J. E. LANGLEY.

WIRE APPLYING AND TWISTING IMPLEMENT.

APPLICATION FILED FEB. 24, 1913.

1,087,787.

Patented Feb. 17, 1914.

2 SHEETS—SHEET 1.

Fig. 1.

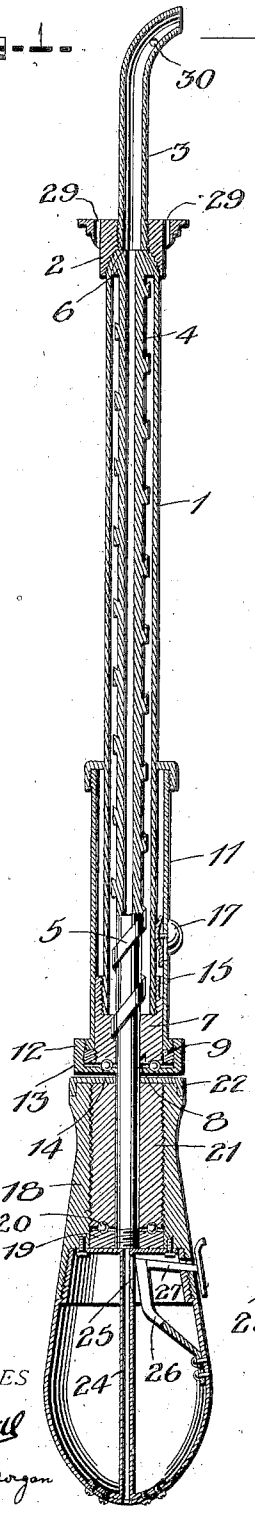


Fig. 2.

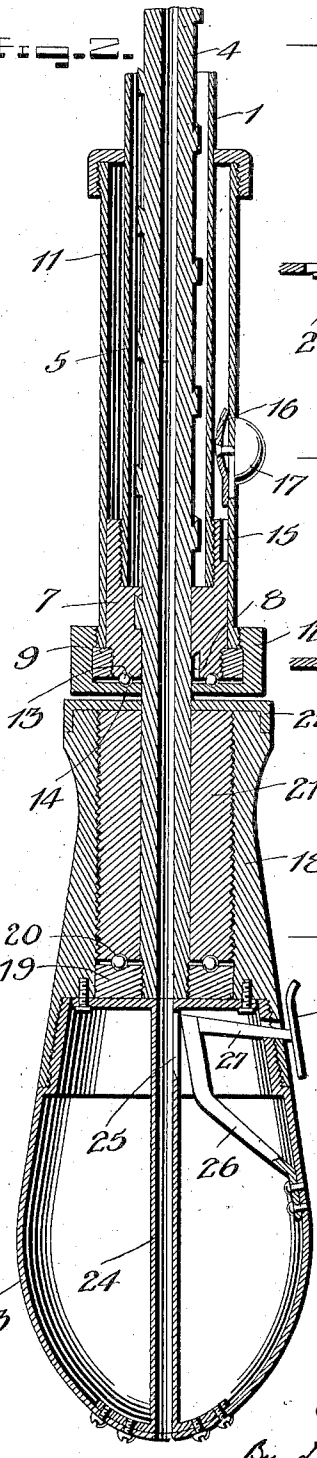


Fig. 3.

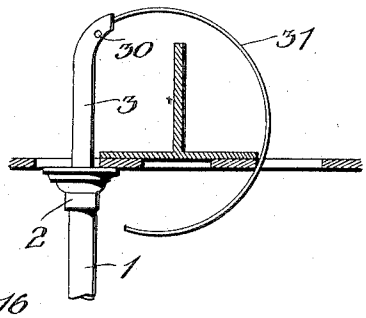


Fig. 4.

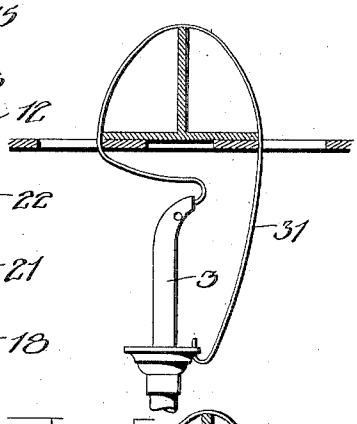
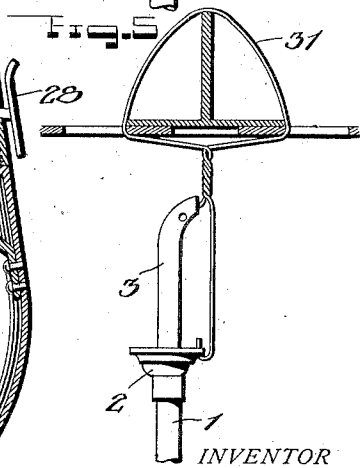


Fig. 5.



