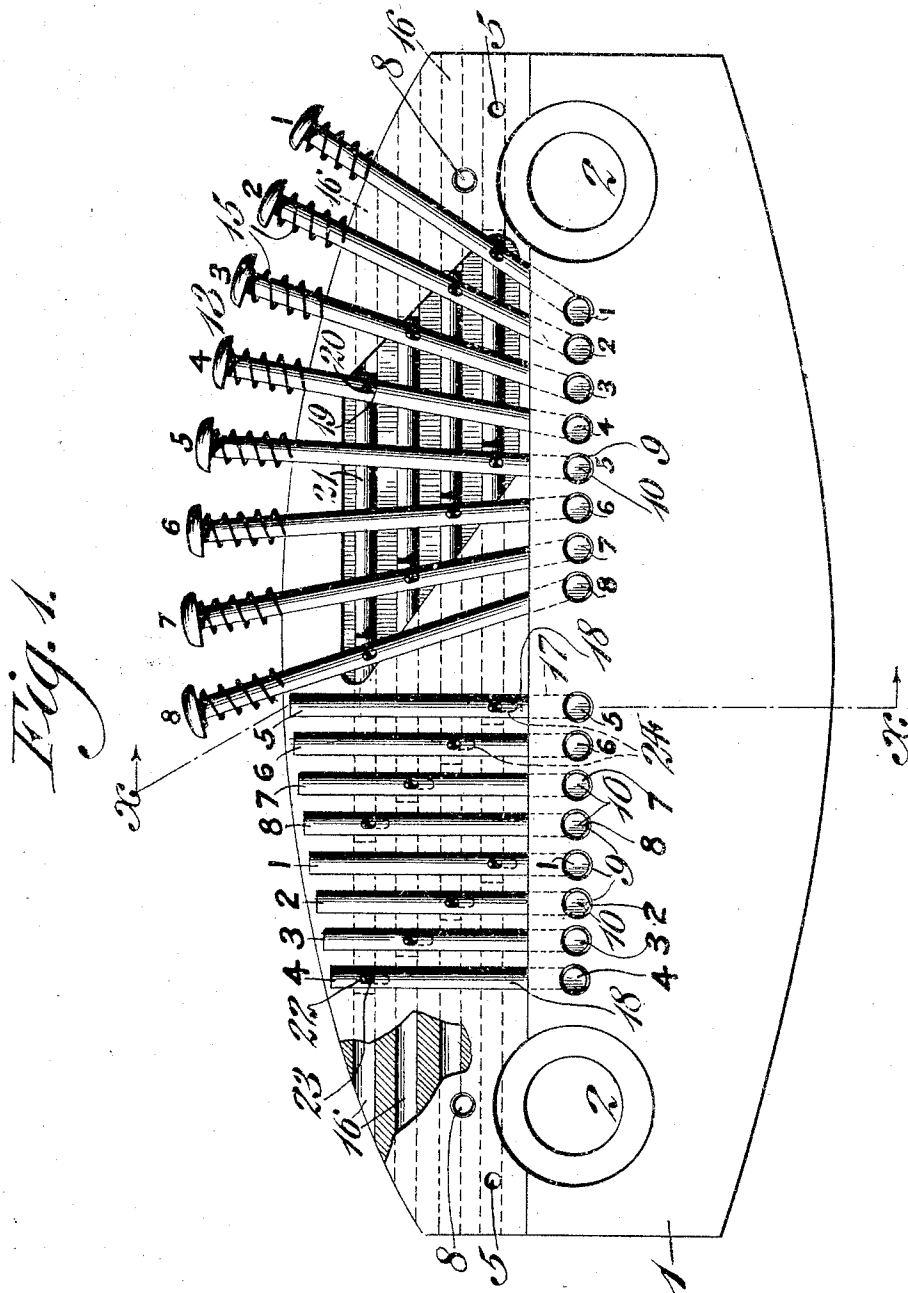


W. K. CALDWELL.
 HEAD FOR PUNCHING FIVE AND SIX FRAME BRUSSEL CARDS.
 APPLICATION FILED SEPT. 24, 1909.

959,200.

