June 21, 1932. F. ZETTEK 1,864,162

CORDAGE MACHINE

Filed Sept. 30, 1929

Fig. 1.

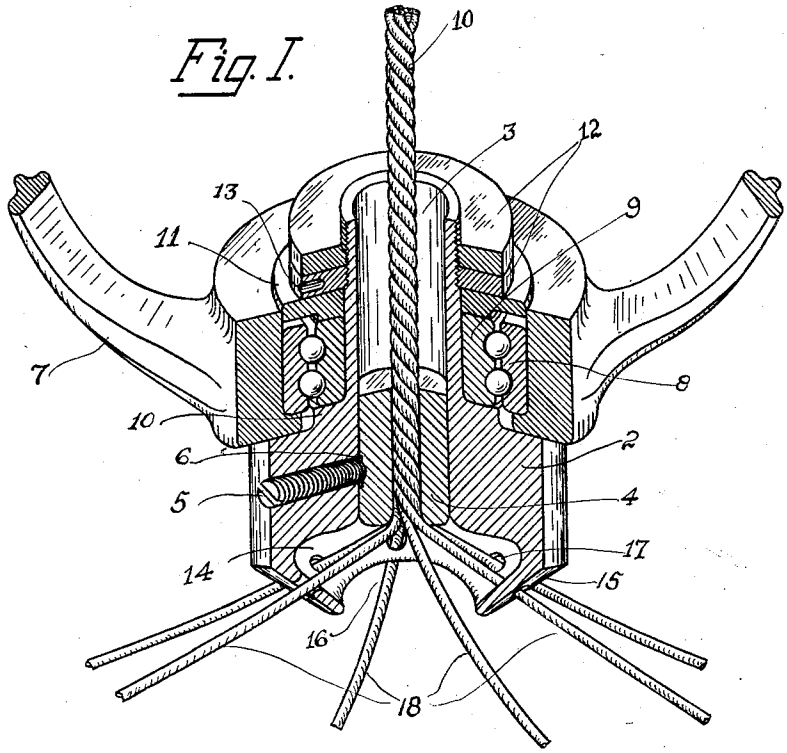


Fig. 2.

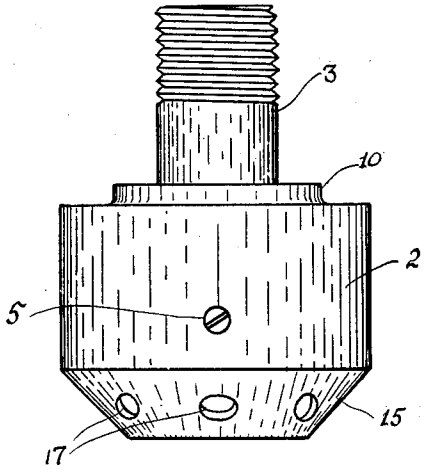
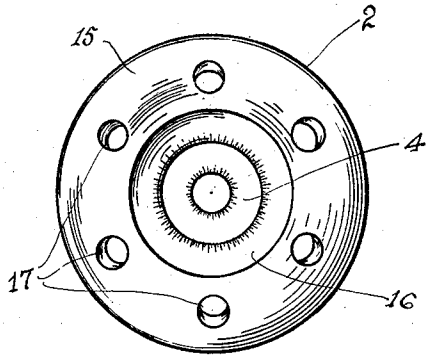


Fig. 3.



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UNITED STATES PATENT OFFICE

FRANK ZETTEK, OF CHICAGO, ILLINOIS, ASSIGNOR TO KELLOGG SWITCHBOARD AND SUPPLY COMPANY, OF CHICAGO, ILLINOIS, A CORPORATION OF ILLINOIS

CORDAGE MACHINE

Application filed September 30, 1929. Serial No. 396,050.

My invention relates to wire stranding machines and has to do more particularly with the wire twisting mechanism as used on such machines.

In stranding machines of the present type as commercially used the twisting of a number of wires into a cord is attained by subjecting the component wires to a simultaneous rotary and drawing movement; the first being supplied by a rotating disk or a spider upon whose periphery or arms the spools of insulated wire are conveniently located and the second by a capstan wheel around whose outer rim the already twisted wires or cord is wound and which draws the latter through a stationary sizing bushing or mouthpiece. The machine places a cover around the wires after they are twisted together.

