

W. V. GEE.

MACHINE FOR STITCHING TOGETHER JACQUARD CARDS.

No. 361,406.

Patented Apr. 19, 1887.

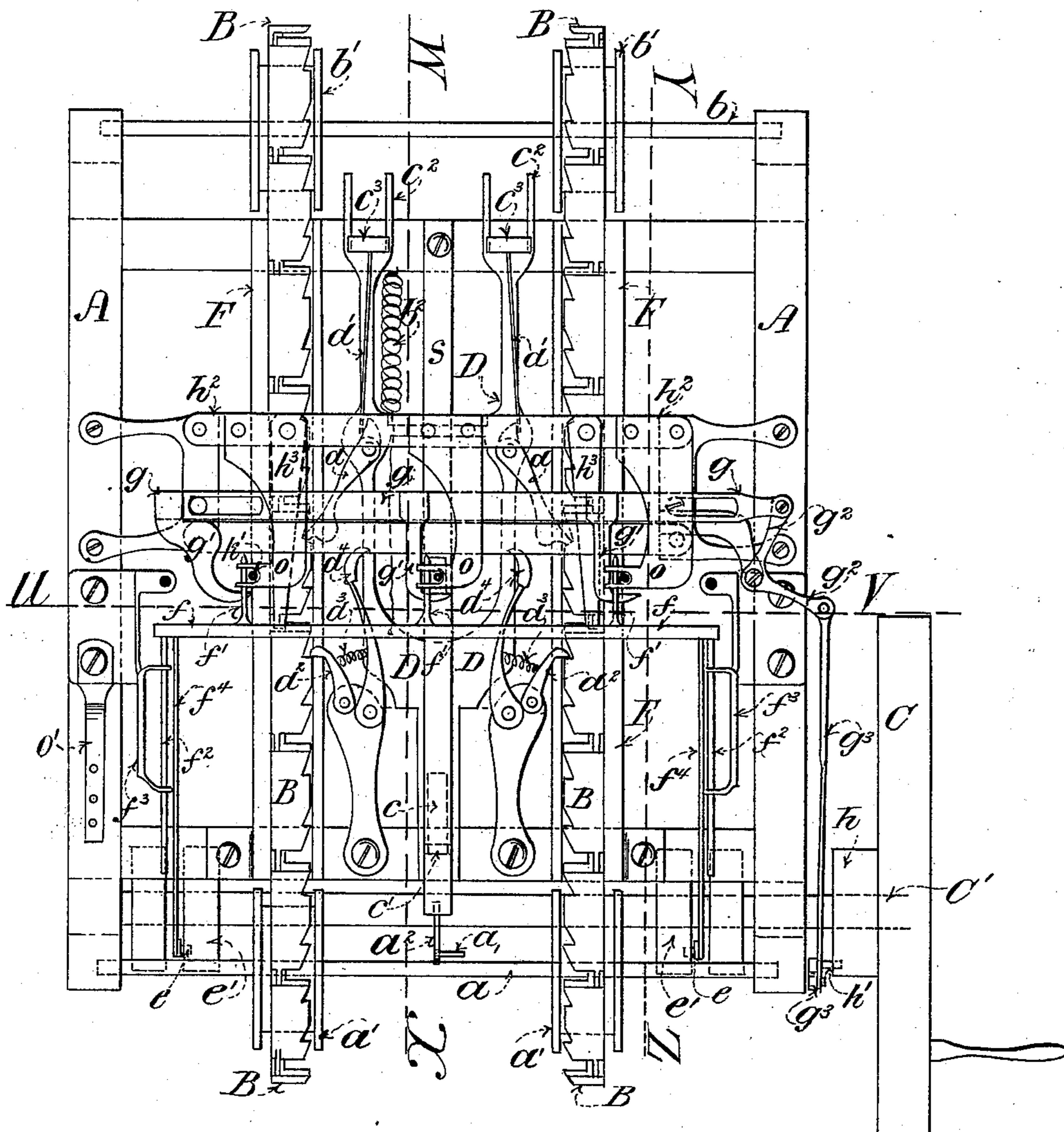


Fig. 1

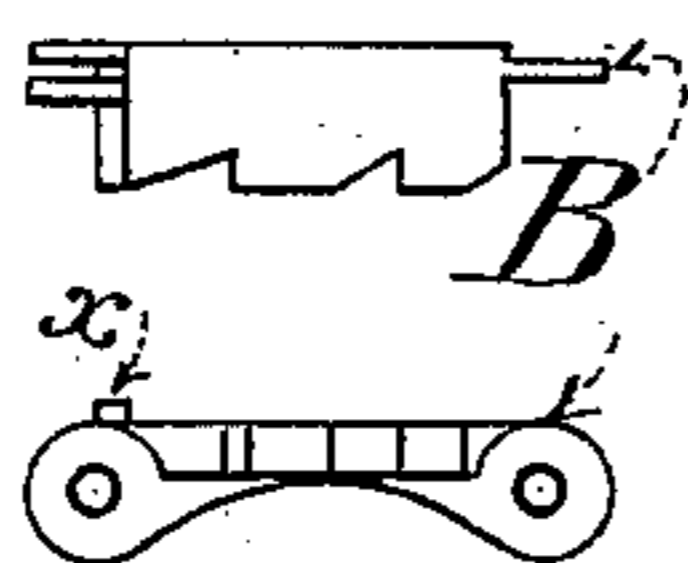


Fig. 1^a

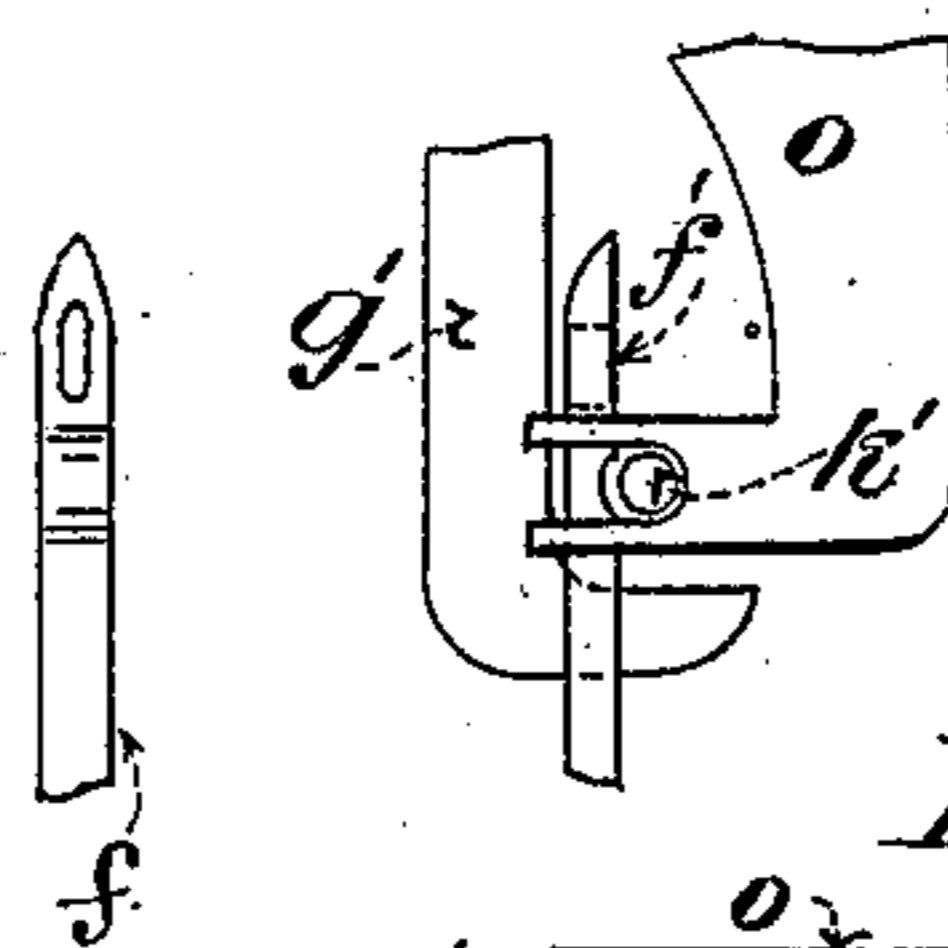


