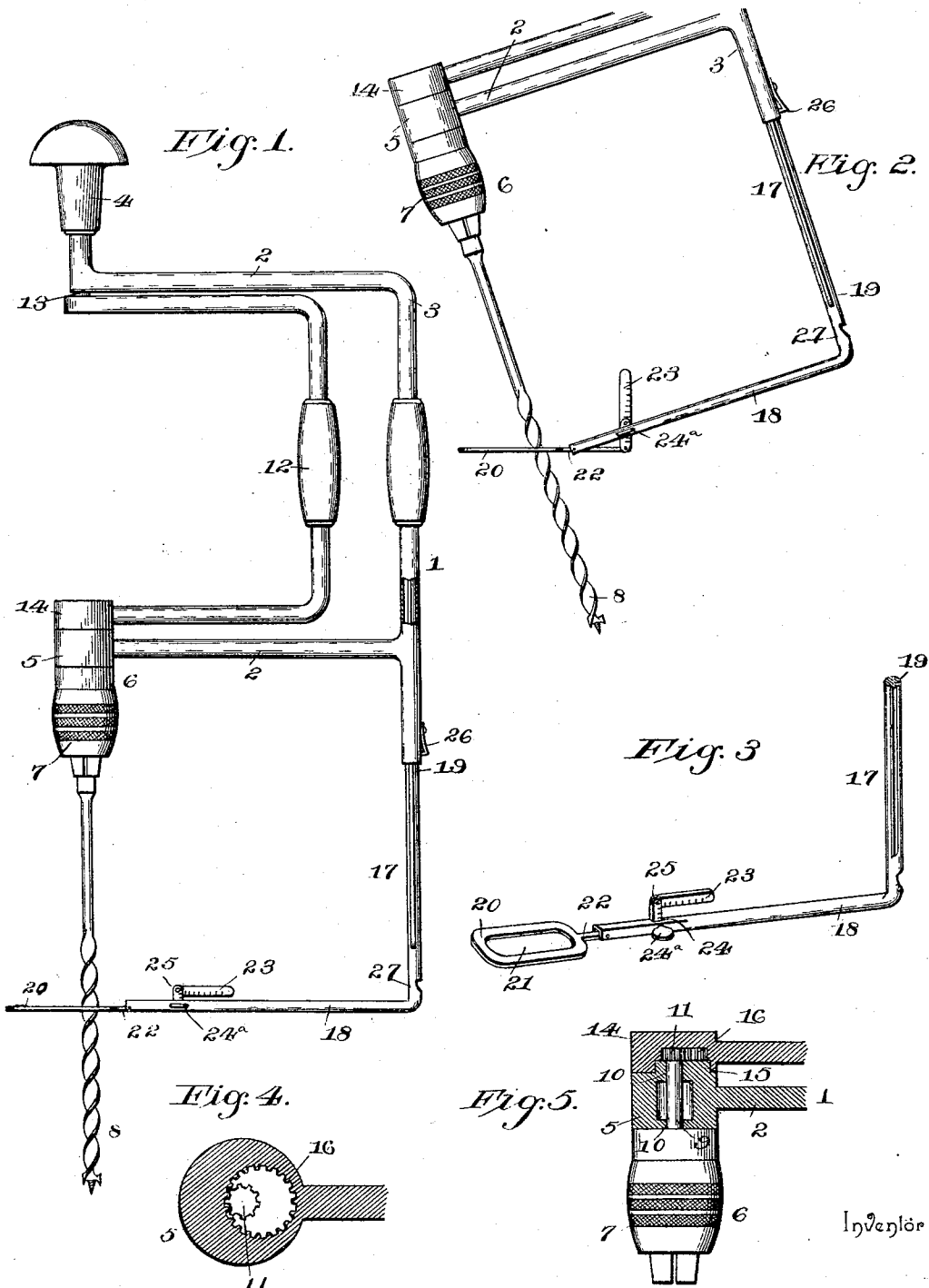


(No Model.)

J. F. ALLEY.
GAGE BRACE.

No. 521,579.

Patented June 19, 1894.



Witnesses
Ed Ford
Ed Ford

By *J. F. Alley* & Attorneys.

John F. Alley,
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UNITED STATES PATENT OFFICE.

JOHN F. ALLEY, OF NORTON, VIRGINIA.

GAGE-BRACE.

SPECIFICATION forming part of Letters Patent No. 521,579, dated June 19, 1894.

Application filed January 31, 1894. Serial No. 498,879. (No model.)

To all whom it may concern:

Be it known that I, JOHN F. ALLEY, a citizen of the United States, residing at Norton, in the county of Wise and State of Virginia, have invented a new and useful Gage-Brace, of which the following is a specification.

My invention relates to improvements in braces for bits or drills, and it has for its object to provide a simple, inexpensive and efficient construction whereby the speed of the bit is multiplied; and furthermore, to provide a gage for the guidance of the operator, whereby he is assisted in boring perpendicular to a given surface or at any desired angle.

Further objects and advantages of this invention will appear in the following description, and the novel features thereof will be particularly pointed out in the appended claims.

