

No. 628,481.

Patented July 11, 1899.

M. W. LEE.

PUNCH SELECTOR FOR CARD PUNCHING MACHINES.

(Application filed Apr. 15, 1898.)

(No Model.)

6 Sheets—Sheet 1.

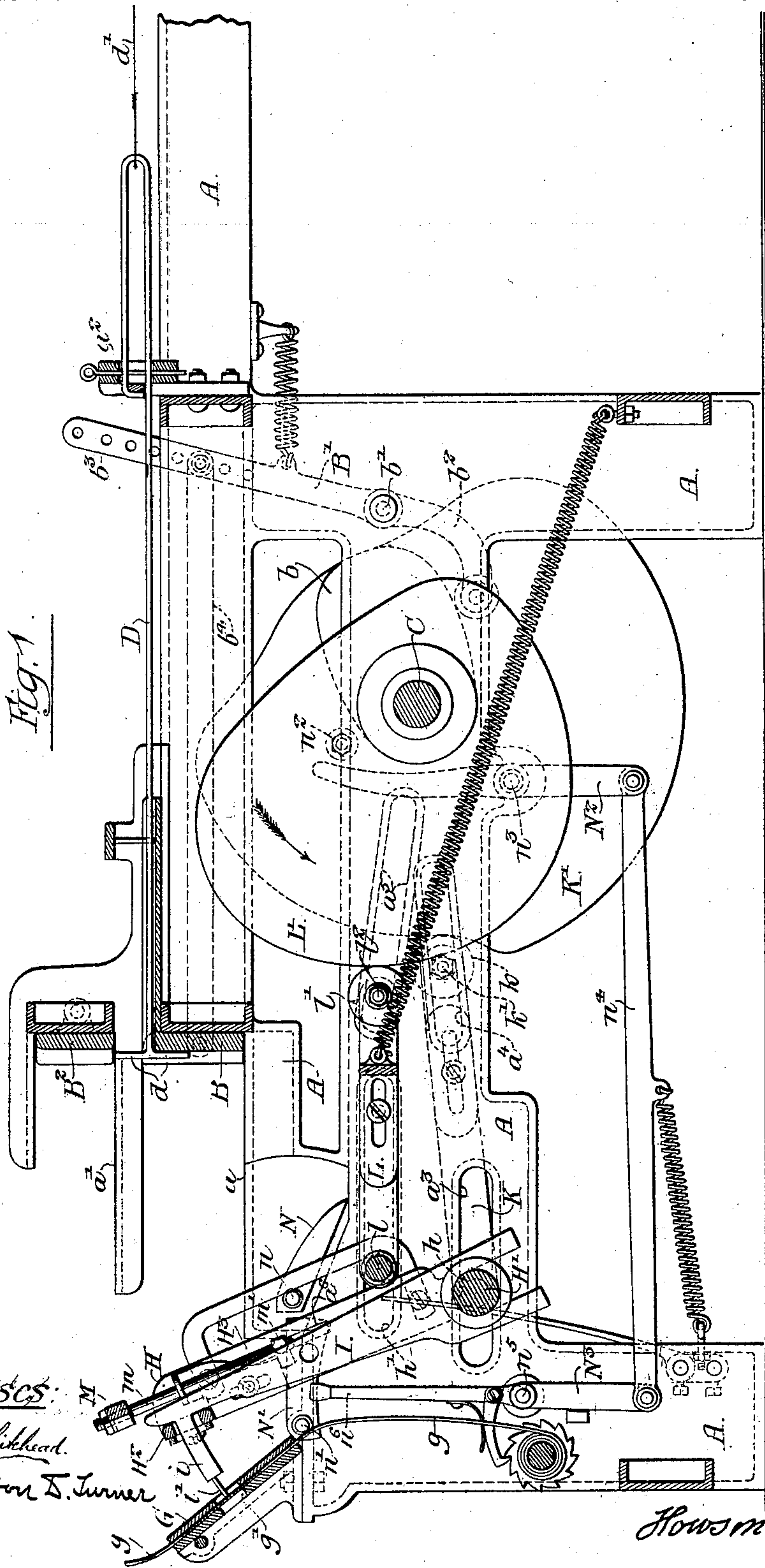


Fig. 1.

Witnesses:

Louis H. Holbrook

Hamilton D. Turner

Inventor:

Moses W. Lee.

by his Attys.

