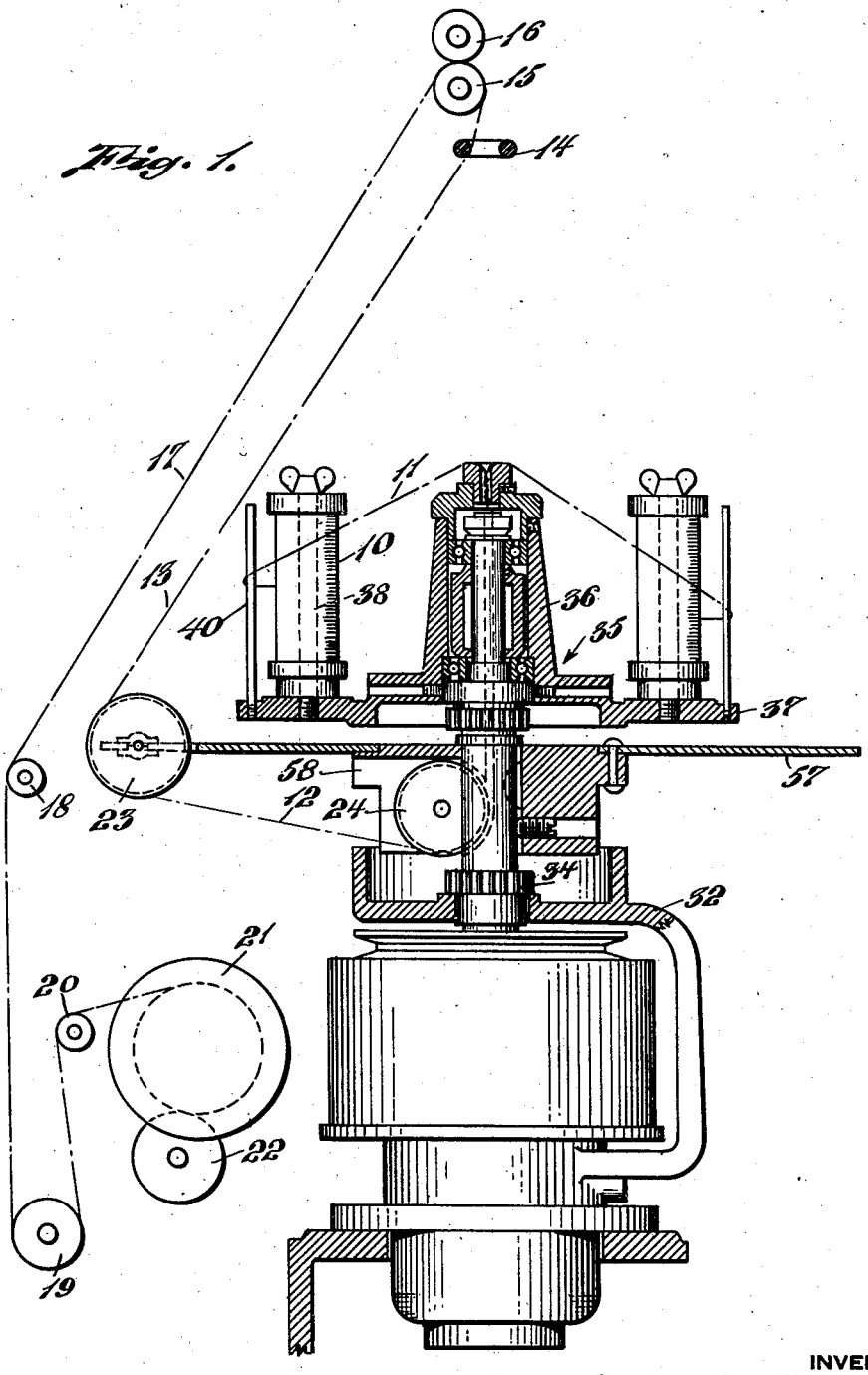
July 4, 1944. A. E. WINSLOW 2,353,103

STRAND TWISTING APPARATUS

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Fig. 1.



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Fig. 2.

