No. 668,187. Patented Feb. 19, 1901.

S. H. HULL.

HARNESS STRAP GUIDE.

(Application filed Sept. 23, 1898.)

(No Model.)

Fig. 1.

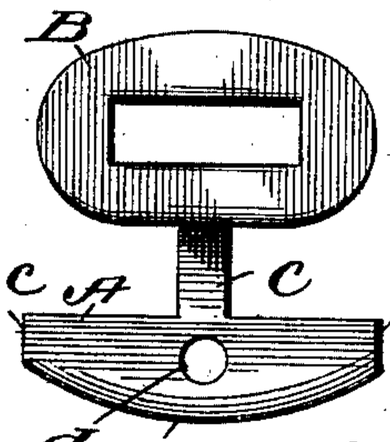


Fig. 2.

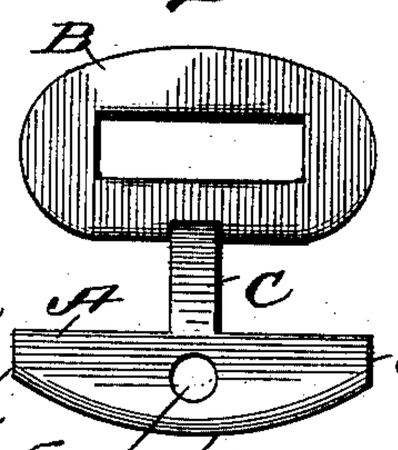


Fig. 3.

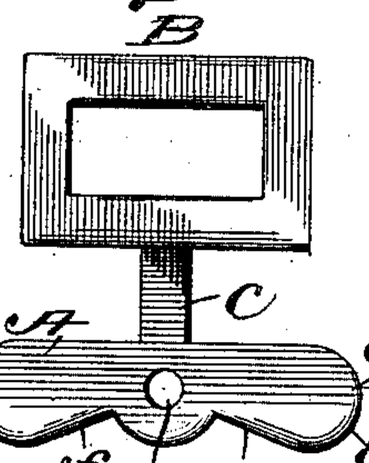


Fig. 4.

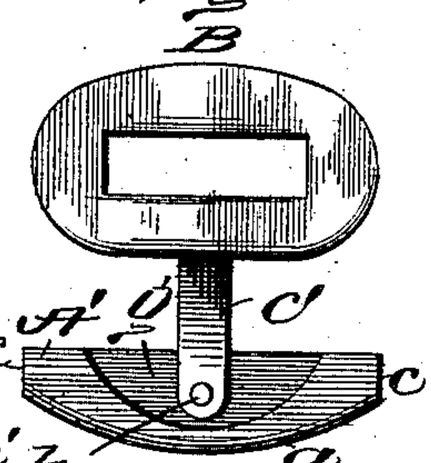


Fig. 5.

Fig. 6.

Fig. 7.

Fig. 8.

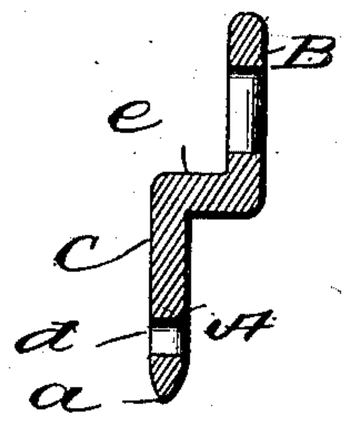


Fig. 9.

