Oct. 29, 1929. J. L. BARRA 1,733,392

SECTIONAL DRILL STEEL

Filed May 19, 1926

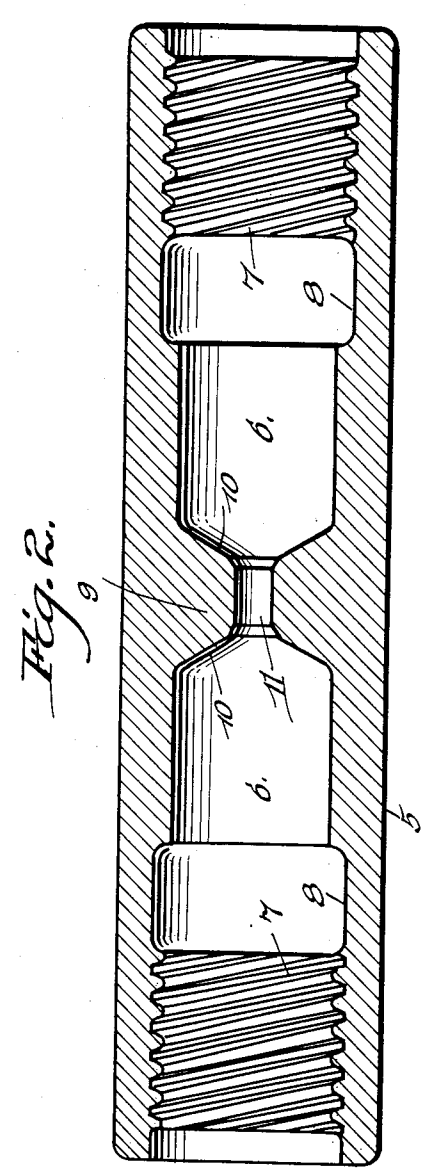


Fig. 2.

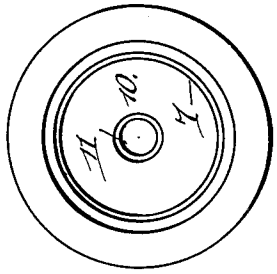


Fig. 3.

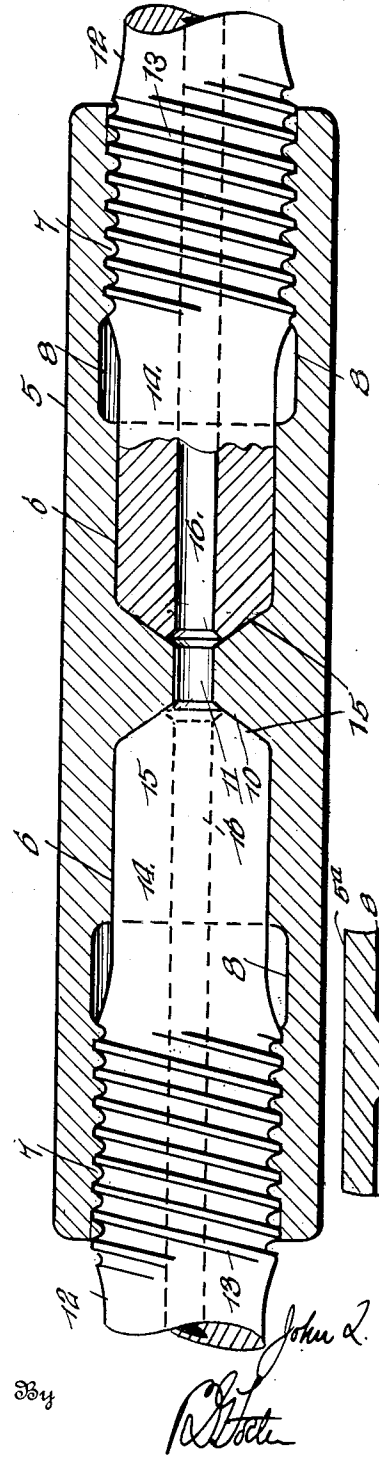


Fig. 1.

