(No Model.) 2 Sheets—Sheet 1.

M. B. LLOYD.

WIRE COILER.

No. 548,000. Patented Oct. 15, 1895.

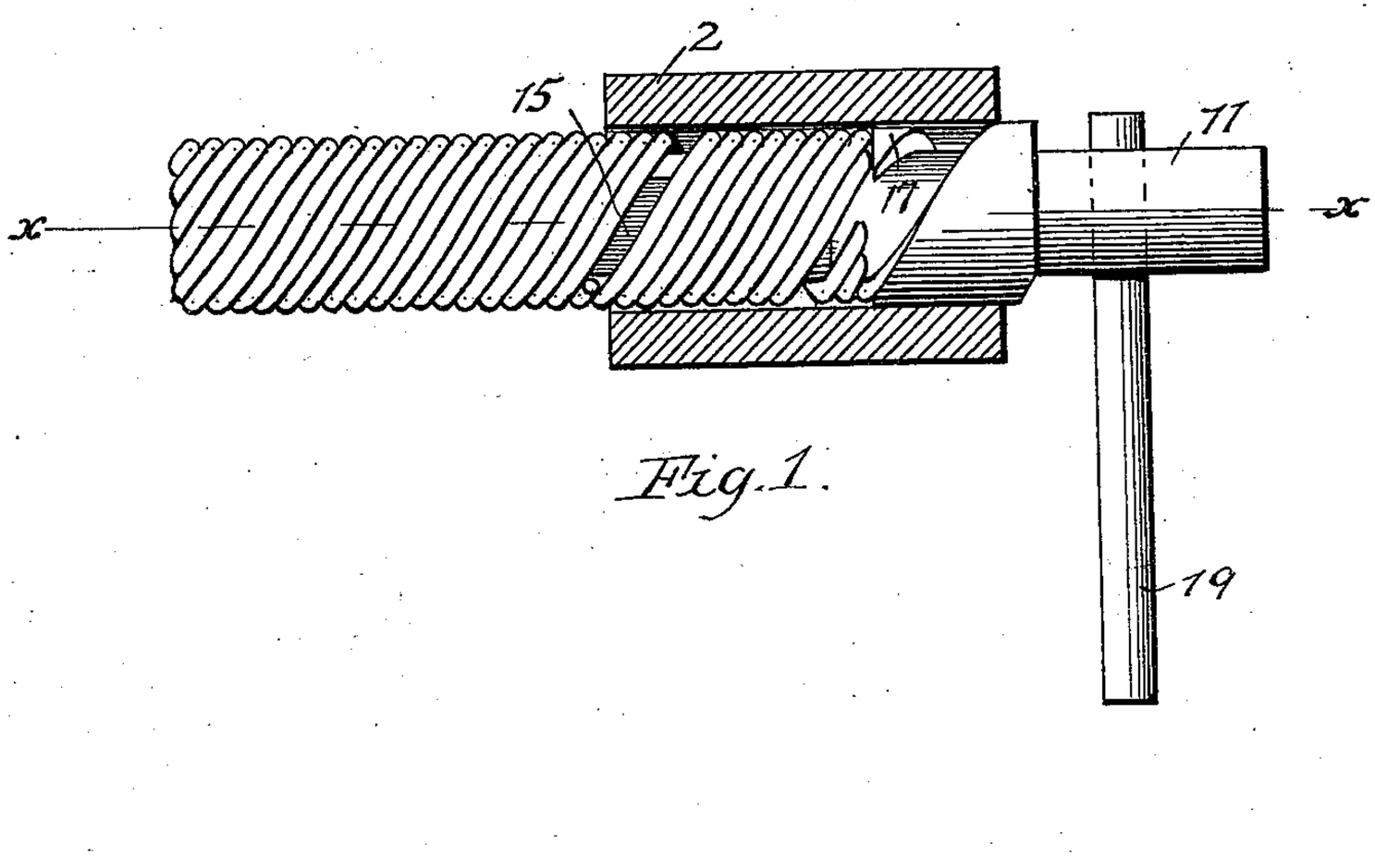


Fig. 1.

Fig. 2.

