

No. 627,340.

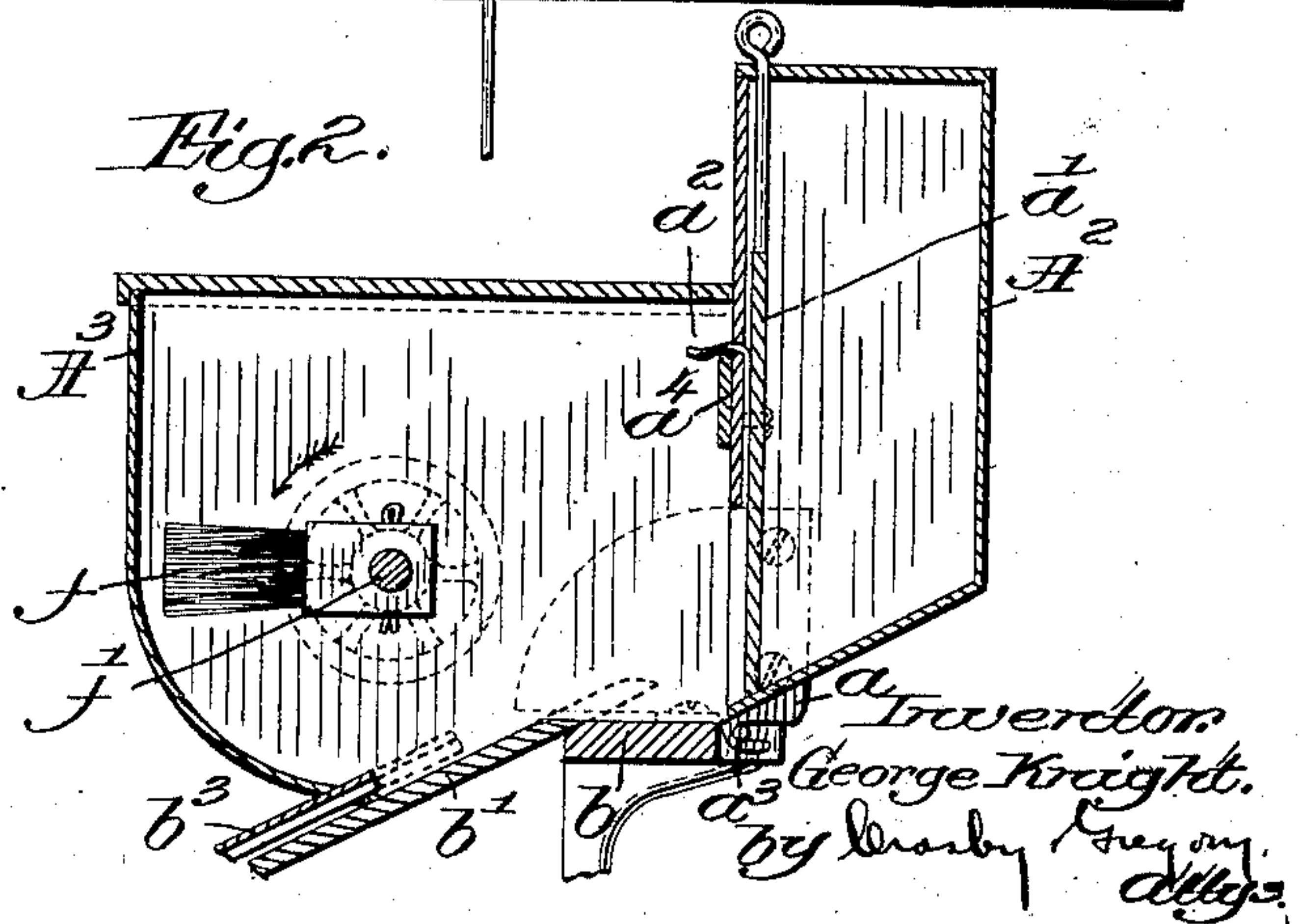
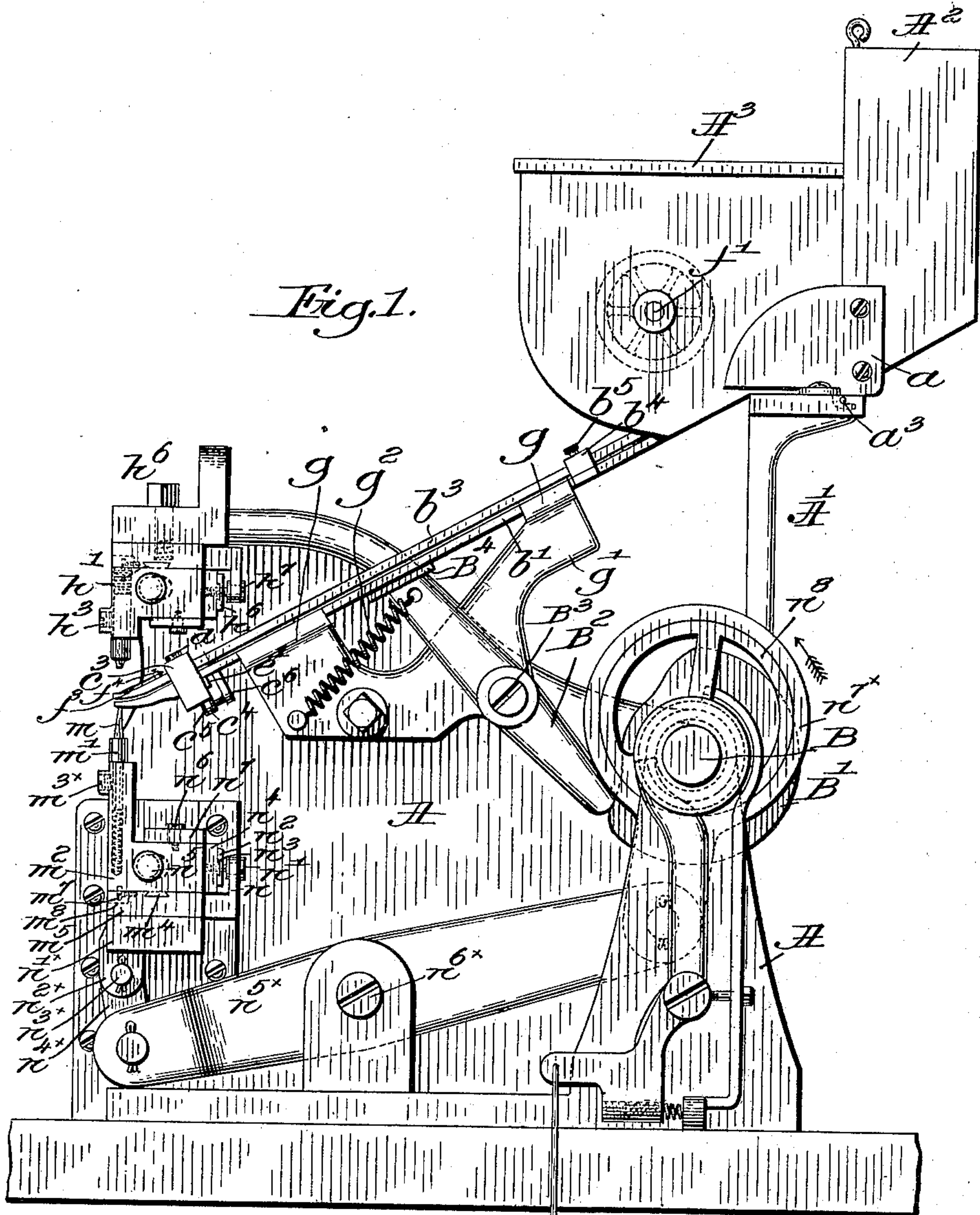
Patented June 20, 1899.

