

(No Model.)

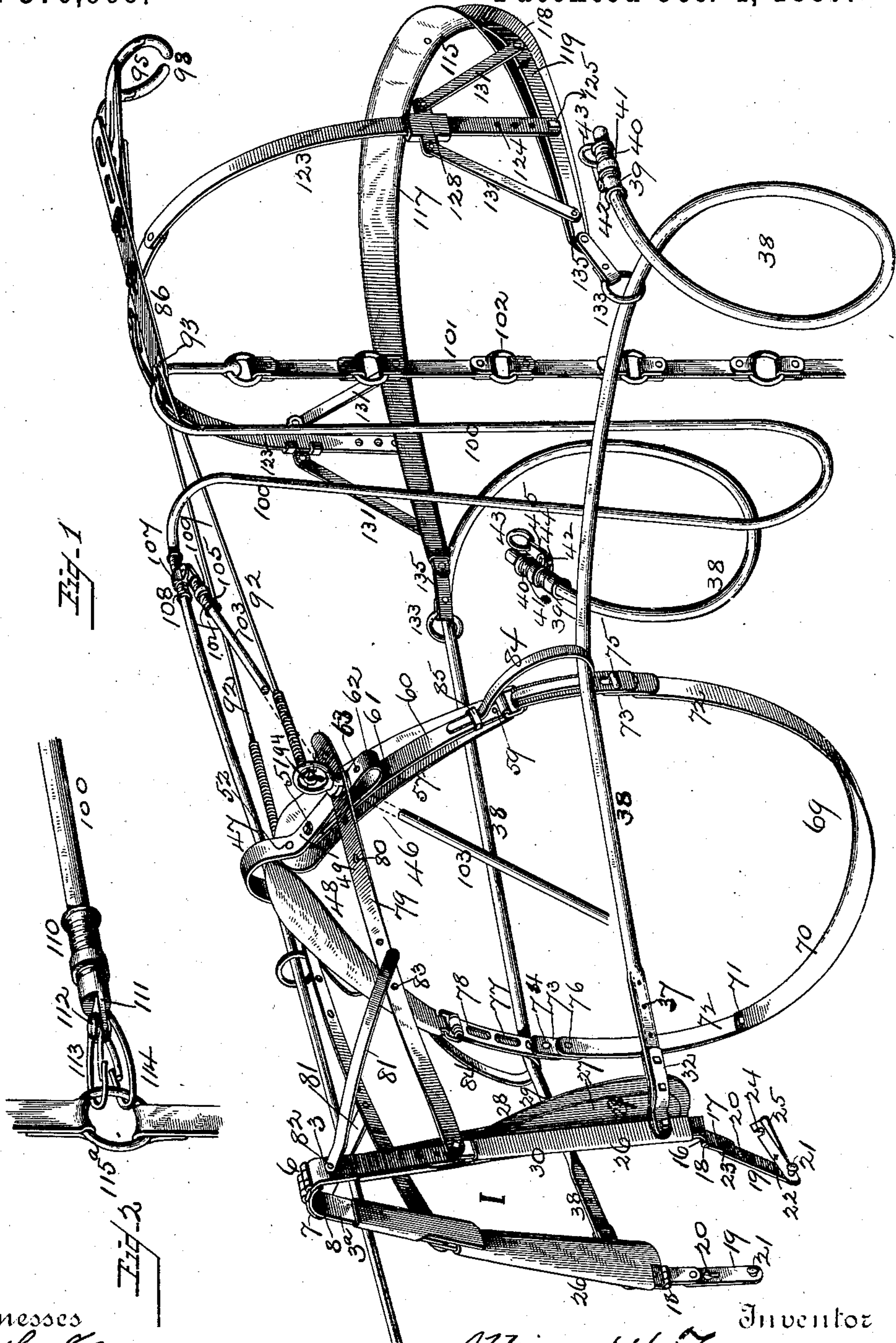
3 Sheets—Sheet 1.

A. W. TOURGÉE.

HARNESS.

No. 370,909.

Patented Oct. 4, 1887.



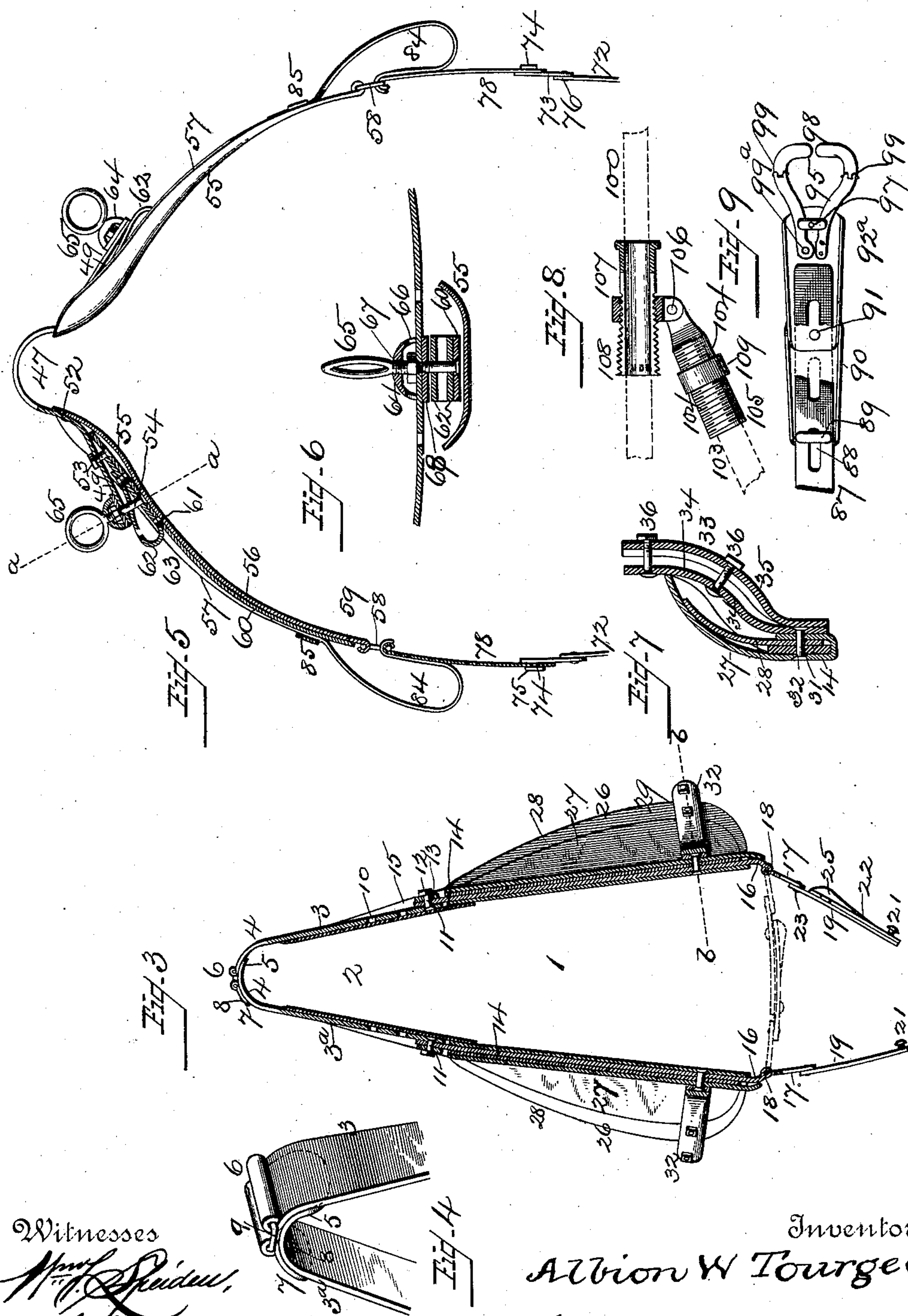
Witnesses
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3 Sheets—Sheet 2.

