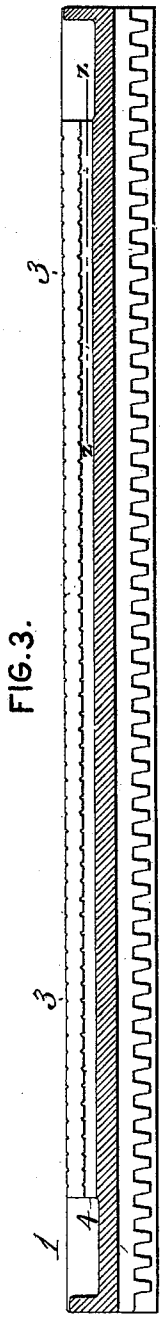
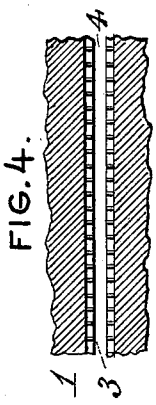
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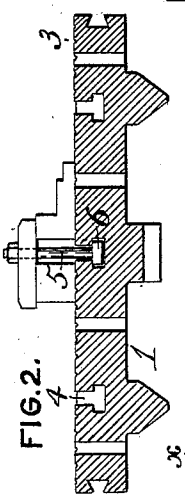
F. W. TAYLOR.

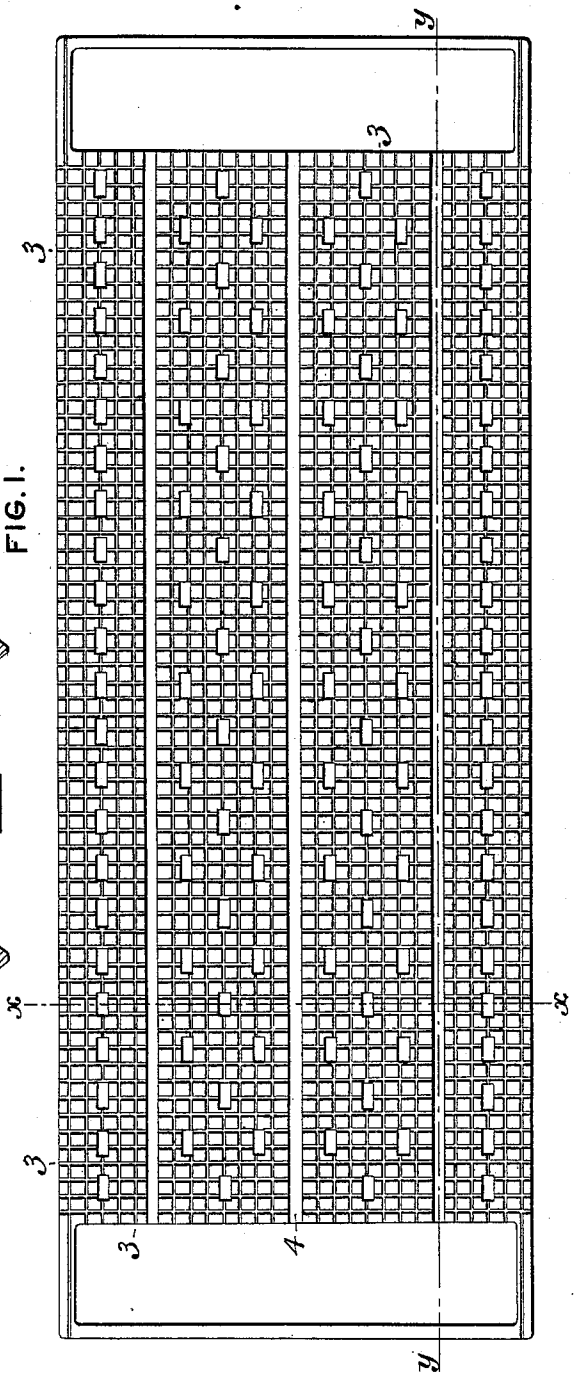
METALLIC TABLE FOR MACHINE TOOLS.

