W. I. BULLARD.

SHACKLE STRAP.

APPLICATION FILED JUNE 23, 1909.

1,010,580.

Patented Dec. 5, 1911.

Fig. 1

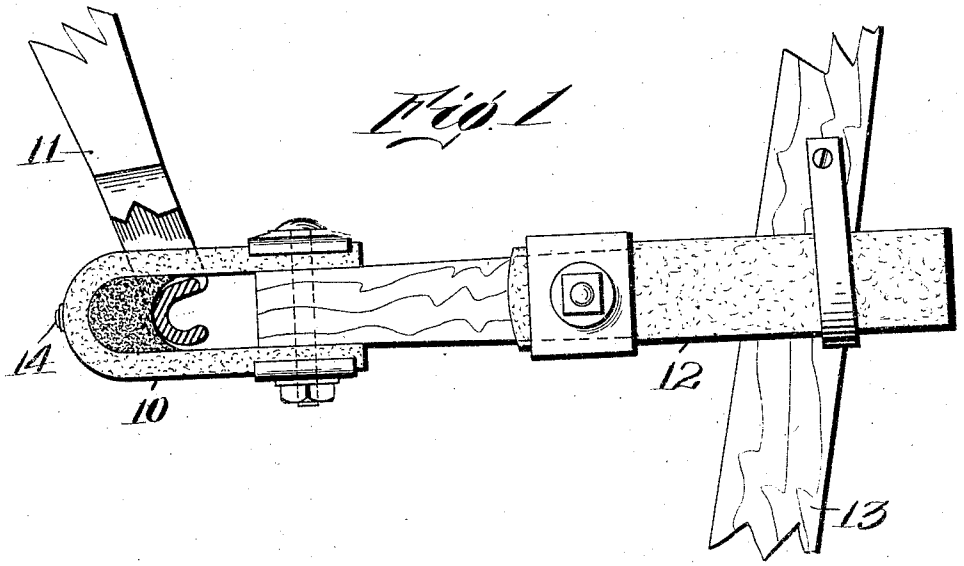



Fig. 2.

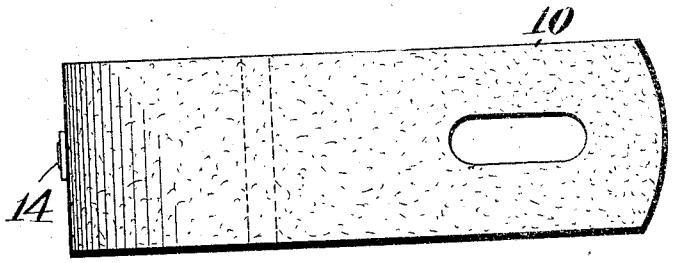
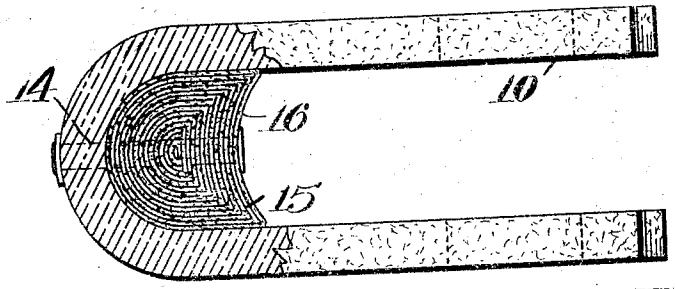



Fig. 3.




Witnesses:
C. F. Wesson
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# UNITED STATES PATENT OFFICE.

WASHINGTON IRVING BULLARD, OF DANIELSON, CONNECTICUT, ASSIGNOR TO E. H. JACOBS MANUFACTURING CO., OF DANIELSON, CONNECTICUT, A CORPORATION OF CONNECTICUT.

## SHACKLE-STRAP.

1,010,580. Specification of Letters Patent. Patented Dec. 5, 1911.

Application filed June 23, 1909. Serial No. 503,842.

*To all whom it may concern:*

Be it known that I, WASHINGTON IRVING BULLARD, a citizen of the United States, residing at Danielson, in the county of Windham and State of Connecticut, have invented a new and useful Shackle-Strap, of which the following is a specification.

This invention relates to a shackle or pick arm strap for looms particularly designed for use in connection with the shackles, stirrups or pick arms of looms of the types known as the Northrup and Draper looms.

The principal objects of the invention are to provide a wearing surface for the shackle strap that will have a greater extent and duration than those of the plain leather or canvas straps that have been used heretofore, and that will be of such a character as to take up a great deal of the vibration resulting from the propulsion of the picker-stick and shuttle; also to provide a construction particularly adapted for use with a stirrup made of cast iron, and having a very firm wearing surface and a solid backing behind it.

Further objects and advantages of the invention will appear hereinafter.

Reference is to be had to the accompanying drawings, in which—

Figure 1 is a side view of a shackle strap and certain connected parts showing how this invention may be applied thereto; Fig. 2 is a plan; and Fig. 3 is a side view on enlarged scale of the shackle strap alone.

The invention is shown as applied to a shackle strap 10 adapted to be used in connection with a cast iron stirrup 11, a lug strap 12, and picker stick 13, the latter named feature being shown as of ordinary construction. The shackle strap 10 is shown as of a general U-shaped form and formed of a plurality of substantially concentric layers of canvas or similar fabric adhering to each other in compressed form. Through this strap at a point near the crotch passes a longitudinal rivet 14 which strengthens the shackle strap itself, but the principal object of which is to secure in position a plug 15. This plug is shown as consisting of a plurality of substantially concentric layers of fabric all arranged with their edges in the two vertical side surfaces of the plug. The surface layers at the rear extend along the inner surfaces of the strap and at the operative surface they give a concave wearing surface 16 for the stirrup, in this case of three to five times the durability of that secured by plain leather.

It will be observed that the stirrup 11 has an oscillating motion, and consequently the convex active face thereof instead of delivering a blow to the plug 15 wears the surface thereof by a swinging motion along the concave face. It is for this reason that the placing of the fabric in the way shown in Fig. 3 is more effective than it would be if the wearing surface were composed of the cut edges of the fabric. This invention applies particularly to the shackle strap. Because of this action of the stirrup the effect is very different from that on the lug strap which engages the picker with a direct normal blow.

As the plug wears the inner parallel layers are exposed and the surface remains concave so that it does not readily get out of shape. It is frequently desired to use cast iron stirrups, and the plurality of concave layers of fabric in and back of the wearing surface 16 are located in the position indicated in Fig. 3, because in this way they present a firmer surface and a more solid backing than would otherwise be obtained. This is particularly advantageous when a heavy stirrup is employed, especially a cast iron one.

While I have illustrated and described a preferred embodiment of the invention, I am aware that many modifications can be made therein by any person skilled in the art without departing from the scope of the invention as expressed in the claim. Therefore I do not wish to be limited to all the details of construction shown and described, but

What I do claim is:—

The combination with an oscillatory stirrup having a convex active face, of a shackle strap therefor comprising a loop of resilient fibrous material and having a plug at the U-shaped end thereof for receiving said convex face, said plug consisting of a plurality of layers of compressed fabric adhering to each other, said layers being arranged in two connected concave sets, those of each set being parallel with each other, the outside ones

of one set fitting in the U-shaped end of the loop, and those of the other set substantially fitting said convex face, whereby the latter outside layers will be worn along their fibers by the oscillatory motion of said face therealong.

In testimony whereof I have hereunto set my hand, in the presence of two subscribing witnesses.

WASHINGTON IRVING BULLARD.

Witnesses:
ALBERT E. FAY,
LOUIS W. SOUTHGATE.