

No. 717,170.

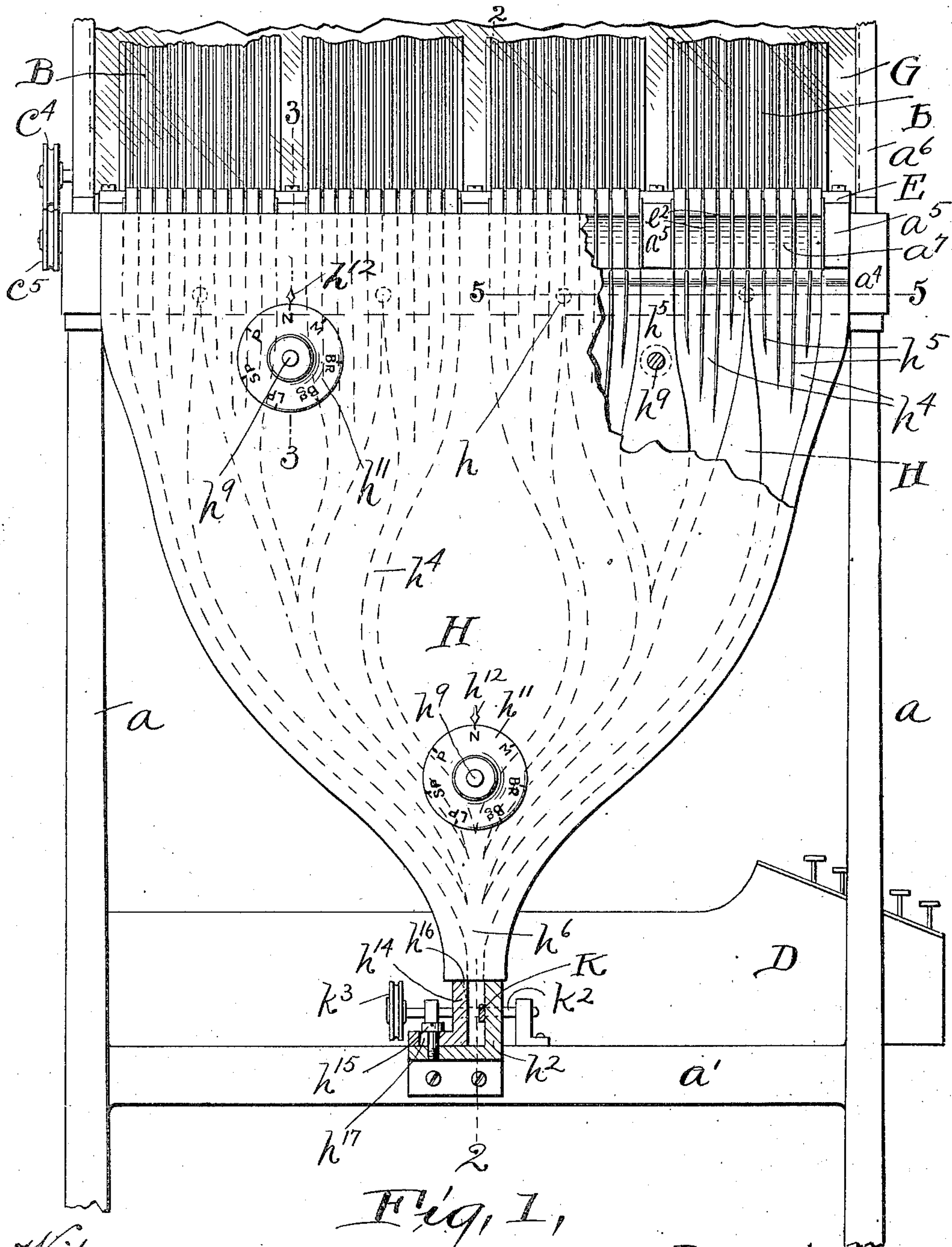
Patented Dec. 30, 1902.

F. B. CONVERSE, JR.
TYPE SETTING MACHINE.

(Application filed Mar. 15, 1900.)

(No Model.)

