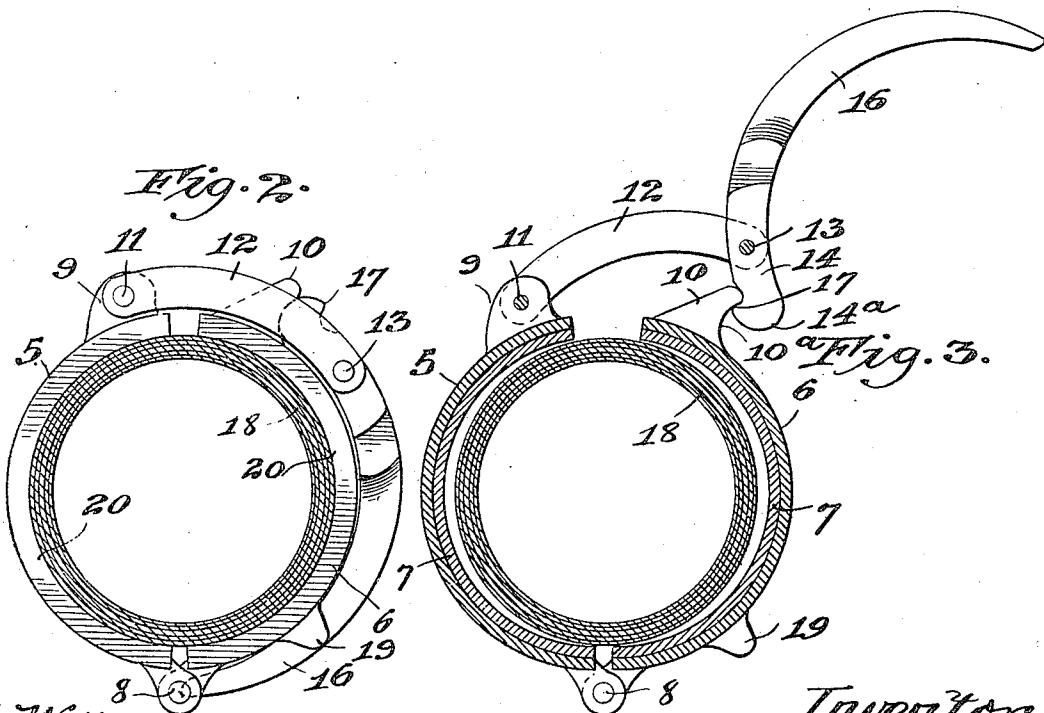
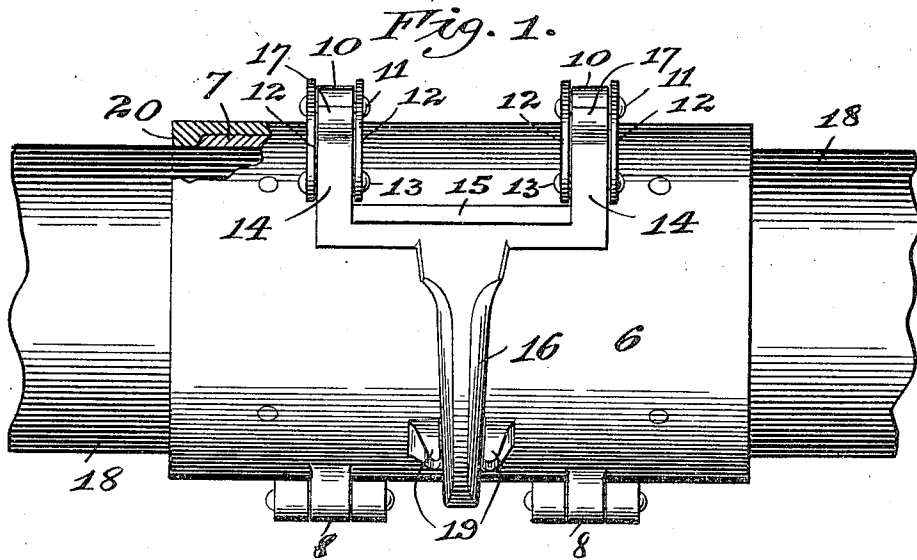


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CLAMPING DEVICE.
APPLICATION FILED NOV. 5, 1909.

