

No. 679,599.

Patented July 30, 1901.

J. CAMPBELL.

MANUFACTURE OF ETCHED METAL RULES.

(Application filed Oct. 9, 1900.)

(No Model.)

Fig. 1.

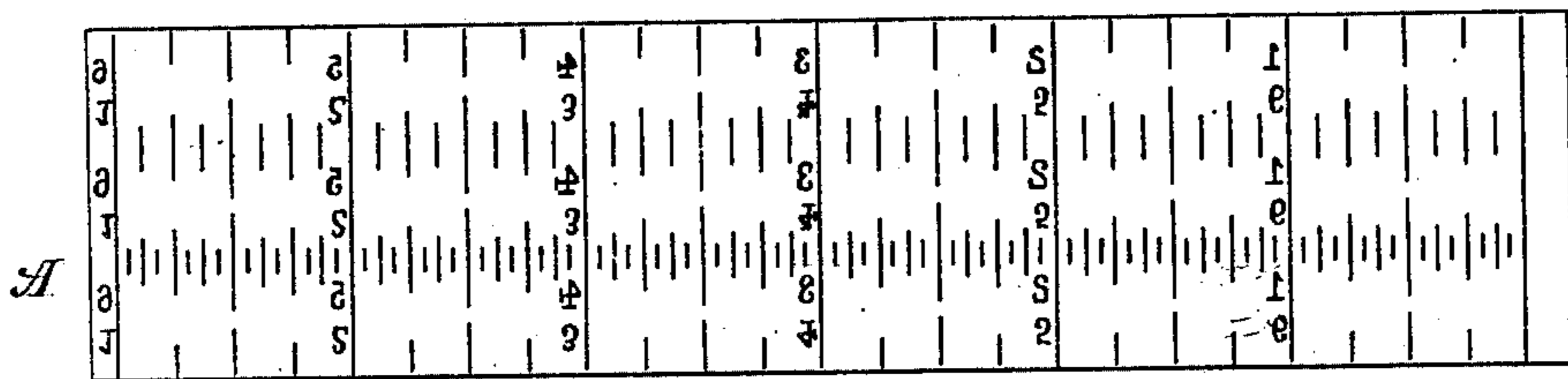


Fig. 2.

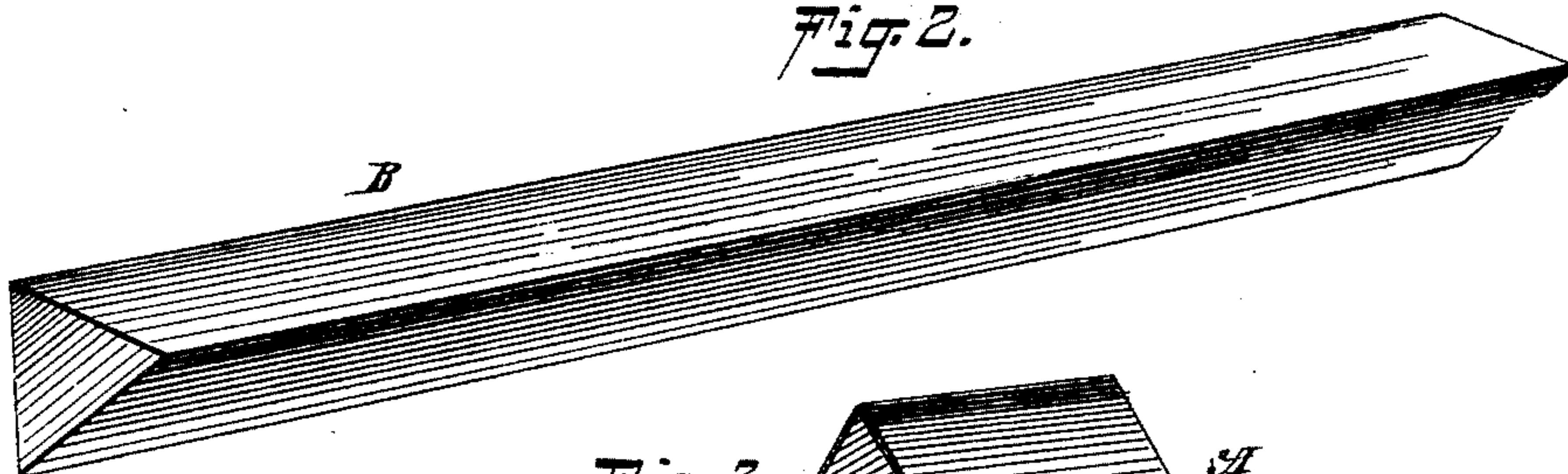


Fig. 3.

