(No Model.) 2 Sheets—Sheet 1.

E. F. DWYER.

PATTERN GRADING DEVICE.

No. 438,147. Patented Oct. 14, 1890.

Fig. 1.

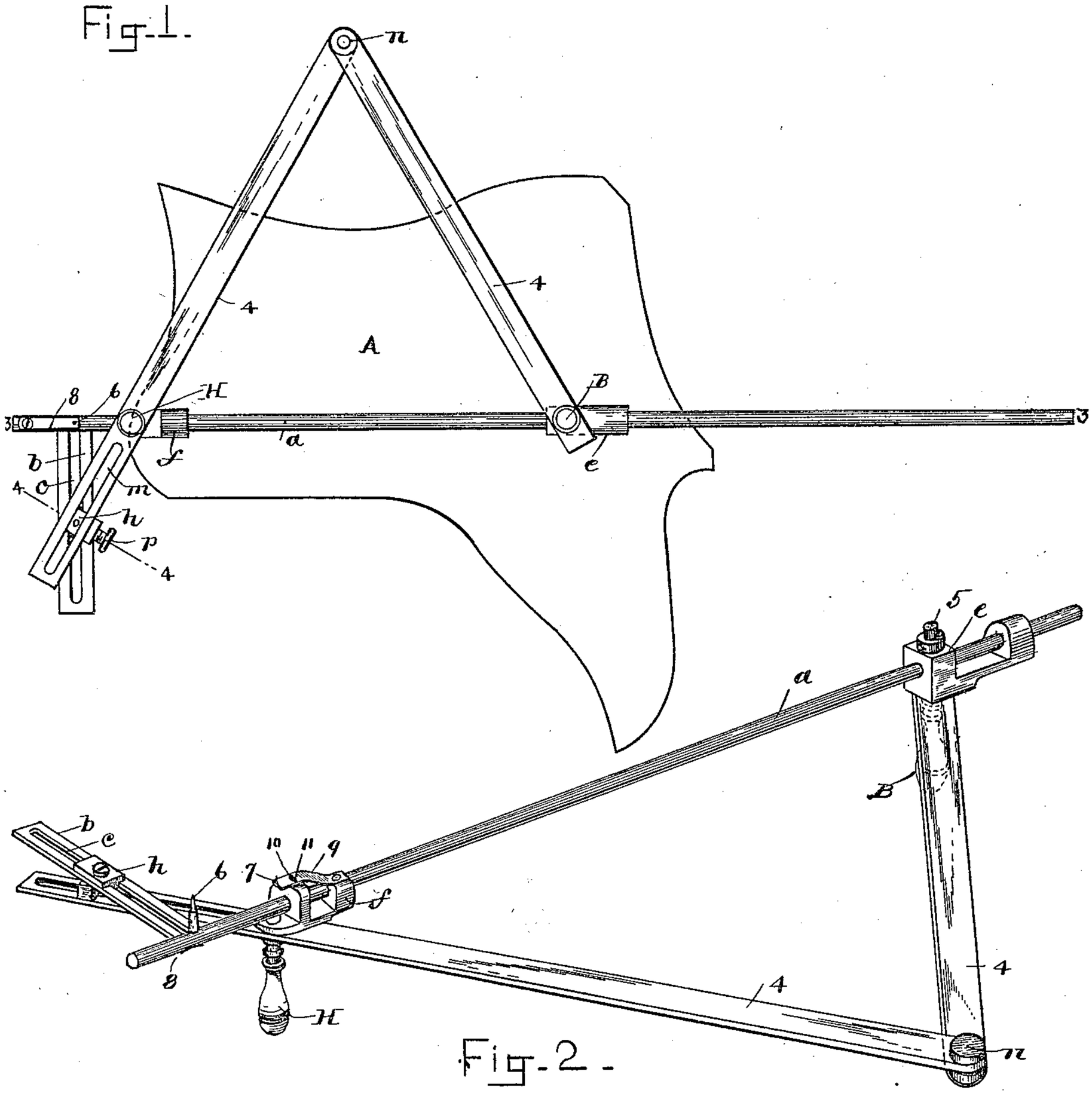

Fig. 2.

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(No Model.) 2 Sheets—Sheet 2.

