(No Model.) 2 Sheets—Sheet 1.

S. J. HART.

HOSE CLAMP.

No. 513,322. Patented Jan. 23, 1894.

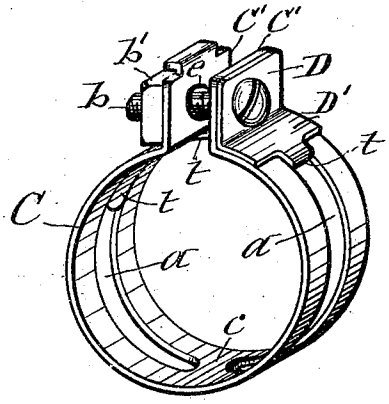

Fig. 1

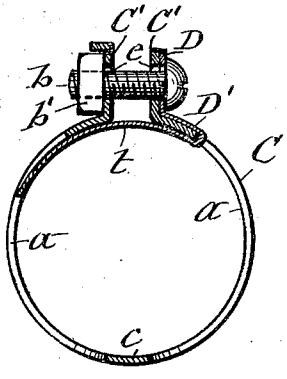

Fig. 2

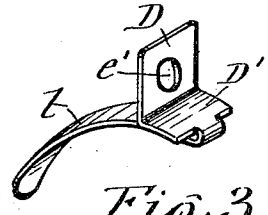

Fig. 3

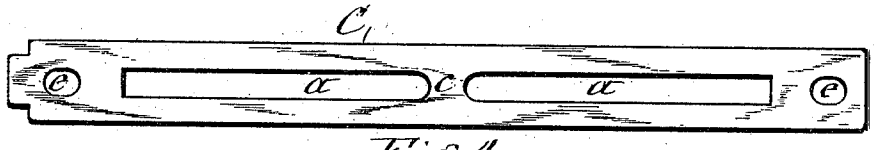

Fig. 4

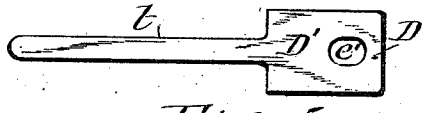

Fig. 5

WITNESSES:

C. L. Burdixon

H. M. Seamans

INVENTOR:

Samuel J. Hart

By E. Laass

his ATTORNEY.

THE NATIONAL LITHOGRAPHING COMPANY,
WASHINGTON, D. C.

(No Model.) 2 Sheets—Sheet 2.

S. J. HART.

HOSE CLAMP.

No. 513,322. Patented Jan. 23, 1894.

