Aug. 25, 1931. E. G. GARTIN 1,820,185

PERCUSSIVE TOOL

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Fig. 1.

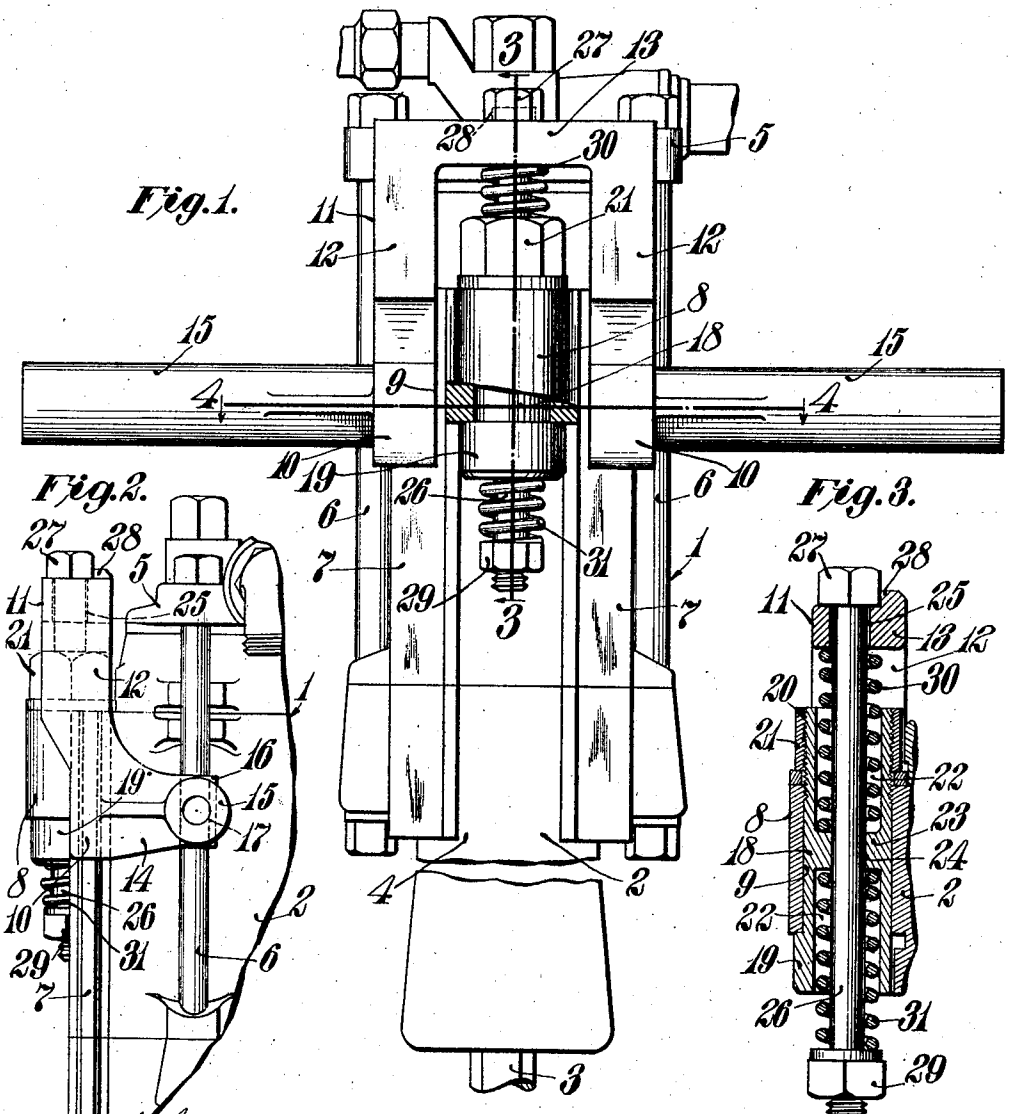
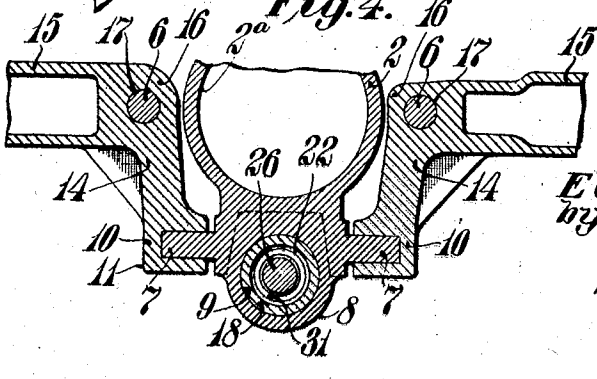


Fig. 2.

