

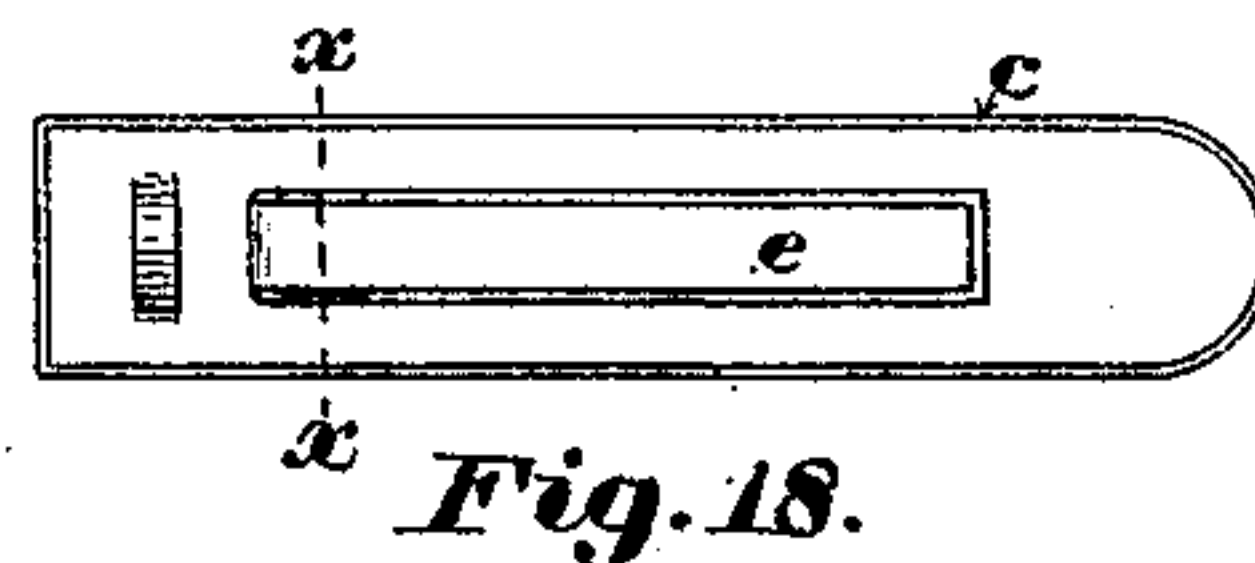
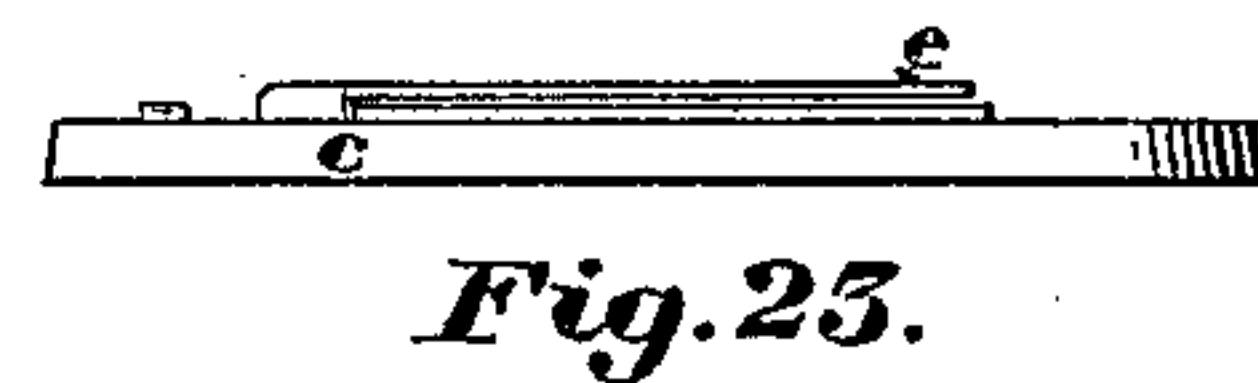
