Oct. 7, 1930. C. C. HANSEN 1,777,305

CUSHIONING DEVICE FOR ROCK DRILLS

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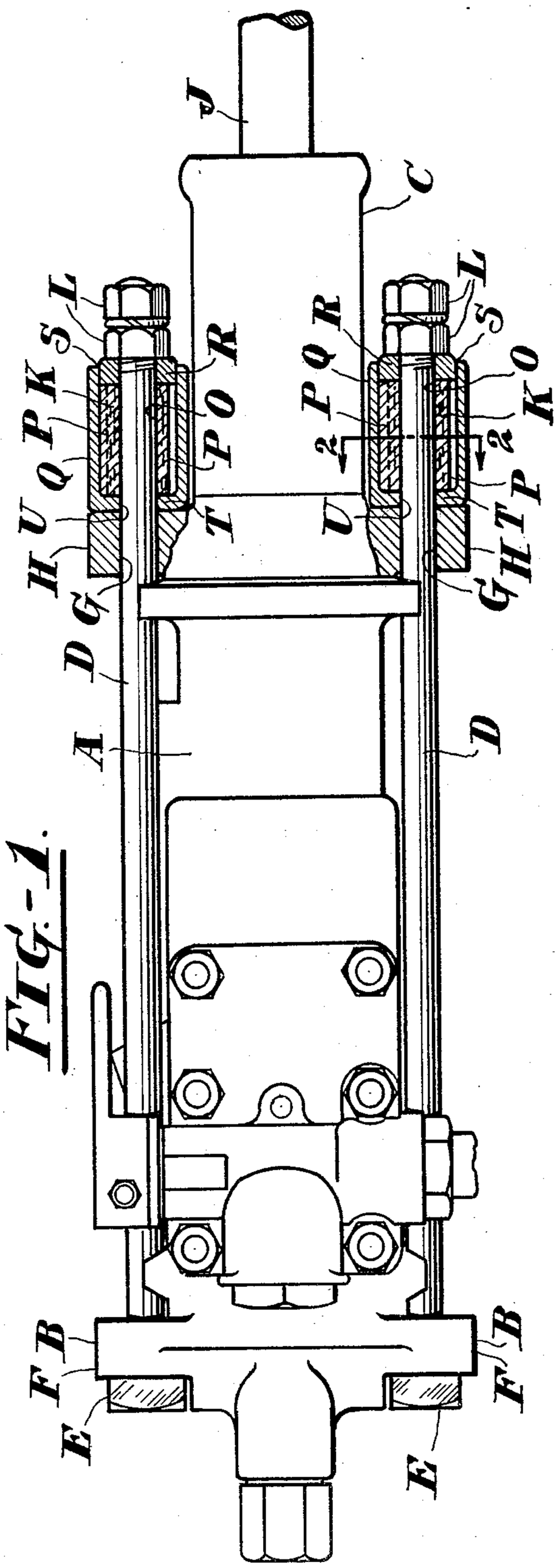

FIG.-1.

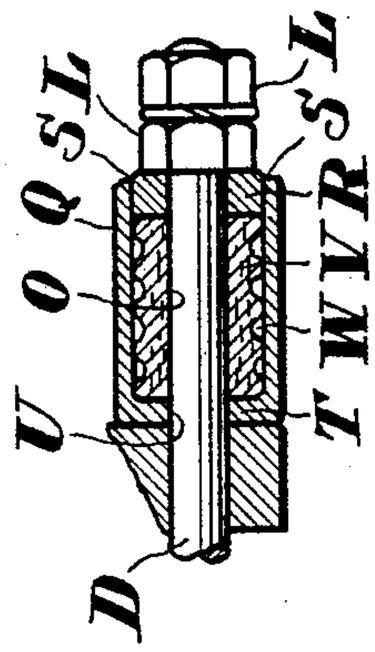

FIG.-3.

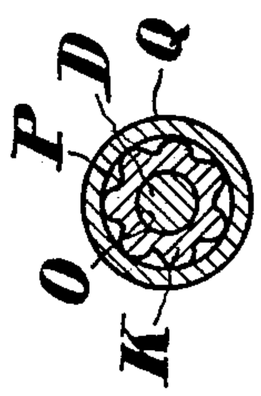

FIG.-2.

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UNITED STATES PATENT OFFICE

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CUSHIONING DEVICE FOR ROCK DRILLS

Application filed March 7, 1928. Serial No. 259,898.

