

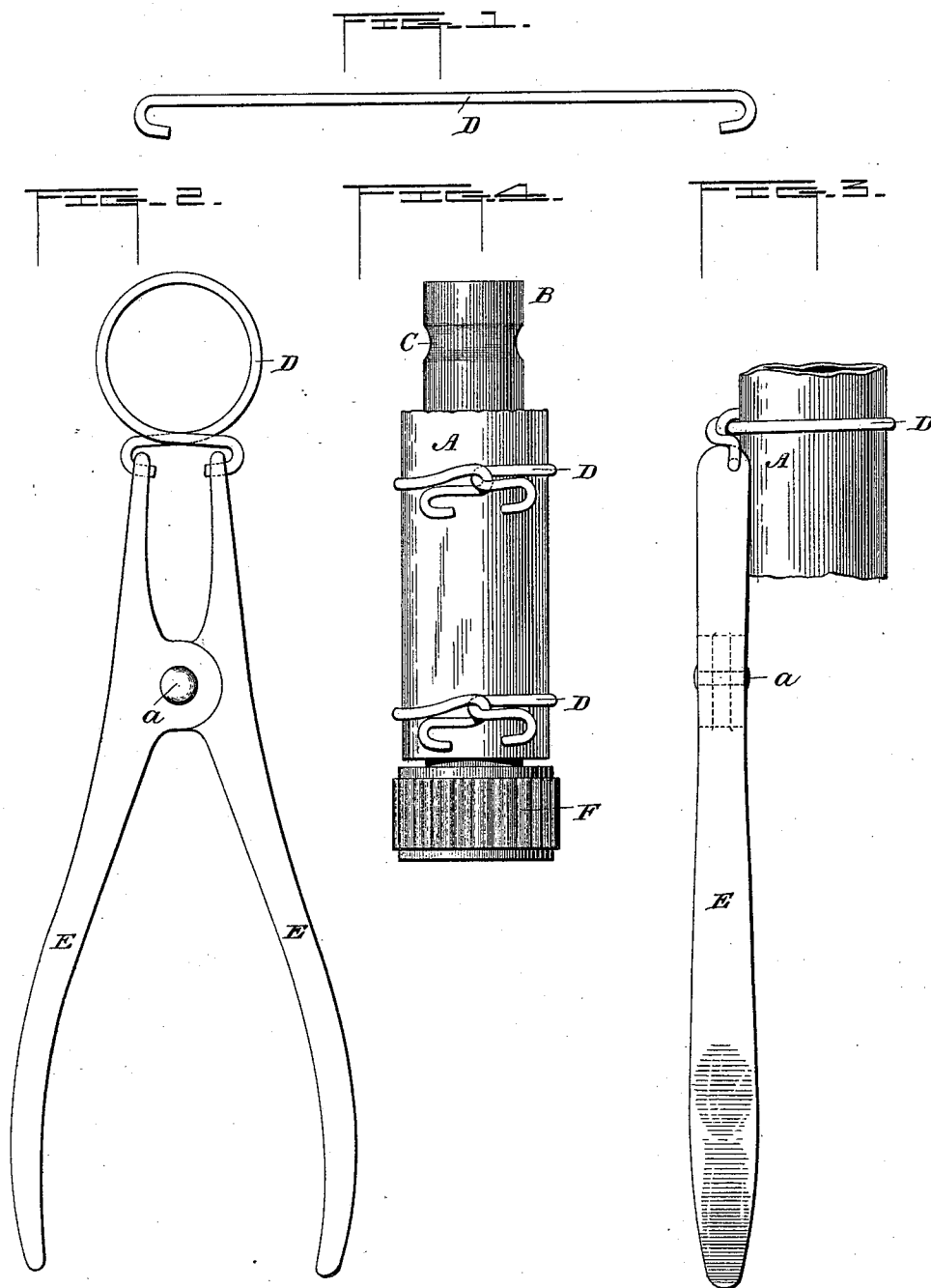
(No Model.)

C. E. HUDSON.

APPLIANCE FOR UNITING AND REPAIRING RUBBER HOSE.

No. 402,673.

Patented May 7, 1889.



Witnesses,

L. A. Conner Jr.
Thomas Mitchell

Inventor,
Charles E. Hudson
by
Benj. R. Catlin Attorney

UNITED STATES PATENT OFFICE.

CHARLES E. HUDSON, OF LEOMINSTER, MASSACHUSETTS.

APPLIANCE FOR UNITING AND REPAIRING RUBBER HOSE.

SPECIFICATION forming part of Letters Patent No. 402,673, dated May 7, 1889.

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To all whom it may concern:

Be it known that I, CHARLES E. HUDSON, a citizen of the United States, residing at Leominster, in the county of Worcester, in the State of Massachusetts, have invented certain new and useful Improvements in Appliances for Uniting and Repairing Rubber Hose, of which the following is a specification.

My invention consists in the particular coupling and ring therefor, hereinafter described and pointed out.

Figure 1 represents the wire band. Fig. 2 is a side view of the tool in the first position when applying the wire band. Fig. 3 shows the back of one of the levers composing said tool and shows its position when the wire band has been applied. Fig. 4 is a section of hose secured to a coupling by the means invented by me and hereinafter described.

Similar letters of reference indicate like parts on all the figures.