Fig. 1^b

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William V. Gee
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(Model.)

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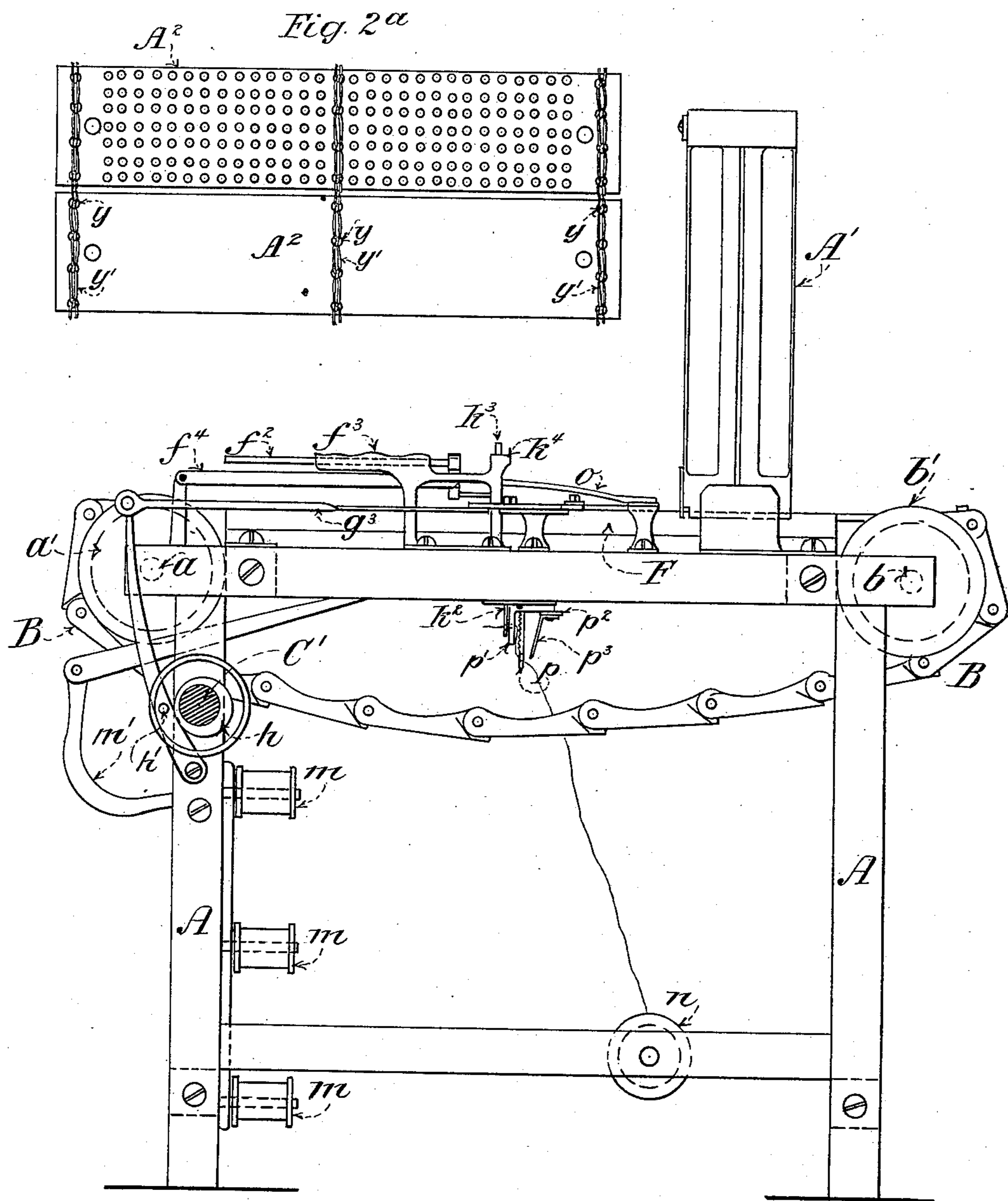