This invention relates to rock drills, but more particularly to a cushioning device for the side bolts employed for holding the casing parts of the drill together.

The objects of the invention are to prevent breakage of the side bolts and to enable the cushioning means to render service for an extended period of time, thus preventing the necessity of frequently disassembling the drill for the purpose of replacing the same.

Other objects will be in part obvious and in part pointed out hereinafter.

In the accompanying drawings in which similar reference characters refer to similar parts,

Figure 1 is a longitudinal plan view partly in section of a rock drill equipped with a cushioning device constructed in accordance with the practice of the invention,

Figure 2 is a transverse view taken through Figure 1 on the line 2—2 looking in the direction indicated by the arrows, and

Figure 3 is a sectional elevation of a modified form of the invention.

Referring more particularly to the drawings, A designates a cylinder of a rock drill having back and front heads B and C respectively which are clamped to the cylinder by means of side bolts D. The heads E of the side bolts D are seated on flanges F of the back head and the forward portions of the side bolts D extend through apertures G of flanges H formed integrally with the front head C.

In accordance with the present invention, means are provided for protecting the side bolts D against the effects of shock incident to drilling, as for instance, when the force of the blow of the hammer piston (not shown) is delivered to the front head and associated parts instead of to the working implement J as sometimes occurs whenever the working implement is projected out of the range of the hammer piston. To this end rubber buffers K are disposed on the side bolts D and are interposed between the flanges H and nuts L threaded on the front ends of the side bolts for clamping the casing parts together as well as for applying the desired pressure on the cushioning means, such as the buffers K.

The buffers K have central bores O to receive the side bolts D and in the peripheries of the buffers are formed longitudinal grooves P to permit of displacement of the buffers in a lateral direction.

Suitable means are provided for limiting the degree of displacement of the buffers. To this end the buffers are encased in cup-shaped sleeves Q which are preferably formed as separate elements instead of as integral parts of the front head. The front end of the sleeves project beyond the corresponding ends of the buffers K to receive washers R which form seats for the front ends of the buffers K. The outer peripheries S of the washers R cooperate slidably with the inner walls of the sleeves Q to maintain the sleeves Q in concentric position on the side bolts D. In order to thus also maintain the rearward ends of the sleeves Q, said sleeves are provided with end walls T in which are formed central apertures U to receive slidably the side bolts D. In the assembled position, the end walls T occupy a position between the rearward ends of the buffers K and the flanges H of the front head.

In the modification illustrated in Figure 3, a buffer V is provided with a series of annular grooves W to permit of displacement of the buffer V in a lateral direction whenever the front head C is subjected to the blows of the percussive element, such as a hammer piston. The sleeve Q which acts as a casing for the buffer V is like that illustrated in the preferred modification.

In assembling the device on the rock drill, the sleeves Q are first disposed on the side bolts D and the buffers K may then be inserted in the sleeves. Thereafter the washers R may be placed in position to abut the forward ends of the buffers and the nuts L are threaded on the side bolts to clamp the casing parts, such as the cylinder and the front and back heads, firmly together and also to apply the desired pressure to the buffers K.

During the operation of the drill, whenever the drill steel J occupies such a position

as to permit the hammer piston to impact against the front head or associated parts the blow will be absorbed by the buffers K which, although being composed of rubber and are therefore incompressible, will expand in a lateral direction due to the grooves in their surfaces. This momentary transformation of the buffers will permit of limited relative longitudinal movement of the cylinder and the front head and will therefore protect the side bolts against the severe strains resulting from such blows.

In practice the present invention has been found to function in an unusually efficient manner and to render service for an extended period of time without necessitating frequent disassembling of the rock drill for the purpose of replacing broken cushioning means, such as springs which have heretofore been employed for this purpose.

I claim:

In a cushioning device for rock drills, the combination of a cylinder and a front head, flanges on the front head, side bolts extending through the flanges for securing the front head to the cylinder, nuts on the side bolts, tubular buffer members mounted directly on each side bolt between the flanges and nuts, said buffers having longitudinal grooves in their peripheries to render them yieldable, cup-shaped sleeves encasing the buffers to limit lateral displacement of the buffers, walls at the rear ends of the sleeves having apertures to slidably receive the side bolts, and washers on the side bolts slidable in the front ends of the sleeves for maintaining the sleeves in concentric position on the bolts.

In testimony whereof I have signed this specification.

CHARLES C. HANSEN.