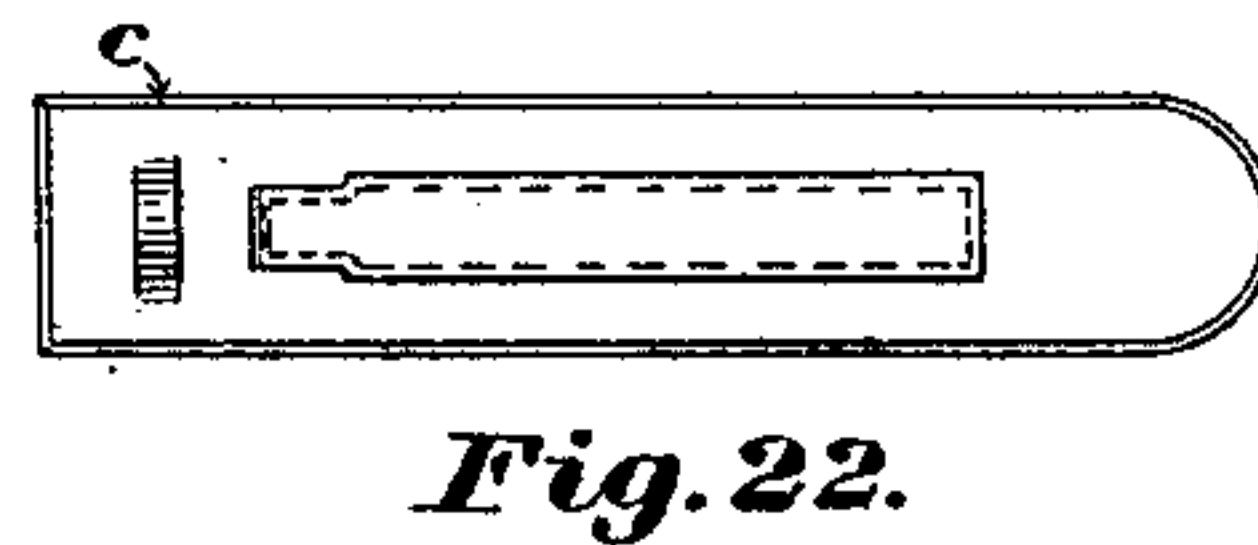
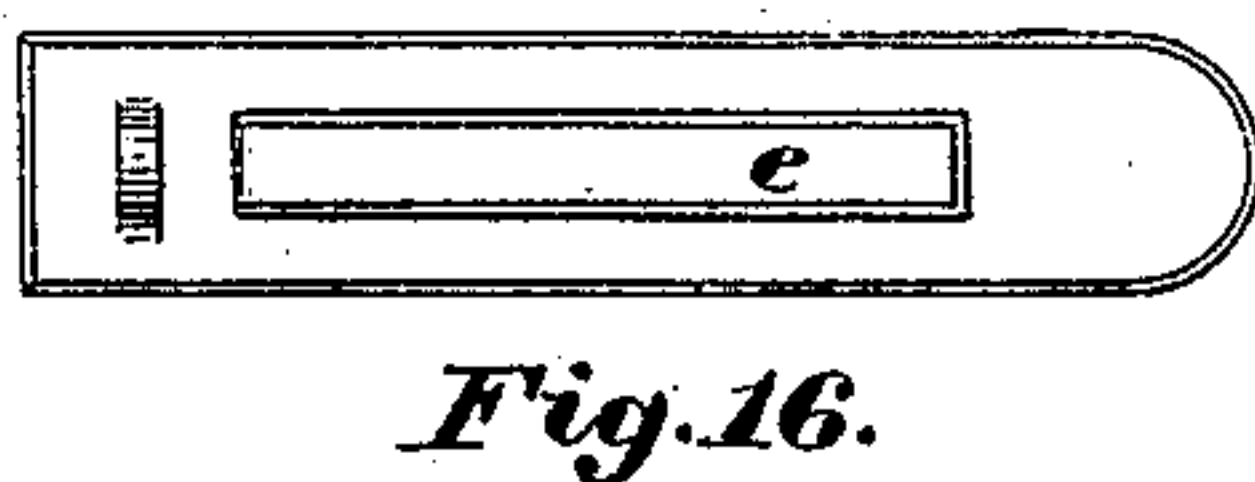
