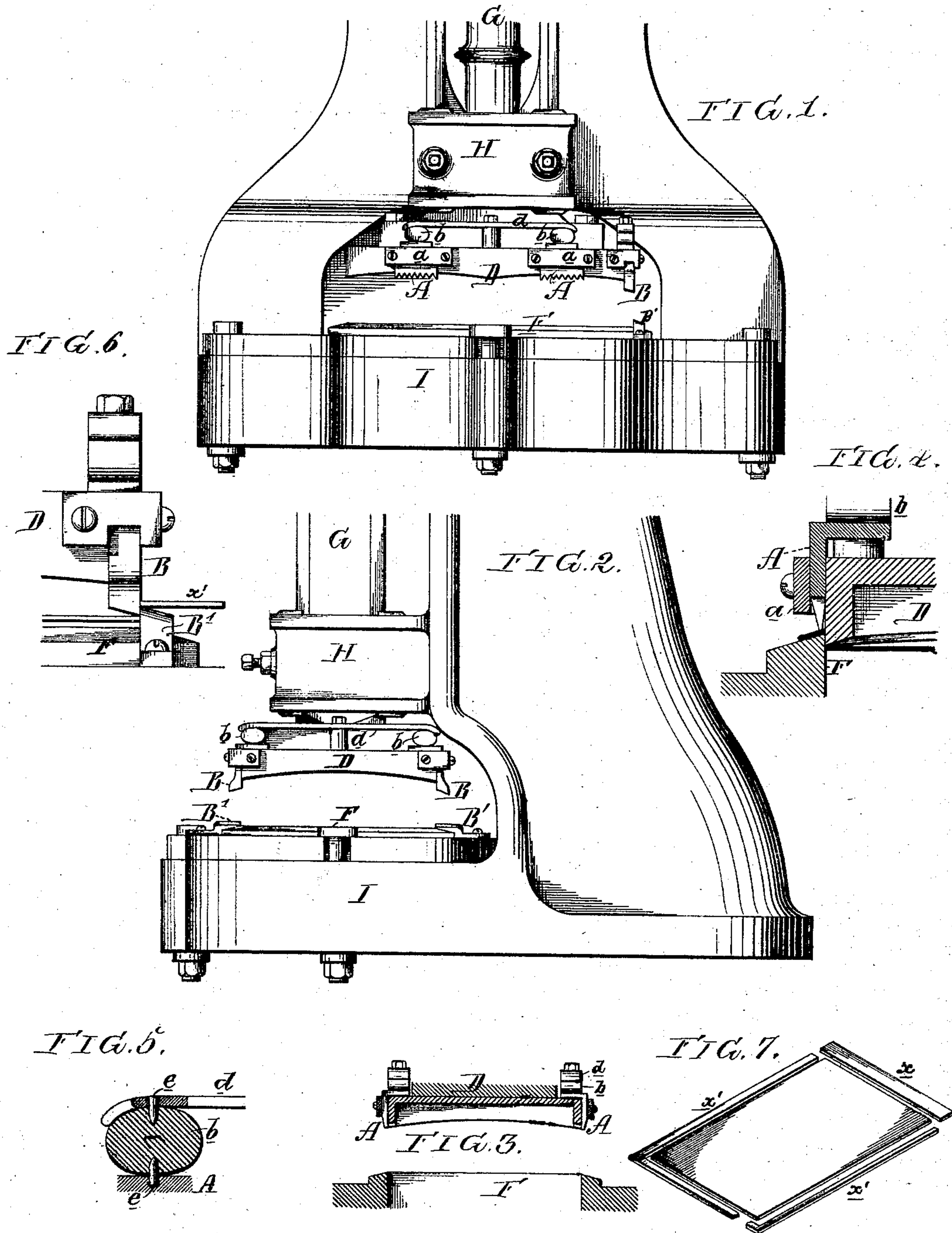


G. H. PERKINS.
Punching-Machines.

Case N.

No. 152,862.

Patented July 7, 1874.



Witnesses, Harry Smith
Thomas M. Elvair

George H. Perkins
by his Atty.
Howson and Son.

