(No Model.)

H. R. KEITHLEY.

TROLLEY WIRE AND TROLLEY THEREFOR.

No. 560,098. Patented May 12, 1896.

Fig. 1.

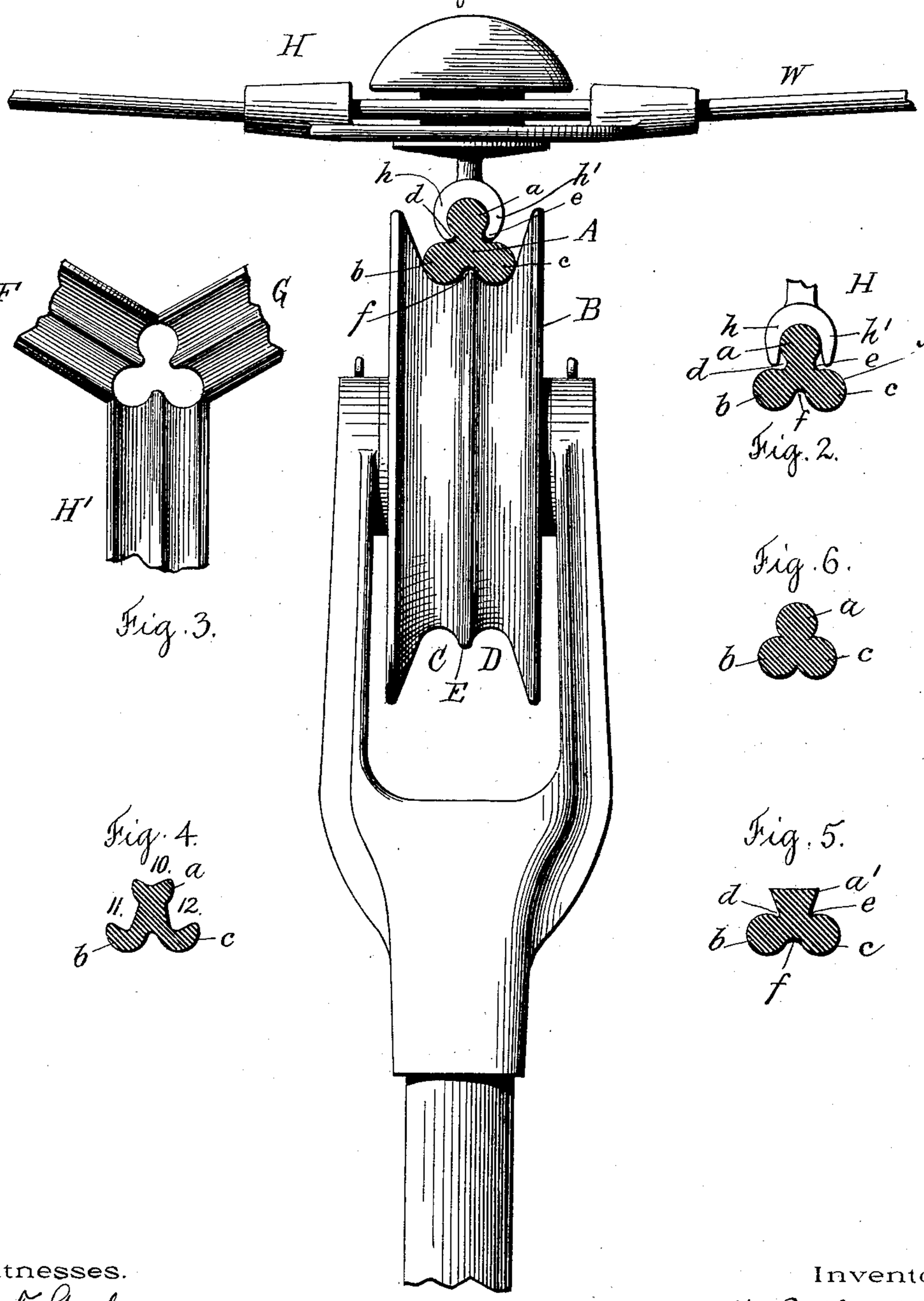

Fig. 3.

Fig. 2.

Fig. 6.

Fig. 4.

Fig. 5.

Witnesses.
Thos. F. Schmelz
E. M. Healy.

Inventor.
H. R. Keithley,
By
Southgate & Southgate
Attorneys.

UNITED STATES PATENT OFFICE.

HERBERT R. KEITHLEY, OF NEW YORK, N. Y.

TROLLEY-WIRE AND TROLLEY THEREFOR.

SPECIFICATION forming part of Letters Patent No. 560,098, dated May 12, 1896.

Application filed March 28, 1896. Serial No. 585,185. (No model.)

To all whom it may concern:

Be it known that I, HERBERT R. KEITHLEY, a citizen of the United States, residing at New York, in the county of New York and State of New York, have invented a new and useful Improvement in Trolley-Wires and Trolleys Therefor, of which the following is a specification.