My invention is practiced in the following manner: To secure a section of rubber hose to a coupling, the hose A (shown in Fig. 4) is first slipped over the tubular core B. The core is like those in common use, and is connected with the coupling F, so as to permit the latter to revolve upon it in the usual way. The core B is provided with several circumferential grooves, like the groove C, which in Fig. 4 of the drawings are covered by the hose A. After the hose has been slipped over the core a ring, D', is applied to the hose A opposite to one of the said grooves, and the ends passed by each other, as shown in Fig. 2. The tool shown in Fig. 2 consists of two bent levers, E E, pivoted together at *a*, and each provided with a hole, *b*, at the extremity of its shorter arm sufficiently large to admit the hook of the wire band. The ends of the wire are then hooked into the holes *b b*, as shown in Fig. 2, and the longer arms of the tool are grasped by the hand and pressed together until the wire band is tightly drawn around the hose. The tool is given a half-turn, twisting or looping the wire bands around each other, as shown in Fig. 4, so as to secure the ends together. The tool is then pushed down upon the hose into the position shown in Fig. 3 for the purpose of bending over the hooks. The tool is then removed and the hooked ends

of the wire bands hammered down flat upon the hose, as shown in Fig. 4, so as not to interfere with the hands when in use.

In Fig. 4 two wire bands are shown to connect the hose and coupling; but any number may be used that is desired. By these means it is obvious that hose may be repaired by inserting one end of a core similar to the core B into one section of the broken hose and the other end into the other and applying the wire bands as above described.

My invention is useful whenever the uniting of hose is required, either in repairing or manufacturing the same.

The band D is bent into a ring, D', substantially in the form shown in Fig. 2. Its ends, provided with hooks, overlap each other and are ready to receive the tool, as indicated. These rings are ready for use and are to be slipped over the end of the hose and securely tightened thereon in the manner described.

I am aware that rubber hose has been repaired by means of metal bands or straps; but in use of any of the means I have heretofore known there is difficulty in securely holding the ends of the bands while applying them.

The novelty of my band as above shown consists in its circular form with the ends lapping past each other and having open hooks on the ends with their points projecting toward each other, and separated by sufficient space to permit the shorter arms of the tool to be closed together and inserted between them and the free ends of the open hooks to enter the transverse holes in the ends of the tool by opening the latter, and the tool to be removed by reversing the process after the band is applied. These transverse holes in the ends of the tool are made of a diameter to just receive the free ends of the open wire hooks. The band and its hooks are preferably made of a wire sufficiently ductile to allow the wire to clinch sharply over the outer edges of the holes in the arms of the tool, and thus prevent all slip of the hooks out of the same when the strain is brought upon the band by the tool in securing the hose upon the core B. This construction of the open hooks and their method of use with the tool prevents all liability of the ends of

the band slipping out of the holes in the tool by any twisting or turning around of the end parts of the band or by any drawing out of the bent-over ends which form the hooks when the strain is brought upon it in applying it to the hose.

I am aware that compressible rings or bands have been used to bind hose upon internally-placed tubes, and also that wire with hooked ends have been used as bale-ties, and such matters are not claimed herein, but only the device herein described and particularly pointed out. In my band the ends of the hooks which engage each other are recurved to permit the use of a special tool whereby the band is conveniently tightened and its ends then bent down to form a secure and efficient band. The tool referred to is adapted to tighten the band by grasping and compressing its handles, the particular form of the recurved hooks adapting the band to be secured by this convenient operation.

Tools having open slots to engage the enlarged ends of a band instead of perforations to receive hooks and having said slots arranged in different planes in the end of the jaws have been employed, and in one case the ends of the band were enlarged by bending the wire back upon itself. Such band, however, was not provided with hooks, nor do the slots in the tools referred to hold the ends of the wire securely without liability to slip out of the slots. My band has hooks that enter openings from which they cannot possibly slip, said openings being located in the same plane near the bottom of the jaws of the tool, whereby the ends of the band can be turned down closely upon the coupling and upon one side of the same.

It is important that the above-described hooks shall be situated in practically the same plane as the two openings in the short arms of the tool to permit its easy application or removal. It will of course be obvious that immaterial variations in respect to this plane that do not interfere practically with the entry of the free ends of the hooks into openings in the tool, nor with an operation substantially such as herein set forth, do not constitute a departure from the improvement.

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

1. A metal ring for uniting hose to couplings, formed from a band having its ends bent outwardly and backwardly into the form of the open hooks, with their bow parts lapping past each other, substantially as specified.

2. A metal ring for uniting hose and couplings, formed by a band having ends lapping past each other and bent outward and backward in the form of open hooks, with the free ends of the said hooks pointing toward each other and separated by a space for the purpose of allowing the shorter arms of the tool-levers E E to be inserted between them and the said ends to be entered into the transverse holes of said levers, substantially as described.

3. The combination, with a hose and coupling, of a wire ring formed by a band having its ends lapping past and bent around each other and provided with outwardly-recurved open hooks, with their free ends pointing toward each other, substantially as described.

4. The combination, with a hose and coupling, of a wire ring formed by a band having its ends lapping past and bent around each other, and provided with outwardly-recurved open hooks with their free ends pointing toward each other and separated by a space for the purpose of allowing the closing up and withdrawal of the shorter arms of the tool-levers E E from and between the same, whereby the hose is secured to its coupling by the band, substantially as described.

5. A metal ring for uniting hose to couplings, formed by a band having its ends lapping past each other and bent outward and backward in the form of open hooks, said hooks being situated in substantially the same plane with relation to each other, with their free ends pointing toward each other and separated by a space for the purpose of allowing the shorter arms of the tool-levers E E to be inserted between them and the said ends to be entered into the transverse holes of said levers, substantially as described.

6. The combination, with a hose and coupling, of a ring formed by a wire band having its ends lapping past and bent around each other, and provided with outwardly-recurved open hooks situated in substantially the same plane with relation to each other, their free ends pointing toward each other and separated by a space for the purpose of allowing the closing up and withdrawal of the shorter arms of the tool-levers E E from and between the same, whereby the hose is secured to its coupling by the band, substantially as described.

CHARLES E. HUDSON.

Witnesses:

ROBERT L. CARTER,
CHAUNCEY W. CARTER.