Patented May 24, 1910.

3 SHEETS—SHEET 1.



WITNESSES

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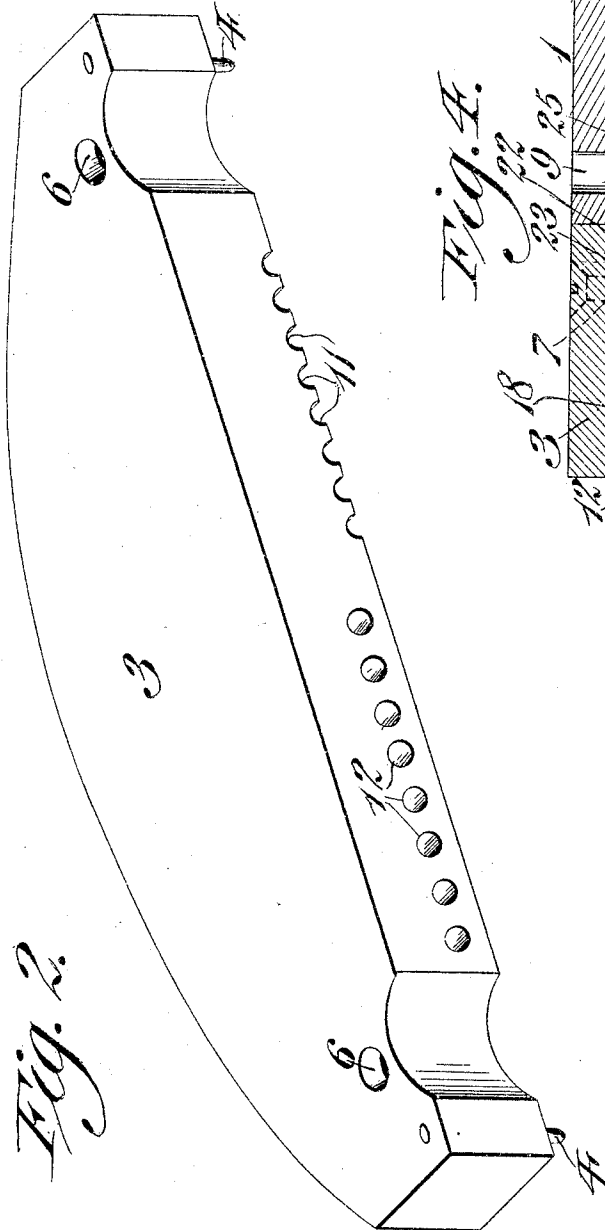


Fig. 4.

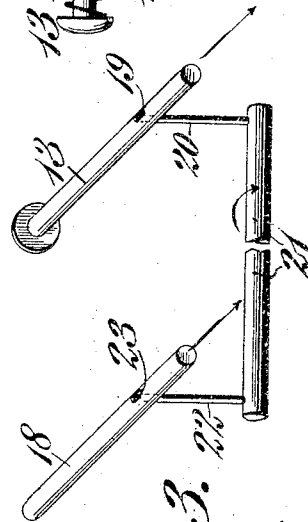
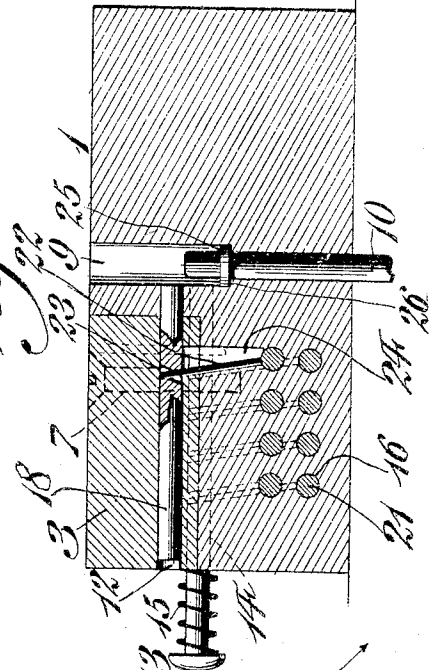


Fig. 3.

