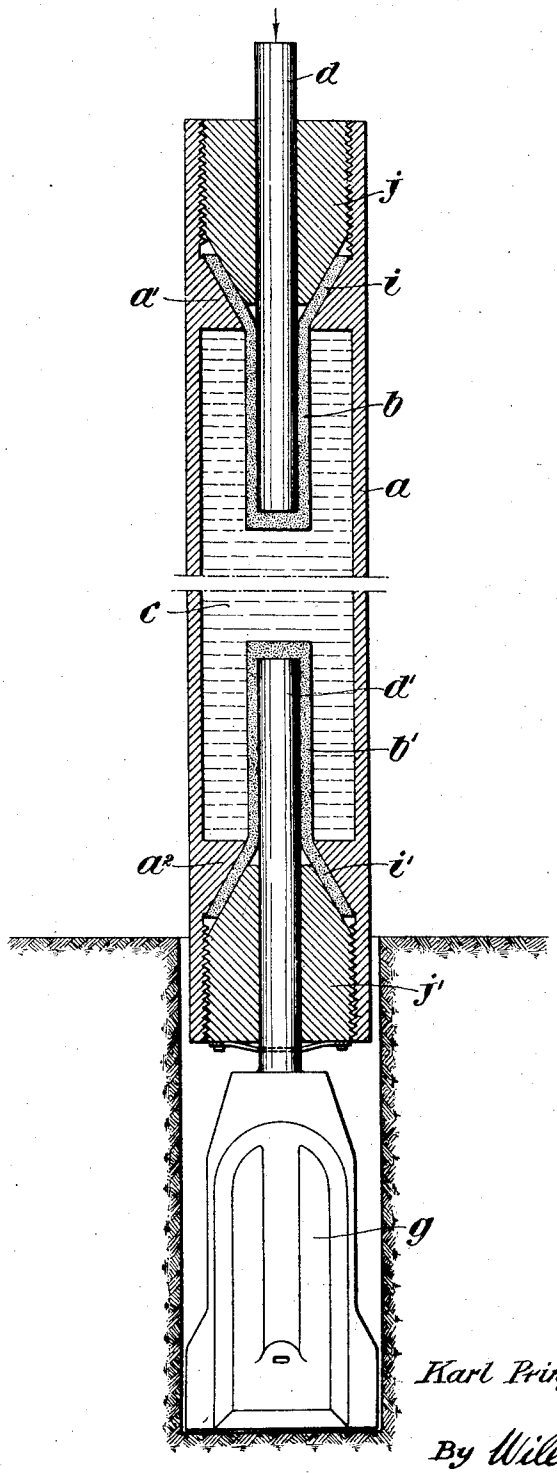
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K. P. ZU LÖWENSTEIN

DEVICE FOR DRILLING OR CHISELING AWAY ROCK

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DEVICE FOR DRILLING OR CHISELING AWAY ROCK.

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This invention relates to a device for drilling rock or for chiseling it away. In this device a liquid, generally water, is enclosed in a tube which is closed and packed at both ends and into which extend from both ends, through the packings, pistons, of which one receives the outer blows and transmits them to said liquid which then transmits the blows to the other piston and to the drill or chisel attached thereto. The object of the invention is to render the latter blows as hard as possible in order to increase the effect of the drill or chisel, and the invention consists in certain means provided for this purpose.

Now to attain the effect in view, the two pistons extend freely into the chamber filled with liquid, and the projecting part of each piston is enclosed in an elastic bag closed at its inner end where it covers the respective piston, and consisting of rubber or the like, so as to be extensible, and being secured at its other end firmly between the cylinder wall or, more precisely, an internal annular shoulder thereof and a guide-member for the respective piston. The inwardly projecting part of each tubular bag is surrounded with the liquid enclosed in the cylinder and cannot, therefore, give way laterally, or bend in any way, so that the blows are transmitted without any decrease of strength.

My invention is illustrated diagrammatically and by way of example in the accompanying drawing in which the improved device is shown in vertical section. It is constructed as follows:

The metallic cylinder or tube a is closed at its ends by metallic plugs j j', the inner ends of which are conical, as shown. The tube a is provided with internal annular shoulders a' a^2, each of which is so shaped as to correspond to the conicalness of said shoulders. The pistons d and d', of which d receives the blows at its outer end, whereas d' receives them at its inner end by the intermediary of the liquid c which fills up completely the interior of the tube a, extend axially through the plugs j j' and terminate at some distance from one another, as shown. The pistons d d' are enclosed in bags b b' of rubber or the like, and the open ends of the bags are enlarged conically in such a manner as to fit accurately between the plugs and the shoulders described. i and i' denote these enlarged parts of the bags; these parts form at the same time packings for the tube or cylinder and the pistons. It is obvious that the bags cannot give way laterally, in consequence whereof the transmitted blows are harder than otherwise.

I claim:

A device for drilling or chiseling away rock, comprising, in combination, a tube having a chamber formed therein, packed stoppers each having a bore therein arranged within the opposite ends of said tube, pistons extending through the bores of said stoppers into the chamber formed within said tube, the tube adapted to be filled completely with a liquid; and elastic bags enclosing the inwardly projecting parts of said pistons and being fastened at their other ends, substantially as set forth.

In witness whereof I have hereunto set my hand.

KARL PRINZ zu LÖWENSTEIN.