Howe & Horn

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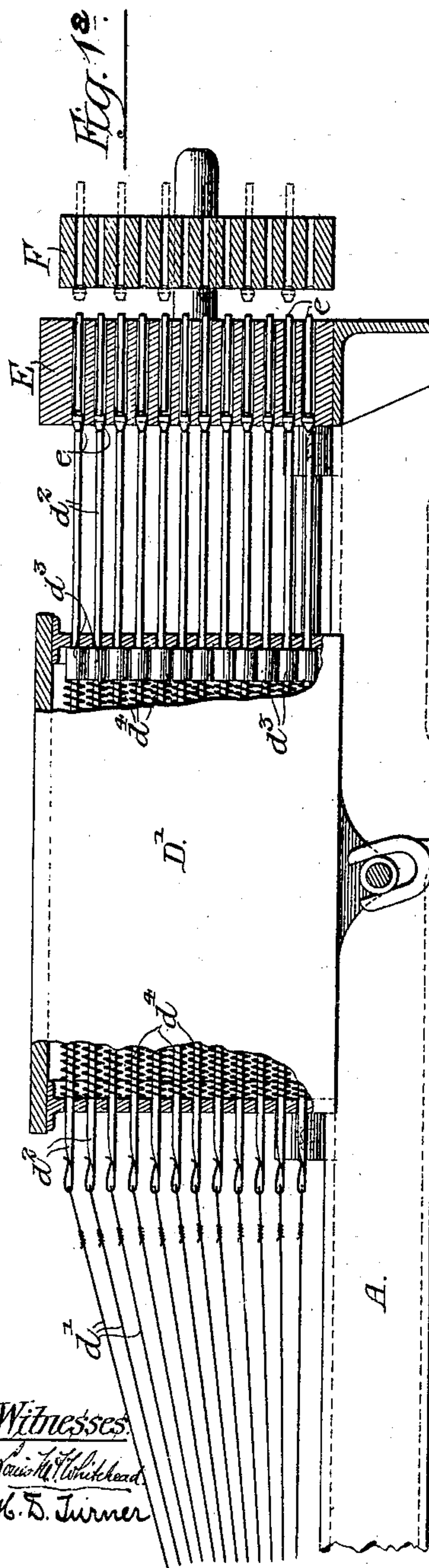
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6 Sheets—Sheet 2.



Witnesses
H. D. Turner
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Fig. 11.

