

Nov. 30, 1943.

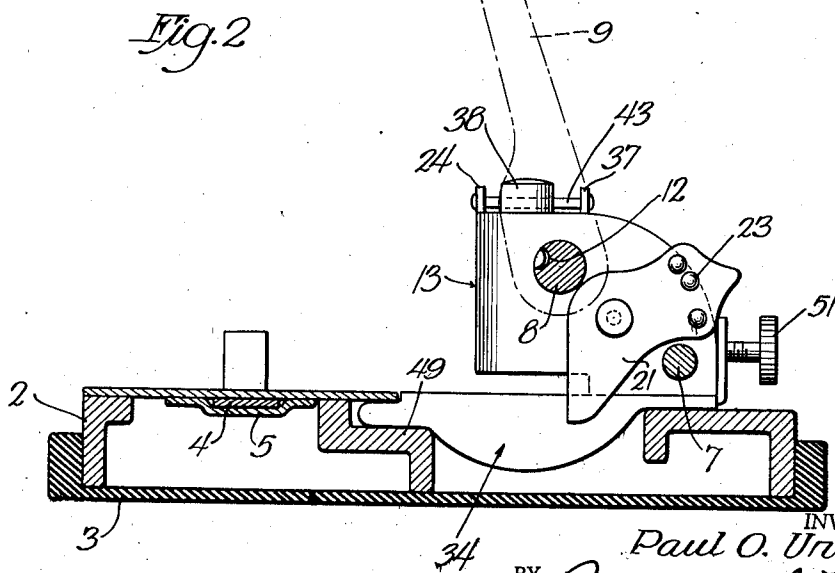
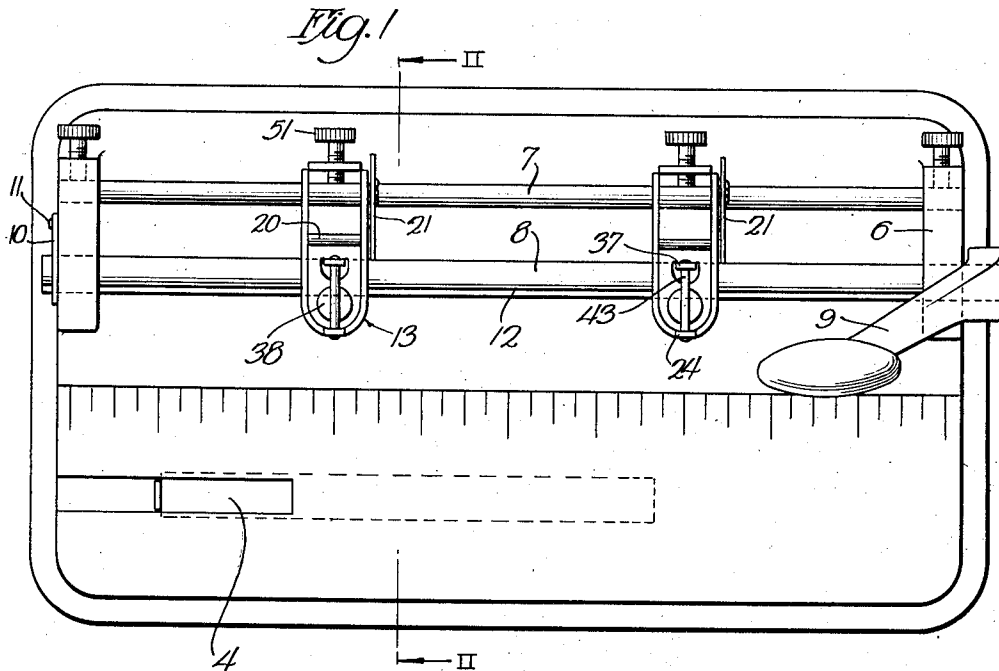
P. O. UNGER