HARNES.

Patented Oct. 4, 1887.



Witnesses

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Chas. J. Gooch

(No Model.)

3 Sheets—Sheet 3.

A. W. TOURGÉE.

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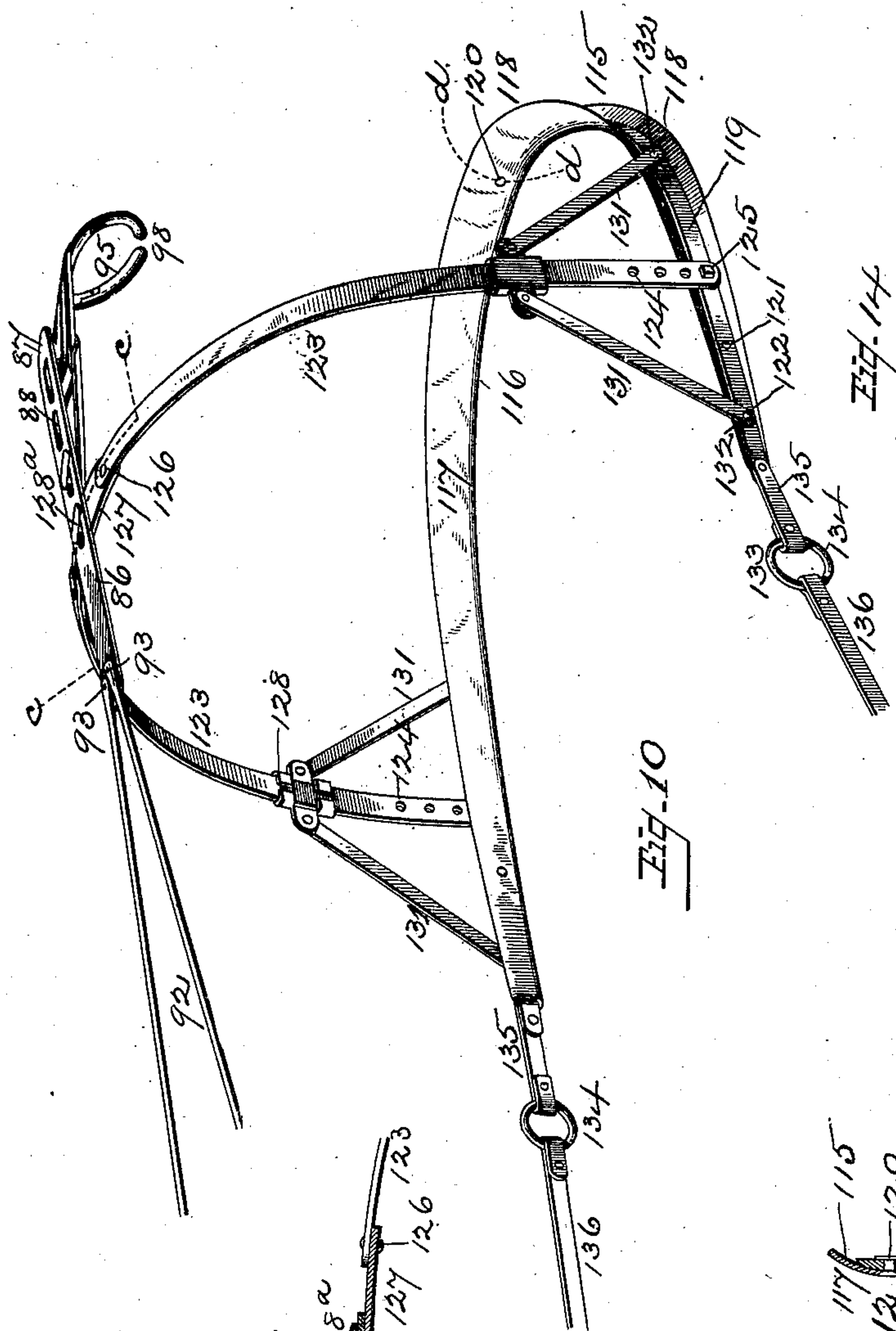