Fig. 3.

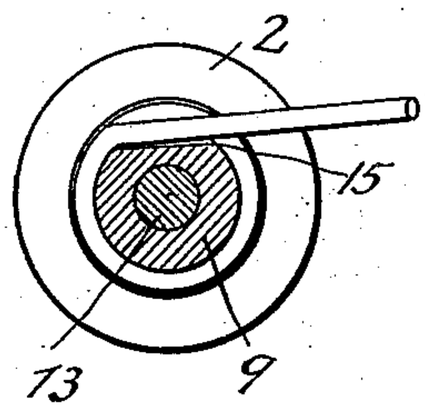


Fig. 4.

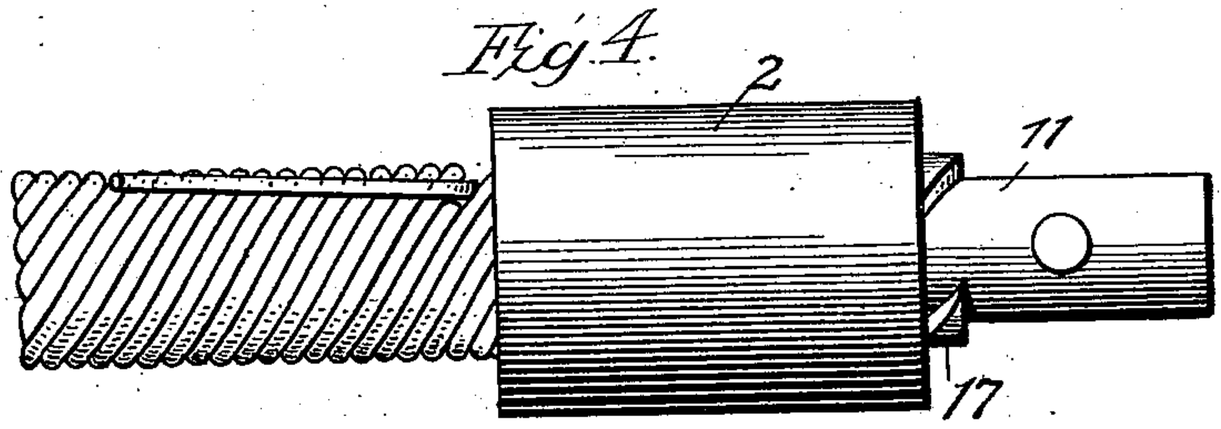
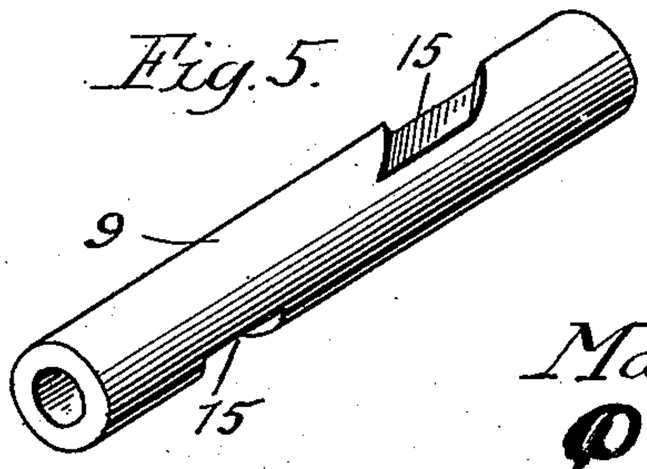


Fig. 5.



Witnesses.
J. Jerren.
E. F. Shyon

Inventor.
Marshall B. Lloyd.
By Paul & Hawley
his attorneys.

(No Model.) 2 Sheets—Sheet 2.

M. B. LLOYD.

WIRE COILER.

No. 548,000. Patented Oct. 15, 1895.

Fig. 6.