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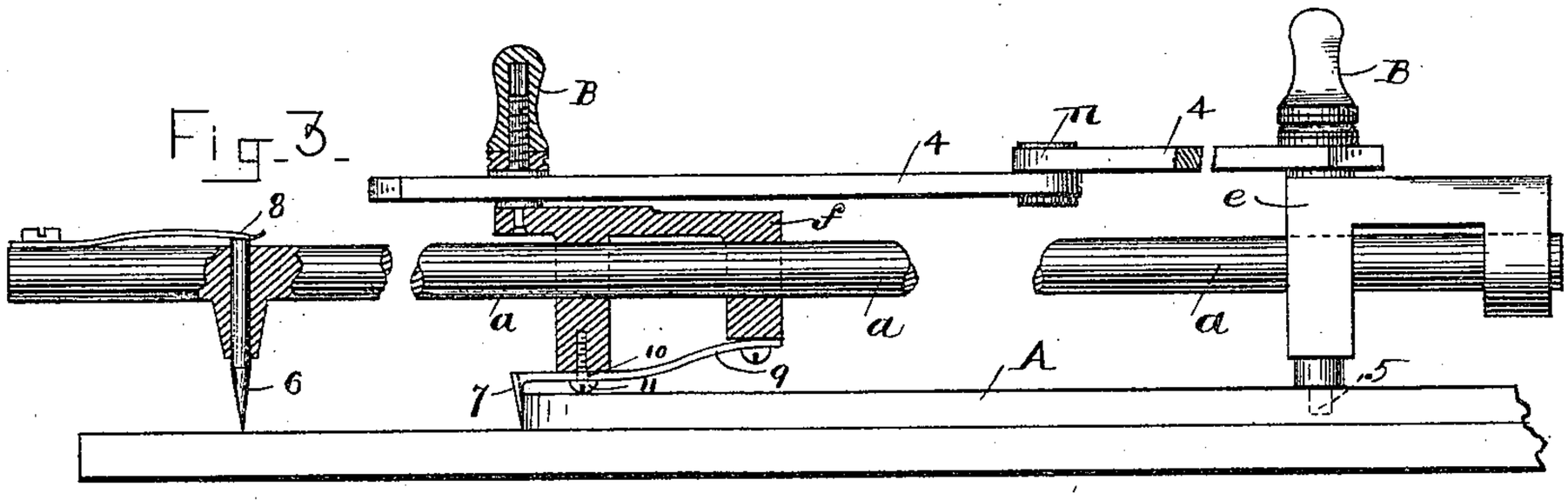
PATTERN GRADING DEVICE.

No. 438,147. Patented Oct. 14, 1890.

Fig. 3.



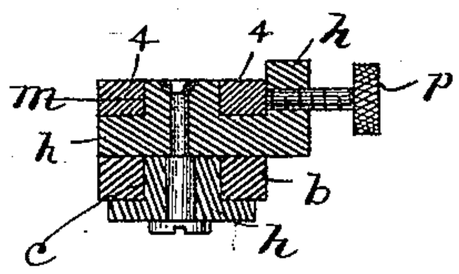


Fig. 4.