3 Sheets—Sheet 1.



Witnesses
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F. D. Auman

Inventor,
Francis B. Converse, Jr.
By his Attorneys,
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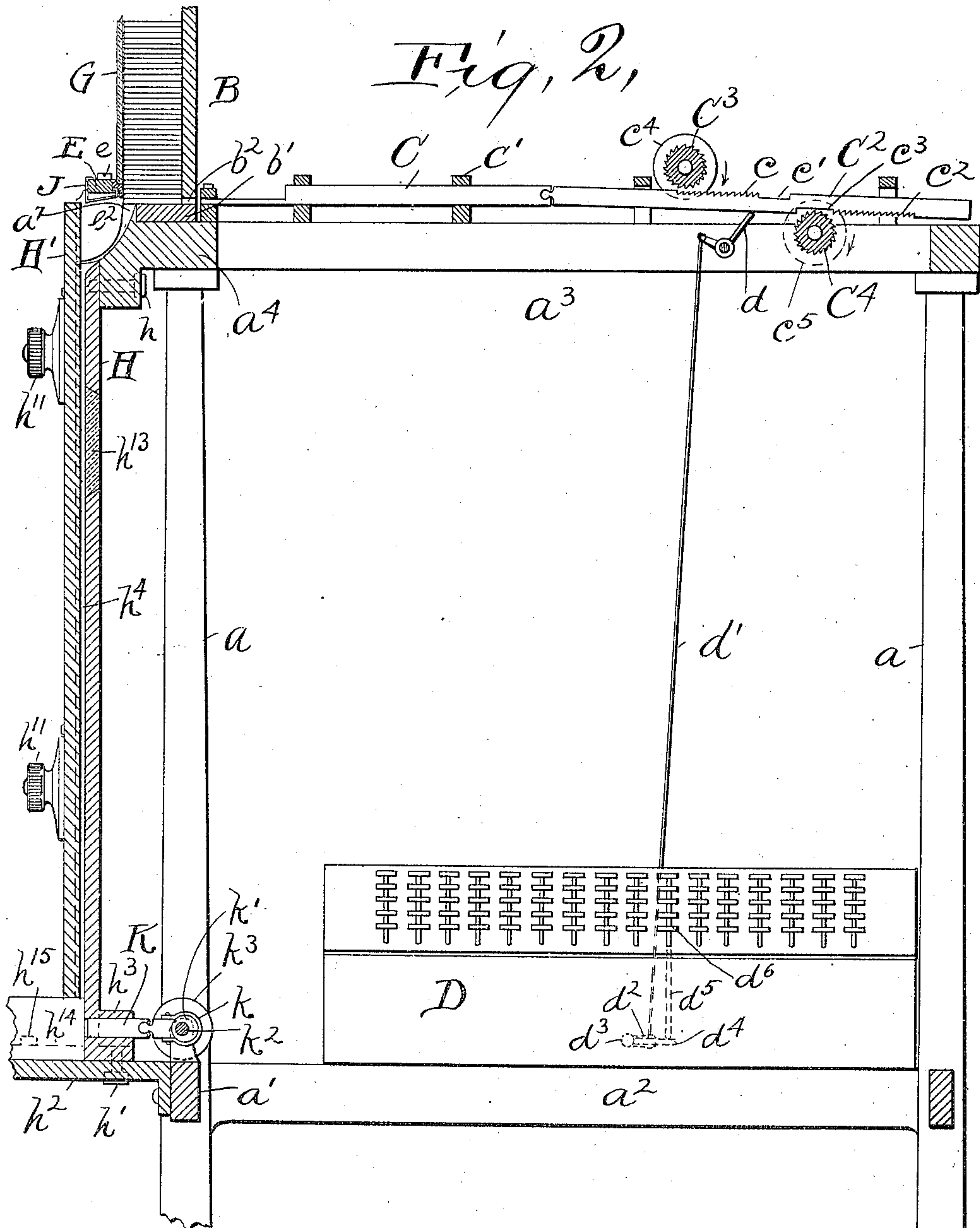
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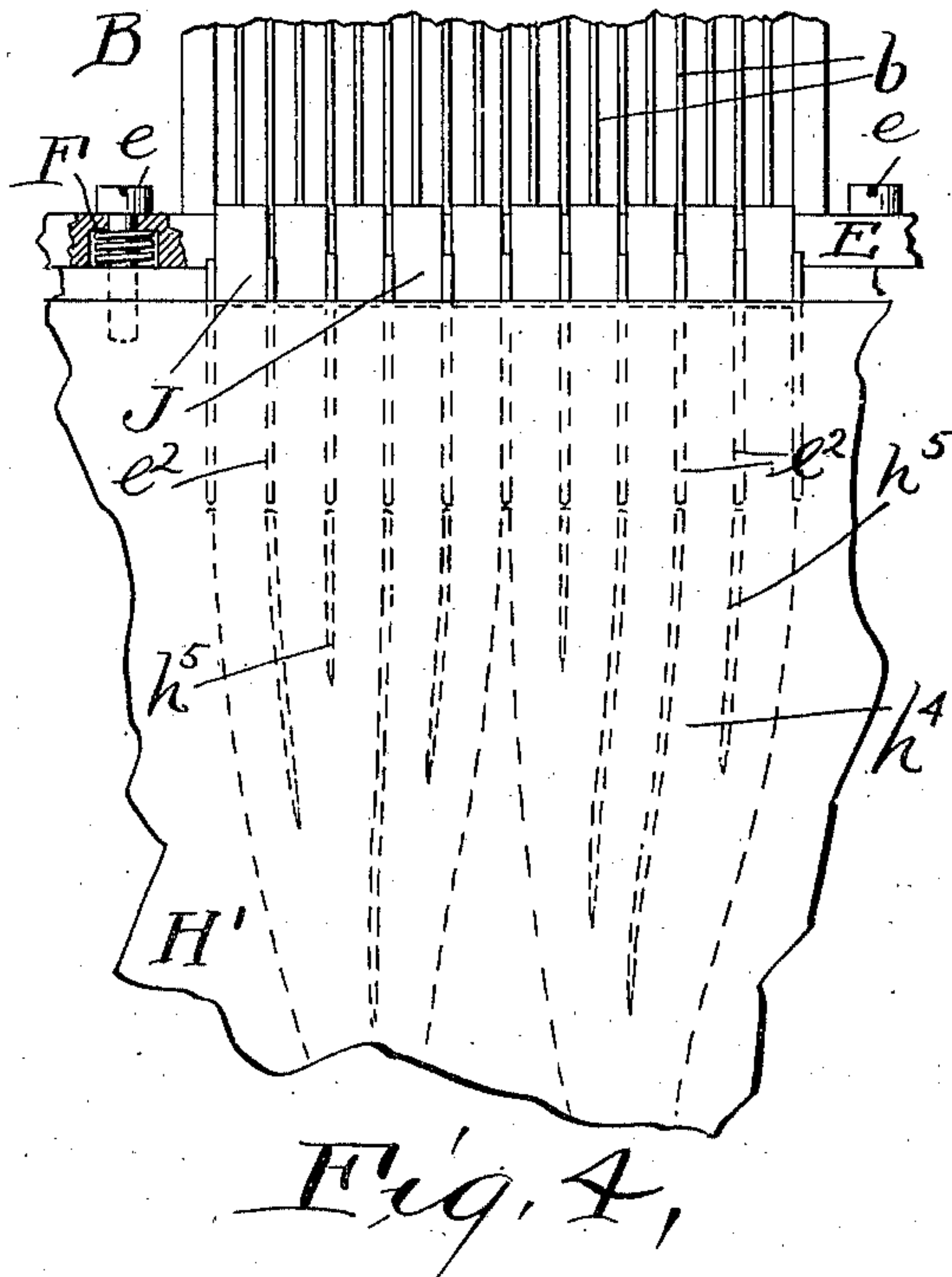
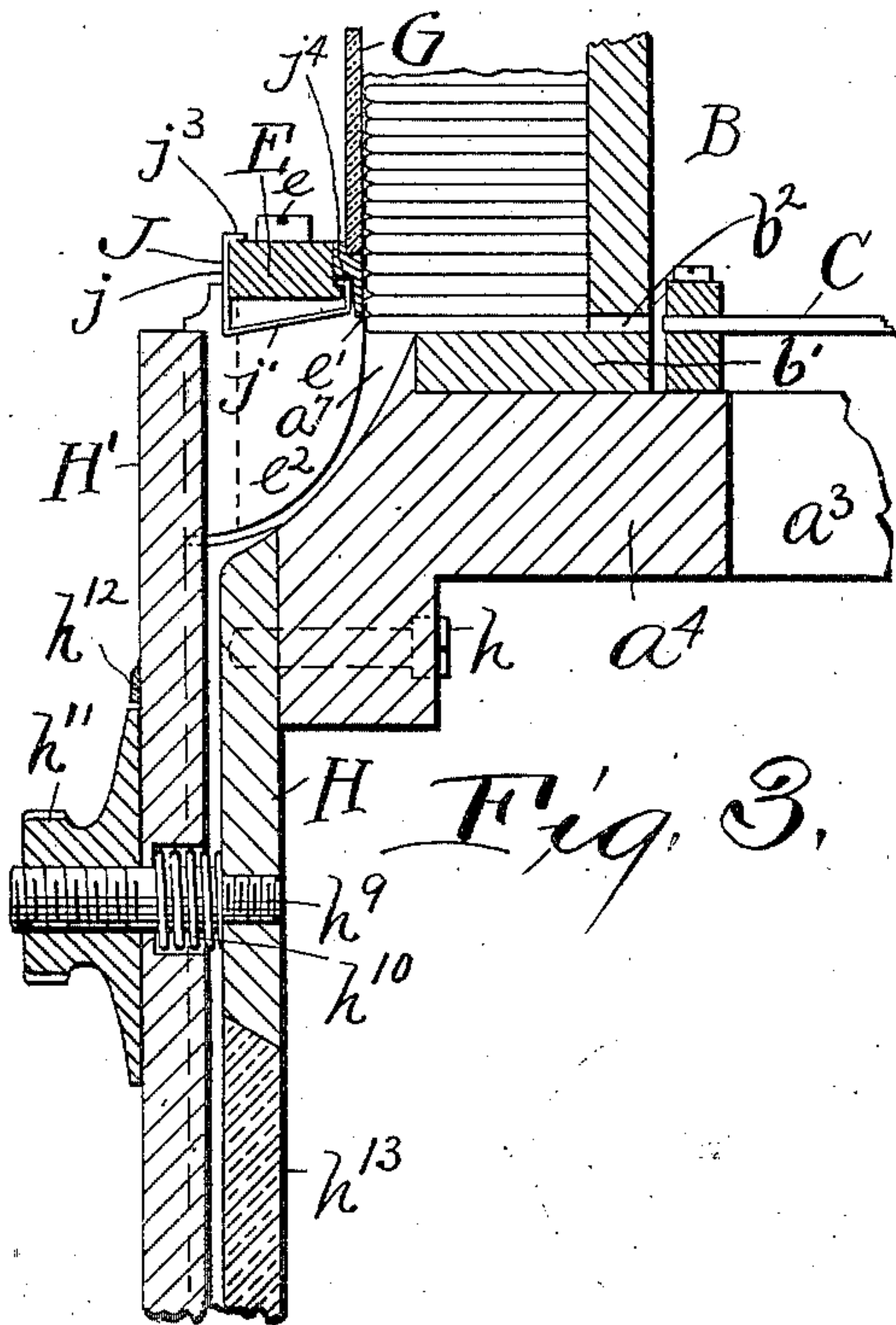
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3 Sheets—Sheet 3.



