

No. 840,294.

PATENTED JAN. 1, 1907.

J. N. BROWN.
PIANO TOOL.

APPLICATION FILED NOV. 16, 1903.

2 SHEETS—SHEET 2.

Fig. 10.

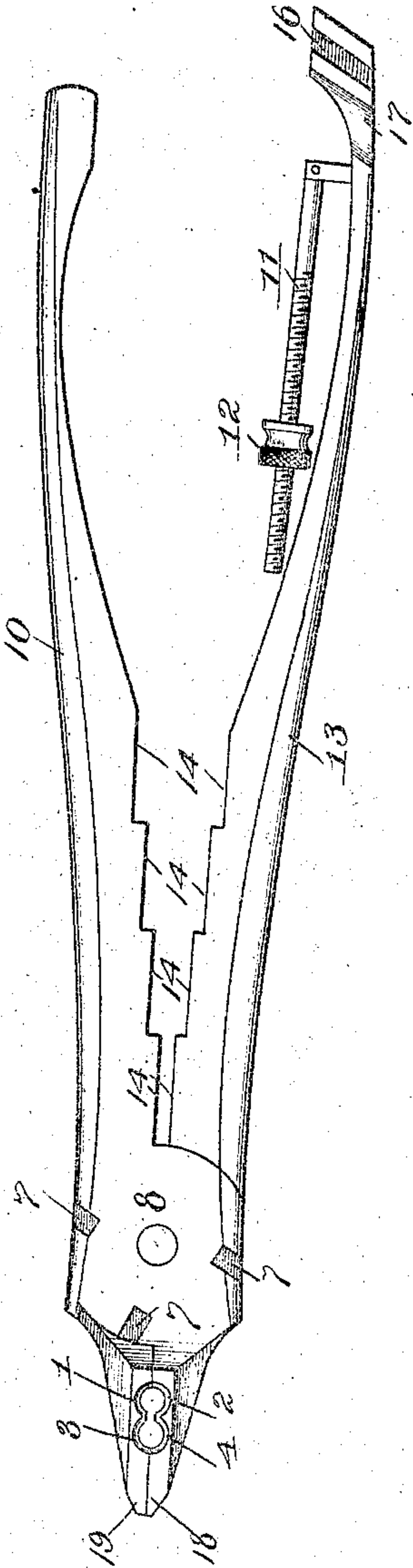


Fig. 11.

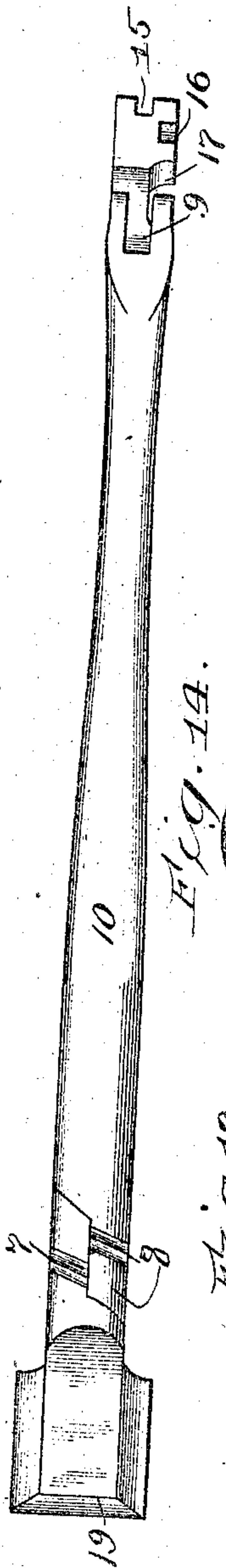


Fig. 12.

