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G. SCHILLING.

WIRE TWISTING TOOL.

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Fig. 1.

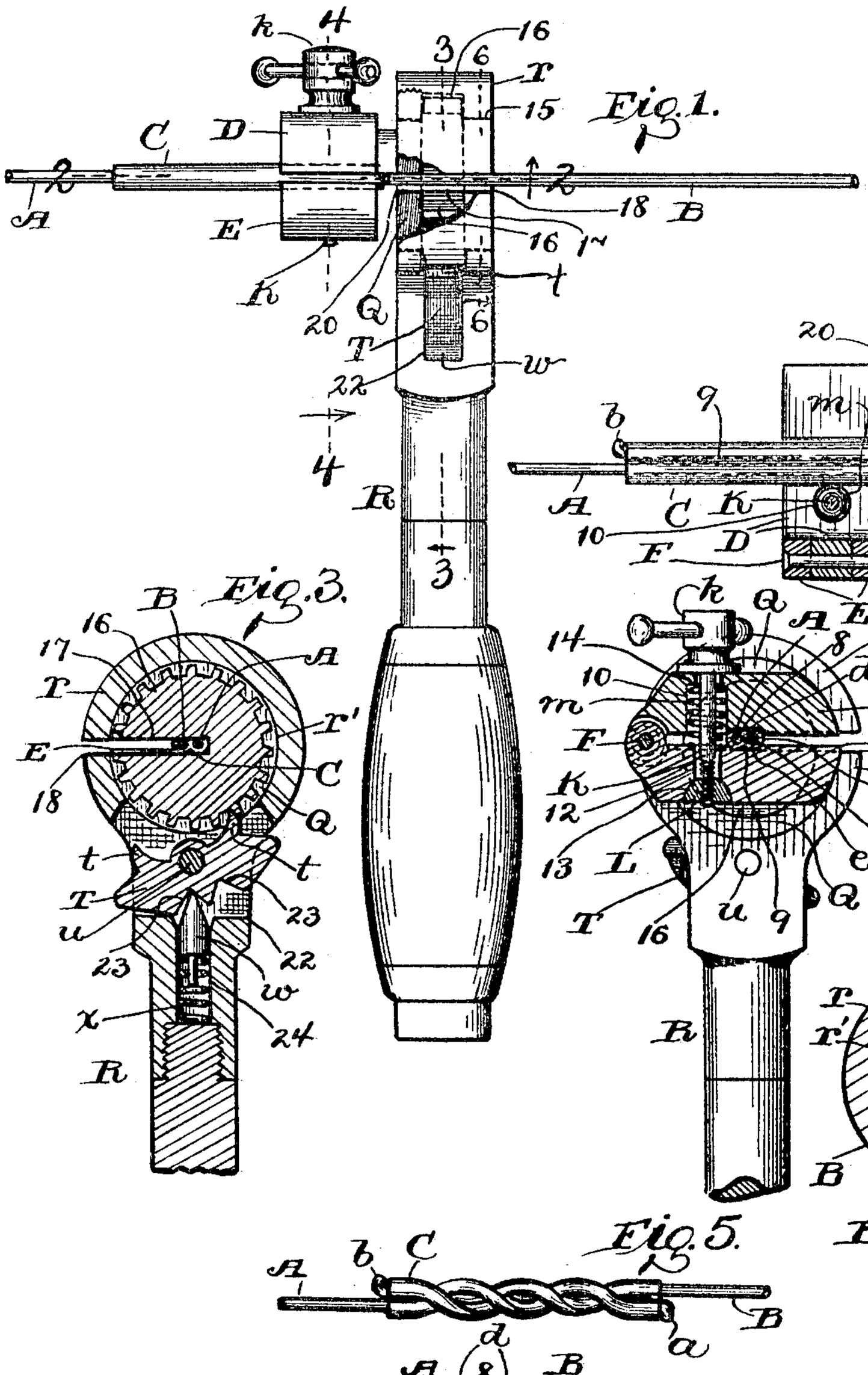


Fig. 2.