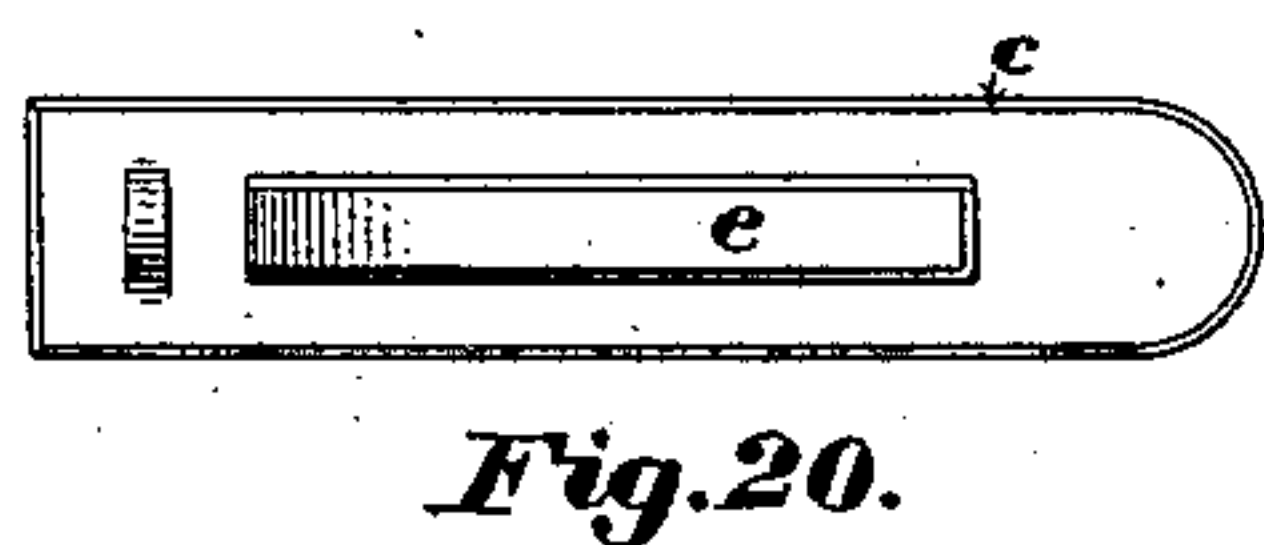
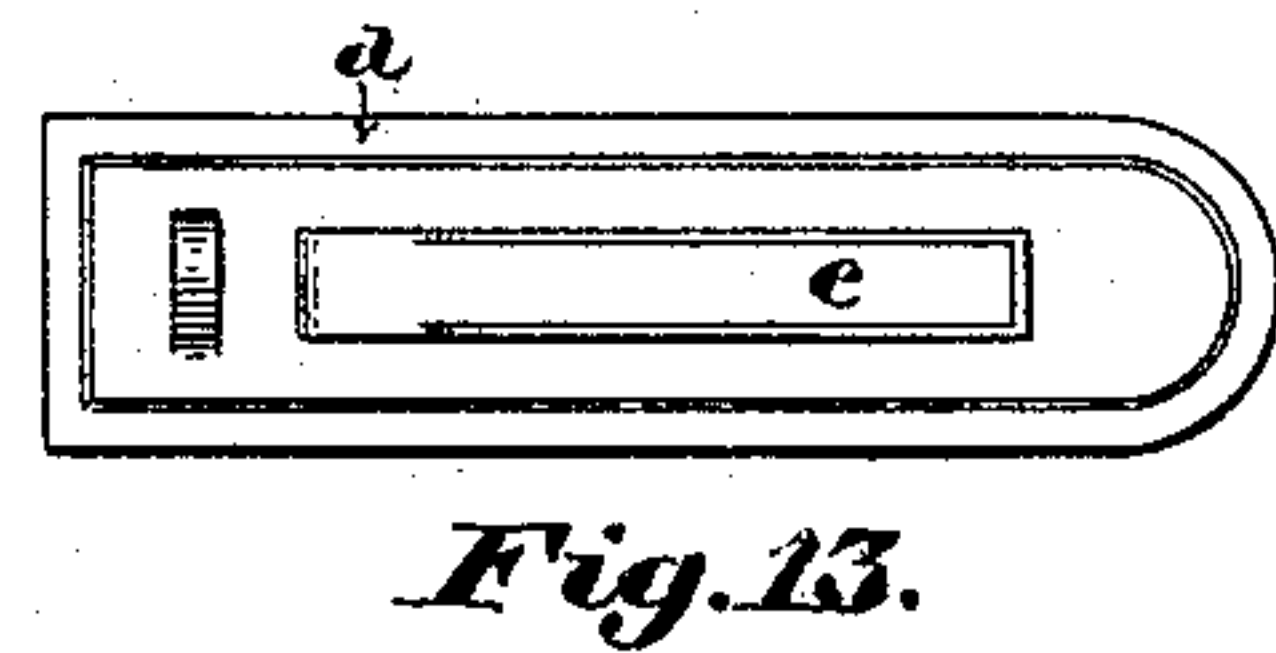
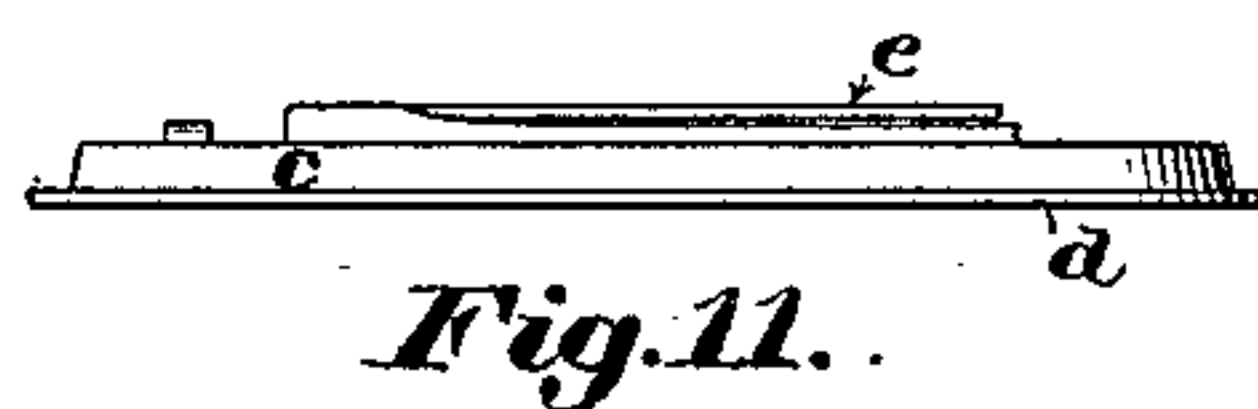
