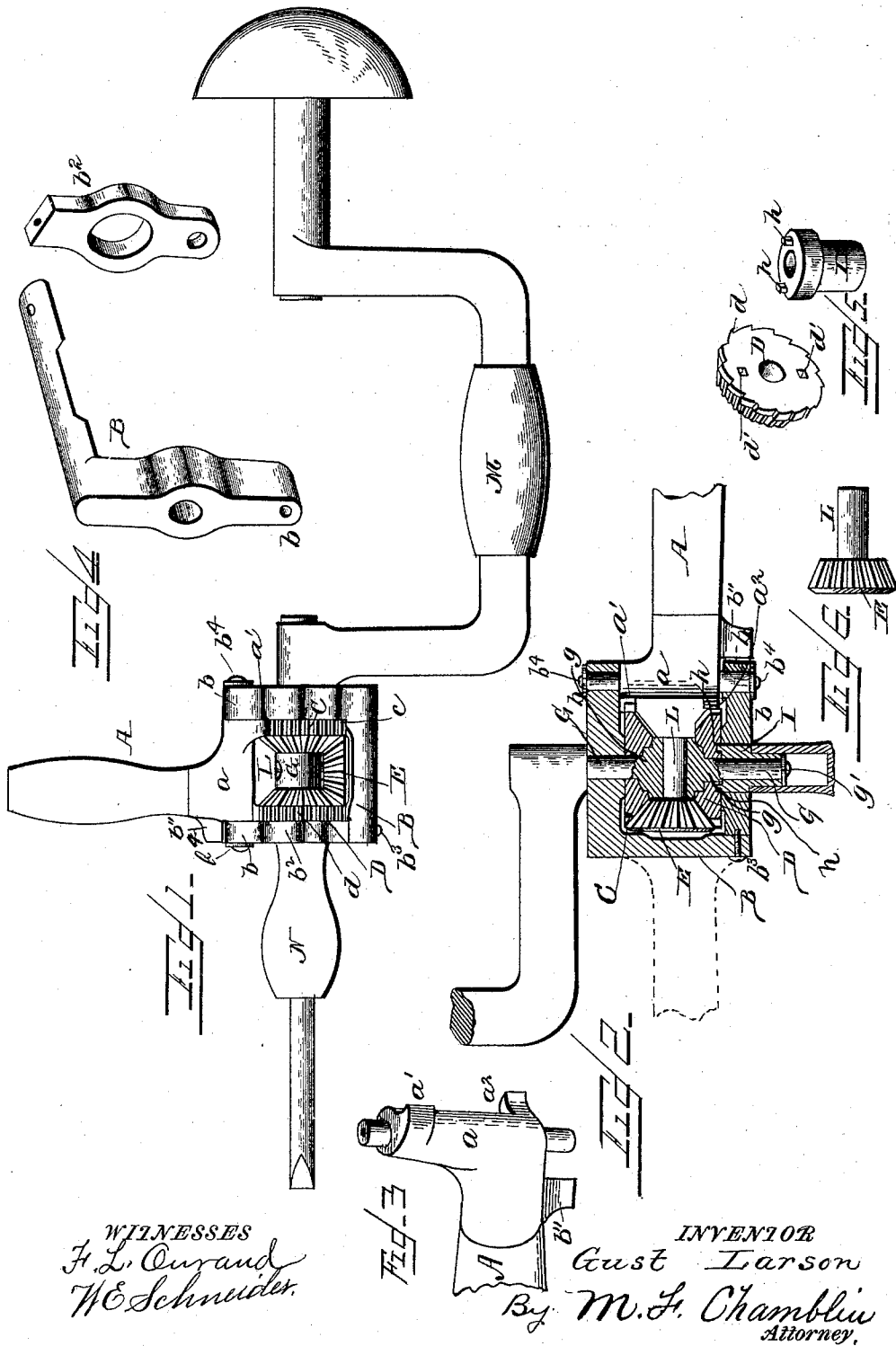


(No Model.)

