L. JAMETON.

SYSTEM FOR FORMING POLYGONAL HELICAL COILS.

APPLICATION FILED JULY 1, 1915.

1,191,514.

Patented July 18, 1916.

2 SHEETS—SHEET 1.

Fig. 1.

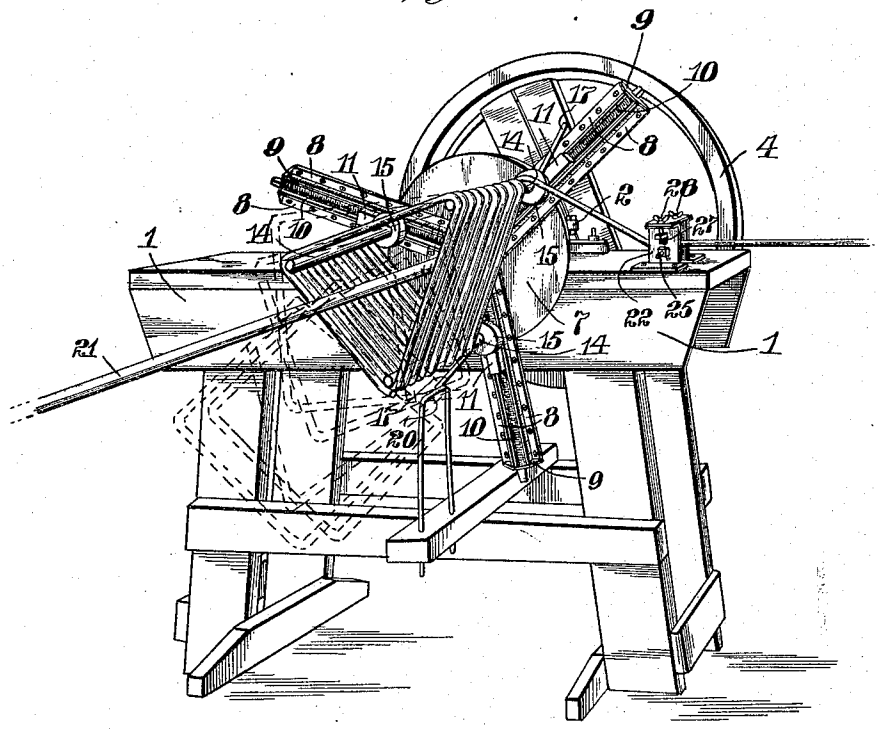
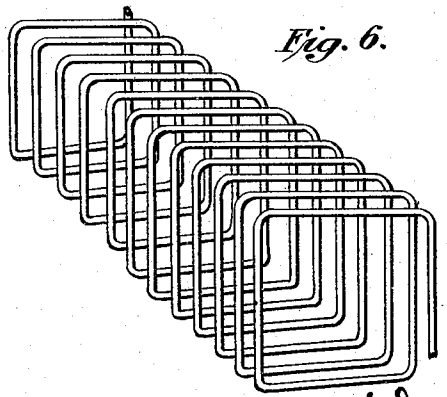


Fig. 6.



Attest:

Leon Jameton
Inventor:

by Wm B. Whitney
Atty

THE NORRIS PETERS CO., PHOTO-LITHO. WASHINGTON, D. C.

L. JAMETON.

SYSTEM FOR FORMING POLYGONAL HELICAL COILS.

APPLICATION FILED JULY 1, 1915.

1,191,514.

Patented July 18, 1916.

2 SHEETS—SHEET 2.

Fig. 2.