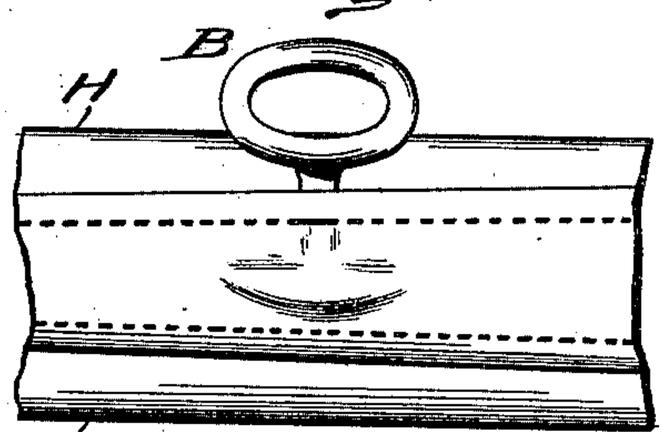
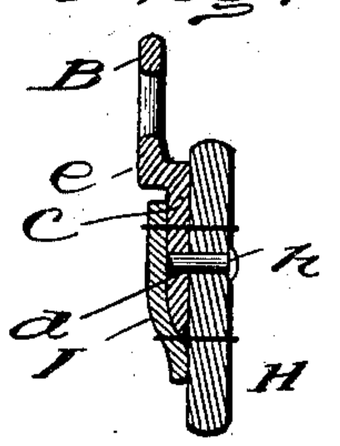
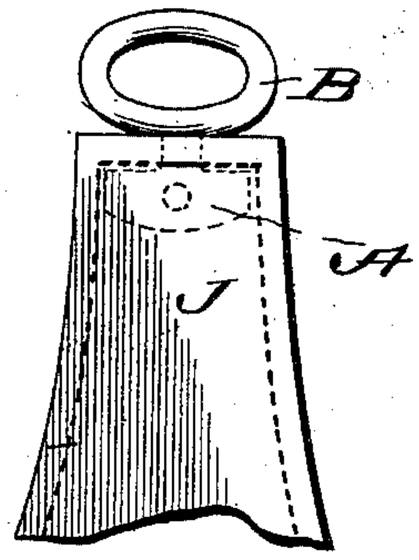
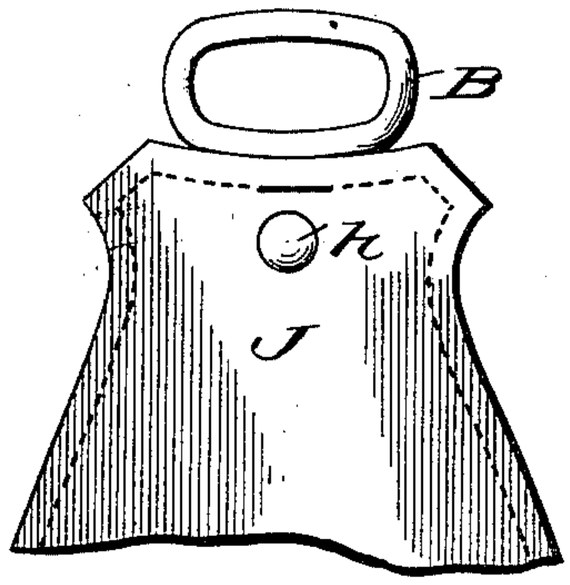


Fig. 10.







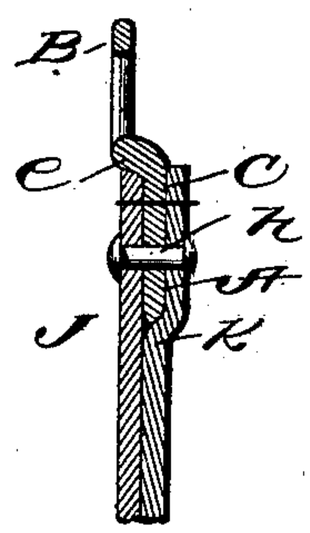


Fig. 11.

