

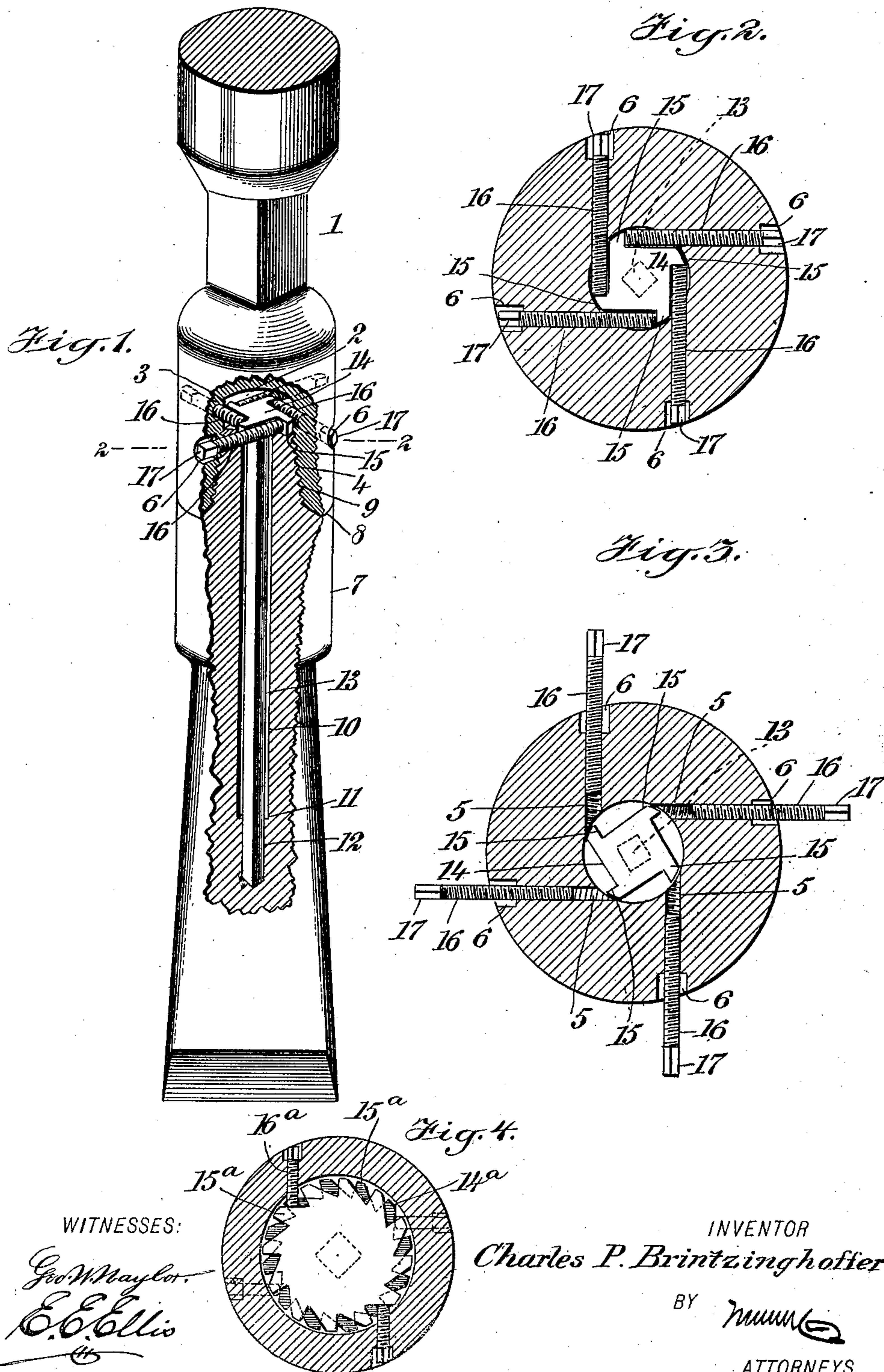
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C. P. BRINTZINGHOFFER.
FASTENING DEVICE FOR DRILL BITS OR THE LIKE.

APPLICATION FILED JULY 18, 1903.

NO MODEL.



WITNESSES:

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CHARLES PHILIP BRINTZINGHOFFER, OF HOWARD, KANSAS.

FASTENING DEVICE FOR DRILL-BITS OR THE LIKE.