Fig. 10

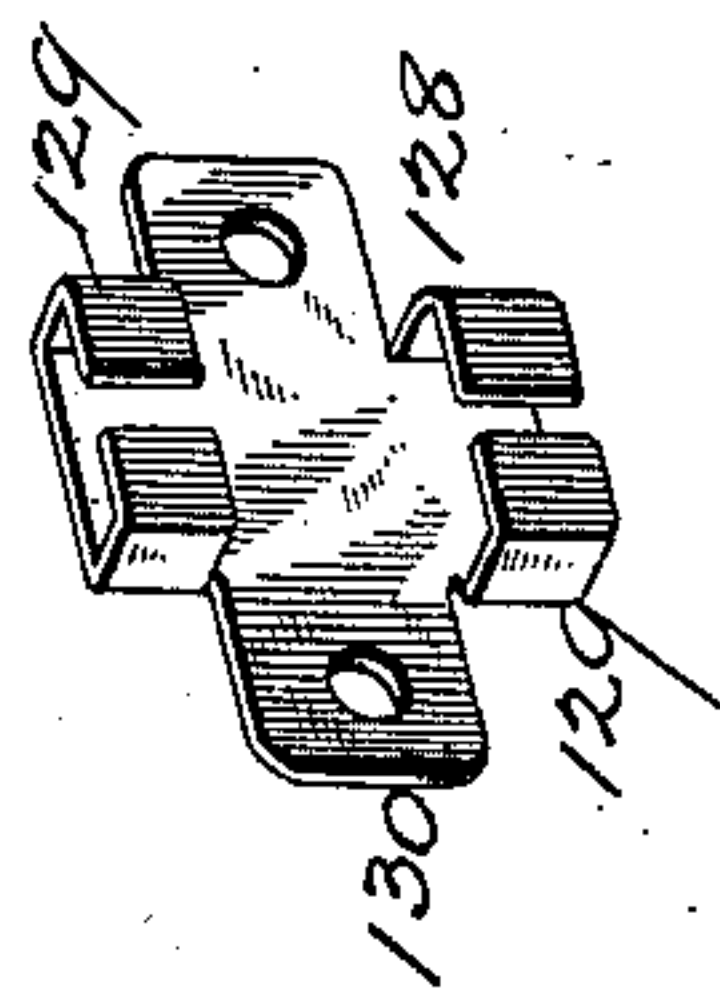


Fig. 14

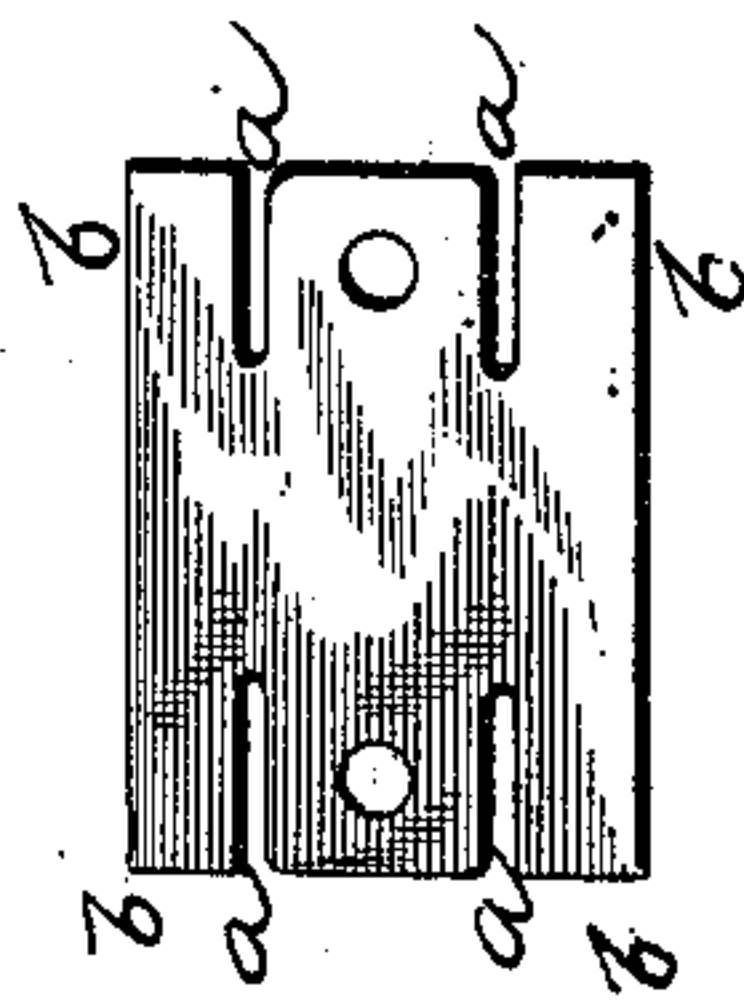


Fig. 13

Fig. 11

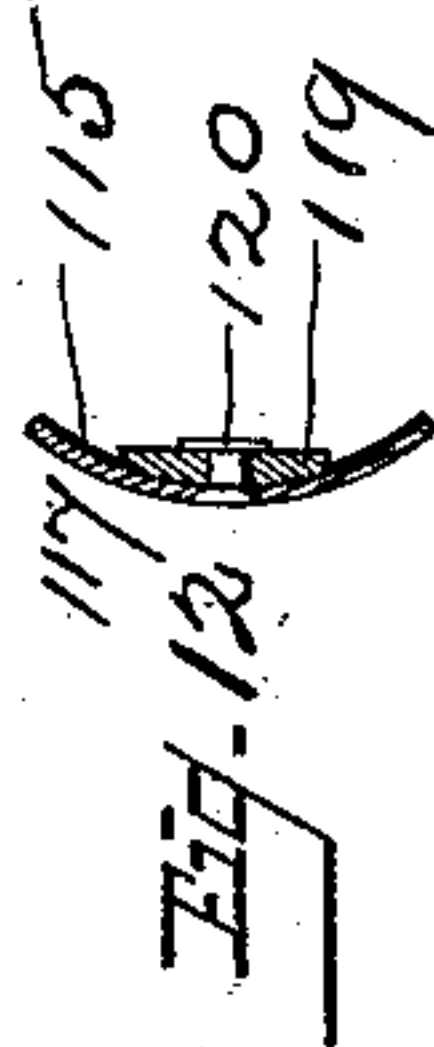
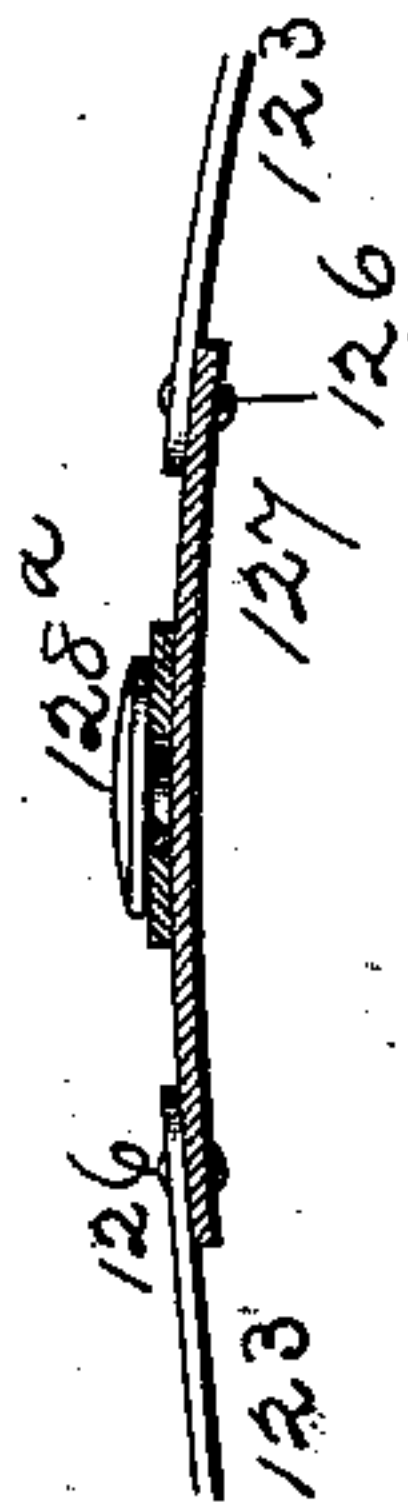


Fig. 12

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UNITED STATES PATENT OFFICE.

ALBION W. TOURGÉE, OF MAYVILLE, NEW YORK, ASSIGNOR TO E. K. TOURGÉE, OF SAME PLACE.

HARNESS.

SPECIFICATION forming part of Letters Patent No. 370,909, dated October 4, 1887.

Application filed December 31, 1886. Serial No. 223,123. (No model.)

To all whom it may concern:

Be it known that I, ALBION W. TOURGÉE, a citizen of the United States, residing at Mayville, in the county of Chautauqua and State of New York, have invented certain new and useful Improvements in Harness; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to the production of a novel harness adapted for use in connection with either single or double teams.

