

H. LEA.
 PATTERN DUPLICATING AND REVERSING MACHINE.
 APPLICATION FILED OCT. 22, 1915.

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 2 SHEETS—SHEET 1.

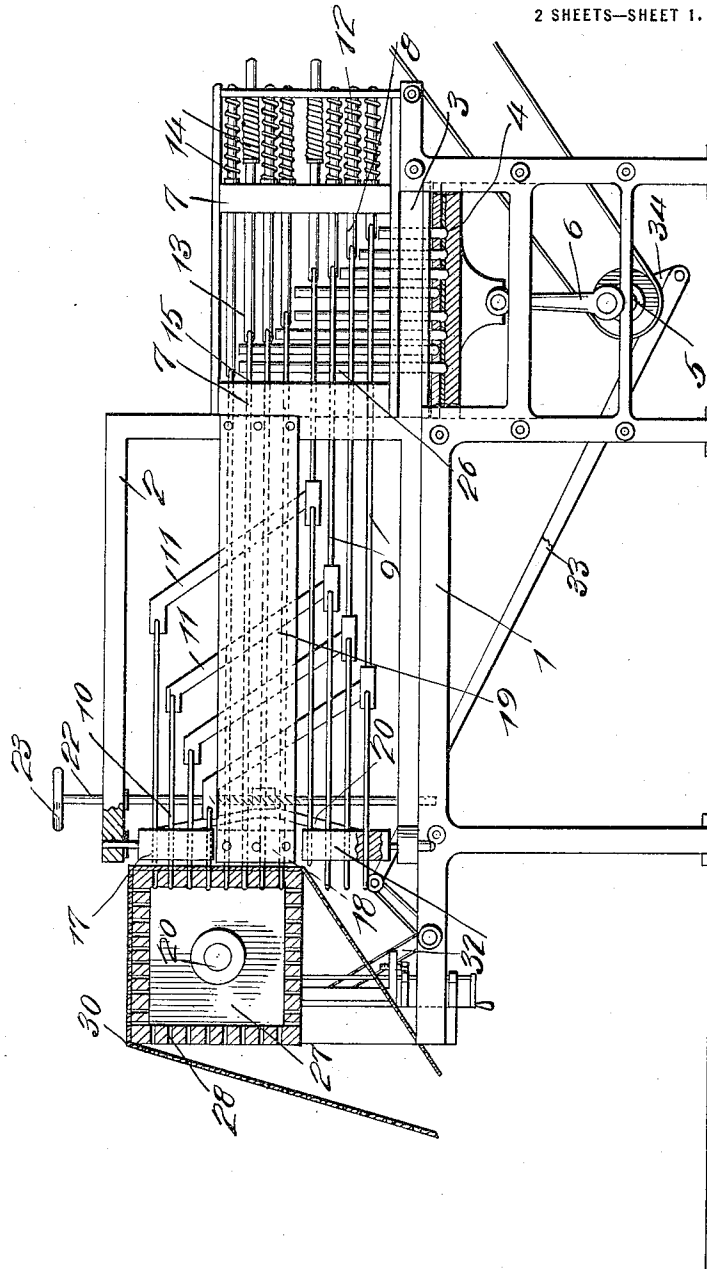


Fig. 1.