No. 359,369. Patented Mar. 15, 1887.









ATTEST.

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N. PETERS. Photo-Lithographer, Washington, D. C.

(No Model.) 2 Sheets—Sheet 2.

F. W. TAYLOR.

METALLIC TABLE FOR MACHINE TOOLS.

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FIG. 10.



FIG. 9.

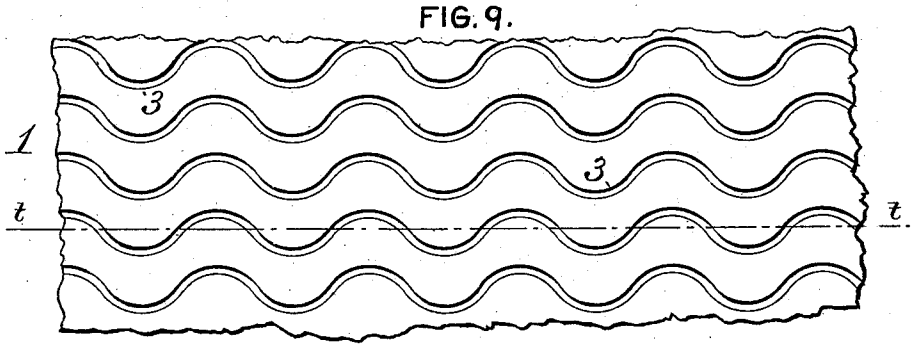


FIG. 8.

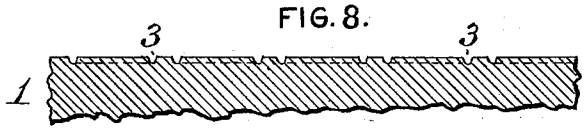


FIG. 7.

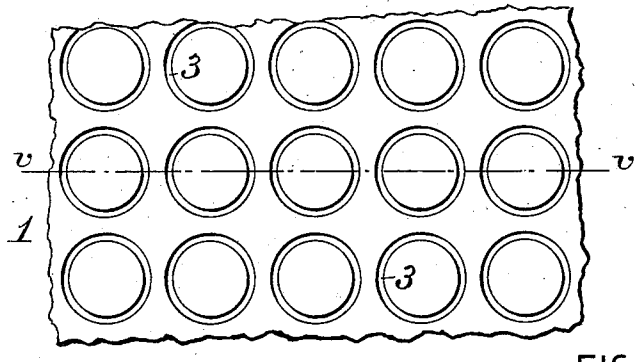


FIG. 6.

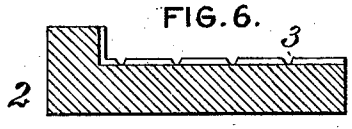
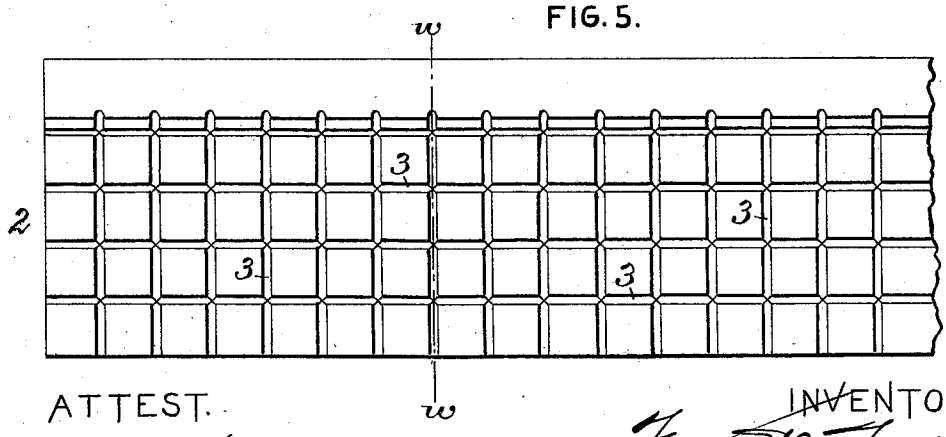


FIG. 5.



