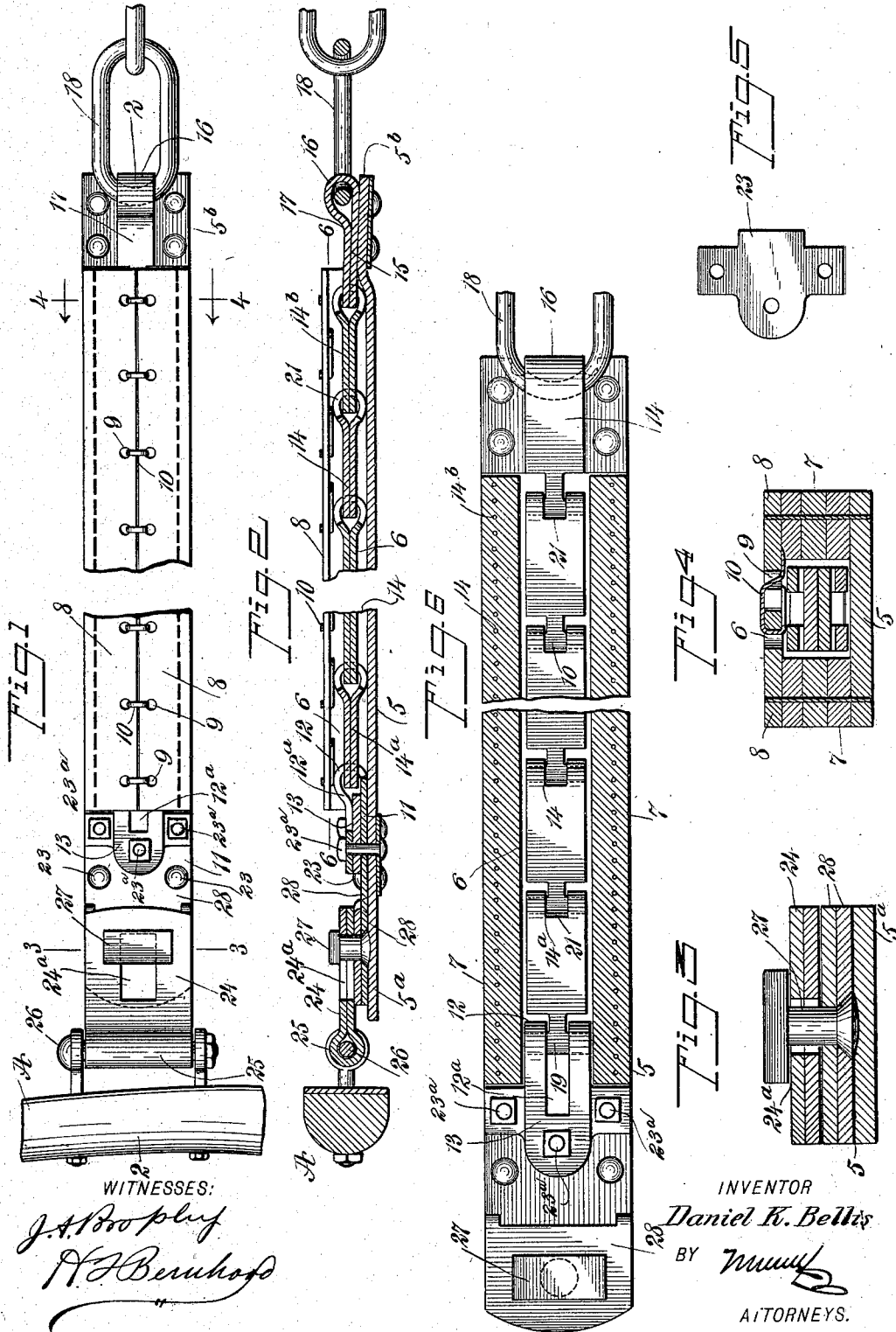


D. K. BELLIS.
HARNESS TRACE.

APPLICATION FILED AUG. 1, 1902.

NO MODEL.

2 SHEETS—SHEET 1.



WITNESSES:
J. A. Dropluf
H. J. Bernhof

INVENTOR
Daniel K. Bellis
 BY *Mumford*
 ATTORNEYS.

No. 738,596.