My invention comprises a novel construction of the several parts of a complete harness, the several parts being composed wholly or chiefly of thin metal, so shaped and arranged as to permit ease of movement, freedom from chafing or abrasion of the horse, lightness, durability, and greater excellence and efficiency by means of variously shaped and adjusted metallic parts, springs, fastenings, connections, and adjustments novel in their character and designed to secure with metallic devices the service hitherto rendered by leather or other pliable fabrics, and an adjustment, elasticity, and adaptability of the several parts to suit horses of different sizes and shapes and permit of the ready application or removal of the harness or any part thereof. The several parts of the harness have a general resemblance to the corresponding parts of an ordinary harness, although to some extent differing in form, construction, and character of application and service, all of which will be fully described hereinafter.

In the accompanying drawings, Figure 1 represents in perspective a complete harness constructed according to my present invention and adapted for use either for a single or a double team, the front ends of the reins shown in this figure being omitted for lack of space, and the bridle being also omitted, as that forms no part of my present invention. Fig. 2 represents a detail view of the front end of one of the reins and the manner of connecting the same to the bridle-ring to which the bit is attached. Fig. 3 represents a front elevation, partly in section, of my improved collar and its locking device, the latter being shown in

full lines as open and in dotted lines as locked. Fig. 4 represents an enlarged detail view in perspective of the upper part of the top section of the collar, (or arch,) showing the hinged and pivotal connection of the upper portion of the two leaves forming said top section or arch. Fig. 5 represents a front elevation, partly in section, of the saddle, saddle-arch, their adjusting devices, girth-connections, and a portion of the girth. Fig. 6 represents a detail sectional view on the line *a a* of Fig. 5. Fig. 7 represents a detail sectional view, taken on the line *b b* of Fig. 3, showing the trace-securing device for securing the adjustable connection of the front ends of the traces to the collar, and also showing the construction of the lower part of the collar and collar-pad. Fig. 8 represents a detail sectional view showing the adjustable connecting devices for connecting the main and cross reins or lines when more than one horse is employed. Fig. 9 represents a detail top plan view, partly broken away, of the rear end of the back-strap or back-band and the crupper. Fig. 10 represents a perspective view of the breeching hip-strap, back-band, and crupper, adjustable connecting devices, thill-strap, and connections. Fig. 11 represents a section taken on the line *c c* of Fig. 10. Fig. 12 represents a section taken on the line *d d* of Fig. 10. Fig. 13 represents a plan view of the blank for forming, and Fig. 14 represents a perspective view of the completed sliding band connecting the breeching and hip-strap-connecting braces.

The harness represented in the drawings is adapted for use with either one or a pair of horses, the rein or line shown in Fig. 1 representing one-half of a rein as adapted for use with a double team, as in some cases, both for single and double teams, a breeching is not employed. My harness can be very readily used in such cases by simply unbuttoning the hip-strap from the back-band or back-strap, and removing it and the breeching.

I will now proceed to describe the several parts of my harness in detail, which comprises all the parts going to constitute a complete harness with the single exception of the bridle, which latter forms no part of my present invention.

1 represents the collar, which is formed of metal, the neck-bars being in sections pivotally connected together.

2 represents the top section of the collar, which is in the form of an arch, the plates or bars 3 3^a of which arch have inwardly-curved upper ends, 4, said curved portions having a rounded under face to permit of their resting easily and comfortably upon the neck of a horse without chafing it. The inwardly-curved end of one of the members of the arch 2 extends across the under face of the top of the arch and has its end free, as represented at 5, so as to constitute an outward-acting spring which is always depressed when the collar is closed.

6 represents a pivot-hinge connecting the curved arch-bars together. Any suitable hinge other than that represented may be employed to connect the respective members of the arch and permit of the neck-bars being moved outwardly and transversely during use or when the collar-lock, to be presently described, is open. In the drawings I have represented a convenient and desirable form of hinge for this purpose, in which the leaf or plate 7 of the hinge is pivoted at one end, as at 8, to the extended side plate or bar, 3^a, which leaf is at its other end turned over one side of a square metallic loop, 9, while the upper end of the other side plate, 3, is similarly turned over the other side of said loop 9, as clearly represented in Fig. 4 of the drawings. The end of the side bar 3^a is rounded, so as to permit the other side bar 3 to act freely on the pivot-hinge 6, which, as shown, is located a little beyond the middle on the side of the bar 3^a. The loop or buckle hinge is in the middle of the arch, and permits the arch-bars moving outwardly or inwardly, so as to permit the collar to open at the bottom, while the pivot 8 permits of the oscillation of said bars. This spring-arch is thus readily adjustable to horses' necks generally. Through the lower portions of the side bars or plates, 3 3^a, forming the arch 2, and through similar holes, 13, in the lower bars, 14 14, extend transverse holes or slots 10, through which pivots, usually composed of bolts 11, secured by nuts 12, are passed to adjustably and pivotally connect the two parts of the collar together. The collar may be readily adjusted, as to length, to suit the necks of different horses by adjusting the pivotal connections 11 12 between the upper and lower bars to the respective holes, 10 13. As it may be desired, for instance, to shorten the collar, the connections 11 12 would be removed, the lower bars, 14, slipped up on the arch 2 to the desired height, and the said connections then passed through the registering holes 10 13. Similarly, when it is desired to lengthen the collar the lower bars, 14, would be disconnected from, lowered upon, and connected to the arch at a lower part thereof.

15 15 represent inwardly-curved metallic pads. The pads upon the lower part of the arch serve to protect the shoulders of the horse

from the action of the pivots 11 12, and may be extended down the inside of the bar as far as may be desired, acting as a washer between the shoulder and the lower part of the collar, being held always in place by the arch, to which they are rigidly attached. The lower parts, 14, of the neck-bar are preferably pivotally connected on the outside of the arch 2, as shown, as by this means there is no danger of the neck of the horse being pinched during the oscillatory movements of the parts, even should the pads 15 be absent. By pivoting the upper and lower bars together entire freedom is afforded for the movements of the horse's head and neck, as such pivotal connections permit of the lower part of the collar to swing freely backward and forward, and thus renders the collar sufficiently flexible to accommodate itself to the varied movements of the horse. The lower bars extend in a straight or nearly straight line to the corner of the shoulder, where they are there turned across the breast almost at right angles, as at 16, being given a slight outward bend to avoid their pressing against the breast in front.

17 17 represent cross-bars hinged at one end by outwardly-acting hinges 18 18 to the outwardly-bent right-angled lower ends, 16, of the lower bars, 14, while to the opposite ends of these cross-bars 17 are pivotally connected the two members 19 19 of the lock-plate, having key-hole slots 20 and headed lugs or pins 21 21, which, when the two plates of the lock are brought together to close and fasten the bottom of the collar, engage in said slots, as represented in dotted lines, Fig. 3.