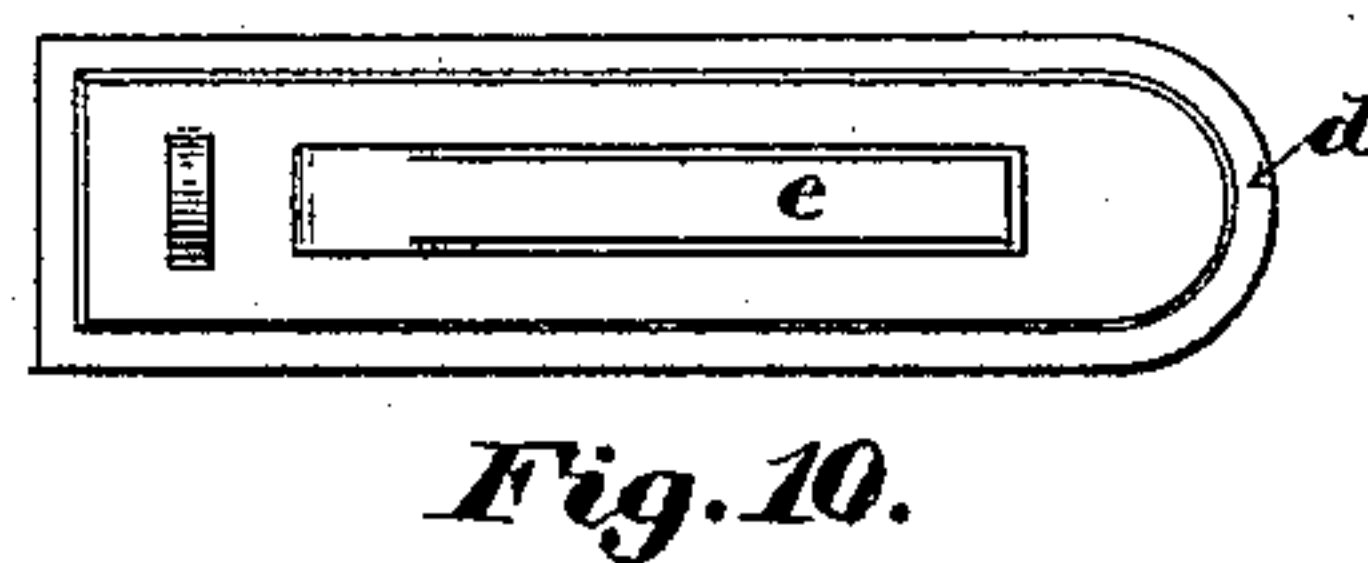
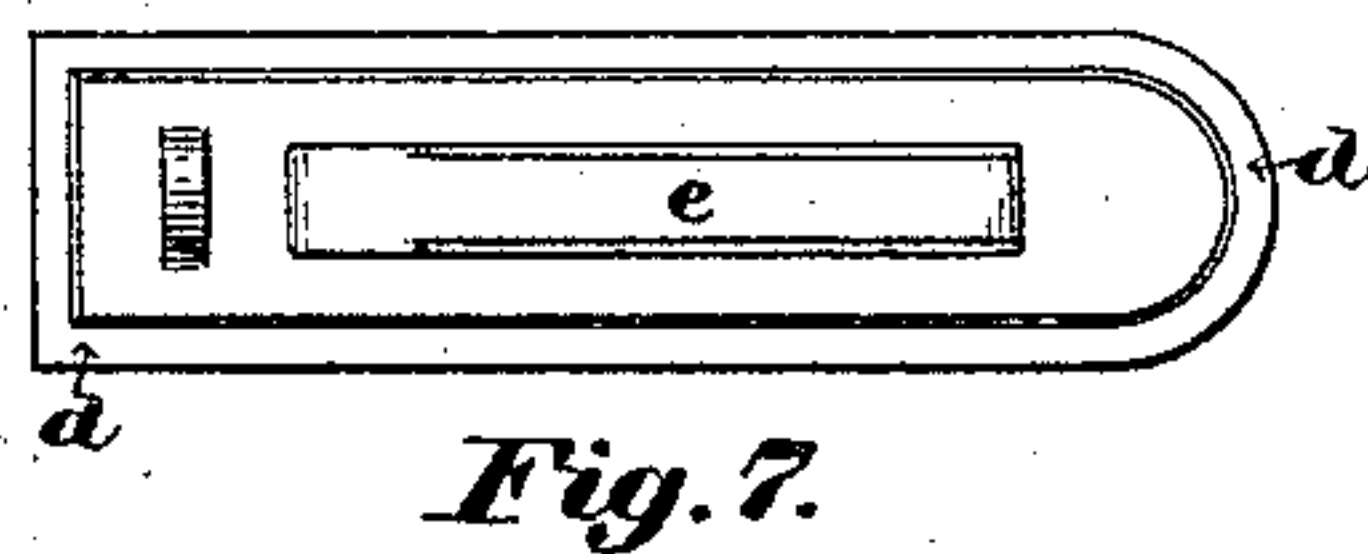
