W. E. EICHHOFF.

WIRE REEL.

APPLICATION FILED DEC. 10, 1912. RENEWED JUNE 22, 1914.

1,108,726.

Patented Aug. 25, 1914.

2 SHEETS—SHEET 1.

FIG. 4.

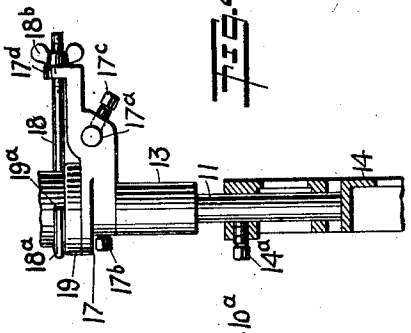


FIG. 5.

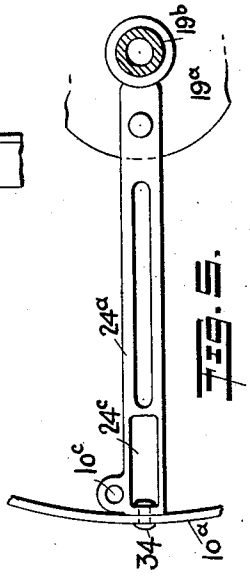


FIG. 6.

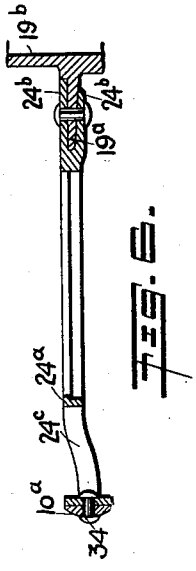


FIG. 1.

FIG. 7.

WITNESSES

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2 SHEETS—SHEET 2.

FIG. 2.

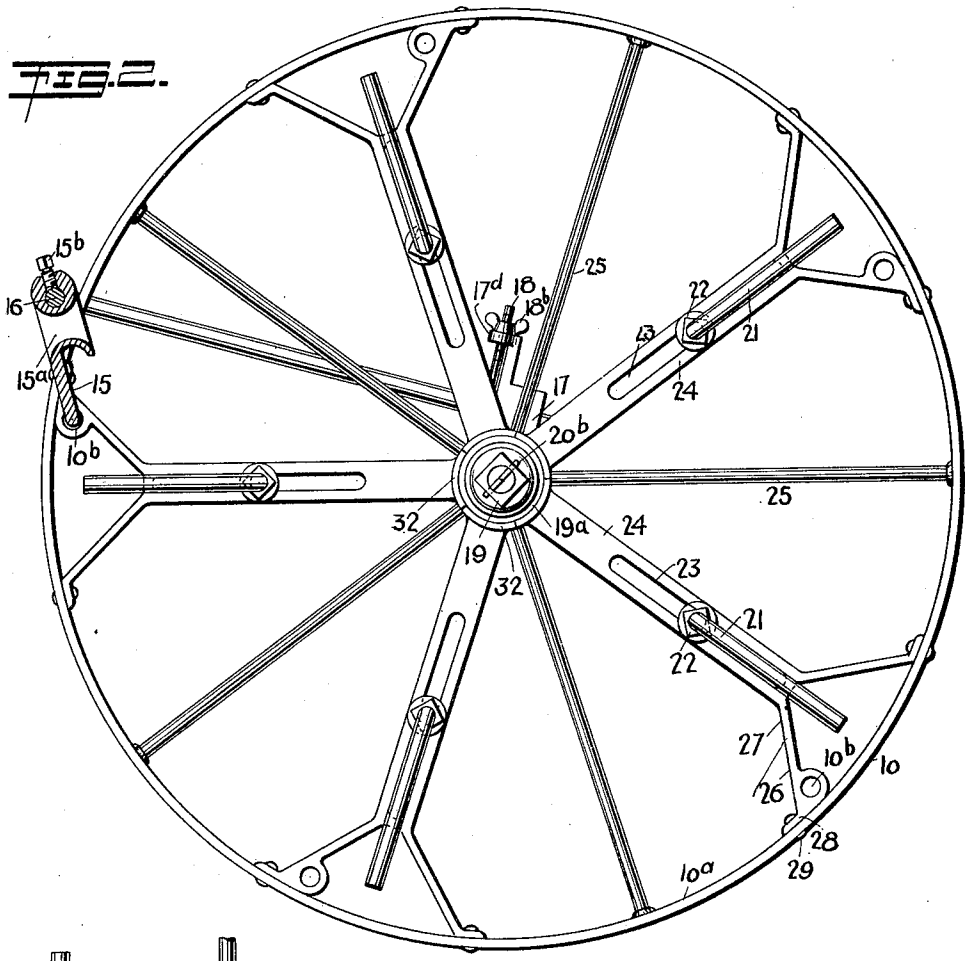
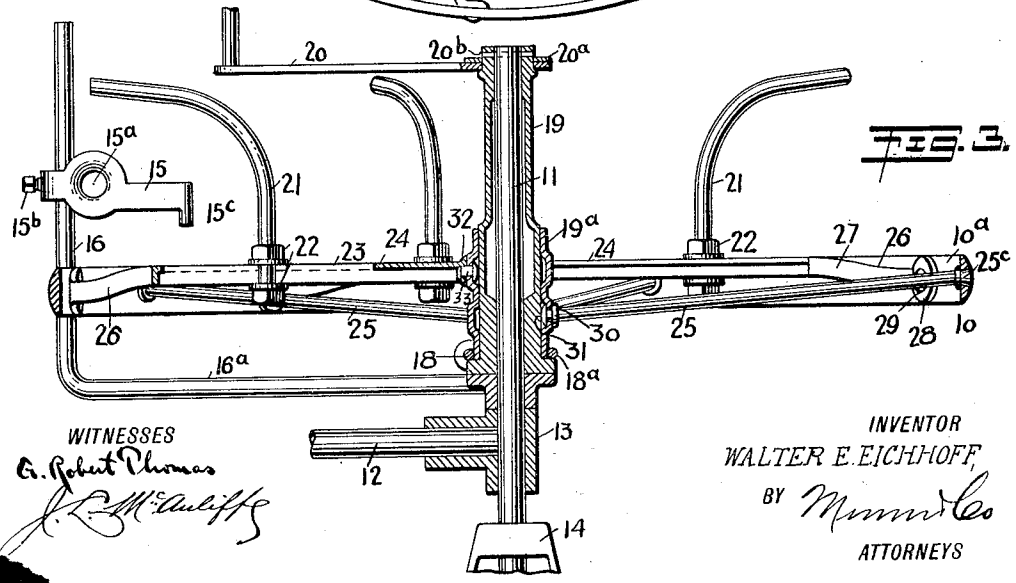