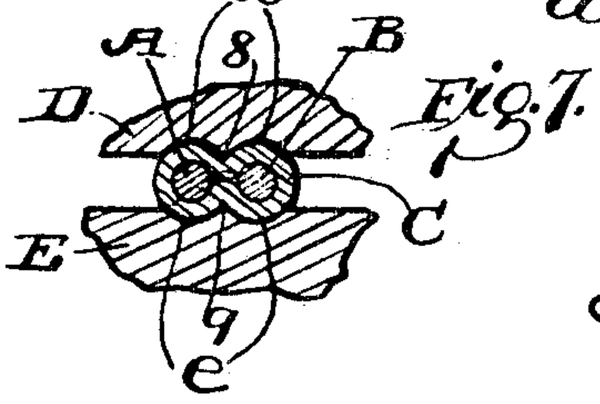
Fig. 3.

Fig. 4.

Fig. 6.

Fig. 5.

Fig. 7.



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WIRE-TWISTING TOOL.

No. 798,925. Specification of Letters Patent. Patented Sept. 5, 1905.

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To all whom it may concern:

Be it known that I, GEORGE SCHILLING, a citizen of the United States of America, residing at Cleveland, in the county of Cuyahoga and State of Ohio, have invented certain new and useful Improvements in Wire-Twisting Tools; and I hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it pertains to make and use the same.

This invention relates to improvements in wire-twisting tools.

The object of this invention is to provide a wire-twisting tool which is simple and durable in construction, which can be used as a wrench, and which is conveniently operated and efficient and reliable in its operation.

With this object in view and to the end of realizing other advantages hereinafter appearing this invention consists in certain features of construction and combinations of parts hereinafter described, and pointed out in the claims.

In the accompanying drawings, Figure 1 is a side elevation of a wire-twisting tool embodying my invention with the tool shown applied to two wires which are to be twisted together. Portions of the casing *r* are broken away in this figure to more clearly show the construction. Fig. 2 is a horizontal section on line 2 2, Fig. 1, looking upwardly. Fig. 3 is a vertical section on line 3 3, Fig. 1, looking in the direction indicated by the arrow. Fig. 4 is a vertical section on line 4 4, Fig. 1, looking in the direction indicated by the arrow. Fig. 5 is a view illustrating two wires twisted together. Fig. 6 is a vertical section on line 6 6, Fig. 1, looking outwardly. Fig. 7 is an enlarged section of the work-engaging portions of the work-clamping means of the tool.

Referring to the drawings, A and B indicate two parallel wires which are to be twisted together. The wires A and B extend through a sheet-metal tube C and are bent at the ends to prevent their displacement from the said tube preparatory to the operation of the wire-twisting tool—that is, (see Figs. 2 and 5,) the wire A is bent, as at *a*, over one end of the tube C, and the wire B is bent, as at *b*, over the other end of the tube. Obviously the wires A and B can be held together in some other way, so as to dispense with the tube C.

My improved wire-twisting tool comprises means for clamping the work and other means for intermittently rotating the work-clamping means. Obviously, therefore, when the tube C, with the wires A and B extending therethrough, is held at one end against rotation by pliers or other means and the work-clamping means is applied to the opposite end of the said tube and thereupon intermittently rotated the tube C, and consequently the wires extending through the tube, will be twisted together, as shown in Fig. 5.

The work-clamping means of my improved wire-twisting tool comprises two jaws D and E, which are suitably connected together and relatively adjustable to increase or decrease the space between them. The jaws D and E are hinged together, as at F, at one side of the tool and arranged to swing toward and from each other. The jaws D and E are provided in their opposing faces with recesses *d* and *e*, formed in and extending transversely of the different jaws, respectively, and arranged parallel with the axis of the hinge connection between the jaws. Preferably a pair of parallel recesses *d* and a pair of parallel recesses *e* are formed in the jaws D and E, respectively, as shown more clearly in Fig. 7, and the tube C is pressed inwardly between the wires extending therethrough to form two corrugations 8 and 9 in and externally of the tube at opposite sides, respectively, of the tube, and when the work is engaged by the jaws the wall between the recesses *d* engages the corrugation 8 and the wall between the recesses *e* engages the corrugation 9, and hence the work is accurately and efficiently held by and between the jaws.

