

No. 688,492.

Patented Dec. 10, 1901.

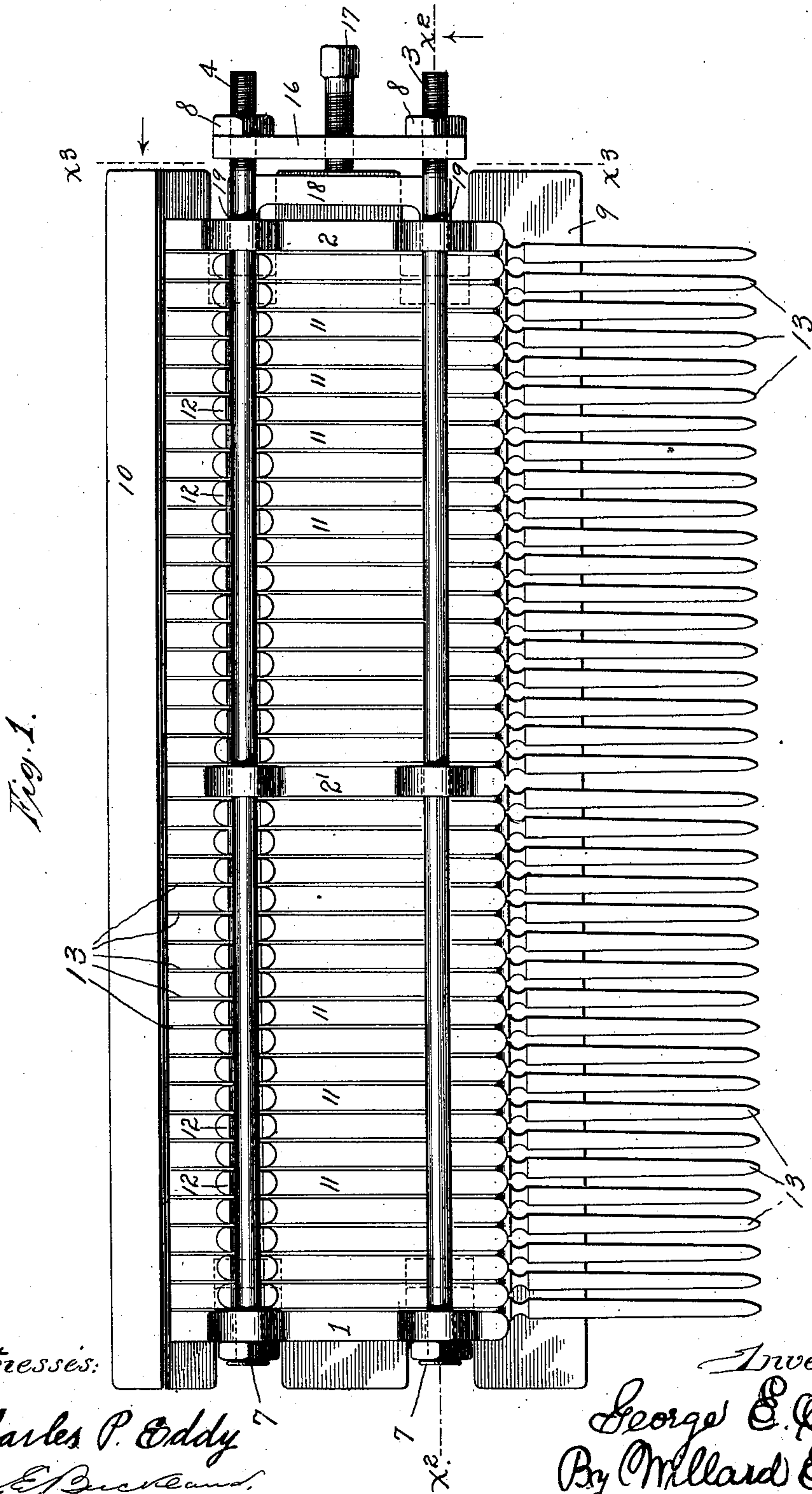
G. E. SMITH.

APPARATUS FOR SMITHING AND DRAW TEMPERING CUTLERY.

(Application filed June 21, 1901.)

(No Model.)

2 Sheets—Sheet 1.



Witnesses:

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C. E. Buckland.

Inventor:

George E. Smith,
By Willard Eddy, Atty.