a^4 Fig. 5,

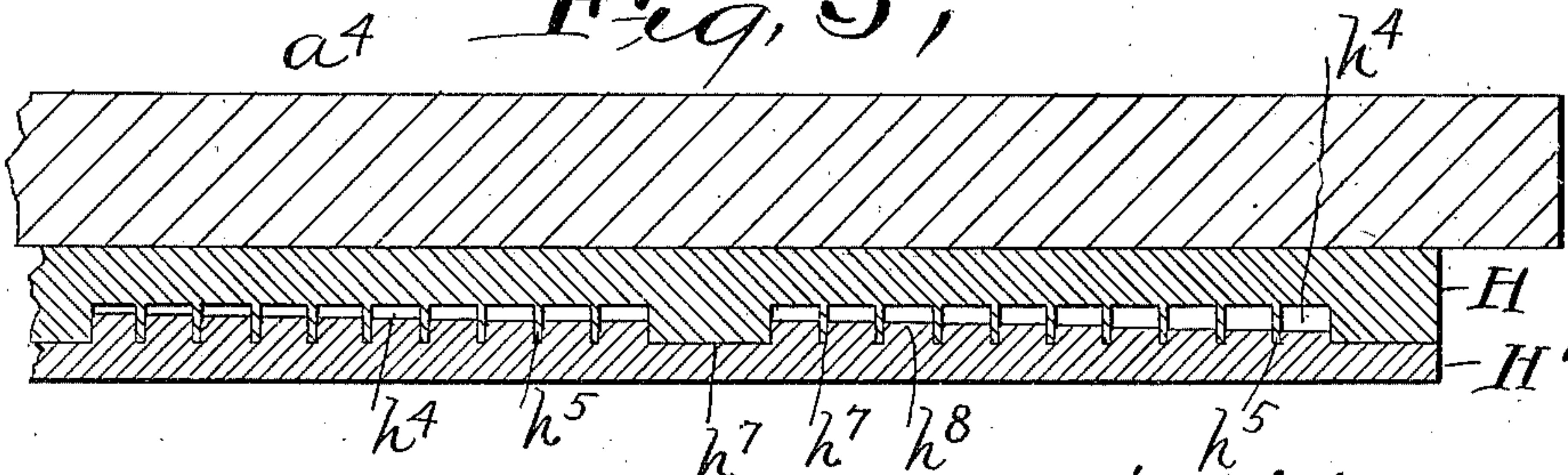


Fig. 6,

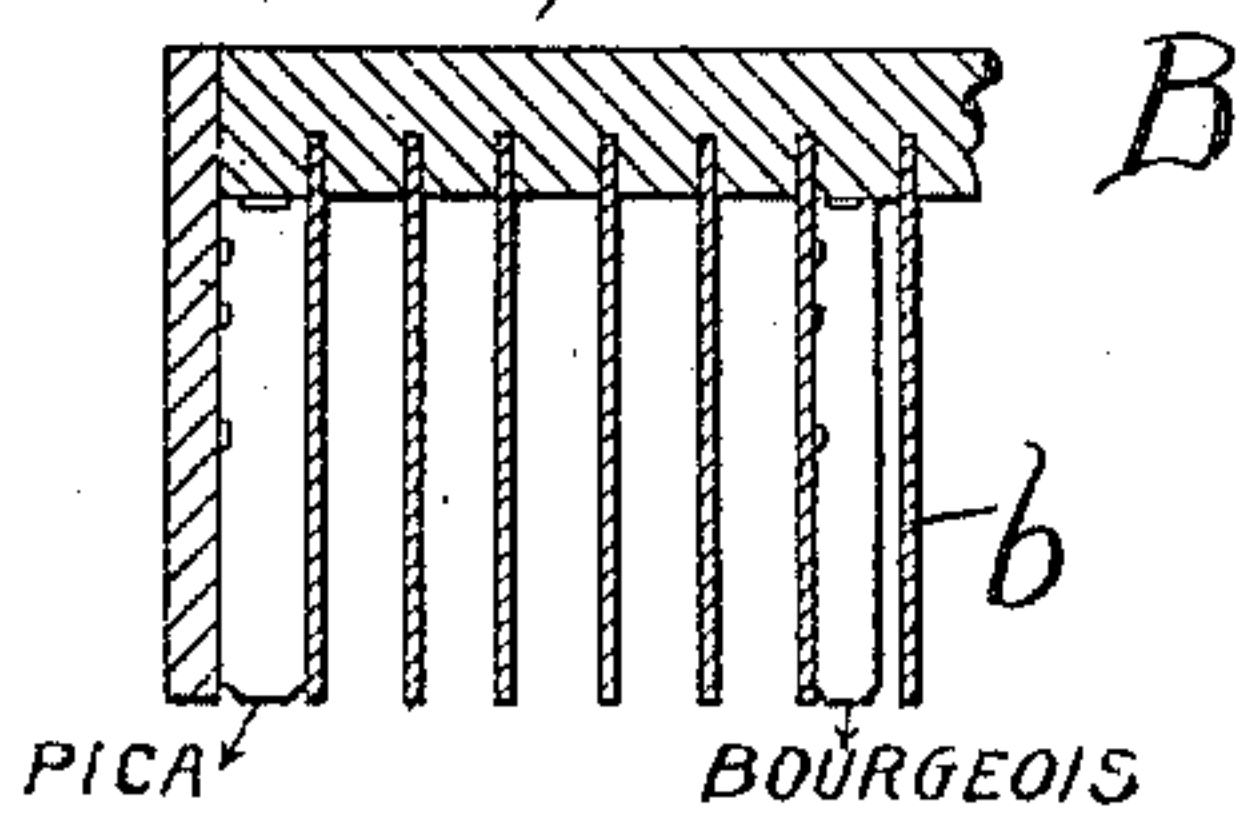