In the drawings: Figure 1 is a side view of a brace embodying my invention. Fig. 2 is a detail view of the lower portion thereof, showing the gage arranged at an inclination. Fig. 3 is a detail perspective view of the gage detached. Fig. 4 is a detail transverse section of the bit stock to show the gearing. Fig. 5 is a detail central longitudinal section of the same.

Similar numerals of reference indicate corresponding parts in all the figures of the drawings.

1 designates the supporting frame of the brace, consisting of a U-shaped arm having the parallel bars 2 connected at their outer ends by the intermediate vertical tubular rod 3, which extends slightly below the lower bar 2.

4 represents the head, which is secured to the inner end of the upper bar of the U-shaped frame, and 5 is a sleeve which is fixed or integral with the inner end of the lower bar of said frame, and forms a part of the bit-stock 6.

7 represents the bit-socket, carrying a bit 8, and having a reduced stem 9, which is rotatably mounted in the sleeve 5, said sleeve being hollowed out between its ends to provide the terminal bearings 10, whereby the intermediate portion of the stem is out of contact with the sleeve. Said stem terminates at its upper end in a spur-wheel 11, which is arranged adjacent to the upper extremity of the sleeve.

12 represents the operating handle or lever, which is U-shaped, its upper arm being journaled upon the pintle 13, depending from the head, and its lower arm being provided at its inner end with a cap 14, which fits snugly and rotatably upon a reduced portion 15, at the upper end of the sleeve 5, and is provided with an interior annular gear 16, which meshes with the pinion at the upper end of the stem 9.

From the above description it will be obvious that the rotation of the operating handle will cause an increased speed of the bit-socket, and by providing the interior gear, which is carried by the handle, with double the number of teeth of the spur-pinion, said bit-socket will be caused to rotate at double the speed of the operating handle, this being the preferred ratio and being that indicated in the drawings.

17 represents the gage having a horizontal arm 18 and a vertical stem 19, which is preferably polished exteriorly and is fitted snugly and slidably in the bore of the tubular rod 3, at the outer end of the supporting frame, said stem and tubular rod being feathered to prevent independent rotation thereof. Pivotaly connected to the inner end of the horizontal arm of the gage is a foot 20, provided with an elongated opening or slot 21 to receive the bit, and having an extension 22, which normally lies in a groove in the under side of the arm 18. Connected to the outer extremity of this extension of the foot is a graduated arm 23, fitting in a guide-opening 24, in the arm 18, and secured at any desired adjustment by means of a set-screw 24^a. This arm may be jointed, as shown at 25, to allow the upper portion thereof, when above the plane of the upper side of the arm 18, to fold down parallel with said arm, in order that it may be out of the way when the gage is retracted or arranged in its folded position.

By means of the graduated arm any desired inclination of the foot may be attained to suit the desired inclination of the bit to the surface, and by resting the foot upon the surface the brace is steadied and held in the desired position and the gage is repressed as the boring proceeds. A locking spring 26 is arranged at the lower end of the tubular portion of the supporting frame to engage a notch

27 in the stem 19 when the gage is elevated to its folded position.

The operation of the above described tool will be readily understood from the foregoing description, and it will be obvious that by means of the gage which I have provided, the operator may set the parts to bore perpendicularly to the surface, or at any desired angle, the exact position of the brace being indicated positively, thus securing an accuracy which is unattainable without mechanical assistance.

It will be understood that the arm 23, which I have described as graduated, may be provided with a scale indicating degrees or angles, as shown in the drawings, but this is not essential to the operativeness of my invention and may be omitted.

Various changes in the form, proportion, and the minor details of construction may be resorted to without departing from the principle or sacrificing any of the advantages of this invention.

Having described my invention, what I claim is—

1. The combination with a bit brace having a supporting frame, of a gage mounted to slide upon said frame and having a horizontal arm, a foot pivotally connected to said arm, and means for adjusting the foot angularly with relation to the arm, substantially as specified.

2. The combination with a bit brace having a supporting frame, of a gage provided with a stem fitting slidably in a tubular rod forming one member of said frame and having a foot

adapted to bear upon the surface adjacent to the bit, said stem being adapted to slide freely into said tubular rod as the boring proceeds, substantially as specified.

3. The combination with a bit brace having a supporting frame, of a gage provided with a stem which is fitted slidably in a tubular rod carried by said frame, and feathered in said rod to prevent independent relative rotation of the parts and having a foot to bear upon a surface adjacent to the bit, whereby as the boring proceeds said stem recedes into the tubular rod, and a locking device to secure the gage in its folded position, substantially as specified.

4. The combination with a bit brace having a supporting frame, of a gage mounted to slide on said frame and having a pivoted foot, an arm connected to an extension of said foot, and a set-screw to engage the arm and lock the foot at any desired angular adjustment, substantially as specified.

5. The combination with a bit brace having a supporting frame, of a gage mounted to slide on said frame and having a pivotal foot, a graduated arm connected to said foot and operating in a suitable guide, and means to lock the graduated arm at any desired adjustment, substantially as specified.

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

JOHN F. ALLEY.

Witnesses:

S. N. TAYLOR,
F. C. HABERN.