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WITNESSES

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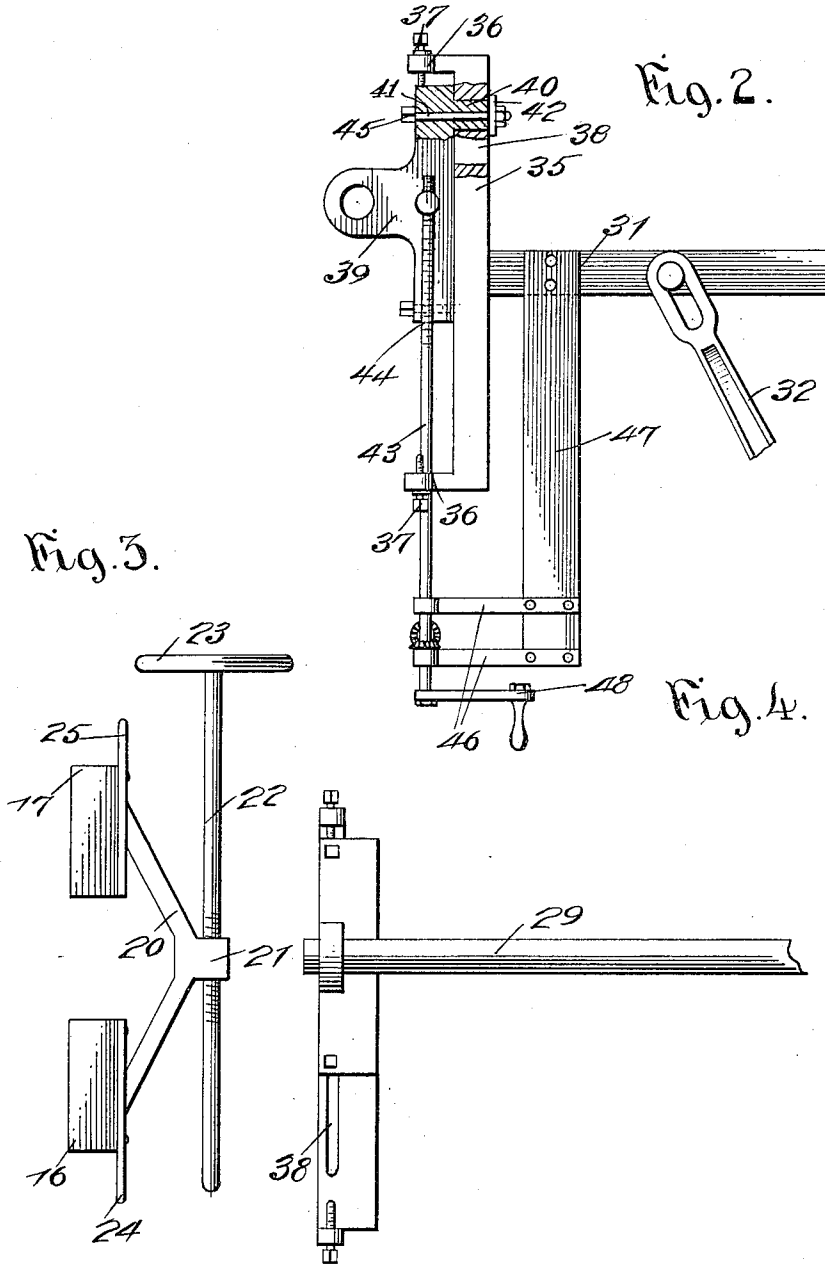
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PATTERN DUPLICATING AND REVERSING MACHINE.

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Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, HARRY LEA, a citizen of the United States, residing at Thompsonville, in the county of Hartford and State of Connecticut, have invented certain new and useful Improvements in Pattern Duplicating and Reversing Machines, of which the following is a specification.

My invention relates to pattern punching machines, and more particularly to a machine for use in preparing pattern cards for jacquard or figured weaving.

The primary object of my invention is to provide a machine for reproducing and reversing a design carried on a pattern cylinder, the improvements of my invention being applicable to the punching machine of the ordinary type as now disclosed in the prior art.

My invention embodies broadly means for changing the position of the pattern carrying roller, and means for altering the relative positions of the needles which co-act with said roller to control punches for reproducing and reversing a design or pattern carried by the pattern roller.

A further object of my invention is to provide an improved pattern reproducing and reversing machine which is simple in construction, cheap to manufacture, strong and durable and effective in operation.

With the above and other objects in view my invention resides preferably in the construction, combination, and arrangement of parts as hereinafter set forth in the specification and illustrated in the accompanying drawings, in which—

Figure 1 is a side elevation of a pattern reproducing and reversing machine embodying the improvements of my invention, portions thereof being shown in section. Fig. 2 is a detail enlarged side elevational view of the roller carrying frame. Fig. 3 is a detail elevational view of the needle carrying blocks. Fig. 4 is a fragmentary end elevational view of the roller carrying frame.

Similar reference characters indicate similar parts throughout the various views of the drawings.

In the drawings, wherein the preferred embodiment of my invention is illustrated, a card punching machine is illustrated having a base frame 1 and a supplemental frame 2 thereon, said frame 2 being substantially U-shaped in configuration and serving to support the needle adjusting

mechanism hereinafter described. The frame 1 is provided with a punch carrying frame 3, the punch carrying frame of the construction common in the art at the present time. The usual card carrying table 4, operating shaft 5, and connecting rod 6 are associated with said frame 3 and card carrying plate 4 for the purpose well known to those skilled in the art.

