

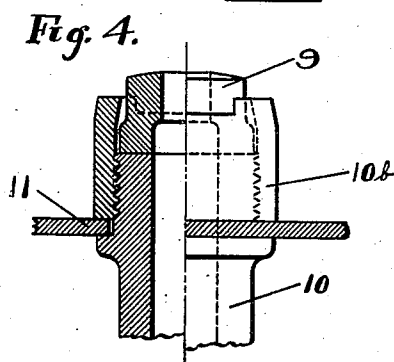
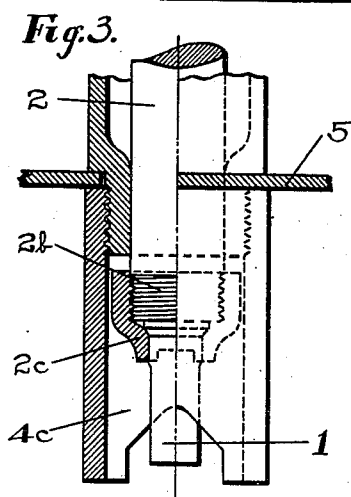
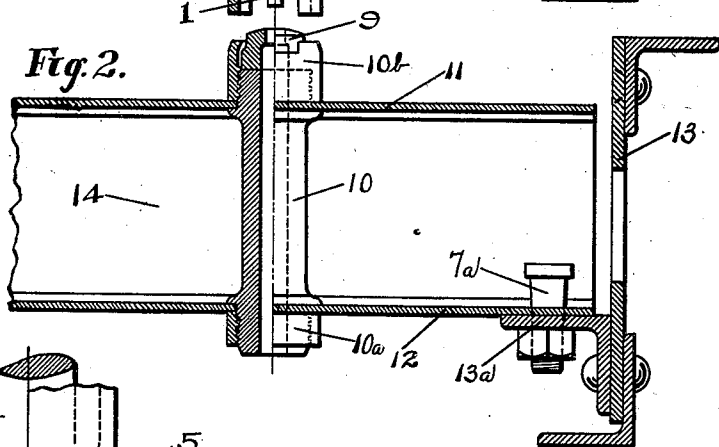
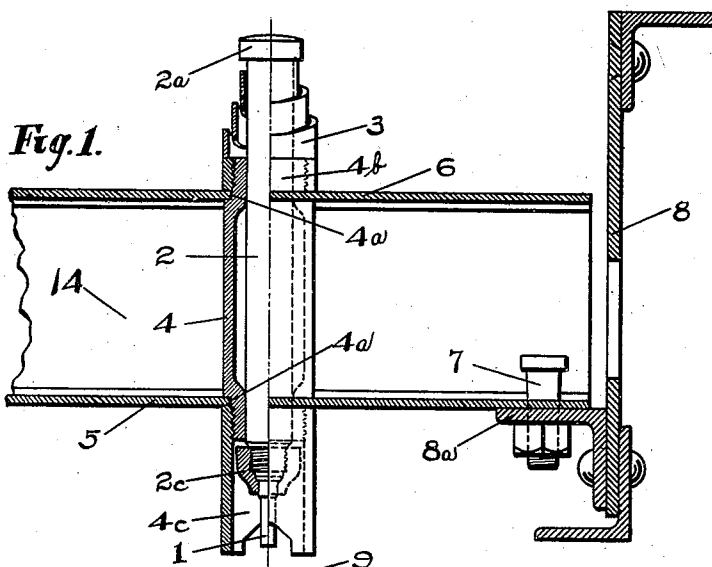
No. 856,110.

PATENTED JUNE 4, 1907.

E. W. SUMMERS.  
METAL PUNCHING MACHINE.

APPLICATION FILED FEB. 1, 1907.