Fig. 3.

Fig. 4.



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Fig. 6.

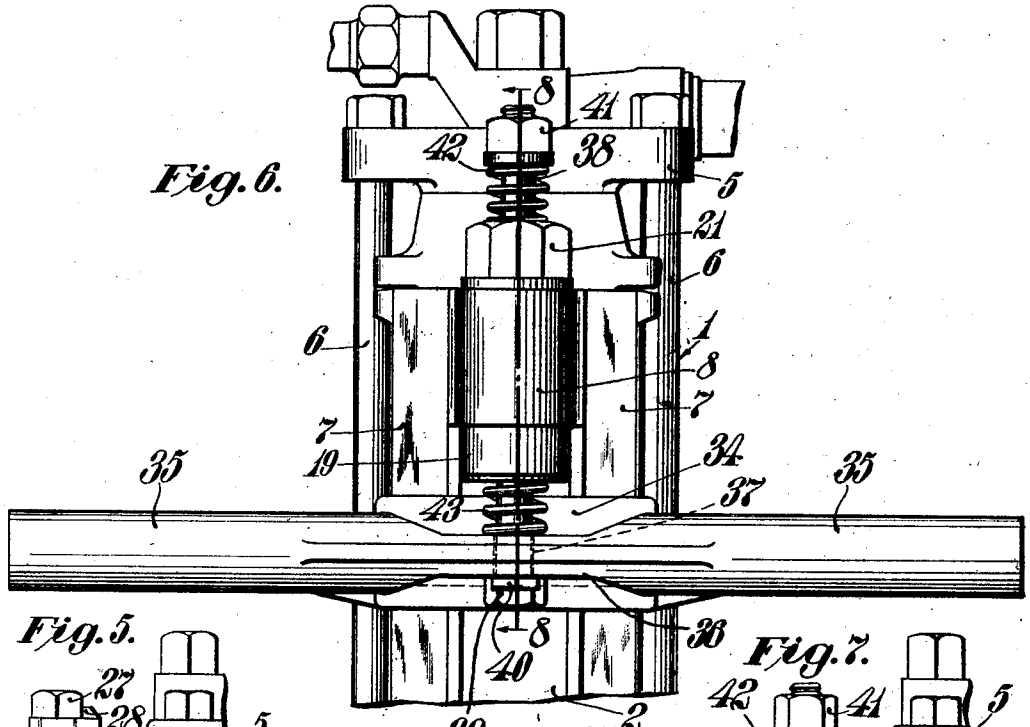


Fig. 5.

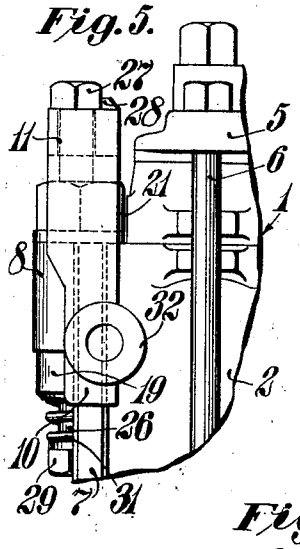


Fig. 8.

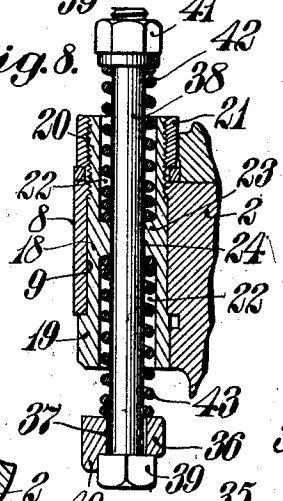


Fig. 7.

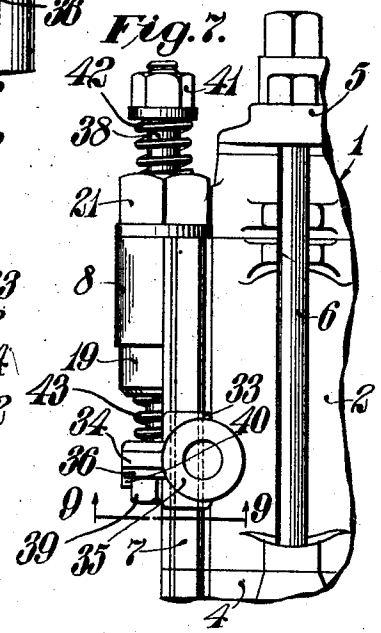
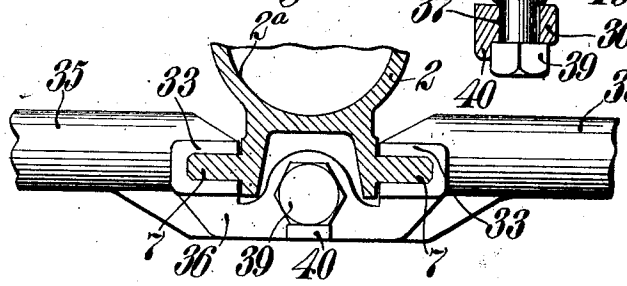