WITNESSES

W. H. Rockwell

Caroline Morgan

INVENTOR

J. E. Langley

By Langdon Moore

Attorney

J. E. LANGLEY.

WIRE APPLYING AND TWISTING IMPLEMENT.

APPLICATION FILED FEB. 24, 1913.

1,087,787.

Patented Feb. 17, 1914.

2 SHEETS—SHEET 2.

Fig 6

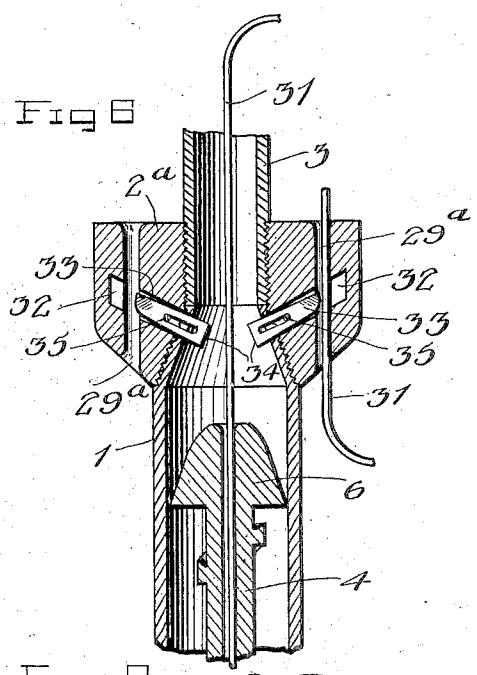


Fig 7

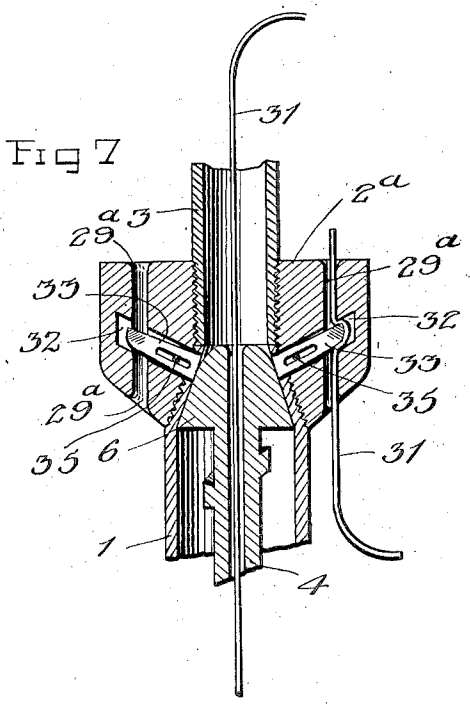


Fig 8

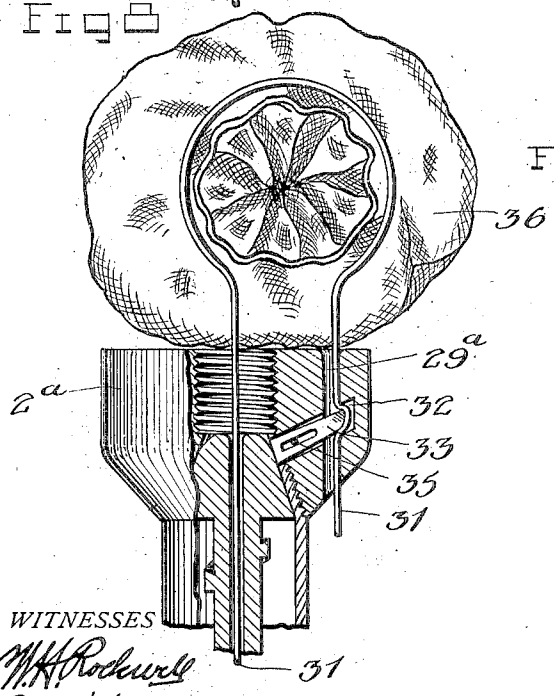
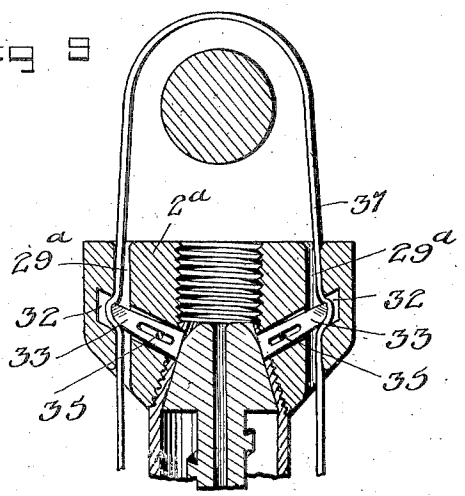


Fig 9



WITNESSES

M. H. Rockwell

Caroline Morgan

INVENTOR

J. E. Langley,

By Langdon Moore

Attorney

UNITED STATES PATENT OFFICE.

