(No Model.)

S. E. WATERMAN & F. H. KELLEY.

SURFACE GAGE.

No. 273,784. Patented Mar. 13, 1883.

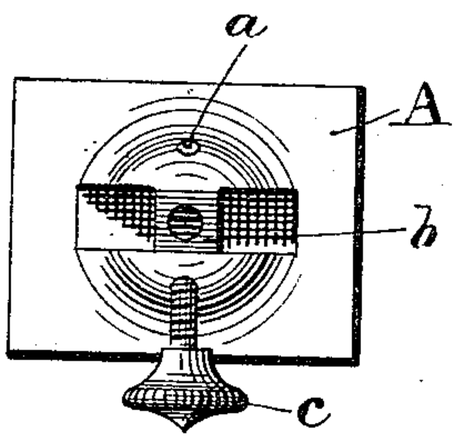

FIG. 1.

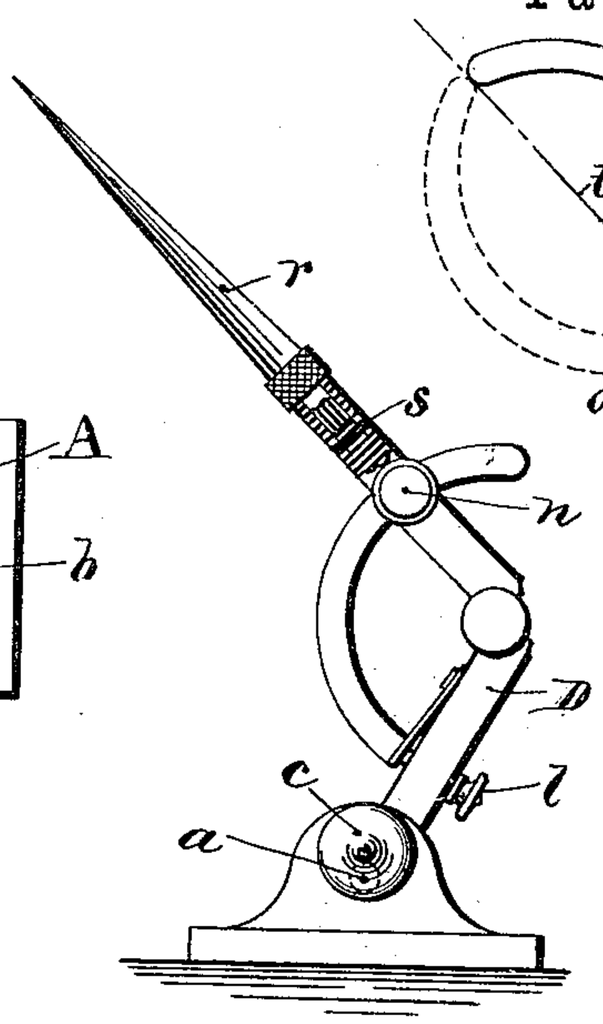

FIG. 2.

