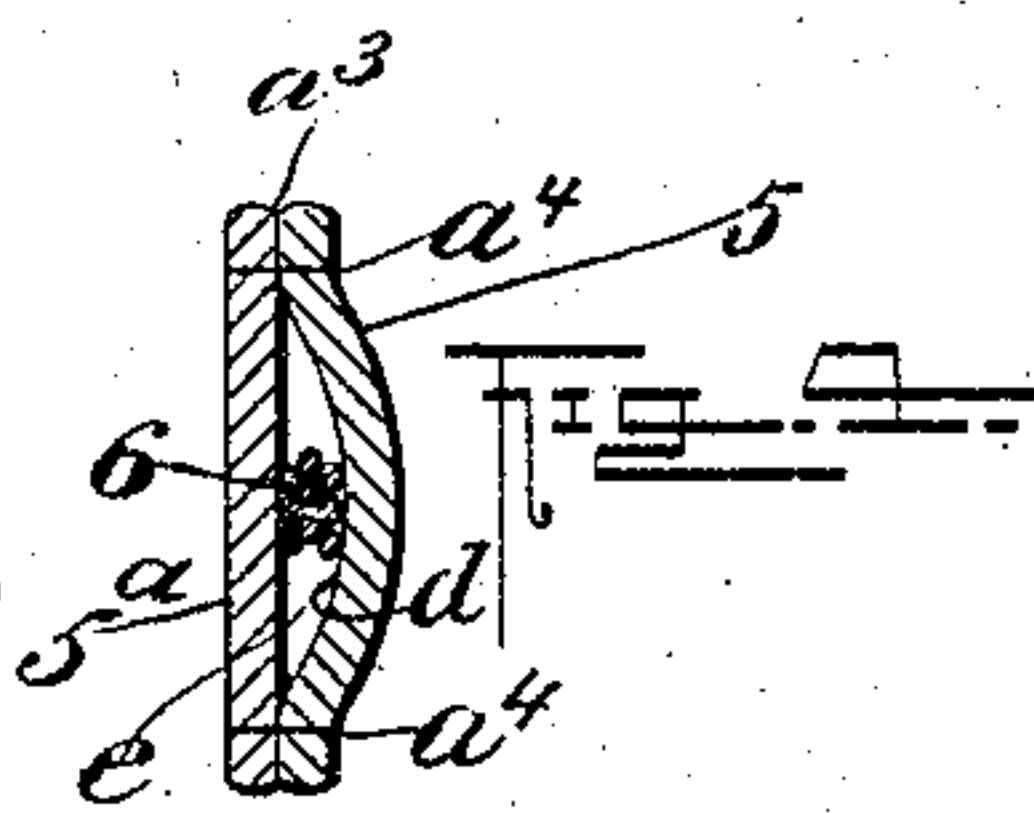
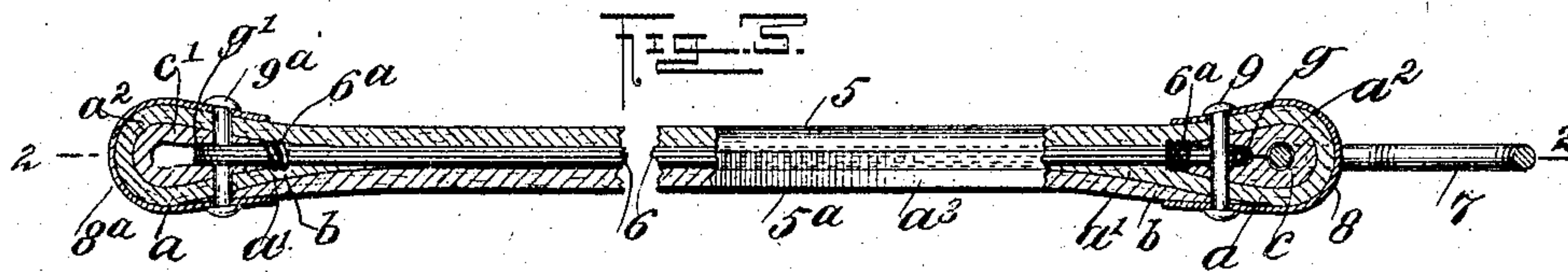