22 represents a flat key pivoted at one end, as represented at 23, to one member of the lock-plate 19, said key having a transverse open-ended slot, 24, and a thumb-piece, 25. When it is desired to close and fasten the bottom bars, 14, of the collar, the lock-plates 19 are grasped, the lower bars, 14, drawn inward, and the lock-plates drawn together and brought into overlapping position with the headed pins 21 within the enlarged portion of their appropriate slots 20, the inward pressure on said lock-plates released, whereupon the bars 14 will spring outward and draw the headed pins within the narrower portion of the slots 20. The thumb-piece 25 on the key 22 is then grasped and the key slid between the overlapping lock-plate 19 and its open-ended slot 24 placed in engagement with the headed pin passed through the slot in that plate 19 to which the key is pivoted, the key, when pushed between the lapping plates 19, not only acting to grip and bind them together and in forcing the under plate in frictional and gripping contact with the head of the pin passed therethrough, but, by reason of a portion of the solid part of the key extending across the lower face of the head of said pin, also additionally serving as a stop to prevent the withdrawal of said pin through the slot through any jarring that may arise, thus

insuring the rigid and secure locking of the lower part of the collar. By connecting the lock-plate to the lower side bars, 14, of the collar by means of hinges 18 the cross-bars 5 17 and the thereto-attached lock-plates 19 are permitted to fall outward out of the way, as represented in full lines in Figs. 1 and 3. When the lock is unfastened, the attachment of the cross-bars and the lock-plates to the collar are rendered very easy, and the lock-plates are kept exactly horizontal when locked together. By pivoting the lock-plates to the cross-bars provision is made for oscillatory movements and jarring without affecting the lock, and the 15 plates can be more readily placed in and removed from locking position than would be the case were such hinge and pivotal connections absent. The lock-plates 19 may be provided with any suitable number of key-hole 20 slots to secure the adjustable connection thereof and regulate the width of opening at the bottom of the collar.

The pad or puff 26 of the collar consists of sheet metal struck up into the proper form, 25 turned over and riveted or otherwise fastened to the side bars. This pad is designed to be of spring metal and to offer a yielding and graduated pressure to the shoulder by being composed of one or more layers, 27 28, to regulate rigidity, the under one, 28, being rounded at the outer edge and puffed or swelled, as shown at 29, with an inward back curve, so as to fit into the front of the shoulder instead of swelling outward, so as to embrace the shoulder. The under layer is at its inner edge bent around and embraces the adjacent side bar, as represented at 30, to which it is riveted or otherwise suitably secured.

Near the lower angle of each lower member 40 of the collar is the metallic trace-fastener 33, which consists of a hollow box made in two parts, 34 and 35. The outer one, 35, is semi-cylindrical, so as to fit either round or flat traces, said trace-fastener being pivoted to the neck-bar of the collar by an adjustable nut-and-bolt attachment, 32, passing through a suitable hole, 31, said trace-fastener being curved outward, so as to avoid the shoulder, and the two parts being secured together by bolts and nuts 50 36, or other suitable means, which also pass through holes 37 in the traces, so as to hold the traces securely.

It will readily be seen that by means of the holes 37 in the traces and the connecting devices 36 the traces can be readily adjusted in position within the fasteners, so as to lengthen or shorten them, as desired.

It will be observed that the collar as thus constructed when closed, instead of being of oval or elliptical shape, as customary, is more of a reversed-V shape, the upper third of the collar being of arch or bow form, which, when the parts are in position, is held rigid by hold-back and brace springs, to be presently described, and by them maintained at all times in the same relation to the parts of the harness-saddle, while the lower part of the collar

flares outwardly in straight lines, forming, with the locking device, a practically square or oblong shape. This form prevents choking 70 by removing pressure from the thick part of the horse's neck. It also gives direct and not sliding pressure on the shoulder, so that force applied in holding back is applied to the horse's back and neck alike, the effect of 75 this combination being to form a light, elastic, but sufficiently rigid yoke, which embraces the animal's shoulders and distributes the weight of the tongue and of the load on a descending grade between the pads and the collar. 80

38 represents the traces, which, as before stated, are adjustably attached at their front ends to the trace-fasteners through the medium of the holes 37 and the connecting devices 36. The traces may be either flat or round or 85 tubular, or partly of both forms, as desired. In the drawings I have represented them as round with perforated flat front ends, although it is manifest that the front ends may also be round and have the holes 37 formed therein. 90 On the rear end of each tug or trace I slip a short cylinder or tube, 39, which is split or bifurcated from its outer end rearward for a portion of its length, and is exteriorly screw-threaded, as represented at 40. 95

41 represents a screw cap or ring, to which is hinged or pivoted, as shown at 42, a cock-eye, said screw cap or ring 41 in the illustration shown being formed with outwardly-extending cheeks or flanges 44, and the cockeye 100 with a tail, 45, which latter is placed between and pivoted to the cheeks 44 by the pivot 42, passing therethrough. The cockeye is at a right angle to the plane of the tail 45 to permit of its ready engagement with the whiffletree- 105 hook or other draft attachment. The advantage of this construction is that it readily allows of the end of the trace being left round and its connection with the draft device rendered readily adjustable. By bifurcating the 110 threaded tube 39 it can be easily and speedily slipped upon and also clamped on the trace by the screw cap or ring 41, thus providing a perfectly secure and effective connection for the cockeye. 115

When it is designed to use my harness as a double harness without traces, the draft devices would be attached to the draft-yoke or trace-fastener, heretofore described, attached to the collar. 120

The harness-saddle 46 is of sheet metal and is composed of two parts—viz., first, the tree or connecting bar 47, and, second, the pad 48. The tree or connecting bar is of ordinary form—an arch with two downward and outwardly projecting prongs, 49—through which 125 are terret receiving and adjustment holes 51 for adjustably securing the saddle-pad in position upon the horse and securing the connection of the spring thereto, the perforations 130 near the base on each side of the arch permitting of the attachment of the tree to the under portion of the pad either by a rivet or a bolt and nut, as at 52, while the perforations

51 permit of the passage therethrough of the bolts 53 and terret 54, by means of which the springs, to be presently described, are adjustably connected to the tree.

