

No. 632,484.

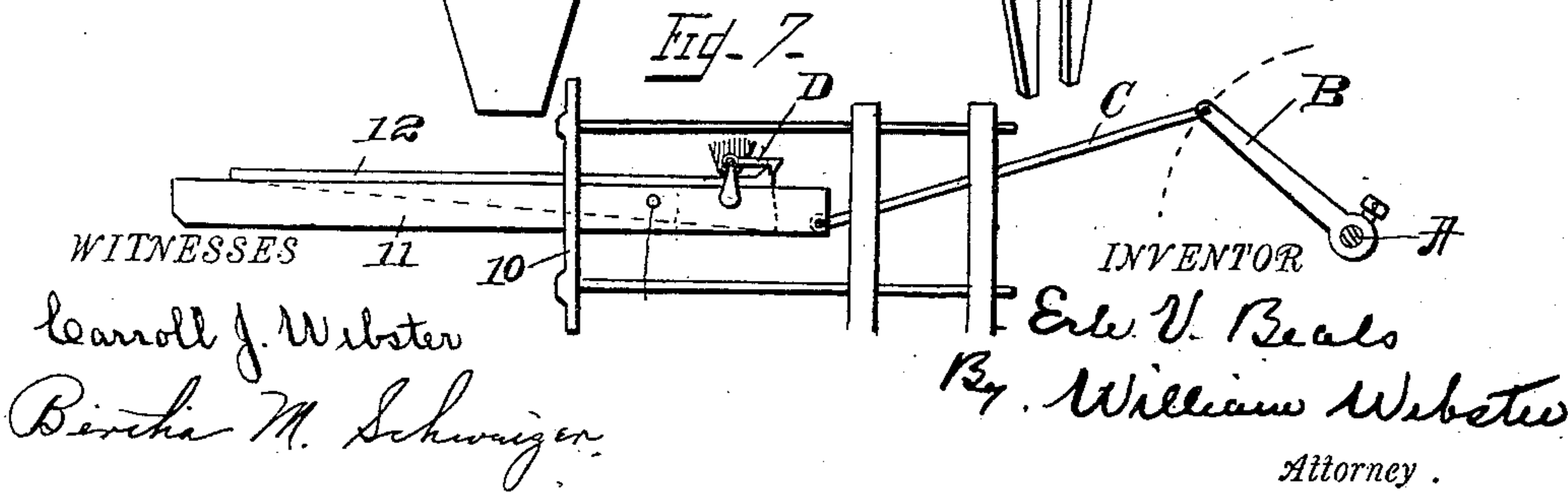
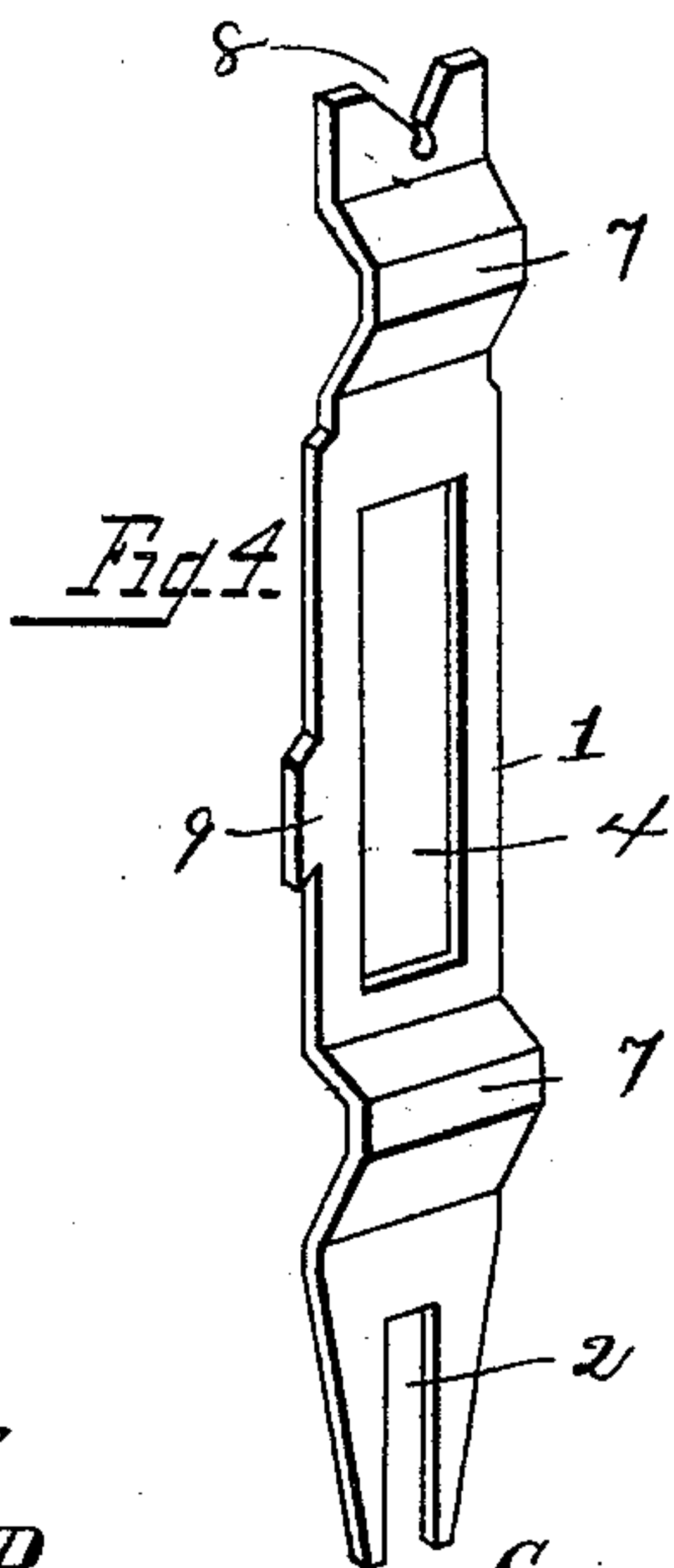
