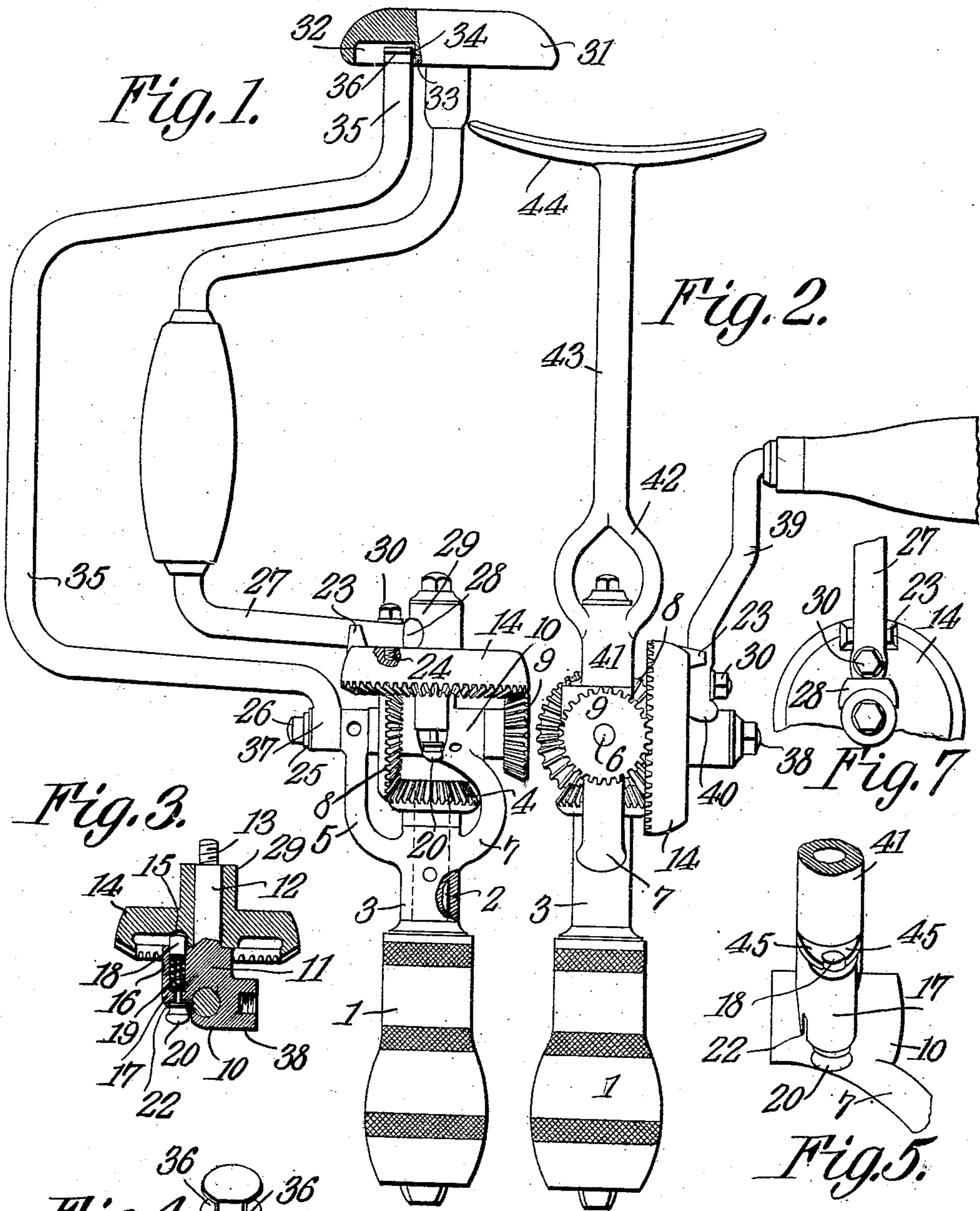


No. 863,927.

PATENTED AUG. 20, 1907.

A. LARSEN.  
BIT BRACE.

APPLICATION FILED DEC. 6, 1906.



WITNESSES:

*E. H. Clavett*  
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Fig. 6. By

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# UNITED STATES PATENT OFFICE.

ANTON LARSEN, OF RACINE, WISCONSIN.

## BIT-BRACE.

No. 863,927.

Specification of Letters Patent.

Patented Aug. 20, 1907.

Application filed December 6, 1906. Serial No. 346,660.

*To all whom it may concern:*

Be it known that I, ANTON LARSEN, a subject of Frederick VIII of Denmark, residing at Racine, in the county of Racine and State of Wisconsin, have invented a new and useful Bit-Brace, of which the following is a specification.

