

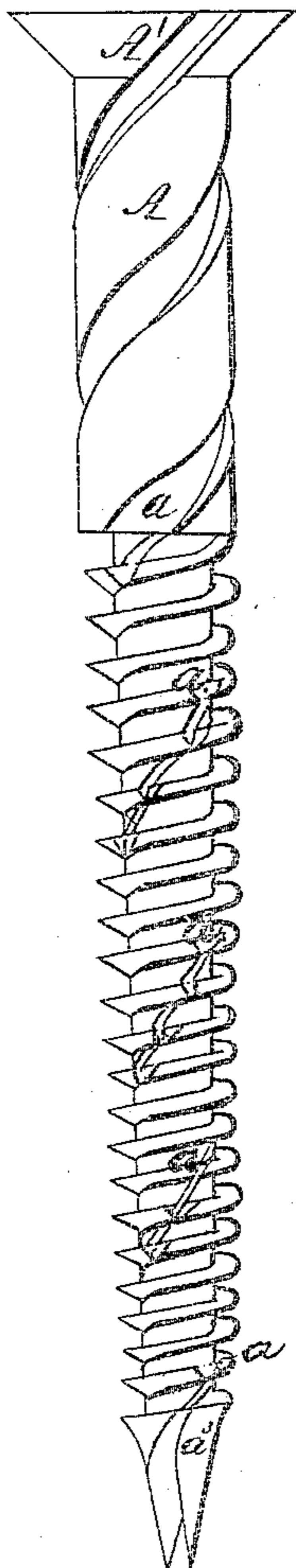
W. G. A. Bonwill.

Wood Screw.

N^o 45,133.

Patented Nov. 22, 1864.

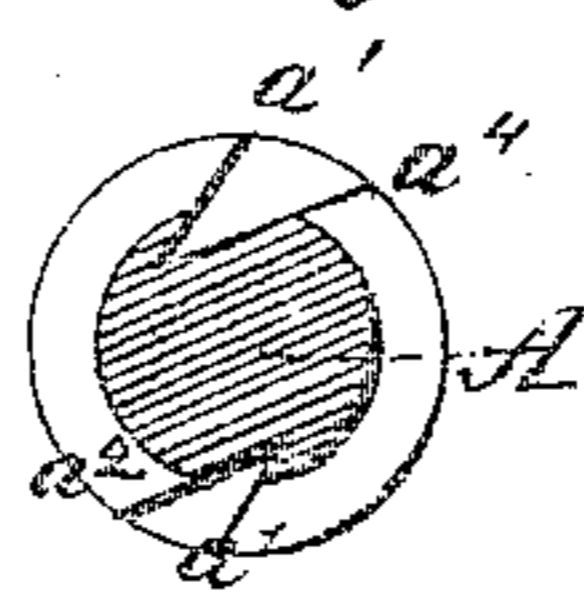
Fig. 1.



Witnesses.

*C. D. Smith
D. Scheith*

Fig. 2.



Inventor.

W. G. A. Bonwill

*By *Munn & Co.* Attys.*

UNITED STATES PATENT OFFICE.

WILLIAM G. A. BONWILL, OF DOVER, DELAWARE.

IMPROVEMENT IN SCREWS.

Specification forming part of Letters Patent No. 45,133, dated November 22, 1864.

To all whom it may concern:

Be it known that I, WILLIAM G. A. BONWILL, of Dover, in the county of Kent and State of Delaware, have invented a new and useful Improvement in Wood-Screws; and I do hereby declare the following to be a full and exact description of the same, reference being had to the accompanying drawings, making part of this specification, in which—

Figure 1 is a side elevation, on an enlarged scale, of my improved screw. Fig. 2 is a transverse section of the same.

Similar letters of reference indicate corresponding parts in the several figures.

My present invention relates to a wood-screw constructed in such manner that it may be inserted into or through the most delicate article without splitting or otherwise injuring the same; and it is also adapted to be driven with less force, and to remain in a more firm and secure condition within the wood without first boring a hole therefor.

In order that others skilled in the art to which my invention appertains may be enabled to fully understand and use the same, I will proceed to describe it.

In the accompanying drawings, A may represent the body of a screw, and A' the head thereof. In the threads of the screw A, I form one or more grooves, *a*, each of which at the side *a'* may be straight or radial, or slightly undercut, and the opposite side, *a''*, of the groove is beveled, the chief object in thus forming the screw being to prevent the splitting of the wood into which it is driven without first boring a hole to receive it. The groove *a* may be spiral or diagonal or parallel with the axis of the screw, and it may extend longitudinally the entire length of the body A, including that portion near the head which is not threaded, so as to provide free egress for the cuttings or particles made by the boring action of the screw. At the point *a*³ the groove *a* can be cut either level with the body of the screw or below it, so that the base will present a cutting-edge as well as the thread. By extending the groove *a* to the extreme point, as shown in Fig. 3, the screw, after receiving a very slight tap, will enter the wood as well as a gimlet-pointed screw, although the difference between the point of the gimlet and that exhibited in Fig. 3 is readily distinguishable. Near the point of the screw I

make the grooves parallel with the axis, whereas the gimlet-point has a spiral groove which causes the particles of wood to be pressed or forced asunder by the point when tapped with a hammer, and thus said gimlet-point is ineffectual, in that it does not take a firm hold at the beginning of its insertion.

I have found by experiment that by making the grooves at the point parallel with the axis the screw, when slightly tapped, will take a firm, wedge-like hold upon the wood, and when turned penetrate the same with an effect or action similar to that of an auger or of a bit, cutting its way as it enters. The edge *a'* of the groove *a* may be either coincident with the general exterior of the screw, or, if desired, it may be made somewhat prominent.

The principle upon which this screw is constructed, and its superiority, as compared with those hitherto devised, will be readily perceived. A screw as constructed by me bores or cuts its way smoothly as fast as it penetrates, thus obviating resistance to its penetration, and adapting it to be driven by the application of but very little force, whereas the ordinary screw has great resistance offered to its penetration, for the reason that the threads, instead of cutting the wood, merely press the fibers or particles into a smaller compass, even when an aperture has been previously made for the reception of the screw by an awl or other instrument. As it requires less force to drive the screw when provided with a groove or grooves in the manner explained, it is in nowise more liable to break or bend than the screw in common use, and if in using my improved screw an aperture be first made for its reception, it will provide a more effectual attaching medium, inasmuch as the wood preserves its normal condition and the threads therein cut to the full depth.

Either a straight, diagonal, or spiral groove, will serve to prevent the wood from splitting, and adapt the screw to enter with less resistance, &c.; but in practice I prefer to form the groove in such manner that the breaks in the thread will not be directly beneath or in line with each other.

By extending the grooves into the body of the screw throughout its full length there will be more certainty of the holes being cleanly cut the full thickness or diameter of the screw

and freer egress given to the cuttings while the screw is penetrating, so that in very large screws this provision will effectually prevent both splitting and choking. The groove may also be extended into the beveled side of the head of the screw, (for the purpose of adapting it to countersink itself,) as shown in Fig. 1.

I am aware that it has before been proposed to form screws with longitudinal or spiral grooves intersecting the thread; but,

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

As a new article of manufacture, a wood-screw constructed as herein specified.

WM. G. A. BONWILL.

Witnesses:

HENRY W. DRAPER,
ALBERT COWGILL.