962,566.

Patented June 28, 1910.



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UNITED STATES PATENT OFFICE.

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CLAMPING DEVICE.

962,566.

Specification of Letters Patent. Patented June 28, 1910.

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To all whom it may concern:

Be it known that I, FRANK GERTH, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Clamping Devices, of which the following is a specification.

This invention relates to clamping devices, and in its principal intended application to what are known as hose clamps or patches, although capable of useful application to and embodiment in any generally analogous situation or device.

More specifically, my improved clamp is of that general character or type employing a pair of substantially semi-cylindric clamp members that are hinged together at one of their respective longitudinal edges and provided at their opposite longitudinal edges with lever and link mechanism for drawing the two clamp-members together upon the hose or other article to which the device is applied and automatically locking it in such closed position against the effect of internal strains tending to open the clamp.

The general object of the invention is to provide a device of the character mentioned which may be more easily operated and shall possess increased efficiency and durability, as compared with similar devices now known.

The invention will be readily understood when considered in connection with the accompanying drawing showing an approved form of the invention as embodied in a hose patch, and in which,—

Figure 1 is a side elevational view of the device partly broken out and in section and showing the same as applied to a section of hose. Fig. 2 is an end view of the device as it appears in its closed or operative condition upon a hose, the latter being shown in section, and Fig. 3 is a cross-sectional detail showing the device in a partly expanded condition and illustrating the means for securing the two clamp members together in such partially expanded position preliminary to sliding the device lengthwise of the hose to and over the leak in the latter.

Referring to the drawing, 5 and 6 designate a pair of substantially semi-cylindrical shells that are preferably provided with an internal lining 7 of rubber or other suitable material and are hinged together at one of their respective longitudinal edges, as shown at 8, to form a mating pair of clamp-mem-

bers. At their opposite longitudinal edges these clamp-members 5 and 6 are provided with pivot and abutment lugs 9 and 10, respectively; there being preferably a plurality of each, as shown. The abutment lugs 10 are formed with concave outer faces 10^a for engagement with the rounded ends of co-operating locking levers hereinafter described. Pivoted at one end at 11 to said pivot lugs 9 are a pair of links 12; and pivoted at 13 between their ends to the other ends of said links 12 are a pair of locking levers 14. The outer ends of said locking levers are rigidly connected by a cross-bar 15, and rigid with the latter is an operating handle 16. The inner ends of the locking levers 14 are rounded or convexed, as shown at 14^a so as to slidably fulcrum upon the concave faces 10^a of the abutment lugs 10 in the operation of closing the clamp, and also with hooks 17 that are adapted to engage the outer ends of the abutment lugs 10 in the manner clearly shown in Fig. 3, so as to maintain the clamp in a partly expanded condition, in which it has a loose sliding fit upon the hose, this latter being designated by 18. In such position of the parts, the engagement of the cross-bar 15 with the outer edges or backs of the links 12 forms a stop to limit the backward swing of the locking levers and to thereby form a positive tension connection between the free edges of the clamp-members.

It will be noticed that the links 12, locking levers 14, and operating arm or handle 16 are all curved longitudinally conformably to the transverse curvature of the clamp-members, so that when the parts are in the positions which they assume as the clamp is closed and tightened about the hose, they all lie with comparative snugness against and upon the outer surfaces of the clamp, as clearly shown in Fig. 2. In this position the clamp is not only closed but is automatically locked against opening by internal pressure, owing to the fact that the direct line of tension between the pivots 11 and 13 falls inwardly of the fulcrum center between the coöperating surfaces 10^a and 14^a. The locking levers 14, cross-bar 15, and handle 16 are preferably all formed integral, and to prevent breakage or lateral strain upon the handle and locking levers as the device may be dragged along the ground, encountering more or less obstruction, I form on

the outer surface of the clamp-member 6 a pair of safety lugs or keepers 19 which engage the opposite edges of the handle when the latter is in closed position and consequently oppose resistance to the lateral strain upon the handle of such obstructions.