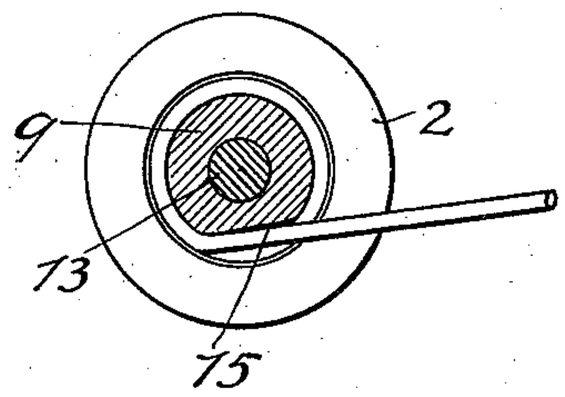


Fig. 7.

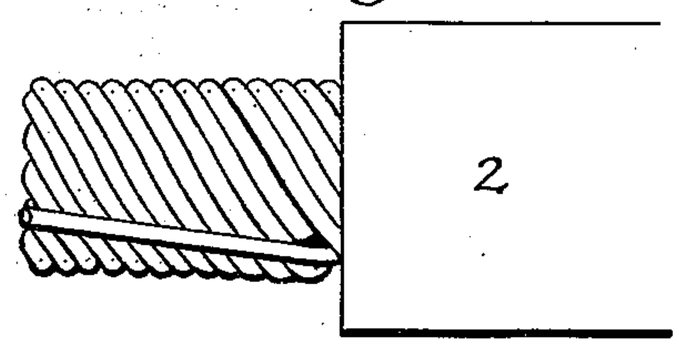


Fig. 8.

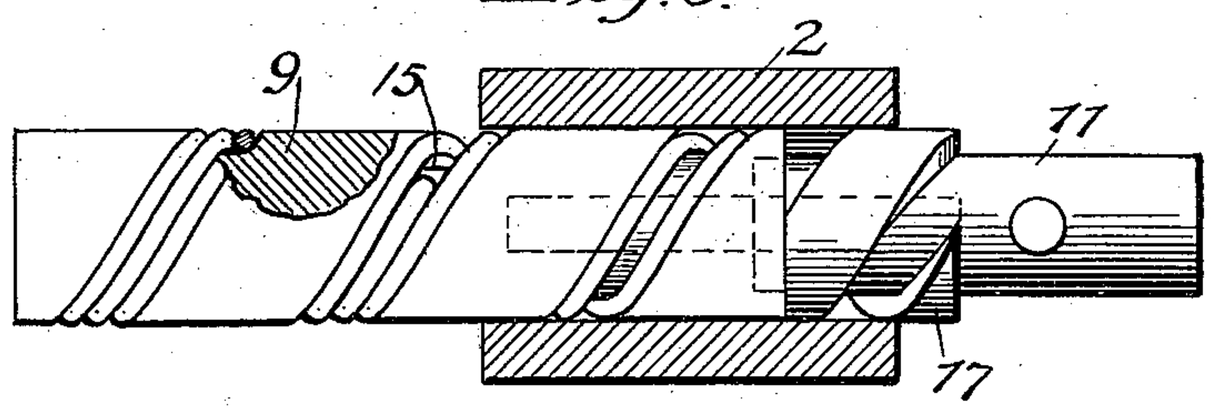


Fig. 9.

