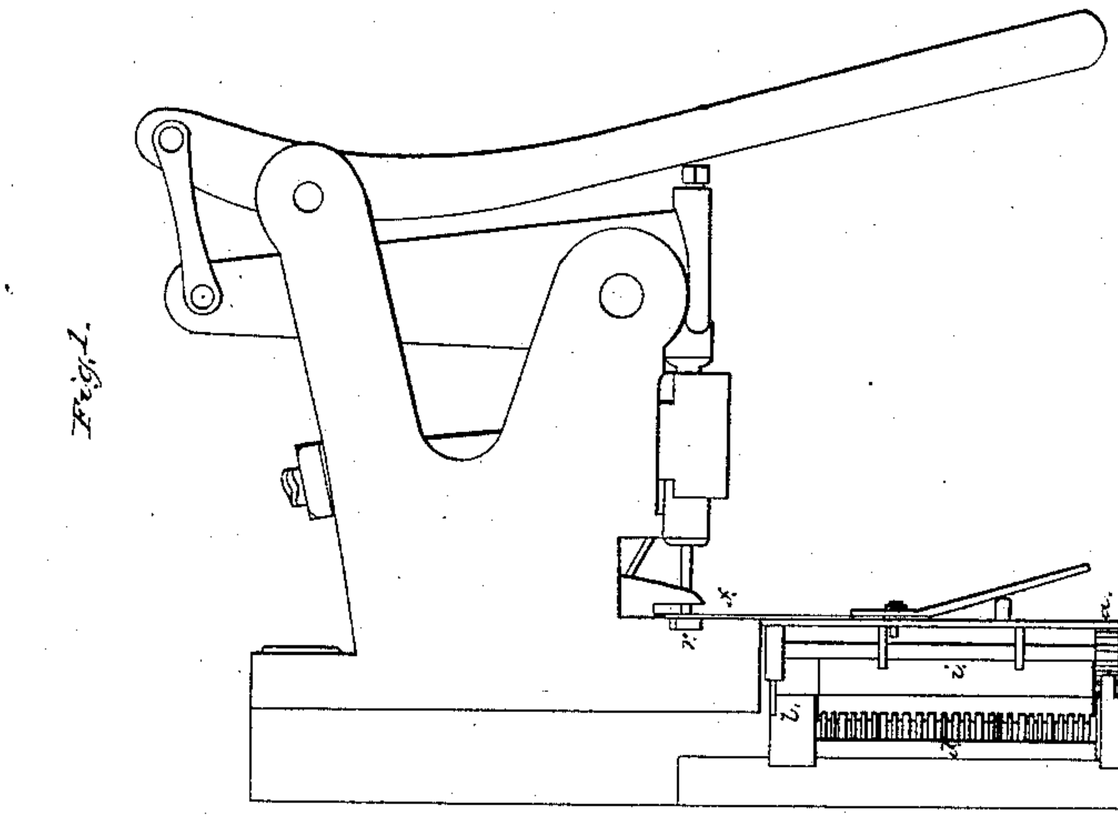
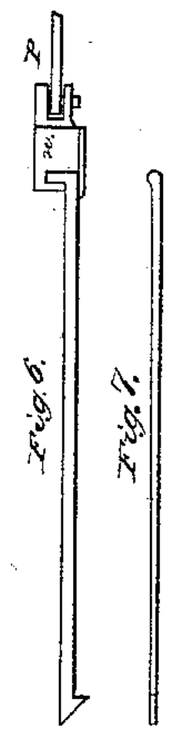
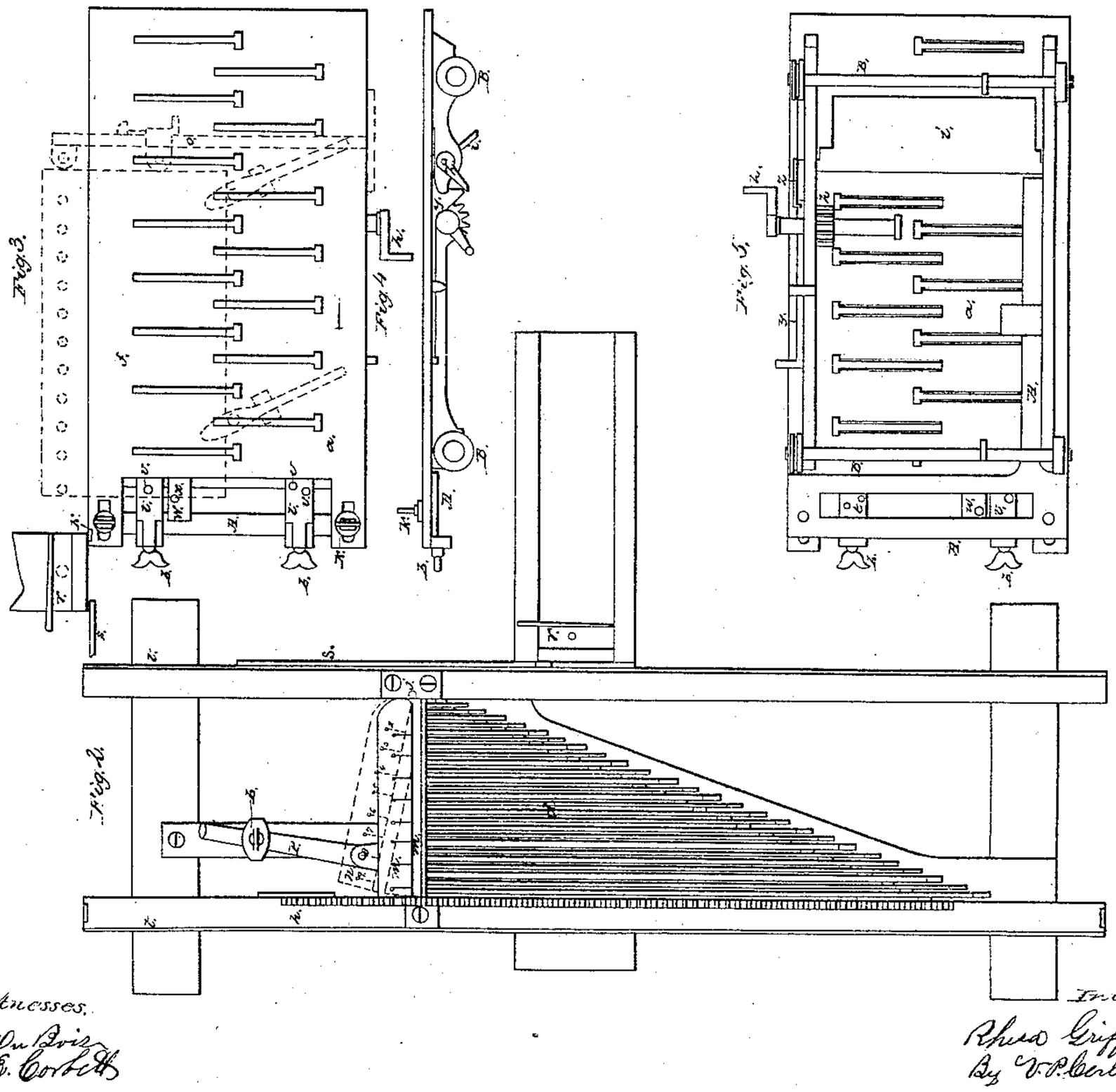
# R. Griffin,