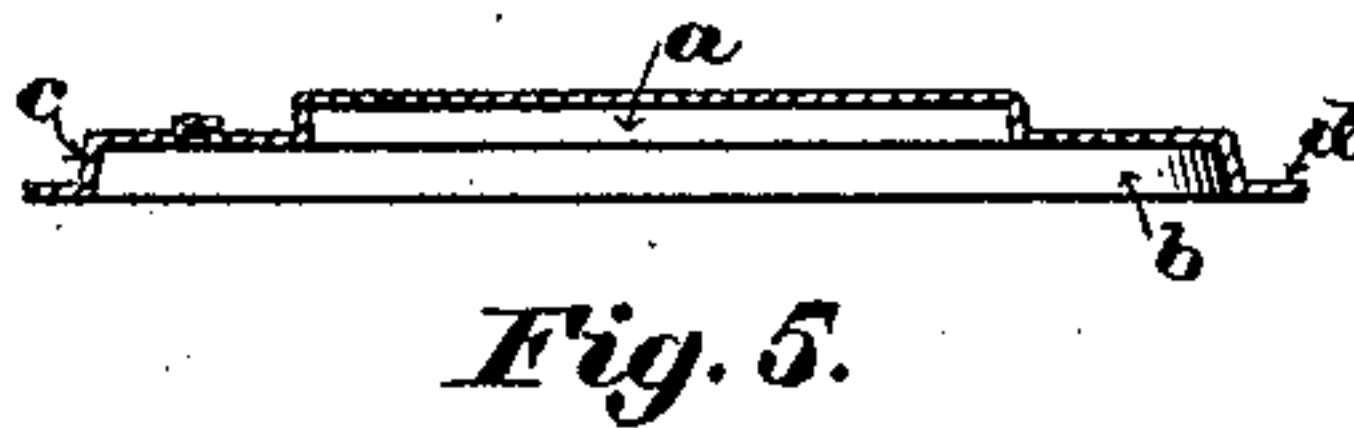
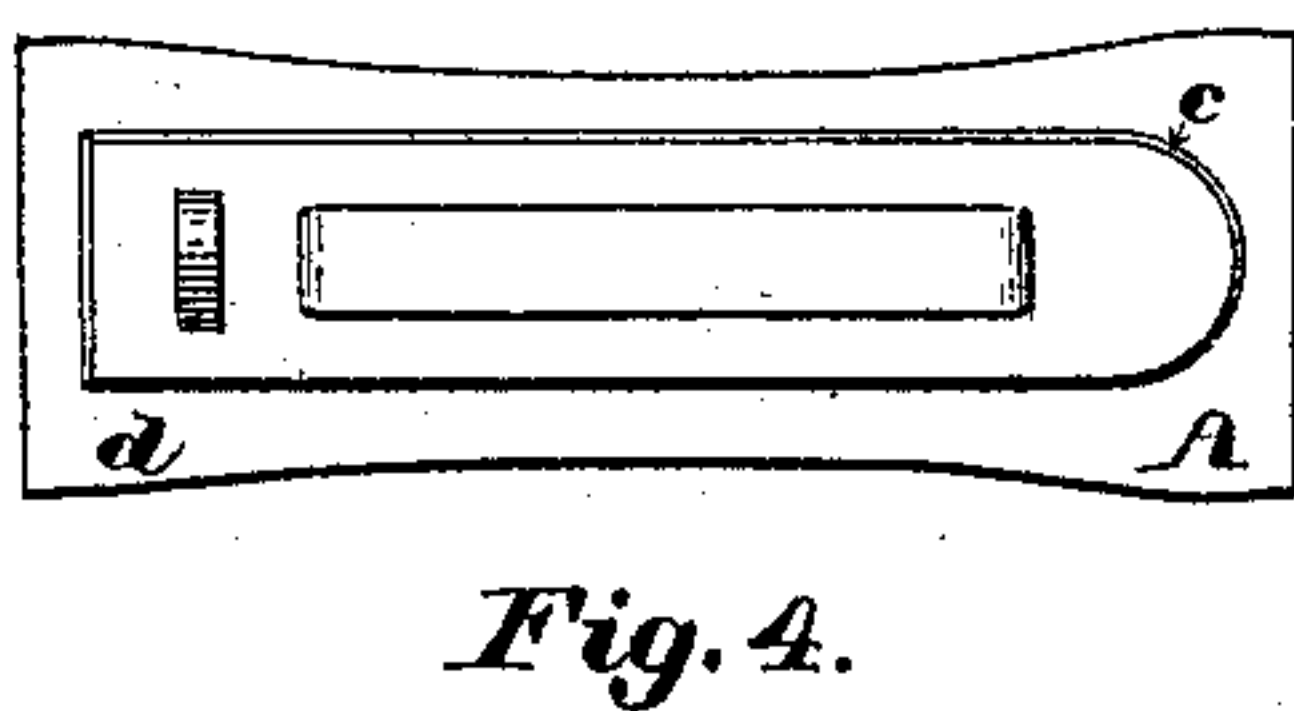