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UNITED STATES PATENT OFFICE.

FREDERICK W. TAYLOR, OF PHILADELPHIA, PENNSYLVANIA.

METALLIC TABLE FOR MACHINE-TOOLS.

SPECIFICATION forming part of Letters Patent No. 359,369, dated March 15, 1887.

Application filed July 7, 1886. Serial No. 207,341. (No model.)

To all whom it may concern:

Be it known that I, FREDERICK W. TAYLOR, of the city and county of Philadelphia, in the State of Pennsylvania, have invented a certain new and useful Improvement in Metallic Tables or Face-Plates for Machine-Tools, &c., of which improvement the following is a specification.

My invention relates to tables, face-plates, and other plane surfaces to which the work or piece of metal to be acted on by an appropriate tool is fastened in planing-machines, drill-presses, slotting, boring, or turning machines, and other machine-tools, as well as to straightening or surface plates for holding metals while being straightened by hammering with sledges or mallets.

The object of my invention is to prevent the surfaces of said tables or plates from curving or arching upwardly under the action of the tool applied in working the metal held thereon.

To this end my invention, generally stated, consists in a metallic table or plate for holding metal, having the whole or any desired portion of its surface on which the work rests, or against which clamping-bolts abut, traversed by a series of grooves or channels, which are located in any desired number and relation upon the surface of the table or plate, or of the bolt-slots therein, (which surfaces have heretofore been smooth plane surfaces,) in such manner that one or more of said grooves shall be closely adjacent to any part of the table or plate with which it is possible for the work or piece of metal operated on, or a bolt holding the same, to be in contact.

The improvement claimed is hereinafter fully set forth.

In the accompanying drawings, Figure 1 is a plan or top view of a planer-table, illustrating the application of my invention; Fig. 2, a transverse section through the same at the line *x x* of Fig. 1; Fig. 3, a longitudinal section through the same at the line *y y* of Fig. 1; Fig. 4, a partial horizontal section at the line *z z* of Fig 3; Fig. 5, a plan view of a straightening-plate embodying my invention; Fig. 6, a transverse section through the same at the line *w w* of Fig. 5; Figs. 7 and 9, plan views of portions of tables or plates, illustrating different modifications of my invention; Fig. 8, a longitudinal section at the line *v v* of Fig. 7, and Fig. 10 a similar section at the line *t t* of Fig. 9.

In operating on metal by tools of different descriptions—as in planing, drilling, slotting, &c.—the piece of metal which is acted on must be held upon and supported by a proper table or plate, and the action of the tool transmits, through the work or piece of metal operated on to the table or plate on which it rests, a series of shocks or blows more or less minute, depending upon the nature of the work being done and the greater or less degree of chattering of the piece. The effect of such minute blows on the surface of the table is to peen or stretch it in the same manner as though it had received a series of blows from the peen of a hammer, and the stretching of the surface of the table or plate induced thereby causes the whole table or plate to arch or curve upwardly, so that its surface assumes a convex form. The surfaces of straightening-plates are peened or stretched in a similar manner, so that the plates arch or curve upwardly into convex form by the action of the blows from the mallets or sledges which are transmitted to the plates through the pieces which are straightened upon them. A further cause of the peening or curving of face-plates and tables is the pressure of the heads of the bolts by which the work is held against the surfaces of the slots or grooves in the table in which said bolts fit, said pressure stretching such surfaces and causing the table to arch or curve.

