

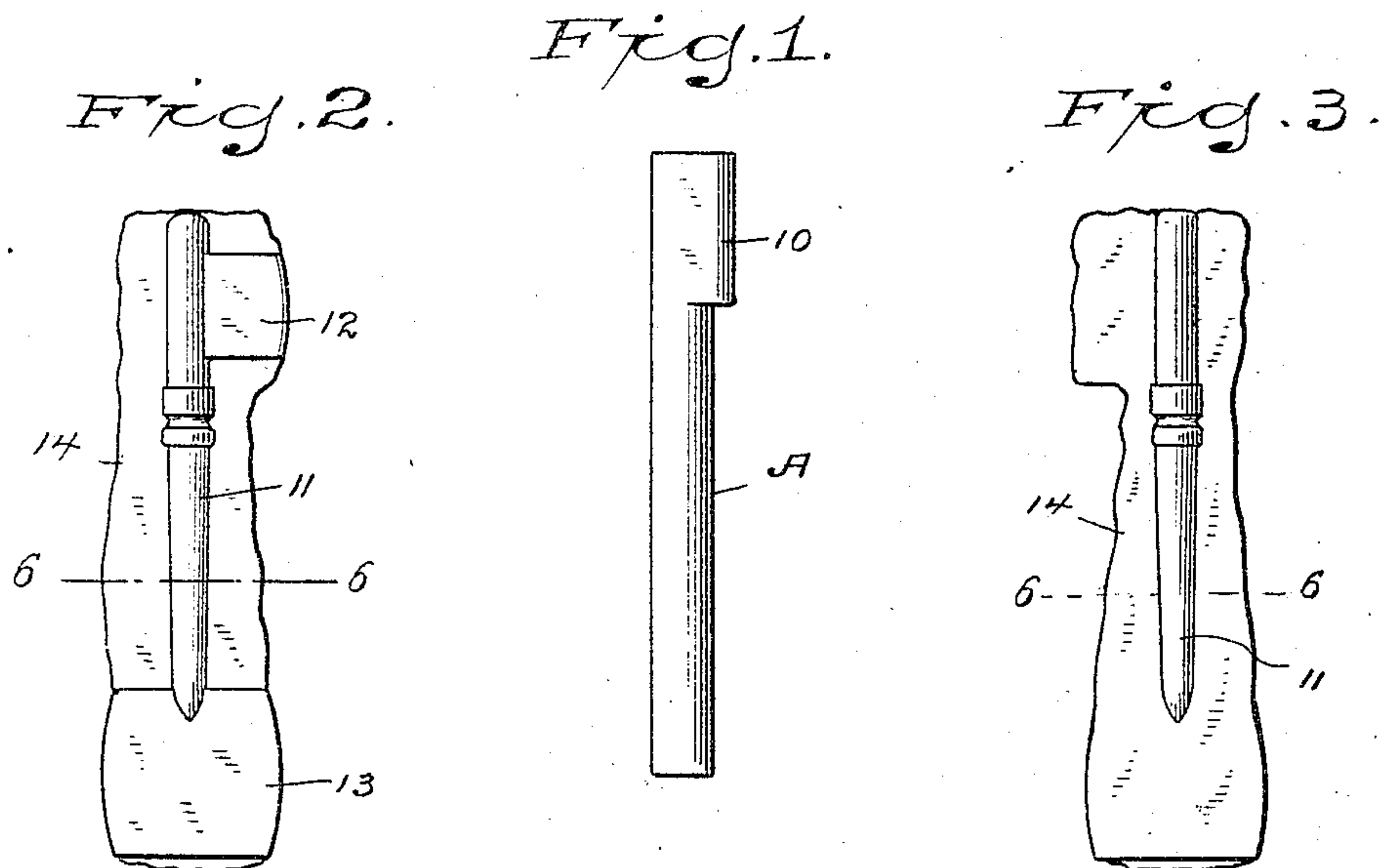
No. 774,242.

PATENTED NOV. 8, 1904.