JOHN E. LANGLEY, OF CHARLESTON, SOUTH CAROLINA.

WIRE APPLYING AND TWISTING IMPLEMENT.

1,087,787. Specification of Letters Patent. Patented Feb. 17, 1914.

Application filed February 24, 1913. Serial No. 750,260.

To all whom it may concern:

Be it known that I, JOHN EDWARD LANGLEY, a citizen of the United States, residing at Charleston, in the county of Charleston and State of South Carolina, have invented new and useful Improvements in Wire Applying and Twisting Implements, of which the following is a specification.

This invention relates to improvements in wire working, and more particularly to an implement for joining and twisting wire.

It is the object of this invention to provide an instrument of simple construction and operation for passing a strand of wire about an object or objects and binding the wire so passed firmly thereabout by twisting the ends about each other.

This implement can be used to great advantage in securing metal laths or expanded metal to the furring or supports, and particularly in this instance in securing the metal laths or expanded metal to ceilings, which ordinarily is a tedious and expensive undertaking when done by hand. This implement can also be used to great advantage in securing the tie rods of reinforced concrete, attaching tags to bags or other articles, or for any other purpose where it is desired to mechanically pass a wire about objects and then tie the ends.

While the preferred form of this invention is illustrated upon the accompanying sheet of drawing, yet it is to be understood that minor detail changes may be made without departing from the scope thereof.

Figure 1 is a view partly in section of the completed implement. Fig. 2 is a view in transverse section of the handle and operating means. Fig. 3 is a view in diagram illustrating the first step in securing metal lathing to the furring by means of this implement. Fig. 4 is a view in diagram of the second step of this operation. Fig. 5 is a view in diagram of the last step before the wires are cut. Fig. 6 is a view in transverse section through a modified form of foot illustrating the wire inserted. Fig. 7 is a similar view illustrating the wire deformed in the foot. Fig. 8 is a view partly in transverse section of the foot illustrating the application of this implement in tying a bag. Fig. 9 is a view in transverse section of the foot illustrating the manner of employing a short piece of wire.

This implement comprises a tubular body 1 provided at one end with a foot 2 having a flat surface preferably of greater diameter than the body and extending at right angles thereto. The foot is provided with a detachable central extension in the form of a tube 3 terminating in a curved extremity or mouth piece.

A shaft 4 having a central bore is mounted to reciprocate within the tubular body. This shaft is preferably of less diameter than the body and is provided about its outer circumference with a spiral flange or thread 5 of high pitch terminating at the end adjacent the foot in a cap or guide 6 slidably engaging the inner walls of the tubular body. The opposite end of the tubular body is provided with an operating member preferably in the form of a sleeve 7 threaded thereon having a central bore through which the shaft reciprocates and this bore provided with a spiral groove 8 adapted to receive the spiral flange or thread 5 upon the shaft. To the outer end of the operating member or sleeve a bearing ring 9 is secured and a race way for ball bearings is provided about the outer end within said ring. A tubular hand-hold 11 is rotatably secured about the tubular body by a ring 12 surrounding the bearing ring 9 of the sleeve or operating member having a corresponding race way to secure the ball bearings 13 in end closure 14 which also has a central perforation allowing the shaft to reciprocate therethrough and attach at the other end the tubular hand-hold. To secure the hand-hold 11 stationary with the tubular body 1 a recess 15 is provided in the inner end of the operating member or sleeve 7, which is adapted to be engaged by a spring catch 16 traveling longitudinally in a slot in the hand-hold and provided with an operating button 17 on the outer side thereof.

The outer end of the shaft 4 extends into a handle 18 therefor and is rotatably secured therein by means of a ring 19 secured to the end of the shaft. The handle proper between the ring 19 and the end adjacent the operating member or sleeve 7 is preferably provided with a screw-threaded recess containing a screw-threaded securing sleeve 21 about the shaft with a series of ball-bearings between the sleeve and ring 19. This end of the handle is preferably closed by a perforated plate 22 surrounding the shaft having a depending flange adapted to be

screw-threaded or otherwise fitted to the outer circumference of the handle.