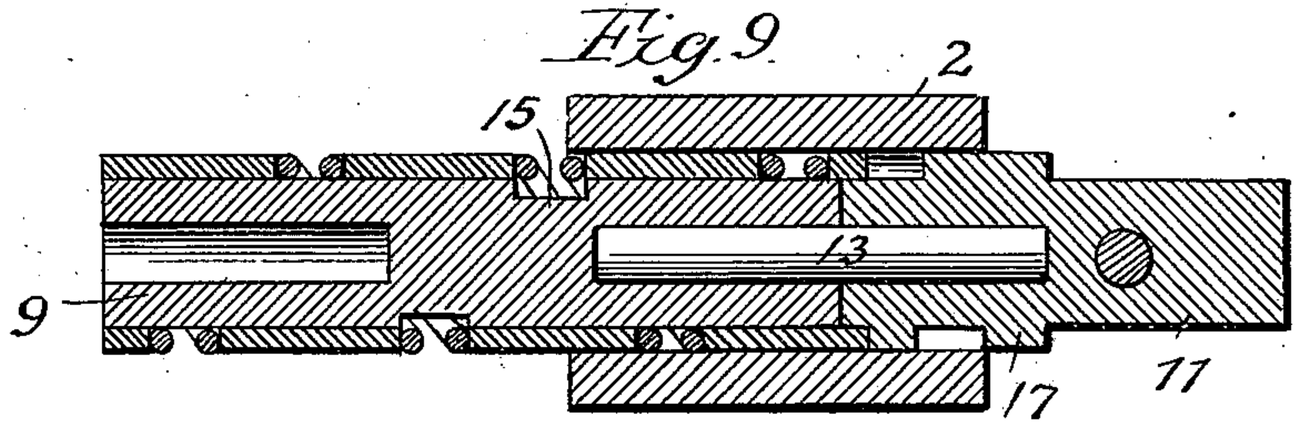


Fig. 10.

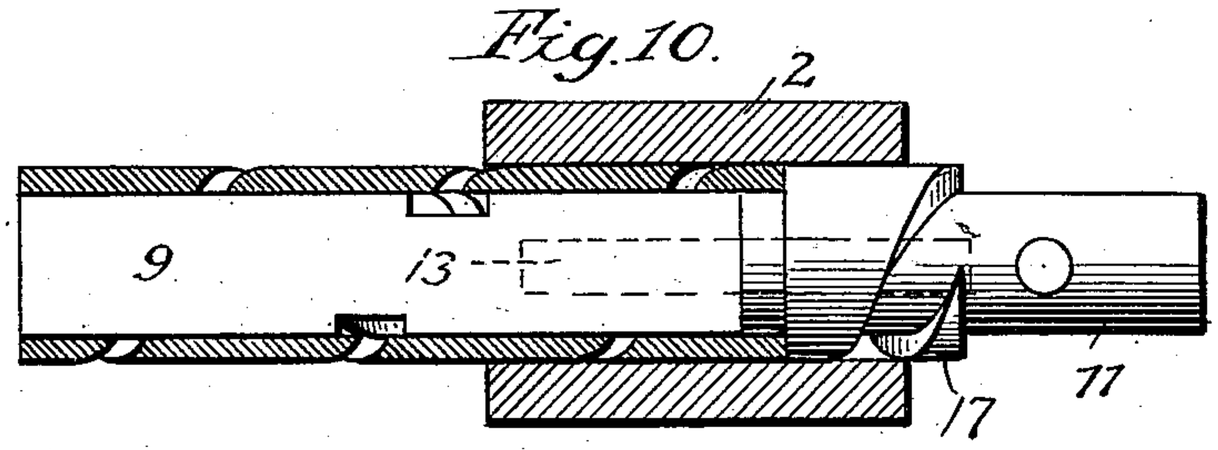
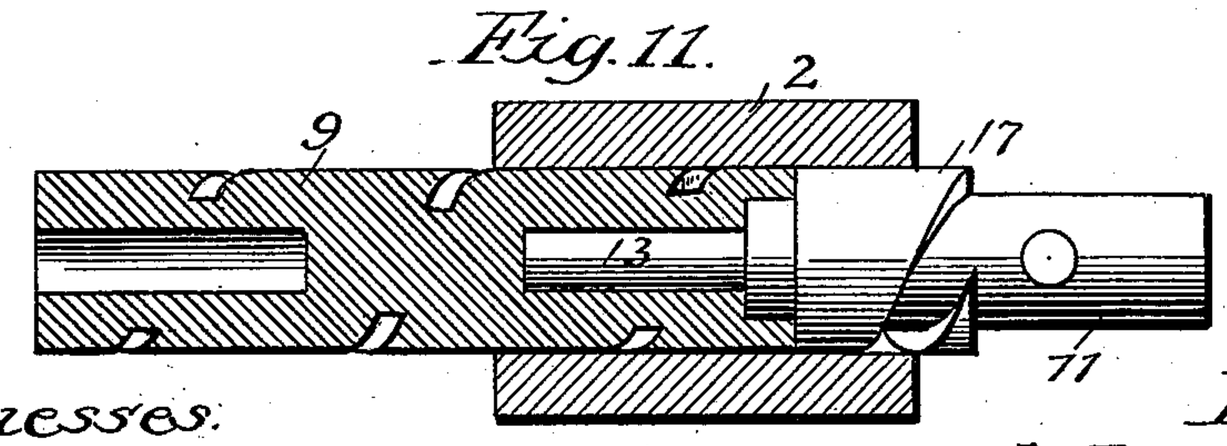


Fig. 11.