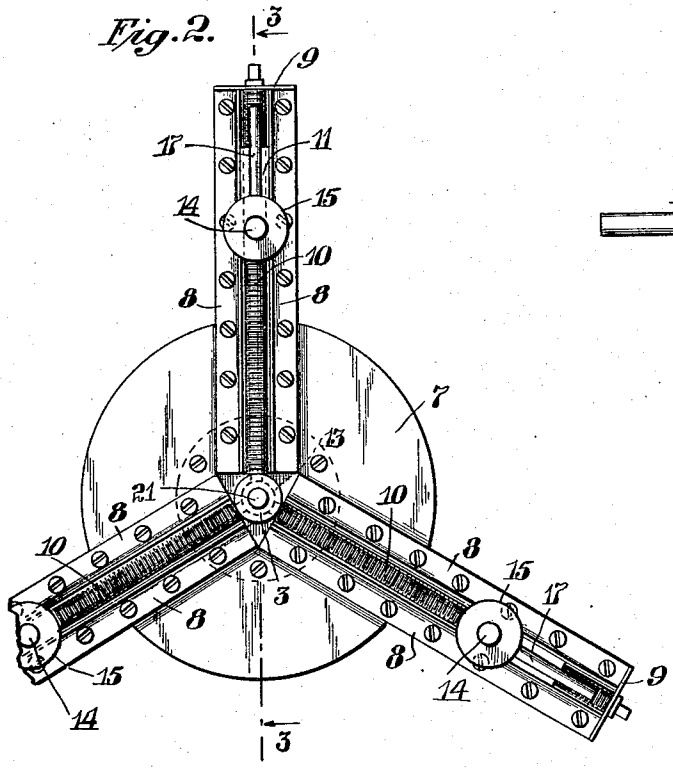


Fig. 3.

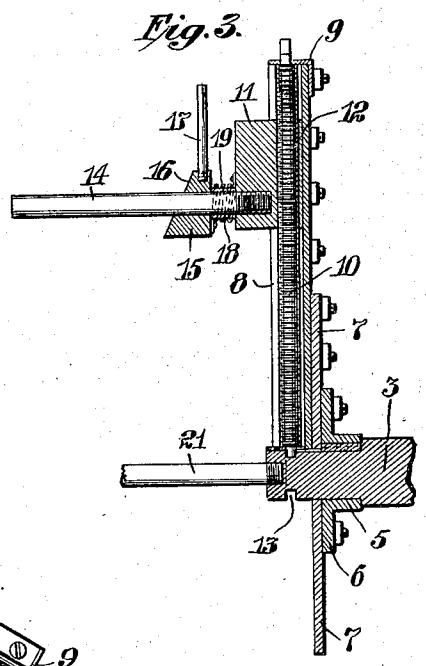


Fig. 4.

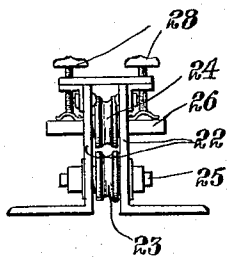
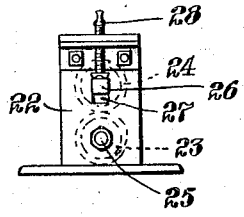


Fig. 5.



Leon Jameton

Inventor:

Attest:

by Wm. B. Whitney

Atty

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

LEON JAMETON, OF ST. LOUIS, MISSOURI.

SYSTEM FOR FORMING POLYGONAL HELICAL COILS.

1,191,514. Specification of Letters Patent. Patented July 18, 1916.

Application filed July 1, 1915. Serial No. 37,441.

To all whom it may concern:

Be it known that I, LEON JAMETON, a citizen of the United States, and a resident of the city of St. Louis, in the State of Missouri, have invented a certain new and useful System for Forming Polygonal Helical Coils, of which the following is a specification.

The invention relates to polygonal helical coils, and more particularly to the so-called square spirals which are commonly used for the reinforcement of concrete columns, beams, and the like. These coils or spirals, usually made of wrought iron or mild steel wire which is somewhat resilient, have heretofore been formed by winding the necessary number of turns upon a rectangular mandrel of suitable size. On removal from the mandrel the coils, when not made at the place at which they are to be used, are tied up into more or less compact bundles for shipment; and, as required for use, are untied and drawn out to the required length, thereby separating the turns and giving them the desired pitch. Coils so wound have always caused considerable trouble in use. Because of the resiliency of the wire, and no matter how closely it has been bent to the angles of the mandrel, the coils when removed therefrom, or when released from the bundles into which they have been tied and in which they are held more or less closely in shape, will twist or spring out of shape, for a quarter or a half turn depending upon their length, thus making it difficult to place and hold them in proper position within the form, with their sides in planes parallel to the sides of the form, while the concrete is being poured.

The object of my invention is to provide a new method of manufacture by which to produce improved coils which are substantially without twist.

The invention consists, broadly, in winding the wire or light rod, of suitable size and section for the use in view, into a helical coil of a smaller number of sides and angles than the finished coil under tension so adjusted that, when released therefrom, the spring of the wire will twist the coil to the desired angular form. For square spiral reinforcement, for example, the wire is wound into a triangular coil upon a triangular mandrel or reel, the tension under which it is wound, dependent upon the size and resiliency of the wire as will be understood by those skilled in the art, being adjusted to so bend the wire around the corners of the mandrel that its twist will transform the triangular coil when removed from the mandrel into the required square spiral. I thus utilize the natural and heretofore objectionable twist of the coil to produce a new and improved coil substantially without twist.