G. KNIGHT.
GANG EYELETING MACHINE.

(Application filed Mar. 29, 1897.)

(No Model.)

4 Sheets—Sheet 1.



witnesses:

Fred S. Grunkef.
Thomas J. Drummond.

Inverdon
George Knight.
by Wesley Gregory
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No. 627,340.

Patented June 20, 1899.

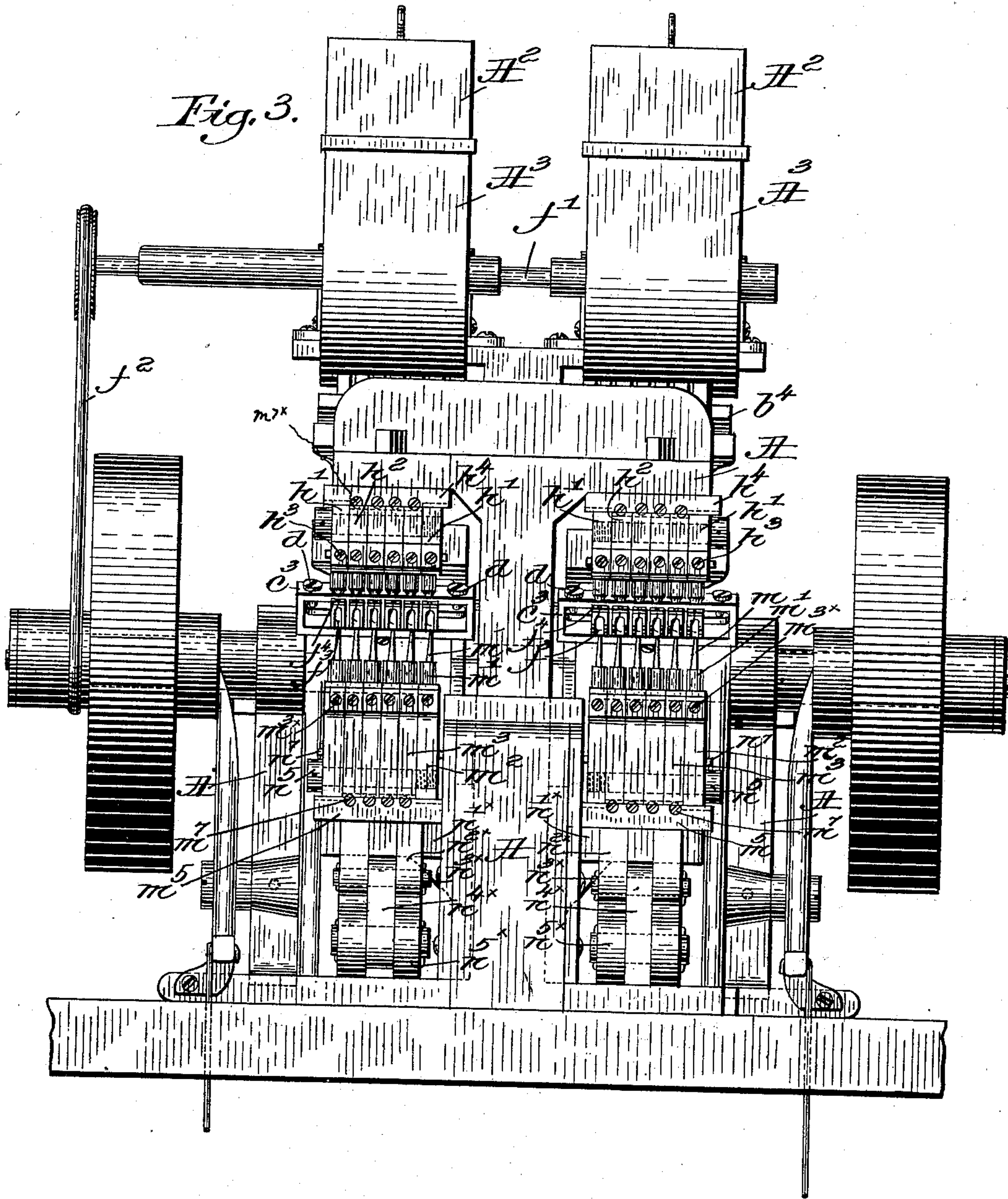
G. KNIGHT.

GANG EYELETING MACHINE.

(No Model.)

(Application filed Mar. 29, 1897.)