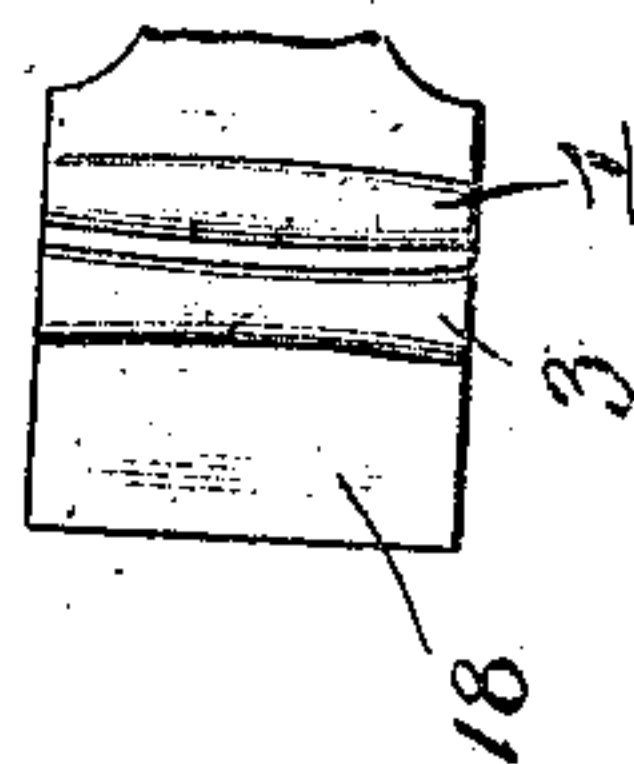


Fig. 13.

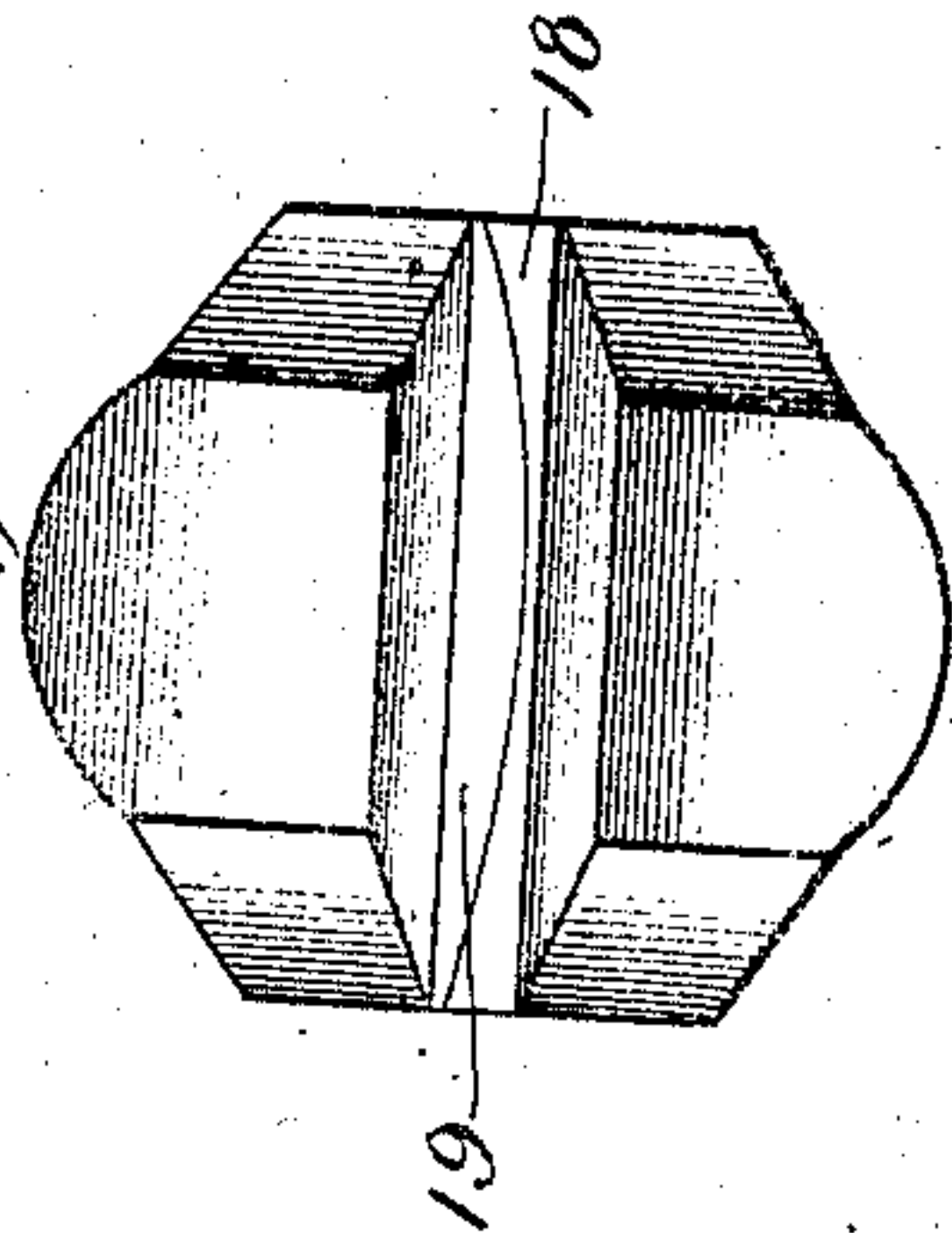
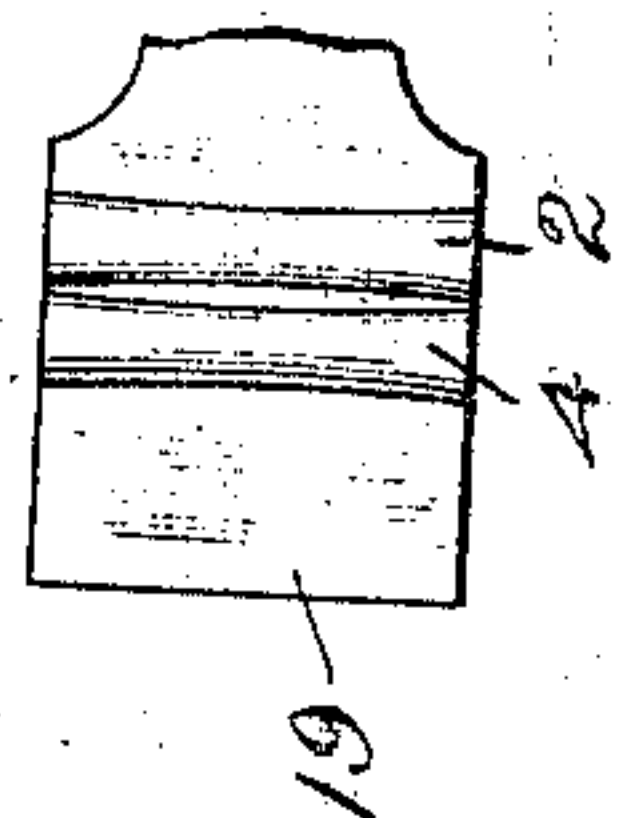