Fig. 2

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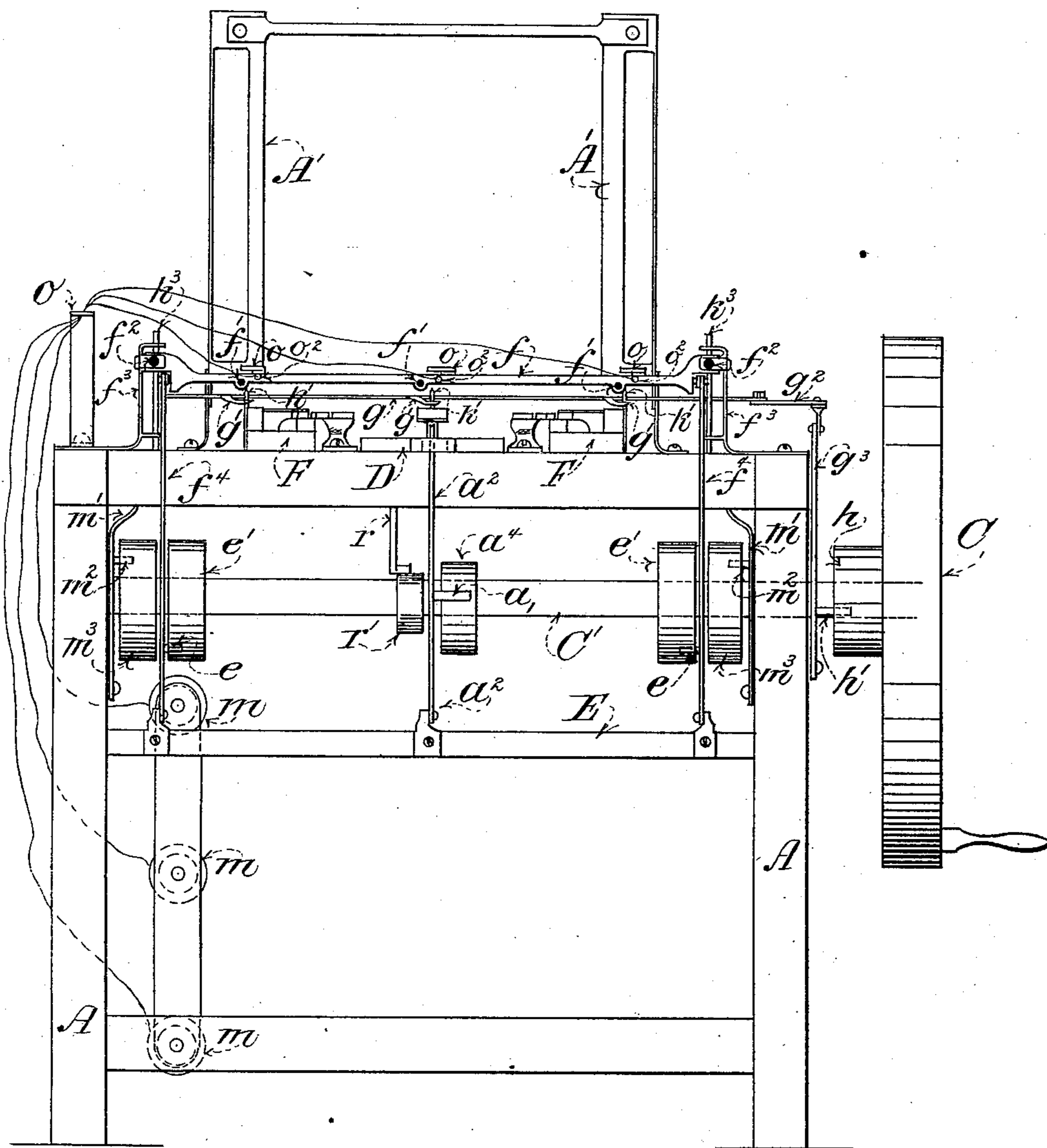


