F. M. COLLIER & C. THOMAS.

TRACES FOR HARNESS.

No. 194,991. Patented Sept. 11, 1877.

Fig. 1.

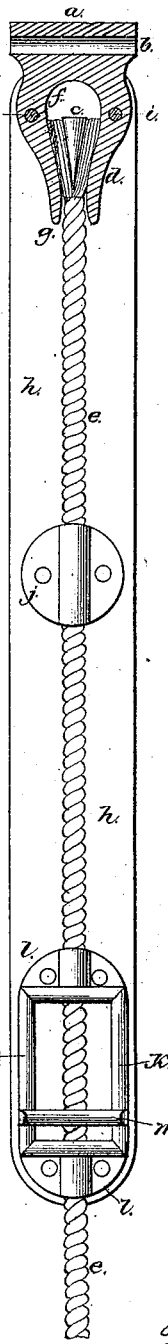

Fig. 3.

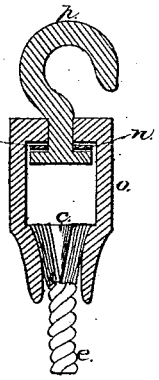

Fig. 4.

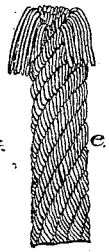

Fig. 5.

Fig. 2.

Attest:

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FREDERICK M. COLLIER AND CHAUNCEY THOMAS, OF BOSTON, MASS.

IMPROVEMENT IN TRACES FOR HARNESS.

Specification forming part of Letters Patent No. 194,991, dated September 11, 1877; application filed January 12, 1877.

To all whom it may concern:

Be it known that we, FREDERICK M. COLLIER and CHAUNCEY THOMAS, both residents of the city of Boston, in the county of Suffolk and State of Massachusetts, have invented a new and Improved Trace for Harness, which improvement is fully set forth in the following specification, reference being had to the accompanying drawings.

To the trace now in comu on use, made of leather, there are two very serious objections: first, the great cost; second, the necessary frequent renewals when used for heavy work, especially when used on horse-cars, where the constant stopping of the car causes a like constant and undue strain on the trace as the horses settle themselves to the work of starting the car.

The object, therefore, of this invention is to secure a substitute for the leather trace, as at present used, which shall be materially cheaper and stronger, and to so adjust the same and adapt it to the desired purpose that it may prove to be superior to leather, both in point of practical utility and cheapness, and also as an ornamental trace.

In the drawings accompanying, Figure 1 represents that part of the trace which is attached to the hame.

The attaching device *a* in this case being such as will apply to harness used on horse-railroads in general, it will be understood that the attachment to the hame must vary with the style of hame to which attachment is to be made; but sufficient is here shown to illustrate the fact that such variation will generally be simple in form.

The drawing represents a sectional view of an attaching device, such a view being best calculated to illustrate the novelty of the invention, regarding the adjustment of the wire cable, which is used as a substitute for leather, which is now in general use.

The adjustment to the hame common for the purpose is by a pin or bolt, and a hole drilled through the casting *a*, as shown at *b*, is for the purpose of adapting our new trace to the ordinary trace-hame. For our new trace we use what is generally known as the "wire cable," of about three-eighths of an inch in diameter, and practical experiments prove it to be possessed of all the advantages of the leather trace, with the additional merit of superior strength and durability, secured at a nominal cost. The cable is best represented in Fig. 4 of the drawing. It is also shown in Figs. 1 and 3, and designated by the letter *e*.

The cable is attached to the casting *a* as follows: The casting *a* has a globular opening, *f*, on the inner side, which passes into that part which is conical in outward form, making a conical cavity within the same, and a narrow neck at *d*, just large enough to admit the drawing through of the cable. The cable, being inserted, is passed through sufficiently far to allow the workman to untwist the strands and bend them back about five-eighths of an inch and against the cable, as best shown in Fig. 4. Thus the cable is increased in bulk to about double its original size at this point, and forms a head to the cable, not easily pulled out from the aperture through which it was inserted. The cable is now drawn back and driven hard into its conical socket, and the conical plug (best shown in Fig. 5) is driven into its center, to make the mass as solid as possible, after which the whole is soldered solidly together to prevent it from working or loosening. As the cable and plug are either galvanized or tinned the solder freely and firmly unites therewith, forming a solid mass.

In the casting *a*, it will be observed, the socket is brought to a narrow neck at *d*, and again enlarged beyond that point, as shown at *g*. It is designed to run the solder only to the point indicated by the letter *d*. By the enlargement at *g* the cable is allowed to bend slightly at this point without being cut by any sharp angle, while the enlarged orifice prevents an abrupt bending at this point. *h* represents a leather strap about two feet long by two inches wide, which serves the purpose of a shield for the shoulder of the horse to prevent injury from the cable. It is attached to the cable-socket by two ordinary rivets, as shown at *i i*, and is further sustained in its position by two other guide-pieces, *j* and *l l*. The guide-piece *j* is used as a support for the strap. The sectional view, Fig. 2, shows its construction. It is riveted to the leather in the ordinary way. The guide-piece *l l* is made double, and is connected by the parallel bars

k k, raised about one-fourth of an inch from the line of adjustment to the strap *h*. These bars afford means of attachment for saddle-straps and belly-girths. The bar *m*, thrown across and connecting the bars *k k*, is for the purpose of adjusting the breech-strap, when such straps are used.

Fig. 3 shows the device for connecting the cable with the whiffletree, the figure being a sectional view of the device.

It will be seen that the manner of attaching the cable to the casting is the same as heretofore described. It is, therefore, unnecessary to repeat it. The casting, however, is necessarily different in form, being in the general form of a parallelopiped, with a conical tube extending from one end similar to the one connected with the hame-casting, and to which the cable is attached. Instead of the globular cavity in the former, this has a square aperture passing through the body of the casting, thus allowing a ready adjustment of the cable and at the same time the passing of a swivel-hook through the opposite end. Before adjusting the swivel-hook an iron or steel washer, *n*, is placed on the hook, to so far as possible prevent the wear, which at this point is somewhat out of proportion. The hook, made in the ordinary form of a swivel-hook, is now inserted through a hole drilled through the unoccupied end of the casting, and the trace is complete, and the whiffletree-connection may be direct with the hook, or by means of an ordinary chain used for such purposes.

Having thus described our invention, what we claim as new, and desire to secure by Letters Patent, is—

1. A harness-trace composed of a wire cable, provided with suitable separate attaching devices, all substantially as shown and set forth.

2. The socket-casting *a*, in combination with the cable *e* and shield-strap *h*, substantially as described.

3. The combination of the plug *c* with the cable *e* and casting *a*, substantially as and for the purpose described.

4. The combination of the cable *e* with the holders or guides *a*, *j*, and *l l*, and strap *h*, substantially as and for the purpose specified.

5. The combination of the cable *e* with the casting *o* and hook *p*, substantially as and for the purpose described.

6. The double bearing or guide *l l* and its bars *k k* and *m*, in combination with the cable *e* and strap *h*, substantially as and for the purpose above described.

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Witnesses:
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