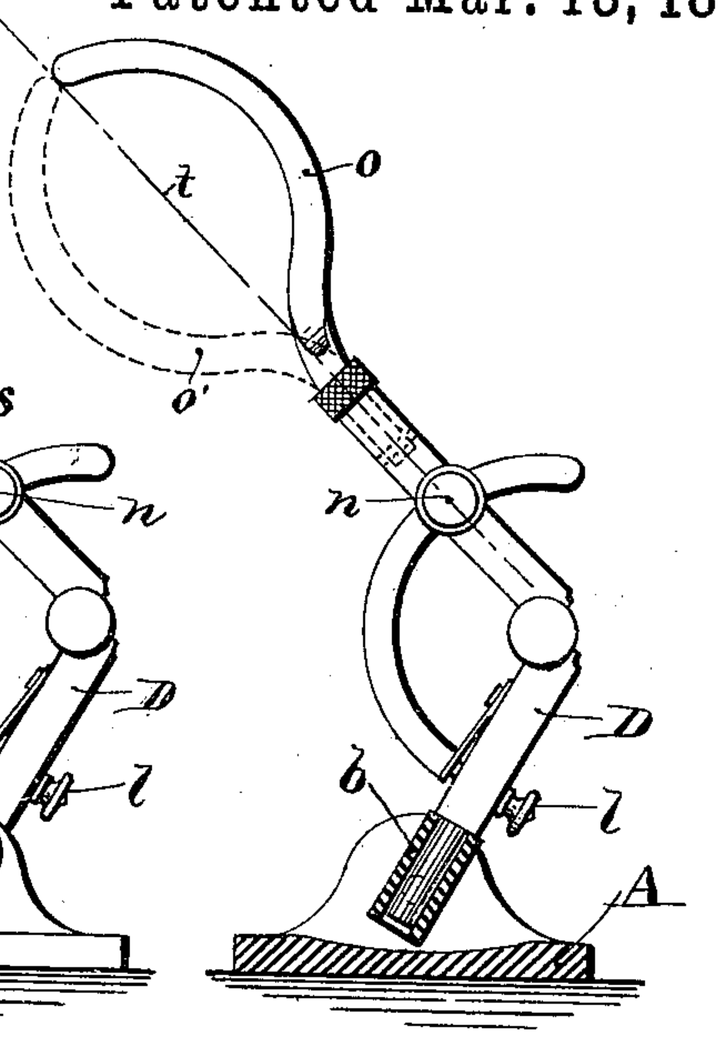

FIG. 3.

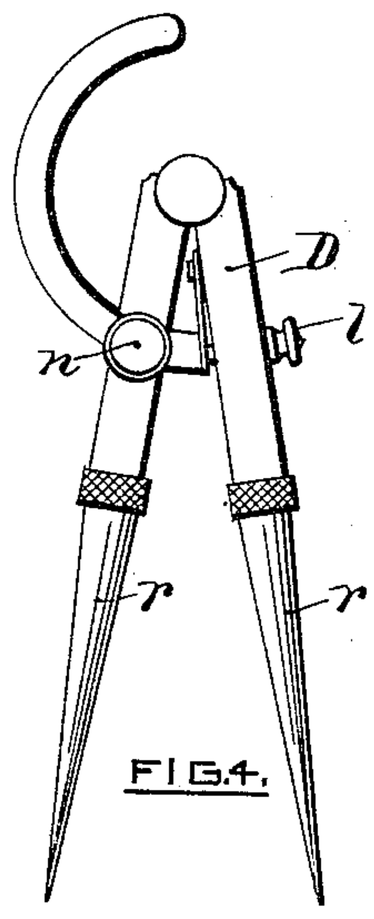

FIG. 4.

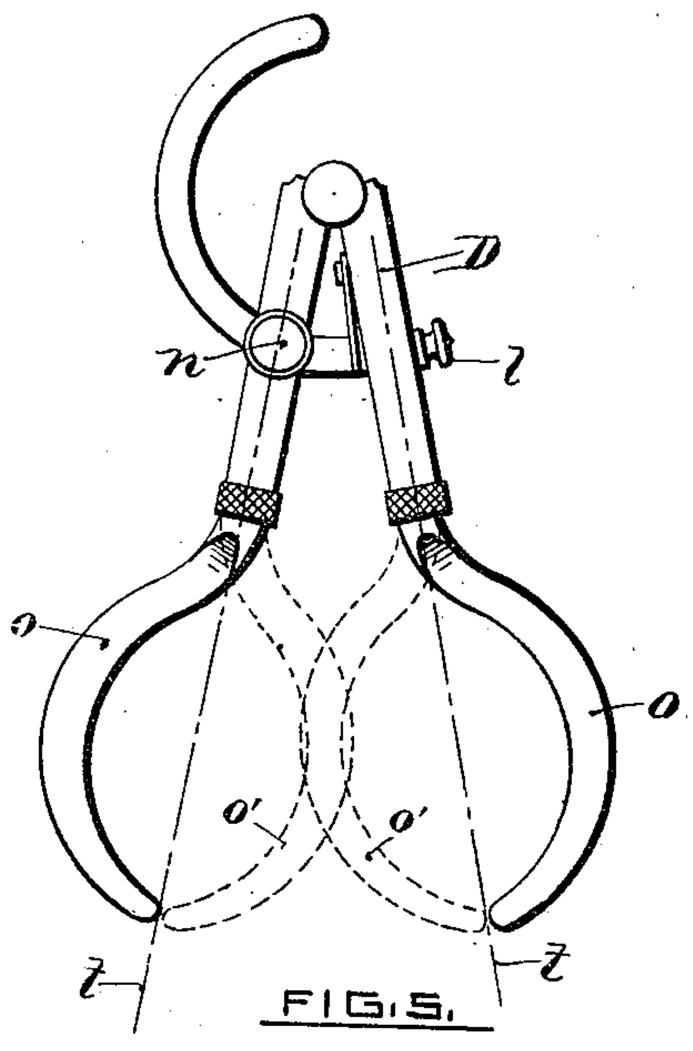

FIG. 5.