Fig. 3

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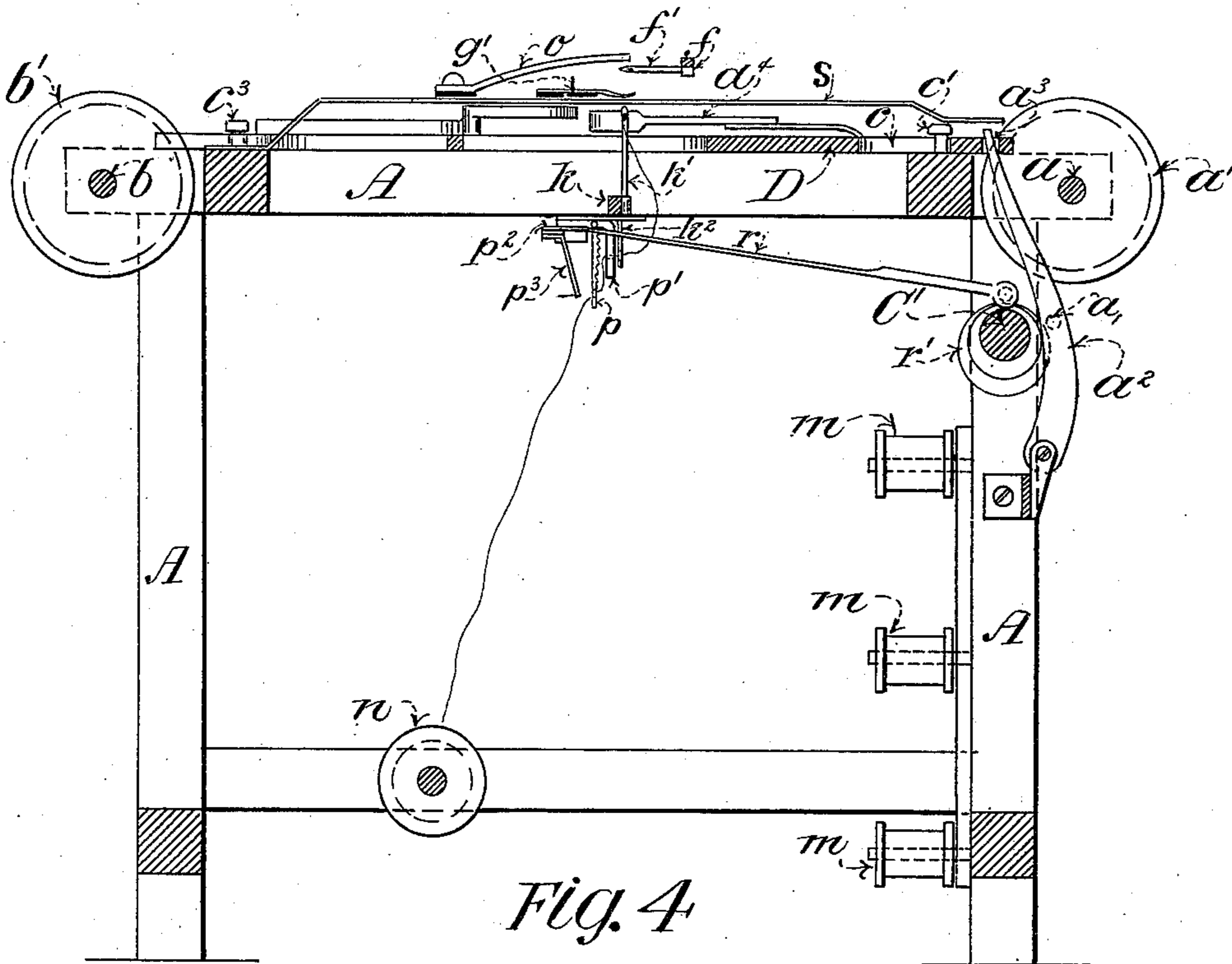