Fig. 9.



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Patented Aug. 25, 1931 1,820,185

UNITED STATES PATENT OFFICE

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PERCUSSIVE TOOL

Application filed September 29, 1925. Serial No. 59,417.

This invention relates to fluid actuated percussive tools of the hand held type and more particularly to cushioned handles for such tools.

Rock drills of the hand held type usually have fluid actuated motors which percussively actuate the cutting tool. In such drills the excessive jars and vibrations set up by the percussive motor are transmitted to the supporting handle of the drill which is grasped by the operator and consequently severe shocks and jars are transmitted to the operator, which is not only extremely annoying and fatiguing but may result in severe injury to him especially if the drilling tool is held to the work for any great length of time.

The primary object of this invention is to enable a hand held fluid actuated percussive tool to be easily supported relative to the work without the transmission of excessive jars and shocks to the operator. Another object of this invention is to provide improved shock absorbing connections between the handle and the percussive motor of a hand held percussive tool. Still another object is to provide an improved cushioning handle having improved and simplified attaching means therefor. Yet another object of the invention is to provide an improved cushioned handle which is simple in structure having a comparatively small number of component parts and which may be applied to a rock drill of standard construction, herein of the "drifter" type, with a minimum of change and expense. A still further object of my invention is to provide an improved handle attachment for a mounted drifter type drill whereby the latter may be utilized as a hand held "sinker". These and other objects of my invention will, however, subsequently appear.

This invention in one of its preferred embodiments may comprise a percussive rock drill having a cushioned supporting handle adapted to be grasped by the operator for holding the drill to the work. Preferably this form of my invention may comprise a handle having laterally projecting grasping portions mounted on a yoke-shaped member having guideways formed thereon which are slidably mounted on the usual lateral guiding gibs provided on the body of the drill. These gibs normally form guides for the drill when mounted in a supporting cradle and the drill used as a drifting machine. The handle is resiliently mounted on the body of the drill by means of a sleeve member having oppositely acting compression springs carried thereby and a cooperating supporting bolt. This sleeve member is rigidly secured within a bore formed in a boss on the motor cylinder and which normally receives the feed nut when the drill is mounted for drifter work. The gibs and the resilient mounting are preferably offset from the longitudinal center of the drill while the yoke-shaped bracket has inwardly projecting arms thereon which extend to the central longitudinal plane of the tool at each side of the latter where the laterally projecting grasping portions of the handle are located, thus improving the balance and handling of the drill when used as a "sinker". If desired, however, these grasping portions may be offset from the longitudinal center of the tool.

In the accompanying drawings I have shown for purposes of illustration several embodiments which my invention may assume in practice.

In these drawings,—

Fig. 1 is a side elevation of a percussive rock drill of the drifter type having incorporated therein the improved cushioned supporting handle.

Fig. 2 is a fragmentary side elevation of the rock drill shown in Fig. 1.

Fig. 3 is a detail central longitudinal sectional view taken substantially on line 3—3 of Fig. 1.

Fig. 4 is a detail transverse horizontal sectional view taken substantially on line 4—4 of Fig. 1.

Fig. 5 is a fragmentary side elevational view of the rock drill shown in Fig. 1, illustrating a slightly modified form of the cushioned handle supporting structure.

Fig. 6 is a view similar to that shown in Fig. 1 illustrating a cushioned handle of still

further modified structure, parts being broken away to facilitate illustration.

Fig. 7 is a fragmentary side elevational view of the drill shown in Fig. 6.

Fig. 8 is a central longitudinal sectional view taken substantially on line 8—8 of Fig. 6.

Fig. 9 is a detail transverse horizontal sectional view taken substantially on line 9—9 of Fig. 7.

