire of various sizes and at the same time provided adequate adjustable means of supplying the wire from the unreeler under the proper tension and other conditions necessary for the desired results for which the device is intended.

The unreeling device described hereabove is susceptible to various changes within the spirit of the invention. While this specification sets forth the present and preferred construction of the device, still in practice deviations from such detail may be resorted to as do not depart from the spirit of the invention as defined by the appended claims.

I claim:

1. A wire unreeling device in the form of a coil holding and tensioning mechanism comprising two end brackets with feet; spacers therebetween the two end brackets and means of securing said spacers to said end brackets; a removable coil holding bar with means provided in said bar to hold it in engagement with said two end brackets; an adjustable spool tensioning device and an adjustable wire tensioning device.

2. A wire unreeling device in the form of a coil holding and tensioning mechanism comprising two end brackets with feet; spacers therebetween the two end brackets and means of securing said spacers to said end brackets; a removable coil holding bar adapted to ride in holes provided in the two end brackets; and an adjustable wire tensioning means rotatably mounted on one of the spacers between the two end brackets.

3. A wire unreeling device in the form of a coil holding and tensioning mechanism comprising two end brackets; spacers therebetween the two end brackets and means of securing said spacers to said end brackets; a removable coil holding bar with means provided on said bar to hold it in

engagement with holes provided in said two end brackets; an adjustable spool tensioning device and an adjustable wire tensioning means.

4. A wire unreeling device in the form of a coil holding and tensioning mechanism comprising two end brackets; spacers therebetween the two end brackets and means for securing said spacers to said end brackets; a removable coil holding bar and means for securing it therebetween said two end brackets; an adjustable spool tensioning device and means of securing it to the feet of the two end brackets.

5. A wire unreeling device in the form of a coil holding and tensioning mechanism comprising two end brackets with feet; spacers therebetween the two end brackets and means of securing said spacers to said end brackets; a coil holding bar adapted for removable engagement with the two end brackets and an adjustable wire tension device mounted in engagement with one of said spacers therebetween said end brackets.

6. A wire unreeling device in the form of a coil holding and tensioning mechanism comprising two end brackets with feet; spacers therebetween the two end brackets and means of securing said spacers to said end brackets; a removable supporting bar to hold a coil or spool of wire thereon; grooved means provided in said supporting bar to hold it in engagement with said two end brackets; a wire tensioning device with adjustable means provided thereon for regulating the amount of tension on a wire as it passes through said tensioning means and an adjustable spool tensioning device to regulate the amount of tension on a spool of wire as it is unreeled.

7. A wire unreeling device in the form of a coil holding and tensioning mechanism comprising two end brackets with feet; spacers therebetween the two end brackets and means of securing said spacers to said end brackets; an adjustable spool tensioning device; an adjustable wire tensioning means and a removable spool holding or supporting bar adapted to be positioned therebetween the two end brackets and removably engaged therewith.

8. A wire unreeling device in the form of a spool holding and tensioning mechanism comprising two end brackets with feet; spacers therebetween the two end brackets and means of securing said spacers to said end brackets; an adjustable spool tensioning device; an adjustable wire tensioning means and a spool holding bar in removable engagement with said two end brackets.

9. A wire unreeling device in the form of a spool holding mechanism comprising two end brackets; spacers therebetween the two end brackets and means for securing said spacers to said brackets; an adjustable wire tensioning device and a spool holding bar in removable engagement with said two brackets.

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