

Q. S. BACKUS.
Standard Gages.

No. 157,779.

Patented Dec. 15, 1874.

Fig: 1.

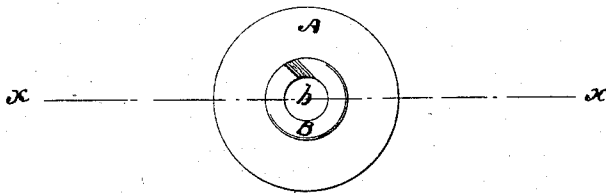


Fig: 2.

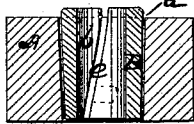


Fig: 3.



Witnesses:

W. Lovell
H. C. Mattenberg.

Inventor:

Quimby S. Backus
per W. H. Simpson
Atty.

UNITED STATES PATENT OFFICE.

QUIMBY S. BACKUS, OF WINCHENDON, MASSACHUSETTS.

IMPROVEMENT IN STANDARD-GAGES.

Specification forming part of Letters Patent No. **157,779**, dated December 15, 1874; application filed June 16, 1874.

To all whom it may concern:

Be it known that I, QUIMBY S. BACKUS, of Winchendon, in the county of Worcester and State of Massachusetts, have invented a new and Improved Standard-Gage; and that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, making a part of this specification.

This invention is in the nature of an improvement in the construction of standard-gages; and the invention consists in a standard-gage constructed with a perforated tapering and adjustable steel plug fitted into a corresponding tapering orifice within a steel block, substantially as hereinafter described.

The great difficulty experienced in making standard-gages is well known by all mechanics. In fact, there are but few mechanics or tool-makers sufficiently skilled to construct standard-gages, so extremely nice and accurate must the fitting be, and the expense incurred in getting up a set of standard-gages is a drawback, in many instances, to employing them. Hence it is that the several parts of a given machine are not necessarily interchangeable, so that repairs are at times troublesome and expensive. To obviate these difficulties, and to enable manufacturers to construct their gages at a reasonable cost, and at the same time preserve the utmost accuracy under all circumstances, is the chief aim of my invention, as will be seen from the following description and accompanying drawings, wherein—

Figure 1 is a plan view of my standard-gage; Fig. 2 a cross-section of same; and Fig. 3, view of gage-pin.

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

A is a block of steel, of cylindrical or other shape desired. Through the block A is formed a tapering hole, *a*. This hole is formed exactly cylindrical, and of a true taper from end to end. Accurately fitting into the hole *a* is a plug or bushing, B. The exterior surface of this plug or bushing is made to fit with great accuracy the interior of the tapered hole *a*, so that said plug or bushing will bear equally within the hole *a*. Through the center of the

plug or bushing B is accurately formed a cylindrical hole, *b*. This last-mentioned hole is formed with great exactitude, and is of the exact size it is intended the gage shall represent. Through one side of the plug or bushing B is made a diagonal cut, *e*. This cut passes entirely through one side of the plug or bushing, as shown in Fig. 2.

My gage being constructed substantially as above described, its operation is as follows:

The plug or bushing B is placed within the tapering hole *a* of the block A, within which it accurately fits, as above mentioned, the upper end of the plug or bushing projecting slightly above the upper surface of the block. The device it is intended to gage—as, for instance, a spindle or journal—is inserted into the cylindrical hole *b*, and its proper bearing within said hole gages the spindle or journal, or determines how nearly it approaches the standard size, which the hole *b* accurately represents. This operation is the same as in ordinary standard-gages; but if, when by constant use or otherwise, the gaging-hole *b* shall become enlarged, and thereby depart from the standard, and its usefulness destroyed, a standard-gage pin, C, is inserted into the gage-hole *b*, and a slight tap on the projecting end of the plug or bushing B forces this plug or bushing into the conical hole *a* of the block A, and contracts the plug or bushing tightly and truly around the gage-pin C, which is then withdrawn, and the gage-hole *b* is restored to its standard size. This adjusting feature of the plug or bushing is accomplished by means of the tapering form of the hole *a*, and the outer surface of the plug or bushing B and cut *e*, so that as the plug or bushing is driven inward it contracts equally around its surface, and the cut *e* permits the contraction of the gage-hole *b*, which is in this way contracted uniformly throughout. The cut *e* being diagonal, it cannot wear or injuriously cut the gage-pin C or the device that is to be gaged within the hole *b*. The accurate fitting of the plug or bushing B within the hole *a* of the block A is sufficient to retain the plug within the block without danger of its being disturbed; but, if desired, the upper end of the plug may be countersunk below the surface of the block, and a screw-nut fitted into the block, bearing onto

the upper end of the plug, so that as the nut is turned the plug is forced into the taper hole, and retained in position by the friction together with the screw-nut; or any other device may be adopted for adjusting or retaining the plug or bushing within the taper hole in the block.

From the foregoing description of the construction and operation of my standard-gage it will be seen that a standard-gage may be constructed of the utmost accuracy, by almost any good mechanic, at a great saving of cost, and without the tedious labor of working down the fitting parts by friction, as standard-gages are ordinarily made, for, by my method of constructing standard-gages, the entire gage may be constructed of soft steel, and therefore readily worked, and afterward hardened, since any departure from the standard caused by the action of heat during the process of hardening can readily be corrected by the adjusting feature, and in the manner before described. This,

it will be perceived, is a very great advantage, since a standard-gage, as ordinarily constructed, must of necessity be made of the hardest steel in the first instance, for, if hardened after it is fully completed, the heat would destroy its standard.

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

1. A standard-gage constructed with an adjustable plug or bushing, substantially as and for the purpose described.

2. In a standard-gage, the combination of a conical opening with a conical perforated and cut bushing, substantially as and for the purpose described.

QUIMBY S. BACKUS.

Witnesses:

H. L. WATTENBERG,
G. M. PLYMPTON.