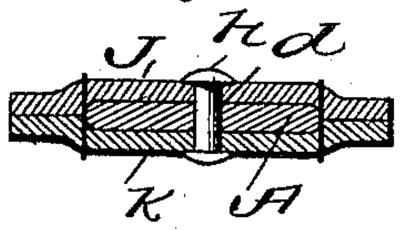
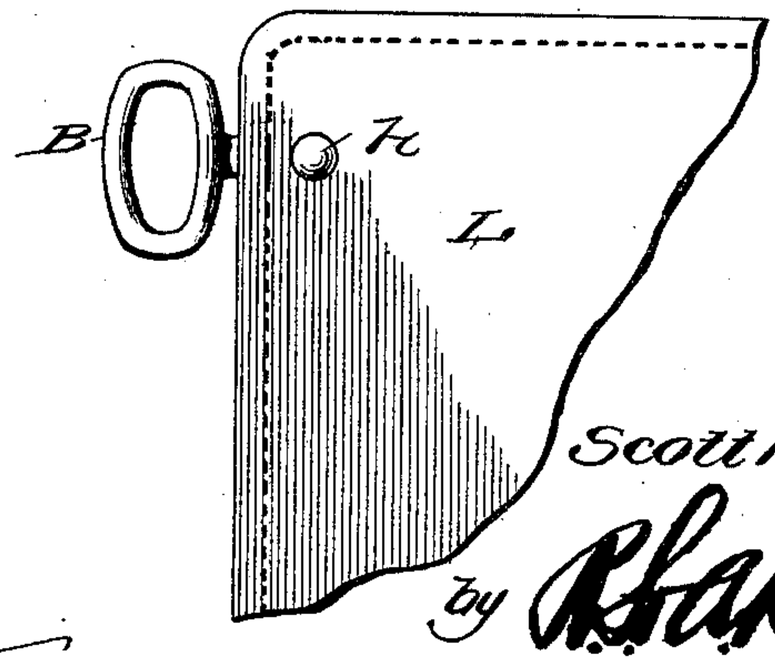


Fig. 12.



Witnesses

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UNITED STATES PATENT OFFICE.

SCOTT HARTER HULL, OF OSKALOOSA, IOWA.

HARNESS STRAP-GUIDE.

SPECIFICATION forming part of Letters Patent No. 668,187, dated February 19, 1901.

Application filed September 23, 1898. Serial No. 691,735. (No model.)

To all whom it may concern:

Be it known that I, SCOTT HARTER HULL, a citizen of the United States, residing at Oskaloosa, in the county of Mahaska and State of Iowa, have invented certain new and useful Improvements in Harness-D's, (for which I have obtained a patent in Canada, No. 59,886, bearing date May 5, 1898;) 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.

This invention relates to improvements in harness-D's or metallic loops of the character employed for attaching the connecting or supporting straps to the main parts of a harness.

The object of the invention is to provide a simple and cheap construction of D which is capable of a wider application and range of usefulness than prior devices of its kind, which obviates the necessity of "blocking" or filling up openings and requires but a single stoppage of the stitching-machine in applying it to the harness, and which is adapted to hold the connecting-strap and bear upon the stitches in such a manner as to relieve the latter of undue strain and at the same time to be held thereby securely against casual displacement.

The invention further makes provision for the use of a rivet to make the connection of the D absolutely secure when used on heavy harness.

With these and other minor objects in view the invention consists of a harness-D embodying certain novel features of construction and arrangement of parts, as will be hereinafter fully described and claimed.

In the accompanying drawings, Figure 1 is a front view of a harness-D constructed in accordance with the invention. Fig. 2 is a rear view of the same. Figs. 3 and 4 are front views showing modified forms of D's. Fig. 5 is a central vertical section through the forms of harness-D's shown in Figs. 1, 2, and 3. Fig. 6 is a view showing the application of the D to the breeching or breast-collar of a harness. Fig. 7 is a central vertical section thereof. Figs. 8 and 9 are views showing, respectively, the application of the D to a martingale drop or ornament and a flank-drop. Fig. 10 is a central vertical section of the latter. Fig. 11 is a cross-section through Figs. 8 and 9. Fig. 12 is a view showing the application of the D to a blind for connecting the winker-brace thereto.