FIG. 3.



WITNESSES

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WIRE-REEL.

1,108,726. Specification of Letters Patent. Patented Aug. 25, 1914.

Application filed December 10, 1912, Serial No. 735,924. Renewed June 22, 1914. Serial No. 846,697.

To all whom it may concern:

Be it known that I, WALTER E. EICHHOFF, a citizen of the United States, and a resident of South Pasadena, in the county of Los Angeles and State of California, have invented a new and Improved Wire-Reel, of which the following is a full, clear, and exact description.

My invention, while applicable to wire reels generally, is more particularly designed for use by the linemen of telephone, telegraph and electric light companies, in which ample strength is required to support the weight of heavy coils of wire, especially when the reel is so disposed as to turn on an approximately horizontal axis for reeling or taking up the wire.

It is a design of my invention to increase the strength and efficiency of reels of the indicated character.

It is also a design of my invention to make provision for conveniently and quickly disposing the reel to turn on either a vertical axis, or an approximately horizontal axis as may be desired for paying out the wire, or taking up the same.

Furthermore, it is a design of my invention to prevent the outer strands of the coil, when the wire is released, from becoming entangled in the reel; thus, with the ordinary reel, the outer, loose strands tend to spring outward beyond the rim of the reel, and when the wire is again pulled taut, it draws inward at the under side of the reel, around the hub, becoming entangled and causing trouble.

The invention includes also a novel construction and arrangement of the wire guide to guide the wire to the reel, and to make provision for moving the guide into engagement with the reel, to lock the same against rotation, when desired.

My invention also has for its design to provide a brake device that may be readily and conveniently adjusted and set to regulate the degree of freedom permitted the reel and prevent the wire from being paid out too fast; the improved brake enables me to dispense with the services of a man especially to attend to the brake to prevent the paying out of the wire too freely, use being made of a simple brake-actuating device, preferably in the form of a wing nut, the adjustment of which serves to cause the brake to exert the desired friction on the reel, so that the latter will respond to a pull on the wire without permitting the wire to unwind too fast.

The distinguishing features of my invention, and the important structural elements characterizing the preferred embodiment which is illustrated as an example, will be more particularly explained in the specific description hereinafter to be given.

Reference is to be had to the accompanying drawings forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the views.