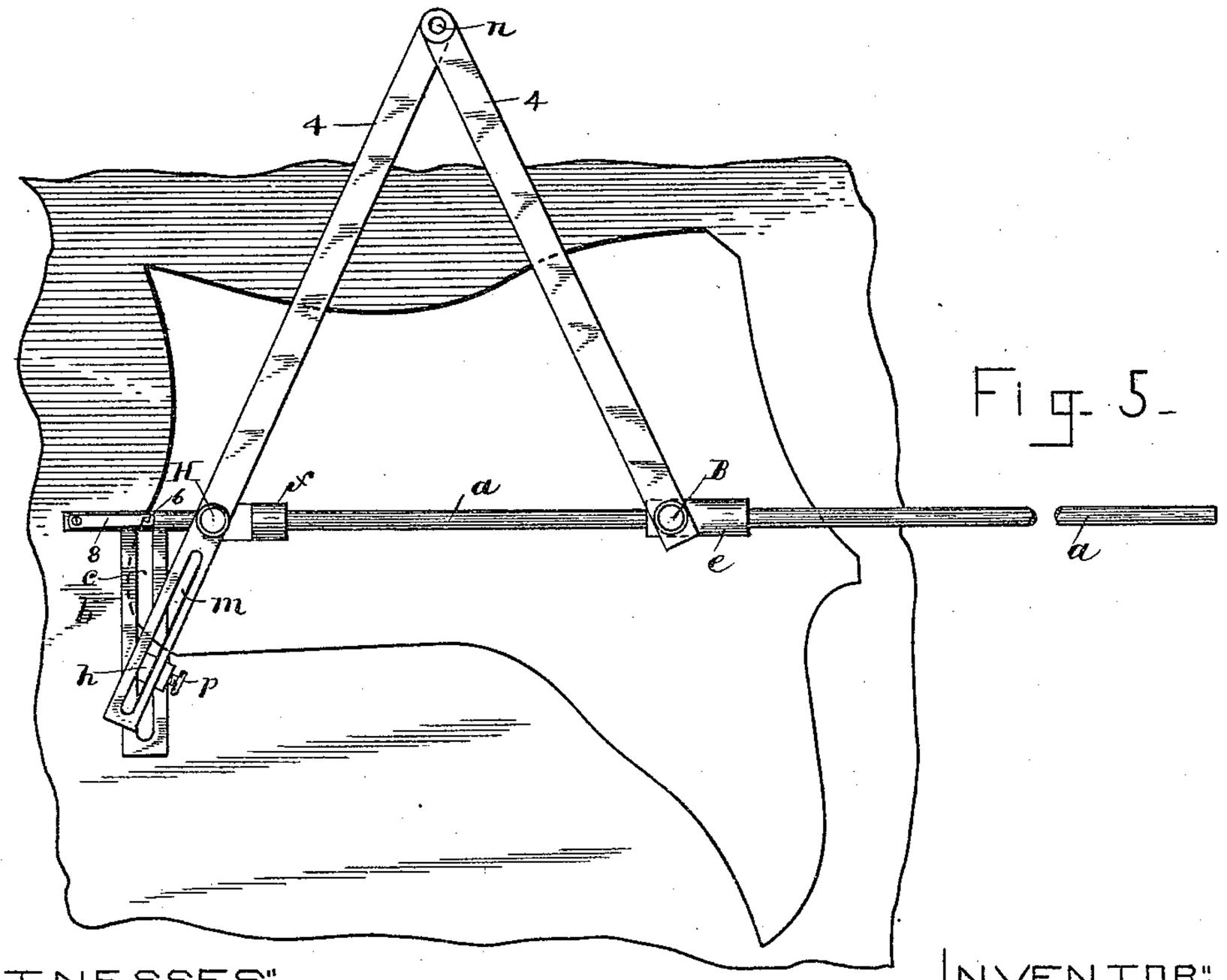


Fig. 5.

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UNITED STATES PATENT OFFICE.

EDWARD F. DWYER, OF LYNN, MASSACHUSETTS.

PATTERN-GRADING DEVICE.

SPECIFICATION forming part of Letters Patent No. 438,147, dated October 14, 1890.

Application filed May 3, 1889. Serial No. 309,423. (No model.)

To all whom it may concern:

Be it known that I, EDWARD F. DWYER, of Lynn, in the county of Essex and Commonwealth of Massachusetts, have invented a certain new and Improved Pattern-Grading Device, of which the following, taken in connection with the accompanying drawings, is a specification.

This invention relates to a mechanism for grading patterns, and more specifically to that class of said mechanisms whereby a pattern of a given size and form is employed or taken as a unit and other patterns described therefrom which differ in size proportionally.

In the drawings, Figure 1 is a plan view of my invention represented in connection with a shoe-pattern. Fig. 2 is a perspective of the device inverted. Fig. 3 is a section on line 3 3 of Fig. 1. Fig. 4 is a section on line 4 4 of Fig. 1. Fig. 5 is a plan representing a modified use of the invention.

In carrying out my invention I employ the rod *a*, which is provided with an offset *b*, having a channel-groove *c*. On the rod *a* are slides *e f*, and in the channel *c* is arranged the slide *h*. The said slides are connected by an intermediate mechanism composed of the bars 4 4. To that end said bars are connected by swivel-joint *n* and have swivel-joint connections, as shown, with the slides *e f*. Connection is made with the slide *h* by introducing a projection of the slide into a groove *m*, formed in the bar. A set-screw *p* operates to hold the slide fixed in the bar and permits of ready adjustment of the slide relatively to the traveler-point, as hereinafter specified.

