

B. G. Welch.

Gang-Punch.

N^o 74646.

Patented Feb. 18, 1868.

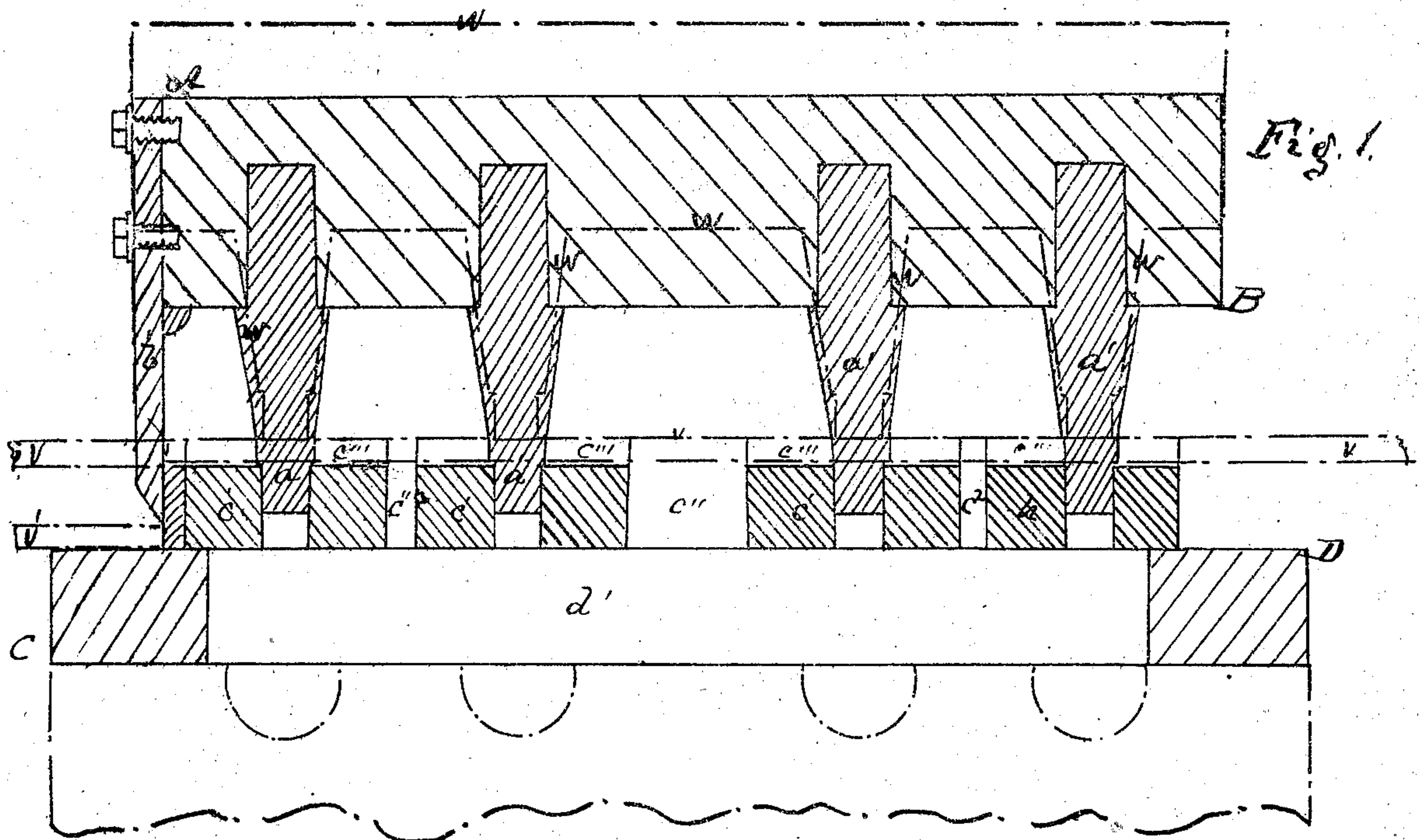


Fig. 1.