Clamping devices of this character, when used as hose patches, are usually provided with an internal lining of rubber or rubber cloth or other like material fitting the inner surface of the clamp shells throughout; and it is found in practice that the sliding of the clamp lengthwise of the hose detaches and curls inwardly the ends of such lining, thus obstructing the free movement of the clamp to and from its desired position and requiring early repair or renewal of such lining. To obviate this objection, I form on the ends of the shells 5 and 6 internal annular shoulders or beads 20 (Fig. 1) against the inner edges of which the ends of the lining 7 abut; said lining being of a thickness not exceeding the thickness of the shoulders or beads, whereby the ends of the lining itself are protected from contact with the hose, and the tendency to curl or roll inwardly the ends of such lining is obviated.

The manner of operating the device is obvious from the foregoing description; but it may be noted that the pivoting of the locking levers 14 upon the free ends of the tension links 12, and the making of the operating handle rigid with said locking levers affords great facility and speed in the operations of both opening and closing the clamp, since the free ends of the locking levers are quickly and readily brought into engagement with the abutment lugs, or swung out of engagement with the latter by the proper manipulation of the handle; while the provision of the hooks 17 that cooperatively engage the outer ends of the abutment lugs 10 and the stop engagement of the cross-bar 15 with the backs of the links 12 enables the clamp-members to be quickly connected in partly expanded position and securely held in such position preliminary to the final tightening and closing of the clamp by the simple inward swing of the handle 16. The described construction also affords an exceedingly powerful leverage in effecting the closing and tightening of the clamp upon and about the hose or other object to which it is applied, the engagement of the locking levers with the abutment lugs and the closing of the clamp being readily effected by but one hand of the operator. The provision of the safety lugs or keepers for the

handle and the end shoulders or beads forming a protection or shield for the ends of the lining are features which obviously materially enhance the life and durability of the device.

Without limiting myself to the exact form and construction of parts shown and described, I claim:

1. A clamping device of the character described, comprising in combination a pair of substantially semi-cylindric clamp-members hinged together at one of their respective longitudinal edges and provided at their opposite longitudinal edges with pivot lugs and abutment lugs, respectively, a plurality of links pivoted at one end to said pivot lugs, a corresponding plurality of locking levers pivoted to the other ends of said links and provided with hooked inner ends adapted to engage the outer ends of said abutment lugs to maintain the clamp in partly expanded condition and to fulcrum upon said abutment lugs to effect the closing of the clamp, a cross-bar rigidly connecting said locking levers and cooperating with said links to form a stop to limit the backward swing of said locking levers, and an operating handle rigid with said cross-bar, substantially as described.

2. A clamping device of the character described, comprising in combination a pair of substantially semi-cylindric clamp-members hinged together at one of their respective longitudinal edges and provided at their opposite longitudinal edges with pivot lugs and abutment lugs, respectively, said abutment lugs having concave outer faces, a plurality of links pivoted at one end to said pivot lugs, a corresponding plurality of locking levers pivoted to the other ends of said links, said locking levers being formed with rounded inner ends adapted to slidably fulcrum upon the concave faces of said abutment lugs to effect the closing movement of the clamp, and with hooks adapted to engage the outer ends of said abutment lugs to maintain the clamp in a partly expanded condition, a cross-bar rigidly connecting the outer ends of said locking levers and cooperating with the outer edges of said links to form a stop to limit the backward swing of said locking levers, and an operating handle rigid with said cross-bar, substantially as described.

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