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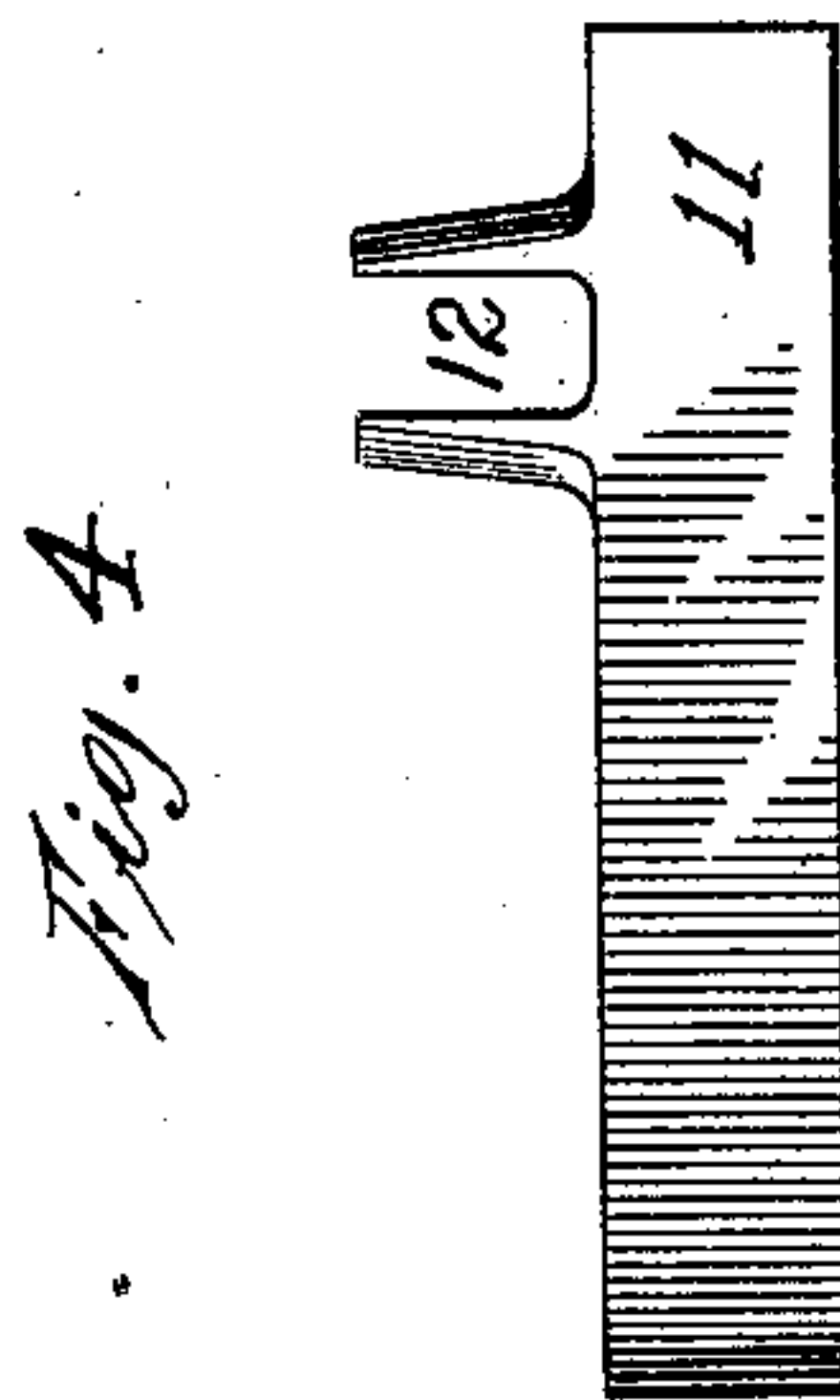