4 Sheets—Sheet 2.



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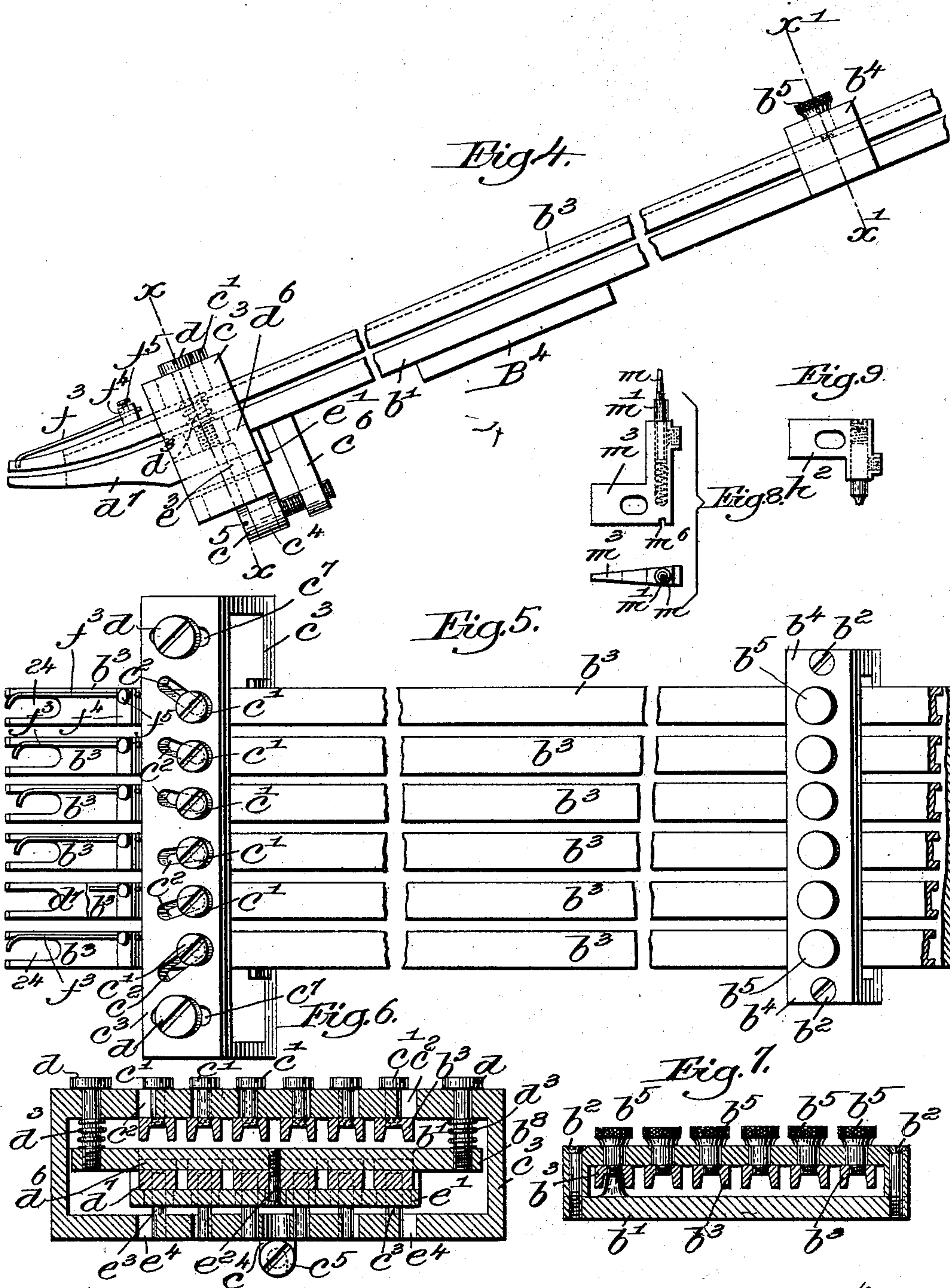
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(Application filed Mar. 29, 1897.)

(No Model.)

4 Sheets—Sheet 3.



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4 Sheets—Sheet 4.

Fig. 10.