Fig. 14.



Witnesses:

Ray White.

Harry O. LeWhite

Inventor

Julius N. Brown.

By

Wm S. Bates

Atty.

UNITED STATES PATENT OFFICE.

JULIUS N. BROWN, OF CHICAGO, ILLINOIS.

PIANO-TOOL.

No. 840,294.

Specification of Letters Patent.

Patented Jan. 1, 1907.

Application filed November 16, 1903. Serial No. 181,302.

To all whom it may concern:

Be it known that I, JULIUS N. BROWN, of Chicago, Illinois, have invented certain new and useful Improvements in Tools for the Use of Piano Tuners and Makers, whereof the following is a specification.

In the adjustment of a piano-action, both before and after it leaves the factory, it is frequently necessary to regulate the spacing of the hammers and also to correct twisted hammer-shanks. The hammer-shanks being made of wood, this has commonly been done by means of heat applied by an alcohol or Bunsen flame, the shanks being bent into shape under the influence of the heat. I have discovered that these operations can be performed without the use of heat, and I have invented a tool for performing them. This tool I make in the form of pliers, and I have so constructed it that a variety of other operations can be performed with it in addition to those named.

In the accompanying drawings I have shown a plier containing my invention in what I now consider its best form.

Figure 1 is a side elevation of the tool. Fig. 2 is a top elevation of same. Fig. 3 is a top view of the lower nose of Fig. 1. Fig. 4 is an end view of the same. Fig. 5 is an under view of the top nose of Fig. 1. Fig. 6 is a section at 6 6 of Fig. 1. Fig. 7 is a section at 7 7 of Fig. 1. Fig. 8 is a view from below of the end of the lower handle of Fig. 1. Fig. 9 is an end view of the same. Fig. 10 is a side elevation of the plier with a modified nose. Fig. 11 is a top elevation of the same. Fig. 12 shows the face of the lower jaw of same. Fig. 13 shows the face of the upper jaw of same. Fig. 14 is an end view of the nose of same. In these various figures, 1 and 2 are registering semigrooves, and 3 and 4 are registering semigrooves, in the nose of the pliers. These registering grooves form two holes of approximately circular cross-section, and of about the size of or a trifle larger than a hammer-shank. The semigrooves 1 and 2 are both curved upward, as seen in Fig. 7, so that the bottom of 1 presents a concave appearance, and the bottom of 2 presents a convex appearance. The convexity of 2 is greater than the concavity of 1, so that the hole formed by the grooves is smaller in the middle than at the ends. In the use of the tool in spacing hammer-shanks it is applied to the shank with the convex