WITNESSES

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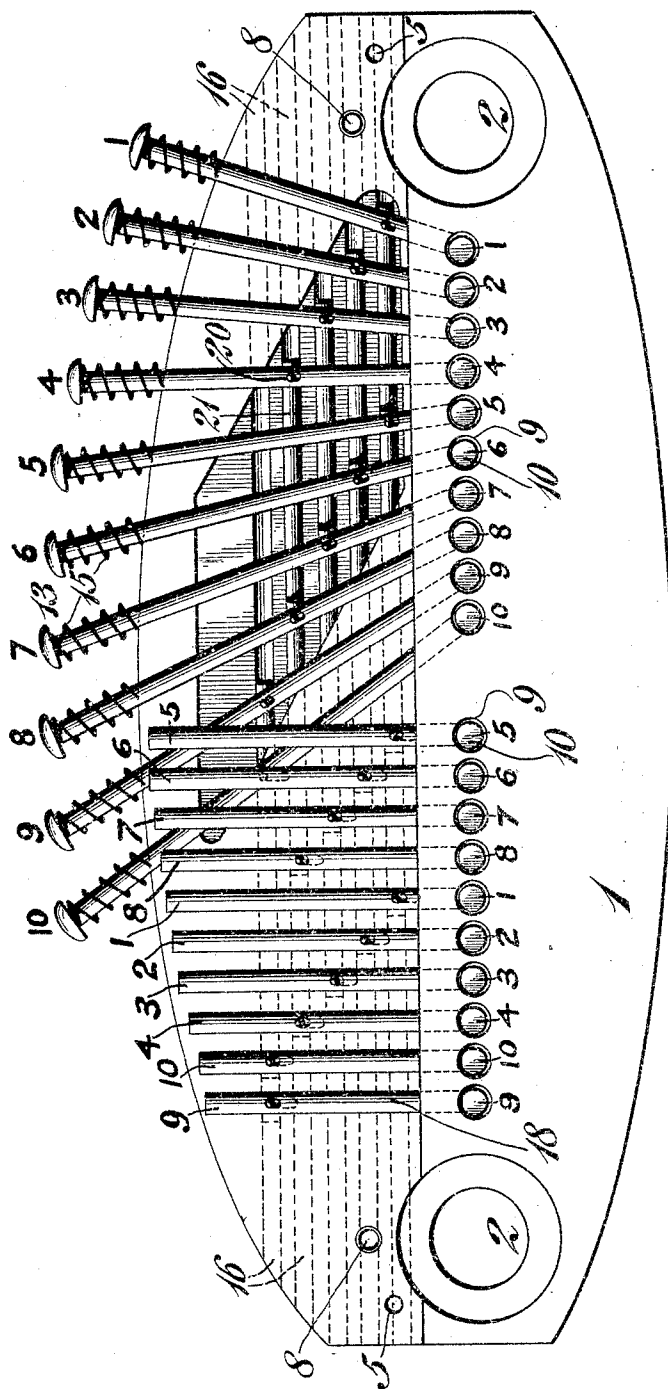
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3 SHEETS—SHEET 3.

Fig. 5.



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HEAD FOR PUNCHING FIVE AND SIX FRAME BRUSSEL-CARDS.

959,200.

Specification of Letters Patent.

Patented May 24, 1910.

Application filed September 24, 1909. Serial No. 519,349.

To all whom it may concern:

Be it known that I, WILLIAM K. CALDWELL, a citizen of the United States, residing in the city and county of Philadelphia, State of Pennsylvania, have invented a new and useful Head for Punching Five and Six Frame Brussel-Cards, of which the following is a specification.

My present invention consists of a novel construction of a head for perforating cards, whereby the cards are provided with the desired apertures or perforations located at predetermined places on the cards so that the perforations will correspond to a desired pattern.