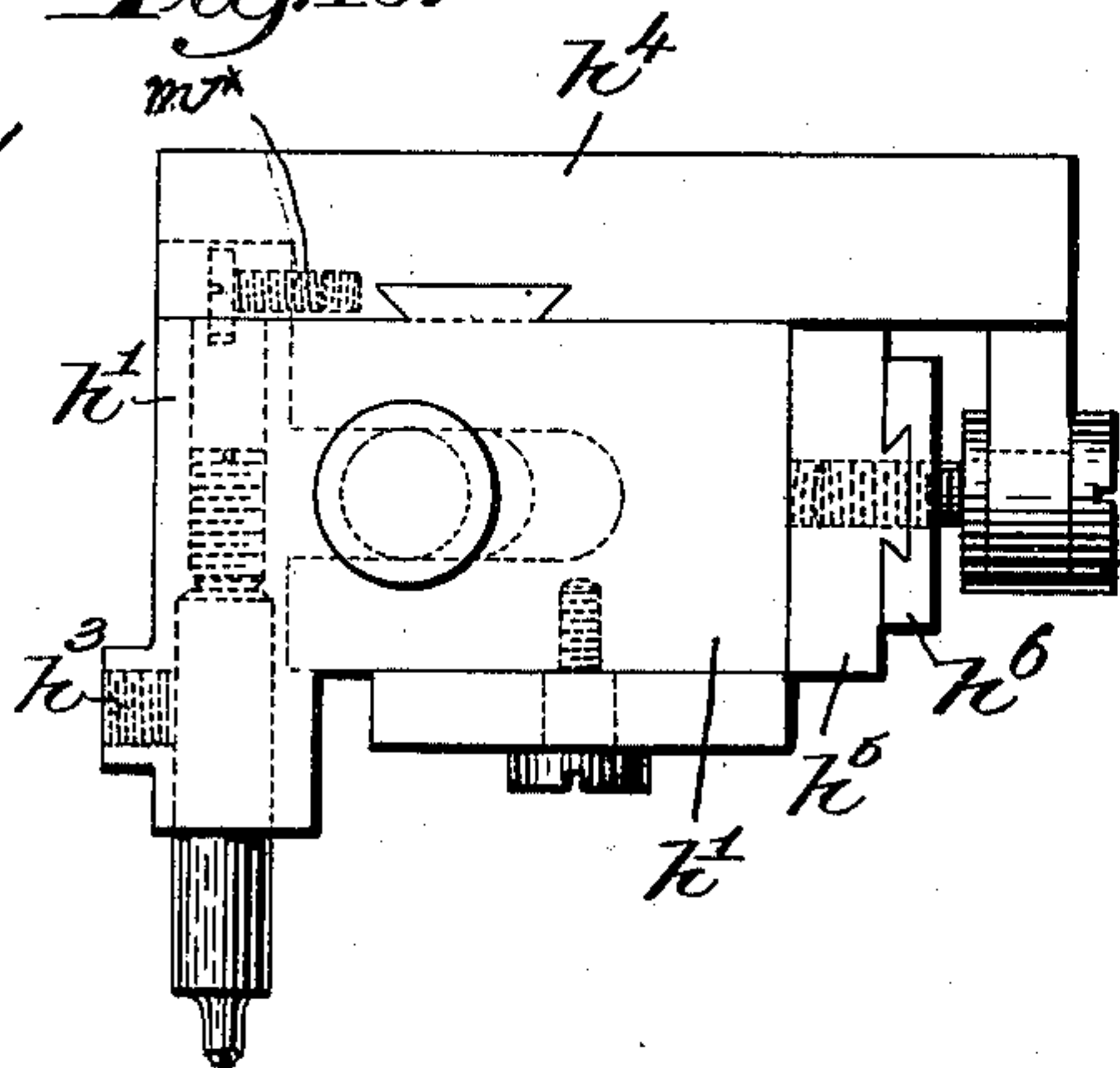


Fig. 11.

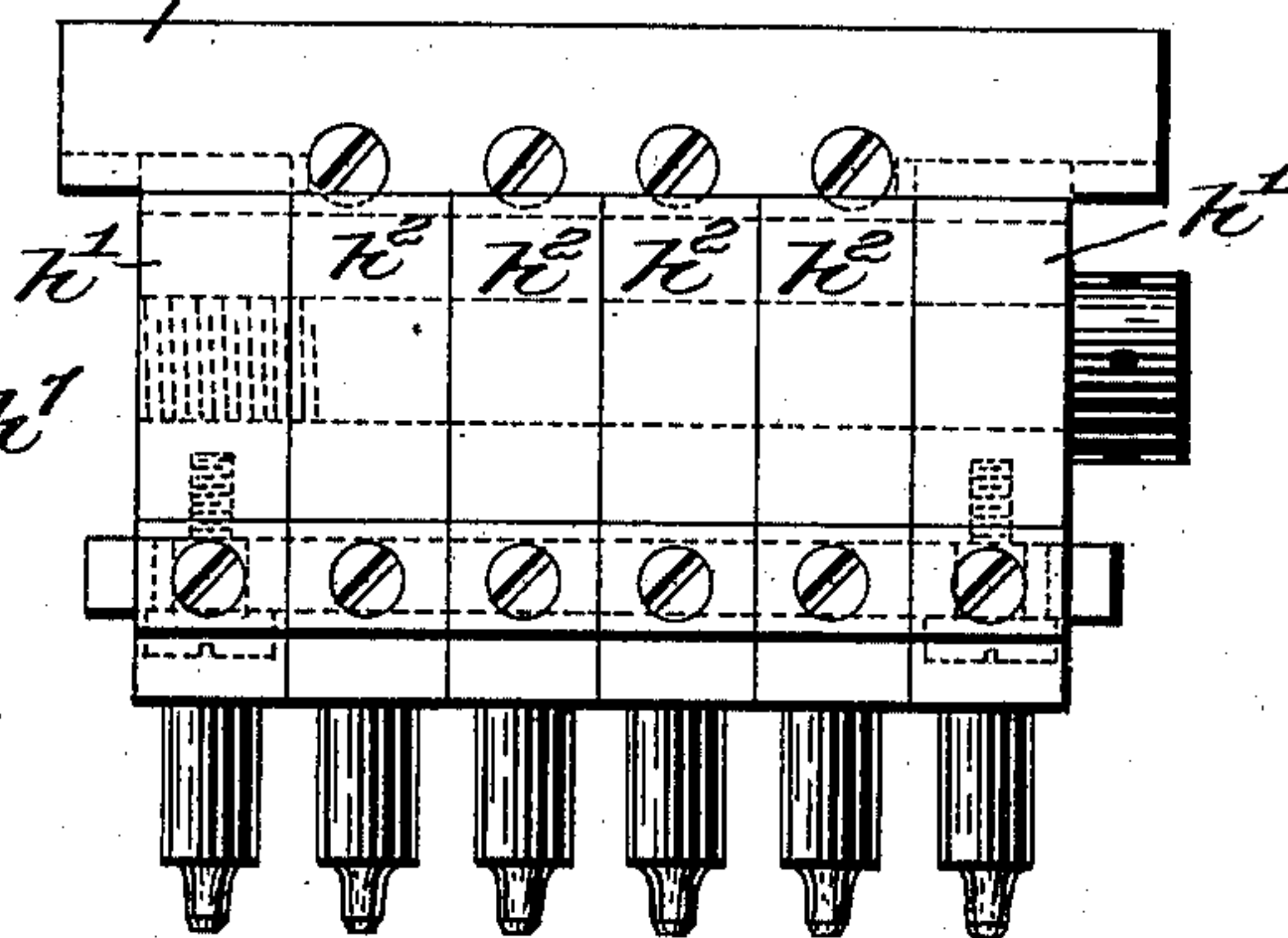


Fig. 12.

