

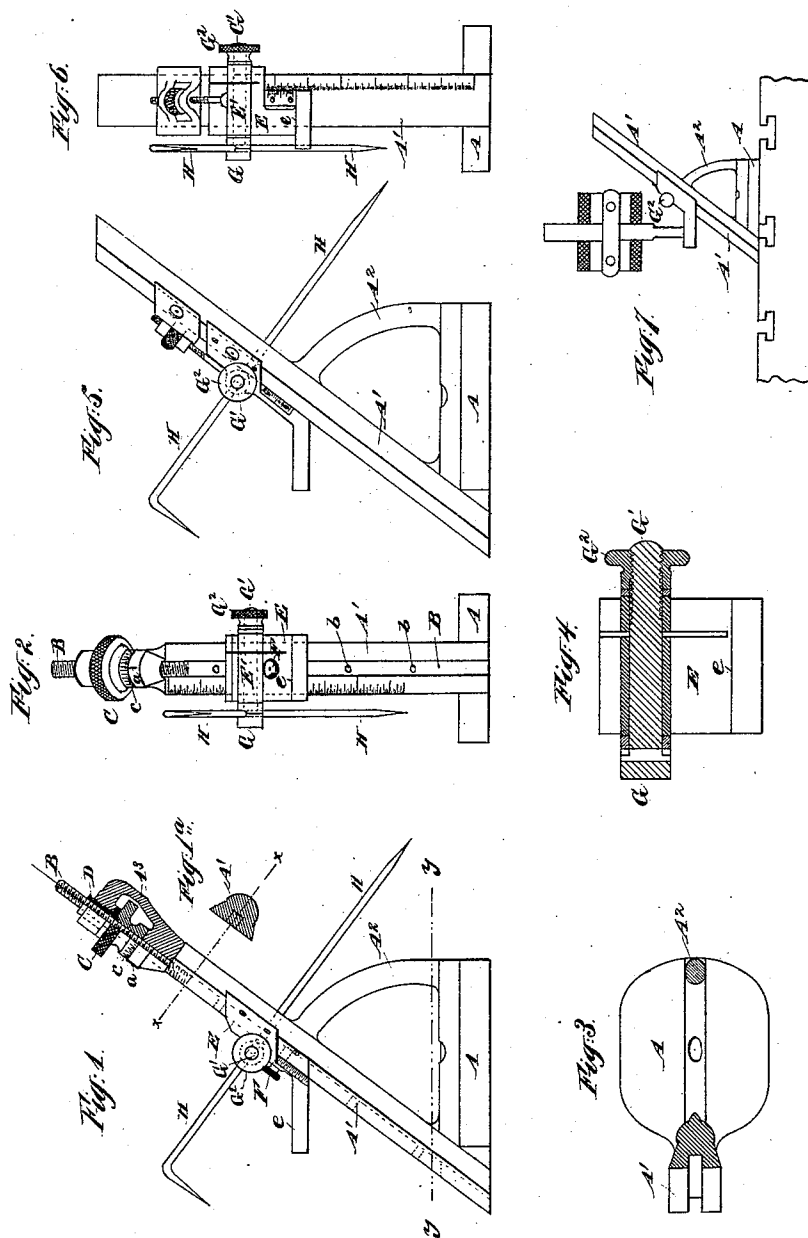
(No Model.)

B. E. D. STAFFORD & F. E. WHIPPLE.

SURFACE AND PLANER GAGE.

No. 352,584.

Patented Nov. 16, 1886.



Witnesses:
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UNITED STATES PATENT OFFICE.

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SURFACE AND PLANER GAGE.

SPECIFICATION forming part of Letters Patent No. 352,584, dated November 16, 1886.

Application filed March 9, 1886. Serial No. 194,636. (No model.)

To all whom it may concern:

Be it known that we, BENJAMIN E. D. STAFFORD and FENNER E. WHIPPLE, of Hopedale, Worcester county, State of Massachusetts, have invented a certain new and Improved Surface and Planer Gage, of which the following is a specification.

Many attempts have been heretofore made to supply delicately-adjustable means for gaging the height of the tool in a metal planer, and for gaging other measurements, as required. The increasing refinement of workmanship in heavy as well as light machinery increases the necessity for such a device, which can be rapidly brought to the required position and hold its adjustment with great force. Our improved instrument supplies the want very completely.

Our gage may be made cheaply, and yet realize much of the advantages. We will describe it as complete, adapted for being adjusted with a high degree of nicety. It is an instrument of moderate size, having a substantial body of cast iron, steel, or other strong and rigid material, adapted to stand on a planer table or other surface, and to hold an adjustable parallel surface at any desired height above. The parallel surface slides up and down on an inclined graduated way, allowance being made in the graduations for the inclination, so that inches, centimeters, or other desired units of measure and their fractions may be conveniently and accurately measured. We provide convenient means for rapidly shifting the gage to large extents, and for very delicately adjusting it to small extents. All the parts are strong and adapted to the exigencies of shop-work.

The following is a description of what we consider the best means of carrying out the invention.

The accompanying drawings form a part of this specification.