FIG. 6.

WITNESSES.

James E. Arnold

Benj. Arnold

INVENTORS.

Stinchy E Waterman

Fred H Kelley

UNITED STATES PATENT OFFICE.

STUKELY E. WATERMAN AND FREDERICK H. KELLEY, OF PAWTUCKET, RHODE ISLAND.

SURFACE-GAGE.

SPECIFICATION forming part of Letters Patent No. 273,784, dated March 13, 1883.

Application filed December 1, 1882. (No model.)

To all whom it may concern:

Be it known that we, STUKELY E. WATERMAN and FREDERICK H. KELLEY, of Pawtucket, in the county of Providence and State of Rhode Island, have invented certain new and useful Improvements in Surface-Gages, of which the following is a full and correct description, reference being had to the accompanying drawings, forming a part of this specification.

This invention consists mainly of an improved base-block for a surface-gage, and in a novel combination of a compass and caliper arrangement with the base, whereby a combination-tool is produced.

In the drawings, Figure 1 shows a top view of the base-block. Fig. 2 is a side view of the same, with a compass-body and one point. Fig. 3 shows the same with a curved leg instead of the compass-point. Fig. 4 shows the compasses separate. Fig. 5 represents the same compass-body with the curved legs. Fig. 6 is an extension-bar.

The base A is made with a projection on upper surface, through which a vertical slot is cut to receive the block *b*, which is nicely fitted into the slot, and held by the pin *a*, that passes through one side of the projection and forms a pivot for the block to swing on. A milled screw, *c*, is inserted in the other side of the projection, a little above the pin *a*, for the purpose of holding the block *b* in any desired position. A hole is made lengthwise through the block *b* to receive the shank of the compact body D, from which the point has been removed. (See Fig. 2.)

D is the body or upper part of a pair of compasses or calipers, into which the points *r r* are fitted, and also the curved legs *o o*. A pin, *s*, is put through the shank near the bottom of the hole or socket, (see Fig. 2, where it is shown in section,) and slots are cut in the ends of the curved legs to receive the pin when the legs are put in and hold them in the same plane as that of the compass-body. The block *b* is furnished with a pin, *e*, in like manner, and a slot is cut in the shank that is put in it to make sure that the plane of motion of the compass-body D shall agree with that of the block *b*. Another view of these slots is shown in the ends of the extension-bar *j*, Fig. 6, one end of which is fitted into the block *b* and the other into the shank of the body D, and it is also fitted to be used between the points *r r* or legs *o o* and the compass-body. The two screws *n l* of the compass-body afford all the facilities for quick and nice adjustment of the gage that a pair of compasses possesses, to which is added the swinging motion of the block *b*, raising and throwing forward the compass-body. The compass-point, as in Fig. 2, forms a surface-gage for side work, and by substituting one of the curved legs, as in Fig. 3, an upper and under surface-gage is made for work that the point will not do as well. The outer ends of the curved legs are made in circles, the peripheries of which are in an exact line, *t*, with the axis of that part inserted in the compass-shank, so that when turned one-half around, as shown by the dotted lines *o'*, Figs. 3 and 5, they will indicate the same diameter for an inside as for an outside measurement, and will also show the same distance up from the base as an upper or under surface gage when one leg is used for that purpose. A hole is made in the block *b* on one side, into which the point of the screw *c* enters when the block is plumb, so that it may be used to hold a level attached to a socket fitted to the hole in the block.

Having thus described our improvements, what we claim as our invention, and desire to secure by Letters Patent, is—

1. The combination of the base A, slotted as described, with the block *b*, pin *a*, and screw *c*, substantially as and for the purpose set forth.

2. The combination of the base A and block *b* with the body of a pair of compasses and the straight legs *r r* or curved legs *o o*, substantially as described, and for the purpose set forth.

3. The joints of the legs *o o* with the body D, and of that body with the block *b*, made with pins and slots, substantially as shown and described, and for the purpose set forth.

STUKELY E. WATERMAN.
FRED. H. KELLEY.

Witnesses:
JAMES E. ARNOLD,
BENJ. ARNOLD.