UNITED STATES PATENT OFFICE.

GEORGE H. PERKINS, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR TO HIMSELF AND JOSEPH LE COMTE, OF NEW YORK CITY, AND ATLANTIC REFINING COMPANY, OF PHILADELPHIA, PENNSYLVANIA.

IMPROVEMENT IN PUNCHING-MACHINES.

Specification forming part of Letters Patent No. **152,862**, dated July 7, 1874; application filed March 18, 1874.

CASE N.

To all whom it may concern:

Be it known that I, GEORGE H. PERKINS, of the city of Philadelphia, Pennsylvania, have invented certain Improvements in Punching-Machines, of which the following is a specification:

The object of my invention is to trim a sheet-metal plate with perfect truth by the action of a punch and die, and to cut a strip or strips from the remnant of the plate simultaneously with the trimming operation; and I attain this object by combining spring-grippers A and supplemental cutters B and B' with the punch D and its die F, as shown in the elevations, Figures 1 and 2, sectional view, Fig. 3, enlarged views, Figs. 4, 5, and 6, and perspective view, Fig. 7, of the accompanying drawing.

The punching-machine to which my improvements are applied is of ordinary construction, the rod G, to which the punch is secured, sliding in bearings in a frame, H, and the open die F being secured to the bed-plate I.

In trimming or punching out blanks from sheet-metal plates, such, for instance, as those used in the manufacture of transportation-cans for petroleum, &c., it is difficult to prevent them from yielding to the pressure of the punch when placed over the open die, so that the cut edges are apt to be irregular, this being especially noticeable when shear-punches, such as that illustrated in the drawing, are employed, and when, in order to prevent waste of metal, the plates are trimmed close to their edges, and have very little hold upon the die. I have found that this objection can be entirely overcome by gripping and holding the edges of the plate so as to prevent it from yielding to the pressure of the punch during the trimming operation, and that it is most advantageous to secure the grippers A to the punch, so that they may descend with the latter and gripe the plate before the cutting commences.

Each gripper is serrated at its lower end, so that it may have a firm hold upon the plates, and it is arranged to slide, to a limited extent, between the edge of the punch and a plate, *a*, secured thereto, as shown in Fig. 4. A rubber or other spring, *b*, which is interposed between the upper bent end of each gripper and a bar, *d*, secured to the punch, forces the said gripper downward, so that it shall be brought in contact with the edge of the sheet-metal plate in advance of the punch, and then permits the gripper to yield as the punch descends, without relaxing its hold upon the plate. One cross-bar, *d*, serves for two grippers, and it may, if desired, have an inherent spring, and be caused to bear directly upon the said grippers.

If, as I prefer, a rubber spring, *b*, is used, it may be retained in place by pins *e* on the gripper and bar *d*, as shown in Fig. 5.

It frequently happens, in trimming sheet-metal plates, that a portion of the remnant is of sufficient width to be available in the manufacture of small articles, providing it can be detached at once, and without involving extra labor. In order to cut such strips from the remnant, I attach supplemental spring-cutters B to the edge of the punch, in the same manner as the grippers and corresponding fixed cutters B' to the die or bed-plate beneath, as shown in Figs. 2 and 6, so that when the punch descends, these cutters shall slit the edges of the plate to a sufficient depth to separate the desired strip or strips from the remnant when the latter is formed by the punch. The strip *x* shown in Fig. 7, for instance, is separated from the narrow and worthless portion *x'* of the remnant by two sets of cutters, B B', arranged at one end of the punch and die, and adjacent to the corners of the same.

I claim as my invention—

1. The grippers A, guided by and having a limited sliding movement on the edge of the punch, in combination with the cross-bar *d*,

secured to the said punch, and the interposed springs *b*.

2. The spring-cutters B and fixed cutters B', combined with the punch D and its die F, in the manner described, for the purpose of severing strips *x* from the remnant of the sheet-metal plate acted on by the said punch and its die.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

GEORGE H. PERKINS.

Witnesses:

WM. A. STEEL,
HUBERT HOWSON.