This invention relates to bit braces and its object is to provide a brace having interchangeable actuating means whereby the brace can be operated in various ways to meet different conditions and tastes.

With these and other objects in view the invention consists of certain novel features of construction and combinations of parts which will be hereinafter more fully described and pointed out in the claims.

In the accompanying drawings is shown the preferred form of the invention.

In said drawings: Figure 1 is an elevation of the brace, a portion of the knob thereof being shown in section; Fig. 2 is an elevation thereof showing the same provided with actuating means different from those disclosed in Fig. 1; Fig. 3 is an enlarged section through the lock of the brace; Fig. 4 is a detail view of the knob engaging end of the stationary handle; Fig. 5 is a perspective view of one end of the shank of the breast plate and showing the same held against rotation by the lock; Fig. 6 is a detail view of one end of the locking plunger and showing its holding wings; and Fig. 7 is a plan view of one end of the crank arm and the adjoining portion of the drive gear.

Referring to the figures by characters of reference, 1 is a suitable chuck or tool holder connected to a shaft 2 which is rotatably mounted within the tubular body 3 of the brace. This shaft has a gear 4 at one end and an arm 5 which is integral with the body 3 extends beyond the gear 4 and constitutes a bearing for a shaft 6 which is also mounted within one end of an arm 7 integral with the body 3 and overhanging the gear 4. Shaft 6 has a large gear 8 keyed or otherwise secured thereon and meshing with gear 4 and another smaller gear 9 is secured upon one end of the shaft. A sleeve 10 is formed integral with the arm 7 and the shaft 6 extends through this sleeve. Said sleeve has a stud 11 thereon from which projects a stem 12 having its terminal screw threaded as shown at 13. This stem is adapted to constitute a bearing for a gear 14 meshing with the gear 9. Any suitable means may be employed for securing the gear 14 upon the stem 12. This gear has a recess 15 in its inner face adapted to register with the end of a passage 16 formed within a lateral extension 17 on sleeve 10. Within this passage is mounted a plunger 18 which is normally projected therebeyond by means of a spring 19. A head 20 is formed at one end of the plunger and has oppositely extending wings 21 adapted to normally rest within recesses 22 formed at diametrically opposite points within the wall of passage 16. It will therefore be understood that by pulling

longitudinally on head 20 the wings 21 can be withdrawn from recesses 22 and the plunger 18 retracted into the passage. Said plunger may be held in retracted position by partly rotating it so as to cause the wings 21 to bear against one end of the extension 17. When the wings 21 are seated within the recesses 22 the plunger is adapted to project into contact with gear 14 and to spring into engagement with recess 15 when the same is brought into position thereover. When the plunger 6 engages the gear 14 it becomes impossible to rotate said gear independently of the sleeve 10 and the parts connected thereto. Gear 14 has a pair of outstanding lugs 23 thereon and a screw threaded recess 24 is formed within the outer face of the gear 14 at a point between these lugs and the center of the gear 14. The arm 5 has an outstanding stud 25 provided with suitable retaining means such as a nut 26.

As shown in Fig. 7 the lugs 23 embrace one end portion of a crank arm 27 said arm being provided at its terminal with a saddle 28 adapted to bear against the upstanding sleeve 29 formed at the center of gear 14. A locking screw 30 extends through the arm 27 and into the recess 24 thereby securely locking the crank arm to the gear 14 and insuring their simultaneous rotation. A knob 31 is swiveled upon the free end of the crank arm 27 and this knob has a recess 32 in its inner face partly overlapped by a plate 33 in which is formed a slot 34 of less width than the recess 32. The recess is adapted to receive the end of a yoke-shaped handle 35 said end being provided with oppositely disposed grooves 36 so that it can be inserted into the slot 34 and engage the walls thereof, as shown in Fig. 1. The other end of the handle 35 has an eye 37 adapted to engage the stud 25 and be held thereon by the nut 26. With the parts connected in this manner it will be seen that the handle 25 can be gripped with the left hand and the crank arm 27 rotated with the right hand, provided of course that the plunger 18 is withdrawn from and locked against engagement with the gear 14. The rotation of the crank arm 27 will cause gear 14 to rotate gear 9 and shaft 6 whereupon the larger gear 8 will rotate the gear 4 and shaft 2. The speed of rotation will therefore be multiplied. Should it be desired to use the members in the ordinary manner the plunger 18 is unlocked so as to spring into engagement with gear 14 and the handle 35 is removed from the stud 25 and its other end slipped out of engagement with plate 33. The knob 31 can then be pressed against the body in the ordinary manner while the crank arm 27 is being rotated. The rotation of this crank arm will of course cause the locked gears and the body 3 to rotate therewith and the members will therefore operate in every respect like an ordinary bit brace.

