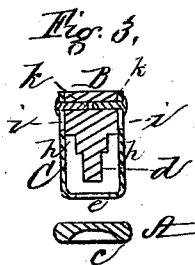
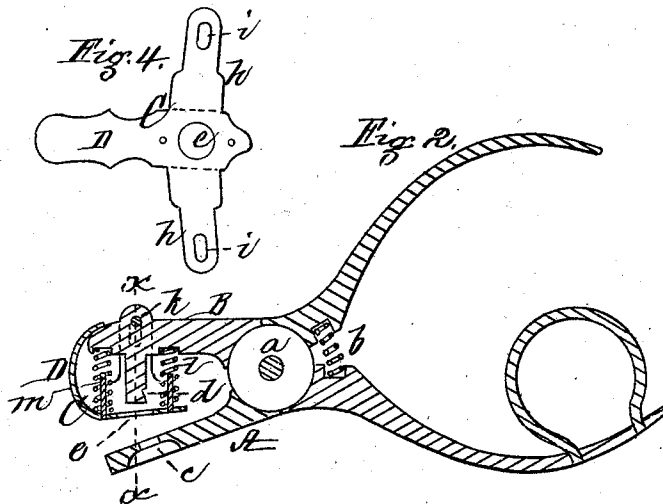
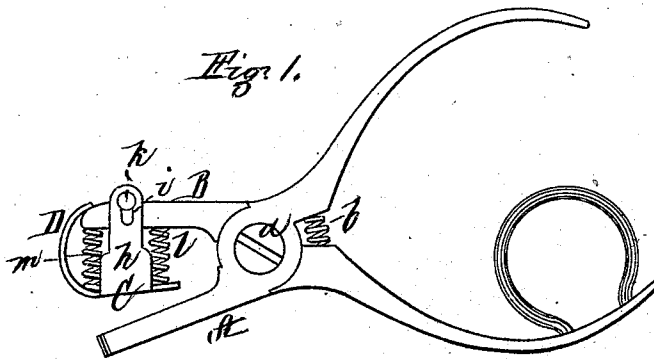


W. HILL.
TICKET-PUNCHES.

No. 184,008.

Patented Nov. 7, 1876.



Witnesses,
W. J. Cambridge
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Warren Hill,
per
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UNITED STATES PATENT OFFICE.

WARREN HILL, OF BOSTON, MASSACHUSETTS.

IMPROVEMENT IN TICKET-PUNCHES.

Specification forming part of Letters Patent No. **184,008**, dated November 7, 1876; application filed September 7, 1876.

To all whom it may concern :

Be it known that I, WARREN HILL, of Boston, in the county of Suffolk and State of Massachusetts, have invented certain Improvements in Ticket-Punches, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, making part of this specification, in which—

Figure 1 is an elevation of a ticket-punch constructed in accordance with my invention. Fig. 2 is a longitudinal section through the center of the same. Fig. 3 is a transverse section on the line *xx* of Fig. 2; Fig. 4, detail to be referred to.

Ticket-punches in which the clearer is provided with one spring only and connected with both jaws, are objectionable, for the following reasons: The ticket, after being punched, is not readily carried away from the male cutting-die by the clearer, and should a number of tickets be entered at once the punch cannot be operated, owing to the clearer being pivoted to the jaw containing the female die. Furthermore, a portion of the space between the outer end of the clearer and jaw of the female die is left open, and sometimes at night interferes with the ready introduction of the ticket.

To overcome the above-mentioned difficulties is the object of my present invention, which consists in a clearer, provided with two slotted arms or side pieces, by which it is secured to the jaw of the male die, two springs being employed—one at the toe and the other at the heel of the clearer—by which construction its face is caused to adapt or adjust itself to the surface of the ticket on which it bears, and insures the punched ticket being instantly cleared from the male cutting-die when the jaws are separated, while any number of tickets which may be entered between the clearer and jaw of the female die can be punched at a single operation.

My invention also consists in providing the clearer with a curved guard, which extends over the space between the outer ends of the clearer and the jaw of the male die, and facilitates the entrance of the tickets at the proper point.

To enable others skilled in the art to under-

stand and use my invention, I will proceed to describe the manner in which I have carried it out.

In the said drawings, A B are two jaws, pivoted together at *a* and kept apart by a stiff spiral spring, *b*. The jaw A is provided with a female die, *c*, and the jaw B with a male die, *d*, made to fit therein. The jaw B is also provided with a clearer, C, for freeing the punched ticket from the male die after the latter has cut a piece out therefrom, a passage, *e*, being formed in the clearer for the passage of the male die through it on its way to the female die. This clearer (struck up in one and the same piece, and seen in Fig. 4 before being bent around and applied) is connected with the jaw of the male die *d* by means of two arms or side pieces, *h*, each provided with a slot, *i*, through which passes a pin, *k*, provided with a head.

l m are two short spiral springs placed between the clearer and jaw B, one on each side of the male die *d*, which serve to press the clearer out beyond the end of the male die as far as allowed by the slots *i* and pins *k*, these springs yielding to allow the clearer to be forced back over the end of the male die when it enters the female die as the jaws approach each other. It will be seen that after the ticket has been punched it continues to be held firmly between the face of the clearer and the jaw A until the male die is entirely withdrawn from the ticket, thus leaving it perfectly free to be withdrawn as soon as the pressure of the clearer thereon is relieved by the still farther separation of the jaws.

By attaching the clearer to only one of the jaws, (the jaw B of the male die,) instead of also pivoting it to the jaw A of the female die, and by also interposing two springs between the clearer and the jaw B, the former is brought with a positive motion at right angles upon the surface of the ticket, and is free to instantly adjust itself so as to press and hold the ticket with a uniform bearing against the said jaw A, the entire surface of the clearer being brought into contact with the ticket, as required. The outer end of the clearer is bent around upon a curved line, so as to extend entirely over the space between it and the jaw B of the male die, thus serving as a

guard, D, for the outer spring *m* and facilitating the introduction of the tickets between the clearer and the jaw A of the female die.

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

1. The clearer C, with its slotted arms *h*, connected with the jaw B of the male die *d*, in combination with the springs *l m* and jaw A, containing the female die *c*, operating substantially in the manner and for the purpose set forth.

2. The guard D, in combination with the clearer C, having slotted arms *h*, the jaw B of the male die *d*, springs *l m*, and jaw A, of the female die *c*, substantially as and for the purpose described.

Witness my hand this 29th day of August, 1876.

WARREN HILL.

In presence of—

N. W. STEARNS,

W. J. CAMBRIDGE.