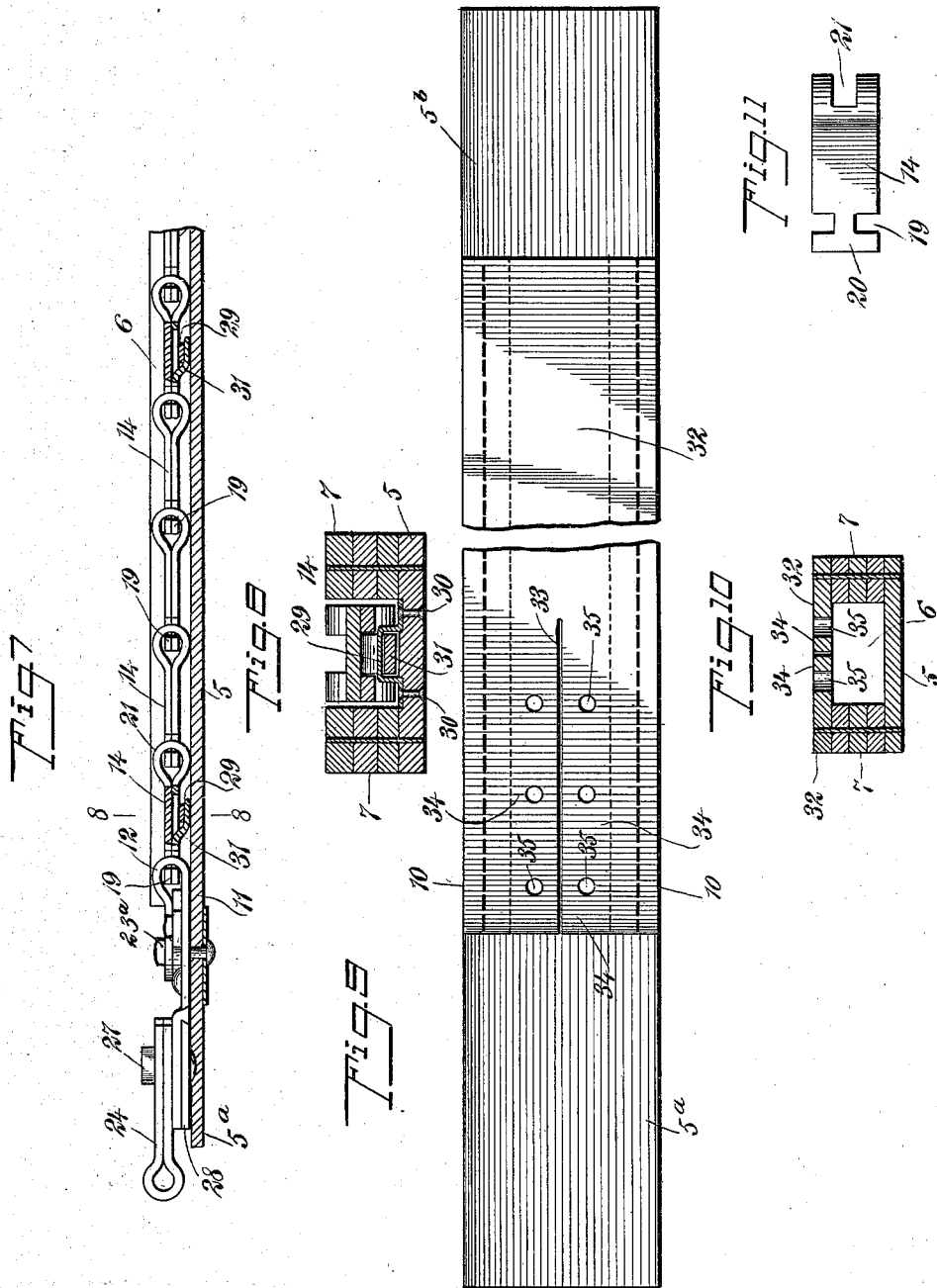
PATENTED SEPT. 8, 1903.

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NO MODEL.

2 SHEETS—SHEET 2.



WITNESSES:
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UNITED STATES PATENT OFFICE.

DANIEL K. BELLIS, OF MANTON, MICHIGAN.

HARNES-TRACE.

SPECIFICATION forming part of Letters Patent No. 738,596, dated September 8, 1903.

Application filed August 1, 1902. Serial No. 117,976. (No model.)