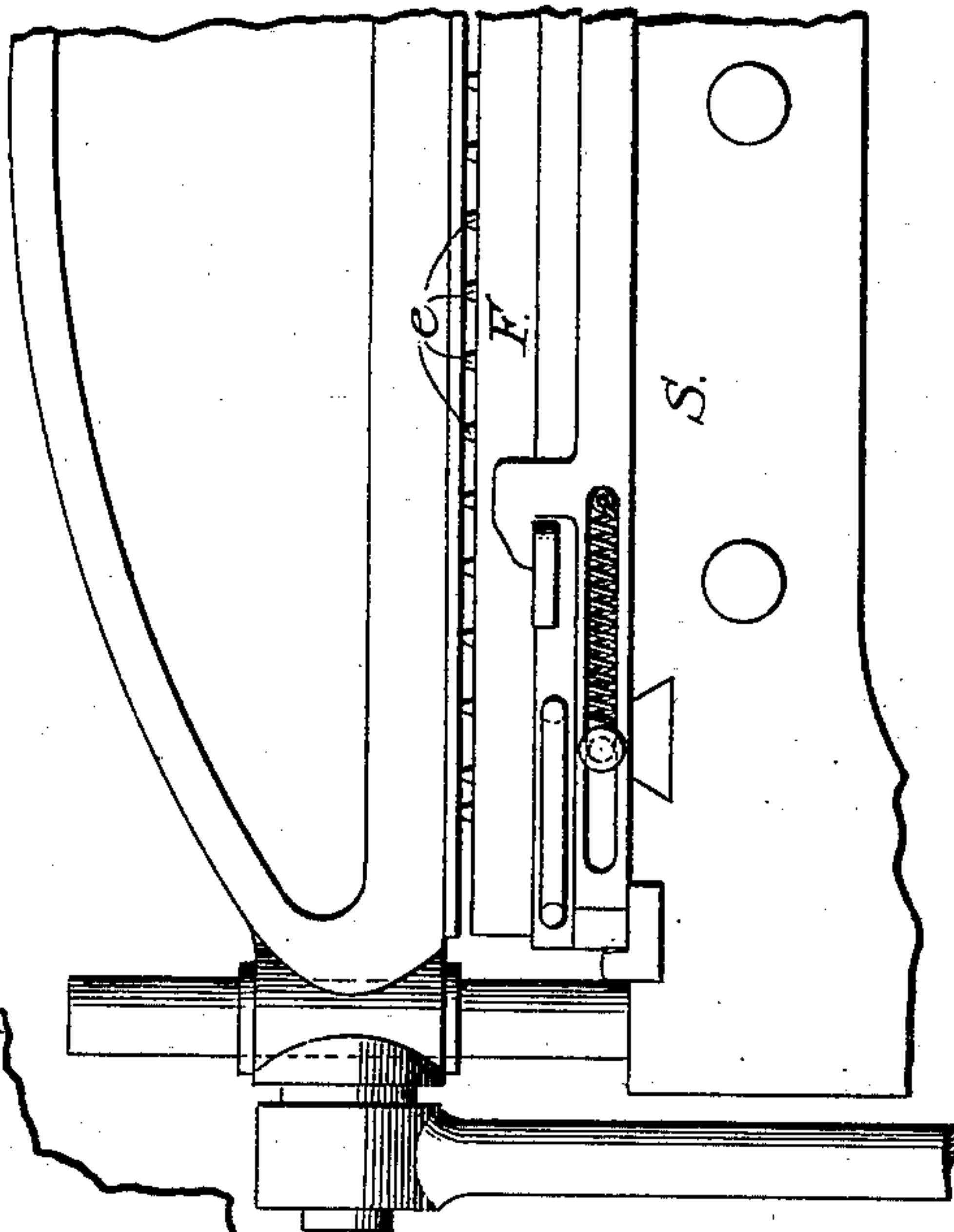
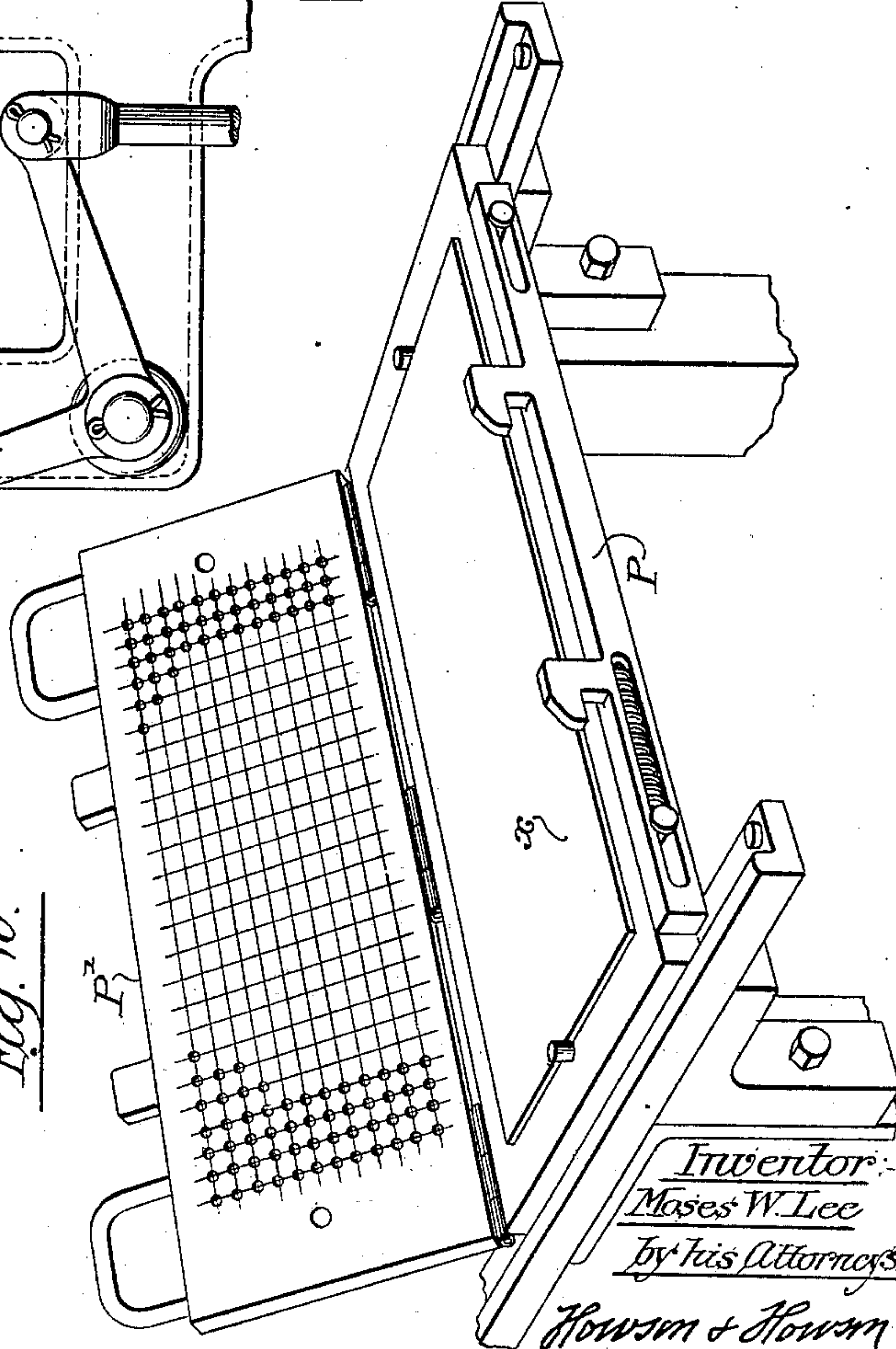


Fig. 10.