G. LARSON.
BRACE.

No. 468,771.

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WITNESSES
H. L. Curand
W. C. Schneider.

INVENTOR
Gust Larson
By M. F. Chamblin
Attorney.

UNITED STATES PATENT OFFICE.

GUST. LARSON, OF ALEXANDRIA, ASSIGNOR TO WILLIAM C. SMITH AND
THOMAS F. MOORE, OF WADENA, MINNESOTA.

BRACE.

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To all whom it may concern:

Be it known that I, GUST. LARSON, a citizen of the United States of America, residing at Alexandria, in the county of Douglas and State of Minnesota, have invented certain new and useful Improvements in Braces, of which the following is a specification, reference being had therein to the accompanying drawings.

My invention relates to an improvement in an ordinary brace and bit; and the object is to provide a mechanism or device for operating with great rapidity the bit of a brace in conjunction with the brace or bit-stock—that is, by the aid of my invention the bit upon the forward revolutions of the handle of the brace can be made to turn twice to each revolution of the handle. I attain said object by a certain combination and arrangement of parts fully described in this specification, and illustrated in the accompanying drawings, in which—

Figure 1 is a view in elevation of my invention complete. Fig. 2 is a longitudinal sectional view of a part of the same, illustrating the details of construction. Figs. 3, 4, 5, and 6 are detailed views of parts to be referred to hereinafter.

Referring to the drawings, the letter A designates a handle with the lower end *a* bent at a right angle. This handle is provided, upon opposite sides of the end *a*, with the downwardly-projecting pawls *a'* *a''*, and is pivotally secured, by means of the screws or pivots *b*⁵, between the ends *b* of the revolving clevis-shaped frame B. The projecting portion *b''* of this handle performs the function of a guide and brake. It will be readily observed that as said handle is pivotally secured the same may be moved, so as to cause said pawls to engage the notches *c* and *d*, respectively, of either of the crown-wheels C and D. When the handle A is operated so that the pawl *a'* will engage one of the notches *c* upon the rim of the crown-wheel C, this rigidly holds said crown-wheel in a stationary position, thereby permitting the pinion E to drive the crown-wheel D, which imparts motion to the cap I, which drives the bit-socket N. The opposite result is produced when the pawl *a''* is made to engage the notches *d* of the crown-wheel

D—that is, the cap I will then remain stationary and the portion G will revolve within said cap.

The clevis or U-shaped frame B is so constructed that the bottom portion *b*² can be removed by taking out the screw-bolts *b*³ and *b*⁴, and by then removing the handle M and bit-holder N said frame can be readily removed from its normal position upon the portion G of the bit-stock. Said portion G of the bit-stock or brace is journaled through the center of the top and bottom of the frame B, and is formed with the reduced portions *g* *g'* and *g''*.

The crown-wheels C and D are provided upon their periphery with the notches *c* and *d*, and they are located upon the portion G of the bit-stock at the points *g* *g'*. In the bottom of the crown-wheel D there are two orifices *d'* *d''*, which are adapted to receive the projections or keys *h* upon the top of the cap I, which fits upon the lower end of the portion G of the bit-stock. It will be observed that the lower end or reduced portion *g'* of said portion G revolves within the cap I and that the crown-wheel D communicates motion to the cap I by means of the projections or keys *h* upon the top of cap I, which fit into the orifices *d'* *d''* upon the bottom of the crown-wheel D. Such being the case, the cap I, being rigidly fit into the bit-socket N and revolving upon the reduced portion *g'* of the portion G, drives the bit-socket N, when the upper crown-wheel C is rigidly held in a stationary position by means of the pawl *a'* engaging the notches *c* upon the crown-wheel C. When the crown-wheel D is rigidly secured by the pawl *a''* engaging the notches *d* thereof, the bit-holder becomes inoperative or is thrown out of gear—that is, the portion G revolves within the cap I, and therefore the bit-holder N remains stationary. This obviates a serious objection heretofore experienced in operating brace-bits of this character—namely, that of preventing the bit from being broken when the brace is being operated in the event that the same should suddenly come in contact with a knot or any unusually-hard substance in the wood. The handle A being held stationary while the brace is operated, it is apparent that should the bit strike any hard