5 The saddle-pad 55 is composed of an inner piece of pliable sheet metal, 56, either permanently or removably attached to the tree at its upper extremity by the bolt or rivet 52, and slightly upturned at its edges, as at 57, and having curved or rounded under portion 10 and extending downward far enough to reach the outermost point in the curve of the horse's body. At the lower end said pad is turned over a square loop, 58, by which it is connected with the girth. Attached to the lower 15 end of this inner portion of the pad by a rivet, 59, or bolt and nut is a spring, 60, reaching up the attachment with the tree and having perforations 61, which admit of its adjustment by means of the bolts and nuts 53 and terret 20 54 on the prong of the tree. Under the end of each prong 49 is a bow-spring, 62, having perforations 63, which admit of its being used to raise or lower the end or prongs of the tree 25 with relation to the spring 60 below. The operation of this style of pad is to make it perfectly and easily adjustable to any form of horse within reasonable limits. By moving the interior spring, 60, outward and the other 30 one, 62, inward the end of the pliable inner sheet, 56, of the pad is depressed and the pad made to fit exactly any form of barrel. It is intended to cover the bolts and nuts, or part of them, the outer ones and the terret, with a peculiarly-shaped hollow cap, 64. This hollow 35 cap or nut cover forms a guard and lock for the nuts, forms an ornamental cover for the same, and protects them from interference and from rain and dust. In the illustration shown 40 in Fig. 6 of the drawings this cap 64 is represented as forming a base for the terret ring 65, and is there composed of a hollow rounded top portion having slotted sides 66, to permit of the passage therethrough of the lower end of 45 the arch-prong, and also the insertion of the thumb and finger or an instrument to operate the nut, with a screw-threaded orifice, 67, to receive the stem of the terret, a base portion, 68, on which said prong may rest, and with a 50 central hole through which the bolt may pass. Where such cap is employed simply as a guard or ornamental covering to a bolt-nut it would be composed of a hollow cap with an imperforate top portion, the base portion in such 55 case operating as a washer, as represented in Fig. 5, the construction in such case of this cap being the same as heretofore described, with the single exception that the hole in the top for the reception of the terret is omitted. 60 69 represents the girth, which is composed of three parts, viz: First, an inner sheet, 70, of pliable sheet metal having outwardly-curved edges and riveted at the ends to the outer part, as at 71; second, a band, 72, of spring sheet 65 metal, fitting the groove formed by upsetting the edges of the inner piece, 70, and riveted to it at 71. This outer portion of the girth is

an outward-acting spring, the action of which is regulated by the interior plate, 70; and, 70 third, pivotal connections. Near each end of the spring 72 is pivotally attached, at 76, on the outer side, a short piece, 73, of the same character, to which is attached a stud, 74, having a head, 75, the longer diameter of which is crosswise of the band. This stud fits, by 75 its longer diameter, certain slots 77 in the overlapping ends of strips of spring metal, which are hinged to the lower ends of the pad by the square loops 58 by means of the slotted 80 connecting-plates 78 and the studs 74 on the connecting-strap 73. The length of the girth can be readily adjusted by simply turning the pivoted piece 73 on the end of the girth down until it is at right angles with the slotted connecting-strap 78, passing the head 75 of the 85 stud 74 through the appropriate slot 77, and returning the pivoted piece to its position. The edges of this pivoted piece are slightly upturned to make disengagement impossible.

At the junction of the upper or arch and 90 lower parts of the collar are adjustably pivoted the holdback-springs 79, which consist of flat metallic outwardly-acting springs, and extend back to the pad or harness-saddle, being provided with holes or perforations 80, by 95 means of which and the terrets or bolts and nuts said springs may be adjusted, so as to regulate the distance between the collar and the saddle and accommodate the movements of the collar resulting from the horse's action. 100

81 represents the stay-spring, which is a small flat metallic spring adjustably and pivotally connecting the upper part of the collar and the holdback-spring, so as to regulate the 105 position of the upper part of the collar with relation to the holdback-spring and pad, each of said stay springs or braces being pivoted at its upper end, at 82, to the arch, and at its lower end pivoted with capability of adjustment in the holes or perforations 83 in the 110 holdback-spring. The operation of these two springs is to distribute the force required to hold back the load on a descending track evenly between the saddle and the top of the collar. 115

The trace-supports consist of a pair of thin springs, 84, struck into proper shape, the lower end of one of each of which hooks into the hinge connecting the pad and girth, while the other end is slipped under a cap or thimble, 85. The advantages of this construction 120 are that the trace-supports are easily attached and removed, are noiseless, and cannot rattle.

The back-band or back-spring 86 consists of elastic and adjustable straps extending from 125 the point of the hips back to the crupper. The top strap, 87, has adjustment holes or slots 88, through which an elongated headed stud 89 on the lower strap, 90, passes. This stud is set solidly in the strap, as it is not 130 often changed. To the strap 90 is pivoted, at 91, a plate or strap, 92, to which the crupper is attached. By reason of the pivotal connection of the crupper-plate 90 and the loose con-

nection formed by the stud 89 freedom of movement is permitted to the tail of the horse. The plates or straps 87 90 92^a are of sheet metal and have upturned or curved edges, as shown.

5 The back-band in front of the hips may be extended as far as desired in one piece of spring metal. From that point it is divided, so as to connect with the pad of the harness-saddle on each side by a spring or springs, 92, pivotally
10 attached at 93 to the back-strap. These springs may be either flat or coiled or partly flat and partly coiled, as shown, their action being twofold—first, to accommodate the action of the horse in bending his body to one
15 side or the other, and, second, to prevent the rocking or tipping of the harness pad which results from attaching the back-strap directly to the arch of the harness-saddle. The springs 92 are at their front ends attached to the saddle-pad in any suitable manner—such, for instance, as by loops or eyes 94.

95 represents the crupper, which is of bifurcated form, one of the arms being rigidly connected at its inner end to the plate 90, upon
25 which it rests, while the other arm is attached to said plate 90 by a vertical pivot or hinge, 99^a, which permits of one of the tubular arms of the crupper being moved sidewise or laterally, when desired, and clasped around the
30 horse's tail, said arm being held in place, when in position, by a turn-button, 97, pivoted to the plate 90. Rearwardly of its connection to the plate 90 said crupper extends in the form of curved jointed metal tubes 98, the jointed
35 portions being pivotally connected together by vertically-acting hinges or pivots 99 and the lateral-acting hinge 99^a, to permit of movement in use, the ready insertion of the tail of the horse, and to accommodate strain upon the
40 central portion by draft on the back-strap.

The reins or lines 100 may be of the ordinary character, round throughout their entire length, or round at the front part only. In case the ordinary lines are used it is intended
45 that the grip or hand part shall be composed of alternate flat or round parts of somewhat more than a hand's breadth in length and connected by metallic rings of sufficient size to admit the finger, or, as represented in the
50 drawings, Fig. 1, with a round front portion and a section of flat lengths, 101, connected together and to the round portion by rings 102. The purpose of this is to increase the pliability of the rein, and at the same time
55 afford a stronger grip, without any need of special adjustment as to length; in other words, to do away with the need of special grips. A rein thus constructed possesses the great advantage that wherever a man catches hold of
60 his line he has an invincible grip by simply slipping a finger through a ring.

In the drawings I have represented a portion of the reins for use in a double harness. In this construction the cross-reins 103 in the
65 double harness are united to the main or outer line by a tubular clamp composed of a pair of half-tubes, 104, having an exterior screw-

thread, 105, and pivoted at 106 to a threaded nut, 107, working on a similarly jawed or split tubular clamp 108 on the main line or rein 100. 70 When it is desired to connect a cross-rein to the main rein, the exteriorly-threaded and split or jawed tubular clamp 108 is slid along the line 100 to the appropriate position, and tightened thereon by screwing the threaded nut 75 107 thereon, which act compresses the spring-jaws of said clamp 108 upon the rein, so as to firmly grip it. Then the inner end of the cross-rein 103 is inserted between the spring-jaws 105 of its clamp 104, and said jaws gripped upon 80 the cross-rein by turning the screw nut or ring 109 along toward the outer end of the clamp. The exterior faces of the clamping-tubes and the interior of the sliding rings may be plain, and the clamping may be accomplished simply 85 by a sliding grip, if desired; but I prefer to employ screw-threads, as such would be safer and more effective. The same mechanism as that on the cross-line is intended to be used to attach a round trace to hames or collar. The 90 advantages secured by this arrangement are neatness, ease of operation, and readiness of adjustment. The clamping devices may be applied to any round rein.

