

**A NOVEL PIANO CARD STAMPING MACHINE.**

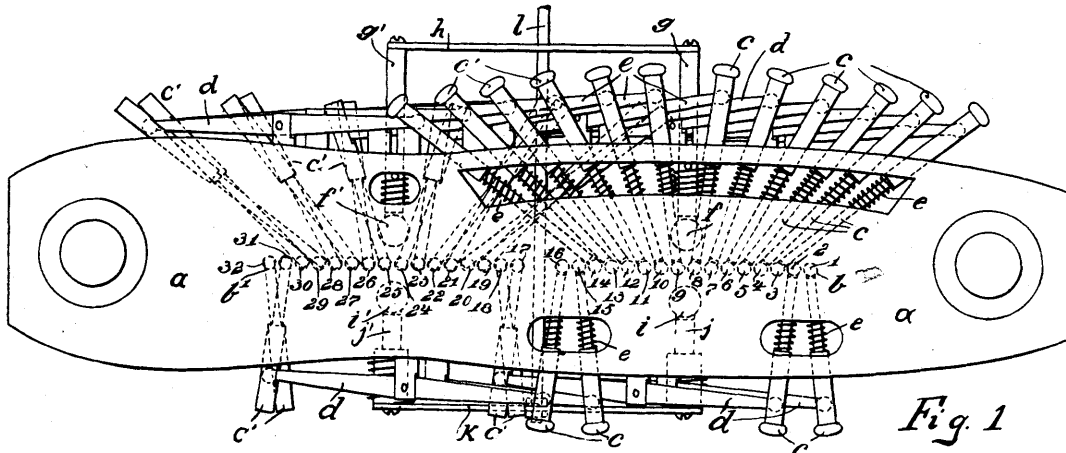
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In this card stamper there are combined two common heads into one, being arranged side by side, the respective keys of one section or head being connected to keys in the other head and this in such a manner that when one key in the first head operates a punch, its mate key in the other head is withdrawn and does not operate its respective punch, and vice versa. By having two cards

thus punched in unison, from the foregoing item it will be seen that these two cards bear a certain relation to each other, since they are cut from one set of keys by the operator, each key, as mentioned before, operating one punch in both sections of the head.

The purpose of the new head is to provide means for cutting cards for elaborate fabrics, etc., and where this special cutting in connec-

With reference to Fig. 1, i. e., the head of the machine, we see that the same refers to what we might call a double 16 key fine index card stamper, the same controlling the cutting of  $16 \times 2 = 32$  punches at one time. In its general principle of construction, the new head closely resembles a regular head of a piano card stamper, only that it is larger, it being operated in the regular manner. A de-

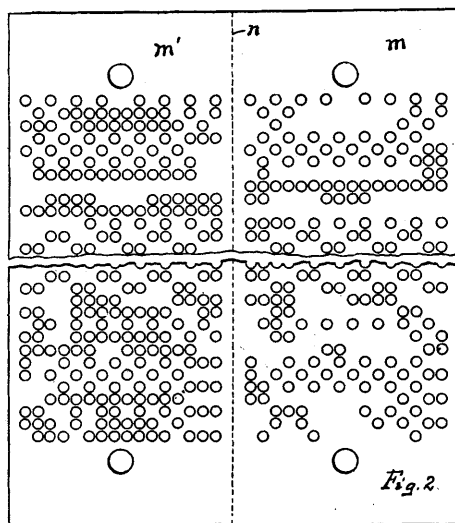


tion with the proper tie up of the Jacquard harness will produce the required effects in the fabric.

In order to more clearly explain the subject, the accompanying two illustrations are given, of which Fig. 1 is a top plan view of

scription of the construction and operation of the new card stamper is best given by quoting letters of reference accompanying our illustrations, and of which a indicates the head of the machine, operated in the usual manner. b and b' indicate respectively the two series of punches as operated in turn by means of the two series of keys c and c'. Twelve of these keys are shown to be operated from the back, the remaining four keys being operated from the front of the head.