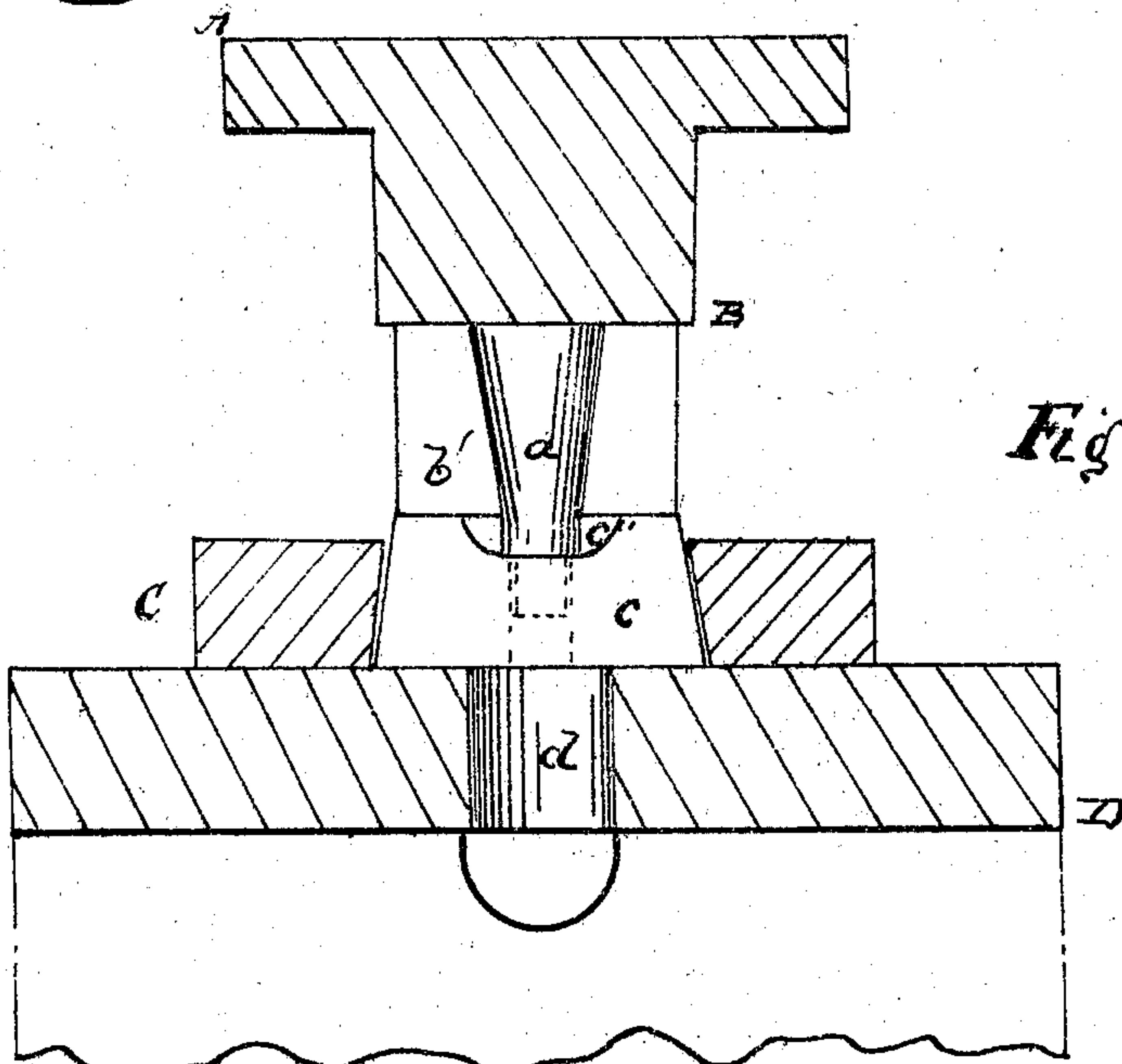


Fig. 2.

Witnesses:

Ray Morrison

John Welch Inventor. Benj. B. Welch

United States Patent Office.

BENJAMIN G. WELCH, OF DANVILLE, PENNSYLVANIA.

Letters Patent No. 74,646, dated February 18, 1868.

IMPROVED GANG-PUNCH.

The Schedule referred to in these Letters Patent and making part of the same.