Fig. 4

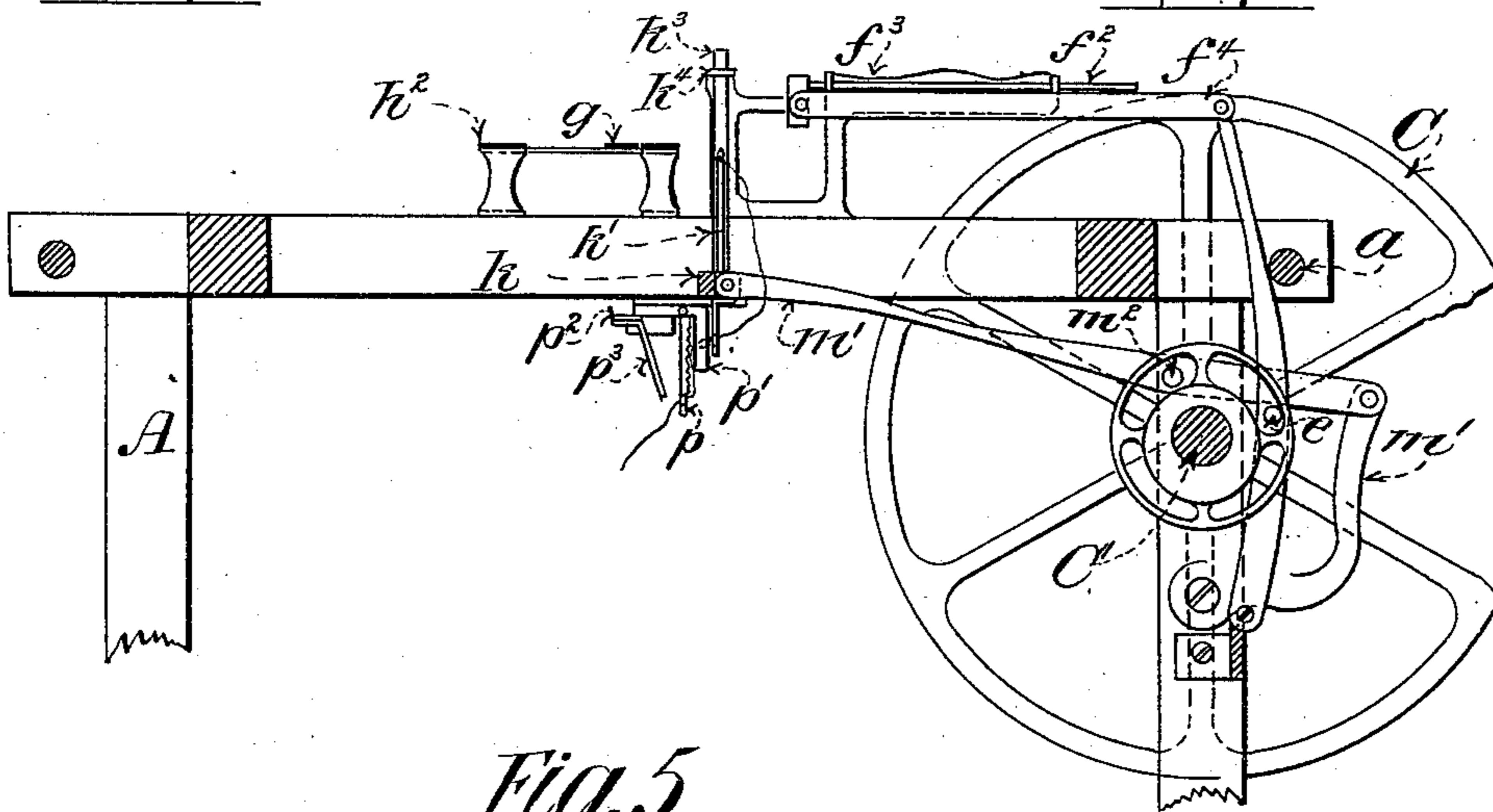


Fig. 5

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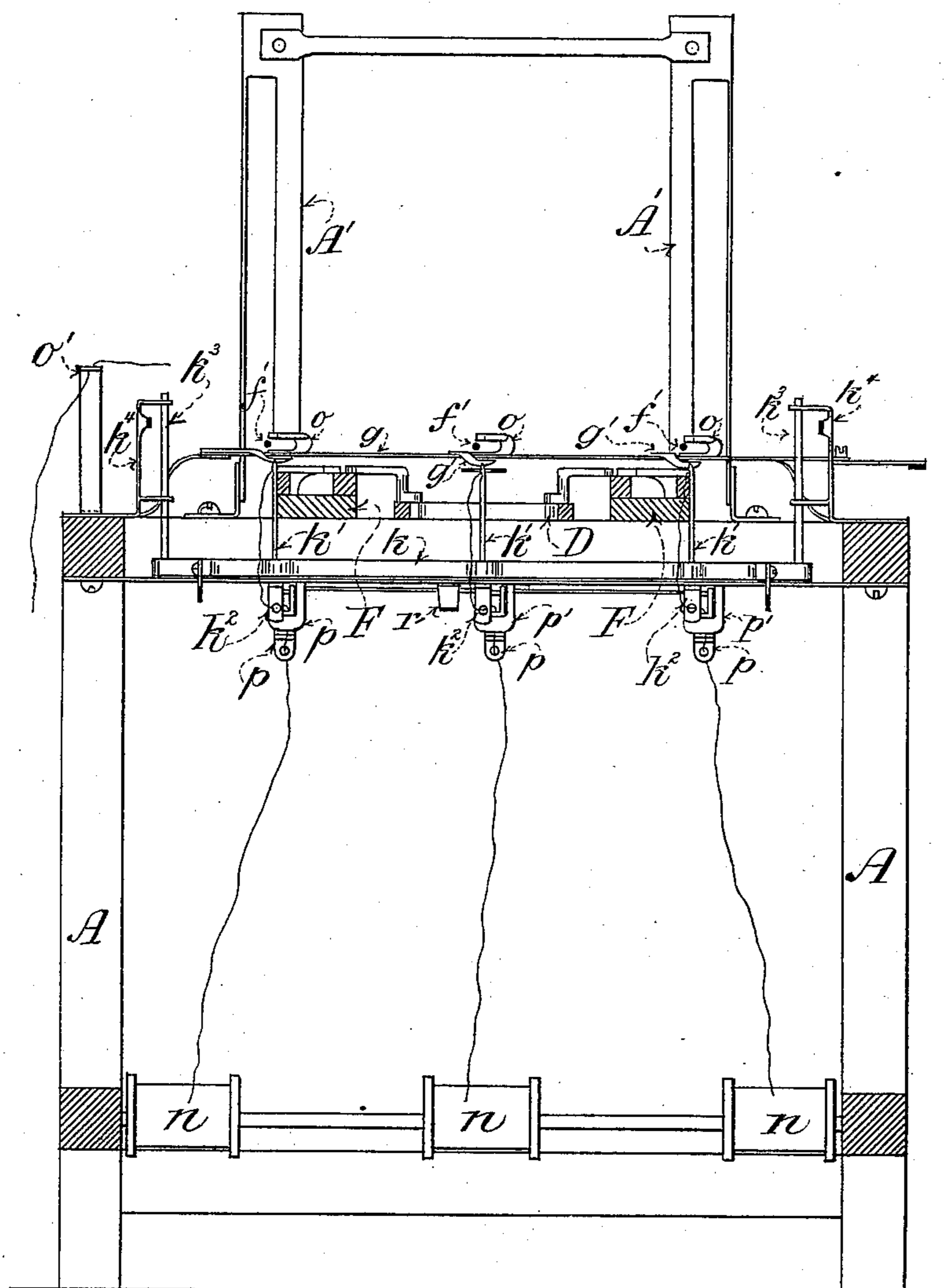