2,335,552

PUNCH

Filed March 26, 1942

2 Sheets-Sheet 1



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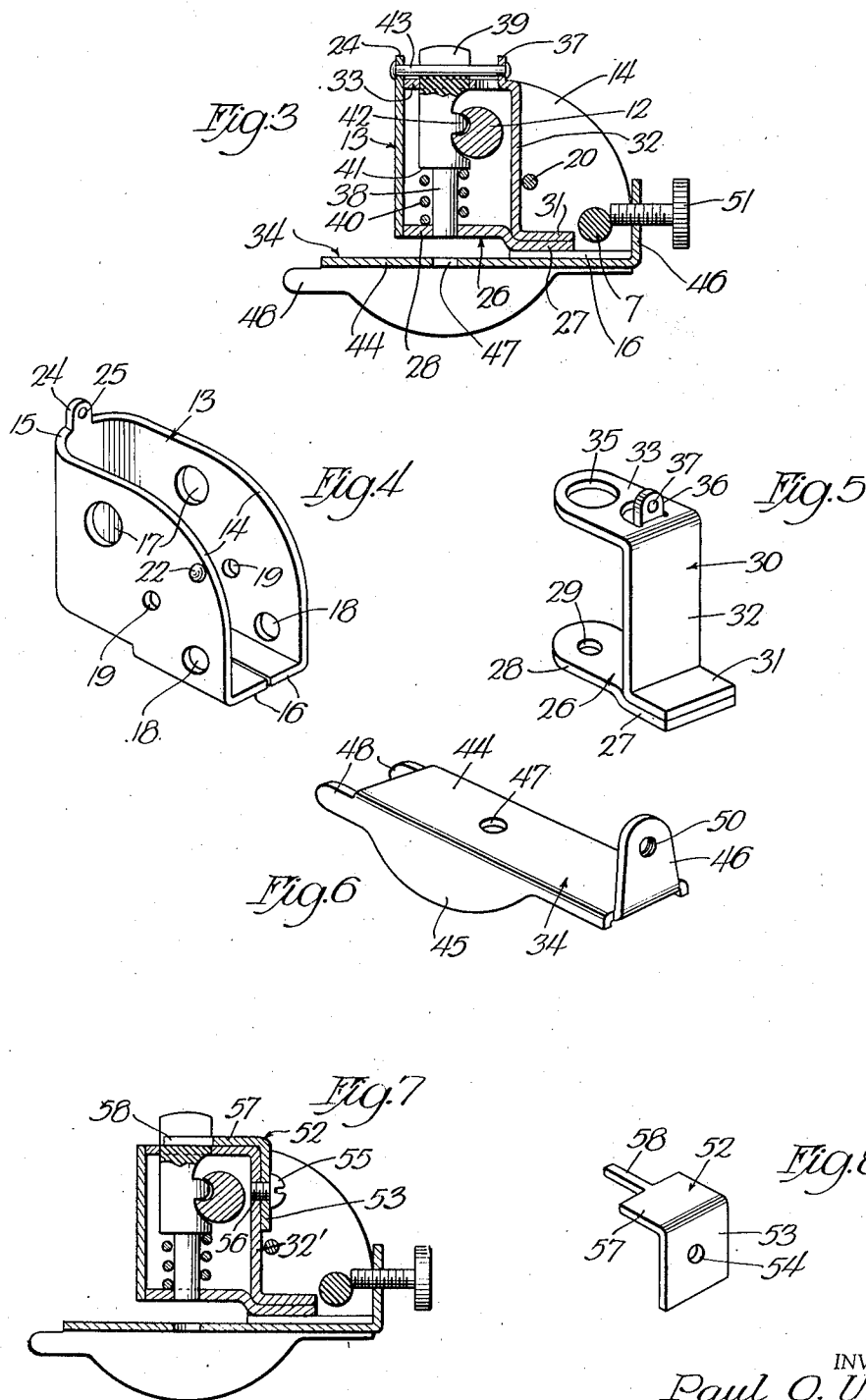
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2 Sheets-Sheet 2



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UNITED STATES PATENT OFFICE

2,335,552

PUNCH

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6 Claims. (Cl. 164—91)

This invention relates to a punch for perforating loose sheets of paper or similar material.

It is an object of this invention to provide a durable punch head formed from sheet metal and provided with means for retaining the punch pin in predetermined position to facilitate the assembly of the punch heads with the punch base. Other objects of this invention will become apparent upon reading the following description, taken in conjunction with the accompanying drawings, in which:

Figure 1 is a top elevation of a punch embodying the invention;

Figure 2 is a cross sectional view taken along the line II—II of Figure 1;

Figure 3 is a cross sectional view taken through the punch head;

Figure 4 is a detail perspective view of the shell;

Figure 5 is a detail perspective view of the bracket and stripper plate;

Figure 6 is a detail perspective view of the base of the punch head;

Figure 7 is a view similar to Figure 3 showing a modified form of punch head; and

Figure 8 is a detail perspective view of the retaining member used in the embodiment illustrated in Figure 7.

In the drawings, the reference numeral 2 indicates a base member provided with a removable chip pan 3. The side gauge 4 is secured to the base member by means of a bracket 5.

The base member 2 is provided at each end with an integral upstanding ear 6. Each ear is provided with two apertures (not shown). A rod 7 has its opposite ends positioned in one set of said apertures, and an operating shaft 8 is supported in the other set of said apertures. An operating lever 9 is fixed to one end of the operating shaft 8 and the other end of the operating shaft is secured by means of a latch 10 pivoted to one ear 6 as indicated at 11. The shaft 8 is provided with a longitudinally extending notch 12 for a purpose hereinafter described.

The punch head includes a shell 13 formed by bending a sheet metal blank to provide two parallel walls 14 joined by a rounded front wall 15. The walls 14 are provided with extensions 16 which are bent inwardly and abut to form a bottom wall for the rear portion of the shell. The walls 14 are provided with a pair of aligned apertures 17 adapted to receive the operating shaft 8, a second pair of apertures 18 adapted to receive the rod 7, and a third pair of apertures 19 which receive a rivet 20 by means of which a back gauge

21 is pivoted to each shell. One wall 14 is provided with an embossment 22 adapted to cooperate with any of a plurality of embossments 23 provided on the back gauge 21, to maintain the back gauge in any predetermined position. The front wall 15 of the shell is provided with an integral upstanding ear 24 apertured, as indicated at 25, for a purpose to be hereinafter described.