2 SHEETS—SHEET 1.



WITNESSES:-

R. N. Lowry.  
Charles Barnett.

INVENTOR:-

E. W. Summers.

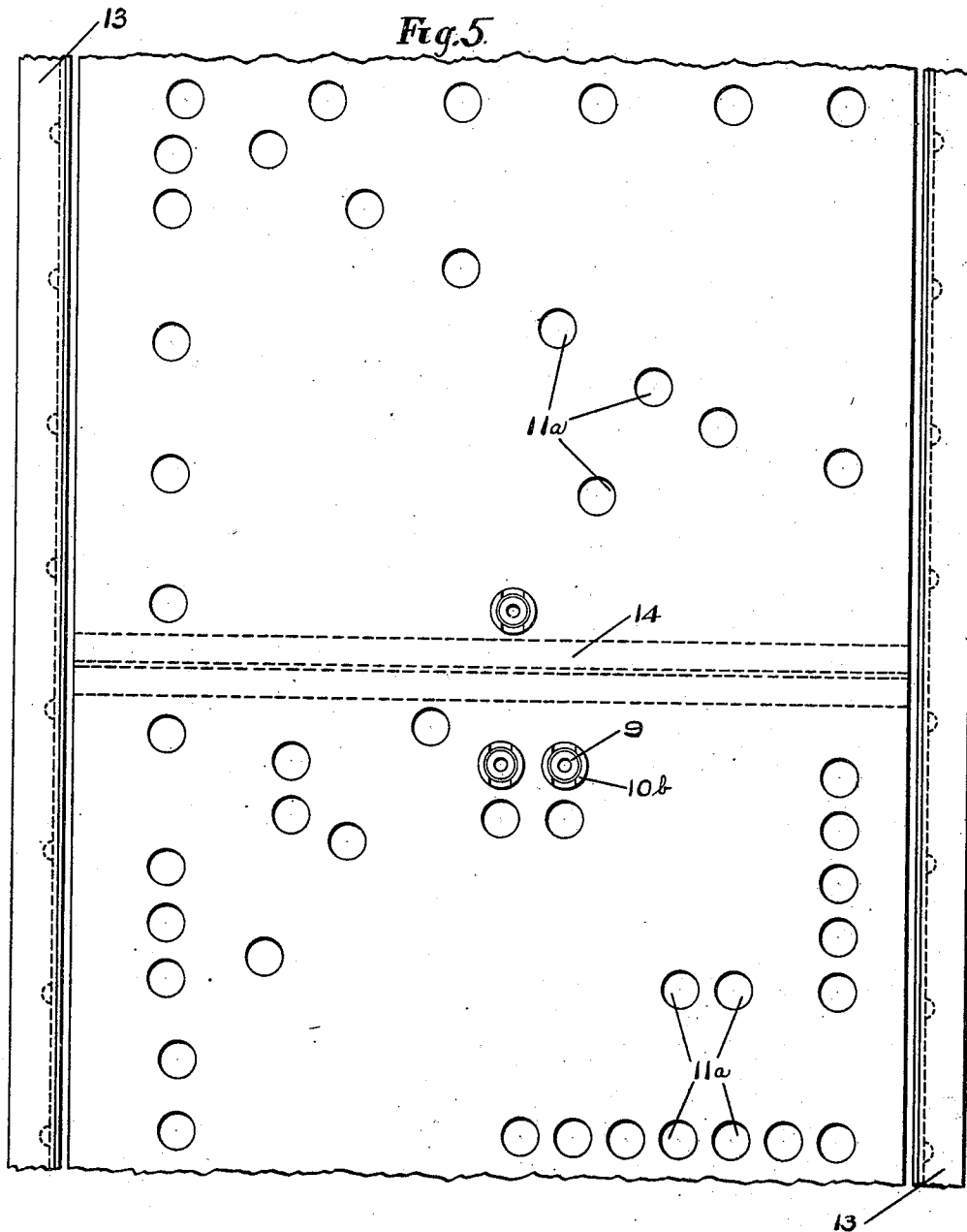
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# UNITED STATES PATENT OFFICE.

EDGAR WEBSTER SUMMERS, OF WILKINSBURG, PENNSYLVANIA.

## METAL-PUNCHING MACHINE.

No. 856,110.

Specification of Letters Patent.

Patented June 4, 1907.

Application filed February 1, 1907. Serial No. 355,220.

*To all whom it may concern:*

Be it known that I, EDGAR WEBSTER SUMMERS, of Wilkinsburg, in the county of Allegheny and State of Pennsylvania, have invented a certain new and useful Improvement in Metal-Punching Machines, of which improvement the following is a specification, reference being had to the accompanying drawings, forming part of this specification, in which—

Fig. 1 is a sectional elevation taken through part of a punch-carrying-templet, and the side-girder of the templet-carrying-frame.

Fig. 2 is a sectional elevation taken through a part of a die-carrying-templet, and the side-girder of the templet-carrying-frame.

Fig. 3 shows the lower end of the punch-carrying-shank, partly in section and partly outside view.

Fig. 4 shows the upper end of the die-carrying-separator, partly in section and partly in outside view.

Fig. 5 shows a portion of the die-carrying-templet in top view, in its position between the side-girders of the die-carrying-frame.

This invention is along the lines indicated in my co-pending application, Ser. No. 353,914 filed Jan. 24th. 1907, and along the lines of my application of the same title as this and of the same filing date. In this application the arrangement of punches and dies is intended for use in that class of machines wherein a punch and die is located for each hole to be punched in a plate, or other metallic shape, and which plate is so large as to make it impractical to operate all of the punches under the ram of a press at one time. The arrangement is for the purpose of furnishing a method of exact location of punches and dies, and which location may not be disturbed, or the relative position of the punches changed in the plane of the plate to be punched, by reason of the necessary handling to perform the punching operation, or in placing or removing the metallic plates to be punched.