Inventor:
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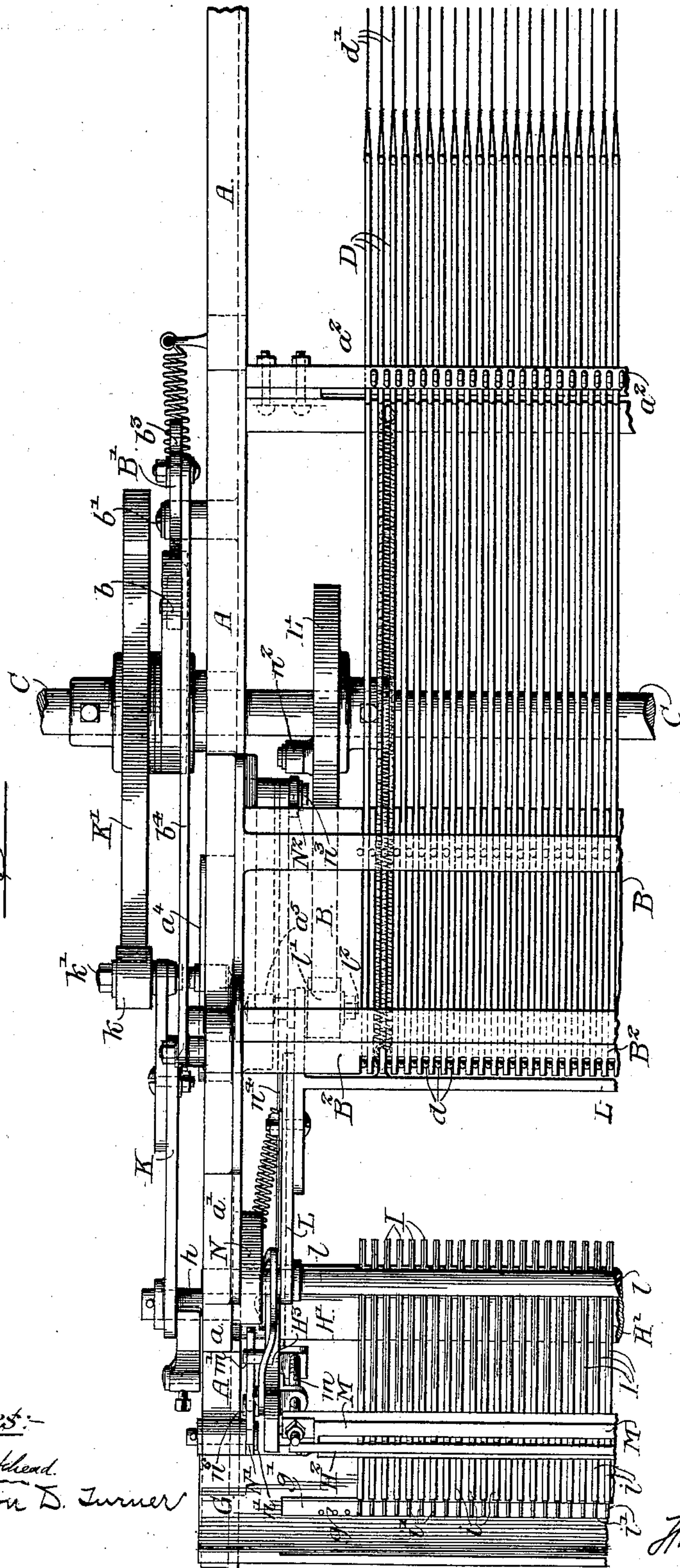
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6 Sheets—Sheet 3.

Fig. 2.