It has been found that owing partly to the considerable strain and friction to which the wires are subjected in the stationary bushing, partly to incidental variations of the tension of the capstan wheel, the wires would frequently become tangled or irregularly twisted or broken during the twisting and covering operation.

To overcome this difficulty I have arranged a simple but an efficient device consisting of a rotary wire guide secured to the supporting frame by means of a ball bearing and serving as a receptacle for the mouthpiece into which the wires are being fed, the whole rotary arrangement operating to reduce the friction and facilitate the twisting of the wires into a cord.

For a better understanding of my invention reference may be had to the accompanying drawing, in which I have illustrated a preferred embodiment of my invention and in which like reference characters in the several views denote like parts, and in which:

Fig. 1 is a perspective view of a section through the twisting attachment as invented by me;

Fig. 2 is a side view of the wire guide; and

Fig. 3 is a bottom view of the wire guide.

Referring now more in detail to my invention as illustrated, the rotatable die comprises the wire guide 2 made of hardened tool steel and having at its upper part a tubular extension 3 serving as a receptacle for the mouthpiece 4, which is secured to the wire guide by means of the screw 5 pressing against an indention 6 in the cylindrical surface of the mouthpiece. The wire guide is secured to the stationary frame 7 by means of the ball bearing 8 whose inner ring 9 resting on the shoulder 10 of the wire guide is held in place by the cover plate 11 which serves also to protect the bearing from lint and grit and which is pressed against the bearing by the rings 12 having a screw-threaded engagement with the tubular extension 3 of the wire guide 2. Around the circumference of the rings 12 a number of suitable perforations 13 are provided which serve to receive the jaws of a key for tightening said rings.

The hollowed lower part 14 of the wire guide is bounded from below by a partial conical surface 15 having a central aperture 16 and a number of equally spaced orifices 17 conveniently distributed around the central aperture 16 as shown in the drawing. Underneath the twisting attachment as described above and independent from the same but co-axial with it is located a rotating disk or a spider, not shown in the drawing, upon whose periphery or arms a number of spools of wire are conveniently secured. From these spools the wires 18 are led first through the orifices 17 of the wire guide 2 and then into the mouthpiece 4 where the wires are twisted into a cord. The cord is drawn upward by a capstan wheel, not shown in the drawing, around whose outer rim the cord is wound. The actual twisting of the wires into a cord is a result of the combined drawing motion of the capstan wheel and the rotation of the spools as well as of that of the wire guide which being secured to the rigid frame 7 by means of a ball bearing is compelled to revolve with the wires owing to the pressure of the same in the orifices 17.

The advantage of having a rotary wire guide and especially such as supported by a nearly frictionless ball bearing and impelled in its circumvolution by the pressure of the wires themselves consists in its ability to respond flexibly either to incidental fluctuation, in the speed with which the wires are

drawn or rotated and unrolled from the spools or to any irregularities in the thickness of the individual wires all of which may tend to complicate the process of twisting and cause tangling and breaking of the wires.

The cylindrical mouth 4 is perforated through its center to suit the thickness of the cord, and its lower part is conveniently rounded with a view of minimum friction.

In illustrating my invention I have shown an embodiment worked out for commercial purposes, but it will be obvious to those skilled in the art that minor changes may be made without departing from the spirit of my invention, and I, therefore do not wish to be limited by the exact structure as shown, but aim to cover all such changes and modifications as come within the spirit and scope of the appended claims.

Having described my invention, what I claim as new and desire to secure by United States Letters Patent is—

1. In a cordage machine, a frame, an annular member frictionally held therein, a second annular member within said first annular member, a ball bearing between said annular members, a wire guide having a frustro-conical outer surface with a plurality of orifices therein, screw threaded collars holding said wire guide in frictional engagement with said second annular member, a removable die, and a set-screw for holding said die in said wire guide.

2. In a cordage machine, a frame, a removable die, a set-screw for holding said removable die, a wire-guide having a frustro-conical outer surface with orifices therein and a hollow cylindrical portion adapted to receive said removable die, a plurality of wires passing through said orifices in said wire guide, a ball bearing having an inner and an outer annular member, said inner annular member held in frictional engagement with said wire guide and said outer annular member held in frictional engagement with said frame, said wire guide adapted to rotate under the influence of the wires passing through the orifices in said wire guide.

Signed by me at Chicago, in the county of Cook and State of Illinois, this 27th day of September, 1929.

FRANK ZETTEK.