T. BOOTH.

BIT WRENCH.

APPLICATION FILED NOV. 3, 1908.

925,745. Patented June 22, 1909.

Fig. 1.

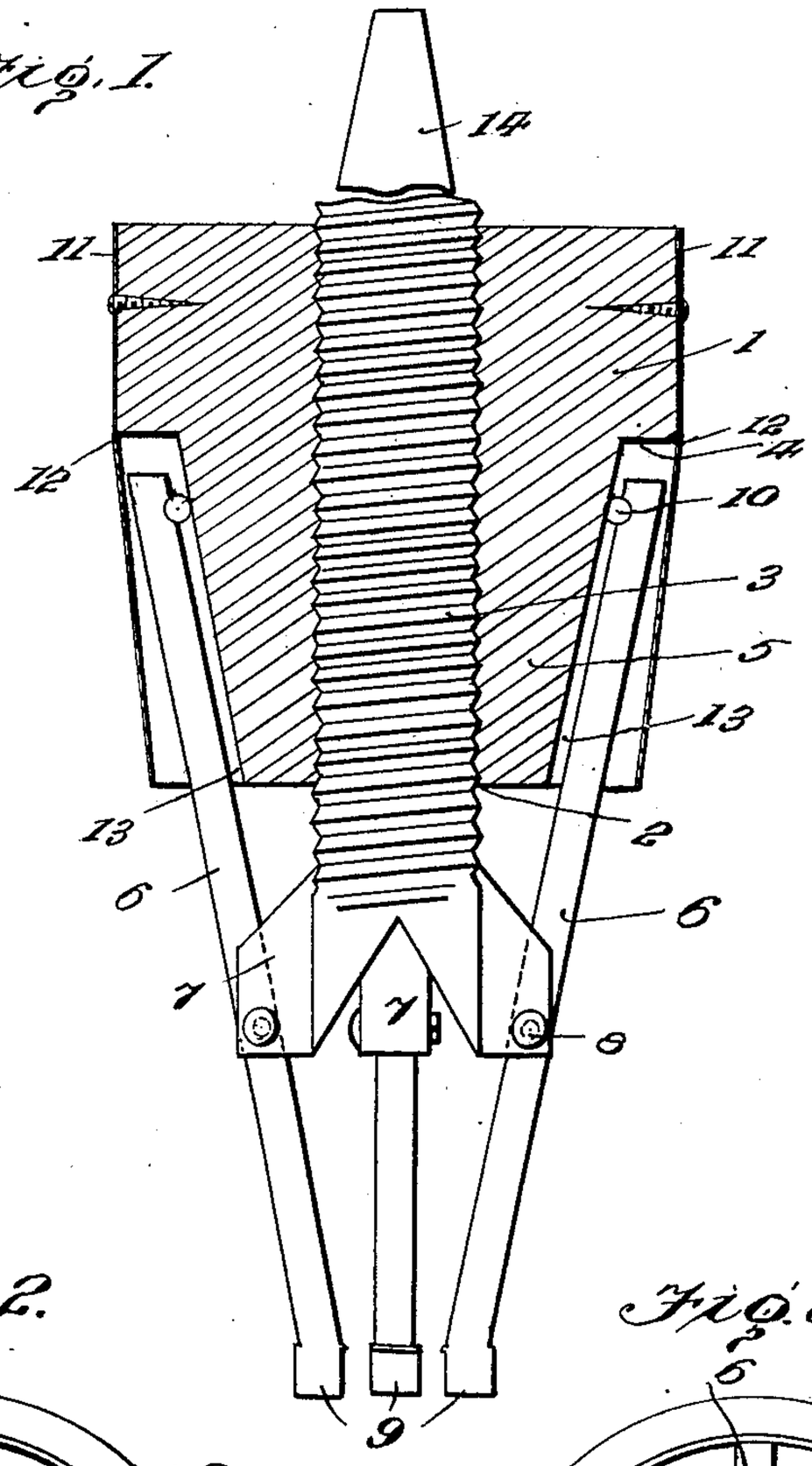


Fig. 2.