Fig. 6

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UNITED STATES PATENT OFFICE.

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MACHINE FOR STITCHING TOGETHER JACQUARD CARDS.

SPECIFICATION forming part of Letters Patent No. 361,405, dated April 19, 1887.

Application filed March 10, 1886. Serial No. 194,679. (Model.)

To all whom it may concern:

Be it known that I, WILLIAM V. GEE, a citizen of the United States, residing at Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Machines for Lacing or Stitching Together Pattern-Cards for Jacquard Looms; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to machines for lacing or stitching together pattern-cards for Jacquard looms; and the improvement consists in the construction and arrangement of the several parts of the machine, as will be hereinafter described, and more particularly pointed out in the claims.

In the accompanying drawings, Figure 1 represents a plan of the machine. Figs. 1^a are views of a section of the endless chains that carry along the pattern-cards. Figs. 1^b are views showing the position of the upper and lower needles and the hooks which aid in forming the loop or stitch. Fig. 2 is a side elevation with the driving-wheel removed. Fig. 2^a is a view of two of the cards after they have been sewed together. Fig. 3 is an end elevation with the front shaft that carries the endless chains along removed. Fig. 4 is a longitudinal section on the line W X. Fig. 5 is a longitudinal section on the line Y Z. Fig. 6 is a vertical section on the line U V.

A A represent the frame of the machine.

C is the driving-pulley, which may be operated by a belt or turned by hand.

C' is the driving-shaft through which the motion is transferred to the different parts of the machine.

a is a shaft extending across the front end of the machine.

a' a' are two channeled pulleys on the shaft a.

b is a shaft extending across the back of the machine.

b' b' are two channeled pulleys on the shaft b.

B B are two endless chains extending from front to back of the machine and working over the channeled pulleys a' b'.

D is a sliding carriage that moves back and

forward on the top of the machine between the endless chains B B.

E is a bar extending across the front of the machine and secured rigidly to the frame thereof.

a² is a lever pivoted at one end to the bar E and at the opposite end fitting into the slot a³ in the forward end of the carriage D.

a₁ is a spur or projection on the pivoted lever a².

a⁴ is a cam on the middle of the driving-shaft C'. This cam, operating on the lever a², pulls the sliding carriage forward.

b² is a spiral spring that brings the carriage back after it has been pulled forward by the lever a².

c is a slot in the forward end of the carriage back of the slot a³.

c' is a pin secured in the frame of the machine. This pin fits into the slot c, thereby forming a guide for the forward end of the carriage D.

c² c² are two slots forming the guide for the rear end of the carriage D.

c³ c³ are two pins in the frame of the machine, fitting into the slots c² on the end of the carriage.

d d are pivoted catches or pawls secured on either side of the sliding carriage D, for the purpose of engaging in the notches cut on the inner side of the endless chains B B, and thus moving said chains regularly along as the carriage is pulled forward from time to time by the action of the lever a².

d' d' are two flat springs secured in the carriage D and having their free ends bearing against the catches d d, for the purpose of pressing and holding said catches into the notches on the endless chains B B.

d² d² are two catches or pawls secured on the frame of the machine and engaging in the notches on the chains B B, for the purpose of preventing said chains from moving backward.

d³ d³ are springs holding the catches d² in position.

d⁴ d⁴ are two stops secured to the frame of the machine on either side of the carriage. These stops are for the purpose of preventing any overthrow of the chains from the mo-

mentum of the carriage when the machine is being operated at a high rate of speed.

F F are two parallel tracks or supports for the endless chains B B.

5 A' is a rack, into which the loose pattern-cards are placed one on top of the other.

f is the bar carrying the top needles, $f'f'f'$.

f^2f^2 are two horizontal arms attached to the ends of the needle-bar f.

10 f^3f^3 are bearings for the arms f^2 . These bearings are attached to the frame of the machine, holding the needle-bar in position and allowing it to move freely back and forward.

15 f^4f^4 are two jointed levers located on opposite sides of the machine and secured at one end thereof to the ends of the needle-bar f and at the opposite ends to the cross-bar E.

e e are spurs or projections on the jointed levers f^4 .