Heretofore it has been customary in connecting the breast-piece of a harness with the shoulder-piece and the breeching of a harness with the hip-piece to employ a loop or ring connector in form of the letter D, said connector being applied between the folds of the breeching or breast-collar and the outside layer of leather with its straight side and a portion of its arms inserted therebetween and its curved side projecting outward to receive the connecting-strap. The operation of applying D's of this character is tedious, annoying, and expensive, and in large factories where machines are employed for stitching requires great expertness and skill in order to make a stable connection and turn out a sufficient amount of work, for the reason that the operator is compelled to simultaneously hold the three parts assembled, guide the work, and control the machine and much time is lost in cutting out and applying small pieces of leather to block up or fill the open space in the confined portion of the D to prevent the outer layer of leather from sinking therein and making an unsightly job. In stitching the parts together the operator is also compelled to stop the machine and raise and lower the presser-arm in crossing each arm of the D, eight of such stops being required in the manufacture of a complete set of harness in which the D's are applied only to the breast-collar and breeching, whereby further loss of time is occasioned. Such D's furthermore do not give satisfaction, because the slender arms thereof have but slight bearing on the leather and stitches and twist and turn or cant under the pull of the strap and quickly cut the stitches and become unfastened. To overcome one or more of the aforementioned objections, various other forms of D's have been devised, all of which, however, require more than one stoppage of the sewing-machine in connecting them to the harness, while most of them require to be blocked or filled up in the manner stated, thus rendering the operation of attaching them costly and laborious. Where these diffi-

culties are partly or wholly overcome, other objections are to be found—as, for instance, the construction employed either necessitates the use of a rivet in addition to the stitching to prevent the D from pulling out or the D is only capable of being employed on harness parts composed of a main fold and an outer narrow layer or of being employed with a certain form and width of layer, thereby necessitating the carrying in stock of various forms and sizes of D's to meet the ordinary requirements of the trade.

This invention is designed to overcome the defects above noted and produce a D which combines all the advantages while being free from the disadvantages of prior devices of its kind. These advantages will be fully set forth in the following description.

In its organization the D comprises a base A, an upper loop or strap guide B, and an offset connecting-shank C, and is preferably cast or otherwise made of a single piece of metal, although this construction may be departed from to the extent of making the base-plate independent of and riveting or otherwise connecting it to the shank, as shown in Fig. 4, the construction of which will be more fully described hereinafter. The base A is composed of a plate which extends parallel with the loop and has its lower edge *a* curved longitudinally in the arc of a circle and beveled from opposite sides and its ends *c* truncated to form plane right-angular shoulders. The plate is made of sufficient depth to form a firm bearing for and stay the loop and prevent it from canting under the pull of the strap and is wholly imperforate except at the center, where it is preferably provided in line with the shank with a transverse hole or opening *d* for the passage of a fastening pin, rivet, or tack. To increase the bearing-surface of the base-plate, the ends thereof may be extended, if desired, beyond the strap-loop to make the plate of relatively greater length than the loop and adapt it to more firmly hold the latter. The said loop or strap-guide B is closed and has the general form of a plate provided with an elongated slot or opening. This slot, which receives the looped end of the supporting or connecting strap of the harness, may be, like the plate itself, of any preferred general form or contour to adapt the device for use with various straps or for various purposes. The shank C consists of a comparatively long and narrow stem centrally located and formed of a single branch or piece of metal rising from the upper edge of the base-plate and connected at its upper end to the lower rear edge of the loop or guide-plate. As clearly shown in Fig. 5, the upper part of the shank is offset to form an arm *e*, arranged at an angle thereto and projecting forwardly and terminating at the rear side of the loop, thus positioning the base-plate and loop in different parallel planes one in advance of the other. By offsetting the shank instead of the loop I avoid the necessity of securing the lower portion of the latter between the folds or plies of the harness and at the same time maintain it in an upright position and in a plane parallel with the base-plate, whereby the pulling strain is transmitted on a direct line to the base-plate and torsional twisting and canting of the D thereunder almost, if not entirely, obviated.

