T. HAGER.

Wire Rope and Cable.

No. 202,812. Patented April 23, 1878.

Fig. 1.

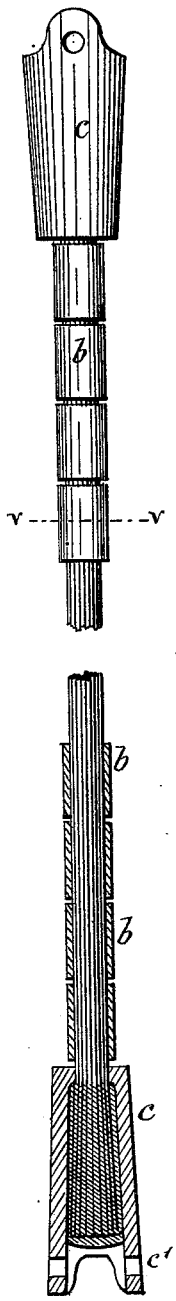


Fig. 2.

Fig. 3

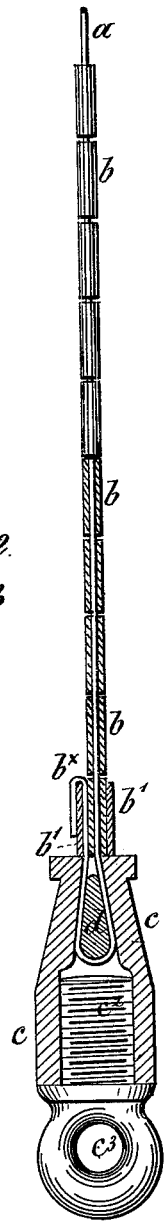
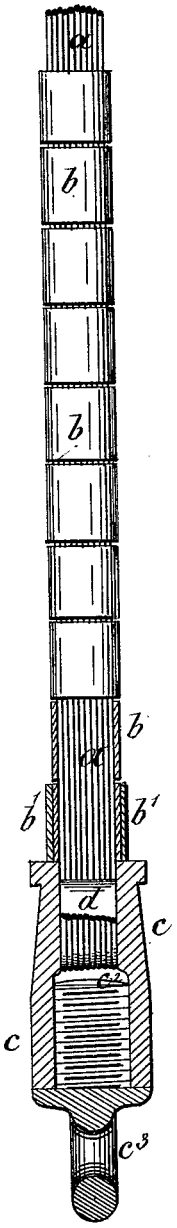


Fig. 4.



Witnesses

Alf. L. Leonard

Henri Guillaume

Inventor

Theodor Hager

by Henry Orth

atty

UNITED STATES PATENT OFFICE.

THEODOR HAGER, OF MAYENCE, GERMANY.

IMPROVEMENT IN WIRE ROPES AND CABLES.

Specification forming part of Letters Patent No. **202,812**, dated April 23, 1878; application filed January 9, 1878.

To all whom it may concern:

Be it known that I, THEODOR HAGER, of the city of Mayence, in the German Empire, have invented an Improved Wire Rope or Cable, of which the following is a specification:

My invention relates to the construction of wire ropes and cables, and their peculiar adaptation to mechanical purposes; and consists, first, in arranging the wires in bundles or fascines, all the wires being parallel to each other, instead of twisting the wires or strands of wires together, as has been the practice heretofore, whereby greater pliability and tensile strength are obtained, and in inclosing the bundles in a series of loosely-fitting metallic sleeves, to allow free play of the wires within said sleeves, and to permit of the bundle or rope so formed being readily and easily bent; secondly, in providing suitable means for uniting the ends of the wires together, and for forming an endless rope, or for attaching said rope to or connecting it with any other mechanical device.

Figure 1 illustrates a round rope or cable constructed according to my invention, one of the binding-sockets being in section. Fig. 2 is a section through line *v v* of Fig. 1. Figs. 3 and 4 are edge and plan views, respectively, partly in section, of a flat rope or wire band constructed according to my invention.

In the accompanying drawings, *a a* represent a series of wires, or a wire fascine or bundle, in which all the wires are laid parallel with each other, either to form a round rope, as in Figs. 1 and 2, or a band or flat rope, as in Figs. 3 and 4. The fascine or bundle is contained within a series of loosely-fitting sleeves or rings, *b b*, in which the wires *a a* have free play. These sleeves are slipped over the bundle after one end thereof has been bound together, in the manner and by the means hereinafter described. The sleeves or rings *b* are not pushed or jammed too close together, as the rope in such case would have little or no pliancy, sufficient room being given between the sleeves or rings *b* to admit of the ready bending of the rope. By these means the manufacture of wire ropes is not only simplified considerably, but the ropes are more pliant and possess greater tensile strength than those constructed in the usual way, as will be readily understood.

c is a metallic cylindrical or flattened socket, (tapering from top to base, and provided with perforated ears c^1,) serving to unite and firmly hold the ends of the wires *a* forming the bundle, and providing means either for forming an endless rope, by pivoting the two end sockets *c* of a rope together, or for attaching said rope to or connecting it with any other mechanical device. The manner in which the ends of the bundle are made fast within the socket may be varied. For instance, the wires *a*, after being slipped through the smaller end of the tapering socket sufficiently to permit of their being bent, are drawn back again into the socket after having been bent or doubled, and may then be firmly united with each other and with the socket *c* by filling the latter with solder or other metal while in a state of fusion, as shown by Fig. 1; or the wires of the bundle may be slipped through the socket *c* by the small end, and then bent around a wedge, *d*, as shown by Figs. 3 and 4.

It will be evident that the greater the strain upon the rope the tighter it is wedged within the socket *c;* but to further secure against the accidental straightening of the ends of the wires by the strain exerted upon the rope, I bend the wires around the wedge in such manner that the ends, when drawn down into place within the socket, will project below the latter sufficiently to permit of an additional sleeve or ring, *b′*, being slipped over said ends, which are then bent over the sleeve *b′*, and may be wired or tied into position, if desired, as fully shown at $b^\times$, Fig. 3.

Instead of the perforated ears c^1, I may use a screw-plug, c^2, provided with an eye, c^3, which plug is tightly screwed into the enlarged end of the socket *c*, its inner periphery being correspondingly threaded, as will be readily understood.

I am aware that the construction of wire cables with their component wires laid parallel to each other is not new, and I do not claim this construction, broadly, nor the means heretofore employed to bind the bundles by means of wires from distance to distance, as the method employed by me is much superior to that heretofore employed. When the bundle of wire is inclosed in a series of loosely-fitting sleeves, within which the component

wires have free play, I obtain a stronger and more pliable cable or rope, and have the further advantage of giving this rope any desired form in cross-section, either round, flat, or angular, according to the shape of the sleeves employed to contain the wires, while by the method heretofore employed round cables or ropes can be made only, and, owing to the tight binding, these ropes or cables have but a limited pliability.

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

1. A wire rope or cable having its wires arranged parallel to each other, in combination with a series of loosely-fitting metallic sleeves, forming a sectional and pliable casing for said rope or cable, substantially as described, for the purpose specified.

2. The combination, with the binding device and the wire rope, constructed as shown and described, of the binding-sleeve b^1, substantially as described, for the purpose specified.

This specification signed by me this the 16th day of October, 1877.

THEODOR HAGER.

Witnesses:
ALBERT CAHN,
H. MILLER.