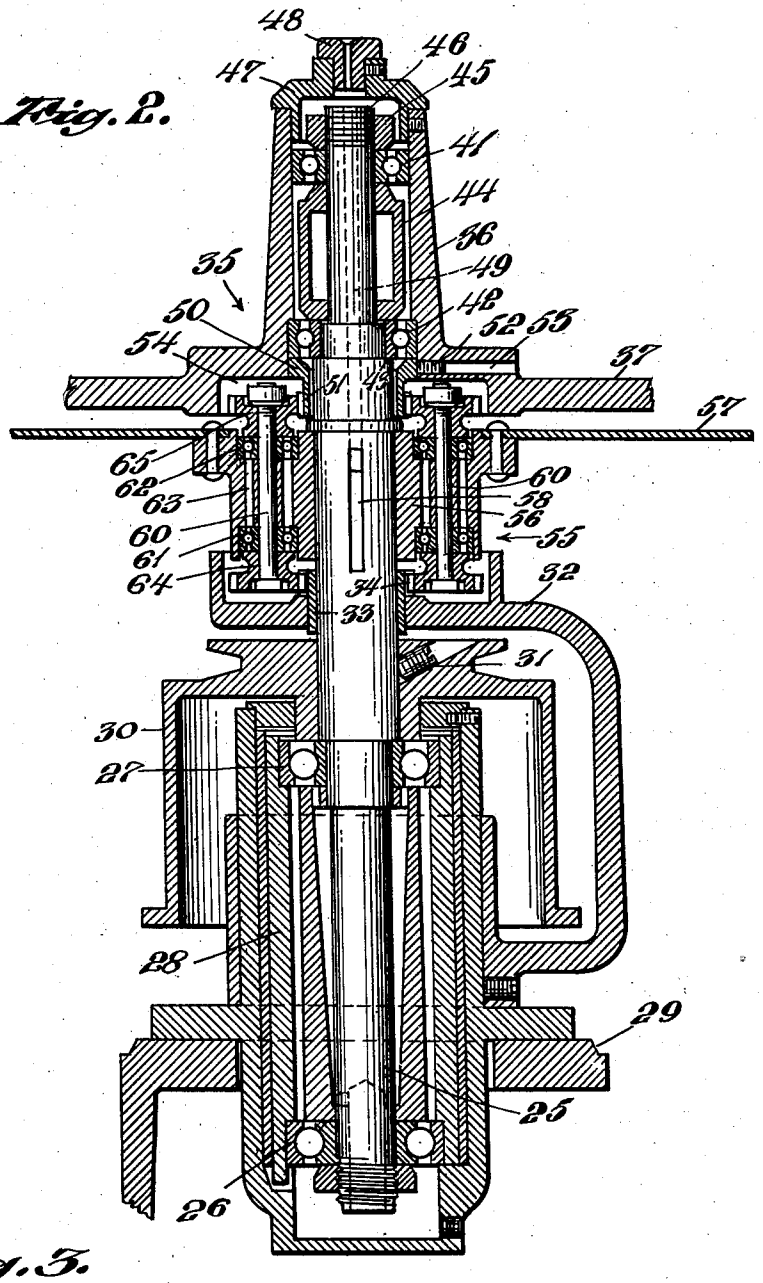
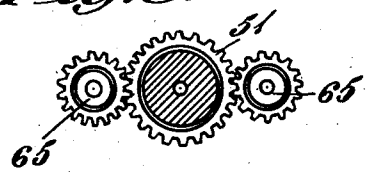


Fig. 3.



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Patented July 4, 1944 2,353,103

UNITED STATES PATENT OFFICE

2,353,103

STRAND TWISTING APPARATUS

Albert E. Winslow, Mystic, Conn., assignor to Atwood Machine Company, a corporation of Connecticut

Application October 29, 1943, Serial No. 508,130

1 Claim. (Cl. 57—58)

This invention relates to a device for the twisting or laying of strand material and more particularly to a device adapted to impart more than one turn of twist to one or more strands for each revolution of the flyer.

In such a device the package or packages from which the strand material is supplied do not partake of the revolution of the flyer. The strands are drawn from the supply package or packages in a manner to form a loop which is carried by the flyer around the package or packages. Assuming the supply package to be mounted on a stationary axis, two turns of twist are imparted for each revolution of the loop about the package. The manner in which the supply package support is held stationary while mounted upon a rotating spindle with the yarn looping about the supply package has been accomplished in various ways and it is the means by which this result is accomplished which is the feature of this invention.

One of the objects of this invention is to provide a simple and efficient manner of positively holding the supply package support stationary while being mounted upon the revolving spindle which rotates the strands about the package support.

Another object of this invention is to provide a positive drive through the flyer from a stationary frame to the supply package support so as to prevent slip between the driving parts.

Another object of this invention is to provide a direct and positive drive from the spindle flyer to the creel or package support by means of gears which will engage a fixed or stationary part and will engage the creel or package support.

With these and other objects in view, the invention consists of certain novel features of construction, as will be more fully described and particularly pointed out in the appended claim.

In the accompanying drawings:

Fig. 1 is a diagrammatic view of the invention illustrating the operating parts of the twisting device;

Fig. 2 is a sectional view on a larger scale illustrating the spindle mounting and showing the package support or creel fragmentally;

Fig. 3 is a top plan view illustrating the drive between the flyer and its associated parts.