The frame 3 comprises a plurality of vertical standards 7, said standards 7 serving as bearing supports for rods 8, said rods carrying needles 9, said needles 9 being slightly resilient for a purpose which will hereinafter appear. The needles 9 will be hereinafter designated as the bottom needles and the needles 10 as the top needles, said needles 9 and 10 being connected by diagonally extending bars 11 so as to reciprocate simultaneously. The rods 8 are surrounded by coiled springs 12 whereby to yieldably maintain the same against movement away from the pattern roller hereinafter described. A second set of reciprocally mounted rods are provided and are designated 13, said rods being maintained in the position shown by means of coiled springs 14 surrounding the same. The rods 13 carry needles 15 similar in construction with the needles 9, however, the needles 15 need not be resilient.

The upper extremities of the needles 9, 10 and 15 are reciprocally mounted, respectively, in vertically movable blocks 16, and 17, the block 18 being carried by a longitudinally extending bar 19, there being two of said bars 19 mounted on each side of the frame 2. The blocks 16 and 17 are connected by a yoke member 20, said yoke member having a lug 21 thereon with a threaded opening through which a threaded adjusting bar 22 is adapted to pass, said adjusting bar having a hand wheel on the upper extremity thereof. Said bar 22 is mounted for rotation in the frame 2, as shown to advantage in Fig. 1. The blocks 16 and 17 are provided with extensions 24 and 25, respectively, said extensions being received through openings in the adjacent extremities of the frame 2 whereby to guide said blocks during adjustment and to prevent lost motion of the same.

The punches are designated 26, said punches being freely mounted in the frame 3 and adapted for vertical movement. As is known to those skilled in the art, the rods

8 and 13 serve to maintain certain of said punches in operative position, depending upon the needles which are depressed by the pattern.

5 The pattern carrying roller is designated 27 and is of the usual type, being hollow and having a plurality of openings 28 in the walls thereof. The roller is mounted upon a shaft 29 and the pattern is designated 30, said pattern being also of the form com-
10 mon in the art. I have provided an improved carrying frame for said roller whereby to facilitate the reversal of the design carried on the roller, said frame having the
15 usual reciprocating portion 31 connected with the bell-crank lever 32 which receives oscillatory motion from the connecting rod 33 which in turn receives a reciprocating motion from the crank 34 mounted on the
20 shaft 5. The improved carrying frame includes a vertical yoke 35 carried by the frame 31. The opposite extremities of the yoke 35 are provided with brackets 36 in which are mounted said screws 37 for a pur-
25 pose which will hereinafter appear. The yoke 35 is slotted as indicated at 38 and a bearing bracket 39 is mounted on said yoke and carries a bearing shaft 29 on which the roller 27 is mounted. It is to be understood
30 that there are two of the yokes 35 provided, one on each end of the shaft 29. The bearing bracket 39 is adapted for vertical movement on the yoke 35, said bracket having a plurality of lugs 40 projecting therefrom for
35 reception in the slots 38. Suitable bolts 41 pass through said bracket 39 and are provided with retaining washers 42 which bear upon the rear face of the yoke 35 and prevent displacement of the bearing bracket.

40 In order to facilitate vertical adjustment of the bearing bracket 39, a suitable rod 43 is provided having a threaded extremity 44 which is receivable in a threaded lug 45 carried by the bearing bracket 39. The lower
45 extremity of the rod 43 is mounted in bearing arms 46 carried by a depending support 47.

In operation, a pattern having the desired design thereon is placed upon the roller 27. A card on which the design is to be repro-
50 duced is placed upon the punch table 4 in the manner well known to those skilled in the art. The handle 48 is rotated to bring the pattern roller to the lowermost position and the hand-wheel 23 is rotated to raise
55 the blocks 16 and 17. This causes the set of needles 10 to be clear of the pattern roller. The needles and punches are in normal position at this time and when the machine is
60 started, the roller will be caused to move against the needles, certain of said needles passing through certain of the openings 28, depending upon the design on the pattern, which operation will release certain of the
65 punches and maintain certain other of said

punches in operative or punching position. Simultaneously with the above movement the table 4 is caused to rise presenting the card or the like to the punches and repro-
70 ducing the design thereon. When it is desired to reverse the design, the rod 43 is rotated by means of its handle 48 causing the roller to be moved to the position shown
75 in Fig. 1 into its uppermost position. This will cause the needles 10 to be operated, it being, if course understood that the needles 15 are maintained in their original position
80 so that the design produced by the upper sets of needles will be reproduced, but reversed by the actuation of the upper needles. It will be found from an inspection of Fig. 1 that the needle block which is idle is en-
85 tirely clear of the pattern, and therefore cannot interfere with the free operation of the machine.

While I have shown and described my invention as possessing a peculiar form and construction, it is desired that it be under-
90 stood that I may make such changes in the details thereof that do not depart from the spirit and scope of the invention as claimed.

