No. 698,450. Patented Apr. 29, 1902.

T. CAPPER.

MECHANISM FOR PRODUCING PATTERN CARDS.

(Application filed Sept. 20, 1901.)

(No Model.) 2 Sheets—Sheet 1.

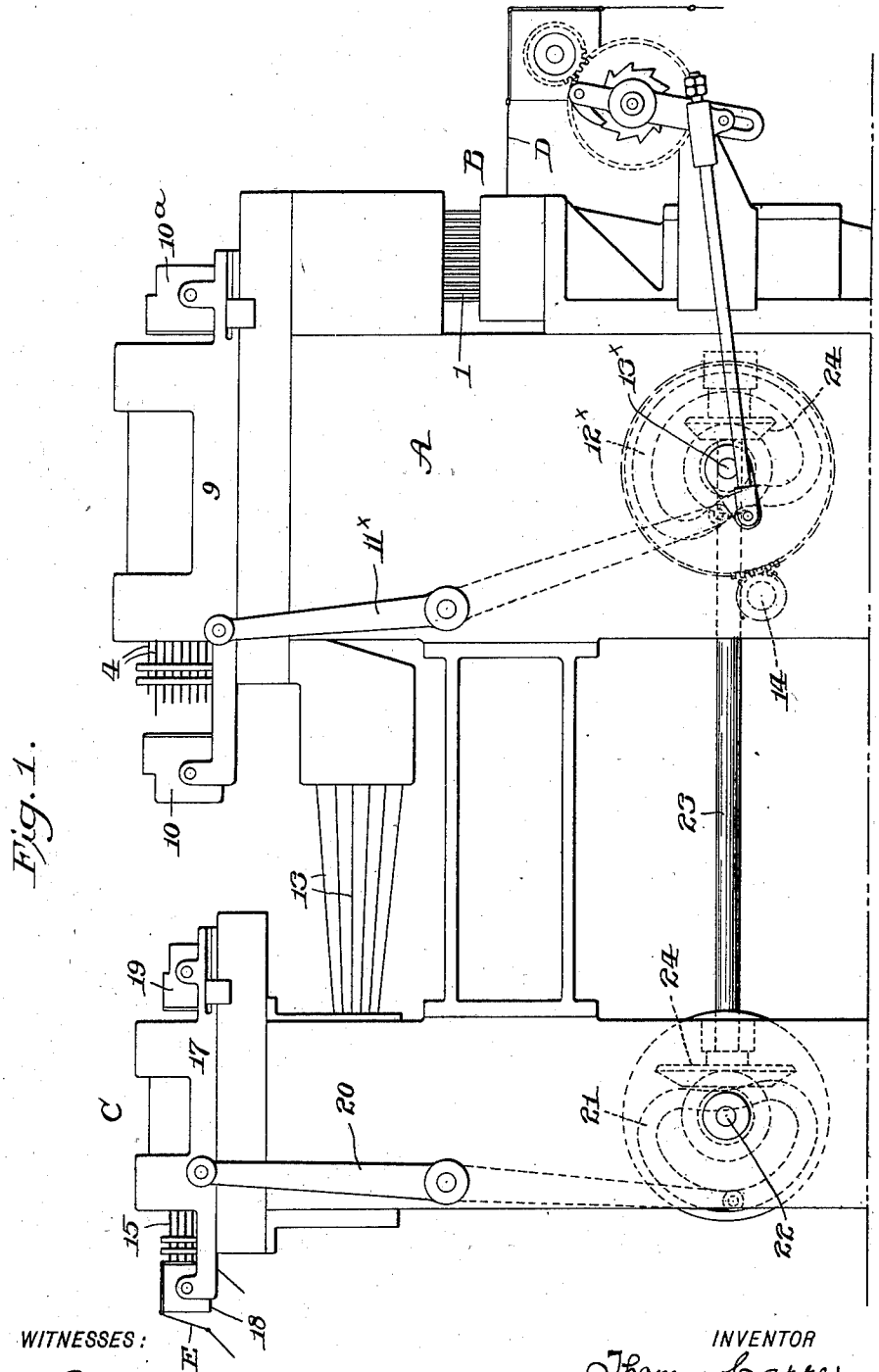


Fig. 1.