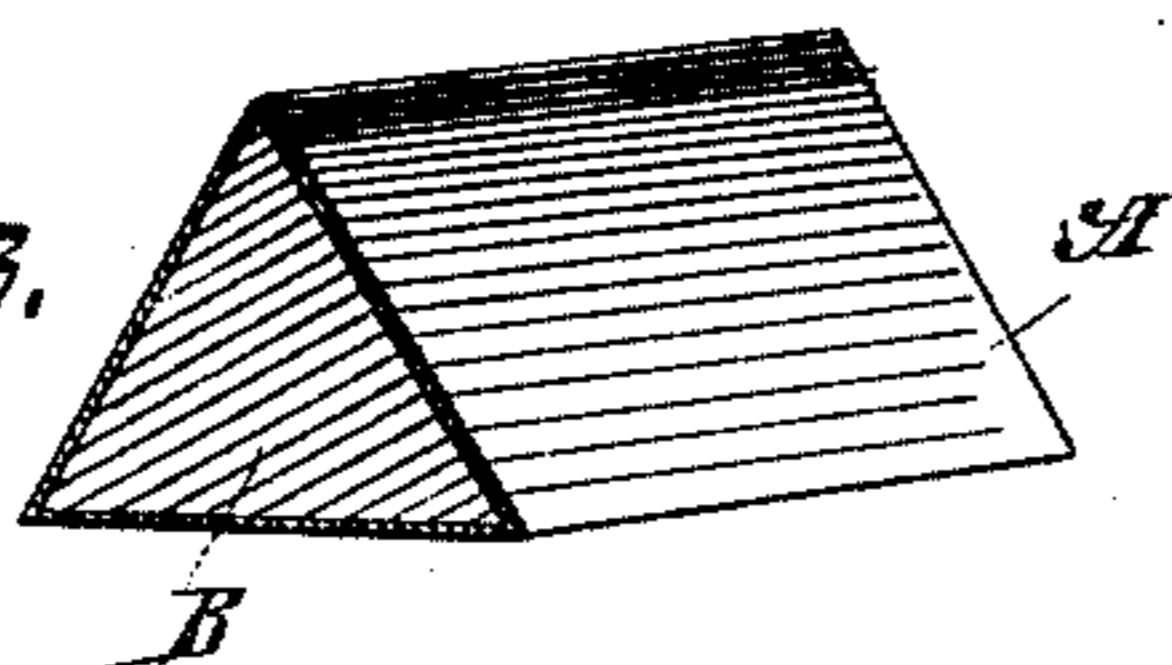


Fig. 4.