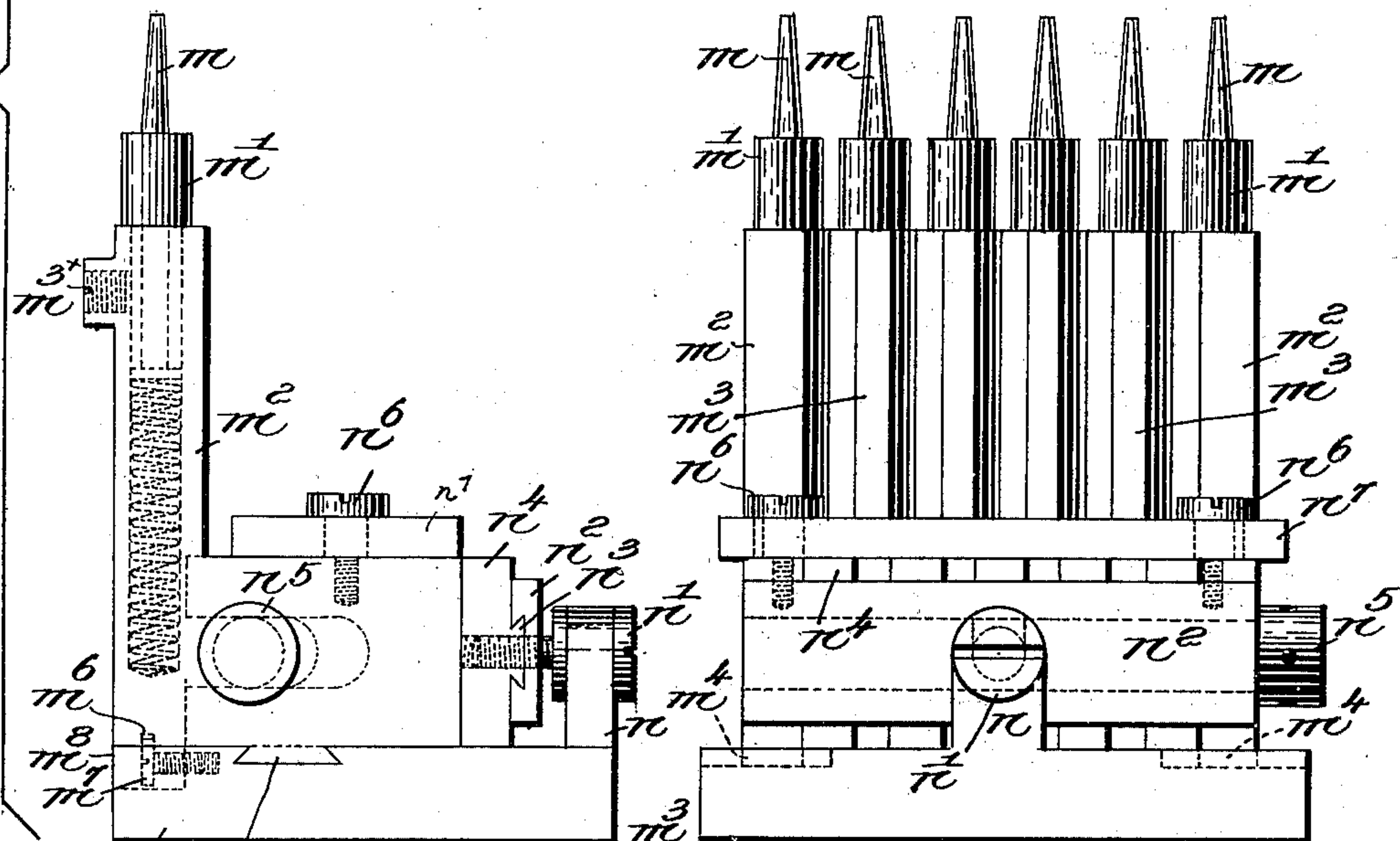
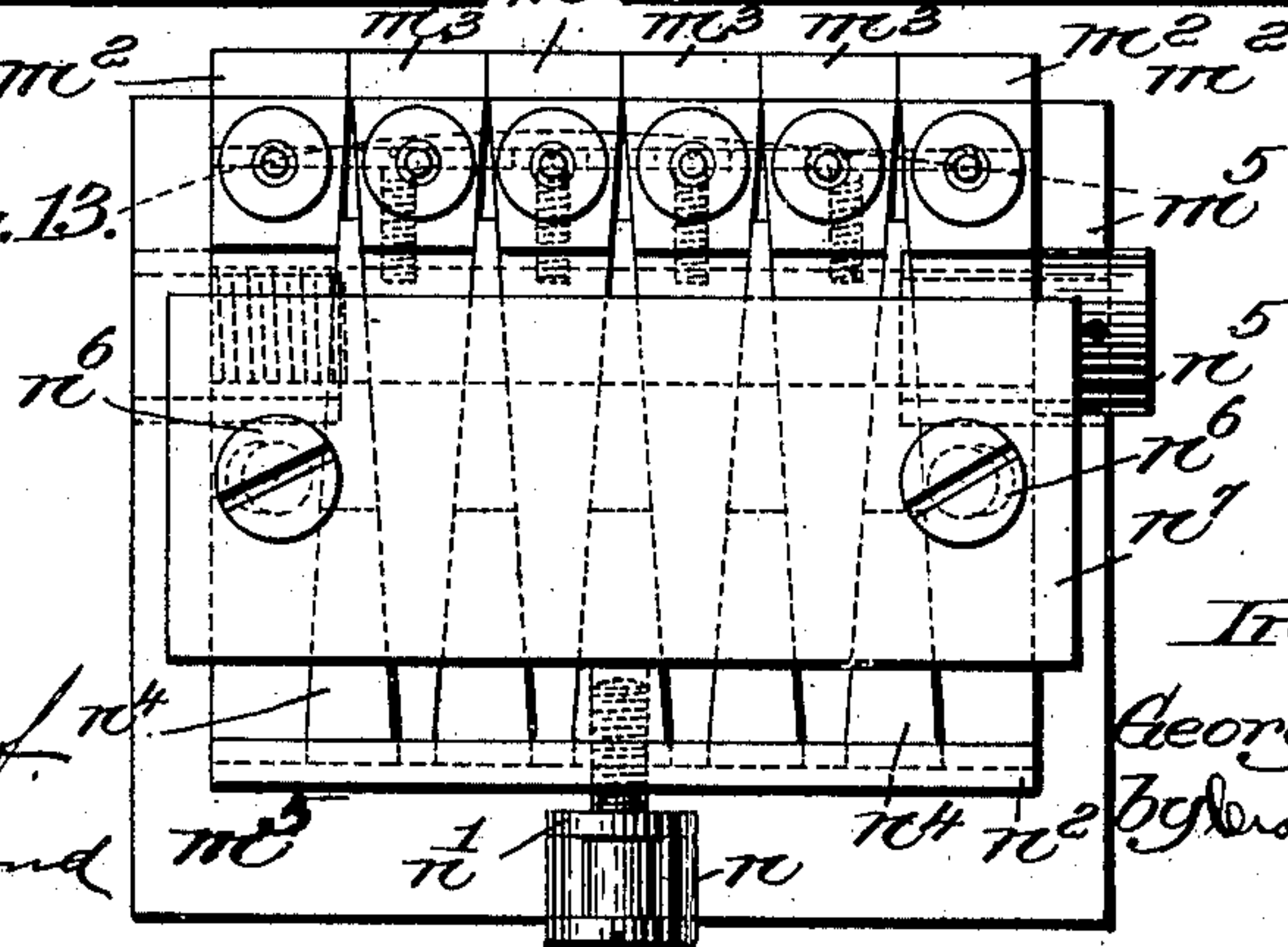


Fig. 13.