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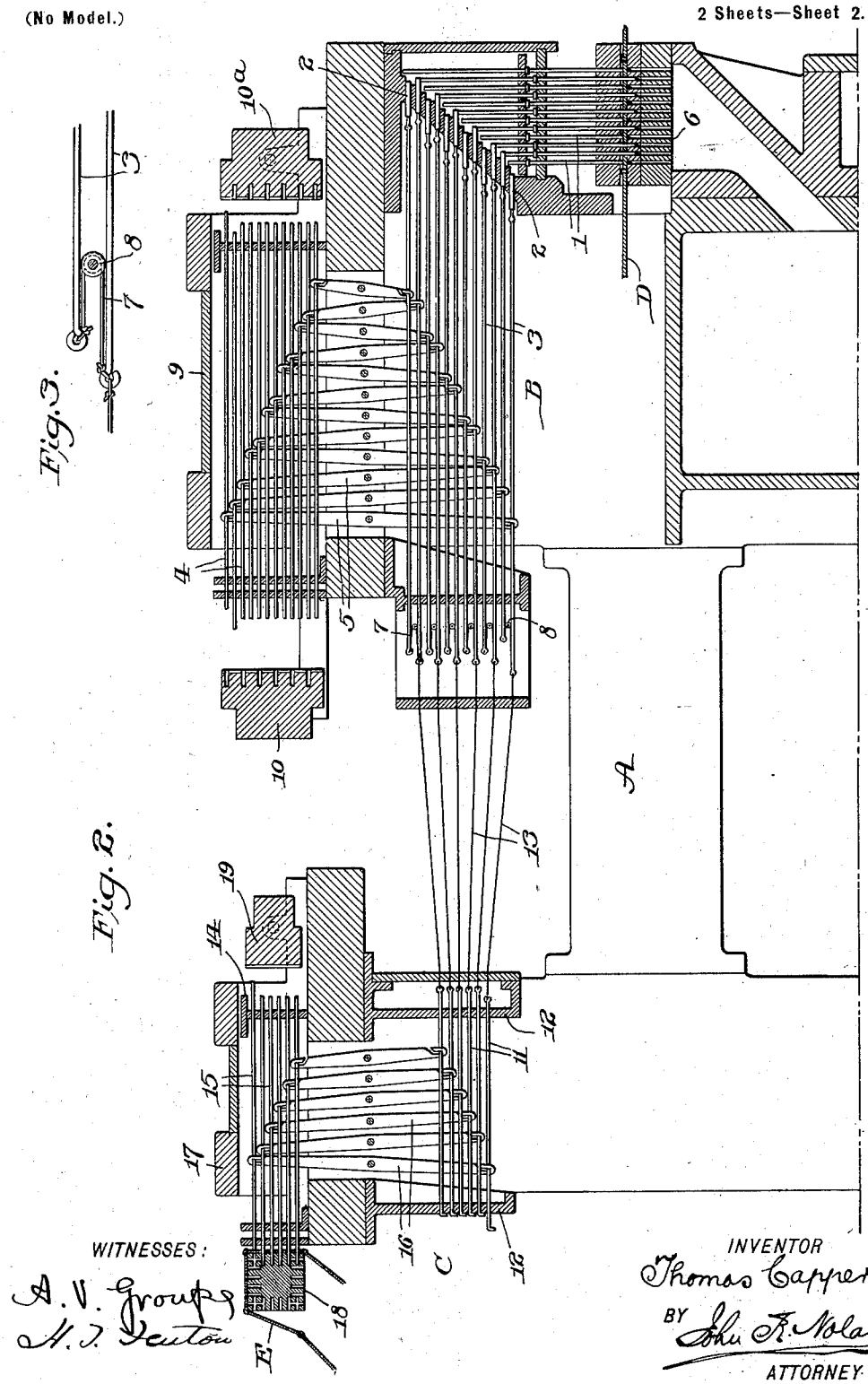
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MECHANISM FOR PRODUCING PATTERN-CARDS.