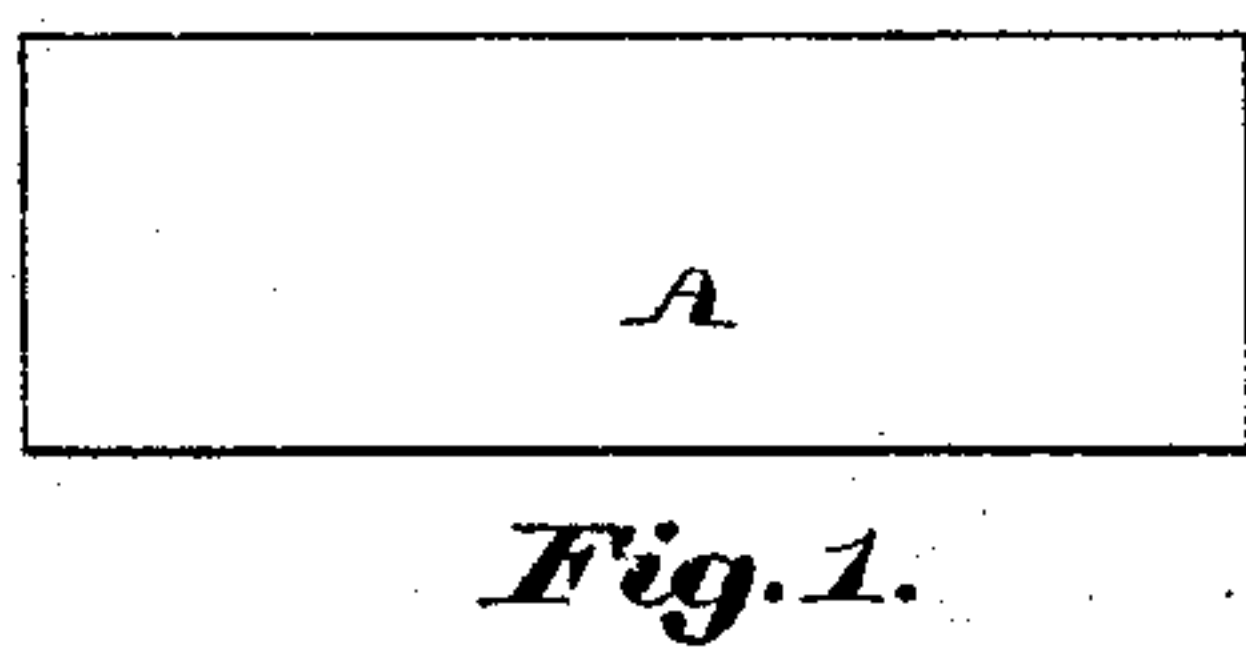
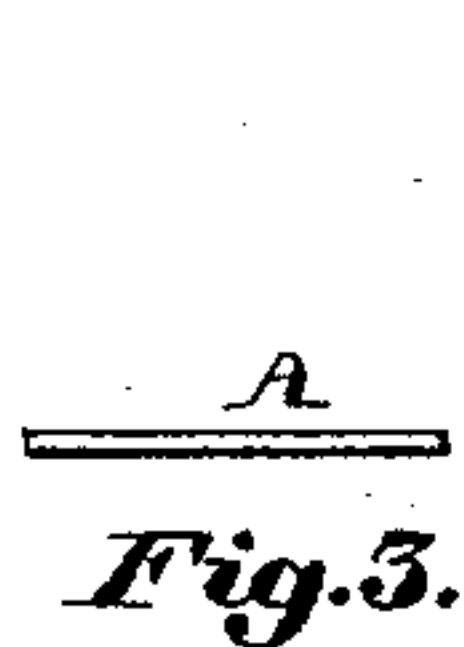
(No Model.)