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UNITED STATES PATENT OFFICE.

GEORGE KNIGHT, OF BROCKTON, MASSACHUSETTS.

GANG EYELETING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 627,340, dated June 20, 1899.

Application filed March 29, 1897. Serial No. 629,772. (No model.)

To all whom it may concern:

Be it known that I, GEORGE KNIGHT, of Brockton, in the county of Plymouth and State of Massachusetts, have invented an Improvement in Gang Eyeletting-Machines, of which the following description, in connection with the accompanying drawings, is a specification, like letters on the drawings representing like parts.

10 This invention has for its object the production of an improved eyeletting-machine whereby a series of eyelets may be set simultaneously in any article wherein it is desired to employ eyelets, the said machine being
15 adapted to set said eyelets in any desired line, which line may, if desired, be more or less curved or irregular, and the eyelets may be set at a greater or less distance apart, my machine being particularly desirable for use in
20 connection with boots and shoes.

The particular features in which my invention consists will be hereinafter fully set forth, and especially emphasized in the claims at the end of this specification.

25 Figure 1 is a right-hand side elevation of an eyeletting-machine embodying my invention. Fig. 2 is a sectional detail showing the reservoir and hopper with the upper ends of the raceways. Fig. 3 is a front elevation of the
30 machine shown in Fig. 1. Fig. 4 is an enlarged side elevation broken out centrally, showing the raceway. Fig. 5 is a top or plan view of the parts shown in Fig. 4. Fig. 6 is a section in the dotted line x , Fig. 4. Fig. 7
35 is a section in the dotted line x' , Fig. 4. Fig. 8 is a side elevation and plan view of the scale shown in Fig. 1 of the bottom or under set and block carrying it; Fig. 9, a like-scaled side elevation of the top set and the block carrying it. Fig. 10 is a detail in side elevation,
40 showing much enlarged the bottom and top sets and means for holding and adjusting them. Fig. 11 is an enlarged front view showing the top sets and their blocks; Fig. 12, a rear side view of the bottom sets and their adjusting means. Fig. 13 is a plan view of the bottom set, and Fig. 14 shows a modified form of raceway.

50 The framework A is of suitable shape to support the working parts, said framework presenting an upright standard A', on which are erected the reservoir A² and the hopper A³.

The reservoir A² has, as shown, two hooked ears a suitably attached to it and so made as to embrace a part of the hopper A³, and said
55 reservoir has also a sliding door a' and a spring-catch a^2 . The hooked ears of the reservoir engage a suitable pin a^3 , shown as on the stand, thus constituting a hinge-joint, the spring-catch holding the reservoir closed in
60 working position, said catch at such time engaging a bar a^4 , forming part of the hopper.

To fill the reservoir, it will be turned over toward the right, viewing Fig. 2, and when filled the door will be closed and the reservoir
65 will be put back into the full-line position, Figs. 1 and 2, and the door will be raised and let the eyelets issue therefrom in a tapering pile, said eyelets resting on and slightly overflowing a shelf b , which is exposed at the bottom
70 of the hopper. The eyelets which fall from the shelf drop upon and slide down the inclined top of the bottom plate b' of the raceway, some of them entering grooved bars b^3 , forming also a part of the raceway, as shown
75 in Fig. 7. The upper ends of these bars are connected with a cross-bar b^4 by suitable studscrews b^5 , so that said bars may be pivotally suspended from said cross-bar, said bar being connected by screws b^2 with the bottom
80 plate of the raceway. These bars near their lower ends are provided each with a threaded hole (see Fig. 6) to receive a stud-screw c' , said screws entering diagonal slots c^2 in a bar shown as shaped like a yoke c^3 , having at its
85 lower end an ear c^4 , which is slotted to enter an annular groove in an adjusting-screw c^5 , the threaded part of said screw entering a threaded lug c^6 , depending from the bottom plate b' , the rotation of said adjusting-screw
90 changing the position of the said bar and causing its diagonal grooves to act on the studscrews c' and spread apart or move toward each other the lower or delivering ends of the said grooved bars, according to the direction
95 of movement of the said bar c^3 , the distance apart of the lower ends of those bars controlling the distance apart of the eyelets. The bar c^3 is slotted at c^7 to receive two screws d , said screws entering threaded ears b^8 of the
100 bottom plate b' , said screws being surrounded by suitable springs d^3 , which normally act to elevate the said bar c^3 and with it the grooved bars, and so by turning these screws more or

less a space of greater or less width may be left between the under sides of the grooved bars and the top of the plate b' for the reception of the flanged part of the eyelets, the space being adjusted to correspond with the thickness of the said flange. The under side of the plate b' , near its termination, is provided with a cross-groove, said groove receiving the upturned ends d^6 of the raceway-terminals d^7 , slotted at their delivery ends, as at 24, (see Fig. 5,) for the reception of the plungers m of the lower sets. These terminals may be adjusted laterally on the plate b' , and when put in adjusted position may be clamped in such position by a clamp e' , shown as an angle-bar, which is connected to the under side of the plate b' by a suitable clamping-screw e^2 . Each of these terminals has a stud e^3 extended from it through a diagonal slot e^4 in the bottom part of the bar c^3 , said slots corresponding in shape with those c^2 in the top of the yoke, so that the ends of the grooved bars b^3 and the ends of the terminals may be spread or contracted in unison.

The hopper contains a rotating brush f , fast on a suitable shaft f' , driven by a suitable belt f^2 , the said brush sweeping upwardly at intervals over the incline b' the eyelets which rest thereon, thus keeping said eyelets sufficiently agitated so that they find their way right side up into the spaces of the grooved bars.