SPECIFICATION forming part of Letters Patent No. 698,450, dated April 29, 1902.

Application filed September 20, 1901. Serial No. 75,803. (No model.)

To all whom it may concern:

Be it known that I, THOMAS CAPPER, a citizen of the United States, residing in the city and county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Mechanism for Producing Pattern-Cards, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming a part of this specification.

This invention relates to mechanism for producing pattern-cards. Heretofore such cards have been produced upon machines termed "card-stampers," wherein punch-keys corresponding in number with the entire series of pattern-holes to be punched in a card were manipulated by the operator. This operation required not only time and care, but skill of a high order. The card or cards thus produced were enchained and applied to a "repeating machine."

The object of my invention is to provide a simple and efficient construction and organization of mechanism whereby a pattern-card having simply a portion of the pattern-holes punched therein by the usual card-stamper may be applied to the mechanism to control and effect the disposition of punches for the formation of a complete pattern-card.

In carrying out my invention I employ, preferably, a repeating machine of any ordinary or approved construction and couple the operating-rods of each pair of companion keys—to wit, an "odd" and an "even"—in such a manner that when one of the rods is retracted to withdraw its key from the path of the underlying punch the other or companion rod is moved forward to project its key into the path of the underlying punch, and I combine with said machine a key-selecting mechanism under the control of a partially-punched pattern-card, as will be hereinafter particularly described and claimed.

In the drawings, Figure 1 is a side elevation of a machine embodying my invention. Fig. 2 is a longitudinal vertical section thereof. Fig. 3 is a detail of the coupling between companion key-operating rods.

A represents the main frame, B the punching mechanism thereon, and C the selecting mechanism operatively connected with the punching mechanism.

The punching mechanism herein illustrated is a modification of the well-known Royle repeating machine exemplified in Letters Patent of the United States No. 304,864, dated September 9, 1884, and No. 556,775, dated March 24, 1896, and includes the following construction: 1 indicates a series of vertically-disposed punches; 2, horizontal rows of keys movable into and from the path of said punches; 3, operating-rods for said keys; 4, "selecting-needles," and 5 connecting-levers between said needles and the operating-rods. 6 is the rising-and-falling carriage on which the blank cards D are supported, so that during the upward stroke of the carriage those punches across whose path are projected the keys are caused to punch corresponding holes in the card. In a repeating machine the selecting-needles 3 are actuated by a completely-punched pattern-card on an adjacent cylinder to effect the projection of the requisite punches, as will appear by reference to said patent.

According to my invention the operating-rods of each companion pair of punches are coupled together—that is, each rod of a row of odds is coupled with the corresponding rod of a row of evens. The coupling in its preferred form comprises a flexible strip 7, secured to the adjacent ends of companion rods and passed about an interposed transverse pin or roller 8, whereby when one of said rods is moved in one direction the other is oppositely moved, and conversely. Hence, assuming the rows of "odd" punches to be projected, if any of the operating-rods thereof be retracted the punches controlled by said rods will be similarly retracted, and the companion "even" punches will be projected.

On the main frame is a horizontally reciprocative carriage 9, carrying at its respective ends two heads 10 10^a, one, 10, of which is provided with rows of perforations in line with the rows of needles 4, which are connected with the odd punches, and the other, 10^a, of which heads is provided with rows of perforations in line with the rows of needles 4 for the even punches. During the move-

ment of the carriage to the left the head 10^a acts upon the "odd" needles to set the odd punches in their normal or projected position, and during the movement to the right the other head similarly acts upon the even needles to retract the corresponding punches.

