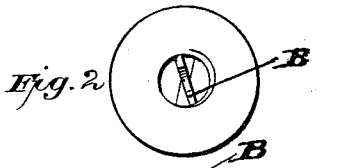
(No Model.)

# T. C. McPHERSON.

## WIRE COILING APPARATUS.

No. 436,256. Patented Sept. 9, 1890.

Fig. 2



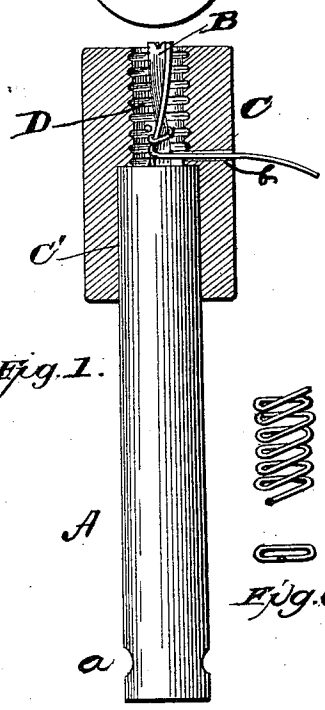




Fig. 1.



Fig. 6.

Fig. 3

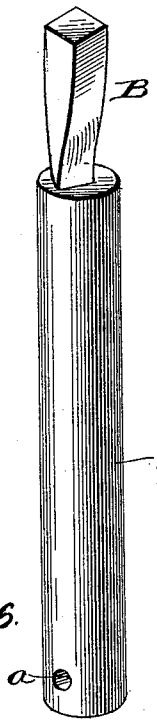



Fig. 4.

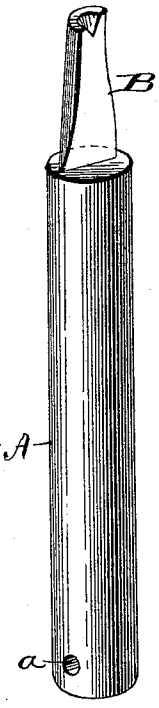
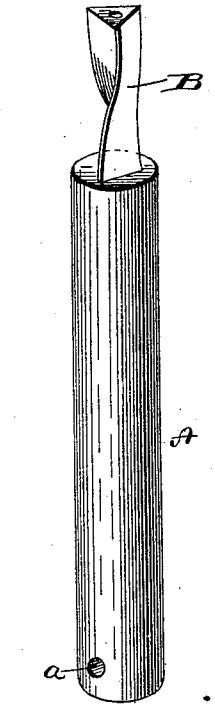



Fig. 5



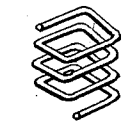



Fig. 7

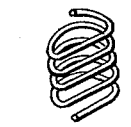


Fig. 8.

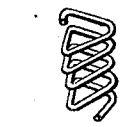


Fig. 9.

WITNESSES

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# UNITED STATES PATENT OFFICE.

THOMAS C. McPHERSON, OF BEAVER FALLS, PENNSYLVANIA.

## WIRE-COILING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 436,256, dated September 9, 1890.

Application filed May 12, 1890. Serial No. 351,382. (No model.)

*To all whom it may concern:*

Be it known that I, THOMAS C. McPHERSON, a citizen of the United States, residing at Beaver Falls, in the county of Beaver and State of Pennsylvania, have invented new and useful Improvements in Methods and Apparatus for Coiling Wire; and I do hereby declare the following to be a full, clear, and exact description of said invention, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

My invention relates to the devices for forming wire coils in various shapes directly from the cold wire.