The lower ends of the grooved bars b^3 are slotted at 24 for the entrance therein of the plungers m of the lower sets, and coöperating with these slots I have arranged a series of eyelet-stops f^3 , which enter lugs f^4 on said bars, said stops being made adjustable by screws f^5 , so that they may act to arrest all the eyelets in the same horizontal line or in any curved or irregular line, according to the shape which it is desired that the set of eyelets shall present in the material in which they may be set.

As herein shown, my machine is made as a double machine—that is, it has two gangs of top and bottom sets, to be described, and they are arranged each in proper parts of the frame, and the framework has suitable bearings for the reception of two power-driven rotating shafts B in substantially the same line. Both parts of the machine being substantially alike, I need herein describe specifically but one of them.

The main shaft has a suitable cam B' , which in the rotation of the shaft acts upon the end of a lever B^2 , pivoted at B^3 , the upper end of said lever entering a hole in the bar or plate B^4 , connected with or forming part of the lower plate b' of the raceway, so that when the said cam B' strikes the said lever it acts to move the entire raceway to the right, viewing Fig. 1, sliding the same in the guideways g , forming part of a stand g' , the said raceway moving from the full-line position, Fig. 2, into the dotted-line position, Fig. 2, the upper end of the plate b' entering the pile of

eyelets on the shelf. This upward movement of the raceway also enables the eyelets to be discharged from the lower end of the raceway, but not, however, until after the plungers of the bottom sets, to be described, have entered the eyelets held at said lower ends. The reverse movement of the raceway is effected by the spring g^2 . The lower sets m' , herein shown as six in number, are held in suitable set-carrying blocks $m^2 m^3$ by suitable set-screws. The blocks m^2 have at their lower ends dovetailed projections m^4 , which enter dovetailed grooves in a plate m^5 , and the set-carrying blocks m^3 have a cross-groove m^6 , in which enters the flanged edge of a screw m^7 , each of said screw-heads standing in a recess m^8 in the plate m^5 , the threaded end of the screw entering a threaded hole in the plate m^5 . By rotating the screws m^7 the said blocks m^3 may be slid back and forth to put the sets carried by them out of line with relation to the sets carried by the blocks m^2 . These blocks m^2 and m^3 must also be adjusted at times to and from each other to place the eyelets at the proper distance apart to correspond with the position of the grooved eyelet-guiding bars of the raceways. To effect this latter adjustment, I have mounted in an ear n , at the rear of the block m^5 , a screw n' , having a groove in its neck, a forked end of the ear n entering this groove, a threaded part of the said screw entering a bar n^2 , having a dovetailed groove, (see Fig. 10,) in which enters loosely a series of dovetailed projections n^3 at the large ends of a series of wedges n^4 , said wedges occupying positions between the tapered sides of the blocks $m^2 m^3$, as shown in Fig. 12. The blocks m^3 are all slotted, as shown in Fig. 8, to receive a clamp-screw n^5 , one end of which is screwed into one of the blocks m^2 , the head of the said screw acting against the outer side of the other of said blocks m^2 . By loosening this screw or turning it in one direction the blocks $m^2 m^3$ may thereafter be adjusted laterally by the said wedges. When it is desired to adjust these blocks to separate the sets for the desired distance one from the other, the screw n' may be turned in a direction to force the bar n^2 and its wedges into the spaces between the blocks, and at such times the dovetailed part of the blocks m^2 will slide in the dovetailed grooves and the blocks m^3 will slide on the plate m^5 and on the flanged edges of the screw-heads. The blocks m^2 have each a shouldered screw n^6 , and between the said shoulders and the under sides of the heads of said screws is a cross-bar n^7 , slotted where the screws stand in the slots, so that the said bar, while it keeps the blocks m^3 seated on the plate m^5 , does not interfere with the lateral movement of the blocks m^2 .

The bottom sets are hollow and receive within their ends the usual spring-supported plunger m commonly used in eyeleting-machines. The upper or top sets h of corresponding number are held in blocks $h' h^2$ by

suitable screws h^3 , and these blocks h^1 h^2 are mounted on and made adjustable on the plate h^4 by wedges h^5 , controlled by a bar h^6 and a screw h^7 , all as described particularly with relation to the adjustment of the hollow sets, the like-shaped devices being, however, designated by different letters, as stated. These top sets, with the exception of the top-set blocks on which they are mounted and the provisions for adjusting said blocks, are all old and common. When the cross-head and the lower sets are raised, the plungers in their ascent enter each the proper eyelet at the lower end of the raceway, and passing through said eyelet it meets the end of the upper set, at which time the raceway has imparted to it its upward movement, thus detaching the eyelets entered by the plungers from the lower ends of the raceways. Thereafter the continued upward movement of the lower set while the plunger is arrested in its movement causes the lower set, it supporting the flanged end of the eyelet, to force the unflanged end of the eyelet over and upon the truncated end of the upper set, causing said set to spring outwardly and flange the small end of the eyelet, setting its small end closely upon the work.

By this machine I may set any desired number of eyelets—for instance, all the eyelets used in the half of a top of a boot or shoe or all the eyelets in one-half of a corset or other article or thing where it is desired to use a large number of eyelets.

When the raceway is drawn back, the stop f^3 , holding the eyelet at the end of the raceway, it being made as a spring, yields, letting the eyelet-shank pass the stop, and immediately thereafter the stop, due to its spring action, comes quickly into position between the eyelet then entered by the plunger and the one next back of it in the raceway, holding it in position to be entered at the proper time by the plunger at its next rise.

The main shafts have suitable clutch-pulleys, normally loose thereon, and under the control of a clutch operated by a lever through the foot of the operator. This clutch mechanism may be of usual or desired construction so long as the operator, by his foot upon the treadle, may at any desired moment start the shaft in rotation, letting it run once and then automatically stopping it.

This machine, as has been stated, is made as a twin machine—that is, it has two distinct series of top and bottom sets arranged side by side, the sets of one series being so located as to eyelet the right-hand half of a shoe and the sets of the other half the left-hand side of a shoe, and with two such series of sets the eyelets may be set in a shoe without stopping to make any adjustments after the sets have been once properly positioned for a given style of shoe.