In Fig. 3 the construction of the D is slightly modified by making the loop B and the slot therein of rectangular form, and the base-plate is formed with broadened rounded ends *c'* to increase its bearing-surface at these points, and at the center around the opening *d* for the rivet or fastening the said plate is also widened to strengthen it. From the outer broadened ends to the central widened portion the base-plate in this instance is also recessed, as at *f*, in its lower edge to further prevent movement thereof, as the parts to which it is applied, if doubled, will sink or fit into said recessed lower edge.

In Fig. 4 a further modification is shown, and therein the base-plate A' has a curved recess *g* formed in its rear face and opening through the upper edge thereof, and the shank C' is independent of the said base-plate. This construction permits the loop or guide-plate B to be primarily arranged at any desired angle relatively to the harness part to which it is applied without shifting the base-plate and accommodate the irregular positions of straps in special forms of harness. The lower end of the shank in this form of the D extends down into the recess and lies flush with the rear face of the base-plate and is secured thereto by a rivet *h* passed through a central opening therein or formed integrally therewith, as desired.

Figs. 6 and 7 of the drawings show the application of the D to the breast-collar or breeching of a harness. These parts are made up in the usual way of a main fold or ply H and an outer layer I, which latter is ordinarily made tapering or scalloped to suit the taste or fancy of the manufacturer or user and secured to the fold by a continuous line of stitching running parallel with the edges and extending around the ends thereof. In connecting these parts they are assembled with the layer extending longitudinally of and lying against the outer surface of the fold and the base-plate and the lower portion of the shank of the D placed beneath the layer and between the same and the fold, as shown in said figures. Now in stitching said parts together the operator is compelled to hold them thus assembled, which is a difficult operation of itself on account of the liability of the D to slip out, and at the same time guide the work and manipulate the machine. The operator is furthermore compelled in applying the ordinary form of D to block or fill up the opening therein with a piece of leather and stop and raise and lower the presser-foot of the machine two or more times in crossing the arms thereof, thus rendering the opera-

tion slow and tedious. These objections are entirely overcome by the use of my D, as it may be either temporarily or permanently secured to the fold H or to both the fold and ply by passing a pin or tack or a rivet *h* therethrough and through the opening *d* therein, so as to hold the same securely and leave the hands of the operator practically free to operate the machine, and but one stoppage of the machine instead of from two to four is required to cross the shank C, which is advantageous in effecting a material saving of time and much more secure attachment of the upper portion of the D, as but a very slight break occurs in the spacing of the stitches. It will be seen that when the D is thus applied the base-plate will secure a firm bearing against the fold and ply to hold the D securely, while the loop or guide-plate will stand straight and in the vertical plane of said plate, so as to receive and transmit the pull of the strap attached thereto in a direct line to the same, whereby torsional twist and canting of the D and straining on the stitches will be nearly, if not entirely, avoided. It will further be seen that while the loop or guide-plate stands straight and vertical the offset portion of the shank holds it forward and outward from the ply, so that it cannot possibly buckle down upon and indent or otherwise injure or mutilate the same, while the lower curved edge of the guide-plate bears against the lower row of stitches and holds it firmly against swinging or turning movement. The beveled sides of the plate, moreover, allow the lower portion of the layer I to be drawn closely to the ply and about the lower curved edge of said plate without straining the stitches. I may dispense with the use of a rivet on all but very heavy harness-work, as the D will hold securely without it. Should the D become loosened, however, as a result of stretching of the leather or loosening of the stitches, a rivet may be quickly applied to rigidly secure it and reinforce the leather.