M. BRAY & G. W. McCLINTOCK.

REED FOR MUSICAL INSTRUMENTS.

No. 280,789.

Patented July 10, 1883.



Witnesses:

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UNITED STATES PATENT OFFICE.

MELLEN BRAY, OF NEWTON, AND GEORGE W. McCLINTOCK, OF BOSTON,
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REED FOR MUSICAL INSTRUMENTS.

SPECIFICATION forming part of Letters Patent No. 280,789, dated July 10, 1883.

Application filed February 10, 1883. (No model.)

To all whom it may concern:

Be it known that we, MELLEN BRAY, of Newton, in the county of Middlesex and State of Massachusetts, and GEO. W. McCLINTOCK, of Boston, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Reeds and Reed-Plates for Musical Instruments, of which the following, taken in connection with the accompanying drawings, is a specification.

Our invention relates to the manufacture of reeds and reed-plates for musical instruments, and has for its object a material reduction in the cost of the reeds and reed-plates by using thinner metal, without necessitating any change in the construction of the reed-boards.

Reed-plates were formerly made by taking a piece of metal of the required thickness and cutting a cavity in one side thereof, through the bottom of which cavity the throat was cut for the passage of air, and upon the opposite side a metal tongue was riveted to produce by its vibrations the musical note. The reed-plates in any instrument were of uniform thickness; but the tongues were of different thicknesses, according to the note to be produced, but in the case of the higher notes were much thinner than the plates. The metal cut away in forming the throat and cavity was depreciated in value, though not entirely wasted.

In Letters Patent No. 253,262, granted to Mellen Bray February 7, 1882, a method is described for forming the cavity and throat in reed-plates by swaging or compressing the plates in dies, which forced the surplus metal out laterally between the dies, the tongue being formed from the same plate by compressing the metal over the throat to the required thickness and cutting away its edges around three sides of the tongue to give it liberty to vibrate. The metal required for forming reed-plates in this manner was the same thickness as that required in the first method referred to.

Our present invention consists in forming the reed-plate, or reed and reed-plate combined, from a plate of metal but a little thicker than the required thickness of the reed-tongue to be formed, by swaging or bending said plate of metal to form the cavity and throat, and turn a portion of the edge of said plate at

right angles, or nearly so, to the main body of said plate to increase its thickness around its edge, as will be described. The tongue or reed is formed from the same piece of metal by compressing and cutting away substantially in the same manner as described in the Letters Patent above cited. We are thus enabled to use plates of different thicknesses for the different notes corresponding nearly with the thickness of the different tongues.

Figures 1, 2, and 3 of the drawings are respectively a plan, a side elevation, and an end view of the blank from which our reed and reed-plate are made. Figs. 4, 5, and 6 are respectively a plan, a longitudinal section and a transverse section of the same blank after being subjected to the swaging-dies. Figs. 7, 8, and 9 are respectively a plan, a side elevation, and a transverse section of the same after the first milling operation and the trimming of the flange. Figs. 10, 11, and 12 are respectively a plan, a side elevation, and an end elevation of the same after the second milling operation. Figs. 13, 14, and 15 are respectively a plan, a longitudinal section, and a transverse section of the finished article. Figs. 16 and 17 are respectively a plan and an edge view of a reed and reed-plate of a modified form. Figs. 18 and 19 are respectively a plan and transverse section of a modification, the cutting-plane of the section being on line *x x* on Fig. 18. Figs. 20 and 21 are respectively a plan and a side elevation of another modification; and Figs. 22 and 23 are similar views of still another modification.