In the devices heretofore employed for work of this character, two separate cards have been simultaneously punched but it has been found difficult to devise a construction, wherein a double card is simultaneously punched and the two cards afterward separated, one of said cards serving for the left hand set and the other for the right hand set.

With the above in view, my invention consists of a novel construction of a head for punching machines, in which I employ manually controlled keys for simultaneously controlling punches in different independent groups.

It further consists of a novel manner of connecting the plungers in one group with the plungers corresponding to the same numbers in another group whereby when a plunger in one group is locked in operative position the corresponding plunger in the other group will be locked in operative position simultaneously therewith.

It further consists of other novel features of construction, all as will be hereinafter fully set forth.

For the purpose of illustrating my invention, I have shown in the accompanying drawings one form thereof which is at present preferred by me, since the same has been found in practice to give satisfactory and reliable results, although it is to be understood that the various instrumentalities of which my invention consists can be variously arranged and organized and that my invention is not limited to the precise arrangement and organization of these instrumentalities as herein shown and described.

Figure 1 represents a top plan view of a head for punching five and six frame brussel cards embodying my invention. Fig. 2 rep-

resents a perspective view of a cap employed, the same being shown in detached position. Fig. 3 represents a perspective view of a portion of my device showing more in detail the manner in which two corresponding punches in different groups may be controlled. Fig. 4 represents a section on line $x-x$, Fig. 1. Fig. 5 represents a top plan view of another embodiment of my invention in which ten plungers are controlled.

Similar numerals of reference indicate corresponding parts in the figures.

Referring to the drawings:—1 designates a head which is provided with suitable apertures 2, whereby such head is adapted to be secured to the plunger of the stamping or punching mechanism. In the present instance the head 1 is provided with the removable cap 3 in which a portion of the apertures are formed.

4 designates dowel pins secured to the cap 3 and adapted to be seated in the recesses 5, whereby the cap 3 is properly alined with respect to the head 1. In the embodiment seen in Figs. 1 to 4 inclusive, I employ two groups of punches, each group consisting of eight independent punches and I employ one set of keys for controlling the groups of punches. The cap 3 is provided with the apertures 6 through which suitable fastening devices 7 are adapted to pass whereby the cap is secured in assembled position with respect to the head 1, said fastening devices 7 engaging suitable apertures 8 in the head 1. The head 1 is provided with a series of apertures 9 therethrough, in which are located plungers 10. The cap 3 is provided with a row of eight semi-circular apertures 11 therein, forming one group and also a group of apertures 12, comprising eight laterally extending apertures.

13 designates the keys which control the plungers, there being in the present instance, but eight of these keys employed, said keys being adapted to be seated in the grooves 11 in the cap 3 and also in similar grooves 14 in the body portion of the head 1, said keys being provided with springs 15 located intermediate the head 1 and the head of the keys whereby the latter are normally maintained in the position indicated in Fig. 1. The body portion of the head 1 is provided with laterally extending apertures 16 from which extend at an angle thereto, the apertures 17 in which are located a second set of controlling keys 18. Since all of the

keys 13 are connected in substantially the same way with the keys 18, I will simply describe the connection of one key in one group with the corresponding key in the other group.

Taking, for example, the No. 4 key, the same is provided with an aperture 19 in which is seated the end of a bar or rock shaft 20 which latter is connected with a rod 21 movably mounted in one of the laterally extending apertures 16. The opposite end of the movable member 21 has secured thereto one end of a connection 22, the opposite end of which is seated in an aperture 23 in the key 18 which corresponds to the No. 4 key in the first group. I preferably arrange the plungers controlled by the keys in the first group in serial order 1-2-3-4-5-6-7-8 and the plungers in the second group in the following order: 5-6-7-8-1-2-3-4. In order that the members 20 and 22 may have sufficient play within the body portion of the head 1, I provide the angular shaped apertures 24, as will be apparent by reference to Fig. 4.