Witnesses:
J. Jerrew.
C. B. Lyon

Inventor:
Marshall B. Lloyd.
By Paul & Hawley
his Attorneys.

UNITED STATES PATENT OFFICE.

MARSHALL BURNS LLOYD, OF MINNEAPOLIS, MINNESOTA, ASSIGNOR TO THE WHITE MANUFACTURING COMPANY, OF SAME PLACE.

WIRE-COILER.

SPECIFICATION forming part of Letters Patent No. 548,000, dated October 15, 1895.

Application filed January 24, 1895. Serial No. 536,011. (No model.)

To all whom it may concern:

Be it known that I, MARSHALL BURNS LLOYD, of Minneapolis, Hennepin county, Minnesota, have invented certain new and useful Improvements in Wire-Coilers, of which the following is a specification.

This invention relates to improvements in coilers adapted for use with a force-feed and designed for use in coiling wire into spirals, as in the manufacture of coiled-wire fabrics for bed-bottoms, door-mats, or other like purposes; and the invention consists, generally, in a coiler comprising a core, an outer shell or cylinder, and a spiral filling arranged between the core and the shell, forming a space or the path of the running wire.

The invention further consists in means for adjusting the pitch of the running wire.

The invention further consists in the constructions and combinations hereinafter described, and particularly pointed out in the claims.

In the accompanying drawings, forming part of this specification, Figure 1 is a plan view of the improved coiler, the shell being shown in section. Fig. 2 is a longitudinal section of the coiler on the line *x x* of Fig. 1. Fig. 3 is a transverse section showing the position in which the running wire enters the coiler. Fig. 4 is a side elevation showing also the running wire entering the coiler. Fig. 5 is a perspective of a section of the core. Fig. 6 is a transverse section showing the coiler arranged to make a left-hand coil. Fig. 7 is a detail showing the wire entering the left-hand coiler. Fig. 8 shows a longitudinal section of the shell and an elevation of the core, showing a modified arrangement of the filling. Fig. 9 is a longitudinal section of the coiler of the construction shown in Fig. 8. Fig. 10 is a view similar to Fig. 9, showing another modification of the filling. Fig. 11 is a longitudinal section showing the adjustable core and showing the groove or path for the running wire formed in the body of the core.

In the drawings, 2 represents the outer shell or cylinder, which is in the form of a tube of suitable length and diameter and formed of suitable material. This part 2 does not revolve, being fixed in any suitable manner to a convenient part of the machine-frame. Within this shell is arranged a core formed of two sections 9 and 11, secured together so as to have a common axis by a pin 13, which enters an opening in each section of the core. The section 9 is cylindrical and is provided near one or both ends with the groove or flat portion 15. By providing this groove in each end of this section of the core and forming an opening in each end to receive the pin 13 the section is made reversible, so that after it becomes worn it may be turned end for end, although, of course, this construction is not essential.

The section 11 is provided with a spiral rib 17, which comes to a point at its inner end. This section is also provided with the adjusting handle or rod 19, and any convenient means (not shown) may be provided for locking this handle after this part of the core has been adjusted to the proper position. The space within the shell and between it and the core is substantially filled by a spirally-coiled strip of metal or other suitable material arranged to form a space or path for the passage of the running wire. In practice I prefer to coil a series of wires close together and then cut out one of the wires opposite the groove 15 in the core. The part of the series of coiled wires outside of the shell and beyond the groove 15 form suitable means whereby the core may be clamped in position by a suitable clamp of any preferred construction. (Not shown.)

The surrounding shell 2 may be fixed.