To all whom it may concern:

Be it known that I, DANIEL K. BELLIS, a citizen of the United States, and a resident of Manton, in the county of Wexford and State of Michigan, have invented a new and Improved Harness-Trace, of which the following is a full, clear, and exact description.

My invention relates to improvements in harness-traces of that class which employ leather and metallic chains in their construction.

In the present service of leather-traces it is found that the traces comprising the pair used in harness are liable to stretch unequally, owing to the constant exposure to the weather and to the wetting which the leather receives, particularly under conditions of service such as in swampy places and in wintry climates. This inequality in the length of the pair of traces frequently is the direct cause of sore and galled shoulders of the horses, and it is a cause of much discomfort to the animal and of expense to the owner thereof.

One object of this invention is to overcome stretching of the leather by a composite trace embodying a metallic chain as an integral part thereof, the leather and the chain being so combined as to retain the desirable pliability or flexibility of the trace.

A further object is to provide a simple and strong article in which the weight is minimized, the chain and the trace are compactly disposed so as to present a minimum thickness, the chain is housed in the leather in a manner to be concealed and protected from the weather, and the leather presents a flat side for engagement with the horse's legs.

Further objects are to provide means for readily disconnecting the chain and for securely fastening it to the leather trace, to enable a heel-chain or cockeye to be used in connection with the trace, and to provide a simple and efficient means by which the trace may be easily and quickly attached to or removed from a hame.

With these ends in view the invention consists in the novel combination, construction, and arrangement of parts, which will be hereinafter fully described and claimed.

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 plan view of a portion of a harness-trace constructed in accordance with my invention. Fig. 2 is a longitudinal section thereof on the line 2 2 of Fig. 1. Fig. 3 is a cross-section on the line 3 3 of Fig. 1. Fig. 4 is another cross-section on the line 4 4 of Fig. 1 looking in the direction of the arrow. Fig. 5 is a detail view of the chain-retaining plate, which is adapted to be placed adjacent to the hame-clip plate. Fig. 6 is a horizontal section on the line 6 6 of Fig. 2. Fig. 7 is a longitudinal sectional elevation through the trace shown by Fig. 6. Fig. 8 is a cross-section on the line 8 8 of Fig. 7. Figs. 9 and 10 are respectively a detail plan view of another form of trace and a cross-section on the line 10 10 of Fig. 9, and Fig. 11 is a detail view of one of the chain-links.

The leather trace 5 is provided with a longitudinal chamber or pocket 6, which is formed by superposing a proper number of layers 7 upon the foundation layer 5 of the trace and arranging these layers 7 in parallel spaced relation to each other, as shown by Figs. 3 and 4. On top of the parallel rows of layers 7 are laid the flaps 8, which are united with the layers 7 to the foundation-strap 5 by sewing, riveting, or otherwise fastening the parts firmly together. The flaps 8 are extended over the chamber 6, so as to substantially meet each other at their inner edges, and these flaps are provided with eyelets or apertures 9, which receive the lacing-thong 10, the latter serving to unite the flaps and close them securely over the longitudinal chamber 6. The layers 7 and 8 do not extend the full length of the foundation layer 5, and hence the end portions of this foundation layer are extended or prolonged beyond the chamber, so as to form the tongues 5^a 5^b.

On the tongue 5^a, adjacent to one end of the longitudinal chamber 6, is provided a clip 11, consisting of a base-plate which is doubled or folded upon itself, so as to form the loop 12, and the overlapping plate 13, said base-plate of the clip being riveted or otherwise firmly attached to the tongue 5^a at points beyond the end of the chamber. The doubled portion of the clip which forms the eye or loop 12 extends into one end of said chamber

6, and to this loop is connected the link 14^a at one end of a flat metallic chain 14, the latter extending lengthwise of the chamber 6 and arranged compactly against the foundation layer 5 of the trace. The other link 14^b, at the opposite end of the chain, is adapted for connection with a heel-clip 15, which consists of a metallic plate that is doubled or folded upon itself in a manner to form a base-plate, an eye or loop 16, and a top plate 17.

The base-plate of the heel-clip is fastened securely to the tongue 5^b of the leather trace by rivets, screws, or other suitable devices, and the eye or loop 16 of this heel-clip is extended or projected beyond the end of the chamber 6 in a manner to expose the same for engagement by a link 18 of a heel-chain, or in lieu of this heel-chain I may employ a cockeye adapted for engagement with said loop of the heel-clip.