The invention will be fully understood by reference to the accompanying drawings, in which—

Figure 1 is a perspective view of a machine, also my invention, suitable for continuously winding square spirals, showing a coil of wire in process of manufacture; Fig. 2, an enlarged front end elevation of the rotary reel or mandrel of the machine; Fig. 3, a section on the line 3 3 of Fig. 2, with the lower radial arm omitted; Figs. 4 and 5, front and side elevations, respectively, of the frictional feeding device; and Fig. 6, a perspective view of a square spiral, showing the form assumed by a properly wound triangular coil when removed from the machine.

Referring to the drawings, 1 is a bench or suitable frame upon which is journaled, in bearings 2, a horizontal shaft 3 which is driven from any suitable source of power by means, for example, of a belt-pulley 4 mounted upon an end of the shaft. Keyed to a seat 5 at the other end of the shaft is a flanged hub 6 to which is bolted an annular plate 7, and to the face of this plate are bolted at angles of 120° to each other three pairs of angle irons 8, each pair connected at its outer ends by angles 9, which form equidistant radial arms. A block 11 is mounted to slide within the grooved slot formed in each arm by the angle irons and is held in radially adjustable position therein by a screw bolt 10, which, passing through a threaded opening 12 lengthwise of the block, bears at its reduced inner end in an annular slot 13 around the end of the shaft and at its outer end is provided with a bearing in the connecting angle 9 through which it extends and terminates in a square head by which it may be turned. Each sliding block carries screwed into a threaded socket in its face, a reel rod 14 which extends parallel to the shaft and has rotatably mounted thereon a feed block 15, having an inclined outer face 16 and carrying a trip arm 17, which is spaced from the sliding

block by a tubular washer 18 and is yieldingly held in normal angular position on the rod (Fig. 3) by a coiled spring 19. A tripper 20, suitably supported upon the frame, extends from below into the path of the radial trip arms. A rod 21, screwed into the end of the shaft and forming an extension thereof, serves to support the coil of wire as it is pushed off from their outer ends after being wound upon the reel rods 14.

A convenient frictional feeding device by which to regulate the tension of the wire as it is being wound consists of two standards 22 which are secured in position upon the frame of the machine and between which are mounted two loose grooved rollers 23, 24, the lower roller upon a pivot 25 fixed in the standards and the upper roller upon a pivot 26 sliding up and down in vertical slots 27 in the standards and adjusted by thumb screws 28 bearing against its ends.

The process of manufacturing square spiral reinforcement substantially without twist as practised upon the machine described is obvious. Preparatory to its use, the machine is adjusted by taking a wrench and turning the screw bolts 10 to position the sliding blocks and the reel rods 14 for the size of coil to be made, the required position for any given size of coil being indicated by graduations on the angle irons of the arms (see Fig. 1); corresponding to the respective sizes of the spirals in inches. The end of the wire, taken say from a reel, is passed between the rollers of the frictional feeding device and secured in any suitable manner to one of the reel rods 14, by bending it and hooking it around the rod, for example, close to the inclined face of the feeding block thereon. The upper roller of the frictional feed is then adjusted to give the tension required to properly bend the wire around the reel rods, and the machine is started. As the reel revolves, the wire is drawn through the frictional feeding device and bent around and wound upon the reel rods close to the feed blocks, and, as each reel rod passes the tripper (Fig. 1), the feed block is caused to swing partially around thereon and so to force the coil outwardly on the reel rods until, after a certain number of turns have been formed, the outer end of the coil leaves the ends of the reel rods and is supported upon the central rod or shaft extension. If the tension has been properly adjusted, the required tension being readily determinable by the operator according to the size and resiliency of the wire used, the wire will be so bent around the three reel rods that the natural twist of the coil as it leaves the reel will cause it to assume the desired square spiral form without further tendency to twist.

While I have illustrated and described my invention with particular reference to the manufacture of square spirals, it will of course be understood that it is not limited thereto and that both the process and the machine may be variously modified in their details, within the scope of the appended claims, without departing from the spirit or sacrificing the advantages thereof.

What I claim as new, and desire to secure by Letters Patent, is—

1. The method of forming polygonal helical coils which consists in forming under suitable tension a helical coil having a less number of sides than the desired finished coil and permitting the same to react under its natural resiliency when freed from the coiling means to form a helix of the desired form.

2. The method of forming a square helical coil which consists in forming a triangular helical coil under suitable tension and permitting the same to react under its natural resiliency when freed from the coiling means to form a square helix.

3. The method of forming square spiral wire reinforce which consists in forming a triangular helical coil under suitable tension and permitting the same to react under the natural resiliency of the wire when freed from the coiling means to form the desired square spiral reinforce.

LEON JAMETON.

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