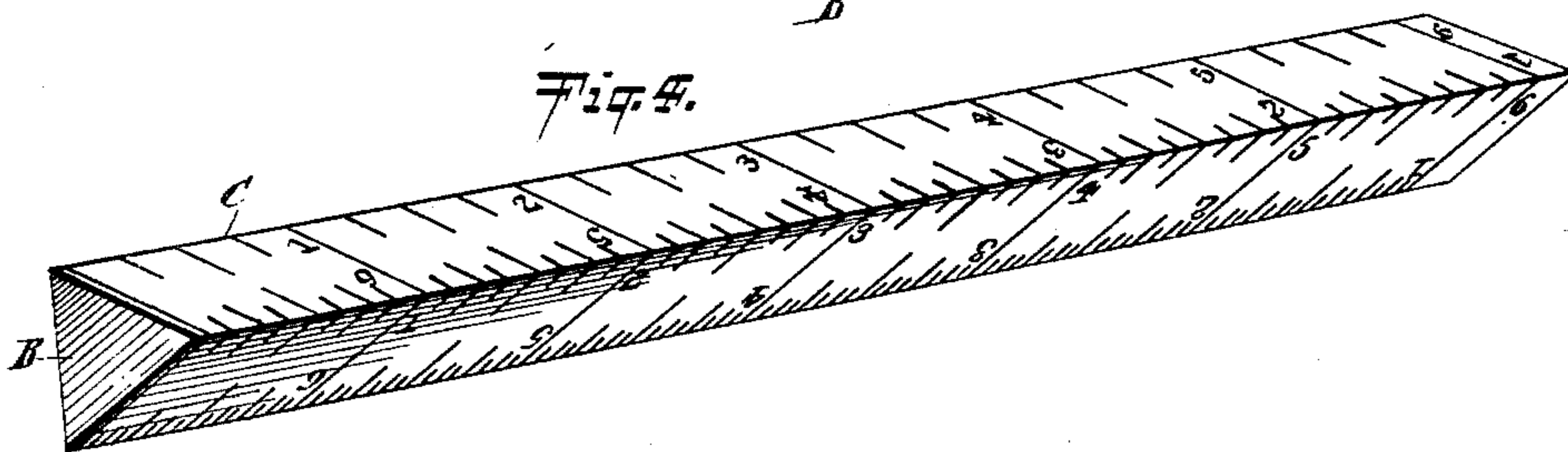


Fig. 5.

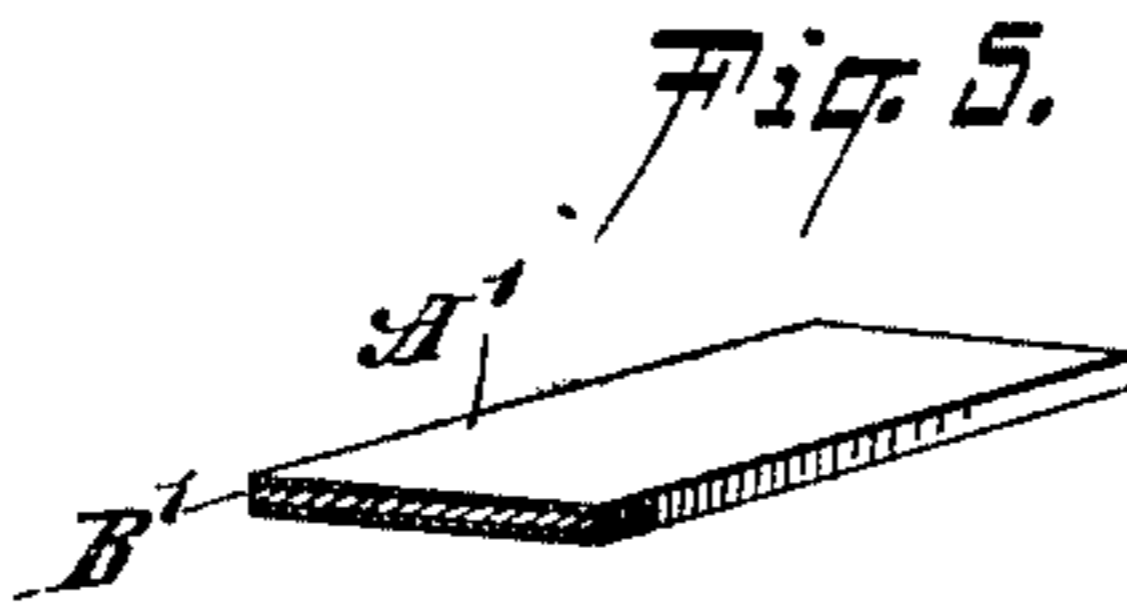
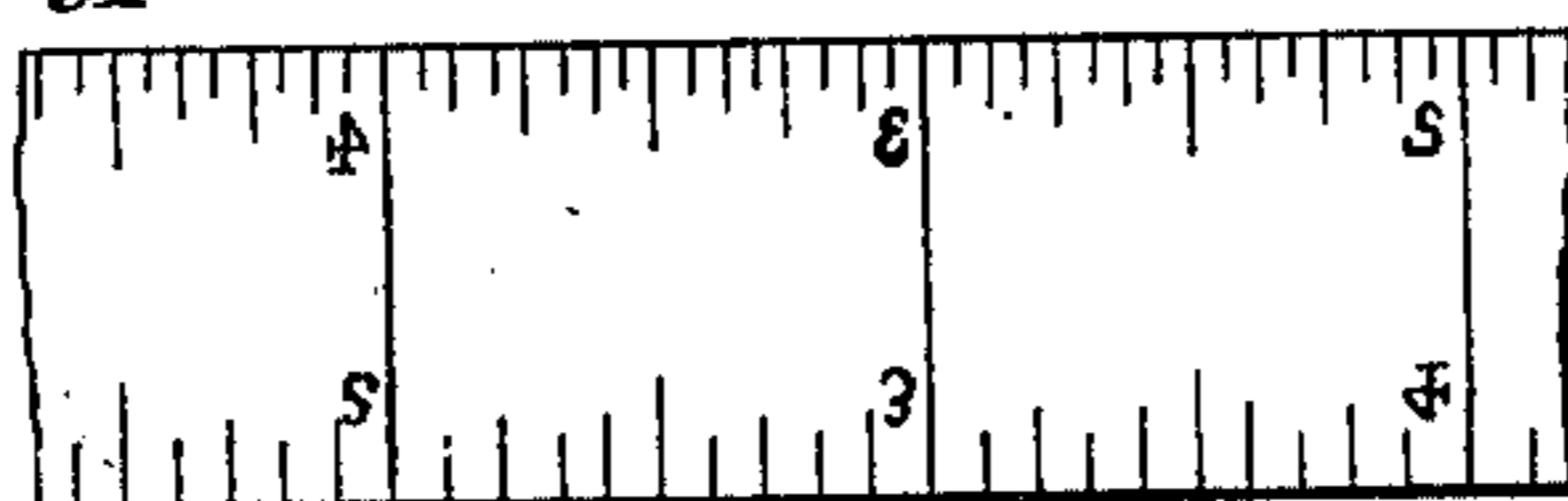