The screw-threads on the clamping-tubes 95 may, if desired, be of a character to form indentations in the interior surface thereof, in which case, when the screw-threaded rings are turned along the clamps, the indentations on the spring-jaws will be pressed against the 100 inclosed end of the rein and hold it firmly, without flattening or perforating it.

The lines and bridles of this harness may be either of the ordinary styles or the bridles and round and hollow rein heretofore patented by me on the 13th of November, 1885, No. 329,508, such reins, however, being modified as herein described. 105

The forward end of each length of rein is similarly gripped between a clamp, 110, of similar construction to the clamping device 104 110 109. Extending outwardly from this tubular clamp 110 is a flange or lip, 111, to which are riveted at 112 wire bridle-grasping snap-hooks 113 114, one above the other, the top 115 snap-hook, 113, facing one way, while the bottom one, 114, faces in the opposite direction, as shown in Fig. 2 of the drawings. By these snap-hooks the reins are connected with the bridle-ring 115^a, and the reins can thus be 120 connected or disconnected easily and rapidly. By facing the hooks in opposite directions, as represented, a safety-catch is formed which insures the maintenance of the rein-connection with the bridle. 125

The breeching 115 is composed of an inner strip of metal, 116, of bowed form, gradually tapering from the center toward each end, and having curved or rounded inner face, 117, and outwardly-curved edges 118, to permit of its 130 resting against the horse without chafing, and a flat spring, 119, resting within the groove formed by the curved shape of the inner piece, 116, and secured at 120 to the center of the

breeching, and having adjustment-holes 121 at and near its respective ends, through which bolts, rivets, or other connecting devices 122 are passed, to adjustably secure said spring to the inner plate, 116, of the breeching, and thus regulate the degree of tension of said spring thereon, so as to regulate the rotundity of the breeching. The hip-strap is composed of two curved strips of spring metal, 123 123, having holes 124 in their lower ends, to facilitate their vertically-adjustable connection by bolts and nuts 125 with the breeching, the upper ends of said sectional hip-strap being pivotally connected, as at 126, to the top of the connecting plate or strip, 127, having upturned edges and of about the same width as the width of the hip-strap, in order that each of the straps 123 may have independent rests or bearings upon which to oscillate during the sidewise movements of the horse in either direction. The hip-strap is connected to the back-band by means of a button or stud, 128^a, which has its longest diameter lengthwise of the plate or strip 127, and engages with the appropriate slot, 88, in said back-band.

128 represents a sliding clasp or band, which in its completed state, as represented in Fig. 14, has top and bottom square inturned lips, 129, which embrace the hip-strap, and outwardly-extending perforated flanges or wings 130, to which are pivotally connected the upper ends of a pair of braces, 131, which extend therefrom at an outward angle to and are at their lower ends pivotally connected, as at 132, to the breeching, so as to brace and connect said breeching and hip-strap together and yet provide for oscillatory movements. When it is desired to either shorten or lengthen the hip-strap, the bolts 125 are removed, the band or clasp 128, with the thereto-attached braces 131, slid up or down, as the case may require, upon the hip-strap, and the bolt 125 then restored to its connecting position. When it is desired to remove the breeching, the button 128^a is released from engagement with the slot 88, whereupon the hip-strap and the breeching and connections can be removed.

133 represents the thill-braces, which consist of rings 134, pivotally connected by straps or strips 135 to the front ends of the breeching, so as to receive the thill-straps 136.

The manner of forming the sliding band or clasp 128 will be readily understood on reference to Figs. 13 and 14. In Fig. 13 is shown the blank, which consists of a flat piece of metal having a pair of slots, *a a*, at each end. By bending the ends *b* over partly at right angles and partly parallel with the body of the blank the inturned lips 129, for claspings the hip-strap, are produced.

Wherever rivets are herein referred to it is designed to employ bolts and nuts, except in such instances as where the parts are not intended to be adjustable, as thereby an easier adjustment of parts can be effected than would be possible were the ordinary headed rivets employed.

Having thus described my invention, what I claim is—

1. A metallic harness comprising a collar composed of a two-part and pivotally-connected arch-shaped top portion having adjustment-holes in its lower portion, side bars having similar adjustment-holes in their upper portions, pivot pins or bolts connecting the respective sections with capability of vertical adjustment the one on the other, and a bottom connecting-lock hinged to said side bars, a flexible perforated saddle-tree, flexible saddle and girth, a spring connected to the saddle and having perforations registering with the perforations in the tree, perforated holdback-springs pivotally connected at their front ends to the collar, bolts or terrets connecting said holdback-springs and tree, stay-springs pivotally connected at their respective ends to the collar and holdback-springs, trace or tug fasteners each composed of a two-part hollow box, one part being semi-cylindrical to adapt the same to receive either round or flat traces, spring trace-supports, an elastic and pliable metallic back-band having a perforated rear portion, a hinged bifurcated crupper having one arm hinged to the back-band to permit of its lateral movement and the outer ends jointed to permit of vertical movement, a button for holding the laterally-moving arm in locked position, a connecting band or strap removably and adjustably connecting said back-band and crupper, a flexible metallic breeching, a sectional hip-strap having perforations in its lower ends to permit of its vertically-adjustable connection with the breeching, a connecting strip having a button to engage the perforations in the back-band, and having pivotal connection with the sectional hip-strap, braces pivotally connected at their ends respectively to the hip-strap and breeching, traces having longitudinally-adjustable cock-eye-carrying clamps and cockeyes hinged to said clamps, reins having jawed gripping clamp-connections, oppositely-facing snap-hooks to connect with the bridle, and a series of hand-grasps, substantially as and for the purpose set forth.

2. A metallic collar composed of a two-part arch-shaped top portion, having overlapping curved upper ends and a pivot-hinge connecting the same, a pair of straight side bars pivotally connected to said arch with capability of vertical adjustment thereon, a two-part lock-plate having hinge and pivotal connection to the lower ends of the side bars, and devices, substantially as described, for securing said plates in locked position.

3. A metallic collar having a jointed arch-shaped spring top portion, straight lower bars having transversely and outwardly bent lower ends, means, substantially as described, for pivotally and adjustably connecting the upper and lower parts of the collar, inwardly-curved sheet-metal spring pads or puffs at the lower portion of the collar, and inwardly-curved metallic protecting-pads secured to the

lower part of the arch, substantially as set forth.

4. A metallic collar having a jointed arch-shaped spring top portion, straight lower bars having transversely and outwardly bent lower ends, means, substantially as described, for pivotally and adjustably connecting the upper and lower parts of the collar, and inwardly-curved metallic protecting-pads secured to the lower part of the arch, substantially as set forth.