The means for actuating the jaws D and E toward each other to cause the jaws to tightly clamp the work interposed between them (see Figs. 1 and 4) comprises a screw K, which extends loosely through the jaws at one side of the recesses *d* and *e* and is arranged between the hinge connection between the two jaws and the said recesses at a right angle or approximately at a right angle to the axis of the said hinge connection. The screw K is provided at one end with a head *k*, arranged to bear against the outer side of the jaw D, and a nut L is mounted on the screw-threaded shank of the screw within the outer side of the jaw E. The nut L is semicylindrical to render it capable of oscillation and arranged

with its axis parallel with the axis of the hinge connection between the jaws.

The jaw D is provided with a bore 10 to accommodate the location and operation of the screw K. The bore 10 is arranged in registry with a bore 12 formed in the jaw E, which also accommodates the location and operation of the screw K. The bore 12 is enlarged and shaped at its outer end to form a suitable bearing 13 for the nut L. The bore 10 is somewhat reduced in size transversely at its outer end to form an inwardly-facing shoulder 14 interiorly of the jaw D, and a spiral spring *m* is arranged in the main within the bore 10 and confined between the said shoulder and the face of the jaw E. The spring *m* acts to separate the jaws D and E from the work interposed between the jaws when the screw is turned in the direction required to loosen the jaws relative to the work, and obviously the jaws are caused to tightly clamp the work by turning the said screw in the opposite direction to the required extent.

The jaw D is provided with an axle 15, which is arranged in line axially with the clamping means and is cylindrical at its outer end. The axle 15 has bearing at its outer end in a casing *r*, formed by the inner end of a hand-lever R—that is, the casing *r* is journaled at its outer end upon the axle 15, which extends through the bore *r'*, formed internally of and extending through the said casing. The casing *r* is screw-threaded internally at its opposite or inner end. A correspondingly externally screw-threaded retaining-ring Q is screwed into the screw-threaded end of the casing *r*, and a ratchet-wheel 16 is formed on the axle 15 at the inner end of the retaining-ring between the latter and an annular shoulder *r²*, formed interiorly of the casing. (See Fig. 2.) The axle 15 and the ratchet-wheel 16 are in one piece, provided with a radial slot 17, extending from the periphery of the ratchet-wheel inwardly and somewhat beyond the center of the axle to accommodate the location of the wire B and the application and operation of my improved wire-twisting tool. For the same purpose—that is, to accommodate the location of the wire B and the application and operation of the wire-twisting tool—the casing *r* is slotted radially, as at 18, and the retaining-ring Q is slotted radially, as at 20. (See Figs. 1 and 2.)

It will be observed that in the normal position of the parts preparatory to the application of my improved tool for twisting the wires A and B together the slot 20 in the retaining-ring Q, the slot 18 in the casing *r*, and the slot 17 in the axle and ratchet-wheel are in registry with the space between the jaws D and E. It will be observed also that by intermittently rotating the ratchet-wheel 16 in one and the same direction upon the application of the wire-twisting tool as hereinbefore described the work-clamping means of the tool is correspondingly intermittently rotated to twist the wires A and B together, as shown in Fig. 5.

The means employed for actuating the ratchet-wheel preferably comprises (see Fig. 3) two pawls *t* and *t*, formed on one and the same piece T at the inner side of the said member T. The pawls *t* and *t* are reversely arranged at opposite sides, respectively, of a pin *u*, upon which the pawl-bearing member T is loosely mounted, which pin is arranged parallel with the axis of the ratchet-wheel and extends between and is supported from the side walls of a slot 22, with which the lever R is provided to accommodate the location and operation of the pawl-bearing member, which is provided with two notches 23, formed in the outer side of the pawl-bearing member and arranged centrally between the pawls. A bolt *w*, with which the lever R is interiorly provided, engages one of the notches 23 and is shiftable endwise of a bore 24, which is formed in and arranged longitudinally of the lever R between the slot 22 and the free end of the lever and communicates at its inner end with the said slot. A spiral spring *x* is confined within the bore 24 at the inner end of the bolt *w* and acts to retain the bolt in engagement with the pawl-bearing piece T.

The arrangement of the parts is such that when one of the pawls of the pawl-bearing piece is in operative engagement with the ratchet-wheel the notch 23 nearer the other pawl is engaged by the bolt *w*. The provision of the two pawls is merely for convenience in the manipulation of the tool in any place, accommodating the rotation of the ratchet-wheel in the one or the other direction.