## Metal Punch,

No. 33,989. Patented Dec. 24, 1861.







Witnesses.
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# UNITED STATES PATENT OFFICE.

RHESA GRIFFIN, OF SYRACUSE, NEW YORK.

## IMPROVEMENT IT MACHINES FOR PUNCHING BOILER-PLATES.

Specification forming part of Letters Patent No. **33,989**, dated December 24, 1861.

*To all whom it may concern:*

Be it known that I, RHESA GRIFFIN, of the city of Syracuse, in the county of Onondaga, State of New York, have invented a new and Improved Mode for More Expeditiously and Accurately Punching Plates for Steam-Boilers, and for other purposes that require a cylindrical form; and I do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon.

The nature of my invention consists, first, in a series of rods or bars with catches arranged between two parallel ways or tracks *l l* for a table or platform to travel on, as seen at the vertical cross-section, Fig. 1, and thereby forming a rack for the latch or pawl to act upon, and a sway-bar *n* and its connections at *j* with the cross-bar *m*, Fig. 2; also, the form of the catches and their connections with the sway-bar, as represented at *n*, Figs. 6 and 7; also, the adjustable platform *a*, Fig. 3, with the slide A (which is more fully shown at A A, Fig. 5) and movable dies *t t*, with holes *v v*, and stationary dies *w*, with pin *x*, the use of which in the following description is more fully explained: The cross-bar *m*, Fig. 2, is secured to the ways at right angles from one to the other directly over the edge of the sway-bar *n*, and when the sway-bar is in this position the catches or hooks are extended their extreme distance from the cross-bar *m*. It is evident that the outside cylinder, which forms one section of a boiler, is several times the thickness of the iron used longer in circumference than the inside cylinder. To illustrate more clearly, take a plate of iron nine (9) feet long and one-quarter ($\frac{1}{4}$) of an inch thick and punch the holes (being regulated by the rack or catches, as above represented) for an outside cylinder. Now, to form a cylinder that will fit the inside of this properly with the same number of holes the sway-bar *n* will be drawn back by the bar P, Fig. 2, seven (7) times the thickness of the iron used for the cylinder, or one and three-fourths ($1\frac{3}{4}$) inches at the figure nine (9) on the sway-bar, as seen at *n n*, Fig. 2, the catches or hooks which form the rack keeping their relative distance from each other at the same time. If the circumference of a cylinder was four (4) feet, then the sway-bar would be drawn back seven (7) times the thickness of the iron used at the figure four (4) from the cross-bar *m*. Again, if the circumference of a cylinder was eighteen (18) feet the sway-bar would be drawn back seven-eighths ($\frac{7}{8}$) of an inch (the thickness of the plate being the same) at the figure nine (9) on the sway-bar, or one-half the distance.