A is the blank from which a reed-plate, or a reed and reed-plate combined, may be formed, said blank being cut from sheet metal of a thickness but little in excess of the greatest thickness of the particular reed to be produced therefrom. This blank is subjected to the action of suitable swaging-dies in a drop or other press to strike it up into the shape illustrated in Figs. 4, 5, and 6, by forming therein the recesses *a* and *b*, the former serving, when the whole is completed, as the throat of the reed-plate, and the cover to said recess *a* forming the reed. The recess *b* is formed for the purpose of giving the proper thickness to the edges of the reed-plate to adapt it to fit the grooves

in the reed-board as heretofore made, and at the same time to stiffen the reed-plate by virtue of the vertical or nearly vertical sides *c*, surrounding said recess. The operation of swaging leaves the blank with a horizontally-projecting irregular flange, *d*, as shown in Fig. 4, which flange must be trimmed by suitable cutting-dies to a uniform width from the wall *c*, as shown in Figs. 7, 10, and 13; or it may be entirely removed, as shown in Figs. 16 to 23, inclusive. The next step is the separating of the sides of the reed or tongue from the reed-plate, which is done by subjecting the swaged blank to the action of a milling tool or tools to cut away the corners of the metal thrown up to form the recess *a* along the whole length thereof, as shown in Figs. 16 and 17, or only for the greater part of said length, as shown in Figs. 7 and 8, said cutter or cutters being so arranged and operated as to cut away the metal to a width just equal to the thickness of the side walls of the recess *a* and to a depth slightly in excess of the thickness of the metal covering of said recess *a*, or, in other words, so as to sever the metal covering the recess *a* from the side walls thereof in such a manner that the reed, when completed, may vibrate freely within the throat of the reed-plate. The end of the reed or tongue *e* is then severed in like manner from the end wall of the recess *a*, as shown in Figs. 10 and 11. The next operation is to give to the reed or tongue the desired variable thickness, which is done by milling its upper surface and bending it downward into the throat, as shown in Fig. 14. This milling of the upper surface of the reed or tongue may be done before the tongue is severed from the walls of the recess *a*, if desired; or the varying thickness may be imparted to the reed or tongue by pressure during the swaging operation, as described in Letters Patent No. 253,262, granted to one of the parties to this application February 7, 1882.

Our present invention is an improvement upon the invention described in the above-cited Letters Patent, in that the reed-plate is formed of much thinner metal, thereby materially reducing its cost.

We have found by actual experiment that it is desirable that the reed or tongue *e* should be connected to the wall of the recess *a* at one end, and for some little distance from said end along the sides thereof, in order to strengthen said reed, to accomplish which we make one end of the recess *a* of less depth than the remaining portion and inclined thereto, and mill straight through from end to end of the raised projection thrown up in forming said recess, as shown in Figs. 20 and 21; or we

make a portion of the length of said recess *a* at one end of a less width than the remainder of its length and mill only the wider portion of the projection thrown up in forming said recess, as shown in Figs. 22 and 23; or the recess *a* may be of equal width and depth throughout, as shown in Figs. 4, 5, and 6, and the milling for separating the sides of the tongue *e* may terminate before reaching the end of the raised projection thrown up in forming said recess, as shown in Figs. 7, 8, 10, and 11.

In the modification shown in Figs. 18 and 19 the recess *a* is formed as shown in Figs. 4, 5, and 6, the milling is done as shown in Figs. 16 and 17, and then portions of the walls of the recess *a*, near the uncut end of the reed or tongue *e*, are bent inward till their upper edges are directly beneath the reed or tongue *e*, as shown in Figs. 18 and 19.

It will be seen that while very much less metal is used in making a single reed and reed-plate by the use of our improvements a very stiff reed-plate, having a thickness at its edge from its seat to its upper surface corresponding to the thickness of the reed-plates heretofore in use and adapted to fit the grooves in the reed-boards, is the result.

It is obvious that thicker metal will have to be used for the bass-notes than for those of a higher key. In fact, we intend to use metal about two numbers, by gage, thicker than the desired thickness of the thick end of the particular reed to be produced.

What we claim as new, and desire to secure by Letters Patent of the United States, is—

1. A reed-plate made from thin sheet metal, and having two parallel edges and a lip or rib around its outer edge bent at right angles, or nearly so, to the main body of the plate to form a seat or support at a lower level than that portion of the plate through which the throat is cut, substantially as described.

2. A reed and reed-plate made from a single piece of thin sheet metal, and having a portion of the edge of said plate bent at right angles, or nearly so, to the main body of said plate to raise the reed, and that portion of the plate from which the reed is cut to a level above the bearing-surface of said plate, as set forth.

In testimony whereof we have signed our names to this specification, in the presence of two subscribing witnesses, on this 7th day of February, A. D. 1883.

MELLEN BRAY.

GEORGE W. McCLINTOCK.

Witnesses:

E. A. HEMMENWAY,

WALTER E. LOMBARD.