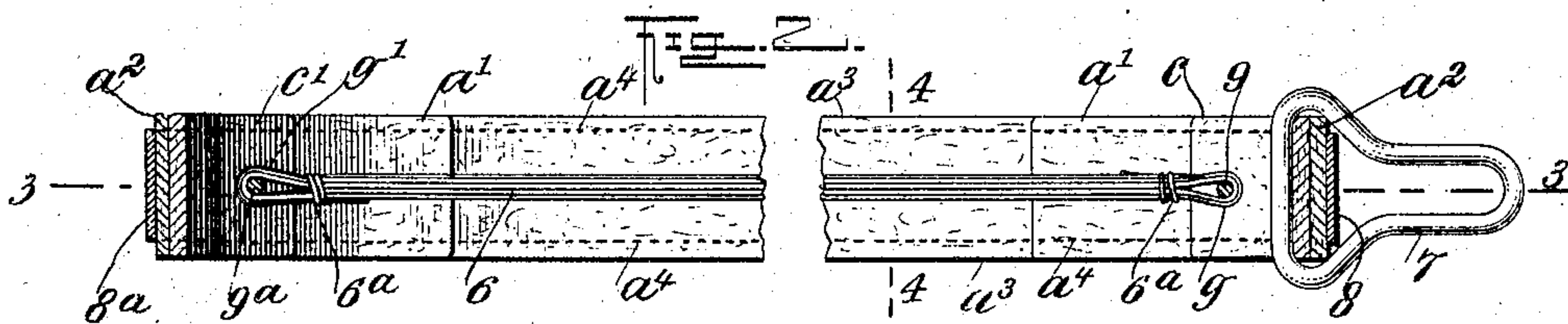
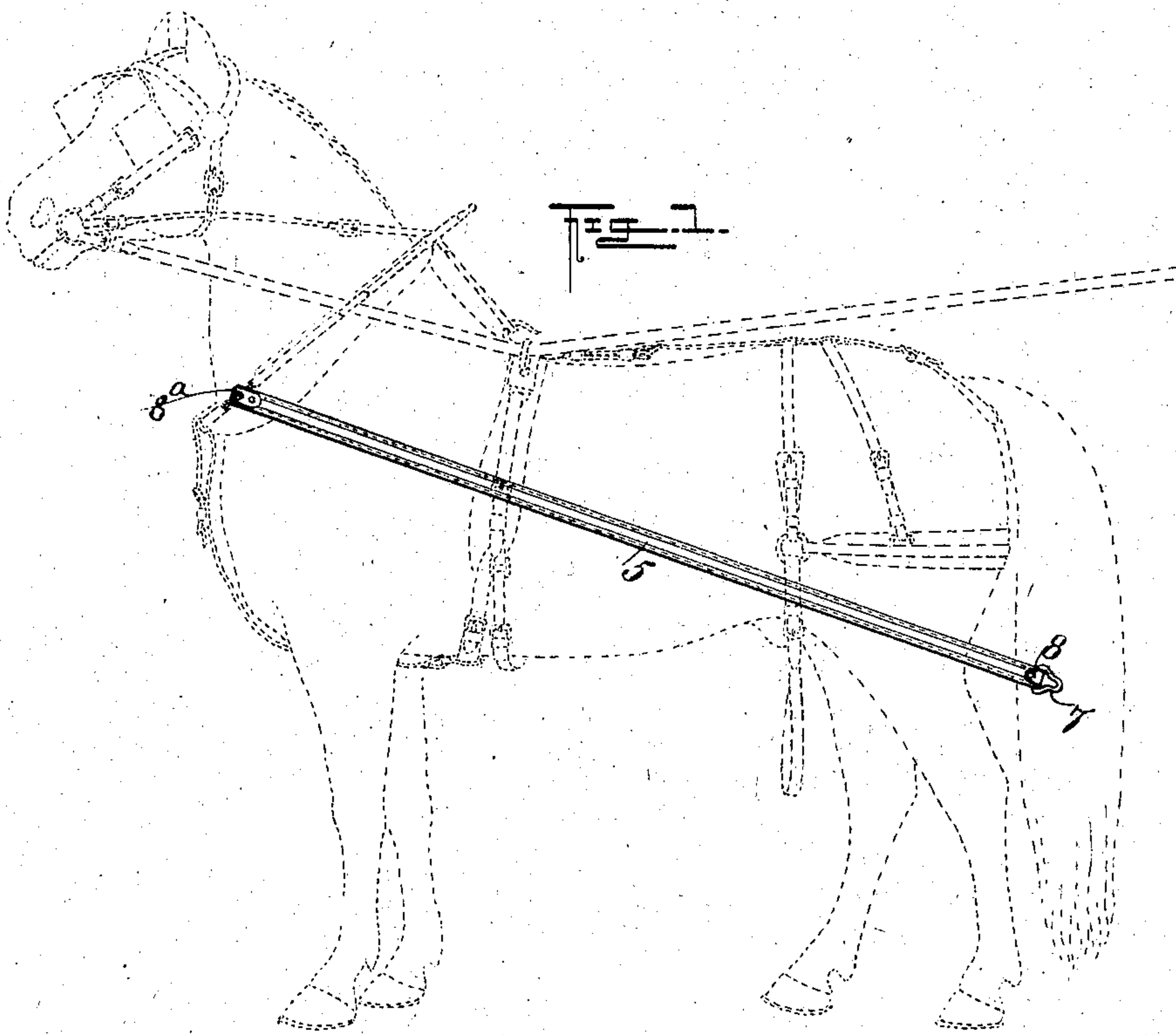