At Fig. 3 is represented a sheet of boiler-plate secured to the platform *a* by the clamps *e e*, the end of the plate against the pin *x*.

Fig. 4 represents a side elevation of the platform, showing the slide *y*, with the incline plane which acts upon the arm *z*, which is attached to the pawl or latch *i*, which raises it clear from the rack *d*, Fig. 2; B B, the truck-wheels; *h*, crank on pinion-shaft; *k*, set-screws that hold the slide A, and *q* the set-screws that hold the movable dies *t t*.

The advantage derived from the use of the slide A A is that the holes *v v* in the dies *t t* can be always brought directly in front of the punch or die *r* and be at right angles with the table or platform, and are readily adjusted by letting the pawl *i* down into the rack *d* and moving the end of the table near the front of the punch or die, Fig. 3, holding the pawl or latch firm against the catch or rack. Then loosen the set-screws *k k* and draw out or shove in the slide A A, as the case may be, until the holes *v v* are in the right position, which is readily obtained by having the slide strike against the catches on the end of the brace *s*, as seen on the outside of the ways, and one end a little in front of the punching-machine, as seen at Figs. 2 and 3, and secure it in that position by the set-screws *k k*.

It is evident that in punching the different-sized cylinders and different thicknesses of iron of the same size the holes in the dies would not be twice in the same place or position relative to the punch. The object of having the holes exactly in front of the punch is that when the plate is punched on the edge that edge may be brought over the dies and pins put through the holes in the plate into the holes in the dies, and in this position is ready to be punched across the end of the plate, which will be exactly at right angles. It is also evident that the holes in a plate for an inside cylinder will be nearer together than those in an outside cylinder; hence the necessity of having the dies *t t* movable. The

object of the hole *u* in the die *t* is to punch across the ends of plates at different angles.

Instead of putting the pin through the plate into the hole *v*, I will put it into the hole *w*, and to increase the angle this same die may be moved more or less toward the punch.

To put a plate on the platform in its proper place is simply to put one end of the plate against the pin *x* with the slat *o*, Fig. 3, or any similar device, ascertain how far over the platform to place it, and secure it with the clamps *e e*, when it will be ready for punching.

The more fully to illustrate the advantages of this machine over the ordinary mode of laying out and punching iron for boilers and other purposes of like form I will describe the usual method, which is thus: For a cylinder nine feet in circumference, take a slat or strip of board nine feet long and three inches wide and lay out and bore the holes seven-eighths of an inch from the edge the proper distance apart—say two inches—and in the other edge make the same number of holes, but reduce the distance from center to center of the holes enough so that in the length of the slat the second row of holes terminates seven times the thickness of the iron or plates to be used shorter than the first row of holes. Now, if the iron or plates were one-quarter of one inch thick, the holes in one side of the slat would be one and three-quarters ($1\frac{3}{4}$) inches shorter than the holes in the other side from end to end of the slat. Again, if the iron or plates used were three-sixteenths ($\frac{3}{16}$) of an inch thick and the same sized cylinder, a new slat or pattern would have to be made to fit the difference in the thickness of iron, and consequently a slat or pattern must be made for every variation of size of cylinder and thickness of iron used, and, again, when the slats or patterns are prepared they are laid on the plates to mark the holes, and when thus marked it is with the greatest care that the holes are punched where they are marked. With my machine the holes can all be punched in less time than they can be laid out in the ordinary way and much more accurately, and when the plates are punched with my machine and put together the holes will fit each other so exact that one-third more rivets can be driven in a day than can be driven in cylinders punched in the ordinary way and far better, for the reason that if the holes do not fit each other properly it requires reaming; but to dispense with the labor of reaming, a drift-pin is driven in to open the holes large enough for the rivets; but this is a very bad operation, for it raises a burr or upsets the iron between the sheets or plates and prevents the plates or sheets from being drawn together by the rivets, and another discrepancy shows itself. If the holes do not fit each other and are reamed out, the holes will be angular through the two sheets, and when the rivet is driven the heads on each side of the sheets or plates are not opposite each other. Consequently a portion of the strength of the rivet is lost.

What I claim as my invention is—

A series of rods or bars with catches or hooks arranged between two parallel ways or tracks for a platform to travel on, thereby forming a rack, as seen at *d*, Fig. 2, for the latch or pull *i*, as seen at Fig. 4, to set against when let down by slide *y;* also, the sway-bar *n* and form of the catches and the manner of connecting them to the sway-bar *n*, as seen at Figs. 6 and 7; also, the bar *m* over the sway-bar *n;* also, slide A, attached to the platform *a* by set-screws K K, Fig. 3, with a slot in it at right angles with the platform, as is also seen at A A, Fig. 5, with movable dies *t t*, with holes in them for the more expeditiously adjusting of the plates or sheets of iron, for the use and purposes above mentioned.

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Witnesses:

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