Fig. 6.



WITNESSES:

William P. Gaebel  
Rev. J. Koster

INVENTOR  
John Campbell.

BY   
ATTORNEYS

# UNITED STATES PATENT OFFICE.

JOHN CAMPBELL, OF MATTEAWAN, NEW YORK, ASSIGNOR OF THREE-FOURTHS TO EMORY LAKIN TOMPKINS, OF FISHKILL LANDING, NEW YORK.

## MANUFACTURE OF ETCHED METAL RULES.

SPECIFICATION forming part of Letters Patent No. 679,599, dated July 30, 1901.

Application filed October 9, 1900. Serial No. 32,513. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN CAMPBELL, a citizen of the United States, and a resident of Matteawan, in the county of Dutchess and State of New York, have invented certain new and useful Improvements in the Manufacture of Etched Metal Rules, of which the following is a full, clear, and exact description.

The invention relates to measuring instruments; and its object is to provide certain new and useful improvements in the manufacture of etched metal rules whereby the rules can be cheaply manufactured and an accurate registration of the graduation-marks on adjacent sides of the rules is obtained.

The invention consists of novel features and parts and combinations of the same, as will be fully described hereinafter and then pointed out in the claims.

A practical embodiment of the invention is represented in the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the views.

Figure 1 is a plan view of the transfer-strip for forming the graduations on a triangular rule. Fig. 2 is a perspective view of the metal blank for the triangular rule. Fig. 3 is a sectional perspective view of the metal blank with the transfer-strip applied thereto. Fig. 4 is a perspective view of the finished triangular rule. Fig. 5 is a sectional perspective view of the blank for a flat rule with the transfer-strip applied thereto, and Fig. 6 is a plan view of the transfer-strip for forming the graduations on the flat rule.

In the manufacture of etched metal rules as heretofore practiced it was customary to use separate transfer-strips for the several sides of the rule-blank, and as the final graduations to be produced on the sides of the rule required accurate register it was necessary to exercise considerable skill on the part of the operator to place the transfer-strips in proper position on the blank to insure registering of the graduations on the several sides of the rule. Thus in order to produce the desired result it was not only necessary to employ skilled labor, but it required considerable time by a skilled workman to place the trans-

fer-strips in proper position, and in practice the result was not satisfactory, as the transfer-strips were liable to shift, with inaccurate registration as the result.