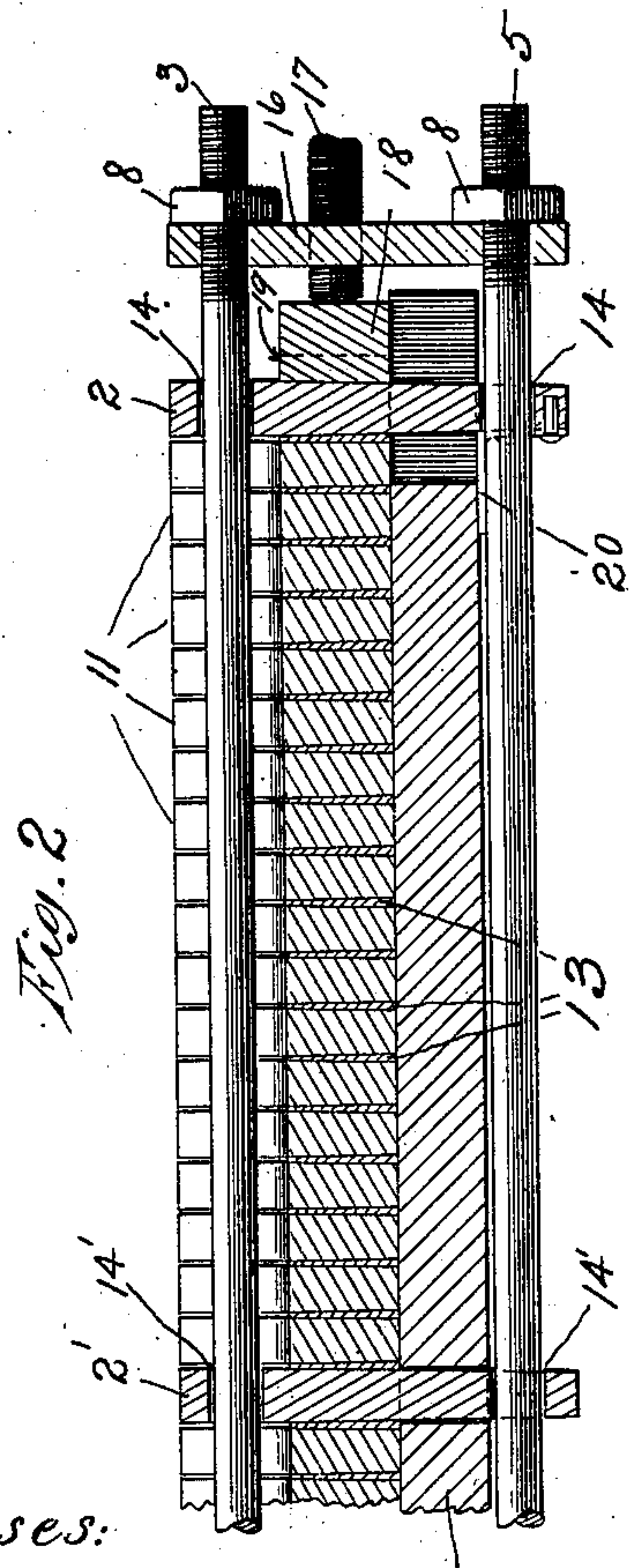
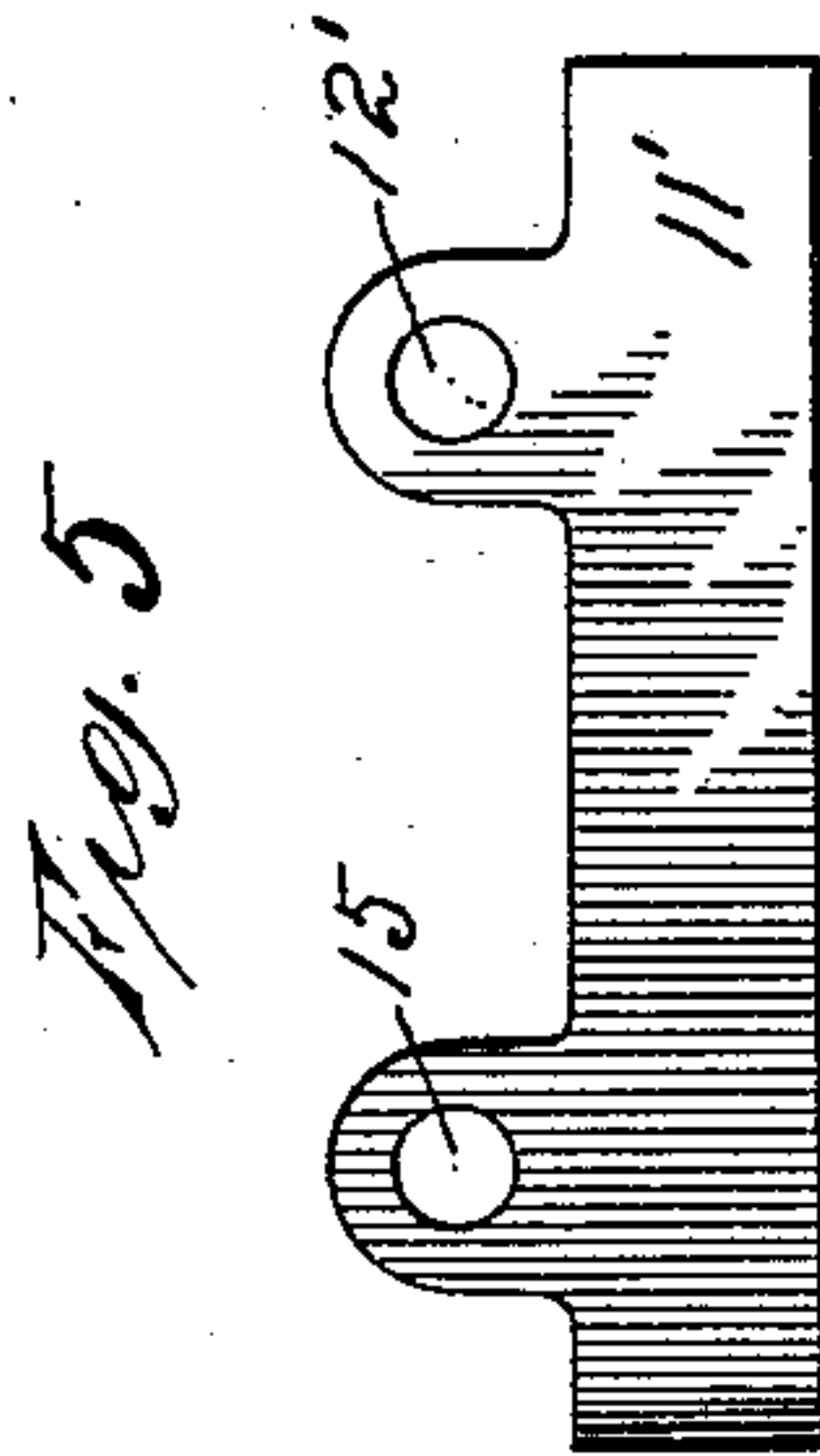
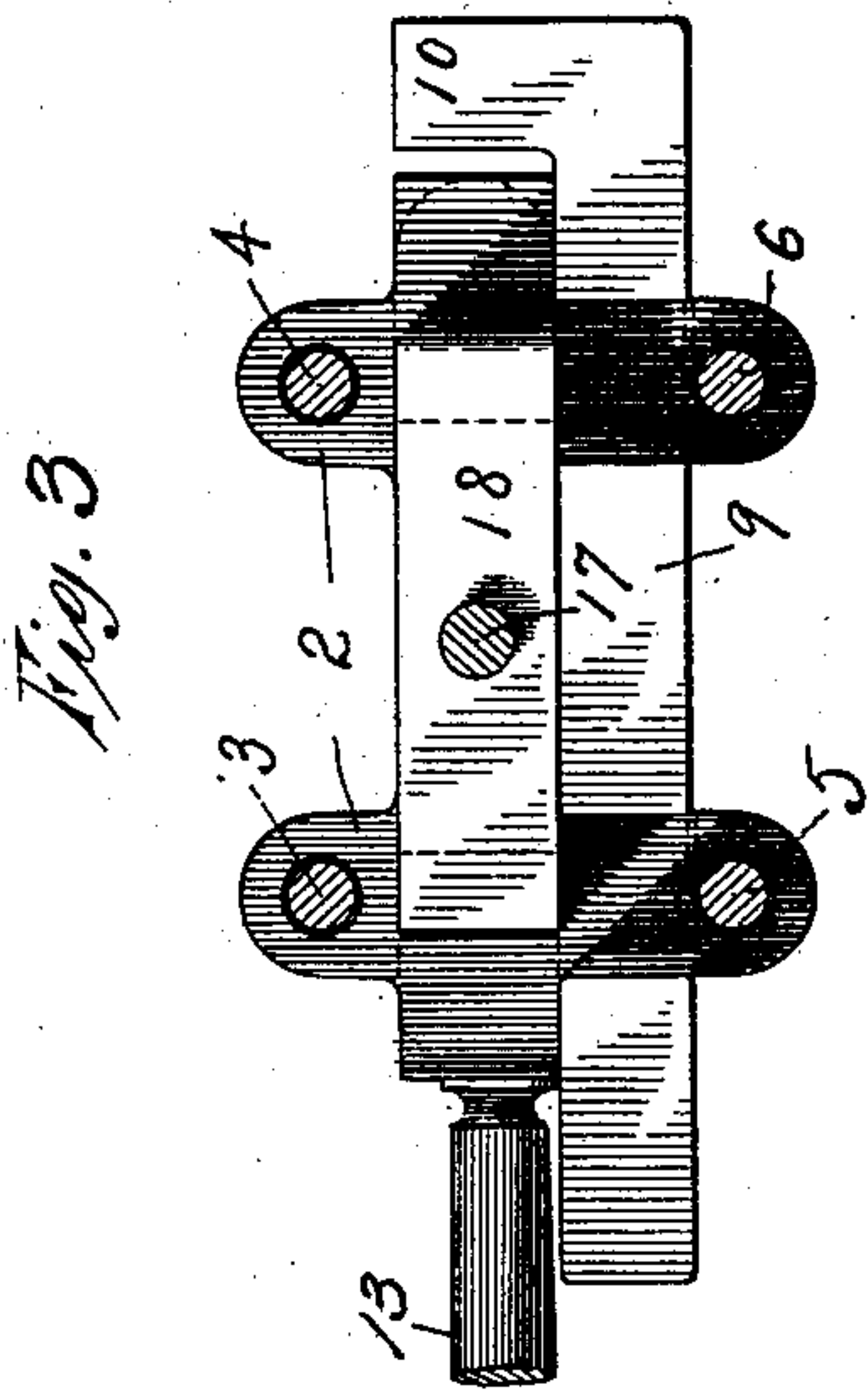
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(Application filed June 21, 1901.)