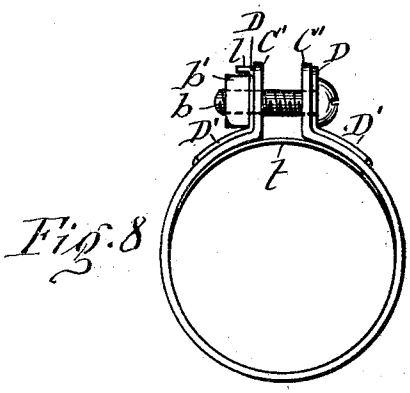

Fig. 8

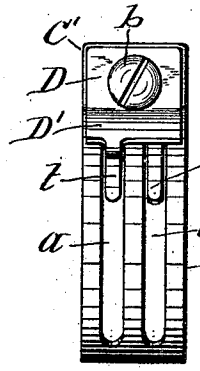

Fig. 6

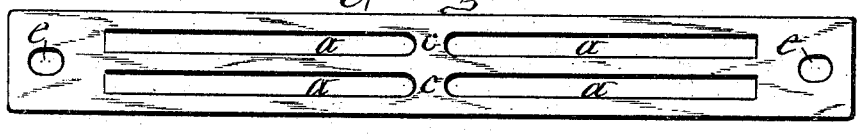

Fig. 12

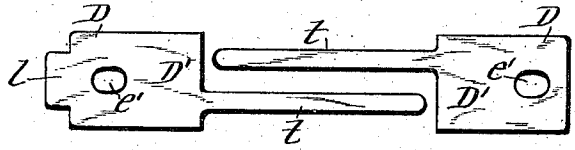

Fig. 10

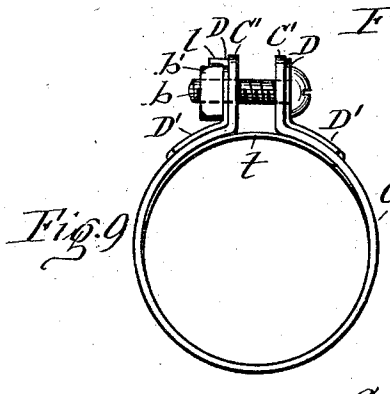

Fig. 9

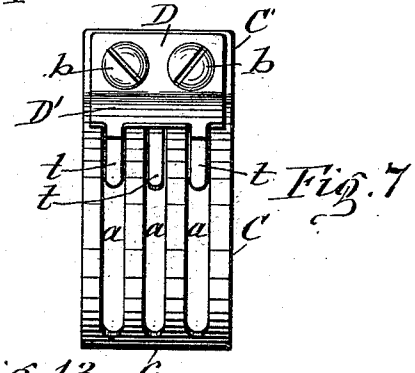

Fig. 7

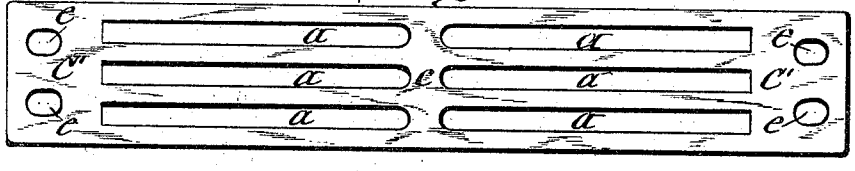

Fig. 13

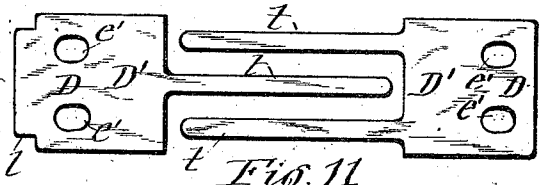

Fig. 11

WITNESSES:
C. L. Bendixon
H. M. Seamans

INVENTOR:
Samuel J. Hart
By E. Laass
his ATTORNEY

THE NATIONAL LITHOGRAPHING COMPANY,
WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

SAMUEL J. HART, OF SYRACUSE, NEW YORK, ASSIGNOR TO J. R. CLANCY, OF SAME PLACE.

HOSE-CLAMP.

SPECIFICATION forming part of Letters Patent No. 513,322, dated January 23, 1894.

Application filed March 15, 1893. Serial No. 466,065. (No model.)

To all whom it may concern:

Be it known that I, SAMUEL J. HART, of Syracuse, in the county of Onondaga, in the State of New York, have invented new and useful Improvements in Hose-Clamps, of which the following, taken in connection with the accompanying drawings, is a full, clear, and exact description.

This invention relates more particularly to the class of hose-clamps in which the embracing band is formed in one piece stamped out of suitable sheet metal bent circular shaped and terminated with radial projecting ears for the reception of the bolt by which the band is clamped onto the hose. Such clamps are usually provided with a liner which extends across the space between the ears adjacent to the inner periphery of the band for the purpose of preventing the hose from being buckled up between the said ears in the operation of tightening the clamp on the hose.

The chief object of this invention is to guard more effectually against the injuring of the hose by the engagement of the free end of the liner with the hose in the operation of tightening the clamp on the hose; and the object of the invention is furthermore to brace the clamping ear of the hose-clamp so as to better resist the strain exerted on it by the clamping bolt; and to that end my invention consists in the improved construction and combination of parts hereinafter fully described and specifically set forth in the claims.

In the annexed drawings Figure 1 is an isometric perspective view of a hose-clamp embodying my improvements. Fig. 2 is a transverse section through the center and in a plane parallel with that of the band. Fig. 3 is a detached perspective view of the combined liner and washer. Fig. 4 is a plan view of the blank of the band. Fig. 5 is a plan view of the blank of the combined liner and washer. Figs. 6 and 7 are side views of clamps embodying modifications of my invention. Figs. 8 and 9 are end views of the same. Fig. 10 is a plan view of the blanks of the liner employed in connection with the band shown in Figs. 6 and 8. Fig. 11 is a plan view of the blanks of the liner required for the band shown in Figs. 7 and 9; and Figs. 12 and 13 are plan views of the blanks of the aforesaid bands.

Similar letters of reference indicate corresponding parts.