The wire in operation passes from suitable feed-rolls through a suitable guide into the spiral space or path between two of the wires, entering first the groove 15. The wire is thus given a sharp bend, as illustrated in Fig. 3, and this causes it to hug the core closely throughout, and thus prevents it from springing out and creating considerable friction on the inside of the shell. As the wire reaches the end of the spiral rib on the section 11, it bears against said rib with sufficient force to give a permanent set to the coil and determine its pitch or inclination. By rotating the section 11 the angle at which the wire will strike the rib may be varied and thereby the pitch of the coiled wire may be regulated. As the running wire passes through the coiler, it bears against the rounded surfaces of the

wire forming the walls of the spiral passage, the wire forming the front wall receiving the greatest amount of force or pressure from the running wire. This rounded surface reduces the wear to the minimum by creating the least amount of friction and prevents cutting or shaving the running wire. As the wires forming the walls of the spiral path or passage for the running wire become worn, they may readily be removed and other wires put in their places, and as these wires are the only parts of the coiler upon which there is any appreciable amount of wear it will be seen that the coiler may be maintained in perfect working condition at a very small expense.

I may, if preferred, use only two wires, as shown in Figs. 8 and 9, or one of these might be omitted and use a coiled strip to fill up the remaining space between them, or all of the wires might be omitted and a spirally-coiled strip be employed, forming the spiral passage between its edges, as shown in Fig. 10. In this instance the strip will be longitudinally adjusted as its edge becomes worn, so as to maintain the wall of the passage against which the running wire bears in substantially the same position at all times.

In Fig. 11 the spiral passage is shown formed by cutting a spiral groove in the section 9 of the core. In this instance the coiler does not possess the advantages of being cheaply renewed or maintained, as do the constructions hereinbefore described; but the core being formed in two sections may be adjusted to regulate the pitch of the coil.

The coiler may, if preferred, be arranged to form a left-hand coil, as shown in Figs. 6 and 7.

The advantages of the coiler will be apparent. The spiral wires or strips are very inexpensive and may be readily renewed, and they may be coiled with a greater or less pitch, as desired. The adjustment of the section 11 of the core is readily accomplished and permits any desired variation in the pitch and length of the coils.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. A wire coiler, having a core formed in two sections one of said sections being rotatably adjustable.

2. A force feed coiler, comprising a shell, a suitable spiral coiler proper arranged therein, a core section also within said shell in line with the coiler and having a spiral rib, and said core section being rotatably adjustable with respect to the coiler proper, substantially as described.

3. The combination, with the shell and a spiral coiler, fixed with relation to one another, of a rotatably adjustable section provided within said shell in line with said coiler and having a spiral rib, said section being rotatably adjustable with respect to said coiler, substantially as described.

4. The combination, with the shell or casing, of the sectional core, one section being provided with a spiral rib and with means for rotatably adjusting said section, and a spirally coiled filling arranged upon the core within the said shell and forming a passage for the running wire.

5. The combination, with the core formed in sections, and the surrounding shell, of the series of spiral wires arranged between said shell and said core.

6. The combination, with the shell, of the core having a spiral passage for the running wire and provided with the groove 15 of a greater depth than said passage, whereby a sharp bend is given to the wire as it enters the coiler.

7. In a wire coiler, a core provided with a groove or cut-away portion 15 for forming a sharp bend in the wire.

8. The combination, with the shell, of the core consisting of the two sections 9 and 11, the section 11 being rotatably adjustable and provided with a spiral rib, and the section 9 being provided with the groove 15, and the series of spiral wires arranged between said shell and said core.

9. The combination, with the shell, of a core stationary therein, a spiral passage being formed between said parts, and one of the walls of said passage being formed by a removable spiral coil, substantially as described.

10. The combination, with the shell, of a core stationary therein, spiral passage being formed between said parts, the walls of said passage being formed by removable spiral coils, substantially as described.

11. The combination, with the shell, of a core stationary therein, a spiral passage being formed between said parts, two walls of said passage being formed by removable spiral coils, substantially as described.

In testimony whereof I have hereunto set my hand this 14th day of January, A. D. 1895.

MARSHALL BURNS LLOYD.

In presence of—

M. E. GOOLEY,

C. G. HAWLEY.