Figure 1 is a side elevation, partly in vertical section. Fig. 1^a is a cross-section on the line *x x*, Fig. 1. Fig. 2 is a front elevation. Fig. 3 is a horizontal section on the line *yy* in Fig. 1. Fig. 4 shows a portion on a larger scale. It is a front elevation, partly in vertical section. The remaining figures show modifications. Fig. 5 is a side elevation, and Fig. 6 a corresponding front elevation. Fig. 7 is a side

elevation showing the device in its simplest form. In this figure we have shown a planer-head with the tool in the act of being adjusted at the proper height by resting on our gage. 55

Similar letters of reference indicate corresponding parts in all the figures where they occur.

A is the base or body, certain portions being designated, when necessary, by additional marks, as A' A², &c. The entire body may be a single casting of steel or iron. Its bottom surface is nicely finished, to rest truly on a planer-table. 60

A' is an inclined way having its front and sides finished in the form shown in Fig. 1^a. 65 The back may be left rough.

A² is a brace, and A³ a head.

Extending up and down the inclined way A' is a deep groove of rectangular section which receives a nicely-fitting steel bar, B, which is of corresponding section through the principal part of its length, but is formed in an accurate screw at and near its upper end, and extended through sufficient plainly-bored holes 75 in the head.

C is a milled thumb-nut threaded on B, fitting in the jaw or cavity provided in the head.

D is a bushing threaded in the head A³, and adapted to be adjusted against the nut C to hold the latter steadily, with liberty to be turned with moderate resistance.

E is our adjustable slide, fitting fairly on the front face of the inclined way A', and engaging 85 over the edge on each side.

F is a removable plug, which may be screw-threaded, if desired. It is inserted through the slide E and caused to engage in any one of a series of holes, *b*, provided in the bar B. To shift the slide up and down to a large extent, it is necessary simply to draw out the plug F and move the slide E downward or upward, and again insert the plug so as to engage in another hole, *b*. 95

The slide E presents a surface, *e*, preferably of hardened steel, which is finished exactly parallel to the bottom of the instrument. This surface is that which it is desired to adjust. On this rests the cutting-edge of the planer-tool when it is being adjusted for working at any given level. The slide E, with its 100

surface *e*, may be adjusted upward or downward with delicacy by turning the milled thumb-nut C in one direction or the other, this nut, with the screw-threaded portion of B, constituting a micrometer adjustment.

The inclined way A' is graduated on the face, the graduations being of proper length to allow for the inclination of the way and to indicate directly the height of the surface *e* above the planer-bed. The pitch of the screw-threaded end of D should correspond with these graduations. The nut C carries graduations *c*. The adjacent surface of the head A³ carries a mark, *a*. The relations of these parts indicate the exact position of the nut, and consequently of the surface *e*.

In the modification shown in Figs. 5 and 6 a vernier is made by the relations of the series of graduations on the inclined way A' with a series of graduations on the slide E. A vernier may be also established in this manner on the forms shown in Figs. 1, 2, 3, and 4.

The slide E is partially divided, as indicated in Fig. 4. A ridge or boss, E', extending across the front of this slide, is bored horizontally, and receives a screw-threaded bolt, G', formed in one with a clamp, G, and operated by a milled thumb-nut, G². The slide E may be moved easily up and down on the way A' so long as the clamp G G' is relaxed, but whenever it is adjusted in the desired position the thumb-nut G², being tightly turned, springs the nearly-divided slide E together, and, by tightly embracing the way A', clamps it immovably thereon. The clamp G is also adapted to receive and hold a scriber, H. When the nut G² is loosened, the clamp G relaxes its hold on the scriber, and the latter may be adjusted in various positions. On tightening the nut G² it is firmly held. The partially-divided condition of the slide E makes it yield a little, giving it an elastic character, which facilitates its firm holding of the scriber, and also its firm holding of itself in position on the way A'. The bent end of the latter is useful simply to determine the height or thickness of any part of the mechanism on which it is applied. The other, the straight-pointed end, may be used to scribe a mark at any height on a casting or other piece

of work, to be treated. This use of a scriber has been long known and practiced.

Our invention offers superior facilities for adjusting its height.

Modifications may be made in the forms and proportions without departing from the principle or sacrificing the advantages of the invention.

We have already described the vernier on the way A'. In Fig. 7, the bar B and the micrometer adjustment therefor are dispensed with. To operate the invention in this form, it is necessary simply to slacken the thumb-nut G² and drive the slide E downward or upward to small extents by rapping it with a wrench or the like.

Parts of the invention can be used without the whole. We can, as indicated in Fig. 7, dispense with the refinement for adjusting the slide E, and move it up and down by percussion. We prefer the whole, as shown in Figs. 1, 2, 3, and 4.

We claim as our invention—

1. The body A, having the graduated way A', in combination with the slide E, having a surface, *e*, parallel to the base of A, and clamping means G G', arranged to serve as herein specified.

2. The threaded bar B, having holes *b*, and nut C, in combination with the plug F, slide E, having the surface *e*, and body A, having the way A' and head A³, arranged for joint operation, as herein specified.

3. The gage described, having the slide E, with surface *e*, adjustable on the inclined way A', micrometer-nut C, perforated bar B, means, as the plug F, for engaging E with B, and vernier graduations for aiding to determine the exact adjustment, all combined and arranged for joint operation, as herein specified.

In testimony whereof we have hereunto set our hands at Milford, Massachusetts, this 4th day of March, 1886, in the presence of two subscribing witnesses.

B. E. D. STAFFORD.
F. E. WHIPPLE.

Witnesses:

LEON E. BRIGHAM,
WILLIAM A. HUNEY.