Each link of the chain 14 is made from a single flat piece of metal which is doubled or folded upon itself, so as to bring the end portions thereof into overlapping relation and to form a loop or eye at the other end of the link. The overlapping ends of the link are notched on opposite sides, as at 19, in order to produce a T-head 20 at one end of the link, as shown by Fig. 11, and the other eye-formed end of the link is provided with a slot 21. The clip 11 is provided in its eye 12 with a longitudinal slot 12^a, into which is adapted to be thrust the T-headed end of the chain-link 14^a. The heel-clip 15 is provided with a T-shaped head at the overlapping portion thereof, and this head is adapted for engagement with the slot in the eye or loop of the chain-link 14^b. The links of the chain 14 are coupled together by inserting the T-head of one link in the slot of the loop or eye of an adjacent link, and thus the series of links are connected flexibly and detachably together in series throughout the length of the chain. It is evident that the flexible flat chain has the link 14^a connected detachably to a fixed clip on the tongue 5^a of the trace, while the other link 14^b of the chain is connected in a like manner with the heel-clip on the tongue 5^b at the opposite end of the chain, whereby the chain is adapted to strengthen and reinforce the leather trace in a manner to overcome stretching thereof, and at the same time said metallic chain is compactly arranged within the chambered leather case and is free to flex or move in any direction, so that the trace as an entirety is quite pliable or flexible in order to meet the practical conditions of service.

Between the base member 11 and the overlapping plate 13 of the clip adjacent to the hame is interposed a limiting-plate 23, which is adapted to be fastened in place by a bolt or by bolts 23^a. This limiting-plate is adapted to extend into the eye or loop 12 of the clip and it engages with or lies close to the T-headed end of the link 14^a, whereby said plate serves to limit or restrict the endwise movement of the link 14^a within the clip-eye 12.

It will be understood that the bolts 23^a may be removed and that the limiting-plate 13 may be withdrawn from the eye portion 12^a of the clip-plate 11. This permits the operator by bending or flexing the leather sheath or strap to slip the headed end 19 of the link 14^a out of the slotted eye 12^a of the clip-plate, thus detaching one end portion of the chain 14 from the clip-plate 11. The chain may now be slipped bodily out of the chamber afforded by the sheath, and the eye-formed end of the other terminal link 14^b of said chain may be manipulated in a way to free it from the head on the heel-clip of the trace, whereby the entire chain may be detached from the sheath or casing. It will also be understood that the chain may be replaced by reversing the operations within the sheath or casing, and it should be borne in mind that the chain has its terminal links connected detachably to the clips at opposite ends of the chamber within the casing, the intermediate portion of the chain being unattached to the sheath or casing, thus facilitating the operation of removing and replacing the chain.

The hame-clip 24 consists of a plate, which is doubled upon itself to provide an eye 25, which is adapted to receive the clip-bolt 26, attached to a hame, as A. This hame-clip 24 is provided with a longitudinal slot 24^a, through which is adapted to be passed the headed bolt 27, the latter serving to secure a metallic wear-plate 28 to the tongue 5^a of the trace. The stud or bolt 27 is of square or other angular form and provided with an angular head, the length of which exceeds the width of the slot 24^a in the hame-clip, said head of the stud being disposed a considerable distance above the wear-plate 28. If desired, the wear-plate may be riveted to the tongue 5^a of the strap. In attaching the trace to the hame the tongue 5^a is turned around, so that the head 27 of the stud or bolt will pass through the slot 24^a of the clip 24, and the tongue and stud are then turned in order to bring the head of the bolt or stud across the slot 24 in the position shown by Fig. 1, whereby the trace may be securely attached to the hame, and it may be easily disconnected therefrom.

One of the important features of my improved trace consists in the employment of a flat foundation layer 5, having the chamber adapted to receive the metallic flexible chain, which is disposed in exceedingly compact relation thereto, said foundation layer 5 presenting a flat smooth surface to the animal in a manner to prevent rubbing or chafing the horse's legs. The metallic chain is of simple and strong construction and it is adapted to be housed or contained within the chambered trace, so as to be protected and concealed thereby, and at the same time the parts are noiseless in action, because the chain does not rattle by reason of its engagement with the leather trace. It is evident that the flaps 8 can be unlaced and spread open in order to permit the operator to obtain access to the

chamber 6 for the purpose of placing the metallic chain therein or of removing the chain from the trace, after which the lacing-thong 10 should be again engaged with the perforated flaps.