No. 791,845.

PATENTED JUNE 6, 1905.

T. J. WAVRUNEK.
HARNESS TRACE.

APPLICATION FILED JULY 15, 1904.



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UNITED STATES PATENT OFFICE.

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HARNESS-TRACE.

SPECIFICATION forming part of Letters Patent No. 791,845, dated June 6, 1905.

Application filed July 15, 1904. Serial No. 216,669.

To all whom it may concern:

Be it known that I, THOMAS JOSEPH WAVRUNEK, a citizen of the United States, and a resident of Shawano, in the county of Shawano and State of Wisconsin, have invented a new and Improved Harness-Trace, of which the following is a full, clear, and exact description.

This invention relates to traces for harness provided to couple a draft-animal to a wagon or truck that is to be drawn, and has for its object to provide novel details of construction for harness-traces which confer great strength, reduce weight, and enable a comparatively light gage or thickness of leather to be employed, the improved features affording a neat shapely trace at a moderate cost.

The invention consists in the novel construction and combination of parts, as is hereinafter described, and defined in the appended claim.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the figures.

Figure 1 is a side view of the improvement applied. Fig. 2 is an enlarged shortened sectional side view of the improved trace, taken substantially on the line 2 2 in Fig. 3. Fig. 3 is a longitudinal sectional view substantially on the line 3 3 in Fig. 2, and Fig. 4 is a transverse sectional view substantially on the line 4 4 in Fig. 2.

As the traces of harness are employed in pairs and are duplicates, but one is shown and described.

5 5^a represent the body portion of one of the improved traces, each piece or ply consisting of an elongated strip of strong leather having proper width, length, and thickness for effective service. The ply 5, which is outermost in service, is of a sufficient length in excess of the length of the ply 5^a to permit each end thereof to be folded and provide a lapping member *a* thereon, the end portions of said lapping members being tapered flatwise, as shown at *a'* in Fig. 3. The other ply, 5^a, is likewise tapered at the ends, and said ends *b* are lapped upon the members *a*.

In the loops *a*², formed by lapping the end portions *a* of the ply 5 upon the main portion,

the reinforcing looped pieces *c c'* are respectively inserted, thereby thickening the looped ends *a*² of the trace, so as to render them very strong when the trace is finished.