(No Model.)

2 Sheets—Sheet 2.



Witnesses:

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UNITED STATES PATENT OFFICE.

GEORGE E. SMITH, OF MERIDEN, CONNECTICUT, ASSIGNOR OF ONE-HALF
TO JOSEPH P. SMITH, OF GLASTONBURY, CONNECTICUT.

APPARATUS FOR SMITHING AND DRAW-TEMPERING CUTLERY.

SPECIFICATION forming part of Letters Patent No. 688,492, dated December 10, 1901.

Application filed June 21, 1901. Serial No. 65,436. (No model.)

To all whom it may concern:

Be it known that I, GEORGE E. SMITH, of Meriden, in New Haven county, Connecticut, have invented certain new and useful Improvements in Apparatus for Smithing and Draw-Tempering Cutlery, which improvements are described in the following specification and are illustrated by the accompanying drawings.

My invention relates in general to the manufacture of cutlery, and in particular to the familiar operations of smithing, draw-tempering, and straightening, which are performed upon blades in the process of manufacturing knives. These several operations, as well as the operation of hardening, have usually been performed separately and in the following order, viz: first, the smithing, done by heating the blades and by shaping and straightening them in a die; next, the hardening, effected by reheating and by sudden cooling in oil or other liquid; then the draw-tempering, accomplished by again reheating and by gradual cooling, and, lastly, the setting or straightening, which has been performed by hammering.

It is the object of my invention to consolidate several of these performances and to provide means for smithing, draw-tempering, and straightening such work in a single operation and by only one heating. To accomplish this result, I make use of a peculiarly-constructed clamp, which is provided with a series of adjustable drawing-blocks and is adapted to hold a number of hardened knife-blades separately distributed and compressed between them during the process of heating.

The best manner in which I have contemplated applying the principles of my invention is shown in the drawings.

Figure 1 is a plan of my improved apparatus with knives held thereby in position for treatment. Fig. 2 is a longitudinal vertical section of a portion of the same on the broken line $x^2 x^2$ in Fig. 1. Fig. 3 is a vertical cross-section of the same on the broken line $x^3 x^3$ in Fig. 1. Fig. 4 is a detail, being a side view of one of the drawing-blocks. Fig. 5 is a like detail of a drawing-block in a modified form.