I do not desire under all circumstances to employ the leather trace having the flaps connected by the lacing-thong arranged to extend throughout the length of the trace. Under some conditions the flaps and the lacing-thong may be omitted, and this style of trace is shown by Figs. 7 and 8, wherein I employ the flat foundation layer 5 and the two series of layers 7, which are united to the foundation layer and are disposed in parallel relation for the purpose of forming the intermediate channel or chamber 6. The metallic chain, the clips for attaching the same to the trace, and the hame-clip are the same as in the construction heretofore described; but in order to compensate for the absence of the flaps, which serve in a measure to hold the chain against displacement within the channel or chamber of the trace, I prefer to employ a series of keepers 29, which are secured to the bottom of the chamber 6 and on the foundation layer 5 by means of rivets 30 or other suitable fasteners, as shown by Fig. 8. The links of the chain are provided with tongues 31, which are adapted to engage with these keepers and serve to confine the chain against displacement and rattling within the leather trace. Of course the keepers may be secured at proper intervals within the channeled trace, as shown by Fig. 7, and the hooks 31 may be provided on the suitable number of links in order to engage with the spaced keepers.

In the embodiment of the invention shown by Fig. 9 I have modified the construction of the sheath forming a part of the trace and providing therein the longitudinal chamber or channel 6. The trace in this instance consists of the foundation layer 5, the superposed layer 7, and a top layer 32, the latter being secured with the layers 7 upon the foundation in a suitable way. This top layer is unslitted and solid throughout its length except for the employment of a short dividing-slot 33 near one end thereof, thus forming the short flaps 34, each having the perforations 35 for the reception of a suitable lacing. The sheath on the trace shown by Figs. 9 and 10 provides an inclosure through which the chain must be drawn, and the divided top layer of this sheath enables one of the chain-links to be drawn therethrough in a manner to connect the same with the metallic clip 11.

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

1. A harness-trace consisting of a flat leather sheath having a longitudinal chamber or channel, exposed metallic clips secured to said sheath at opposite ends of the chamber therein, and a metallic chain housed within said sheath and having its end portions cou-

pled detachably to said exposed clips, the part of the chain intermediate of its end links being unattached to the sheath.

2. A leather trace provided with a sheath having a longitudinal chamber or channel, flaps secured to the sheath and having means for closing them over the outer side of said channel, exposed clips secured to the sheath at opposite ends of the chamber therein, and a metallic chain housed within said sheath and coupled detachably at its ends to the exposed clips.

3. A leather trace provided with a sheath or casing having a longitudinal chamber, a slotted and eye-formed clip secured to the trace at one end of the sheath, another clip secured to the trace at the opposite end of the sheath and having an extended tongue, and a metallic chain having links provided with eyes and tongues, the tongue of one end link being coupled to the eye of one clip, and the eye of the other end link receiving the tongue of the other clip, the part of the chain intermediate of its end links being unattached to the sheath.

4. A leather trace provided with a sheath forming a longitudinal chamber or channel, a clip attached to said trace at one end of the sheath and provided with an eye which projects into the channel or chamber, a chain fastened at one end to the trace and having its other end detachably connected to the eye of said clip, and a limiting-plate secured within the eye and disposed adjacent to the terminal link of said chain.

5. A leather trace provided with a sheath forming a longitudinal channel or chamber, exposed metallic clips fastened to the trace at opposite ends of the channel therein, a flat metallic chain having its terminal links connected detachably to said clips, the part of the chain intermediate of its end links being unattached to the sheath, a stud or bolt fastened to one end of the trace, beyond one of the exposed clips thereon, and a slotted hame-clip connected detachably to said stud or bolt.

6. A flat leather trace provided with a longitudinal sheath forming a channel or chamber, a clip fastened to the trace at one end of the sheath, a heel-clip fastened to said trace at the other end of the sheath and provided with an eye adapted for engagement with a heel-chain or with a cockeye, and a flat metallic chain housed within said sheath and having its terminal links connected detachably to said clips, the part of the chain intermediate of its end links being unattached to the sheath.

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

DANIEL K. BELLIS.

Witnesses:

H. T. BEMHARD,
EVERARD BOLTON MARSHALL.