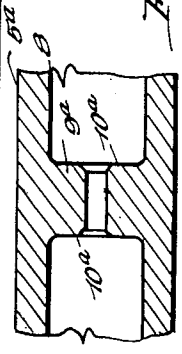


Fig. 4.

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Patented Oct. 29, 1929 1,733,392

UNITED STATES PATENT OFFICE

JOHN L. BARRA, OF DENVER, COLORADO, ASSIGNOR, BY MESNE ASSIGNMENTS, TO THE GARDNER-DENVER COMPANY, OF QUINCY, ILLINOIS, A CORPORATION OF DELAWARE

SECTIONAL DRILL STEEL

Application filed May 19, 1926. Serial No. 110,083.

The present invention relates to drill steel of a sectional character, and particularly that for drilling deep holes. The object is to provide a simple structure in which the parts may be effectively coupled, the means for fastening the sections together being relieved from hammering strains and the coupling constituting an effective abutment element between the shank sections that will transmit the kinetic energy without material loss.

In the accompanying drawings,

Figure 1 is a sectional view of one embodiment of the invention showing the coupling between two shank sections,

Figure 2 is a longitudinal sectional view of the coupling element,

Figure 3 is an end elevation of the same,

Figure 4 is a detail sectional view showing a slightly modified form of partition.

In the structure shown in Figures 1, 2, and 3, a coupling element 5 is employed, generally cylindrical in cross section, and having longitudinal sockets 6 that open through its ends. These sockets have the outer portions of their walls provided with internal threads 7, and at the inner ends of said threads are enlarged chambers or counterbores 8.

Interposed between the sockets and defining their inner ends or bottoms, is a partition wall 9 that is integral with the coupling element. The opposite end faces of this partition are inwardly tapered in conical form to provide tapered seats 10, and extending centrally through the partition between the apices of said seats is a bore 11.

Portions of drill steel shank sections are shown at 12, and have threaded portions 13 that interfit with the threads 7 of the socket wall. These shank sections have unthreaded end portions 14 that extend across the chambers or counterbores 8 and fit into the inner end portions of the sockets. The ends of the shank sections are in the form of cones 15 that fit the seats 10 and thus abut directly against the partition 9. The shank sections as usual are provided with longitudinal bores 16 for the passage of cleansing fluid, and these bores aline with the port or passageway 11 through the partition, as will be clear by reference to Figure 1.

With this construction the coupling element constitutes a peculiarly effective connection between the drill shank sections, the sections, however, being abutted against the partition 9. This partition receives the blows of impact or kinetic energy and transmits them from one section to the other without material jar on the main body of the coupling element, so that the screw threads are protected from such jar. The conical ends serve to center the steel and effectively prevent any lateral play, thus making the entire length of steel more rigid.

The conical terminals may, however, be dispensed with, as shown in Figure 4, in which the coupling member 5^a has an integral partition 9^a with flat faces 10^a that receive correspondingly shaped terminals of the shank sections. Otherwise the structure is the same as that above described.

From the foregoing, it is thought that the construction, operation and many advantages of the herein described invention will be apparent to those skilled in the art, without further description, and it will be understood that various changes in the size, shape, proportion and minor details of construction may be resorted to without departing from the spirit or sacrificing any of the advantages of the invention.

What I claim is:

A sectional drill steel comprising a coupling having an integral partition therein, the end portions of the coupling being internally threaded and the portions on opposite sides of the partition being unthreaded and of less diameter than the threaded portions, forming sockets, said coupling having enlarged unthreaded internal clearance chambers between the threads and the sockets, and drill shank sections having threaded portions that screw into the coupling, said shank sections having unthreaded terminals of less diameter than the threaded portions, said terminals bridging the clearance chambers, engaging in the sockets and bearing against the partition.

In testimony whereof, I affix my signature.

JOHN L. BARRA.