In the illustrative form of my invention shown in Figs. 1 to 4 I have shown a percussive rock drill of the drifter type generally designated 1 comprising a motor cylinder 2 having a bore 2^a (see Fig. 4) in which a usual hammer piston, not shown, is reciprocable for imparting impact blows to the shank of a drill steel 3 suitably carried within the forward end of the drill. The ends of the motor cylinder 2 are provided with front and rear closure members or heads 4 and 5 respectively, suitably held in assembled relation by parallel longitudinally extending side bolts or rods 6 in a well known manner. As illustrated, offset from the longitudinal center of the drill are laterally projecting parallel gibs 7 which are formed integral with the motor cylinder 2 and the front head 4. These gibs normally slide within a usual supporting shell or cradle when the drill is utilized for drifter work as is well known in the art. It will also be observed that formed on the rear end of the motor cylinder 2 is a laterally projecting boss or integral sleeve 8 having a bore 9 whose axis extends parallel with the longitudinal axis of the drill. It will herein be noted that the bore 9 of the boss 8 normally receives the usual feed nut when the drill is utilized as the mounted screw fed "drifter," and this bore 9 herein receives the resilient mounting for my improved cushioned handle to be hereinafter fully described.

In my improved construction it will be observed that cooperating with the lateral gibs 7 are parallel guides 10 formed on a yoke-shaped supporting member or cradle 11. In this instance the member 11 is comprised of parallel longitudinally extending side arms 12 and an upper transverse portion 13 while the lower end of the member 11 has inwardly projecting arms 14 thereon which extend to the central longitudinal plane of the tool at each side of the latter where laterally projecting grasping portions 15 of the handle are located. As shown, formed on the projections 14 are suitable guiding bosses 16 having longitudinally extending bores 17 through which the side bolts 6 extend, thus forming a supplemental guide for the handle. Herein, in accordance with this invention, disposed within the bore 9 of the feed nut boss 8 (see Fig. 3) is a sleeve member 18 provided at its lower end with an enlarged head portion 19 and at its upper end with an externally threaded portion 20. Engaging the portion 20 is a threaded nut 21 which may be tightened to hold the member 18 rigidly in position within the boss 8. As shown, the opposite ends of the member 18 are hollowed out or bored a portion of its length, as at 22, and has a transverse separating portion or partition 23 having a central longitudinally extending reduced bore 24. As illustrated, extending through the bore 24 and an alined bore 25 formed in the transverse portion 13 of the member 11 is a bolt 26 having at its upper end a hexagonal shaped head 27 held in non-rotative relation by means of an upstanding locking lug 28, while the lower threaded end of the bolt is provided with an adjustable nut 29. Engaging the upper surface of the transverse portion 23 and the lower surface of the transverse portion 13 and encircling the bolt 26 is a coiled compression spring 30, while engaging the lower surface of the transverse portion 23 and the nut 29 and acting oppositely from the spring 30 is a similar coiled compression spring 31. The tension of these springs 30 and 31 may be adjusted by suitable adjustment of the nut 29. From the foregoing description it will be evident that the operator grasps the portions 15 of the handle during the drilling operation with the cutting bit of the drill steel 3 held to the work. When the drill is held in this position excessive jars and vibrations set up by the percussive motor are absorbed by the coiled spring 30, the spring 30 being slightly compressed by the pressure exerted on the handle by the operator at that time. After the hole is completed, or if it is necessary to change steels, the operator pulls upwardly on the handle and during this withdrawal operation excessive shocks and jars are absorbed by the lower coiled spring 31.

In the modification shown in Fig. 5 it will be observed that projecting laterally directly from the guide portions 10 on the yoke-shaped supporting member or cradle 11 are laterally projecting grasping portions 32 offset from the central longitudinal center of the drill, thus eliminating the projecting arms 14 and the guiding bosses 16 from the form shown in Figs. 1 to 4. Otherwise this form of my invention is identical to that heretofore described.

In the modification shown in Figs. 6 to 9 it will be observed that cooperating with the gibs 7 are guideways 33 formed integral with a handle supporting member 34, thus forming a slidable mounting for the latter. As shown, projecting laterally from the member 34 are projecting handles or grasping portions 35 disposed at each side of the drill and offset from the longitudinal center of the drill and below the boss 8. The member 34 is herein provided with a transverse portion 36 having a longitudinal bore 37 alined with the bore 9 in the boss 8 and extending through this bore 37 and bore 24

formed in the sleeve 18 is a bolt 38 having at its lower end a hexagon shaped head 39 held in non-rotative relation by a locking lug 40, while the upper threaded end of the bolt 38 is provided with an adjustable nut 41. Disposed in the hollow portions 22 of the sleeve 18 and engaging the nut 41 and the transverse portion 36 of the handle, respectively, are oppositely acting coiled cushioning springs 42 and 43, these springs encircling the bolt 38. The use of this form of my invention is substantially the same as that described above in connection with the other forms.