In order to limit the downward movement of the plungers 10, the same are provided with a shoulder or enlarged head 25 which in its downward position abuts against the recess 26 in the head 1, so that when the keys are advanced the punches will be securely locked in position.

In the embodiment seen in Fig. 5 I have shown a construction similar to that seen in Fig. 1 except that I provide two extra plungers 9 and 10 in each group and I provide corresponding keys and mechanism to connect the keys in the different groups to control such plungers and since the construction and operation of the parts is similar to that seen in Fig. 1 and will be self-evident to those skilled in the art to which this invention appertains, I have deemed it unnecessary in the present instance to describe in detail the construction of this figure.

The operation of my novel device will now be readily apparent and is as follows:—The operator actuates predetermined keys in order that the apertures made in the cards will correspond to the pattern which is to be produced. Assuming that the operator depresses the No. 4 key, the end of the No. 4 key will then extend across the top of the plunger 10 and as the No. 4 key is moved forwardly the rod 21 and the connection 22 will be actuated, the result of which will be that simultaneously with the forward movement of the key 13 corresponding to the No. 4 key in the first group, the key 18 corresponding to the No. 4 key in the second group will be moved forwardly so that the plungers 10 in each group corresponding to the No. 4 key will be prevented from moving upwardly as the head 1 engages the card and such plungers as have been set will per-

forate the card. In this manner all of the eight keys or ten keys employed may be simultaneously or independently actuated to control simultaneously the punches in different groups.

It will now be apparent that in my device I am enabled to insert a one-piece card in which two portions thereof are perforated by the independent sets of punches and after the card has been punched in accordance with the desired pattern, the card is cut in two, one card serving for one set and the other card on being reversed end for end being adapted to serve as a pattern for the other set.

Special attention is directed to the fact that while the punches in one group are arranged in serial order the punches in the other group are arranged in a special manner, namely, 5, 6, 7, 8, 1, 2, 3, 4, 10, 9, and in case the 9 and 10 are not desired, these plungers, keys and their connections are omitted.

It will be apparent that when the keys are extended into openings in which the plungers are located, the plungers will be prevented from moving upwardly when the head of the punching machine is actuated so that the paper will be perforated with such plungers as have been set while the other plungers that have not been set will be moved upwardly by the paper without such plungers passing therethrough, as will be apparent to those skilled in this art.

My device may be very economically manufactured owing to the manner in which the punching head is formed and at the same time the moving parts may be readily inspected when desired, since the cap 3 is removably secured to the body portion of the head.

It will now be apparent that I have devised a novel and useful construction of a head for perforating cards which embodies the features of advantage enumerated as desirable in the statement of the invention and the above description, and while I have in the present instance shown and described a preferred embodiment thereof which has been found in practice to give satisfactory and reliable results, it is to be understood that the same is susceptible of modification in the various particulars without departing from the spirit or scope of the invention or sacrificing any of its advantages.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent, is:—

1. In a device of the character described, a head, two independent groups of plungers mounted in said head, a set of laterally movable keys for each set of plungers adapted to engage the upper end of said plungers to lock the same in operative position, a plurality of rock shafts corresponding to

the number of keys in each group, a rock arm on each shaft operatively connected with the key of one group, a second rock arm on the same operatively connected with the corresponding key in the other group where-
by when a plunger in one group is locked the corresponding plunger in the other group will be locked simultaneously therewith, all of said rock shafts and rock arms being located wholly within said head and resilient means for maintaining said keys in inoperative position.

2. In a device of the character described, the combination with a movable head, of two groups of vertically arranged plungers mounted therein, said plungers having a shoulder thereon for limiting their down-

ward movement, a cap interlocked with said head, a set of keys carried by said cap and movable within the head and adapted to lock the plungers in one group in operative position, a second set of keys having a bearing partly in said cap and partly in said head and adapted to lock the plungers of the other group in operative position, a connection from a key in one group to the corresponding key in the other group, said connections being located wholly within said head and means for maintaining the keys normally in inoperative position.

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Witnesses:

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