SPECIFICATION forming part of Letters Patent No. 754,741, dated March 15, 1904.

Application filed July 18, 1903. Serial No. 166,104. (No model.)

To all whom it may concern:

Be it known that I, CHARLES PHILIP BRINTZINGHOFFER, a citizen of the United States, and a resident of Howard, in the county of Elk and State of Kansas, have invented a new and Improved Fastening Device for Drill-Bits or the Like, of which the following is a full, clear, and exact description.

This invention relates to fastening devices; and it consists, substantially, in the construction, organization, and combinations of parts hereinafter particularly described, and pointed out in the claims.

Though applicable to other purposes in the arts, my improvements are intended more especially for use in fastening or securing drill-bits to the stems or stocks therefor, it being well known that in the operations of boring or drilling oil and similar wells considerable difficulty and loss of time are frequently occasioned either by the loosening of the drills on their stems or else by disconnection and loss of the same within the well, thus often greatly retarding operations and adding materially to the expense thereof.

One of the principal objects of my invention is to provide means for overcoming these difficulties and also to overcome numerous other disadvantages and objections found to exist with many devices hitherto employed for similar purposes.

A further object is to provide a fastening device for the purpose specified which is simple in construction, as well as comparatively inexpensive to manufacture, besides being strong and durable and possessing the capacity for long and repeated service.

The above and additional objects are attained by means substantially such as are illustrated in the accompanying drawings, in which similar characters of reference indicate corresponding parts in all the figures.

Figure 1 is a perspective view, partly broken out and in section, of a well-boring bit, together with a part of the operating stock or stem therefor, and showing one form of my improvements as employed in connection therewith. Fig. 2 is an enlarged cross-sectional view taken substantially in the plane

of the broken line 2 2 of Fig. 1 and showing the main elements of my improved device in locked relationship. Fig. 3 is a similar view to Fig. 2, showing the main elements of the fastening device as disengaged to enable connection and disconnection of the drill-bit to be effected; and Fig. 4 is a cross-sectional view showing a modification, hereinafter more fully described.

Before proceeding with a more detailed description it may be stated that in the form of my improvements herein shown I employ a drill stock or stem of special construction at an end thereof for attachment or connection therewith of the bit of the drill, which is also of special construction, and I employ in conjunction with these elements a specially-devised member tending to maintain the coupled relation of the stock and bit, and while I have herein represented my improvements in a certain preferred embodiment it will be apparent, of course, that I am not limited to the precise details thereof in practice, since immaterial changes therein may be resorted to coming within the scope of my invention.

It has hitherto been attempted to secure drill-bits to their operating stems or stocks by interposing positive locking devices between the two—that is, a locking device maintaining substantial rigidity between said parts; but it is impracticable to employ such form of fastening device, due to the fact that the constant tendency to change of relation between the parts, caused by jarring and wearing of the latter, renders it impossible to properly locate the exact place at which application of the “lock” should be made, and which results in looseness and loss of the bit, as already mentioned.

My improved fastening device comprises a tension member tending to take up all slack or looseness between the bit and its stock, caused by concussion in the striking of the bit, or otherwise, thereby preserving close relation between the parts, as well as integrity of structure, and at the same time imparting to the bit a yieldability to torsional and other strains.

Specific reference being had to the accompanying drawings by the designating characters marked thereon, 1 represents a drill stock or stem having formed therein at a suitable depth from the lower end thereof a cavity or recess 2, leading from the plain sides 3 of which are the walls 4 of a bore or opening formed in such end of the stock, said walls preferably being screw-threaded interiorly to the point of intersection thereof with said sides 3, as shown. Leading to said cavity or recess 2 from different sides of the stock or stem are a plurality of openings 5, shown herein as four in number, and the sides of each of which are screw-threaded, the outer surface of the stock being countersunk or recessed at 6 around the outer end of each of said openings.

The bit 7 is formed a suitable distance from its upper end with an annular shoulder 8 for close fitting of the bit to the lower end of said stock or stem, and said bit is also formed with an externally-threaded extension 9 of reduced diameter, adapted to fit or engage with the threads 4 of the sides of the said bore or opening in the stock. The bit is still further formed with substantially a centrally-located recess 10 extending from the end of the extension 9 to any suitable depth—as to the point 11, for instance—the sides whereof are preferably square or rectangular, as shown. In the base of this recess is formed a subrecess 12, the distance between the sides of which is less than the distance between the sides of said recess 10, this subrecess being also considerably less in depth and having its sides square or rectangular, as shown.

