H. G. BEEDE.

TEXTILE TWISTING MACHINE.

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1,403,832. Patented Jan. 17, 1922.

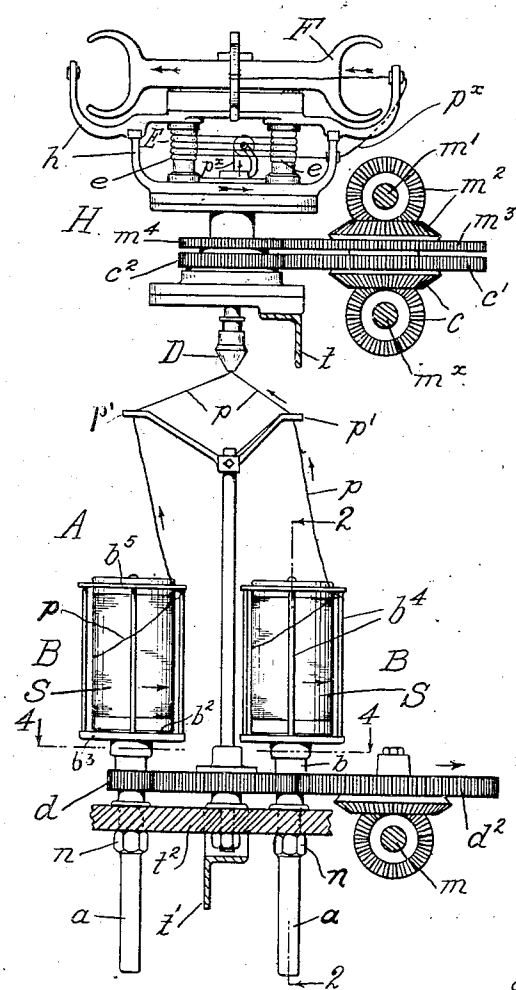


Fig. 1.

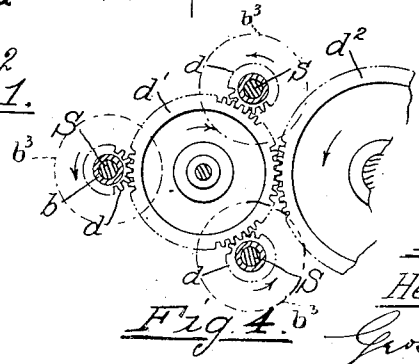


Fig. 4.

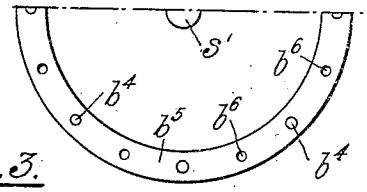


Fig. 3.

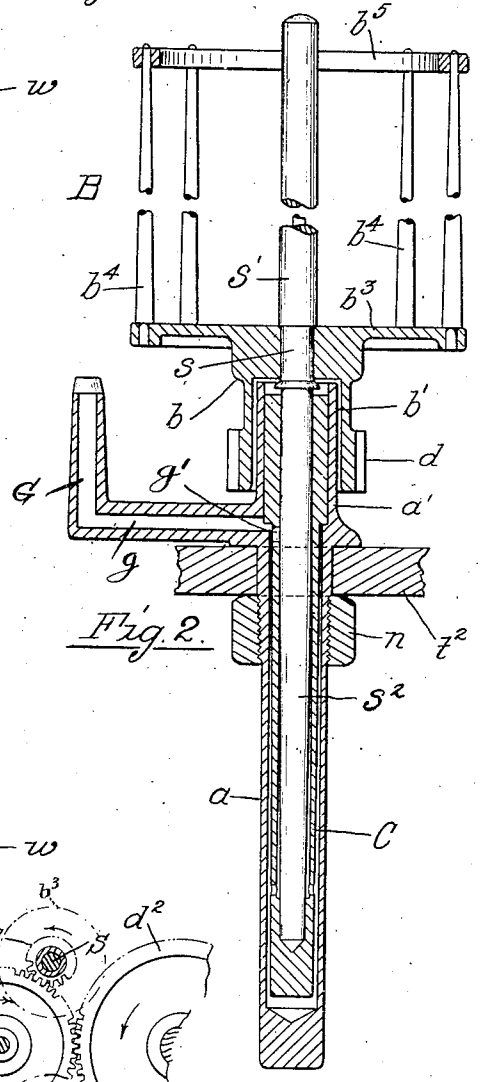


Fig. 2.

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TEXTILE TWISTING MACHINE.

1,403,832. Specification of Letters Patent. Patented Jan. 17, 1922.

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To all whom it may concern:

Be it known that I, HERBERT G. BEEDE, a citizen of the United States, residing at Pawtucket, in the county of Providence and State of Rhode Island, have invented certain new and useful Improvements in Textile Twisting Machines, of which the following is a specification.

This invention relates to improvements in strand-twisting machines, that is, machines of the class arranged to lay and twist a plurality of independent threads so as to produce a "laid" cable.

In a multiple-strand twisting-machine provided with my improvements, each spool-carrying spindle thereof is constructed and arranged to form a self-contained, self-lubricating unit, in which the revoluble spindle or blade proper is flexibly mounted. In a twisting-machine of this general type and having my improvements, the blade, bolster, and bolster-casing are more thoroughly protected and may be readily and accurately mounted and demounted at will; the bolster member is submerged in oil or other suitable lubricant, thereby permitting the spindle to run at an increased rate of speed without throwing or scattering the oil about and injuring the spools and strands. Obviously, a twisting-machine possessing these advantages is capable of materially increasing its output without increasing the cost of attendant labor.