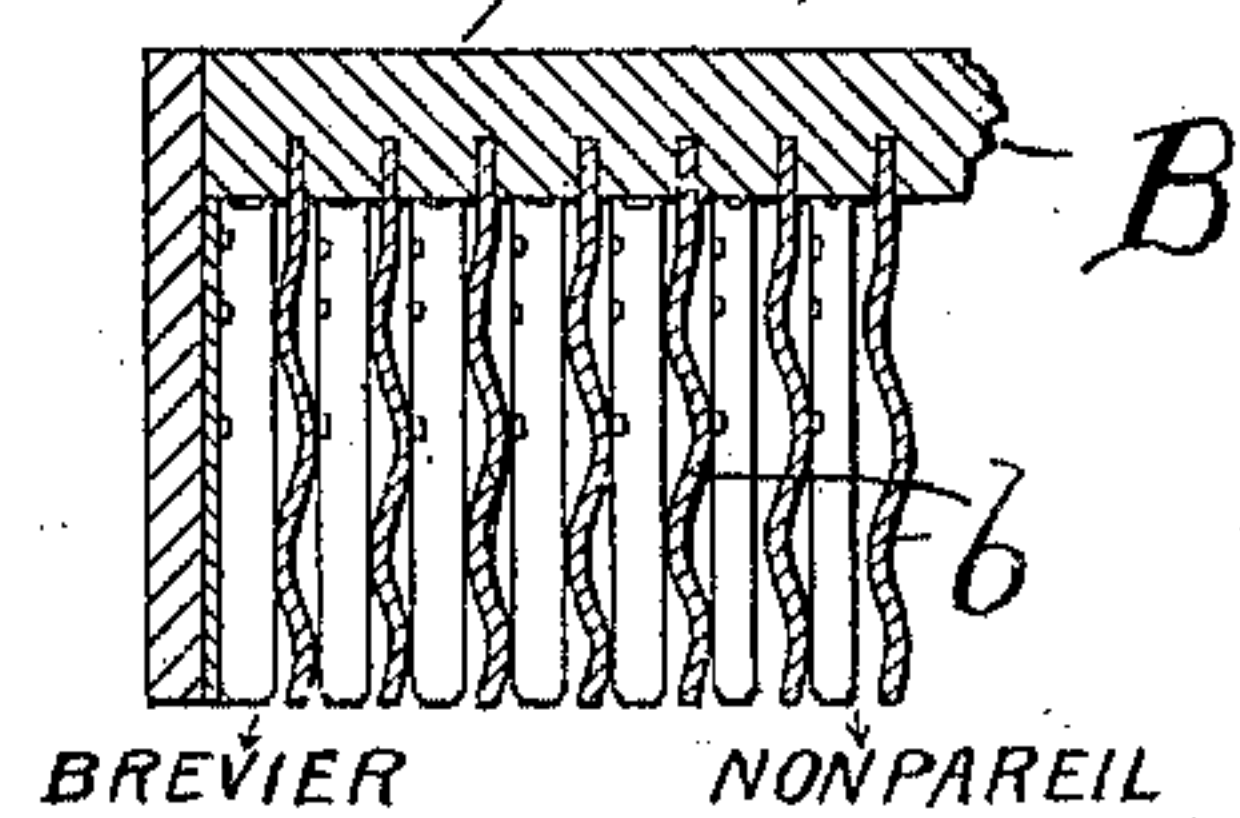
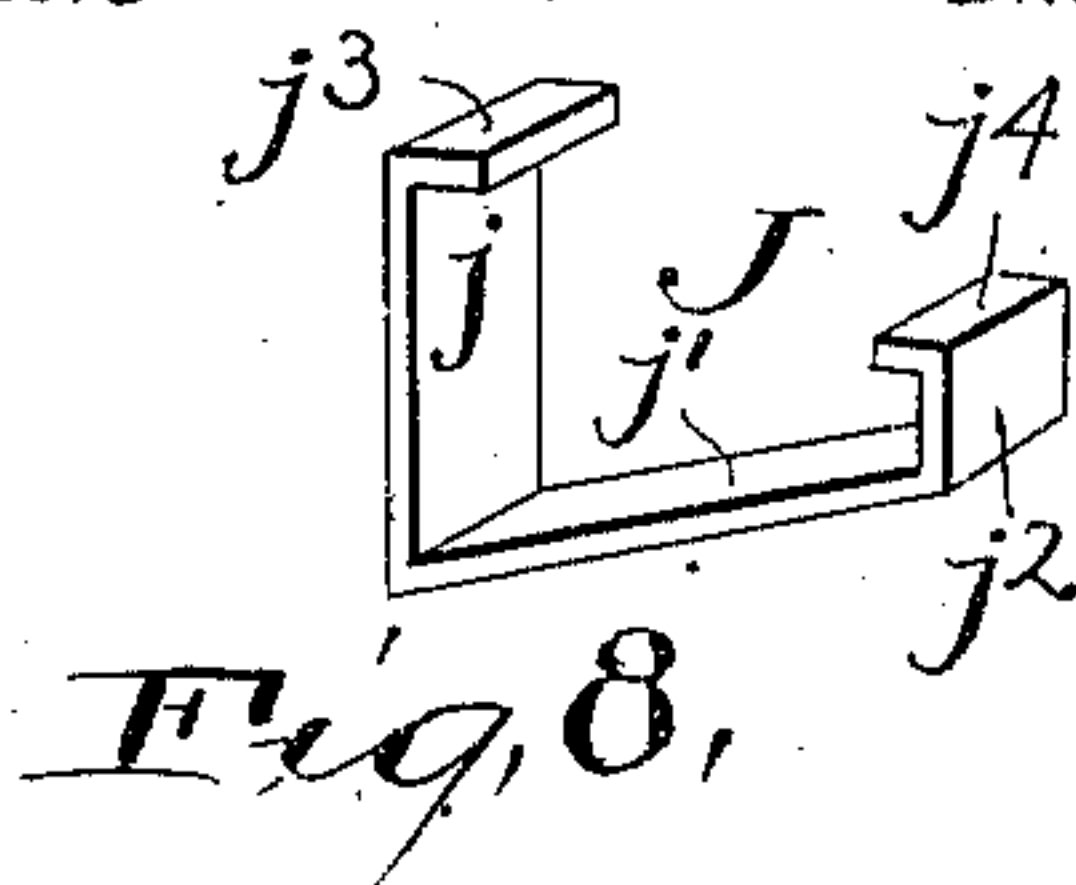