Fitted snugly in the subrecess 12 is the lower end of a tension device, consisting in the present instance of a rod 13, of steel or other suitable material, which rod is substantially (though not essentially so) of equal cross-sectional area with that embraced by the sides of the said subrecess and is formed or provided at its upper end with a head 14, which practically rests upon the end of the hereinbefore-mentioned threaded extension 9 of the bit when the latter is coupled to the stock. This rod is of a resilient elastic character, having a strong tendency to return to normality when once the same has been twisted or placed under tension, and it will be noted that the head 14 thereof is practically square, having a right-angled tooth or projection 15 at each of its corners or angles, said teeth or projections corresponding in number with the openings 5 in the stock and being also located substantially in line with said openings when the bit and its contained tension-rod are properly fitted into place. Working in each of the said openings 5 is a tension-regulating screw 16, adapted to engage at its inner end with one of said teeth or projections, and it is apparent that by first screwing the extension 9 into the bore therefor in the stock and

then properly adjusting said screws the said rod may be twisted in such direction as to cause the same to constantly exert a tendency to turn the extension of the bit more tightly within the stock, and thus whenever the bit becomes loosened any partial separation thereof from the stock is immediately taken up or compensated for in an obvious manner, it being understood that the tensioning of said rod is accomplished by the said screws, which latter lock the head in the position to which it may be turned thereby. The heads 17 of the screws are preferably square or rectangular and are received in the countersinks 6, (see Fig. 2,) a socket-wrench or other suitable implement being usually employed both to adjust the screws to set the tension device as well as to release the head 14 in a manner to enable the bit and its auxiliaries to be detached at any time. In virtue of the cross-sectional area of the recess 10 being greater than that of said rod, it is apparent that the main body of the latter is free to be twisted about its axis, while the lower end thereof constitutes a resistance to such twisting in virtue of being locked by the sides of the subrecess 12, and in this way the rod may be set to any degree of tension desired, as is apparent.

In Fig. 4 the head 14^a is a double one, each member of the head being provided with a series (shown as twelve) of teeth 15^a, adapted to be engaged by screws 16^a, the operation of this form of head being the same as that shown in Figs. 1, 2, and 3. By the employment of a double head a continuous turn can be accomplished, and the necessity for the use of different heads for different drills is obviated.

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

1. A fastening device, comprising two detachably-connected members, and means for automatically tightening the joint therebetween in opposition to forces tending to separate said members.

2. A fastening device, comprising two detachably-connected members, and means adapted to be placed under tension for automatically tightening the joint between the members in opposition to forces tending to separate said members.

3. A fastening device, comprising two members united by a threaded joint, and means for automatically tightening this joint in opposition to forces tending to turn one member relatively to the other.

4. A fastening device, comprising two detachably-connected members, and a rod adapted to be placed under tension for automatically tightening the joint between the members in opposition to forces tending to separate said members.

5. A fastening device, comprising two detachably-connected members united by a threaded joint, and a rod adapted to be placed

under tension for automatically tightening this joint in opposition to forces tending to turn one member relatively to the other.

5 6. A fastening device, comprising two detachably - connected members, and means adapted to be placed under regulated tension for automatically tightening the joint therebetween in opposition to forces tending to separate said members.

10 7. A fastening device, comprising a member having an inner cavity and a threaded bore leading thereto, another member having an extension entering said bore, and formed with a recess having rectangular sides, a rod fastened at one end in the base of said recess, and
15 provided at its other end with lateral projections, the latter being located in said cavity, and means entering the cavity through the sides of said first-named member, and adapted
20 to be adjusted to engage said projections to twist said rod.

8. A fastening device, comprising a mem-

ber having an inner cavity and a threaded bore leading thereto, another member having an extension entering said bore, and formed with
25 a recess having rectangular sides, a rod fastened at one end in the base of said recess, and provided at its other end with lateral projections, the latter being located in said cavity, and screws passing through the walls of said
30 first-named member, for engaging said projections to place said rod under tension.

9. A fastening device, comprising two detachably-connected members, a rod partially
35 located in each of the members, and means carried by one of the members for placing said rod under tension about the axis thereof.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

CHARLES PHILIP BRINTZINGHOFFER.

Witnesses:

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