substance in operation the tendency is to cause the handle A to assume in direction the opposite course of the revolving handle M. In other words, the handle A is thrown almost
 5 instantly, so that the pawl a^2 will engage the notches d . Hence the bit becomes as quickly inoperative, while the revolving handle M may continue to rotate. Should the same be brought suddenly to a standstill, owing to the
 10 bit striking the hard substance, the result invariable would be a broken bit. This is a novel and decidedly advantageous feature of my invention and overcomes a serious difficulty heretofore existing.

15 E represents the revolving pinion, which is located and works between the crown-wheels C and D, respectively. Said pinion is mounted upon the projecting axle L, Fig. 6, of the portion G of the bit-stock. The valuable
 20 and improved results of my invention are chiefly owing to the function performed by said revolving pinion. It will readily be seen that the portion G of the bit-stock or brace (upon which are mounted the crown-wheels
 25 C and D) is revolved or driven by means of the revolving handle M of the brace and that as the pinion E is mounted upon an axle of the portion G, by means of which it may be made to co-operate or revolve in con-
 30 junction with the crown-wheels C and D, respectively, two motions are thereby simultaneously imparted to said pinion—namely, a motion by the revolution of the stock or portion G and another motion by the crown-
 35 wheels C and D, respectively. In other words, while the pinion E revolves with the portion G it at the same time turns upon the projecting axle L, owing to its location between the crown-wheels C and D, when either of said
 40 crown-wheels are held stationary upon the portion G by means of the pawls a' and a^2 of the handle A. Such being the fact, it is apparent that said motions may be communicated alternately to each of the crown-wheels C and
 45 D—that is, when the crown-wheel C is held stationary by the pawl a' said motions are imparted to the crown-wheel D, and vice versa when the crown-wheel D is held stationary by the pawl a^2 . Hence the revolutions of
 50 either of said crown-wheels may be doubled

at the option of the operator. When the crown-wheel C is held stationary, the crown-wheel D, owing to the mechanism heretofore explained, will cause the bit-holder or socket
 N to make two revolutions to each revolution
 55 made by the handle M. This is the important feature of my invention, and as the same is practical and very useful I deem it useless to further enlarge upon its merits.

What I claim is—

1. In a brace, the combination of the portion G, journaled through the center of the frame B and having the reduced portions g g' , the crown-wheels C and D, mounted upon the portion G of the brace at the points g g' ,
 65 respectively, the clevis-shaped frame B, through which the portion G is journaled, the handle A, pivotally secured between the ends b b' of the frame B and provided with the pawls for alternately engaging the crown-
 70 wheels C and D, respectively, the cap I, located upon the lower end of the portion G and having the projections or keys h h' fitting in the orifices d' d'' of the crown-wheel D, and the revolving pinion E, mounted upon the project-
 75 ing axle of the portion G and working between the crown-wheels C and D, respectively, all substantially as described, and for the purpose set forth.

2. In combination with the co-operating
 80 mechanism of a brace, the two crown-wheels mounted upon the portion G, the clevis-shaped frame located upon the portion G, the handle pivotally secured between the ends of said
 85 frame and provided with the pawls for alternately engaging the crown-wheels C and D, respectively, the cap located upon the lower end of the portion G and having the projections or keys h h' fitting in the orifices in the bot-
 90 tom of the lower of said crown-wheels, and the revolving pinion mounted upon the projecting axle of the portion G and working between said crown-wheels, substantially as described and set forth.

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

GUST. LARSON.

Witnesses:

A. G. BROKER,
 M. POPPLER.