In the production of belts, hose, and other articles in which woven-steel-wire coil is used the coils forming the links or meshes have been flattened or shaped into irregular forms by stretching or rolling while in a heated state; and my invention has for its object to form the coils into the desired shape from the cold wire or rod; and to this end my invention consists in connecting or forming with or upon the end of a mandrel a shaping-bar having an outline in cross-section corresponding to the shape it is desired to impart to the coil, with a solid cylindrical sleeve to surround the shaping-bar, having an internal diameter corresponding to the greatest width of the shaping-bar, provided with a spiral groove whose width and depth approximates that of the width of the rod or wire to be operated upon, and an aperture by which to feed the rod or wire to the groove; and the invention further consists in certain details in the construction and arrangement of parts, all as hereinafter explained.

In the accompanying drawings, Figure 1 is a side elevation of a shaft or mandrel, showing a shaping-bar for forming a coil in oblong form, showing the sleeve in section. Fig. 2 is an end view of the same. Fig. 3 is a perspective view of the mandrel, showing a shaping-bar for forming the wire into a rectangular form. Fig. 4 is a similar view with a shaping-bar for forming the wire into segmental form. Fig. 5 is a similar view showing a shaping-bar for forming the wire in triangular form. Figs. 6, 7, 8, and 9, are perspective views of the sections of the wire formed by the several tools illustrated.

The mandrel portion A is shown as made in cylindrical form for chucking in a lathe, or may be provided with an opening *a* to receive a rod or bar to permit the device to be operated by hand. The mandrel or shaft may, however, be made in any desired shape as shall be found most desirable.

The shaping-bar B may be either forged from the same metal as the mandrel or may be connected thereto, as shall be found most convenient, and which shaping-bars are shaped to conform to the configuration it is desired to impart to the wire or rod, and with the angles made in elongated spiral form.

C is a cylindrical collar or sleeve provided at one end with a cylindrical recess C′ to closely fit the mandrel and for the rest of its length corresponding to the length of the shaping-bar, being provided with an internal spiral groove or thread D, designed to conduct the coil to the terminal, the inner walls of this groove being of a diameter corresponding to the greatest width of the shaping-bar B.

Where the coil is to be made in oblong form, the mandrel is made, as shown in Fig. 1, of a thickness corresponding to the thickness desired to give to the coil. The reverse twist of about forty degrees in the shaping-bar is to overcome or counteract the natural recoil or spring of the wire, and when the wire is to be made in rectangular form the mandrel is constructed as shown in Fig. 3, said mandrel, as before stated, being made to conform to the shape it is desired to impart to the rod or wire, the same sleeve being adapted for use with different shaping-bars having a similar width at the broadest point, the wire or rod being fed to the former through a perforation *b*.

By the means herein described it will be seen that it will avoid the tedious processes of heating, stretching, or rolling, and also the expense of heating-furnaces and stretching and rolling appliances, and has also the additional advantage of dispensing with the coiling-rolls used with coiling-machines for forcing the wire through the machine, as in my invention as the wire is introduced into the feed-opening in the sleeve it is caught by the

shaping-bar and drawn in by the revolving mandrel.

Having now described my invention, what I claim, and desire to secure by Letters Patent, is—

1. A shaping-bar having an outline in cross-section corresponding to the shape it is desired to impart to the coil, with a solid cylindrical sleeve to surround the shaping-bar, having an internal diameter corresponding to the greatest width of the shaping-bar, provided with a spiral groove whose width and depth approximate that of the width of the wire or rod to be operated upon, and an aperture whereby said rod or wire is fed to the groove, substantially as set forth.

2. In a device for forming coils of various forms, a shaping-bar having an outline in cross-section corresponding to the shape it is desired to impart to the coil and twisted to bring the angles into elongated spiral form with a sleeve to surround the shaping-bar, substantially as set forth.

3. A shaping-bar for forming coils of various forms, having an outline in cross-section corresponding to the shape it is desired to impart to the coil and twisted to bring the angles into elongated spiral form, in combination with a sleeve provided with an internal spiral groove of a diameter corresponding to the greatest width of the shaping-bar, substantially as set forth.

In testimony whereof I affix my signature in the presence of two subscribing witnesses.

THOS. C. McPHERSON.

Witnesses:

THOS. G. McPHERSON,

G. L. EBERHART.