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

1. A device of the class described, includ-
95 ing a base, a pattern cylinder, a supporting frame, needles carried thereby, a plurality of punches controllable by said needles, and means for altering the relative positions of
100 said pattern cylinder and needles for duplicating or reversing a design formed by the latter.

2. A device of the class described, includ-
105 ing a base, a frame mounted on said base, a pattern cylinder pivotally and slidably movable on said base, a plurality of needles, a plurality of punches controllable by said needles and mounted on said base, means
110 for raising or lowering certain of said needles, and means for raising and lowering said cylinder, said cylinder and needles adapted to coact, whereby to control the
disposition of said punches.

3. A pattern duplicating and reversing card punching device including a base, a
115 frame on said base, said frame comprising a U-shaped body, a plurality of needles carried by said frame and slidably mounted therein, adjusting blocks for certain of said
120 needles, a plurality of punches, certain of said punches being controllable by needles whereby to duplicate a design on the pattern cylinder.

4. In a device of the class described, the combination with a pattern roller and a plu-
125 rality of punches, of a plurality of sets of laterally adjustable needles co-acting with a design carried on said pattern roller to control certain of the punches, a non-adjustable set of needles, and means to move the
130

pattern roller into and out of engagement with certain of the adjustable sets of needles and the non-adjustable set to reverse a design.

5 5. A pattern duplicating and reversing mechanism, including, in combination with a base, a frame on said base having a plurality of punching elements thereon, a pattern roller vertically and horizontally movable on said frame, a plurality of needles coacting therewith to reproduce a design carried on said cylinder, and adjusting blocks through which said needles are disposed for reversing the design, as and for
10 the purpose set forth.

6. A pattern duplicating or reversing mechanism, including, in combination with a base having a frame thereon supporting a plurality of punching elements, a supplemental frame, a plurality of needles reciprocally mounted in said frame to co-act with said punching elements, certain of said needles being laterally displaceable, and means for changing the position vertically
20 of said roller, whereby to reverse the design carried thereon.

7. A perforating machine, in combination with a base having a supporting frame and a plurality of punching elements thereon, a pattern roller, means for adjusting vertically said pattern roller, a plurality of needles co-acting therewith to control certain of said punching elements, and means for changing the positions of needles
25 relative said frame.

8. A perforating machine for jacquard weaving comprising a base, a frame on said base carrying a plurality of punching elements, and a plurality of controlling needles for said punching elements reciprocally mounted on said frame, a pattern carrying roller, means for adjusting said roller vertically, and means for adjusting said needles laterally of their thrust, as and for
40 the purpose set forth.

9. The combination with a pattern roller and a plurality of punches, of a plurality of sets of needles, one of said sets being non-adjustable, other of the sets being laterally adjustable relative said non-adjustable set, means for connecting said adjustable sets to produce their simultaneous movement, and means for adjusting said pattern roller relative said adjustable and
50 non-adjustable sets of needles.

10. A pattern reproducing and reversing

device, including pattern carrying means, means for reproducing the pattern, and means interposed between said pattern carrying means and said pattern reproducing means to control the latter, whereby to reproduce in duplicate said pattern or reproduce the latter in reversed form.

11. A pattern duplicating and reversing mechanism, including, in combination with a plurality of punches, a plurality of simultaneously movable and laterally adjustable sets of members, a pattern carrying member, and means for adjusting said member into position for coaction with the stationary set and one of the adjustable sets of controlling members, whereby to duplicate or reverse a design carried by the pattern carrying member.

12. The combination with a support and a pattern carrying roller, of a plurality of reciprocally mounted sets of members, said members serving to control punches, certain of the sets being adjustable laterally and certain other sets being non-adjustable, the pattern roller being adapted for movement to engage one of the adjustable and non-adjustable sets of members whereby to control the punches to reproduce or reverse a design carried by the roller.

13. The combination of an adjustable pattern roller, a plurality of sets of members arranged in adjustable and non-adjustable sets to be acted upon by the roller, said roller being movable into and out of engagement with one set of adjustable and a set of non-adjustable members to reproduce or reverse a design formed by the punches.

14. The combination with a vertically adjustable pattern roller, and a plurality of punches to be controlled thereby, of a plurality of sets of needles for controlling the punches, certain of the sets being engaged and simultaneously laterally adjustable, said adjustable sets embracing the non-adjustable set, vertical movement of the roller to be engaged with a non-adjustable set and one or the other of the adjustable sets, whereby to reproduce or reverse a design carried by the roller.

In testimony whereof I affix my signature in presence of two witnesses.

HARRY LEA.

Witnesses:

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DAVID READY.