Fig. 7,



Witnesses.
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UNITED STATES PATENT OFFICE.

FRANCIS B. CONVERSE, JR., OF LOUISVILLE, KENTUCKY, ASSIGNOR TO THE CONVERSE MANUFACTURING COMPANY, OF CLEVELAND, OHIO, A CORPORATION OF OHIO.

TYPE-SETTING MACHINE

SPECIFICATION forming part of Letters Patent No. 717,170, dated December 30, 1902.

Application filed March 15, 1900. Serial No. 8,890. (No model.)

To all whom it may concern:

Be it known that I, FRANCIS B. CONVERSE, Jr., a citizen of the United States, residing at Louisville, in the county of Jefferson and State of Kentucky, have invented a certain new and useful Improvement in Type-Setting Machines, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings.

10 The object of my invention is to provide a type-setting machine adapted by very simple adjustments to set a variety of sizes of type. In accomplishing this I provide a race-plate having conduits, down which the type fall, 15 which may be adjusted for different sizes of type to prevent them from turning over during their descent, and I associate with this a series of dogs engaging the type between its passage from the type-case to the race-plate, assisting its proper descension and likewise preventing its turning over.

20 The invention consists, broadly, in the combination, with means for holding the type and ejecting it, of conveying-conduits and means for adjusting their size for different fonts of type.

More particularly, it consists of the composite adjustable race-plate and the guide-dogs above referred to, and of the embodiment of 30 these and other features hereinafter shown and described, whereby the adjustments may be made with rapidity and precision.

35 The invention may be, therefore, conveniently summarized as consisting of a combination of parts hereinafter described, and pointed out in the claims.

40 The drawings clearly illustrate my invention. Figure 1 is an elevation thereof looking toward the race-plate; and Fig. 2 is a substantially vertical section on the line 2 2 of Fig. 1, the keyboard being shown in front elevation, however, and the section through the race-plate following one of the channels. Fig. 3 is an enlarged vertical section on the line 3 3 of Fig. 1; Fig. 4, an enlarged face view of a portion of the race-plate near its upper edge and of the lower part of one of the type-cases, and Fig. 5 an enlarged horizontal section on the line 5 5 of Fig. 1. Figs. 6 and 7 are frag- 50 mentary horizontal sections through type-

cases, showing their construction and illustrating the range of the type carried. Fig. 8 is a perspective view of one of the guide-dogs.