semigroove 2 on the side toward which the shank must be bent and pressure is exerted. This bends the shank, and at the same time the fiber of the wood is very slightly upset, and so sets the shank in the position assumed. The two semigrooves 3 and 4 are both convex across the nose of the pliers, as seen in Fig. 6, so that the hammer-shank is upset to greater degree than in the case of grooves 1 and 2. In case of a twisted hammer-shank, which cannot be both bent and twisted to proper position and set with grooves 1 and 2, the shank is twisted and set with the greater pressure of grooves 3 and 4, which upset the fiber of the wood and cause the shank to maintain its position. These grooves also have another function in spacing the back-checks, as the grooves straddle the bridle-wire and permits the shank of the back-check to be seized by the nose of the pliers. The nose of the pliers may also be used for a key-plier for spreading and engaging the key-mortises. For this purpose one member of the nose is reduced in size to enter the mortise and the opposing member 6 is of a flat spheroidal shape—that is, convex in all directions, so as to give a firm grasp of the material of the key whatever the obliquity of the mortise may be.

7 and 8 represent cutting edges, one on each member of the pliers, or the cutters may be arranged as shown in Figs. 10 and 11 and are sufficiently apparent without further description.

9 is a deep notch or recess in the end of handle 10, and 11 is a long screw provided with a nut 12, pivoted to handle 13 in position to register with the notch 9. These parts cooperate with the close of the pliers and the grooves therein as follows: By swinging the screw 11 to the position shown in dotted lines in Fig. 1, with the nut on the outside of the handle, the engagement of the nose parts with an object may be maintained indefinitely and the degree of pressure exerted regulated. As a further means of controlling the pressure I form the handles with a series of parallel faces 14, between which blocks may be inserted to limit the pressure exerted to the nose. The faces may also be used for holding small pieces for gluing or other purpose. The notch 9 I also use for engaging the key-pin in spacing the keys. At the extreme end of handle 13 I form a notch 15 and in the side of the handle adjacent to it an oblique notch 16 for the purpose of engaging

the back-check shanks in spacing and adjusting the back-checks. Adjacent to notch 16 is a larger notch 17 to pass the bridle-wire.

I claim—

- 5 1. A piano-tool in plier form, having registering grooves across the nose thereof, one of said grooves being concave and the other convex across the plier, whereby a hammer-shank engaged by the grooves will be bent, substantially as set forth.
- 10 2. A piano-tool in plier form, having registering grooves, one concave and the other convex across the plier, the convexity being greater than the concavity, whereby a hammer-shank engaged by the grooves will be bent and set, substantially as set forth.
- 15 3. A tool of the character described, having a nose comprising two members movable toward and from each other and provided with registering grooves across the abutting faces thereof, one of said grooves being concave and the other convex.
- 20 4. A tool of the character described, having a nose comprising two substantially flat members movable toward and from each other, one member being narrower than the other, and the wider member having a convex working face and registering grooves in the said flat members of the nose in rear of the working faces thereof.
- 25 5. A piano-tool in plier form, having a nose consisting of two substantially flat members movable toward and from each other, one member having less surface area than the other, and the larger member having its working face convex in all directions and registering grooves in the said members in rear of the working faces thereof.
- 30 6. A tool of the character described having a nose comprising two members movable toward and from each other and each member provided with a pair of grooves across its face, the grooves in one member being convex and the grooves in the other member being respectively concave and convex.
- 35 7. A tool of the character described, comprising two members movable toward and

from each other and provided with two pairs of registering grooves across the abutting faces thereof, the grooves of one pair being respectively concave and convex and those of the other pair being convex. 50

8. A tool of the class described having two pairs of bending-faces adjacent to one another, one pair comprising a concave seat and a central pressing-face and the other comprising a convex seat and a central pressing-face, such faces being shaped respectively to bend the material operated upon in one direction when operating with the concave seat, and in the other direction when operating the convex seat. 55 60

9. A device of the class described having two pairs of bending-faces adjacent to one another, the dies at one side comprising a concave seat and a central pressing-face and the dies upon the opposite side comprising a convex seat and a pressing-face, whereby the material operated upon can be bent in either direction without turning it over. 65 70

10. A tool of the class described having two pairs of bending-faces adjacent to one another, one pair comprising a concave seat grooved to steady the material and a pressing-face opposite thereto, and the other pair comprising a convex seat grooved to steady the material and a pressing-face opposite thereto, the seats and pressing-faces being adapted respectively to bend the material in opposite directions, substantially as herein set forth. 75 80

11. A tool of the class described comprising hand-pliers having in the opposed jaws two pairs of bending-dies adjacent to one another, the dies upon one face comprising a concave seat and a pressing-face, and the dies upon the opposite face comprising a convex seat and a pressing-face, whereby the material operated upon can be bent in either direction without turning it over. 85

JULIUS N. BROWN.

Witnesses:

WM. S. BATES,
ELLA ELLIOTT.