In the accompanying drawings, Figure 1 is a transverse sectional view, in partial elevation, the portion of the machine represented being at the left of the center line *w—w;* Fig. 2 is a sectional view, taken substantially on the vertical center line 2—2 of Fig. 1, showing, in enlarged scale, the manner of constructing and mounting the spindle, spindle-bolster, and its support; Fig. 3 is a partial plan view of the spool-holder or cage, the spool being omitted from this view; and Fig. 4 is a plan, partly in section, taken substantially on line 4—4 of Fig. 1, showing the arrangement of a group of the spindle units and the manner of driving them by means of gearing.

Textile twisting or cable-producing machines of the general type illustrated in the drawings are usually provided with co-operable lower and upper series of independent twisting-head units, termed first and second twist, respectively. Each of the lower or first twist units is arranged to twist the individual threads or strands singly of a plurality of grouped, independently mounted spools carrying the thread, while at the same time each of the upper or second-twist units is caused to twist together into a single cord or cable the twisted individual strands drawn from the corresponding group of spools of the lower twisting-head; the cord, concurrently with its production, being compressed and stretched and wound upon a suitable reel or spool. The twisting-head units may be arranged longitudinally of the machine in two parallel rows and spaced apart at equal distances in the rows and driven by mechanism capable of actuating the several heads simultaneously.

The main supporting frame of the machine is omitted from the drawing; the upper and lower ties t, t^1, and the lower cross-plate t^2, are, however, represented cross-sectionally; these tie members extend longitudinally along the side of the machine and are adapted to support the twisting-head units at suitable intervals. Each of the lower twisting-head units consists essentially of a plurality of supported stationary tubular bolster-cases a (three being shown); each of the bolster-cases has its upper portion a^1 loosely fitting a recess b^1 formed in the underside of the annular neck b of the respective rotary cage members B. Each member B is fixed to a central vertical rotary spindle-blade s, having its upper portion s^1 adapted to receive a spool S, carrying a strand or thread p; the lower portion s^2 of the spindle-blade extends into and is supported by a non-revoluble bolster C, removably mounted in its corresponding bolster-case a, which in turn is removably supported in the lower cross-plate or rail t^2. See also Fig. 1.

Formed integral with the bolster-case a is an oil receptacle G which communicates with said bolster-case by means of the channel g. The bolster C is provided with an opening g^1 adjacent the inner end of channel g, to permit the oil to pass into said bolster C and lubricate the spindle-blade s, as shown in Fig. 2.

The outer peripheral edge of the base-plate b^3 of the cage is provided with a series of spaced upright pins b^4 fixed at the top to the ring member b^5, the latter having a plurality of threading-eyes b^6 therethrough alternating with the pins. These pins and

eyes are capable of producing a suitable degree of friction or drag upon the thread as it is drawn from the spool. The spool is placed on the spindle and is capable of independent rotary movement by frictional contact, as for example, by means of a disk b^2 of fibrous material interposed between the spool end and the plate b^3 of the cage. The spindle-blade and cage members are adapted to be positively rotated by means of a small gear d fixed to the annular neck b of the cage or base-plate; said gear d being actuated by a transmission gear d^1, in turn intergearing with a suitably driven gear d^2. A horizontal driving-shaft m and intermediate gearing may be employed to actuate the gear d^2, etc.

The lower twisting-head unit A of the series (one only being represented) is provided with suitable members having eyes p^1 for guiding the strands from the respective spools to the rotating central element D, in which the threads are combined, twisted and compressed circumferentially into a smooth cable p^x preparatory to its engagement with the revoluble hauler-rolls and stretching device of the upper or second twisting-head H.

The twisting element D and frame h are adapted to revolve in unison in one direction through the medium of a main driving-shaft m^x, gears c, c^1, and c^2, while the hauler-rolls are actuated in the same direction by a shaft m^1 and gears m^2, m^3, m^4, etc., in a well-known way. The reel F, or other analogous winding means, is adapted to wind the finished cable or cord thereon under considerable tension.

It is deemed unnecessary to include herewith a more detailed description of the machine and the manner of operation, since the general construction and action of twisting-machines are well known. My invention resides more specifically in certain novel features of construction which render the machine more efficient, in that the speed may be materially increased, thereby increasing the product or output; the spindles are more accurately mounted and are operated with less power, while the spindle and bolster members are capable of being more readily mounted in their supports and withdrawn therefrom at will, as desired.

I claim as my invention:

1. A twisting machine having in combination a flexible bearing up-twist spindle and a cage secured to said spindle, said cage comprising a circular base-plate a series of peripherally arranged upright pins secured thereto and a ring-member secured to the top of said pins and provided with a series of threading eyes.

2. A twisting machine having in combination a bolster-case, combined bolster and step bearings mounted in said bolster-case, an up-twist spindle mounted in said bearings, a cage secured to said spindle and provided with a downwardly extending neck-portion provided with a recess adapted to receive the upper portion of said bolster-case.

3. A twisting-machine having in combination a bolster-case, combined bolster and step bearings mounted in said bolster-case, an up-twist spindle mounted in said bearings, a cage secured to said spindle and provided with a downwardly extending neck-portion provided with a recess to receive the upper end of said bolster-case and with an external driving gear upon the free-end of said neck-portion.

4. A twisting machine having in combination a cross-plate, a bolster-case secured in said cross-plate, combined bolster and step bearings mounted in said bolster-case, an up-twist spindle mounted in said bearings, a cage secured to said spindle and provided with a downwardly extending tubular neck-portion adapted to receive the upper end of said bolster-case, and a driving gear formed integral with said tubular neck-portion and having its transverse axis located approximately midway between the top of the cross-plate and the top of the bolster-case.

In testimony whereof I have affixed my signature in presence of two witnesses.

HERBERT G. BEEDE.

Witnesses:
CHARLES W. BOARDMAN,
HERBERT J. SUTTON.