Figure 1 is a side elevation of a wire-reel embodying my invention, the reel being mounted to turn on a vertical axis; Fig. 2 is a plan view, the operating handle of the reel being omitted; Fig. 3 is a vertical section, part of the supporting stand being broken away; Fig. 4 is a detail view in elevation to be hereinafter more particularly referred to; Fig. 5 is a fragmentary detail plan view showing a modification of a reel spoke; Fig. 6 is a vertical section of the device shown in Fig. 5, and Fig. 7 is a fragmentary sectional plan view of a portion of the reel rim and wire guide, illustrating a modification.

In constructing a reel of the illustrated form, the reel proper 10 is mounted to rotate on a T-axle consisting of the T-head 11, and the elongated shank 12, which may be formed separately and united by a T-coupling 13. The axle is adapted to be received in a socket in any suitable stand 14. The drawings show the T-head 11 engaged with the stand 14 so that the reel rotates on a vertical axis, and in practice the head 11 may be removed from the stand 14 and the shank 12 entered in the said stand. I prefer to form the shank 12 with a slight angular offset 12^a at the lower end, as shown in Fig. 1, in order that when the shank is entered in the socket of the stand 14, the axis of the reel instead of being exactly horizontal, will be at a slight angle above the horizontal, and will thus partially relieve the head 11 of the weight of the coil of wire.

In connection with the reel 10, a wire guide 15 is employed, of novel form as hereinafter explained, said guide being supported on an L-shaped rod 16, the shank 15^a of which is secured to a portion of the structure fixed relatively to the reel. In the form

shown the shank 16ª is adapted to be received adjustably in a hole 17ª formed in a flange collar 17, fitting the head 11 above the coupling 13 and held in place by any suitable means, as by a set screw 17ᶜ. A set screw 17ᵇ serves to hold the collar 17 in a fixed position. The flange collar 17 is formed with a lug 17ᵈ, in an opening of which the threaded shank 18 of my improved brake device is received, the brake device being in hooked form, as at 18ª, to partially embrace a member appurtenant to the hub 19 of the reel 10, as hereinafter more particularly explained. On the squared outer end of the hub 19, a suitable handle 20 is provided, and may be secured in place by a washer 20ª and pin 20ᵇ, or other suitable means.

Outwardly curved reel arms 21 are provided on the reel to receive the wire, the inner ends of the said arms being received in radial slots 23 in certain spokes 24, the said arms being clamped to the spokes by clamp nuts 22, in the present instance. Alternating with the spokes 24 are other spokes 25, which preferably are disposed at an angle to the face of the reel and rearwardly inclined from the rim 10ª of the reel to the hub, in order to constitute braces to sustain the weight of a heavy coil of wire when the reel is mounted to rotate on a vertical axis. On the other hand the spokes 24 carrying the reel-arms 21, extend from the hub substantially perpendicular to the axis of rotation, and for the most part substantially flush with the reel rim 10ª. The spokes 24, however, near their outer ends and adjacent to the rim 10ª, are formed with an inward depression as at 26, (Fig. 3.)

With the described form and arrangement of the spokes 24, the loose outer strands of a coil of wire, when the wire is released, will be prevented from springing outward over the rim 10ª, as they will be received in the depressions 26. Thus the wire will be prevented from springing over the reel rim, and will not be drawn inward at the back of the reel in response to a pull on the wire. At the same time, by having the major portion of the spokes 24 flush with the rim, or slightly outward from the plane of the rim, the wire, when it is being taken up, will be properly fed onto the reel, and will not be held away from the face of the spokes by the rim.

The spokes may be secured to the hub and rim in any suitable manner. In Figs. 1 to 3, the inner end of each spoke 25 is shown as formed with a collar 30 adjacent to the inner end of the spoke, and the spoke is passed through the sleeve 19ª, Fig. 3, the extreme end being upset or riveted, as at 31. The spokes 24, as shown in Figs. 2 and 3, are formed with sector-shaped, flanged inner ends 32, and rivets 33 serve to secure the flanged ends 32 to the hub sleeve 19ª. It is to be understood that the sleeve 19ª is shrunk on the hub 19, or otherwise fixedly held thereon so that the turning of the said hub by the handle 20 or otherwise, will serve to turn the reel 10 therewith.

It will be understood in practice that the spokes 24 may be formed on or secured to the hub in any suitable manner; in Figs. 5 and 6 a spoke 24ª is illustrated, which is slotted at its inner end to provide forked members 24ᵇ, between which is received a radial flange 19 on the hub 19ᵇ. The outer ends of the spokes 24, as seen best in Fig. 2, are forked to present diverging arms 27, which have the depressed formation 26 previously referred to, and said arms may be formed with feet 28 to receive rivets 29. The spokes 25 at the outer ends are suitably secured to the rim 10ª as at 25ª. In the form shown in Figs. 5 and 6 the spoke 24ª at its outer end is formed with an opening 24ᵉ, and the extreme end of the spoke is secured to the rim 10ª by rivets 34, or equivalent means.