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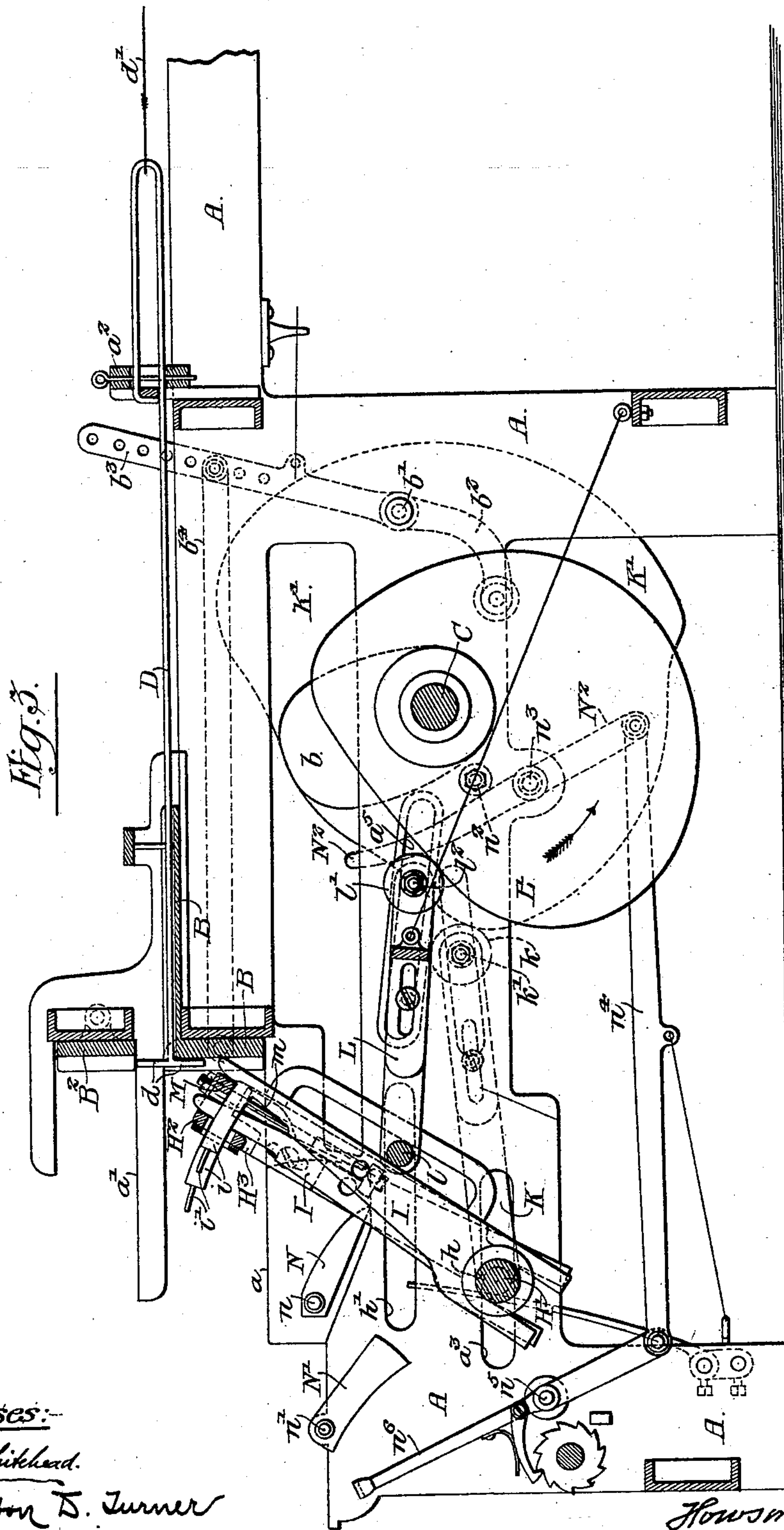
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PUNCH SELECTOR FOR CARD PUNCHING MACHINES.

(Application filed Apr. 15, 1898.)

(No Model.)

6 Sheets—Sheet 4.



Witnesses:

John H. Whitehead.

Hamilton S. Turner

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No. 628,481.

Patented July 11, 1899.

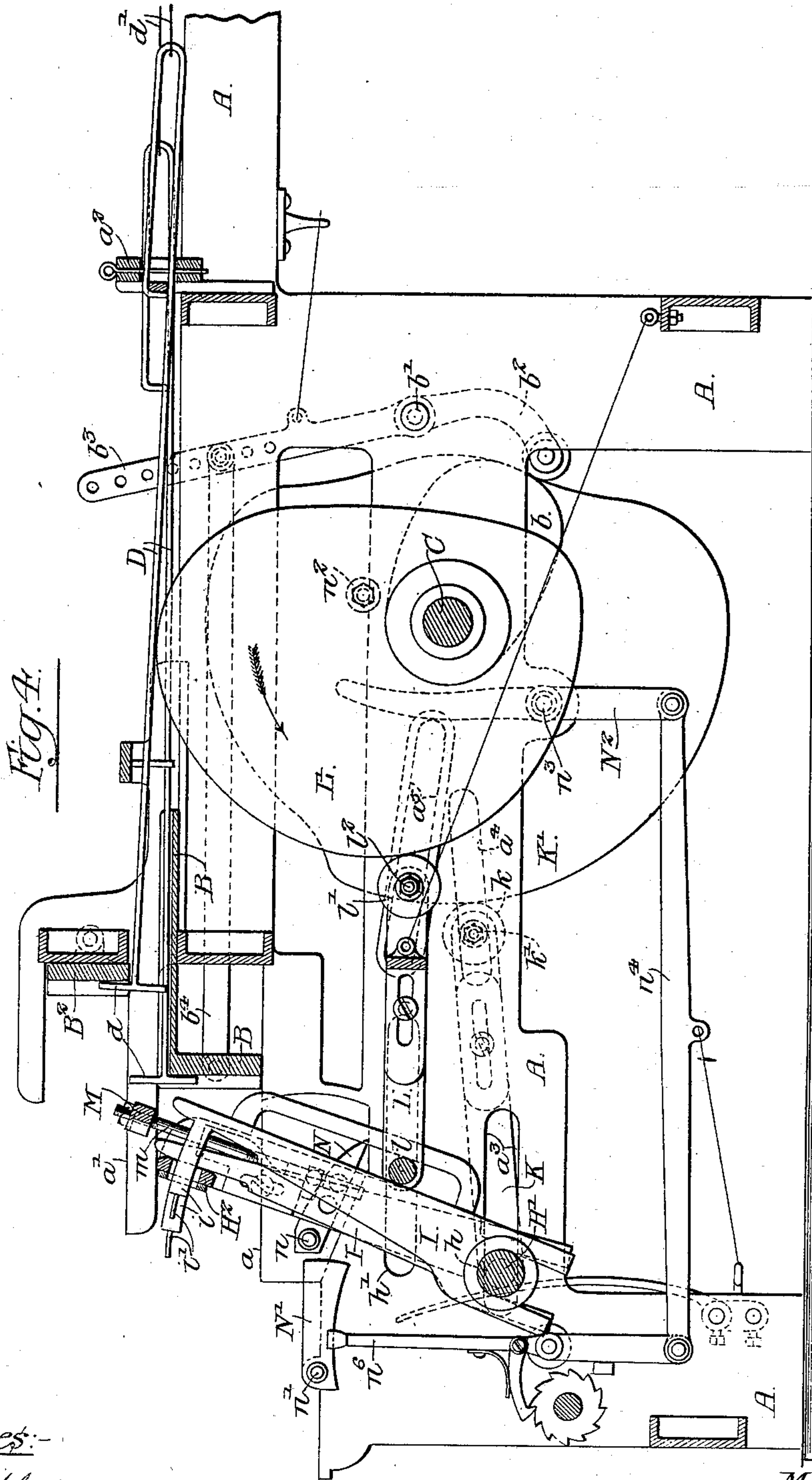
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PUNCH SELECTOR FOR CARD PUNCHING MACHINES.