The invention illustrated in this application forms an alternative arrangement of a part of a larger machine which is shown in my co-pending application Serial No. 517,859. The supply packages are designated 10 from which the strands of material 11 lead into the hollow spindle then downwardly together and radially outwardly as at 12 and thence upwardly as at 13 to loop the strands upon themselves, which loop is revolved about the axis of the spindle so that two turns of twist or lay are placed into the strands for each single turn that the loop makes about the spindle. The upwardly extending run of the work 13 is then guided from the machine through the ring 14 and between feed rolls 15 and 16 and thence led as at 17 over pulley 18 and over suitable guides 19 and 20 to be packaged as at 21, the package being operated by a surface drive 22 as diagrammatically shown in Fig. 1.

Spindle 25 is mounted by means of ball bearings 26 and 27 in a casing designated generally 28 which is held in a stationary support 29. The spindle is driven by a whirl 30 fixed thereto by the set screw 31. An overarm 32 extends from the stationary framework and is provided with a bushing 33 through which this spindle extends. The bushing is fixed in the overarm and is also provided with gear teeth 34.

The creel designated generally 35 is provided with a hub 36 and deck plate 37 upon which rods 38 are mounted for supporting the various supply packages 10 from which the strand material 11 leads over guide 40. The hub 36 is rotatably mounted on the spindle 25 by means of ball bearings 41 and 42 the latter of which rests upon a shoulder 43 of the spindle, while the ball bearings are suitably spaced by a member 44. The upper ball bearing 41 is held in position by a nut 45 having threaded engagement with the upper end 46 of the spindle. A cap 47 is mounted in the hub 36 and supports a guide 48 through which the various strands of material may enter the hollow bore 49 of the spindle 25. The hub 36 carries a gear 50 having teeth 51 and which is held to the hub by a set screw 52 extending through the recess or opening 53 to hold the gear in fixed relation to the hub of this creel or package support. A recess 54 is provided in the creel for the reception of one driving portion carried by the flyer.

The flyer is designated generally 55 and comprises a hub 56 which is held in fixed relation to the spindle 25. A plate 57 is fixed to the hub and extends outwardly for rotatably mounting the pulley 23 while the hub itself is slotted as at 58 to rotatably mount the pulley 24 over which the strand material extends. A plurality of shafts 60 (here shown as two) are rotatably mounted in the hub and as each shaft is the same corresponding reference numerals will be used for the same parts of each shaft. Each

shaft is mounted by means of ball bearings 61 and 62 resting against shoulders provided by the bores 63 and enlargement of this bore at either end. Pinion gears 64 are held by some suitable means at the lower end of each shaft 60 and pinion gears 65 are held by some suitable means at the upper end of the shaft. The gears 64 will mesh with gear 34 while the gears 65 will mesh with the gear 51.

Any number of these shafts may be provided each with gears at its upper and lower end to mesh with the gears 34 and 51 in a similar manner. I have, however, shown but two such shafts which are mounted diametrically opposite each other so as to provide a dynamic balanced relation. In any case where a larger number of shafts are provided the arrangement of the shaft 60 would be such that they would be disposed in equal angular relation and in balanced relation about the flyer.

Each time the flyer rotates about the axis of the spindle by reason of the gear 64 meshing with the gear 34 the shaft 60 will be rotated and gear 51 will be driven by gear 65 in the opposite direction. Inasmuch as the gears 34 and 51 are the same size and the gears 64 and 65 are the same size the gears 34 and 51 will remain relatively the same. The gear 34 is stationary or fixed in the overarm 32 therefore the gear 51 will remain stationary and the creel or supply package support 35 will not rotate. As the gear drive is positive there will be no creeping of the creel with reference to the stationary support.

The drive is simple in that spur gearing is used.

I claim:

In a strand twisting device, a spindle, a supply package support rotatably carried at the upper end portion of said spindle, said support having an annular recess therein, a gear surrounding said spindle and fixed to said support and located within said recess, a stationary support for mounting said spindle and provided with an annular recess therein, a stationary gear fixed to said stationary support and surrounding said spindle and located within said recess, a flyer having a hub portion fixed to said spindle at a location thereon intermediate the said supports, a shaft rotatably fixed to said flyer and revolvable about said spindle and with the end portions thereof extending into said annular recesses, pinions carried by said shaft with the toothed portions thereof located within the said recesses and engageable with the said gears, said pinions and gears being substantially equal in size so as to maintain said supply package support substantially stationary.

ALBERT E. WINSLOW.