With my improvement, presently to be described in detail, no skilled labor whatever is required to place the transfer-strips in proper position, and at the same time accurate registration of the graduations on all sides of the rule is insured.

As shown in Fig. 1, the transfer-strip A is preferably made of tissue-paper and formed with a plurality of graduations arranged lengthwise of the strip with their like graduations in alinement transversely of the strip and made of the usual acid-resisting transfer-ink. The strip A is of such dimensions that when placed in position on the triangular metal blank B it covers the sides thereof, the graduations extending adjacent to the edges of the blank. Now in placing the transfer-strip A in position on the blank B it is only necessary for a workman to start with one edge of the strip on one corner of the blank B and then place the strip first upon one side of the blank, then over the next corner upon the adjacent side, and finally upon the third side, so that the strip is creased along the corners of the blank, the strip, however, being properly stretched and fitted upon the sides of the metal blank. When this has been done, the tissue-paper is moistened in the usual manner and the acid-resisting ink is transferred to the sides of the metal blank and then the transfer is removed from the metal blank.

On all rules I prefer to cut the strip along the corners of the blank, so that the strip-sections can be readily removed each from its corresponding side of the metal blank. Now it is evident that the graduations appear on the sides of the metal blank in proper register with each other, and the blank thus prepared is now subjected to the usual acid-bath, so that that portion of the metal blank not covered by the acid-resisting ink is etched the desired depth. When this has been done, the rule is removed from the bath and the ink is wiped off, leaving the graduations in relief on the sides of the metal blank.

For making ordinary flat rules the metal blank B' receives a transfer-strip A', having graduations along the outer edges of the strip, as is plainly shown in Fig. 6, so that when the strip is doubled crosswise and placed upon the metal blank B' the graduation-marks of the strip are transferred to the sides of the metal blank B' upon moistening the transfer-strip in the usual manner. When this has been done, the transfer-strip is removed from the metal blank. Then the latter is subjected to the acid-bath, and finally the ink is wiped off the etched blank, as above described.

In ordinary flat rules a single graduation only appears on each side; but in triangular and other rules a plurality of graduations appear on each side of the rule.

From the foregoing it is evident that as the strips A are prepared with the graduation-marks of the several graduations on a single strip and in perfect alinement with each other when these graduation-marks are transferred upon the metal blank they must necessarily be in alinement with each other, and consequently the rule finally produced has the graduation-marks in perfect registration with each other.

As shown and described, the graduations are printed in acid-resisting transfer-ink on the tissue-paper; but it is evident that the graduations may appear in white and the rest of the paper covered with the transfer-ink, so that when such strip is used on the metal blank the graduations appear in bas-relief and the background or remaining portion in relief.

From the foregoing it will be seen that with my improvements described exceedingly accurate work is done, and although I have described the improvement on rules made of a single piece it is evident that rules in sec-

tions or joints are produced in the same manner, the graduation-marks on the transfer-strip for each section or joint being arranged according to the location of the section of the rule.

It is understood that I do not limit myself to any particular way or manner in printing or otherwise producing the transfer-strips, as they may be printed from stone, plates, type, or like means.

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

1. A transfer-strip for forming etched metal rules, having a plurality of transversely-alined graduations, formed of acid-resisting transfer-ink, as set forth.

2. A transfer-strip for forming etched metal rules having a plurality of graduations arranged one alongside the other lengthwise of the strip, the like graduation-marks of the several graduations being in transverse alinement with each other and formed of acid-resisting transfer-ink, as set forth.

3. A transfer-strip for forming etched metal rules, consisting of a strip of paper of a size to envelop the blank from which the rule is to be made, said strip having a plurality of graduations arranged one alongside the other lengthwise of the strip, the like graduation-marks of the several graduations being in transverse alinement with each other and formed of acid-resisting transfer-ink, as set forth.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

JOHN CAMPBELL.

Witnesses:

JOHN L. HALL,  
WM. R. BROWN.