It is preferable to provide the lower end of the handle proper with a metallic hollow casing 23, as shown, to carry out the contour of the handle 18 and this casing is provided with a central passage-way 24 acting as a continuation of the bore of the shaft. This passage way adjacent the end of the shaft is provided with a slot 25 through which the free end of a spring clamp 26 may pass, the other end of the spring clamp being fixed to the interior of the handle casing. The spring clamp 26 is so constructed that the free end normally is held between the walls of the slot 25 but does not enter into the passage way. The free end of the clamp is attached to an operating member 27 passing through the outer walls of the casing 23 which is provided with a thumb plate 28 upon the exterior thereof, whereby the free end may be caused to traverse the passage way.

The foot 2 is provided with one or more apertures 29 passing through the flat surface and the tube 3 detachably carried thereby is preferably provided with an aperture 30 in the curved extremity or mouth piece. This tube 3 is made detachable so that tubes of different lengths, or tubes with mouth pieces of different curvatures can be applied to the implement according to the character of the work to be done.

The operation is as follows: The implement in the closed position, as shown in Fig. 1, is preferably held by the operator grasping the hand hold 11 in the left hand and the handle 18 in the right hand, and the handle pulled away from the hand hold to the limit of its movement. The end of the wire 31, which may be on a spool, ball or loose and either carired by the operator or attached to the handle of the implement, is then inserted through the passage way 24 in the handle, passed through the bore of the shaft until it strikes the end of the curved mouth piece or the aperture therein as desired. The thumb plate 28 upon the exterior of the handle is then depressed, which causes the spring clamp 26 to firmly engage and hold the wire 31 in the passage way. The operating button 17 upon the hand hold 11 is moved to lock the operating member 7 thereto, which prevents the rotation of the tubular body 1 and curved mouth piece 3 in relation to the handle 18. When securing metal laths or expanded metal to the furring, the tubular extension 3 is inserted between the laths or expanded metal in proximity to the furring, as illustrated in Fig. 3. The handle 18 is then forced toward the hand hold 11, with thumb plate 28 depressed to lock wire 31, which will cause the length of the wire within the implement to pass through the curved mouth piece or aperture therein in a curved path about the furring and through the laths or expanded metal on the other side. The end of the wire 31 is then passed through one of the apertures 29 in the foot, as shown in Fig. 4, thumb plate 28 released and the implement withdrawn and held on the near side of the laths or expanded metal, as shown in Fig. 4. The spring catch 16 upon the hand hold 11 is then moved to release the operating member 7 and the handle 18 drawn away therefrom which causes the tubular body 1 to rotate and twist the end of the wire secured in the foot 2 with the wire issuing from the mouth piece, as shown in Fig. 5. The twisted ends are then cut by a pair of pliers or wire cutters and the operation is completed.

In Fig. 1 a foot 2 is shown having one or more passage ways 29 of constant diameter through which the free end of the wire is passed by hand from the underside which necessitates the outer portion to be bent upward to hold the wire in place while the twisting is being performed.

Figs. 6 to 9 illustrate a foot 2^a in which the free end of the wire is deformed within the foot and thereby held in place during the twisting movement.

In tying the neck of bags or in securing articles about which free access is had the tube 3 is removed. Fig. 8 illustrates the application of this implement in tying a bag 36. Sufficient wire is fed out, passed about the neck of the bag and the free end passed through the upper side of the foot, the shaft forced home deforming the wire by the plunger 33 mounted to reciprocate in the angular traversing passage 32, and the shaft withdrawn twisting the ends of the loop so formed in making a firm tie. The plunger 33 is retained in the passage 32 by the pin 35 engaging a slot in the plunger body.

At times it is desirable to employ short pieces of wire and to accommodate this implement to this use the passage ways 29^a are arranged in diametrical sides to the foot 2^a and the tube 3 removed. Fig. 9 illustrates this application in which both ends of a short piece of wire 37 after passing about the object are deformed in the passage ways 29^a and twisted in the same manner as above described. In such cases the loop so formed is short and upon twisting the pressure of the twisting wires upon their ends in the foot will be sufficient upon the completion of the twist to draw the ends free so that a complete tie is made automatically.

From the above description it is seen that the wire may be fed continuously, which in itself is a great economy as only the actual amount necessary to the tie is used, and as the bore in the shaft 4 is of good size either large or small wire may be used equally as well, and furthermore should it be desired

to use short lengths of wire instead of the continuous feed the implement is so constructed to adapt itself to this purpose and make the tie in the same manner.