L. W. GATES.  
METHOD OF MAKING COLD FORGED KEYS.

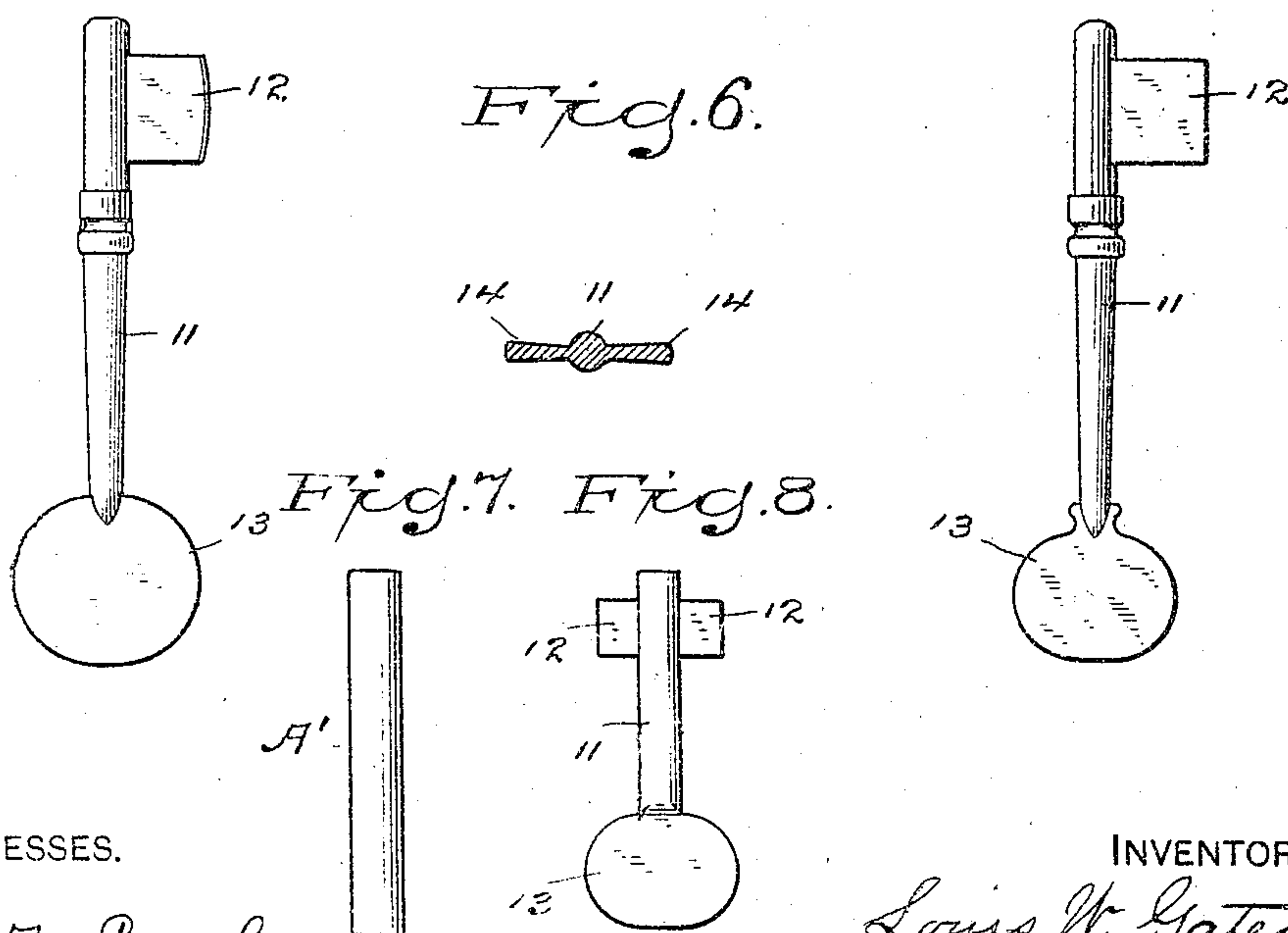
APPLICATION FILED MAR. 12, 1903.

NO MODEL.



*Fig. 4.*

*Fig. 5.*



WITNESSES.

H. A. Lamb,  
J. W. Atherton

INVENTOR.

Louis W. Gates  
By A. M. Webster  
Att'y.

# UNITED STATES PATENT OFFICE.

LOUIS W. GATES, OF WESTHAVEN, CONNECTICUT.

## METHOD OF MAKING COLD-FORGED KEYS.

SPECIFICATION forming part of Letters Patent No. 774,242, dated November 8, 1904.

Application filed March 12, 1903. Serial No. 147,449. (No model.)

*To all whom it may concern:*

Be it known that I, LOUIS W. GATES, a citizen of the United States, residing at Westhaven, county of New Haven, State of Connecticut, have invented a new and useful Method of Making Cold-Forged Keys, of which the following is a specification.

My invention has for its object to provide a method of making keys by cold-forging from blanks of wire.