A stripper plate 26 has one portion 27 positioned on the bottom 16 of the shell and has an offset portion 28 apertured as indicated at 29, to allow the punch pin to project therethrough. A bracket 30 has a bottom flange 31, an upright wall 32 and a top wall 33. The shell 13, stripper plate 26 and the bracket 30 are welded through the bottom 16, the member 27 and the flange 31, to a base 34 to form a unit. The top wall 33 is provided with an aperture 35 adapted to receive the head of a punch pin. The top wall 33 also has an upstanding ear 36 apertured, as indicated at 37, in alignment with the aperture 25.

A punch pin 38 is positioned with its punching end in the aperture 29 and its head 39, which is of larger diameter than the punching end, positioned in the aperture 35. A coiled spring 40 is positioned around the punch pin 38 between the stripper plate 26 and the shoulder 41 of the punch pin. The head 39 of the punch pin is provided with a projection 42 which engages the notch 12 of the operating shaft so that the punch pin may be depressed against the action of the spring 40 when the operating shaft is rotated by pressure on the lever 9. When the operating lever 9 is released, the spring 40 forces the punching pin upwardly. The top surface of the head 39 of the punch pin is provided with a recess so that it can straddle a bar 43 which extends from the ear 24 to the ear 36. The bar 43 holds the punch pin 38 at a predetermined height against the action of the spring 40, and prevents the spring from forcing the punch pin out of the punch head before it is engaged with the notch 12. The bar 43 also prevents the rotation of the punch pin to facilitate assembly of the punch head on the operating shaft 8.

The base 34 of the punch head comprises a flat top portion 44, a pair of depending side portions 45 and an upstanding ear 46. The portion 44 is apertured, as indicated at 47, in registration with the aperture 29. The side walls 45 terminate in forwardly extending legs 48 adapted to rest on a ledge 49 provided on the base of the punch. The ear 46 is apertured, as indicated at 50, to permit passage therethrough of a screw 51 by means of

which the punch head may be secured against longitudinal movement on the rod 7.

When it is desired to change the lateral position of any punch head already assembled on the punch, it is necessary only to loosen the screw 51, move the punch head to the desired position, and then retighten the screw 51. When it is desired to remove a punch head or add a punch head to the punch base, the screw 51 on each punch head is loosened, the latch 10 is released, the rod 7 and the operating shaft 8 are both slid toward the right as far as necessary in order to remove the punch head or add other punch heads. When the bases of the desired punch heads are properly positioned on the punch base, the rod 7 and the operating shaft 8 are pushed through the apertures 18 and 17 and then the latch 10 is moved into engagement with the operating shaft 8 and the screws 51 are tightened against the rod 7.

The modification of the punch head shown in Figures 7 and 8 is essentially similar to that previously described except that the bar 43 is omitted and a plate 52 substituted. The plate 52 is bent at right angles and the depending wall 53 is apertured, as indicated at 54, so that it may be secured to the upstanding wall 32' by means of a screw 55 which enters an aperture 56 provided in the upstanding wall 32'. A tongue 53 projecting forwardly from the top wall 57 of the plate 52 fits in the recess in the head 39 of the punch pin to maintain the punch pin in proper position for the assembly of the punch head on the punch base. If it is desired to remove the punch pin from the punch head for sharpening or for any other purpose, it is necessary only to loosen the screw 55, remove the plate 52 and disengage the operating shaft from the punch head.

While I have described two embodiments of my invention in detail, it will be understood that the description thereof is illustrative, rather than restrictive, as many details may be modified or changed without departing from the spirit or scope of my invention. Accordingly, I do not

desire to be restricted to the exact construction described, except as limited by the appended claims.

I claim:

1. In a punch head, a shell formed from a blank of sheet metal, a bracket fitted in said shell, a stripper plate mounted in said shell, and a base, said shell, bracket, stripper plate, and base being welded together to form a unit.

2. In a punch head, a shell formed from a blank of sheet metal, a bracket mounted in said shell, a punch pin mounted in said bracket, and means secured to said bracket for maintaining said punch pin in predetermined position.

3. In a punch head, a shell and a bracket each formed from a blank of sheet metal, a punch pin mounted in said bracket, and means secured to said shell and said bracket for maintaining said punch pin in predetermined position.

4. In combination, a punch head, and a punch pin mounted in said punch head, said punch pin being provided with a recess, and means secured to said punch head engaging said recess to maintain said punch pin in predetermined position relative to said punch head.

5. In a punch head, a shell formed from a blank of sheet metal, a bracket fitting in said shell, a punch pin mounted in said bracket, said punch pin being provided with a recess in its upper surface, and a bar secured to said shell and said bracket, said bar engaging said recess to maintain said punch pin in predetermined position.

6. In a punch, a punch head, a punch pin mounted in said punch head, said punch pin being provided with a projection, an operating shaft provided with a notch engageable with said projection to actuate said punch pin, and means for maintaining said punch pin in predetermined position relative to said punch head to facilitate assembly of said notched operating shaft with said punch pin.

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