20 $e'e'$ are cams on the driving-shaft C'. These cams operate upon the jointed levers f^4 , and thus move the top needle-bar back and forward.

25 g is a bar extending across the machine and having thereon the hooks $g'g'g'$.

g^2 is a crank-lever attached to the hook-bar g.

30 g^3 is a jointed lever attached at one end to the crank-lever g^2 and at the other end to the frame of the machine.

h is a cam formed on the inner side of the hub of the driving-pulley C.

35 h' is a spur on the jointed lever g^3 . This spur engages with the cam h, thus giving the hook-bar g a back-and-forward movement across the machine.

h^2 is a guide-bar extending across the top of the machine over the sliding carriage.

40 h^3h^3 are two spring-fingers attached to the guide-bar h^2 . These fingers press the cards down on the chains B and hold them in position for the needles to operate upon.

m m m are three spools carrying the threads for the top needles.

45 n n n are the spools carrying the threads for the bottom needles.

k is the bar carrying the bottom needles, $k'k'k'$.

50 $k^2k^2k^2$ are thread-guiding fingers extending downward from the bottom needle-bar, k. In each of these fingers is a small hole through which the thread passes.

55 k^3k^3 are two upwardly-extending arms attached to the ends of the bottom needle-bar on opposite sides of the machine.

k^4k^4 are vertical guides or bearings for the arms k^3 . These bearings are attached rigidly to the frame of the machine.

60 $m'm'$ are jointed levers attached at one end to the ends of the bottom needle-bar and at the other end to the frame of the machine.

m^2m^2 are spurs on the jointed levers m' .

65 m^3m^3 are two cams on the outer ends of the driving-shaft C'. These cams engage with the spurs on the jointed levers m' , and thus give the bottom needle-bar an up-and-down movement.

o o o are three slotted hooks secured upon the bar h^2 . Through the slots on the ends of these hooks the lower needles are projected at every upward movement of the lower needle-bar. 70

x x are the spurs or projections on the rear end of the upper surface of each section of the endless chains B. 75

o' is a guiding-support for the threads for the upper needles.

$o^2o^2o^2$ are holes in the top needle-bar, through which the threads are guided to the top needles. 80

p p p are swinging jaws pivoted to the tension-plates $p'p'p'$, secured under the machine.

p^2 is a pivoted bar extending across the under part of the machine back of the jaws p p p.

85 $p^3p^3p^3$ are three fingers extending downward from the bar p^2 and operating the swinging jaws p.

r is an arm or lever fastened to the bar p^2 and extending forward, so as to be operated by the cam r' on the shaft C'. 90

A² A² represent two of the pattern-cards sewed together.

y y y are the lacing-holes.

95 $y'y'y'$ are the three rows of stitching as they appear on the top of the cards.

s is a card-support extending over the top of the machine and under the cards as they pass along.

The loose cards, having therein the proper amount of lacing-holes on either side thereof, as shown in Fig. 2^a, being placed in the rack A', one above the other, and the top and bottom needles being threaded, the operation of the machine is as follows, viz: The driving-wheel being turned, the sliding carriage D is pulled forward by means of the cam a' , operating the lever a^2 . This movement of the carriage causes the pawls or catches $d d$ to engage with the notches on the inside of the chains B B, thus carrying said chains along on the tracks F F. 100
The spurs or projections x x on the upper surface of each section of the endless chains will each time as they pass along pull out the bottom card from the rack A', and this will be repeated at every forward movement of the carriage D. When the cards have been brought forward to the needles, the operation of sewing is commenced, to do which the bottom needle-bar, with its accompanying needles, each having a thread therein, is first forced or carried upward by the cams m^3 , operating on the jointed levers m^2 . This movement will bring the bottom or vertical needles up through the lacing-holes in the cards until the eye of each needle, with its attached thread, is some distance beyond the line of the upper or horizontal needles. The bottom needles being in this position, the top needle-bar, f, carrying the top or horizontal needles, f' , is given a forward horizontal movement by the operation of the cams $e'e'$ upon the jointed levers f^4 . This carries the needles f' , with their attached threads, between the bottom needles and their attached threads at a point just below the eyes in the 105
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bottom needles, thus forming loops of the bottom threads over the said top needles and their threads. The continued motion brings the bottom needles down out of the holes in the cards, leaving the bottom threads still looped over the top or horizontal needles and corresponding threads. The cards now move forward the distance between the lacing-holes, and, as the top needles remain stationary during this forward movement of the cards, the loops of the bottom threads previously formed on said top needles are pulled along on the needles the same distance that the cards are moved. The forward movement of the cards brings the next adjacent lacing-hole immediately over the bottom needles. Being in this position, the top needles are carried forward until the eyes therein project a short distance beyond the lacing-holes immediately over the bottom needles. The bottom needles, with their attached threads, are then moved upward, passing between the top needles and their corresponding threads, thus forming a loop of the top threads around the bottom needles and their attached threads. After this the top needles are again drawn back until the loop of the bottom threads, previously formed on said top needles, is dropped off, when it will be drawn down into the lacing-hole immediately underneath. The top needle-bar is now moved forward. This movement will carry the needles, with their attached threads, between the projecting bottom needles and their attached threads. The bottom needles are then withdrawn, leaving the bottom threads looped over the top needles and their accompanying threads. The cards being again moved forward one lacing-space by the forward movement of the sliding carriage, the loops of the bottom threads slide along the top or horizontal needles, and the upper needle-bar again advances, so that the eyes of the upper needles will be a little beyond the next adjacent lacing-holes and ready for the next upward movement of the bottom needles, and so on indefinitely.