What I claim is—

1. A wire-twisting tool comprising two oppositely-arranged coöperating jaws which are relatively movable to increase or decrease the space between them; a screw extending loosely through both jaws and provided at one end with a head arranged to bear against the outer side of one of the jaws; a nut mounted on the shank of the screw at the outer side of the other jaw; means acting to separate the jaws upon turning the screw in the direction required to loosen the jaws relative to the work, and means for rotating the jaws substantially as and for the purpose specified.

2. A wire-twisting tool comprising two oppositely-arranged coöperating jaws which are relatively movable to increase or decrease the space between them; a screw extending loosely through both jaws and provided at one end with a head arranged to bear against the outer side of one of the jaws; a nut mounted on the shank of the screw at the outer side of the other jaw, and a spiral spring mounted on the screw between the outer surfaces of the jaws and applied to separate the jaws upon turn-

ing the screw in the direction required to loosen the jaws relative to any work interposed between the jaws.

3. A wire-twisting tool comprising two oppositely-arranged coöperating jaws which are hinged together, with each jaw provided in its work-engaging face with two parallel recesses which extend side by side transversely of the jaw and are in registry with the corresponding recesses in the companion jaw; a screw extending loosely through both jaws between the hinge connection between the two jaws and the aforesaid recesses, which screw is provided at one end with a head arranged to bear against the outer side of one of the jaws, and a turnable nut mounted on the shank of the screw and arranged with its axis parallel with the axis of the aforesaid hinge connection.

4. A wire-twisting tool comprising two oppositely-arranged coöperating jaws which are hinged together; a screw extending loosely through both jaws a suitable distance from the hinge connection between the jaws, which screw is provided at one end with a member arranged to bear against the outer side of one of the jaws, and a turnable nut having bearing in the other jaw at the outer side of the last-mentioned jaw, which nut is mounted on the shank of the screw and arranged with its axis parallel with the axis of the aforesaid hinge connection.

5. A wire-twisting tool consisting of the following: work-clamping means comprising two coöperating jaws, with one of the jaws provided with an axle which is arranged in line axially with the work-clamping means; an oscillatory lever journaled on the axle, and means for transmitting motion to intermittently rotate the axle by the operation of the lever.

6. A wire-twisting tool consisting of the following: work-clamping means comprising two coöperating jaws, with one of the jaws provided with an axle which is arranged in line axially with the work-clamping means and operatively provided with a ratchet-wheel which is arranged with its axis coincident with the axis of the axle; a hand-lever terminating at its inner end in a casing which houses the ratchet-wheel and affords bearing to the axle, with the casing provided interiorly at one end of the ratchet-wheel with an inwardly-facing shoulder; an externally-screw-threaded retaining-ring screwed into the casing at the opposite end of the ratchet-wheel; a pawl for operating the ratchet-wheel, which pawl is arranged within and supported from the lever, and means for retaining the pawl in operative engagement with the ratchet-wheel, and the aforesaid casing, retaining-ring, axle and ratchet-wheel being slotted radially for receiving one of the wires to be twisted together.

7. A wire-twisting tool consisting of the following; work-clamping means comprising two coöperating jaws, with one of the jaws provided with an axle which is arranged in line axially with the work-clamping means and operatively provided with a ratchet-wheel arranged with its axis coincident with the axis of the axle; a hand-lever terminating at its inner end in a casing extending around the ratchet-wheel and journaled on the axle; a pawl for operating the ratchet-wheel, which pawl is arranged within and supported from the lever, and means for retaining the pawl in operative engagement with the ratchet-wheel, and the aforesaid casing, axle and ratchet-wheel being slotted radially for receiving one of the wires to be twisted together.

8. A wire-twisting tool consisting of the following: work-clamping means comprising two coöperating jaws, with one of the jaws provided with an axle which is arranged in line axially with the work-clamping means; a ratchet-wheel formed on the axle and arranged with its axis coincident with the axis of the axle; a lever terminating at its inner end in a casing which houses the ratchet-wheel and affords bearing to the axle; a pawl for operating the ratchet-wheel, which pawl is arranged within and supported from the lever, and means for retaining the pawl in operative engagement with the ratchet-wheel, and the aforesaid casing, axle and ratchet-wheel being slotted radially for receiving one of the wires to be twisted together.

In testimony whereof I sign the foregoing specification in the presence of two witnesses.

GEORGE SCHILLING.

Witnesses:
C. H. Dorer,
B. C. Brown.