As a result of my invention a supporting handle is provided for a rock drill having an improved resilient mounting therefor whereby the shocks and jars transmitted to the handle from the percussive motor are readily absorbed during either feeding of the drill to or withdrawal from the work. It will still further be noted that an improved cushioned handle attachment is provided for a "drifter" type drill, thereby permitting tht latter to be utilized as a "sinker". It will still further be noted that an improved cushioned handle is provided for a rock drill having a comparaively small number of component parts and which may be applied to a "drifter" type drilling tool of standard construction with a minimum of change and expense.

While I have in this application specifically described several embodiments which my invention may assume in practice, it will be understood that these forms of the same are shown for purposes of illustration and that the invention may be modified and embodied in various other forms without departing from its spirit or the scope of the appended claims.

What I claim as new and desire to secure by Letters Patent is:

1. In a percussive tool, a cylinder having guides thereon, front and rear heads for said cylinder. means under tension for maintaining said cylinder and heads in assembled relation, and a handle supporting member slidably mounted on said guides and having portions cooperating with the tensioned portion of said holding means.

2. In a percussive tool, a cylinder having guides thereon, front and rear heads for said cylinder, tensioned side rods for maintaining said cylinder and heads in assembled relation, and a handle supporting member slidably mounted on said guides and having portions cooperating with the tensioned portion of said side rods.

3. In a percussive tool, a cylinder and cooperating heads, side bolts for holding said heads on said cylinder, guides formed on said cylinder and projecting laterally therefrom, and a handle supporting member slidably mounted on said guides and cooperating with said side bolts.

4. In a percussive tool, a cylinder having guides thereon, a hollow sleeve member carried by said cylinder, a bolt extending through said sleeve, a handle supporting member cooperating with said bolt and slidably mounted on said guides, and a compression spring encircling said bolt and engaging said sleeve and handle supporting member.

5. In a percussive tool, a cylinder having guides thereon, a hollow sleeve member carried by said cylinder, a bolt extending through said sleeve, a handle supporting member cooperating with said bolt and slidably mounted on said guides, and compression springs encircling said bolt, one engaging said sleeve and said handle supporting member and the other engaging said sleeve and said bolt, respectively.

6. In a percussive tool, an impact motor including a cylinder having guides thereon, front and rear heads therefor, and side rods for holding said heads and cylinder in assembled relation, a handle supporting member slidably mounted on said guides and having portions slidably guided on said side rods, and a resilient mounting for said supporting member including oppositely acting compression springs disposed on one side of said cylinder.

7. A spring handle adapted to be substituted for the shell of a rock drill, comprising a cradle having internal guideways to receive the shell guides of the rock drill whereon the cradle is adapted to slide, a bolt slidable through the cradle and the rock drill for holding said cradle on the shell guides, a spring encircling the bolt and acting against the cradle and the rock drill for cushioning relative longitudinal movement between the cradle and the rock drill, and lateral grip members on the cradle for manipulating the rock drill.

8. A handle attachment for drifting drills comprising a handle grip, a frame carrying said grip and having guideways for receiving the guide flanges of a drifting drill, a spring mounting for resisting the movement of the handle carried by said frame, and means for securing said mounting in the feed nut sleeve of the drifting drill, said securing means including a sleeve arranged in the feed nut sleeve and having end bores and an apertured transverse partition and said spring mounting including a bolt extending through said securing sleeve and passing through the aperture in said partition, and springs encircling said bolt and positioned in said sleeve bores at opposite sides of said partition.

9. A handle attachment for drifting drills comprising a handle grip, a frame carrying said grip and having guideways for receiving the guide flanges of a drifting drill, a spring mounting for resisting the movement

of the handle carried by said frame, and means for securing said mounting in the feed nut sleeve of the drifting drill, said securing means including a sleeve arranged in the feed nut sleeve and having end bores and an apertured transverse partition and said spring mounting including a bolt extending through said securing sleeve and passing through the aperture in said partition, and springs encircling said bolt and positioned in said sleeve bores at opposite sides of said partition, one of said springs being interposed between said handle frame and the partition of said securing sleeve and said other spring being interposed between said partition and said bolt.

In testimony whereof I affix my signature.

ELMER G. GARTIN.