Reverting to the wire guide 15, it is formed with a suitable eye 15ª through which the wire may pass. A set screw 15ᵇ serves to secure it to its supporting rod 16. The guide may be moved on the rod 16 toward or from the face of the reel 10, and in order to interlock the guide and the reel, to prevent the turning of the latter, I give the reel and guide such a coacting conformation as to enable the one to be engaged with the other. Various means may be employed for the purpose; in the example illustrated in Figs. 1 to 3, the guide is formed at its inner side with a locking member in the form of a stud 15ᵉ, which is adapted to be received in one of an annular series of holes 10ᵇ in the reel, said holes being in the present case, formed in one of the diverging arms 27 of the spokes 24. Equivalent holes 10ᵉ are formed in the spokes 24ª (Figs. 5 and 6). It will be evident that when the wire guide 15 is moved out of engagement with the reel, to a position shown in Figs. 1 and 3, the reel may freely rotate and the wire will be properly guided thereto; or the guide may be moved inward on the rod 16 to the position indicated in Fig. 2, wherein the locking member 15ᵉ is entered in one of the mentioned holes 10ᵇ. In the form shown in Fig. 7, the rim 10ᵈ of the reel has one or more radial holes, indicated by the character 10ᵉ, and the wire-guide 15ᵈ has its stud or equivalent locking member 15ª projecting in a direction to enter a radial hole 10ᵉ of the wheel rim, by a swinging movement of the guide on the supporting arm 16 toward and from the reel, in the plane of the latter. The threaded shank 18 of the brake is adapted to be moved axially by a wing nut 18ᵇ, which is threaded onto said shank outside

of the lug 17[d], to bear against the latter, the arrangement being such that a turning of the nut in either direction will serve to cause the hook 18[a] to exert more or less pressure on the hub of the reel. Thus the operator can adjust the action of the brake to allow the reel to have just the right degree of freedom of movement, without permitting it too great a freedom. Thus the reel does not need the continued attention of an attendant, and the services of a man to regulate the brake pressure, as ordinarily required, are made unnecessary.

Having thus described my invention, I claim as new, and desire to secure by Letters Patent:—

1. A wire-reel comprising a hub, a rim, spokes extending from the hub to the rim and provided with arms for holding the wire, the said spokes being approximately flush with the rim for the greater portion of their length and inclining within the plane of the rims at their outer ends, said outer ends joining the rim inward from the edges thereof, and additional spokes alternating with the first-mentioned spokes, joining the rim in annular alinement with the ends of the first mentioned spokes and said additional spokes being inclined rearwardly from the rim to the hub and being also at an angle to the first-mentioned spokes.

2. The combination with a reel, of a reversible T-axle comprising a shank and a T-head, on one arm of the T-head of which the reel is mounted to rotate, the reel and the said arm being coaxial and a support in which either the remaining arm of the T-head of the axle or the mentioned shank is receivable.

3. The combination with a reel, of a reversible T-axle comprising a shank and a T-head, on one arm of the T-head of which the reel is mounted to rotate, and a support having a socket in which either the remaining arm of the T-head of the axle or the mentioned shank is receivable, the said shank of the T-axle being at the end opposite the T-head terminating in an inclined portion.

4. The combination of a support having a socket, a reversible T-shaped axle, and a reel revoluble on one arm of the T-head of said axle and co-axial therewith, either the other arm of the T-head or the said shank being receivable in said socket.

5. A wire-reel comprising a fixed axle, a hub having a handle thereon at one end and revoluble on said axle, a sleeve fixed on said hub, spokes secured at their inner ends on said sleeve, wire-holding arms on said spokes, a crank handle on the hub outside of the said arms, additional spokes also secured to said sleeve alternating with the first-mentioned spokes and disposed at an angle thereto, and a rim secured to the outer ends of all of said spokes.

6. The combination with a reel, of a wire guide, and a support for said guide on which the latter is adjustable in a direction approximately parallel with the axis of the reel and adapted to be swung laterally on said support, the said guide and the reel having coacting members to engage each other.

7. The combination with a reel and a fixed axle therefor, of a flange collar on said axle back of the reel, an L-shaped rod, one arm of which is secured to said collar, the other arm of the rod terminating at its outer end adjacent to the rim of the reel, and ranging approximately parallel with the axis of the reel, and a wire-guide mounted on said latter arm to move axially thereon, or to swing laterally, the reel having an annular series of holes and the guide having a lug to enter any one of said holes that is brought into line with the lug.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

WALTER ELLSWORTH EICHHOFF.

Witnesses:
WM. G. SMITH,
W. F. BECK.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."