As shown in Figs. 2 and 4, the two plies 5 5^a are imposed one on the other at and near their side edges *a*³ where they are sewed together at *a*⁴, and, as shown at *d* in Fig. 4, the outer ply 5 is rendered concavo-convex between the rows of stitching *a*⁴. A reinforcing draft-rope 6 is provided as a core and is inserted within the space *e*, produced between the plies 5 5^a of the trace by the concavity of the inner side of the ply 5, said rope constituting a leading feature of the improvement. The draft-rope 6 is preferably formed of a continuous wire strand having a sufficient length to permit it to be return-bent or folded alternately in opposite directions at two points *g g'*, which represent the ends of the rope. The multiplicity of the lapped strands thus produced and that form the body of the rope are secured together at their looped ends by wrapping the end portions 6^a of the wire strand around the wires at and near the bights of the loops *g g'*. The several wire strands composing the body of the rope 6 may be twisted together; but preferably they are left straight, so that draft strain will be applied in direction of the axis of each wire strand.

A draft-ring 7 is placed in the loop formed at one end of the trace. A clip-band 8 is mounted upon one looped end of the trace, the band being U-shaped, and thus adapted to closely embrace the trace end and form a metal covering therefor. The clip-band 8 is oppositely perforated near the ends of its members, and in these opposite perforations a strong draft-bolt 9 is inserted, said draft-bolt passing through the loop *g* at an adjacent end of the wire rope 6. The clip-band 8 is clamped securely upon the looped end of the trace it embraces by riveting the ends of the draft-bolt over upon the band, as is shown clearly in Fig. 3. It will be seen that the bolt 9 when riveted at its ends serves to bind the clip-band 8 closely upon the lapped end of the trace, and as the band passes freely through the draft-ring at this end of the trace it will be evident that the draft-ring will be free to

rock on the end of the trace, but will not turn toward either edge of the same. At the opposite end of the trace a similar clip-band 8^a is provided, which embraces the looped member thereof, and in the opposed side members of said clip-band alined perforations are formed near their ends, wherein a draft-bolt 9^a, similar to the draft-bolt 9, is inserted and in a like manner passed through the loop *g'* of the draft-rope 6, said bolt 9^a being riveted at its ends upon the clip-band, thus clamping its side members firmly upon the looped end portion of the trace.

The draft-rope 6 is proportioned in length, so that it will sustain a maximum degree of the draft strain that is imposed upon the composite trace in service, it becoming taut when the trace is pulled upon endwise, and owing to the construction of the end of the trace that is attached to the hames when in use the duplicate traces are laterally pliable where they rest upon the collar over the shoulders of the draft-animal.

It will be observed in Fig. 3 that the inner looped pieces *c c'* are so shaped where they embrace the end cross-bars of the draft-ring 7 that they enter between said cross-bars and the ends of the loops on the draft-rope 6, thus cushioning these adjacent parts, so as to prevent wear thereon which would result from their frictional contact with each other.

It will be seen that the improved trace is rendered very strong by the application of the draft-rope 6 thereto, as the latter, together with the clip-bands 8 8^a, sustains a considerable portion of applied draft strain. It

is feasible, in consideration of the employment of the draft-rope 6 and its manner of connection with the leather plies 5 5^a, that these leather portions of the trace may be considerably lighter than would be necessary if leather only were used in the construction of the trace. It will also be observed that the convexed surface given to the front side of the trace-ply 5 gives the trace a neat appearance, which is enhanced if the clip-bands 8 8^a are polished or otherwise finished.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

A harness-trace, comprising a plurality of elongated leather plies, one ply having return-bent ends forming loops thereon, the other ply lapping at its ends on said loops, a draft-ring held in one of said loops, a wire rope made up of a plurality of straight wires disposed in lateral contact with each other, end portions of the wires being return-bent and forming loops held intact by wrappings of wire, said rope extending lengthwise between the leather plies, a U-shaped clip-band on each looped end of the trace, a securing-bolt passing through each clip-band, looped ply and the corresponding looped end of the straight wires forming the wire rope, and means for securing the side edges of the leather plies together.

In witness whereof I have signed my name to this specification in the presence of two subscribing witnesses.

THOMAS JOSEPH WAVRUNEK.

Witnesses:

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