C— denotes the hose clamp band which is formed with the radially projecting ears —C′—C′— provided with elongated eyes —*e*—*e*— for the reception of the bolt —*b*— which passes through said eyes and is provided with a nut —*b*′— by which to tighten the band on the hose. Said band is provided with a suitable opening or openings in its side or sides, preferably of the form of longitudinal slots —*a*—*a*— extending from the points near the ears —C′—C′— and terminating at a cross-bar —*c*— in the center of the length of the band, said cross-bar forming a tie which prevents the band from being spread by the hose being pressed into the slots —*a*—*a*— when the band is tightened on the hose. This band I form of different widths according to the length of the thimble which is usually inserted in the end of the hose, and the wide bands I provide with two or more parallel slots —*a*′—*a*′—, as shown in Figs. 6 and 7 of the drawings, and in this respect it resembles the hose-clamp shown in the United States Patent No. 477,227, granted to L. H. Redfield, June 22, 1892. I form said band of a blank of either of the shapes shown in Figs. 4, 12 and 13 of the drawings, which blanks I stamp out of sheet steel or other suitable sheet metal by means of suitable dies, and then bend the body or main portion of the blank into circular form, and the end-portions thereof radially outward to serve as clamping-ears —C′—C′— in which latter are punched the elongated eyes —*e*—*e*— for the reception of the clamping bolt —*b*. In connection with the described band I employ the liner —*t*— which extends across the space between the ears —C′—C′— at the inner side of the band and prevents the hose from buckling and becoming pinched between said ears in the operation of tightening the band on the hose. To prevent the free end of said liner from engaging and injuring the hose in the operation of tightening the band, I insert said end into the opening —*a*— in the side of the band so as to bring said end of the liner completely

outside of the inner periphery of the band as shown. This special feature of protecting the hose irrespective of the form or attachment of the liner constitutes one of the important parts of my invention. In order to permit the said liner to be readily applied to the band and as readily removed therefrom when required for renewal I form said liner of the form of one or more tongues —*t*— extending from a washer —D— which is applied to the outer side of one of the ears —C′— and provided with a corresponding elongated eye —*e*′— through which the clamping bolt —*b*— passes. Said combined washer and liner I form separate from the band and of a blank shaped as shown in either of the views Figs. 5, 10 and 11 of the drawings according to the width of the band with which it is to be used, which blank I also stamp out of sheet metal and bend it so as to permit the perforated end portion thereof to be placed snugly against the exterior of the ear —C′— and bring the adjacent portion to rest upon the exterior of the band and thus form a bearing —D′— which braces both the washer and ear. The tongue-portion —*t*— of the blank I bend inward through the adjacent slot —*a*— and then into the shape of an arc concentric to the body of the band and pass its end into the opening or slot —*a*— in the opposite side of the band so as to bring said end of the tongue outside of the inner periphery of the band and thus effectually guard against the catching of said tongue on the exterior of the hose and injuring the same in the operation of tightening the band on the hose. By this construction I obtain a perfect circle inside of the band and its aforesaid liner or tongue —*t*—, and consequently a uniform pressure upon the entire circumference of the hose is obtained.

In connection with a wide band liable to be subjected to great strain and having two or more parallel slots —*a*—*a*— side by side, I preferably employ two washers —D—D— on the outer sides of the two ears —C′—C′, each of said washers being formed with the bearing —D′— and having one or more tongues —*t*— extending from it according to the width of the band and number of slots in the band. These washers with their tongues I also form of blanks stamped out of sheet metal and preferably in the manner shown in Figs. 10 and 11 of the drawings by which I obviate undue waste of material. Each of said blanks I bend and apply to the band in the manner hereinbefore described.

The washer —D— which is interposed between the nut —*b*′— and the ear —C′— I form with the outwardly bent lip —*l*— on its outer end, said lip projecting over the edge of the nut and restraining the same from turning with the bolt in the operation of tightening the band. In this operation the elongation of the eyes —*e*—*e*— obviates shearing strain on the bolt.

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

1. A hose-clamp consisting of a band provided with clamping ears and with openings in its sides, and a liner extending from one side of the band across the space between the ears and having its free end inserted in said opening in the opposite side of the band as set forth.

2. In combination with the hose-clamp-band provided with slots in its sides and with radially projecting clamping ears, a washer on the exterior of one of said ears, a liner formed integral with said washer and passing through the adjacent slot and across the space between the ears and terminating outside of the inner face of the band, to prevent the end of said liner from engaging the hose as set forth.

3. A hose-clamp-band provided with radially projecting clamping ears and with longitudinal slots in opposite sides and formed in one piece stamped out of sheet metal, and a liner consisting of a washer stamped out of sheet metal separate from the band and applied to the exterior of one of the ears and formed with a tongue passing through the adjacent slot of the band to the interior thereof and terminating within the slot in the opposite side of the band, in combination with a clamping bolt passing through the ears and washer, as set forth.

4. In combination with the band —C— provided with perforated ears —C′—C′—, and slots —*a*′—*a*′—, the washer —D— formed separate from the band and applied to the exterior of one of the ears and having the bearing —D′— extending from it and seated on the exterior of the band, the lip —*l*— on the washer, and the tongue —*t*— extending from the aforesaid bearing through the aforesaid slots, and the clamping bolt —*b*— provided with the nut —*b*′— substantially as and for the purpose set forth.

In testimony whereof I have hereunto signed my name this 9th day of March, 1893.

SAMUEL J. HART. [L. S.]

Witnesses:
MARK W. DEWEY,
H. M. SEAMANS.