TO ALL WHOM IT MAY CONCERN:

Be it known that I, BENJAMIN G. WELCH, of Danville, in the county of Montour, and State of Pennsylvania, have invented a new and useful Improvement in the Gang-Punch; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the accompanying drawings, making a part of this specification, in which—

Figure 1 is a vertical longitudinal section, and

Figure 2 a transverse section of the said improved punch—

Like letters of reference indicating the same parts when in the different figures.

My improvement relates more especially to the gang-punch used for punching and cutting off the bars for railway fish-plates, and has for its object the preservation of the proper relative positions of the punches and dies during the operation of punching the heated bars; and my invention consists, substantially as hereinafter described, in making the dies in separate blocks, so as to leave free spaces between them when under the gang of punches, during the operation of punching and cutting off the heated bars.

Referring to the drawings, A B is a rising and falling beam or bar, carrying the punches a' a' and the cutter b' , and C D a stationary bed-plate, directly under the gang of punches, and supporting the dies c' c' . The punches a' a' are fixed vertically, at the required distances apart, along in the under side of the beam A B, and the cutter b' is adjustably secured to one end of the beam, and so that the lower ends of all the said punches a' and the cutter b' shall be in the same horizontal plane, as shown in fig. 1. The dies c' c' are separate blocks of metal, one for each punch, made wider at their bottoms than at their tops, and arranged along in a corresponding under-cut groove c'' in the bed-plate C D, so that they can be forced along therein to come directly under their respective punches a' , and be held firmly down by the said under-cut groove c'' , substantially as represented in the drawings. The top or upper side of each of the dies c' has a groove, c''' , which is of the transverse form, width, and depth of the heated bar which is to be punched, so that the said bar can be moved or pushed along longitudinally therein by the workman, without moving the said dies, when the punches and cutter are elevated.

In the drawings, the punches are represented as resting down in their dies. The faint lines v v , in fig. 1, represent the bar of hot iron as in the groove c''' ; the faint lines w w represent the beam, with its attached punches a' , as descending, and the punches about to pierce the bar v , and the faint lines v' v' as the punched portion of the bar, subsequently cut off by the cutter b' . Directly under the holes of the die-blocks there is a long slot, d' , made through the bed-plate C D, for allowing the small lumps of metal, which are punched from the hot bar v , to pass freely downward and be discharged.

Operation.

The punch and cutter, carrying beam A B, is intended to be raised to a sufficient height and then let fall, by any suitable machinery connecting it with a motive-power, and, whilst elevated, the forward end of the heated bar, which is to be punched and cut off, is to be pushed by the workman, e , along in the grooves c''' c''' of the dies c' c' to the proper limited distance, when the punches in the falling carrier simultaneously punch the series of holes required in the bar, and, on being again elevated, the bar is to be pushed forward the same distance as before, or so that when the punch and cutter-carrier A B again falls, the cutter b' will cut off the previously-punched portion of the said bar, and, at the same time, the gang of punches a' make the series of holes required in the next section of the bar, and so on until the whole bar has been punched and divided into the required sections or "fish-bars." The die-blocks c' being held securely by the under-cut groove c'' in the bed-plate, and at some distance apart from each other, expand or lengthen as they absorb heat from the bar, without altering the positions of their punch-holes in relation to their respective punches a' . It will be seen that the "preservation of the proper relative positions of the punches and dies" will be effectually maintained during the operation of the machine, and in the most simple manner. It will also be seen that, as the punches a' are merely pressed firmly in respective holes, made to receive them in the beam A B, their relative positions cannot be varied by the absorption of heat by the said beam more than will be caused in the dies by the absorption of heat by the bed-plate; in other words, the relative expansion and contraction of the

beam A B and bed-plate C D will be equal, and the punches and dies, therefore, always directly opposite to each other..

Having thus fully described my improvement in the gang-punch, what I claim as new therein, of my invention, and desire to secure by Letters Patent, is confined to the following, viz:

I claim the construction and arrangement of the dies c' c' of a gang-punch, disconnected or separated from each other by suitable spaces, c'' c'' , in their bed-plate C D, substantially as described and set forth, for the purpose specified.

BENJ. G. WELCH.

Witnesses:

BENJ. MORISON,
J. C. BAILEY.