(Application filed Apr. 15, 1898.)

(No Model.)

6 Sheets—Sheet 5.



Witnesses:-

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Hamilton D. Turner

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Moses W. Lee.

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UNITED STATES PATENT OFFICE.

MOSES W. LEE, OF PHILADELPHIA, PENNSYLVANIA.

PUNCH-SELECTOR FOR CARD-PUNCHING MACHINES.

SPECIFICATION forming part of Letters Patent No. 628,481, dated July 11, 1899.

Application filed April 15, 1898. Serial No. 677,713. (No model.)

To all whom it may concern:

Be it known that I, MOSES W. LEE, a subject of the Queen of Great Britain and Ireland, and a resident of Philadelphia, Pennsylvania, have invented certain Improvements in Punch-Selectors for Card-Punching Machines, of which the following is a specification.

The object of my invention is to construct a machine for selecting the pattern for a card-punching apparatus. This object I attain in the following manner, reference being had to the accompanying drawings, in which—

Figure 1 is a longitudinal sectional view of the selecting mechanism of my improved card-punching machine. Fig. 1^a is a sectional view of the opposite end of the machine, showing the mechanism for selecting the card-punches. Fig. 2 is a plan view of a portion of the machine illustrated in Fig. 1. Figs. 3 and 4 are diagram sectional views illustrating the pattern-selectors in different positions. Fig. 5 is a front view of a portion of the selector-carrying frame. Fig. 6 is a perspective view of one of the selectors. Fig. 7 is a sectional perspective view of the pattern-paper carrier. Fig. 8 is a view of a portion of the pattern-paper used in my improved machine. Fig. 9 is a view showing a portion of two cards punched in accordance with the pattern on the paper. Fig. 10 is a perspective view showing a holder for the card to be placed in the punching-press, and Fig. 11 is a view of sufficient of the card-punching press to illustrate my invention.

Mechanism has been employed to reduce the labor of a card-puncher, and devices have been provided, as shown in Fig. 1^a, for selecting the individual punches after each separate selector was selected by hand as the operator read the pattern-sheet. The plate carrying the selected punches was placed in a suitable press above the pattern-sheet and the cards punched by the press. While this mechanism made the punching more accurate and saved considerable labor, it, however, required the selecting of the individual punches by hand.

The main object of my invention is to construct a machine that will automatically select the punches after the pattern is produced on a pattern-sheet.

The pattern-sheet I prefer to use in carry-

ing out my invention is that described in the application for patent filed by me on the 22d day of January, 1898, Serial No. 668,222. This pattern-sheet, which is illustrated in Fig. 8 of the annexed drawings, has perforations in the spaces between the lines, and as the designer fills in the pattern he uses a pigment of such a consistency that it will fill these small perforations, at the same time indicating the pattern on the sheet. This pigment in time dries and is of sufficient thickness to prevent the selectors of the machine from passing through the perforations that are filled with this pigment, while the other selectors will readily pass through the perforations not marked or filled.

The mechanism shown in Figs. 1^a, 10, and 11 are now in common use, and I lay no claim to this particular apparatus, and they are shown only to fully illustrate the method of punching the pattern-cards, and any suitable machine may be substituted for these without departing from my invention.

