(No Model.)

H. LESCHEN.

WIRE CABLE.

No. 395,983. Patented Jan. 8, 1889.

Fig. I.

Fig. II.

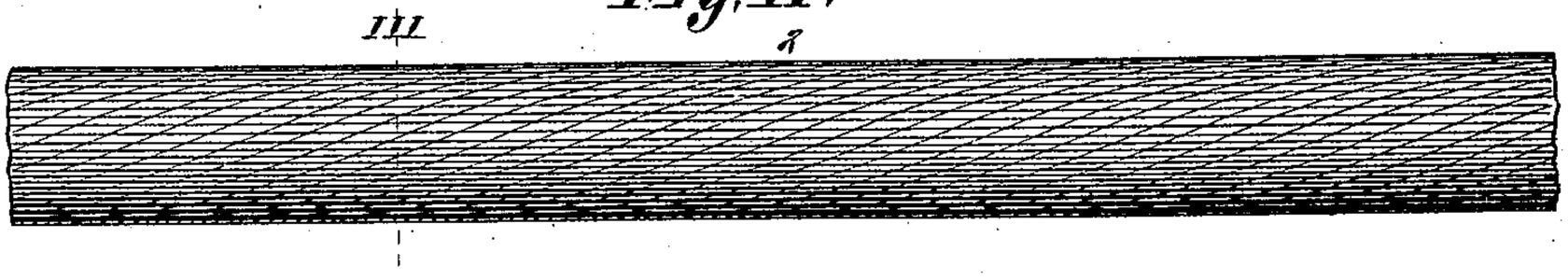


Fig. V

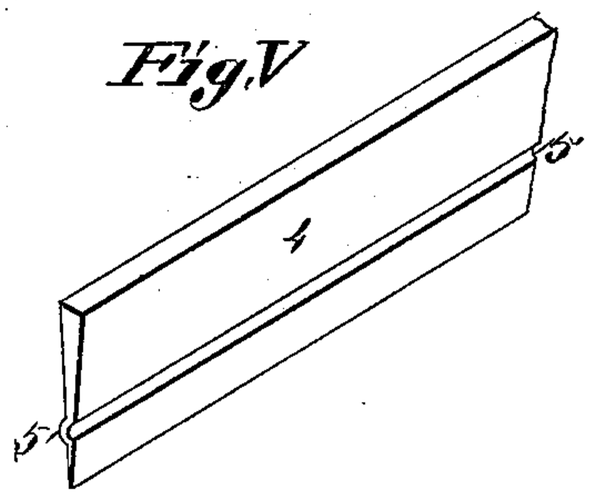


Fig. III.

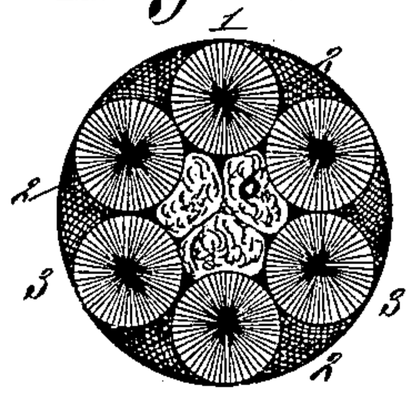
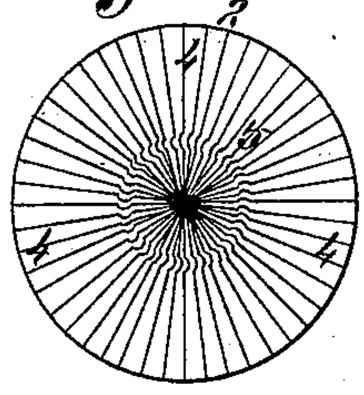


Fig. IV.



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UNITED STATES PATENT OFFICE.

HENRY LESCHEN, OF ST. LOUIS, MISSOURI.

WIRE CABLE.

SPECIFICATION forming part of Letters Patent No. 395,983, dated January 8, 1889.

Application filed November 19, 1887. Serial No. 255,626. (No model.)

To all whom it may concern:

Be it known that I, HENRY LESCHEN, of the city of St. Louis, in the State of Missouri, have invented a certain new and useful Improvement in Wire Cables, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification, and in which—

Figure I is a perspective view of the cable. Fig. II is a perspective view, on a larger scale, of one of the strands. Fig. III is a transverse section taken on line IV IV, Fig. I, showing the position of the hempen core and of the strands in the cable, the ribs of the flat wire not being shown. Fig. IV is a detail sectional view of the bevel-flat-wire strands, showing the locking corrugations or kinks in the flat wires near their inner edges as put together in the strand. Fig. V is a detail perspective view of the corrugated flat wire as shown in position in Fig. IV.

This invention relates to the formation of cables for cable railways, underground haulage, tramways, hoisting devices, standing ropes for derricks, &c.; and the invention consists in features of novelty hereinafter fully described, and pointed out in the claims.

Referring to the drawings, in which similar figures indicate like parts in all the views, 1 represents my improved multiple-ply bevel-flat-wire cable, which, as shown in Figs. I and III, has a smooth friction-surface, with the exception of the curved recesses between the plies. This is an important feature to preserve the cable and the pulleys, grips, &c., with which it comes in contact, from rapid wear.

2 represents one of the strands or plies of which the cable is formed. I preferably make the cable six-ply, as shown in Fig. IV, but do not confine myself to that number, for they may be increased or diminished, according to the work required of the cable.