The machine shown is carried on suitable vertical standards a , braced by suitable cross-bars a^1 a^2 , &c., and carrying at their upper ends a horizontal open frame a^3 . The type-cases (designated B) have their bases b^1 resting in a suitable recess provided in the upper face of the cross member a^4 , which forms the forward end of the horizontal frame a^3 . The type-cases are divided by vertical partitions b into channels, which carry the type on their flat sides. On the rear side of the cases are orifices b^2 , one for each channel, through 65 which an ejector may enter to shove the type from the case. The ejecting mechanism shown is chosen simply as illustrative and does not specifically constitute a part of the invention. It is shown and described in my prior 70 patent, No. 601,706, granted to me April 5, 1898, to which reference is hereby made for a fuller description. Briefly described, it is as follows: A system of longitudinal movable bars C, side by side and one for each type-channel in the cases B, is suitably guided 75 in guides C^1 across the horizontal frame a^3 . At the rear of each bar C is hinged a tail C^2 , which has on its upper side teeth c , in the rear of which is a notch c^1 , and on its upper side teeth c^2 at the front of which is a notch c^3 . A pair of toothed cylinders C^3 C^4 are suitably journaled across the tails C^2 above and below them, respectively, in substantially the relative position shown in Fig. 2. 85 These toothed cylinders are revolved (by a belt on their pulleys c^4 c^5) in the direction of the arrows—that is, the lower edge of the upper cylinder moves forward and the upper edge of the lower cylinder moves rearward. 90 Beneath each ejector-tail is a bell-crank d , which is shown as connected by a wire d^1 (all the wires but one are omitted from the drawings for clearness) with a rock-arm d^2 , projecting from the rock-shaft d^3 , which rock-shaft has another rock-arm d^4 , connected 95 with the stem d^5 of a finger-key, as d^6 , in the keyboard D. Now if a finger-key is depressed this draws down one of the wires d^1 , swinging into a vertical position the upwardly- 100

projecting arm of the corresponding bell-crank d , and thus raises the ejector-tail C^2 , so that its upper teeth c come into engagement with the gear-cylinder C^3 . This advances the ejector-bar, shoving the lowest type in the case forward from it. As the ejector-bar reaches this forward position the notch c' comes beneath the cylinder C^3 , freeing the ejector therefrom, and at the same time the notch c^3 comes over the bell-crank d and the ejector-tail drops down, so that the teeth c^2 come into engagement with the cylinder C^4 , which withdraws the ejector to its original position, the withdrawal returning the bell-crank and the finger-key to their positions and the ejector coming to rest with the notch c^3 over the gear-cylinder C^4 . Thus whenever a finger-key is depressed a type is ejected from the corresponding channel of a type-case.

There are several type-cases—four in the machine shown. As stated, they rest on the forward edge of the horizontal frame a^3 and are preferably secured in some suitable manner near their upper ends. (Not shown.) Extending across the machine in front of the cases and near their lower edge is a horizontal bar E , which is secured by screws e to lugs a^5 , projecting upward from the portion a^4 of the horizontal frame a^3 . A glass plate G may be supported by this bar across the front of the type-cases, the plate being shown as guided at its edges in vertical standards a^6 , rising from the cross member a^4 . The rear side of the cross-bar E (which for convenience of construction is preferably made on a separate piece of metal e') lies just above the lowest type in the cases, preventing the ejection of more than one type. The bar E , and with it the edge e' and the glass plate, are vertically adjustable by suitable means to vary the opening beneath the edge e' , according to the size of the type in the type-case. This adjustment I have provided by surrounding the screws e with stiff protrusile springs F , contained in recesses in the bar E and bearing at their upper edges against the top of said recesses and at their lower edges against the lugs a^5 .

Extending downward from the forward edge of the cross member a^4 is the composite "race-plate," consisting of the stationary plate H and the cooperating adjustable plate H' , carried thereby. The plate H is shown as secured by screws h , passing from a depending flange on the cross member a^4 into the upper edge of the plate H , and at its lower end by screws h' , passing through a plate h^2 , carried by the cross-bar a' of the frame into a boss h^3 on the plate H . In the forward side of this plate are a series of grooves or channels h^4 , preferably of equal depth, being divided by partitions h^5 . Each channel is at its upper end of suitable width preferably to receive the type from two adjacent channels in a type-case. As the grooves descend contiguous grooves merge together, the partitions

h^5 terminating substantially as shown in Figs. 1 or 4. In the machine shown there are eighty channels in a type-case and forty at the upper edge of the race-plate, which are reduced to six farther down on the race-plate, which six come together into a common channel h^6 at the lower end of the race-plate, as shown. The grooves in the race-plate are curved, so that their length and the frictional resistance which they cause to the falling type shall cause the type to pass from any point at the upper edge of the race-plate to the common channel in equal times. The movable plate H' on the race-plate has recesses h^7 , receiving the various partitions and projections h^8 of varying thickness. It will be seen, therefore, that while the grooves in the plate H are all of the same depth the conduits comprehended between the two plates are of different cross-section, according to the size of the projections h^8 . These projections h^8 enter the grooves sufficiently so as to allow the adjustment of the plate H' away from the plate H equal to the difference between the thickness of the largest and smallest fonts carried, whereby there will still be closed conduits at any point of the adjustment.

In constructing the race-plate I first mill out from a flat plate of iron or steel by a suitable templet the plate H , and then using this plate as one side of a mold I cast in it the plate H' of some less refractory material, as brass or hard pewter. All that is necessary then to do is to mill down the faces of the projections h^8 , carried by this plate H' , to the right height. The plate H' will thus accurately cooperate with the plate H and may be very simply and cheaply constructed. The plate H' is supported from the plate H by means of studs h^9 , screwing into the plate H and projecting through the plate H' . Protrusile springs h^{10} , surrounding the studs h^9 and lying in recesses in plate H' , tending to separate the two plates and nuts h^{11} , screw onto the projecting ends of these studs, limiting the separation. There are preferably three of these studs and nuts, two near the upper corners of the race-plate and one near the lower edge. The nut h^{11} has a flaring base similar to the knob of a combination-lock, and around this edge are placed suitable characters indicating the different fonts which the adjustment renders the machine capable of carrying. On the front edge of the plate H' is a suitable pointer or projection h^{12} to form the measuring-point for these characters. As shown in the drawings, the plates are adjusted for the smallest size of type intended to be carried—namely, nonpareil. The two plates H and H' are close together, and the designating-letter "N" on the knobs registers with the pointer h^{12} . If the three knobs are turned until the letter "M" registers with the pointer, the race-plate H' will be forced by the springs h^{10} away from the plate H until the comprehended conduits are large enough to take a font of minion size. Similarly this machine may