The aim of my invention is to provide a trolley-wire which may be easily and securely held, which will present a large surface or line of contact to the trolley-wheel, and to provide, in combination therewith, a trolley-wheel to nicely engage said trolley-wire and to run centrally and easily in contact therewith. To these ends I make the trolley-wire with three ribs in cross-section, the sides of one or more of said ribs diverging outwardly from the other two ribs. The preferred shape I employ is to make each rib substantially circular in cross-section, or so that a cross-section of the wire is like a clover-leaf. Preferably the grooves between the ribs are slightly rounded, so as to do away with sharp angles where the ribs join. To support or hold the wire, I preferably use hangers or clips, whose sides may be pressed into two of the grooves, so that the same will engage one of the ribs or leaves. This will leave two of the ribs and the groove between the same exposed to the trolley-wheel, so that the trolley-wheel will run on the wire without striking or hitting the hangers. I preferably use a trolley-wheel which has two grooves and a middle rib to engage the two exposed ribs and groove of the wire. This will give a long line of contact between the wire and the wheel. The central rib of the wheel fitting into the exposed groove of the wire will keep the wheel centrally and accurately in contact with the wire, so that the wheel will run very smoothly. The exposed working groove of the wire is preferably arranged on the bottom of the wire, so that ice and dirt will not accumulate in the same.

Referring to the drawings forming part of this specification, and which show one way my invention may be carried out, Figure 1 represents a trolley wire and wheel constructed in accordance with my invention. Fig. 2 is a detail view showing the way the hangers or clips are secured to the wire. Fig. 3 is a view showing one way in which my wire may be made; and Figs. 4, 5, and 6 show modified forms of the trolley-wire.

In detail, H designates a hanger or clip of any approved construction supported as from the usual stay or cross wire W. The trolley-wire is designated by A, and the same has three ribs or leaves *a*, *b*, and *c* and three grooves *d*, *e*, and *f*, so that the wire is substantially like a clover-leaf in cross-section. The grooves *d*, *e*, and *f* are slightly rounded to do away with sharp angles where the ribs *a*, *b*, and *c* join. The hanger has projecting sides, as *h* and *h'*, spread just far enough apart to admit the rib or leaf *a* of the wire, as shown in Fig. 2. When the wire is inserted in the hanger in this manner, the sides *h* and *h'* are mechanically forced or pressed into the grooves *d* and *e* of the wire, whereby the hanger will strongly clamp and hold the wire and will leave the ribs *b* and *c* and the groove *f* of the wire exposed for contact with the trolley-wheel.

B designates the trolley-wheel, and the same preferably is formed to have two grooves C and D and a rib E, so that the same will be self-centering on the wire and so that the wheel will fit the wire very closely. This will provide a large contact between the wheel and wire and a construction whereby the wheel will run very smoothly and accurately on the wire. The rib E on the wheel, engaging the groove *f* of the wire, will keep the wheel in position on the wire, and will prevent the same leaving or jumping from the wire in many places where this happens in the ordinary constructions.

My construction is especially applicable for use in connection with heavy currents and where high speed is desired, as the trolley-wheel will not spark or arc as the same runs smoothly and accurately in contact with wire.

One way my wire may be cheaply made is to roll or draw the same between three rollers, as F, G, and H', set at one hundred and twenty degrees to each other, or through a die having the proper opening.

In the modified form of wire shown in Fig. 4 the ribs *a*, *b*, and *c* are cut away or grooved on their upper surfaces, forming depressions

10, 11, and 12. In this construction the configuration which engages with the hangers and with the trolley-wheel is substantially identical with the form of wire illustrated in Figs. 1 and 2. This form may be employed where a light wire containing a small amount of metal is desired.

In the modified form of wire shown in Fig. 5 the rib a' with which the hangers engage is made dovetailed in cross-section instead of circular, as in the constructions previously described. This construction is used with some forms of hangers, but for most places I prefer the clover-leaf shape, as the same has no sharp edges.

Fig. 6 illustrates a clover-leaf wire in which the grooves d', e', and f' are not rounded, and the ribs a, b, and c unite at an acute angle.

While my construction is particularly designed for overhead work, the same may be advantageously used in other locations, and other changes and modifications made by a skilled mechanic without departing from the scope of my invention as expressed in the claims.

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

1. As an article of manufacture, a trolley-wire having three ribs, the sides of one or more of said ribs diverging outwardly, substantially as described.

2. As an article of manufacture, a trolley-wire composed of three circular ribs, substantially as described.

3. A trolley-wire composed of three circular ribs, the grooves between the ribs being rounded to do away with sharp angles where the ribs join, substantially as described.

4. A trolley-wire having three ribs and three grooves in cross-section, and hangers engaging two of the grooves, so that two ribs and one groove will be presented to the trolley-wheel, substantially as described.

5. A trolley-wire, clover-leafed in cross-section, and hangers having their sides forced or pressed in to engage one leaf and to leave two leaves and the groove between the same presented to the trolley-wheel, substantially as described.

6. A trolley-wire having three substantially circular ribs in cross-section, and hangers fitting around one of the ribs so that two ribs will be presented to the trolley-wheel, substantially as described.

7. A trolley-wire clover-leafed in cross-section, hangers engaging one leaf and a trolley-wheel having two grooves to engage the other two leaves and the groove between the same, substantially as described.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

HERBERT R. KEITHLEY.

Witnesses:
LOUIS W. SOUTHGATE,
E. M. HEALY.