4 represents the form of the bevel flat wire, which has a corrugation or kink, 5, near its inner edge. This corrugation forms a locking device for the retention of the parts, if from crystallization and hard usage in old cables there should be any breakage of the wires and consequent tendency to disarrangement of said wires in the strands. The said bevel flat wires are preferably constructed of steel, but may be of iron, copper, or any other suitable metal. As its name denotes, it is of wedge shape, and its thick edge is presented outward to the wearing-surface around the periphery of the strand. A sufficient number of the bevel flat wires are used for their outer edges to fit closely to each other when they have given to them the requisite twist. They taper regularly to their inner edges, so that their sides impact tightly against each other. The outer edge, which is the thick edge of the bevel flat wire, is rounded to the arc of the circle of the periphery of the strand, so that, as shown in Figs. III and V, the surface of the strand presents a true unbroken circle around its periphery. As shown in said figures, the said bevel flat wires are preferably manifold in number, and in consequence thin in cross-section, so as to add to the pliability of the cable, so it follows that in forming said arc to the outer edge of the bevel flat wires there requires but a slight change of form to that of a flat edge, which I prefer to effect in finishing the wire by drawing it through a former-die, after which the cross-section of the individual wires will be a sector of a circle. This is an important feature for the production of a true circular and smooth periphery to the strand to insure a minimum of friction and consequent minimum of wear and ease of movement. In the strand as composed of these corrugated locking-wires (shown in Fig. IV) it will be seen that the corrugations of adjoining wires fit, as do spoons, into each other, and thus they are locked so that they remain intact in their positions in the strand, even if, in consequence of eventual crystallization and wear and tear in old cables, there should otherwise be a disarrangement of the parts.

The bevel flat wires are twisted in the formation of the strands, as shown in Fig. II, in the opposite direction to the twist of the cable, as shown in Fig. I, and so lock its twist.

The strands are twisted around an inner core, 6, that is preferably made of hemp, but may be constructed of any other suitable flexible material that will allow the wire strands to bed and accommodate themselves

around the same during the working of the cable.

Having provided a flexible core for the cable, I prefer to construct the individual strands without a hemp or other flexible core, as there is no movement of the parts around their individual centers, but the movement is around their common cable center, which, as said, has the necessary flexible provision; but should it for some especial purpose be preferred to furnish the individual strands with hemp or other flexible cores, it is evident that it could be done without departing from the essential features of this invention.

This invention is an improvement for certain purposes on my invention an application for patent on which was filed November 7, 1887, Serial No. 254,548, which invention was for a single-strand bevel-flat-wire cable especially applicable for certain purposes as the present invention, having multiple strands of bevel flat wires, and in one modification interlocking bevel flat wires is of especial use for other purposes.

The multiple strands twist individually in a reverse direction to the cable, and so, as usual, lock its twist, and with a far stronger lock than is possible with the counter-twist of the round wire now in use. This form of my invention, which is embodied in the present application, is, from thus having a strong lock-twist, especially adapted to use in hoisting-machines, derricks, elevators for mines, &c., where one end of the cable is free, with no provision to prevent rotation and consequent untwisting of the cable when not firmly lock-twisted.

The corrugated interlaps of the bevel flat wires near their inner ends interlock with each other and firmly hold the adjoining flat wires together and in their positions. Even when an old cable is near worn out, and it may be from crystallization and rough usage some of the wires are broken, the interlock still holds the wires intact in the strand.

In this invention, also, as in that embodied in the application above referred to, (Serial No. 254,548,) it is intended to overcome the great difficulty arising from the rapid wear of the common round-wire cables used in cable railways, hoisting and suspension devices, &c., from the wear and tear on the outer wires, the ends of which immediately, when they wear and break, fly off at a tangent, obstruct the working of the cable, and lay bare the wires beneath subject to future wear. The thick edges of the bevel flat wires are presented to the periphery of the strands, and in consequence to that of the cable also, and take the whole brunt of the wear, and also, as each bevel flat wire is integral from the periphery to the center of said strand, there can be no ragged cable or strands, as when it is formed of twisted or woven strands of round wire, which are worn and give out in detail, and as each wire breaks its ends fly off at a tangent and it ceases to shield from wear the wire behind it. On the contrary, my bevel flat wire being, as aforesaid, integral from the periphery of the strand to its center, said integral flat bevel wire wears from its outer edge inward its thick edge "to the fore," and there are no individual wires to wear and give out by detail.

It is estimated that the strands may wear away half the diameter of the flat wires or more, and that on the thick edge, and the cable yet be serviceable, besides that from the slowness of the wear consequent on its peculiar construction, resulting in only a minimum of friction, it is still more durable. It is also found that a cable constructed in accordance with this device will stretch but very slightly under a heavy strain, which is a feature of great importance over the usual multiple round-wire cables.

Another advantage in the device consequent on its reduced surface exposure as compared to the small round wire in common use is that the metal in my bevel flat wires will not crystallize near as quickly under vibration; neither is it as rapidly injured by rust, &c., under exposure to the elements.

I have shown and described the cable twisted in the opposite direction to the strands, making a lock-twist, which is my usual manner of construction; but if for any purpose a cable is preferred that is twisted in like direction with its strands it is evident that it can be so constructed without departing from the essential features of this invention.

I claim as my invention—

In a cable, the combination, with a fiber core, of a number of strands twisted around and resting upon said core, and each of said strands consisting of bevel flat wires, the cross-section of each of which is a sector of a circle, arranged radially and provided with interlocking corrugations near their inner edges, substantially as set forth.

HENRY LESCHEN.

In presence of—
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