take brevier, bourgeois, long primer, small pica, or pica, according as the knobs are turned to the points designated, respectively, "Br," "Bg," "Lp," "Sp," and "P." Thus the indicated character on the knobs h^{11} shows at once the generic size of the channels—that is, the font for which the machine is set. Between the lugs a^5 on the cross member a^4 the latter is cut away, as at a^7 , to allow the passage of the type to the upper edge of the race-plate and to allow it to swing from a horizontal to a vertical position in said passage. The opening caused by this cutting away is divided into the corresponding channels by webs e^2 , carried by the bar E and adjustable vertically with it and taking at their front edges into the corresponding channels h^7 in the plate H'. As the type is ejected by the advancing bar C its forward end comes onto the ledge formed by the upper edge of the plate H', and its foot swings downward by gravity to the upper corner of plate H' as a center into the vertical position, from whence it drops into the race-plate channels. To insure such passage of the type and prevent their sticking against the curved side of the opening a^7 or turning over in the passage, I support by the bar E a series of dogs J, which consist of strips of flat metal of a width slightly less than the distance between the consecutive webs e^2 —that is, substantially the width of the channels at the upper edge of the race-plate. These strips are bent into the trilateral form, as shown in Figs. 2, 3, and 8. Their extreme sides j and j^2 are substantially parallel, and at the extreme edges of these sides are inward flanges j^3 j^4 . The flange j^4 takes into a corresponding groove formed in the bar E by reason of its edge piece e' , whereby the dogs are virtually pivoted to that bar, and the flanges j^3 normally rest on the upper side of the bar E and form stops limiting the descent of the dogs. The intermediate side j' of the dogs is formed at an obtuse angle with the side j^2 and with an acute angle with the side J, as shown. This acute angle normally projects into the space, which is a forward prolongation of the bottom type in the case. As the type is ejected from the case it thus engages the side J', swinging the dog upward on its pivot J⁴, allowing the passage of the type to its forward position with its front end on the upper edge of the plate H'. As soon as the rear end of the type is released the dog, acting downward on the type, swings it around the corner of the plate H' as a center, preventing its slipping backward against the curved surface of the opening a^7 and causing it to come into a substantially vertical position before it is released. The distance between the acute angle of the dog J and the plate H' is adjusted in or out for the different sizes of type, keeping this distance right to prevent the turning of the type on a longitudinal axis as they swing to the vertical position.

A suitable range of type may be used in

the same type-case. Fig. 6 illustrates a case which is adapted to receive type varying from pica to bourgeois. Fig. 7 shows a case made to fit the same machine, having the same outside dimensions and the same distance between the channels to receive type from brevier to nonpareil. These two cases will cover the range desired. The partitions b between the channels in Fig. 7 are made longitudinally corrugated to reduce the effective size of the channels without changing the distance between their centers or materially increasing the weight of the partitions.

Suitable glass plates h^{13} are shown as set into the plate H, so that the descent of the type may be observed by the operator.

As the type reach the lower end of the race-plate they are fed forward into a common channel, which, as shown in the drawings, consists of the stationary angle-plate h^2 and the angle-plate h^{14} , secured thereto. This angle-plate h^{14} is adjustable toward and from the plate h^2 by means of screws h^{15} , taking into slots h^{17} in the plate h^{14} . The upper corner j^{16} of the plate h^{14} is beveled, so as not to interfere with the descension of the type when the plate is adjusted for receiving the smallest sizes. As the type arrives in this common channel it is fed forward by a suitable reciprocating packer K. The packer shown consists of a plate narrow enough to enter the channel when adjusted for the smallest size of type and longitudinally guided in the boss h^3 on the back of the plate H. At its rear end this packer is shown as carrying a strap k , which extends around an eccentric k' on a shaft k^2 , which is continuously revolved by a suitable belt passing over the pulley k^3 .

From what has been described it will be seen that simply by turning the knobs h^{11} and the screws e , adjusting the common channel and changing the type-cases, adjustment may be made of the machine shown all the way from nonpareil to pica, while adjustment of several sizes may be made without even changing the type-cases. The range of adjustment could be increased still further than here shown, if desirable, though a range corresponding to that from nonpareil to pica (pica having a body twice the size of nonpareil) enables the machine to handle the usual sizes of body-type in most general use.

Having described my invention, I claim—

1. In a type-setting machine, the combination, of a composite race-plate having a plurality of channels which are of adjustable size, and means for indicating the font of type which said channels are adapted to take, substantially as described.

2. In a type-setting machine, in combination, means for holding a supply of type, a race-plate having a plurality of conduits leading to a common point, means for ejecting type from the supply for said conduits down which they may fall by gravity, means for adjusting the size of said conduits, and means

for indicating the capacity of such size after adjustment, substantially as described.

3. In a type-setting machine, in combination, an adjustable race-plate having a series of conduits of various sizes leading from many points above to common points below, a knob adapted to be turned on its axis and thereby simultaneously govern the proportionate adjustment of the size of several conduits, and a system of marking on the knob and a relatively stationary part to indicate for each adjustment the size of font the race-plate can take, substantially as described.

4. In a type-setting machine, in combination, a stationary race-plate, a movable race-plate cooperating therewith, there being conduits comprehended between the two plates, and a screw-threaded knob adapted by turning to establish varying distances between the two plates, said knob governing the whole range of adjustment within at least one complete turn of the knob whereby suitable characteristic marking on the knob and a relatively stationary part may indicate the generic type comprehending size of the conduits rather than simply the amount of adjustment thereof, substantially as described.

5. A type-setting machine having a race-plate adjustable for different fonts of type, and two type-cases interchangeably cooperating therewith, said cases having type-channels of different size, the channels of one case being adapted to confine type smaller than can be confined by the channels of the other case, and the race-plate being adjustable for both cases, substantially as described.

6. In a type-setting machine, the combination of a race-plate having a plurality of conduits leading from several points above to a common point below, means for adjusting the size of said conduits, interchangeable type-cases, means for suitably supporting either of them, means for ejecting type therefrom into a position where it will pass into the conduits in the race-plate, said interchangeable cases having substantially the same external dimensions and having channels adapted to confine type of different sizes, which channels are of substantially the same distance between their centers in the different cases, substantially as described.