At every upward movement of the bottom needles the lever r , operated by the cam r' on the shaft C' , will cause the fingers p^3 to close the pivoted jaws p upon the tension-plates p' , thus holding the bottom threads tightly and allowing no more to unwind from the spools; consequently these bottom threads will be tightened, thus pulling the stitch previously formed down into the lacing-holes in the cards. When the bottom threads are thus drawn tight for the purpose of pulling the stitches down in the lacing-holes, the hooks $g' g'$ on the bar g , resting upon the top of the cards, protect them from the force of the pull and prevent the thread from tearing through. By having these hooks in the position shown, a thin or very ordinary grade of card may be used and the stitch drawn as tightly down as when using a good or superior quality of cards. The closed end of the slots in the hooks $o o o$

on the bar h^2 being close to one side of the bottom needles as they project through said slots at every upward movement, the threads in the said bottom needles are by this means made to bulge out or form a small loop on the side next to the top needles. This bulging or looping of the bottom threads insures the entrance of the top needles between the bottom threads and bottom needles at every forward movement of the top needle-bar.

The needles f' and k' are preferably made with a semicircular cut just back of the eyes therein, as shown in Figs. 1^b. Through this cut-away part of the needles and inside of their accompanying threads the opposite needles and their attached threads are projected.

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

1. In a machine for stitching together pattern-cards, the combination of the driving-shaft C' , having thereon the cams e' and cams m^3 , the levers f^4 , operating the top needle-bar horizontally back and forward, the levers m' , operating the bottom needle-bar vertically up and down, the top needle-bar, f , supported by suitable mechanism and provided with the needles f' , the bottom needle-bar, k , provided with suitable supports and having therein the needles k' , and suitable mechanism for moving the pattern-cards to and from the said needles, all arranged substantially as and for the purpose described.

2. In a machine for stitching together pattern-cards, the combination of the shaft C' , having thereon the cams e' , m^3 , and a^4 , the levers f^4 , operating the top needle-bar horizontally, the levers m' , operating the bottom needle-bar vertically, the top needle-bar, f , having suitable supports and provided with the needles f' , the bottom needle-bar, k , provided with suitable supports and having thereon the needles k' , the lever a^2 , the sliding carriage D , having thereon the catches or pawls $d d$ and provided with suitable means for returning it into place after being pulled forward, the endless chains $B B$, having the spurs $x x$, and the card-rack A , located over the chains B , all arranged substantially as and for the purpose described.

3. In a machine for stitching together pattern-cards, the combination of the driving-shaft C' , having thereon the cams e' , m^3 , and r' , the levers f^4 , levers m' , lever r , the needle-bar f , carrying the needles f' , the horizontal arms or supports f^2 , attached to the top needle-bar and working in the bearings f^3 , the bottom needle-bar, k , having thereon the needles k' and thread-guiding fingers k^2 , the vertical arms k^3 , attached to the needle-bar k and working in the guides or bearings k^4 , the sliding carriage D , having the pawls or catches $d d$ and operated back and forward by any suitable mechanism, the endless chains B , supported over the machine from front to back and having the spurs x on the upper surface of each

section, and the open-bottom card-rack A', secured over the chains B, all arranged substantially as shown and described.

4. In a machine for stitching together pattern-cards and similar articles, stitching mechanism, the endless chains B B, supported over the top of the machine and propelled by suitable mechanism, and having on the upper surface of the sections thereof the spurs or projections α , for taking the bottom card from a number thereof supported in a rack immediately over said chains, in combination with a receptacle for holding the pattern-cards, substantially as shown and described.

5. In combination with the operative parts of a machine for sewing together pattern-cards, substantially as described, the endless chains B, having on the upper surface of the sections thereof the spurs α and connected with suitable mechanism for moving said chains forward at regular intervals, and the open-bottom rack, A', located immediately over the said chains, substantially as shown and described.

6. In a machine for sewing together pattern-cards, the combination of the top needle-bar, f , having thereon the needles f' and provided with suitable mechanism for moving the same horizontally back and forward, the bottom needle-bar, k , having thereon the needles k' and operated by any suitable mechanism up

and down, the notched endless chains B B, having thereon the spurs α and supported over the machine from front to back, the sliding carriage D, operated by any suitable means and provided with catches for engaging with notches in the side of the endless chains B, and the card-rack A', substantially as and for the purpose described.

7. In a machine for stitching together pattern-cards, the combination of the hooks $g' g'$, secured near the needles k' and f' and on a line with the rows of stitching, for the purpose of preventing said stitches from tearing through the cards when the threads are pulled tight, substantially as shown and described.

8. The herein-described tension for the threads used in machines for stitching together pattern-cards, consisting of the swinging jaws p , the tension-plates p' , and the pivoted bar p^2 , having thereon the fingers p^3 , said pivoted bar being connected with the other parts of the machine, in combination with the stitch-forming mechanism, substantially as described.

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

WILLIAM V. GEE.

Witnesses:

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THOS. D. MOWLDS.