In Fig. 1 a means for reciprocating the carriage 9 is indicated, such means including a rocking lever $11^\times$, the upper end of which is connected with the carriage, while its lower arm is operatively connected with a suitable cam $12^\times$ on a shaft $13^\times$, geared with the main driving-shaft $14^\times$ of the machine.

The selecting mechanism corresponds in essential particulars with the punch-selecting mechanism of an ordinary repeating machine. It comprises a series of rows of horizontally-movable rods 11, corresponding in number with the rows of odd-punch-operating rods 3 and mounted and guided in suitable supports 12 on the frame A. The rods 11 of each row are independently connected with the rods 3 of the corresponding row of the punching mechanism by cords 13, so that when one of the rods 11 is retracted the rod 3, coupled therewith, is likewise retracted. Mounted in guides 14 on the main frame is a series of selecting-needles 15, corresponding in number with the rods 11 and connected therewith by levers 16, whereby when the said needles are forced inward the rods will be retracted.

On the main frame is mounted a reciprocative carriage 17, corresponding with the carriage 9 and carrying at one end a pattern-cylinder 18 and at the other end an evener-head 19. The carriage 17 is connected with the upper end of a rocking lever 20, the lower end of the latter being engaged with a suitable cam 21 on a shaft 22, which is connected by means of a shaft 23 and gearing 24 with the shaft $13^\times$. Thus the carriage 17 is reciprocated. The pattern-cylinder thereon carries the chain of punched cards E for effecting the movement of the selecting-needles. Each of these cards instead of being completely punched, as formerly, contains only those holes corresponding with the particular odd punches to remain in action, and hence the imperforate portion of the card acts upon all the opposing selecting-needles excepting those registering with the holes in the card, retracts all the odd punches connected with the needles thus acted upon, and projects into action the corresponding even punches. The odd punches remaining in action and the even punches thus projected into action represent the holes to be punched in the blank card D during the upward movement of the carriage 6.

By the above-described construction it will be seen that a complete pattern-card may be accurately and expeditiously produced without the necessity, as heretofore, of the skilful manual operation of all the card-stamper keys representing the respective pattern-holes in the card, such operation according to my invention being confined to a comparatively few keys.

I would state that my invention is not restricted to the particular mechanism above set forth, as the same may be materially modified without departing from the fair spirit of the invention.

I claim—

1. In a machine for producing pattern-cards, the combination with punching mechanism, including punches, and devices whereby the punches are operated in pairs, one punch of a pair being rendered active while the other punch is rendered idle, and vice versa, of punch-selecting mechanism, and connections between the same and said devices.

2. In a machine for producing pattern-cards, the combination with punching mechanism, including punches, keys therefor arranged in sets, and means for coupling the keys of the respective sets, of punch-selecting mechanism, and connections between the same and a set of keys.

3. In a machine for producing pattern-cards, the combination with punching mechanism, including punches, keys therefor, operating-rods for said keys, and means for coupling said rods in pairs whereby when one rod of a pair is retracted the other is projected, of a punch-selecting mechanism, and connection between the same and one of each pair of said rods.

4. In a machine for producing pattern-cards, the combination with punching mechanism, including punches, keys therefor, operating-rods for said keys, and a flexible coupling for each pair of rods whereby when one rod of a pair is retracted the other is projected, of punch-selecting mechanism, and flexible connections between the same and one of each pair of said rods.

5. In a machine for producing pattern-cards, the combination with punching mechanism, including punches, keys therefor, operating-rods for said keys, said rods being coupled in pairs as described, needles connected with said rods, a reciprocating carriage and means thereon for setting said needles in normal position, of punch-selecting mechanism including rods, flexible connections between the same and one of each pair of rods first named, needles, connection between the same and the rods of the selecting mechanism, a reciprocating carriage, and an evener-head and a card-cylinder on said carriage adapted to coact with the latter needles.

In testimony whereof I have hereunto affixed my signature in the presence of two subscribing witnesses.

THOMAS CAPPER.

Witnesses:
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JOHN R. NOLAN.