Under some circumstances it is preferable to rotate the bit by means of an outstanding crank. In this event the crank arm 27 and the handle 35 are detached

from gear 14 and stud 25 respectively and said gear 14 is secured to a stud 38 extending laterally from sleeve 10 at a point between the gear 8 and 9. Gear 14 will then mesh with the small gear 9. A crank 39 is then placed  
 5 between the lugs 23 and secured by means of the screw 30, said crank being provided with a saddle 40 similar to the saddle 28 hereinbefore referred to. A sleeve 41 is then secured upon the stem 12 in place of gear 14 and extending from the end of this sleeve are oppositely  
 10 bowed arms 42 which merge into a stem 43 having a breast plate 44 at its end. Ears 45 extend laterally from the end of sleeve 41 and are adapted to be engaged by the plunger 18 and held against rotation upon the stem 12. With the parts arranged in this manner the  
 15 body can be pressed against the breast plate 44 and the gears rotated by means of the crank 39.

It will be seen that by constructing the members in the manner herein described the same can be used to meet various conditions and tastes and will be found  
 20 equally effective whether the breast plate 44 and crank 39 are used or the crank arm 27 is used with or without the handle 35.

The preferred form of the invention has been set forth in the foregoing description but I do not limit myself thereto as I am aware that modifications may be made therein without departing from the spirit or sacrificing the advantages thereof, and I therefore reserve the right to make such changes as fairly fall within the scope of the claims.

30 What is claimed is:

1. A bit brace comprising a body, a chuck rotatably connected thereto, a drive gear, a gear rotatable with the chuck, an intermediate shaft, gears thereon meshing respectively with the drive gear and the chuck gear, a holding device rigidly and detachably connected to the body,  
 35 means connected to the drive gear for actuating the same, a knob upon said means and detachably engaging the holding means, and means for locking the drive gear against rotation when the holding means is detached.

40 2. A brace comprising a body, a chuck rotatably connected thereto, a gear rotatable with the chuck, connected intermediate gears journaled upon the body, one of said gears meshing with the chuck gear, angularly disposed studs upon the body and between the intermediate gears,  
 45 a holding device detachably connected to the body, a drive

gear rotatably mounted upon either of the studs and meshing with one of the intermediate gears, and detachable means for rotating the drive gear.

3. A brace comprising a body, a chuck rotatably mounted thereon, angularly disposed studs upon the body, a drive gear adapted to be mounted upon either of said studs, intermediate mechanism for transmitting and multiplying rotary motion from the drive gear when in either of its positions and to the chuck, a detachable holding device connected to the body, and means detachably connected to the drive gear for actuating the same. 50 55

4. A brace comprising a body, a chuck rotatably mounted thereon, angularly disposed studs upon the body, a drive gear adapted to be mounted upon either of said studs, intermediate mechanism for transmitting and multiplying rotary motion from the drive gear when in either of its positions and to the chuck, a detachable holding device connected to the body, means detachably connected to the drive gear for actuating the same, a spring pressed locking plunger for engaging the drive gear to hold it against movement when the holding device is detached, and means for holding said plunger out of engagement with the drive gear. 60 65

5. A brace comprising a body, a shaft rotatably mounted therein, a chuck and a gear carried by said shaft, a transverse shaft carried by the body, intermediate gears upon said shaft, one of said gears meshing with the gear on the chuck shaft, angularly disposed studs carried by the body between the intermediate gears, a drive gear detachably mounted upon either of said studs and engaging and meshing with an intermediate gear, a holding device rigidly secured to the body and extending to a point in alignment with the chuck, and means connected to the drive gear for actuating the same. 70 75

6. A brace comprising a body, a shaft rotatably mounted therein, a chuck and a gear carried by said shaft, a transverse shaft carried by the body, intermediate gears upon said shaft, one of said gears meshing with the gear on the chuck shaft angularly disposed studs carried by the body between the intermediate gears, a drive gear rotatably mounted upon either of said studs and engaging and meshing with an intermediate gear, a handle rigidly and detachably connected to the body, a knob detachably mounted thereon, and a crank arm swiveled within the knob and engaging the drive gear. 80 85 90

In testimony that I claim the foregoing as my own, I have hereto affixed my signature in the presence of two witnesses.

ANTON LARSEN.

Witnesses:

EDWARD PETERSON,  
 LOUIS MOGENSEN.