Figs. 8 to 11, inclusive, show, respectively, the application of the D to a martingale frog or drop ornament and a flank-drop, which parts are composed of corresponding inner and outer plies J and K of leather secured together by a continuous line of stitching running a short distance back from and parallel with the edges thereof. The base-plate of the D is inserted between the two plies just below the upper edges thereof, as clearly shown in Fig. 10 and 11 and as hereinbefore described with reference to Fig. 6, and the end shoulders *c* thereof bear against the opposite side rows of stitches and hold the D against axial play. A rivet may be applied, if desired, to reinforce the row of stitches at the upper edge of the drop; but this is usually unnecessary. The use of a broad wholly or mainly imperforate base-plate permits of the application of the D to these parts of the harness without injuring or marring the appearance thereof, as the distribution of the strain over a wide area is insured and all danger of wear and penetration of the leather obviated. It will be seen that the broadened end shoulders of the base-plate are adapted to bear upon the opposite side rows of stitches of the drop to hold the D in an effective manner, while the lower curved edge thereof performs a like service in connection with the lower row of stitches when the D is applied to a breast-collar or breeching-piece. Furthermore, by forming the D, as described, of cast metal it is made rigid or inflexible and the parts thereof are prevented from twisting or bending under strain.

Fig. 12 shows the application of the D to a blind L to receive the winker brace or stay. The blind is made like the martingale and flank drops of corresponding inner and outer plies of leather, and the D is applied between the same at the usual point of attachment of the brace. Only one of the end shoulders *c* of the base-plate bears against the stitching in this application, and it is desirable to use a rivet to secure a firm connection. The D makes a much more rigid and stable connection than the ordinary ring D and obviates the necessity of sewing the end of the brace to the blind, a practice which has been pursued generally on account of the weak connection of the ring D, and prevents the blinds from becoming detached or loosened and flapping the horse's eyes.

The value of my improved harness-D will be appreciated by those skilled in the art and its advantages readily discerned. By employing a wide base-plate the D is adapted to be applied equally as well to harness parts composed of two like plies as to harness parts composed of a main ply and a layer, as it obtains sufficient bearing to hold it securely as well as to avoid wearing or punching through the leather. The bearing action is in addition increased by the use of the curved beveled edge and end shoulders where the construction of the harness part is such as to permit either one or all of these elements to bear against the stitches, and the provision of the rivet-hole is advantageous in permitting of the application of a pin, tack, or rivet in holding the parts temporarily assembled or permanently securing them together to reinforce the base-plate when used on heavy harness or where an effective bearing of the curved edge and end shoulders thereof cannot be secured, as well as to enable rapid repairs to be made in old harness. By employing a single central shank also to connect the base-plate and loop or guide-plate I am enabled to dispense with the use of an open loop connecting directly with a base, and thus to avoid offsetting and embedding of the lower portion of the loop in the harness, which construction is objectionable on account of the twisting strain and canting set up by the pull of the strap, and, what is more important, to avoid the necessity of blocking up such lower por-

tion of the loop. The form of base-plate employed by me furthermore permits of the use of the D in connection with outer layers of any desired shape and width, while the shank renders but a single stoppage of the sewing-machine necessary in stitching the members of the harness part together. It will thus be seen that my invention provides a D that is capable of a wider application and range of usefulness than prior devices of its kind and embodies all the advantages while being free from the disadvantages thereof and that by its use the saving of valuable time and labor is effected in harness manufacture.

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

1. A metal connector for harness and the like, comprising an oblong solid flat base, a strap-guide, and a single solid shank connecting the base and strap-guide at points intermediate of their ends and offset adjacent to the said strap-guide, substantially as described.

2. A metal connector for harness and the like, comprising an oblong flat solid base provided centrally with an opening for the passage of a fastening, a strap-guide, and a single solid shank connecting the base and strap-guide centrally and offset adjacent to the strap-guide, substantially as specified.

3. A metal connector for harness and the like comprising an oblong solid base provided in one face with a recess opening through its top edge, and a strap-guide having a single solid shank projecting centrally therefrom and connected to the base to admit of the inclination of the strap-guide being varied to meet certain conditions, substantially as set forth.

4. In combination with plies of leather or like stout material stitched together, a metal connector consisting of an oblong solid base held between the said plies, a strap-guide, and a single shank connecting the strap-guide and base centrally and confined by a single stitch and having its outer end offset, substantially as specified.

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

SCOTT HARTER HULL.

Witnesses:

MARGARET WRIGHT,

NELL B. CLENDENON.