In the views the numerals 1 and 2 denote two duplicate clamping-plates held in positions of general parallelism by four duplicate horizontal screw-rods 3, 4, 5, and 6, which have heads 7 and terminal nuts 8 and are inserted through ears or eyes 14 in those plates. On the lower rods 5 and 6 is supported a broad horizontal base-plate 9, having its back edge turned up in a lip or flange 10. For the purpose of covering the otherwise open space between this base-plate and the clamping-plates 1 and 2 small metallic sheets 20 are riveted to the latter, as shown in Fig. 2. An indefinite number of metallic drawing-blocks 11, preferably of iron, are arranged side by side on plate 9 just back of lip 10 and between plates 1 and 2. Each block 11 has on its upper edge a pair of lugs, forming a slot 12 between them, as shown in Fig. 4. In a modified form (shown in Fig. 5) the same block 11 has a perforated ear 12' in lieu of slot 12 and has also a second perforated ear 15. To match the varying thicknesses of the blades of knives 13, the blocks 11 are severally beveled slightly in two directions, being made thicker at the top than at the bottom, as shown in Fig. 2, and thicker at the back end near lip 10 than at the front end toward the handles of knives 13. Midway between plates 1 and 2 an additional plate 2', being, in effect, a drawing-plate and in form a duplicate of plates 1 and 2 and provided with four eyes 14', is placed on rods 3, 4, 5, and 6 to steady them and to prevent them from buckling. On the same screw-rods is set an adjustable screw-plate 16, having a central screw 17, which bears on a block 18. This block, which is shown in Figs. 1, 2, and 3, is provided with two terminal feet 19, bearing, respectively, upon the clamping-plate 2 near the forward screw-rods 3 and 5 and near the backward screw-rods 4 and 6.

Such being the preferred form of the apparatus, the mode of using it remains to be described. The knife-blades 13, already hardened and ready for smithing, are distributed between the drawing-blocks 11 in the positions shown and are firmly clamped thereby by appropriate adjustment of screw-plate 16 and block 18 and by manipulation of screw 17. Then the entire apparatus, as shown in Fig.

1, with the work in position, is set into the furnace, with the end portions of the base-plate 9 resting upon the edges of the furnace and with the body of that plate immediately over the fire. In this way the work is heated with and by the drawing-blocks 11 to the requisite temperature of 325° Fahrenheit, more or less, according to the quality of the steel of which the work is composed, and is at the same time both subjected to a clamping pressure from screw 17 and also protected from the direct action of the fire by the intervening base-plate 9, supplemented by the metallic sheets 20. Then without removing the apparatus from the fire the clamp is loosened by turning screw 17, the knives are drawn out longitudinally toward the operator and laid aside to cool, and other blades are pushed back into the same place and position between the drawing-blocks and clamped there in the described manner to be in turn heated under pressure and withdrawn in the same manner. By this method a number of knives are smithed, draw-tempered, and straightened at one and the same time and by a single operation, and so made ready for grinding. If drawing-blocks of the type shown in Fig. 5 be substituted for the described blocks of the type shown in Figs. 1, 2, and 3, the substituted blocks will be supported by the upper screw-rods 3 and 5 in ears 12' and 15, respectively, and the base-plate 9 may be dispensed with and removed without radically affecting the operation or character of the invention.

Such being the construction and operation of my invention, I claim—

1. A series of drawing-blocks, which are adjustably held near each other, and are adapt-

ed to admit separate blades between them, in combination with a clamp, which is adapted to press the blocks and the work collectively together, and a base-plate, which is adapted to support the blocks, the clamp and the work.

2. A series of drawing-blocks, which are adjustably arranged near together between two clamping-plates, in combination with a screw-clamp, and a bearing-block, having two terminal feet, and adapted to distribute upon one of the clamping-plates the thrust of the clamp-screw.

3. Two clamping-plates, which are provided with marginal ears, and a number of drawing-blocks, which also are provided with marginal ears, and are held adjustably near each other between said clamping-plates, in combination with a number of screw-rods, which pass through the ears of said clamping-plates, and of one of said drawing-blocks.

4. Two clamping-plates, a series of drawing-blocks between them, and clamping mechanism, which has a marginal engagement with said plates and blocks, in combination with a base-plate, supporting the free end of said blocks.

5. In a clamp for cutlery, a pair of clamping-plates, and mechanism for actuating the same, in combination with a series of drawing-plates, which are loosely confined between said clamping-plates, and are beveled in different directions to fit the work.

In testimony whereof I hereunto set my name in the presence of two witnesses.

GEORGE E. SMITH.

Witnesses:

WILLARD EDDY,
JOSEPH P. SMITH.