I have herein illustrated and partially described a brush-like agitator occupying a position in the hopper and extending trans-

versely across the upper end of the raceway, and I have shown a shelf on or toward which the eyelets are thrown by the action of the brush and means for rotating the brush; but no claim is made herein to any of said devices, for the reason that I have chosen to make them the subject-matter of a claim in my application, Serial No. 685,016, filed on the 2d day of July, 1898.

Having described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In an eyeleting-machine, a raceway composed of a plate, and a plurality of bars grooved at their under sides and supported above and close to said plate, substantially as described.

2. In an eyeleting-machine, a raceway presenting a plate, a series of bars grooved at one side and pivotally mounted near their upper ends at one side of said plate, substantially as described.

3. In an eyeleting-machine, a raceway presenting a plate, a series of bars grooved at one side and pivotally mounted near their upper ends at one side of said plate, the lower ends of said grooved bars being adjustable one from or toward the other to space the eyelets, substantially as described.

4. In an eyeleting-machine, a raceway presenting a plate, a series of bars grooved at one side and pivotally mounted near their upper ends at one side of said plate, means to simultaneously adjust the lower ends of said bars one toward or from the other to space the said eyelets, substantially as described.

5. The plate b' of the raceway, a series of pivoted grooved bars to receive the eyelets, and provided each with a stud c' , combined with a slotted bar and means to adjust it to act on said studs to space the lower ends of the bars, substantially as described.

6. A raceway to conduct a plurality of eyelets, a series of top and bottom sets, means to adjust them more or less into or out of line with relation each to the other, combined with a series of spring-stops having their ends normally standing across the path of travel of the said eyelets toward said sets, and means to adjust said stops longitudinally to thereby position the endmost eyelet of each series of eyelets correctly with relation to the position occupied by the sets, substantially as described.

7. In an eyelet-setting machine, a raceway adapted to receive and guide a plurality of series of eyelets, and a series of independent slotted terminals d^7 made adjustable on or with relation to the bottom plate of the raceway, to operate substantially as described.

8. The plate b' of the raceway, a series of slotted terminals provided with studs, a bar having diagonal slots in which the said studs enter, means to adjust said bar, and a clamp to hold the said terminals in adjusted position, substantially as described.

9. In an eyeleting-machine, a raceway com-

posed of a plate b' and a cooperating series of pivoted bars grooved at their sides to receive and guide a series of eyelets, and a bar to which the lower ends of said grooved bars
5 are connected, combined with means to adjust said bar vertically to afford greater or less space between the plate b' and the said grooved bars, substantially as described.

10. In an eyeleting-machine, a series of
10 bottom and top sets, a series of blocks carrying said sets, means to sustain said blocks side by side, and means to adjust said blocks to spread or separate them one from another to space the sets one from another at the
15 proper distance, and means to adjust said blocks independently of one another in an opposite direction to put the sets more or less out of a straight line, substantially as described.

20 11. In an eyeleting-machine, a raceway presenting a series of grooved bars to contain eyelets, means to adjust said bars toward and from each other to separate the eyelets more or less, substantially as described.

25 12. In an eyeleting-machine, a series of sets, a series of blocks carrying said sets, means to sustain said blocks side by side, and means to adjust said blocks to spread or separate them one from another to space the sets
30 one from another at the proper distance, a raceway presenting a series of grooved bars to contain eyelets, means to adjust said bars toward and from each other to separate the eyelets more or less, substantially as described.
35

13. In an eyeleting-machine, a series of sets, a series of blocks carrying said sets, means to sustain said blocks side by side, and means to adjust said blocks to spread
40 or separate them one from another to space the sets one from another at the proper distance, means to adjust said blocks in an opposite direction to put the sets more or less out of straight line, a raceway presenting a
45 series of grooved bars to contain eyelets, means to adjust said bars toward and from each other to separate the eyelets more or less, substantially as described.

14. In an eyeleting-machine, a raceway presenting a series of grooved bars to contain eyelets, means to adjust said bars toward and from each other to separate the eyelets more or less, stops connected with said raceway-bars to stop the eyelets at different distances
55 from the ends of said bars, substantially as described.

15. In an eyeleting-machine, a raceway presenting a series of channels to receive and present a series of eyelets, a series of adjustable
60 eyelet-stops, one for each of said channels, to arrest said eyelets in a line corresponding with

that it is desired the row of eyelets shall occupy with relation to each other when set, combined with a series of top and bottom sets, means to sustain them, means to adjust said
65 sets to occupy a position corresponding with the stops cooperating with the raceway-channels, and means to actuate one of said series of sets, substantially as described.

16. The bottom plate of the raceway provided with a cross-groove, and the raceway-terminals d' having flanges to enter said cross-groove, combined with a clamp to hold the said terminals in adjusted position, substantially as described. 75

17. A series of set-carrying blocks and their sets, and means to support said blocks, combined with a series of wedges, and means to actuate said wedges to separate said blocks more or less, substantially as described. 80

18. A series of set-carrying blocks and their sets, means to support said blocks, combined with a grooved bar and a series of wedges, loosely mounted in said groove, and means to adjust said bar to slide said wedges into the
85 spaces between said blocks, substantially as described.

19. In an eyeleting-machine, a series of set-carrying blocks presenting inclined sides, and means to support said blocks, combined with
90 a series of interposed longitudinally-movable wedges to adjust said blocks toward and from each other, substantially as described.

20. The hopper having a short shelf b and having its rear wall open, combined with an
95 independent reservoir provided with a door which may open to permit the eyelets to slide from said reservoir onto the said shelf in a pile, and with a raceway having its upper end extended into said hopper and adapted to
100 enter intermittently the pile of eyelets on the said shelf, substantially as described.

21. The hopper having a short shelf b and having its rear wall open, an independent reservoir provided with an opening to permit
105 the eyelets to pass therefrom onto the said shelf in a pile, and an agitator, combined with a raceway having its inclined end located in said hopper, and means to move said raceway to enter the eyelets on the said shelf, the said
110 agitator sweeping back from the said raceway any eyelets that did not properly enter the grooved portions thereof, substantially as described.

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

GEORGE KNIGHT.

Witnesses:

GEO. W. GREGORY,
MARGARET A. DUNN.