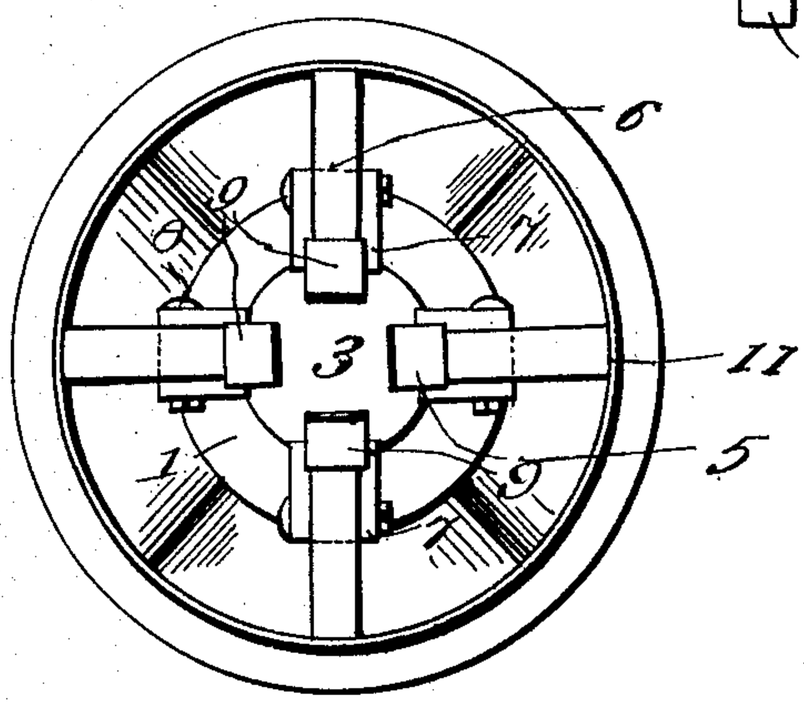
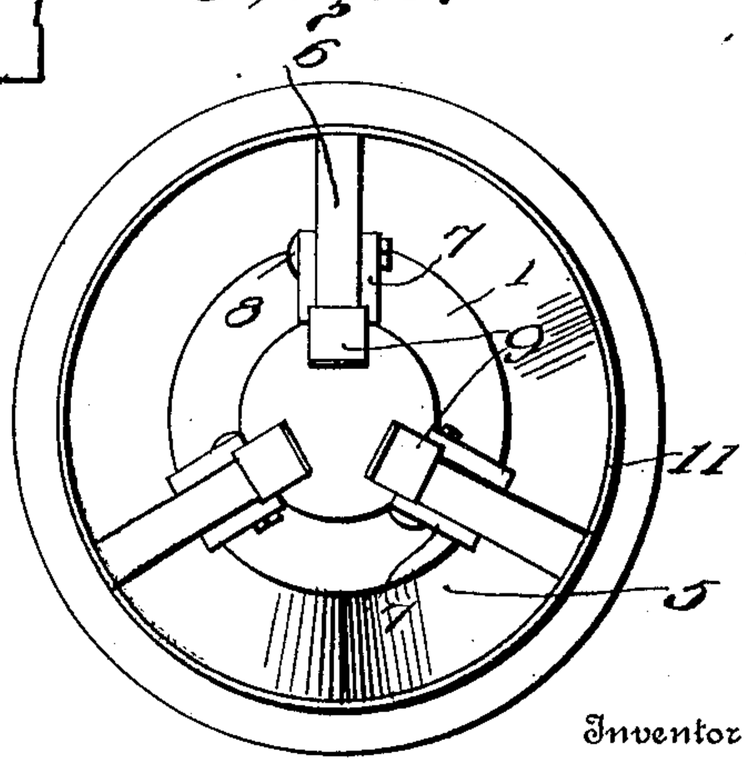


Fig. 3.



Witnesses

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UNITED STATES PATENT OFFICE.

THOMAS BOOTH, OF BOISE, IDAHO.

BIT-WRENCH.

No. 925,745. Specification of Letters Patent. Patented June 22, 1909.

Application filed November 3, 1908. Serial No. 460,851.

To all whom it may concern:

Be it known that I, THOMAS BOOTH, citizen of the United States, residing at Boise, in the county of Ada and State of Idaho, have invented certain new and useful Improvements in Bit-Wrenches, of which the following is a specification.