Examining the keys and their connections more particularly, we will see that each key besides controlling one punch in one section of the head, is at the same time controlling a punch in the other section of the head by means of a lever d and its connections. The keys in one section of the head carry the usual springs e and which through levers mentioned, in turn, operate both sets of keys; the arrangement being such that when a certain key acts on the punch in one section of the head, its mate key in the other section will not operate, i. e., be out of the way of its respective punch, consequently the action of stamping pattern holes in the card, with reference to the two heads thus combined in one machine, will be exactly reversed.



such a duplex head, as used in connection with a regular piano card stamper, clearly showing the two series or sections of keys and punches. Fig. 2 shows a stamped card.

The connection, i. e., relation between the keys in this duplex head is done in pairs (2 keys), consequently, with reference to connection adopted in illustration, two keys in the first section of the head work in pairs against two keys in the other section of the head, the connection with reference to these two pairs of keys (and every other pair of keys in the machine in the same manner) being the reverse.

To explain the foregoing, let us consider the first two keys (1 and 2) in the first section of the head and the first two keys (17 and 18) in the other section of the head, when we will see that key 1 in the first section works against key 18 in the other section, and vice versa key 2 works against key 17. In this manner the remainder of the keys work in pairs, ending with key 15 of the first section working against key 32 of the other section, and key 16 of the first section working against key 31 of the other section.

The arrangement of the connections between keys of the first section to those of the other may be varied for different conditions, as for instance, key 1 may be connected to key 25, key 2 to key 26, continuing in this manner until connecting key 8 to key 32; then connect key 9 to key 17, and so on until closing the affair with key 16 to key 24.

Peg holes at the front ends of the two cards are punched, at the same time that the first row of pattern holes is punched, by means of the punches *f* and *f'*, which are operated through the keys *g* and *g'*, these keys being connected by the rod *h*. Peg holes at the rear ends of the cards are punched by the punches *i* and *i'* simultaneously with the last row of holes, the punches being operated by the keys *j* and *j'*, which are connected by the rod *k*, which has a wire *l* attached to the centre of its length and extending through the head, said wire being then connected to the operating mechanism (not shown).

The principle of stamping the two cards, as previously explained, using the first connections mentioned in the article, will be readily seen by referring to diagram Fig 2, which shows two cards as cut at the same time by the machine, and indicating very clearly the relation which they bear to each other. In order to illustrate the manner in which holes

are cut, we will take rows 4 in each card and follow the holes in each in their relation to each other, starting at the right hand side of the cards. The card *m* was cut on the first section *c* of the head of the machine, and card *m'* on the other section, *c'*.

In card 1.

In card 1'.

Empty 1 .....	corresponds to hole 2
Empty 2 .....	corresponds to hole 1
Hole 3 .....	corresponds to empty 4
Empty 4 .....	corresponds to hole 3
Hole 5 .....	corresponds to empty 6
Empty 6 .....	corresponds to hole 5
Hole 7 .....	corresponds to empty 8
Empty 8 .....	corresponds to hole 7
Hole 9 .....	corresponds to empty 10
Empty 10 .....	corresponds to hole 9
Hole 11 .....	corresponds to empty 12
Empty 12 .....	corresponds to hole 11
Hole 13 .....	corresponds to empty 14
Empty 14 .....	corresponds to hole 13
Hole 15 .....	corresponds to empty 16
Empty 16 .....	corresponds to hole 15

In the same manner, any pair of rows in any card cut may be taken and followed out, and it will be found that two keys forming a pair on the first section of the head always work against each other with a corresponding pair of keys on the other section, as explained. Two independent cards might be punched separately by the head, however, preferably a card of double width, such as shown in the illustration, is punched by the machine, which after the completion of the punching operation are divided by cutting the same at the point indicated by the dotted lines in Fig. 2.