The slide *e* is provided with a downwardly-projecting point 5, and in the rod *a* is fixed a point 6. Said point 6 consists of a metallic pin set into a suitable socket formed in the rod and is pressed downward by a spring 8. It is designed as the marking-point, and instead of the metallic pin a pencil-marker may be employed whenever the work to be done requires that kind of a marker. Intermediate the point 5 and the marker-point 6 is a point 7, which in operation travels about the edge face of the pattern, and to that purpose it is called the "traveler-point." It is connected with the slide *f*. To that end a lever 9 has its rear end swivel-jointed to the slide, as shown. The lever 9 is further provided with an oblong hole 10, through which passes a screw 11, the object of this arrangement being to permit a slight lateral movement of the lever, as and for purposes to be hereinafter described.

I now proceed to describe the operation of this my invention, and to that end I take a pattern, as A, Fig. 1. It is my purpose to construct a series of patterns which shall differ proportionally from the pattern A. The apparatus is positioned over the pattern with the point 5 bearing thereupon at the proper place. The traveler-point 7 is made to bear (see Fig. 3) against the marginal edge face of the pattern, while the marker 6 extends forward to bear upon the material from which the intended pattern is to be formed and projects downward so as to describe a mark thereupon when the instrument is moved. The operator places one hand upon the handle B and the other hand upon the handle H. He then steadies and holds the handle B so as to retain the point 5 fixed in its predetermined position on the pattern, and with the handle H he moves the instrument, thereby carrying the traveler-point 7 entirely round the pattern A, during which operation the traveler-point is made to bear against the marginal edge face of the pattern, and the marker 6 is allowed to bear upon the material and describe a new pattern. The marking-point is made to approach and recede from the traveler-point proportionally as the traveler-point approaches and recedes from the fixed point 5, so that the intended pattern differs proportionally from the pattern A. The size of the intended pattern relatively to the pattern A is predetermined by the location of marking-point 6 relatively to the traveler-point 7, and this relation is changeable to obtain different sizes by an obvious adjustment of the slide *h*.

In some cases it may be desired to grade from a large pattern downward to smaller sizes. In such case the material out of which the pattern, as A, is taken being preserved as a pattern, the marker 6 is now employed as a traveler, while the traveler 7 is employed as a marker. The point 5 is fixed in the blank space previously occupied by the pattern A and the marker 7 is made to trace the edges of the skeleton pattern left by the removal of the pattern A.

To obtain absolute accuracy of measure-

ment, it is necessary to allow for space occupied by the material composing traveler-point 7. To this end I allow lateral movement of the point equal to one-half its diameter in cross-section. To obtain this I employ a swivel-lever 9, which is provided with the slot 10, as shown. The point 7 is concaved on one side to permit the point 6 an approach to its center.

I claim—

1. In combination, the point 5, the slide *f*, carrying the point 7, said slide being movable toward and from the point 5, the support for said slide *f*, jointed connections 4 between the slide *f* and point 5, a marking-point 6, movable toward and from the slide *f* and point 7, and the means for operating the point 6 from the bar 4, substantially as described.

2. In combination, the slides *e* and *f*, carrying the points 5 and 7, respectively, the sliding rod *a* for supporting said slides, the bars 4 4, jointed together and connected with the slides, a marking-point 6 on the rod *a*, and an operating connection between the rod *a* and the bar 4, substantially as described.

3. In combination, a slide *f*, carrying a point 7, a sliding rod *a*, passing through the point-slide *f* and carrying a point 6, a fixed point 5, and an operating connection from the rod *a* and slide *f* to the fixed point 5, subtantially as described.

4. In combination, the bar *a*, the slides *e* and *f*, carrying points 5 and 7 on said bar, jointed bars 4 4, connecting said slides, one of said bars being slotted, a point 6 on the bar *a*, and a slotted arm *b* on the bar *a*, connected with the slotted portion of the bar 4 by an adjustable slide *h*, substantially as described.

5. In combination, the bar *a*, the slides *e* and *f*, carrying points 5 and 7 on said bar, jointed bars 4 4, connecting said slides, a point 6 on the bar *a*, and an arm *h* on the bar *a*, pivotally connected with one of the bars 4, substantially as described.

6. In combination, in the described device, comprising a fixed point 5, a marking-point 6, and a pattern-point 7, with supporting and operating means, an arm 9 for the point 7, pivotally supported to allow lateral play, and the means for limiting said lateral movement, substantially as described.

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