In the accompanying drawings, forming part of this specification, Figure 1 is an elevation of a blank for making ordinary single-bitted keys. Figs. 2 and 3 are elevations illustrating opposite sides of a blank after the first operation has been performed; Fig. 4, an elevation of the blank after the second operation has been performed; Fig. 5, an elevation after a finishing operation has been performed which leaves a finished key; Fig. 6, a section of the shank and fins on the line 6-6 in Figs. 2 and 3; Fig. 7, an elevation of a blank for making small keys; and Fig. 8 is an elevation corresponding with Fig. 4, showing the blank of Fig. 7 after the first and second operations have been performed upon it in making small double-bitted keys.

A and A' (see Figs. 1 and 7) denote the blank upon which my novel method may be performed. These blanks may be a straight piece of wire, preferably round, of suitable length for the key it is desired to make, as in Fig. 7, or the blank may be upset laterally at one end, as at 10 in Fig. 1, to provide metal for a larger single bit, as in the form of key illustrated in Figs. 2 to 5, inclusive.

In practice the blanks are first passed to dies, the action of which is to finish one side of the key-blank and to partially finish the other side, as described in my application Serial No. 147,448. The result of this first operation will be clearly understood from Figs. 2 and 3. In Fig. 2 the finished side of the blank is shown. It will be readily understood from this figure that in the position shown half of the shank 11, the bit 12, and the bow 13 are formed substantially as in the finished key, this giving the proper outline for the finished key. The other side of the

blank, however, is only partly finished by this operation. (See Fig. 3.) The bit and bow do not appear even in outline and only that portion of the shank which rises above the bit and the bow. The metal of the blank that is not required for the bit, shank, and bow of the finished key is forced outward laterally and appears in the fins 14, (clearly shown in Figs. 2, 3, and 6,) an important feature being that the fins are thinnest at their inner edges—that is, next to the shank—and thicken outward, the metal of the blank being manipulated in this manner so as to permit it to flow outward freely when the blank is subjected to the swaging operation.

The next operation is a trimming operation, which without changing the thickness of the bit or bow entirely removes the fin and all the surplus metal appearing in Figs. 2 and 3, leaving the blanks substantially as in Fig. 4, it being understood, of course, that the special configuration imparted to the blank by any of the different operations is not of the essence of my invention and may be changed to meet the requirements of the trade or the taste or judgment of the manufacturer.

It will be understood that the operation just described while it substantially shapes the blank leaves it unfinished. The third operation is a finishing operation. It rounds up and finishes the shank and reduces the thickness and changes the shape of the bit and bow, if necessary, as will be readily understood by comparing Fig. 5 with Fig. 4.

The trimming and finishing operations are performed by any of the usual tools or devices commonly employed for such work. The important feature or step of my invention consists of the complete outlining of one side of the article to serve as an accurate guide during the use of the trimming or finishing tools or devices, while at the same time providing amply for the flow of the surplus metal that forms the fins.

In the form illustrated in Figs. 7 and 8 the method is precisely the same, the only difference being that the blank is not first prepared by being upset laterally to force metal to one side to provide for a larger bit. In keys hav-



ing small bits, as—for example, in the type of double-bitted keys illustrated in Fig. 8—it is not necessary to upset the blank at all, but one side of the bits is formed by the first  
5 operation just as in the other form. It should be understood, therefore, that the lateral upsetting of one end of the blank is only necessary in making larger-sized single-bitted keys.

It should be noted, furthermore, that my invention is not limited to keys upon which the final operation (illustrated in Fig. 5) has been performed, as key-makers are likely to be called upon by lock-makers to furnish key-blanks in the rough, as in Fig. 4, which the  
10 lock-makers finish themselves.

Having thus described my invention, I claim—

1. The method of making cold-forged key-blanks which consists in taking a length of  
20 wire, compressing the same in dies upon opposite sides to thereby spread the metal laterally and completely outline the bow, bit and

shank of the key on one side, and partially outline the shank on the other side, then cutting away the surplus metal to the outline  
25 formed on one side of the blank, substantially as described.

2. The method of making cold-forged key-blanks which consists in upsetting one end of a length of wire to enlarge the cross-section  
30 thereof, compressing the same on opposite sides in dies to thereby spread the metal laterally and completely outline the bow, bit and shank of the key on one side, and partially  
35 outline the shank on the other side, then cutting away the surplus metal to the outline formed on one side of the blank, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

LOUIS W. GATES.

Witnesses:

AGNES PRESCOTT OGDEN,  
JENNIE LOUISE BROCKETT.