Referring now particularly to Figs. 1, 2, 3, and 4, A is the frame of my machine, having a slideway *a* for a slide-bar B, preferably of the form shown in Fig. 1. This slide-bar is reciprocated by means of a cam *b* on a cam-shaft C through the medium of a lever B', pivoted at *b'* to the frame. This lever has one arm *b*², against which the cam *b* operates. The other arm *b*³ of the lever is connected by a rod *b*⁴ to the slide B. By means of this cam the slide is shifted from the position shown in Fig. 1 to the position shown in Fig. 4. The frame has also a slideway *a'* for another slide-bar B², which can be readily coupled to the connecting-rod *b*⁴ when it is wished to operate its slide-bar B² instead of the slide-bar B for a purpose described hereinafter.

D is a series of rods adapted to the grooved surface of the slide-bar B. These rods in the present instance have T-heads *d*, which are engaged by the slide-bar B, so that when certain of these bars are thrown up, as indicated in Fig. 4, the slide-bar only pulls upon those rods that are in engagement with it. These rods D are guided at the rear ends in suitable guides *a*², so that they will be held in proper position, and are connected by cords *d'* to selector-rods *d*², adapted to a bearing-box D', arranged to slide on the frame A of

the machine. The selecting-rods d^2 have heads d^3 , between which and one end of the box are springs d^4 . These springs tend to keep the heads d^3 against the end of the box.

5 When, however, a series of the rods D are drawn out by the slide-bar B, certain of the selector-rods which are connected to the rods D are drawn out with them. Consequently when the slide-box D' is moved forward by
10 the operator pressing his foot on a treadle connected to the bell-crank lever D² only certain of the punches e which are in the punch-frame E are forced into the punch-carrier F, the other punches remaining in the
15 frame, as they are not disturbed by the selector-rods.

G, Figs. 1 and 7, is a casing for the pattern-sheet g , Fig. 8. This casing has an elongated slot g' of a sufficient width to expose a
20 row of the perforations in the pattern-sheet to the selectors. The pattern-sheet is drawn by suitable ratchet feed mechanism, such as shown, or by hand through the casing, so as to expose one row of perforations at a time.
25 Adapted to work in front of this casing is a frame H, Figs. 1, 2, and 5. This frame consists of a bottom cross-bar H', a top cross-bar H², and side bars H³, and projecting from the bottom of the frame are journals h , which are
30 adapted to slide in the slots a^3 in the frame A. These journals are connected to sliding bars K, carrying rollers k and having a pin k' , adapted to work in a slot a^4 in the frame A.

On the cam-shaft C are cams K', which act
35 against the rollers k of the bars K, which are connected to the frame H, so that the bottom of the frame has a reciprocating motion.

In order that the frame H may have the proper swinging and lifting movement, I form
40 at each side frame H a slideway h' , in which is a pin l of a bar L. The outer end of this bar has a roller l' and a pin l^2 , which is adapted to a slot a^5 in the frame A. Acting against the roller l' of each slide-bar L is a cam L',
45 mounted on a cam-shaft C. The cams K' and L' are so set in respect to each other that the proper movement will be given to the frame H.

Carried by the frame H are a series of selectors I, forked or slotted at the base, so as
50 to rest upon the cross-bar H'. The selectors also rest upon the cross-bar H² at the top, and each selector has an arm i , which passes through the bar, and has at its end a blunt
55 pin i' , of a diameter to freely enter the perforations in the pattern-sheet if not obstructed.

M is a locking cross-bar having arms $m m$, which slide in the frame H, and on each arm is a pin m' , which is adapted to travel over
60 the cam N, which is pivoted at n to the frame of the machine and to rest upon a movable supporting-plate N', pivoted at n' . Each of the supporting-plates is actuated by a roller
65 n^2 on the cam L', which strikes a lever N², pivoted at n^3 to the frame of the machine. This lever in turn is connected by a rod n^4 to a lever N³, pivoted at n^5 . The upper end

n^6 of this lever supports the plate N' when in the position shown in Fig. 1; but when the
70 roller n^2 strikes its lever it will throw the lever N³ to the position shown in Fig. 3, out of engagement with the supporting-plate N', allowing the plate to drop, causing the locking
75 cross-bar M to drop between the selectors that have passed through the perforations in the pattern-sheet and those that were obstructed, as shown in Fig. 3, so that the bar locks the selectors in position.

The frame H has slots a^6 for the pins m' of the locking-bar M, which drops suddenly and
80 locks the selectors, and on the forward movement of the frame the pins pass under the pivoted cams N.

The cams L' and K' are so set that the movement of the frame H will be from the
85 position shown in Fig. 1 to the position shown in Fig. 3, with the rear selectors resting against the slide B and directly under certain of the rods D. The frame will then move vertically,
90 so as to force the rods directly above the selectors up out of engagement with the slide B, after which it will return, as shown in Fig. 4. The locking-bar will then travel up the cam N and will be elevated sufficiently above
95 the selectors I so as to allow all the selectors to be in line, so that when the pattern-paper is moved to present another line of perforations the above-described movements will be repeated. Immediately on the return of the
100 frame H the slide B moves forward, as indicated in Fig. 4, pulling out the rods that are still in engagement with the slide, allowing the other rods that are thrown out of engagement to remain idle. This movement, as described in the first part of the specification,
105 draws certain of the punch-selector rods d^2 back, so that only those rods that are projecting force the punches e into the carrier F, Fig. 1^a.