In the peening or curving above referred to, not only are the molecules of metal on the surface of the table or plate caused to assume new positions with relation to one another, by the action of the series of blows which they receive, but also a permanent change is effected in the relative positions of the molecules to a greater or less depth below the surface; or, in other words, the metal below the surface "flows" to a certain depth. The distance below the surface to which this molecular displacement extends will depend upon the character of the work performed upon the piece of metal which is supported on the table or plate in question. Thus, for example, in heavy slotting-machines, in which each cut of the tool transmits a comparatively heavy blow to the table, the perma-

nent displacement of the molecules will extend to a greater depth below the surface than in the case of a light planing-machine, the table of which is subject to correspondingly lighter blows. The effect of this peening or curving is to stretch the surface subject to its action so that it finally assumes a more or less convex form, according to the thickness of metal beneath the part acted on and the extent of the peening action, the actual result being that the table or plate becomes bent so that the side opposite that acted on is concave. To prevent such curvature, by affording means of admitting of the displacement of the molecules of metal under the surface action of the tool, I form in the surface of the tables or straightening-plates, by planing, chipping, drilling, coring, or any other suitable and known manner, a series of grooves or channels, extending in any number, position, form, and relation over the surface of that part of the table or plate, or of the bolt-slots therein which is subject to such peening action, and which I wish to prevent from curving. The molecules of metal adjacent to these grooves when the surface of the table is stretched through the above-mentioned peening action, flow out into the grooves and so prevent the whole table from being put under a strain, which would cause it to arch or curve. The exact form of such grooves is immaterial; but it is necessary, in order to wholly prevent arching or curving, that they shall extend to a sufficient depth below the surface of the table or plate to be beneath the lowest point to which a permanent molecular displacement or flow of the metal of the table or plate under the action of the tool extends, the depth of the grooves and their distances apart varying with the thickness of the table or plate and the character of the work performed upon the piece of metal resting upon it.

The grooves may be rectilinear, circular, or curved, and should be located with sufficient closeness to insure that a portion of one or more of them shall be included in the area of that portion of the table or plate on which the smaller as well as the larger pieces of work will rest in operation. The grooves in the bolt-slots, when the same are employed, extend into the two surfaces, against which the head of the holding-bolt presses when drawn to a proper bearing for securing the work to the table.

Referring to the drawings, Figs. 1 to 4 illustrate the application of my invention in a planer-table, 1, which is otherwise of the ordinary construction. The table is provided, as usual, with longitudinal slots 4, which receive the heads 6 of the clamping-bolts 5, by which the work or piece of metal to be placed is secured to the table. A series of shallow grooves or channels, 3, is formed (either by being cored or cut out) in the surface of the table on which the work is supported, said grooves extending both longitudinally and transversely throughout the same, in such proximity one to another that a portion of one or more of them shall be within the area covered by or closely adjacent to any piece of work fixed upon the table. Similar grooves or channels are formed in the surfaces of the slots 4, against which the heads of the clamping-bolts bear, as shown in Figs. 3 and 4.

My invention is shown in Figs. 5 and 6 as applied in a straightening-plate, 2, the body and side flange of which are each provided with shallow rectilinear surface grooves or channels 3, similar to those of the planer-table before described.

In the modifications illustrated in Figs. 7 to 10, inclusive, the surface-grooves 3 are located, as before, in close proximity one to another, but without intersecting, as in the former cases, being in circular form in Figs. 7 and 8, and in adjacent curvilinear form in Figs. 9 and 10, their specific arrangement and form being, as before stated, immaterial.

I claim as my invention and desire to secure by Letters Patent—

1. A metallic table or plate for holding metal while being operated on by a tool, having its surface traversed by a series of grooves or channels in any desired form, number, and relation, in such manner that one or more of said grooves may be closely adjacent to a part of the table or plate which receives the contact of the work or piece of metal operated on, substantially as and for the purpose set forth.

2. A metallic table or plate for holding metal while being operated on by a tool, provided with slots for clamping or holding down bolts, said slots having a series of grooves or channels in their surfaces, against which the heads of said bolts abut when clamped in position for holding work upon the table, substantially as and for the purpose set forth.

3. A metallic table or plate for holding metal while being operated on by a tool, having its surface traversed by a series of grooves or channels, as described, and being provided with slots for clamping or holding down bolts, having a series of grooves or channels in their surfaces, against which the heads of said bolts abut when clamped in position for holding work upon the table, substantially as and for the purpose set forth.

FREDERICK W. TAYLOR.

Witnesses:
GEORGE C. KERWIN,
JOS. WHITEHOUSE.