In the drawings I show the punches 1, the punch-shanks 2, with their enlarged top-end 2<sup>a</sup> and their threaded bottom-end 2<sup>b</sup> and their punch-clamping-nut 2<sup>c</sup>. I show a spiral-pull-off-spring 3 at the top end of 2. I show the separator or punch-shank-guide 4, the bottom-templet 5, the top-templet 6, which templets are pierced with holes which fit the shouldered ends of 4 at 4<sup>a</sup> and which

are clamped to the separator 4 by means of the clamp-nut 4<sup>b</sup> at the top and 4<sup>c</sup> at the bottom. I show the tapered bolt 7, for bolting temple 5 to a supporting-ledge 8<sup>a</sup> on side-girder 8. I show the die 9, the die-supporting-block 10, which also acts as a separator between templets 11 and 12. I show the clamping-nut 10<sup>a</sup> on the bottom of 10 and the clamping-nut 10<sup>b</sup> on the top of 10, which 10<sup>b</sup> also serves to hold die 9 on top of 10. The tapered-bolt 7<sup>a</sup> is similar to 7 and for the purpose of fixing templet 12 to supporting-ledge 13<sup>a</sup> in side-girder 13. The cross-beams 14 may be the same in either the die-holding-templet or the punch-holding-templet, and are for the purpose of preventing a deflection in the thin sheet-metal templet-plates 5, 6, 11, and 12. These cross-beams may be located at any convenient place across the templet, escaping punches and dies as in Fig. 5. They may be bolted to the sheet-metal templets if desired. In Fig. 5 I show the separator-holes 11<sup>a</sup>, which holes may be located in any arrangement desired, for any arrangement of rivet-holes, or the like which are to be punched. For clearness of illustration I have shown several dies 9 and clamp-nuts 10<sup>b</sup> in position in Fig. 5.

It is the purpose of this invention to use this punch-holding-templet and die-holding-templet in a press similar to that shown in my co-pending application, Ser. No. 353,914, above referred to, or in any other type of press which is adapted to actuate these punches.

In operation the die-carrying-templet rests in the position shown in Fig. 2 with the punch-carrying-templet as in Fig. 1 with the metallic plate or other shape to be punched lying on the die 9 and with the clamp-nut 4<sup>c</sup> resting on the plate and holding it in contact with the die. The lower end of die-holder 10 is supported in the press while the upper end of punch-shank 2 is engaged by any suitable press-ram, forcing the punch down through the plate into the die, the pull-off-spring 3 acting to withdraw the punch from the plate. Any number or arrangement of holes may be punched by this machine with absolute accuracy and exact duplication of the arrangement of holes in the different plates, and it is possible to handle very large plates and perform the work of punching holes with absolute accuracy of location, without the necessity of having a press with a ram-head large enough to operate over the entire surface of

the plate at one and the same time. The templet plates 5, 6, 11, and 12 may be all clamped together and the holes 11<sup>a</sup>, which are alike in all of the plates may all be drilled while the plates are thus clamped. With the separating devices machine-finished in their contacting parts with the templet-plates and the clamp-nuts pulled up taut, it is only necessary then to have the side-girders 8 and 13 held by any suitable means in a fixed relation, one over the other in order to secure the exact registration of all of the punches with all of the dies.

Many changes may be made in the form and shape of punches, dies, separators, or of the type of press for operating the punches or kind of power used without departing from my invention.

I claim:—

1. In a metal punching machine, a templet for locating dies, punches, and the like for punching holes in metal plates, beams, etc., the said templet comprising a plurality of relatively fixed sheets of metal spaced apart, which have a series of holes therethrough, the said series of holes being duplicates of each other in their arrangement and location over the plurality of sheets of metal, comprising the templet.
2. A templet composed of two sheet metal plates spaced apart with means for holding them in fixed relation to each other, and a plurality of punches carried by the templet, and detachable therefrom.
3. In a metal punching machine, a punch-carrying - templet, the said templet being composed of a pair of metallic plates, which plates are held apart by separators, the separators acting as guides for punch-carriers.
4. In a metal punching machine, a punch-carrying - templet, the said templet being composed of a pair of metallic plates, which plates are held apart by separators, which

separators have sleeve-nuts on one end and which sleeve-nuts are adapted to act as pull-offs, by means of their projecting beyond the end of the punches, the punches receding within the sleeve-nuts after the punching operation.

5. In a metal punching machine, a punch-holding-templet, which templet is composed of a pair of metallic plates, which plates are held apart in fixed relation by separators and which templet is supported on side-girders for the purpose of handling in the punching-press.

6. A templet composed of two plates spaced apart, and die carrying members extending transversely thereof and secured rigidly to both plates, whereby such plates are held in fixed relation with respect to each other.

7. In a metal punching machine, a pair of templets, each templet comprising a pair of metallic plates, which are held apart by separators, and which have a stiffener beam transversely of the templet, for the purpose of preventing sagging.

8. A die holding and templet spacing member, comprising a body portion having means for spacing apart in fixed relation a pair of templet plates and provided at one end with means for carrying a die.

9. In a metal punching machine, a pair of metal templet plates spaced apart, the said metal plates having each a series of holes, and die-holding-separator-blocks that are interchangeable and fit in the holes of the said metal plates.

In testimony whereof, I have hereunto set my hand.

EDGAR WEBSTER SUMMERS.

Witnesses:

R. N. LOWRY,

CHARLES BARNETT.