The invention contemplates the construction and arrangement of coöperating sections designed to form a wrench and relates more particularly to that class of wrenches wherein a brace is used in the manipulation of the wrench to turn a nut when properly adjusted.

The invention comprises essentially a stock or handle portion of substantially conical formation provided with a threaded longitudinal opening and a stem provided with a threaded body or main portion designed to coöperate with said threaded opening whereby the stock is moved longitudinally of the stem, and a plurality of gripper arms pivotally connected to the stem extremity, intermediate of their ends and operated by movement of the stock upon the stem.

For a full understanding of the invention and the merits thereof and also to acquire a knowledge of the details of construction and the means for effecting the result, reference is to be had to the following description and accompanying drawings, in which:

Figure 1 is a vertical sectional view, Fig. 2 is an end view, and, Fig. 3 is an end view illustrating a modified arrangement of the gripper arms and jaws.

Corresponding and like parts are referred to in the following description and indicated in all the views of the drawings by the same reference characters.

Referring to the drawings the numeral 1 designates a stock or handle preferably of cylindrical formation provided with a threaded longitudinal opening 2, and 3 designates the threaded body portion of a stem adapted to extend through the opening 2 in the stock, and upon which said stock turns when moved longitudinally thereupon. The stock is formed with an annular shoulder 4, and a reduced conical end portion 5 extending from the shoulder is designed to form a bearing surface upon which the extremities of a plurality of gripper arms 6 operate.

The stem 3 at one extremity is formed with a plurality of out-standing ears 7 slotted to receive the gripper arms 6 and said arms are pivotally secured to the ears within the slots intermediate their extremities as indicated at 8. The jaw members 9, integrally a part of the arms 6, and of any desired shape are designed to positively engage a nut (not shown), and the opposite extremities of the arms are preferably constructed with anti-friction bearings. Such anti-friction bearings may consist of balls 10 as shown, partially embedded in sockets formed in the faces of the arms adjacent to the stock or secured in any approved manner best adapted to obtain the desired results.

The gripper arms 6 at their inner extremities are retained in close proximity to the conical end portion of the stock 1 by a casing 11 secured to the stock as by screws and deflected as indicated at 12 to conform with said conical end whereby an annular slot 13 is formed and in which said extremities operate.

The free end of the stem 3 is provided with a shank 14, and a brace or other tool (not shown) is designated to be secured to said shank for the purpose of operating the wrench when the jaws 9 have been properly adjusted to a nut.

With the arrangements of the several parts, as shown, the operation is as follows:— The stock 1 is permitted to turn upon the stem 3 and move longitudinally thereupon. The gripper arms 6 pivotally secured to the stem extremity intermediate their ends and provided with jaws 9 at one of their extremities are operated by movement of the stock when it is desired to open or close the jaw members. Such action is controlled by the direction of movement of the stock and governed by the conical end formation by which the inner extremities of the arms bearing upon the inclined surface of said conical end, are forced in the desired direction to move the lower extremities of the arms or jaw members to release or close upon a nut.

The practical merit and advantages of a tool of this character will be manifest and will be understood. The number and formation of gripper arms and jaw members may vary whereby the wrench may be adapted for use in connection with nuts embodying special or peculiar features in construction.

Having thus described the invention, what is claimed as new is:—

1. A tool of the character described comprising a threaded stem provided with a

shank, a stock of substantially conical formation provided with a threaded opening through which the stem extends, a casing surrounding said stock and conforming to the conical formation thereof, and gripper arms pivotally secured to one extremity of the stem intermediate their ends and operating at one of their extremities upon the conical surface of said stock and within the annular opening formed between said casing and conical end of the stock.

2. A tool of the character described, comprising a threaded stem provided at its upper end with a many-sided head whereby it may be rotated, a stock of substantially conical formation provided with a threaded central passage through which the stem extends, a casing surrounding said stock and extending down to the lower end thereof but spaced therefrom, and gripper arms pivotally secured to one extremity of the stem intermediate of their ends and engaging at one of their extremities with the conical surface of said stock and within the said casing.

In testimony whereof I affix my signature in presence of two witnesses.

THOMAS BOOTH. [L. S.]

Witnesses:
C. M. BANTA,
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