5. The combination, with a sectional collar, substantially as described, of the lock, herein described, for connecting the lower ends of the neck-bars of a collar, consisting of a pair of plates hinged, respectively, to the lower ends of said neck-bars, a pair of slotted plates pivotally connected to said hinge-bars, and having headed pins to engage said slots, and a slotted key pivotally connected to one of said slotted plates, so as when said slotted plates are connected together by the engagement therewith of the headed pins to permit of said key being slid between said plates and engaging one or more of said headed pins and gripping the lock-plate, substantially as set forth.

6. A metallic trace or tug fastener composed of two outwardly-curved parts, the outer part being semi-cylindrical to adapt said fastener to receive either flat or round traces, said curved pieces being pivotally connected at their inner ends to the neck-bar of the collar, and bolts and nuts connecting said parts together and to the traces, substantially as set forth.

7. The combination, with a metallic collar and metallic harness-saddle, a pair of longitudinally-adjustable holdback-springs for connecting said collar and saddle and regulating the distance between the same, and brace-springs bracing and connecting said collar to the holdback-springs, substantially as set forth.

8. A metallic harness-saddle composed of an arch-tree having downwardly and outwardly projecting perforated prongs, a pad composed of a pair of downwardly-curved plates of pliable sheet metal, each having upturned edges and curved or swelled under portion and connected at the upper part to the tree, and plate-springs adjustably connected to said saddle and tree for the purpose of adjusting the pad and tree to fit different horses.

9. The combination, with a metallic harness-saddle, of a metallic spring-girth composed of an inner sheet or strip of pliable metal having outwardly-curved edges, an outer band of spring metal fitting between the outturned edges of the inner band, strips pivotally connected at one end to said outer band and having studs on their opposite ends, and strips of spring metal hinged at one end to the saddle and having perforated lower ends to receive the studs on the strips connecting the girth to the saddle, substantially as set forth.

10. The combination, with a metallic harness-saddle having a cap or thimble near its

lower end and a loop or hinge at its lower end, of a spring trace-support hooked at its lower end into said loop or hinge and at its upper end slipped within the thimble on the saddle, substantially as set forth.

11. A metallic back-band or back-strap composed of a flexible metallic rear portion having adjustment-slots therein, and an under piece of metal having an upwardly-projecting button or stud to engage with said slots, so as to secure the longitudinal adjustment of the back-band, and a front spring portion having rear pivotal connection to the front portion of the band and front connection on opposite sides of the harness-pad, substantially as set forth.

12. The combination, with a metallic back-band, substantially as herein described, of a tubular metallic bifurcated crupper, one of the arms of which has vertical pivotal connection at its front portion to the back-band, while the other arm is rigidly connected thereto, each of said arms having an inwardly-curved rear end, the outer portion of said inwardly-curved ends or fingers having hinge-connection with the inner portions to permit of said fingers having vertical movement, substantially as and for the purpose set forth.

13. The combination, with a flexible metallic back-band, a metallic plate pivotally connected at its front portion thereto and having upturned side edges and at its rear an upwardly-extending button, and a tubular metallic bifurcated crupper, one arm of which is at its front end rigidly connected to said pivotal plate, while the other arm of said crupper is at its front end pivotally connected to said pivotal plate to permit of the lateral movement of said member of said crupper, each of said arms of the crupper having inturned rear ends pivotally connected to the main portion of the crupper to permit of said rear ends moving vertically, as set forth, and said button being pivotally attached to the pivotal plate and having an elongated head to adapt it to hold said crupper in position, substantially as set forth.

14. A flexible metallic breeching having a curved or rounded inner face, outturned edges, a tension-plate spring adjustably secured to the exterior of said curved metallic breeching to regulate the rotundity and rigidity thereof, and means for removably connecting said breeching to the back-strap, substantially as set forth.

15. In a harness, the combination, with a metallic back-band having adjustment-holes in its rear portion and a flexible metallic breeching, of a sectional curved hip-strap having perforated lower ends and means, as described, for connecting said strap to the breeching with capability of vertical adjustment thereon, and a plate having a button for connecting the same with the back-band and having pivotal connection at or near each end to the respective sections of the hip-strap, substantially as set forth.

16. The combination, with a flexible metallic

breeching, of a spring-metal hip-strap having vertically-adjustable connection with said breeching, clasps or bands having intumed lips to embrace said hip-strap and outwardly-
5 extending perforated flanges or wings, and braces pivotally connected at their upper ends to said clasps or bands and extending outwardly and downwardly therefrom and pivotally connected at their lower ends to the breeching,
10 substantially as and for the purpose set forth.

17. The metallic hip-strap herein described, consisting of a pair of curved spring-metal plates, a connecting-plate pivotally connecting the upper ends of said hip-strap, and
15 means, substantially as described, for removably connecting said hip-strap and connecting-plate to the back-band.

18. In a harness, the combination, with a tug or trace, of a tubular clamp adapted at
20 its rear end to receive the rear end of a trace, and having a split or bifurcated front end and exteriorly screw-threaded, as described, an interiorly-screw-threaded ring or nut to engage the threads on the clamp and grip the
25 jaws thereof upon the trace, and having outwardly-extending cheeks or flanges, a cock-eye having a tail extending therefrom at a right angle and placed between the cheeks or flanges on the ring, and a pivot pin or hinge
30 connecting the tail on the cockeye and the flanges on the ring together, substantially as and for the purpose set forth.

19. The herein-described metallic thill-brace, consisting of a metallic strap pivotally con-
35 nected at its rear end to the front end of the breeching, and having a ring at its outer end to which the thill-strap is secured, substantially as set forth.

20. The adjustable device herein described

for connecting main and cross line reins, con- 40
sisting of a jawed tube embracing the main line, a ring or nut adapted to reciprocate along said tube and clamp the jaws thereof upon the line, and a similarly-jawed tube pivotally con-
45 nected to said sliding ring and having a jaw-gripping ring or nut to clamp said tube on the cross-line, and thus pivotally connect said lines together, arranged and operating substantially as and for the purpose described.

21. The device herein described for connect- 50
ing the front end of a rein to a bridle, consisting of a tubular-jawed clamp within which the front end of the rein is inserted, a ring or nut adapted to reciprocate upon said tube to clamp the jaws thereof upon the rein, and op-
55 positively-facing snap-hooks secured to the front end of said tube, arranged and operating substantially as and for the purpose described.

22. The rein composed of one or more sections, consisting of alternate flat lengths and
60 rings connecting the same together and to the main portion of the rein, so as to form hand-grasps, substantially as set forth.

23. A cap or cover for inclosing the upwardly-projecting portion of the terrets and
65 bolts and nuts, consisting of a perforated base portion to receive the bolt and operate as a washer for the nut, and a top hollow portion to receive the nut and having slotted sides to permit of access to the inclosed nut, substan-
70 tially as and for the purpose set forth.

In testimony whereof I affix my signature in presence of two witnesses.

ALBION W. TOURGÉE.

Witnesses:

C. R. CIPPERLY,
G. S. FLAGLER.