7. In a type-setting machine, in combination, a type-case consisting of a back and sides and projecting partitions dividing the case into channels, said partitions being of material corrugated longitudinally whereby the effective width of the channels for holding type is reduced without varying the position between the centers of the channels, or materially increasing the weight of the case, substantially as described.

8. In a type-setting machine, in combination, means for holding a supply of type, suitable conduits down which type are adapted to fall by gravity, means for ejecting the type from the supply into position where they may fall by gravity into the channels, and a series

of dogs adapted to engage the type during such ejection, substantially as described.

9. In a type-setting machine, the combination of a channel for holding type, a conduit down which type ejected therefrom may pass, means for ejecting type from the channel, a dog which is engaged and lifted by the ejected type and which presses thereafter upon the ejected type until the type has swung to a nearly-vertical position, substantially as described.

10. In a type-setting machine, in combination, means for holding a supply of type, suitable channels down which the type are adapted to fall by gravity, means for ejecting the type from the supply into position where they may fall by gravity into the channels, and a series of pivoted dogs adapted to engage the upper sides of the type and be raised thereby during this ejection and adapted to then press downward on the type and assist in swinging it downward, substantially as described.

11. In a type-setting machine, the combination with a channel for holding type and means for ejecting it therefrom, of a conduit down which the ejected type may pass, and a pivoted dog having an inclined face in the path of ejection adapted to swing upward therefrom, substantially as described.

12. In a type-setting machine, a race-plate having channels down which type may pass, type-cases supported above and at the rear of the race-plate, means for ejecting type from the cases forward above the race-plate to a position where they are adapted to swing downward into a vertical position and pass into the race-plate, a bar extending across this swinging position, and a series of dogs carried by said bar and adapted to engage the upper side of the ejected type and prevent it turning on a longitudinal axis while swinging into the vertical position, substantially as described.

13. In a type setting machine, in combination, a race-plate having conduits down which type may pass, type-cases supported above and behind the race-plate, means for ejecting type from the cases forward onto a ledge above the race-plate in a position where they are adapted to swing downward on the corner of said ledge as a center into a vertical position and pass into the race-plate, and a series of dogs adapted to engage the upper side of the ejected type and prevent it turning on a longitudinal axis while swinging into a vertical position, substantially as described.

14. In a type-setting machine, in combination, a race-plate having conduits down which type may pass, type-cases supported above and behind the race-plate, means for ejecting type from the cases forward above the race-plate to a position where they are adapted to swing downward into a vertical position and pass into the race-plate, a bar extending across the swinging position, a series of dogs carried by said bar and adapted to engage the upper side of the ejected type and pre-

vent it turning on a longitudinal axis and assist in swinging it into the vertical position, and means for vertically adjusting said bar, substantially as described.

5 15. In a type-setting machine, in combination, a race-plate having conduits down which type may pass, type-cases suitably supported, means for ejecting type from the cases to a position where they are adapted to swing
10 downward into a vertical position and pass into the race-plate, a bar extending across this swinging position, a series of dogs carried by said bar and adapted to engage the upper side of the ejected type, said dogs consisting of strips of metal bent into a trilat-
15 eral form, there being flanges on the edges of the extreme sides, one of which flanges operates as a pivot for the dog and the other as a stop limiting the movement of the active corner thereof, substantially as described.

20 16. In a type-setting machine, the combination of a race-plate having channels down which type may pass, type-cases suitably supported, means for ejecting the type from the
25 type-cases into position where they may swing by gravity into a vertical position to pass down said race-plate, a horizontal bar extending across such swinging position, vertical webs depending from said bar, dogs carried by said bar and adapted to engage the
30 ejected type, and means for adjusting said bar vertically, substantially as described.

35 17. In a type-setting machine, in combination, a race-plate having channels down which type may pass, type-cases suitably supported above and at the rear of the race-plate, the position of said type-cases being such that the lowest type therein may be ejected in a line which is a continuation of its nor-
40 mal position onto a ledge above the race-plate, and a series of dogs adapted to engage the type during such ejection and bear down on the type a distance back from the corner of said ledge approximately equal to the
45 thickness of the type, substantially as described.

50 18. In a type-setting machine, in combination, a race-plate having channels down which type may pass, type-cases above and at the rear of said race-plate, means for ejecting type from said cases forward above the race-plate where they may swing down by gravity about a suitable substantially stationary corner as a center, and a series of dogs acting on

the ejected type at the rear of said corner a distance approximately equal to the thickness of the type, said dogs being carried by a vertically-adjustable bar, substantially as described.

19. In a type-setting machine, in combination, a series of channels for holding type, a race-plate having a plurality of conduits leading downward to a common point, means for ejecting type from the channels to a position where they pass into said race-plate, a common receiving-channel at the lower end of
60 said race-plate, suitable dogs for engaging said type during their ejection from the channels to the race-plate, and means for adjusting the size of the conduits in the race-plate
65 and the position of the dogs, substantially as described.

20. In a type-setting machine, in combination, a series of channels for holding type, a race-plate having a plurality of conduits leading downward to a common position, means for ejecting type from the channels to a position where they pass into said race-plate, a common receiving-channel at the lower end of said race-plate, suitable dogs for engaging
75 said type during their ejection from the channels to the race-plate, and means for adjusting the size of the common receiving-channel and the size of the conduits in the race-plate, substantially as described.

21. In a type-setting machine, the combination of a series of channels for holding type, a series of conduits down which type ejected therefrom may pass, means for so ejecting the type from the channels, and a series of dogs
80 adapted to engage the upper side of the type during such ejection and assist in turning it to pass into said vertical channels, said dogs consisting of trilateral pieces of metal J having three sides j j' j'' , a suitable bar stationary
85 in operation to which the sides j'' are pivoted, said dogs occupying such position that the angle between the sides j and the side j' engages the upper side of the type and bears down upon it as the type is ejected onto a suitable ledge, substantially as described.

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

FRANCIS B. CONVERSE, JR.

Witnesses:

CHARLES PLATNER,
GEO. REILLY.