Sometimes it is desirable to draw out the
110 rods D that are not in engagement with the slide B, and this is accomplished by connecting the lever B' to slide B², so that when the rods D are elevated they are thrown up into engagement with the slide B², while the other
115 rods remain inactive. For this reason I preferably provide the rods with T-heads; but they can be simply L-shaped when the slide B only is used.

Suitable springs are used in order to keep
120 the several slides and levers in contact with their cams or rollers, and it will be understood that weights are considered the equivalent of springs for this purpose.

After the blank card to be punched is placed
125 in the card-frame P, which has a pivoted section P', perforated to receive the punches e , so that they will be guided properly when the card x is in position in the frame, the hinged section P' is shut down and locked to hold
130 the card rigidly. It is then placed in the press S, with the plate F, carrying the punches e , mounted above it, so that when pressure is applied to the press the punches will be

driven through the card and the proper perforations made, as shown in Fig. 9.

It will be seen by the above description that the proper punching of the card is transferred from the card-puncher to the designer, so that it is impossible to make a mistake after the proper design is drawn on a pattern-sheet, and that the machine is so simple that it can be readily operated, the pattern-sheet being simply placed in the slotted casing and moved one section at a time as the selectors operate, some of the selectors passing through the perforations, while others are prevented by the obstructions. The selectors are then moved in position to release some of the rods, the remainder of the rods being drawn forward by the slide B, so that those which are not drawn out are in position to select the punches and force them into the carrying-frame, which is afterward mounted in the press to punch the pattern-card.

I claim as my invention—

1. The combination of a carrier for a perforated pattern, a series of selectors controlled by the pattern, punch-selecting rods, mechanism for moving said rods, means for actuating the selectors after being set by the pattern to select the rods, prior to the operation of the means for moving said rods to select the punches, substantially as described.

2. The combination of a carrier for a perforated pattern-sheet, a series of selectors having portions adapted to pass through the perforations of the sheet, selecting-rods and means for shifting the selectors from the pattern-sheet to the rods so that some of the rods will be selected by the action of the selectors, substantially as described.

3. The combination in a card-punching machine, of a frame for receiving the prepared pattern-sheet, a series of selectors some of which are adapted to the openings in the cards in the pattern-sheet, a bar for separating the selectors, a frame carrying the selectors, a series of headed rods and punches, a sliding frame, means for operating the selector-carrying frame so that the selectors will release certain of the rods from the slide, and means for operating the slide so as to separate the rods, substantially as described.

4. The combination of a carrier for a perforated pattern-sheet, a series of pivoted selectors having portions adapted to pass through the perforations of the sheet, selecting-rods and means for shifting the selectors from the pattern-sheet to the rods so that some of the rods will be selected by the action of the selectors, substantially as described.

5. The combination of a carrier for the perforated pattern-sheet, a series of punch-selecting rods, a frame, a series of selectors carried thereby and having portions adapted to pass through perforations in the sheet, means for separating the selectors that pass through the sheet from the other selectors, and means for moving the frame and means for actuating the frame to select the punch-selecting rods, substantially as described.

6. The combination of the carrier for a perforated pattern-sheet, a frame, a series of selectors carried thereby having portions adapted to pass through the perforations in the pattern-sheets, means for separating the selectors, cams for giving the frame a reciprocating motion and a vertical motion, and a series of punch-selecting rods with which the selectors engage, substantially as described.

7. The combination of the carrier for perforated pattern-sheets, a frame, means for operating said frame, a series of pivoted selectors thereon, projections on said selectors adapted to pass through perforations in the sheet, a bar for locking the several selectors out of line, a cam for operating said bar after the series of selectors have been separated, a sliding cross-bar, and punch-selecting rods engaging with said cross-bar and adapted to be released by the selectors, substantially as described.

8. The combination of the pattern-carrier, punch-selectors, two sliding bars, T-headed punch-selecting rods engaging one of said bars, the pivoted selectors adapted to release the rods from one sliding bar and throw them into position to be engaged by the other sliding bar, substantially as described.

9. The combination of a pattern-carrier, a frame, two cams for operating said frame, a series of selectors pivoted to said frame and having pins adapted to pass through the perforations of the pattern-sheet, a locking-bar carried by said frame, mechanism for operating said bar after the selectors have been adjusted, punch-selecting rods, mechanism for shifting the selectors so as to throw out some of the punch-selecting rods, with means for operating the rods to select the punches, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

MOSES W. LEE.

Witnesses:

WILL. A. BARR,
JOS. H. KLEIN.