What I claim is:

1. A wire working implement comprising means to pass a wire therethrough, means to form a loop of the wire about an object, means for attaching the free end of the loop to the implement, and means for twisting the ends of the loop so formed.

2. In a wire working implement, a body, means for extending a wire therethrough, means for attaching the free end of the extended wire, and means for twisting together the ends of the loop so formed.

3. In a wire working implement, a body, means for passing a wire therethrough, means for extending the free end therefrom, means for attaching the free end of the extended wire, and means for twisting the ends of the loop so formed.

4. In a wire working implement, a body, means for passing a wire therethrough, means for extending the free end therefrom, means for directing the return of the free end to the body, means upon the body for attaching the free ends, and means for twisting the ends of the loop so formed.

5. A wire working implement comprising a body and a shaft adapted to reciprocate therein including means for passing a loop of wire about an object upon movement of shaft in one direction, while the body remains relatively stationary, means upon the body for attaching thereto the free end of the loop, and means for rotating the body upon movement of the shaft in the opposite direction to twist the ends of the loop so formed.

6. In a wire working implement, a body, a rotatable hand-hold thereon, a reciprocable shaft therein, a handle rotatably carried upon the end of the shaft, means for extending a wire from the body, means for attaching the free end of the extended wire to the body, means upon the body co-acting with means upon the shaft actuated by the operation of the handle to rotate the body and twist the ends of the loop so formed.

7. In a wire working implement, a body, a rotatable handle thereon, a reciprocable shaft therein, means upon the shaft co-acting with an operating member upon the body to rotate the body within the hand-hold upon reciprocation of the shaft, a handle rotatably carried upon the end of the shaft, means for extending a wire from the body during movement of the shaft in one direction, means upon the body for directing the return of the free end of the wire to the body, means for attaching the free end of the wire to the body, detachable means for locking the hand-hold to the operating member during the extending of the wire adapted to be unlocked thereafter, said unlocked operating member rotating the body upon movement of the shaft in the opposite direction to twist the ends of the loop of wire so formed.

8. In a wire working implement, a body, a reciprocable shaft therein, a handle rotatably carried upon the end of the shaft, said handle, shaft and body provided with central passages for the reception of a wire, and means for passing a wire therethrough and extending the free end beyond the body adapted to be actuated during the reciprocation of the shaft.

9. In a wire working implement, a body having a central passage way, a shaft having a central bore reciprocably mounted therein, a handle for actuating the shaft upon the exterior end thereof having a central passage-way in line with the passage-ways in the body and shaft, said passage-ways adapted to receive a wire, means upon the handle adapted to engage a wire in the passage-way to extend the free end of said wire beyond the body upon movement of the shaft in one direction.

10. In a wire working implement, a body having a central passage-way, a shaft having a central bore reciprocably mounted thereon, a handle for actuating the shaft upon the exterior end thereof having a central passage-way in line with the passage-ways in the body and shaft, said passage-ways adapted to receive a wire, manually-operated means upon the handle adapted to enter the handle passage-way and engage a wire therein to extend the free end of the wire from the body upon movement of the shaft in one direction, said means normally held without the handle passage-way allowing the handle and shaft to pass over a length of wire during movement in the opposite direction.

11. A wire working implement comprising means to pass a wire therethrough, means to form a loop of the wire about an object, means for deforming the free ends of the loop in the implement, and means for twisting the ends of the loop so formed.

12. A wire working implement, comprising a body, a reciprocable, rotatable shaft therein, detachable means for rotating the shaft and body together upon movement in one direction, a foot upon the end of the body having passage-ways therethrough adapted to receive the free end of a wire, and means in the foot for deforming the wire.

13. A wire working implement comprising a body, a reciprocable, rotatable shaft therein, detachable means for rotating the shaft and body together upon movement in one direction, a foot upon the end of the body having passage ways therethrough adapted to receive the free end of a wire, means in the

foot for deforming the wire actuated by engagement of the end of the shaft with said means and securing the wire therein.

14. A wire working implement comprising a body, a reciprocable, rotatable shaft therein, detachable means for rotating the body and shaft together upon movement in one direction, a foot upon the end of the body having passage-ways therethrough adapted to receive the free end of the wire, each passage-way provided with an angular traversing passage-way containing a reciprocable plunger normally without the wire passage-way adapted to be forced against and deform the wire upon engagement with the end of the shaft.

JOHN E. LANGLEY.

Witnesses:
OTTO V. LEE, JR.,
TOM P. HENLEY.