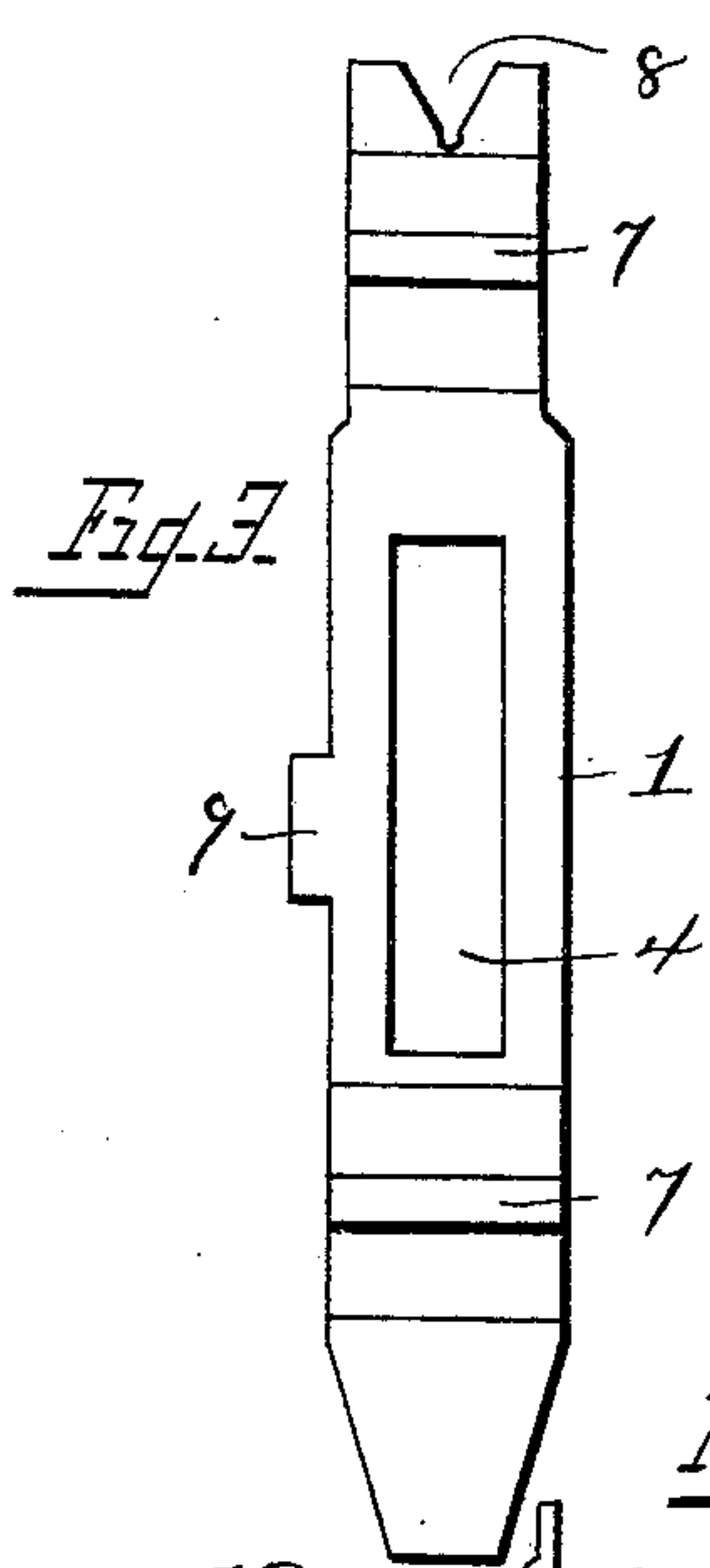
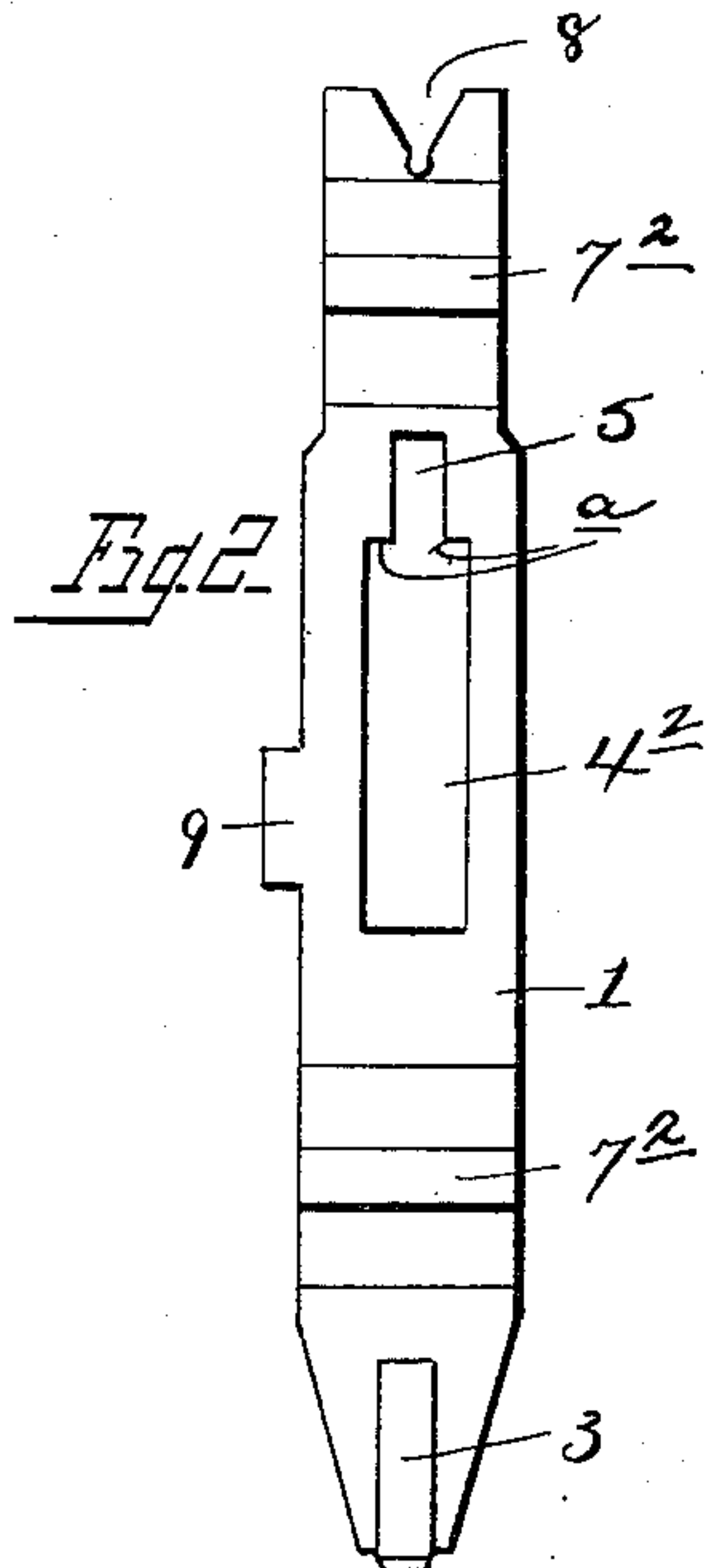
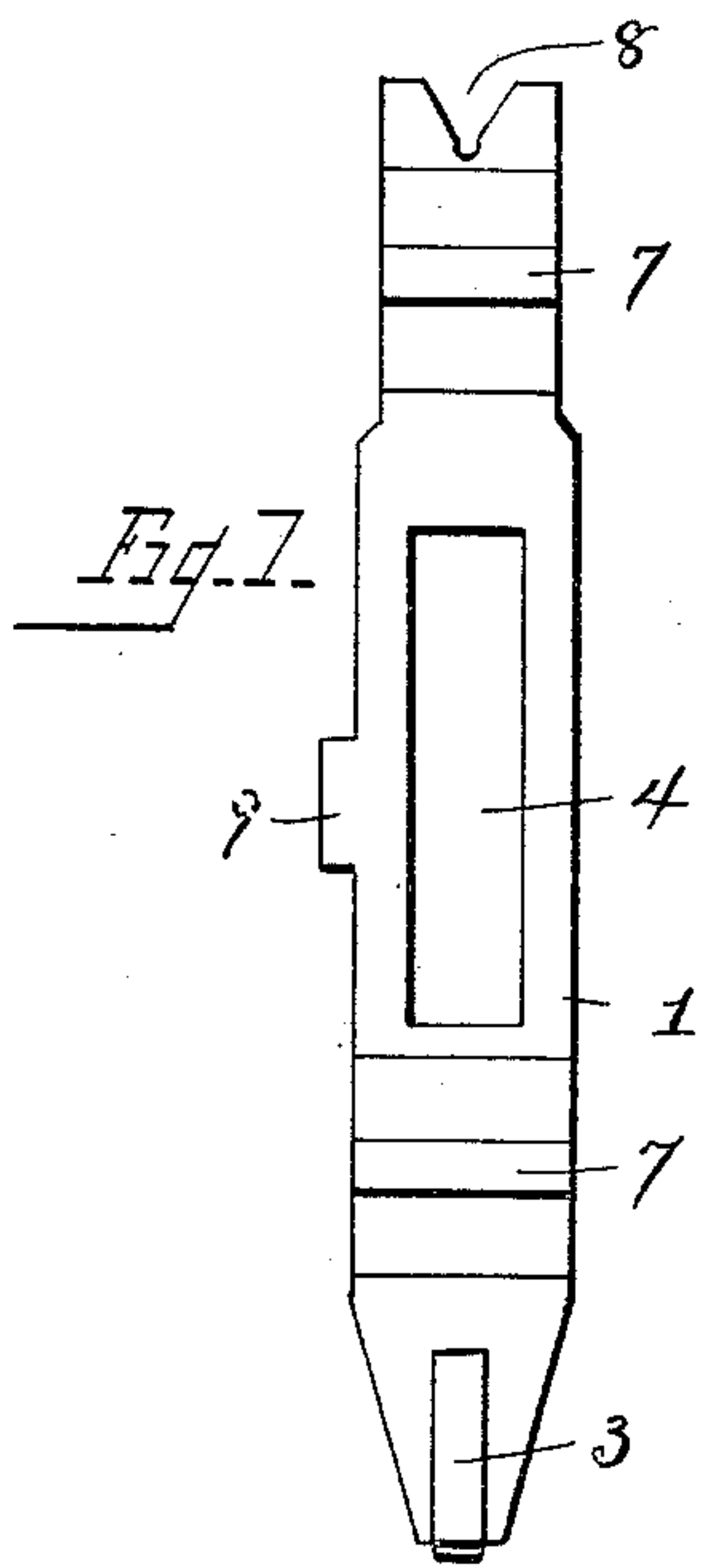
Patented Sept. 5, 1899.

E. V. BEALS.
TYPE FOR PRINTING.

(Application filed Nov. 1, 1893.)

(No Model.)

2 Sheets—Sheet 1.



WITNESSES
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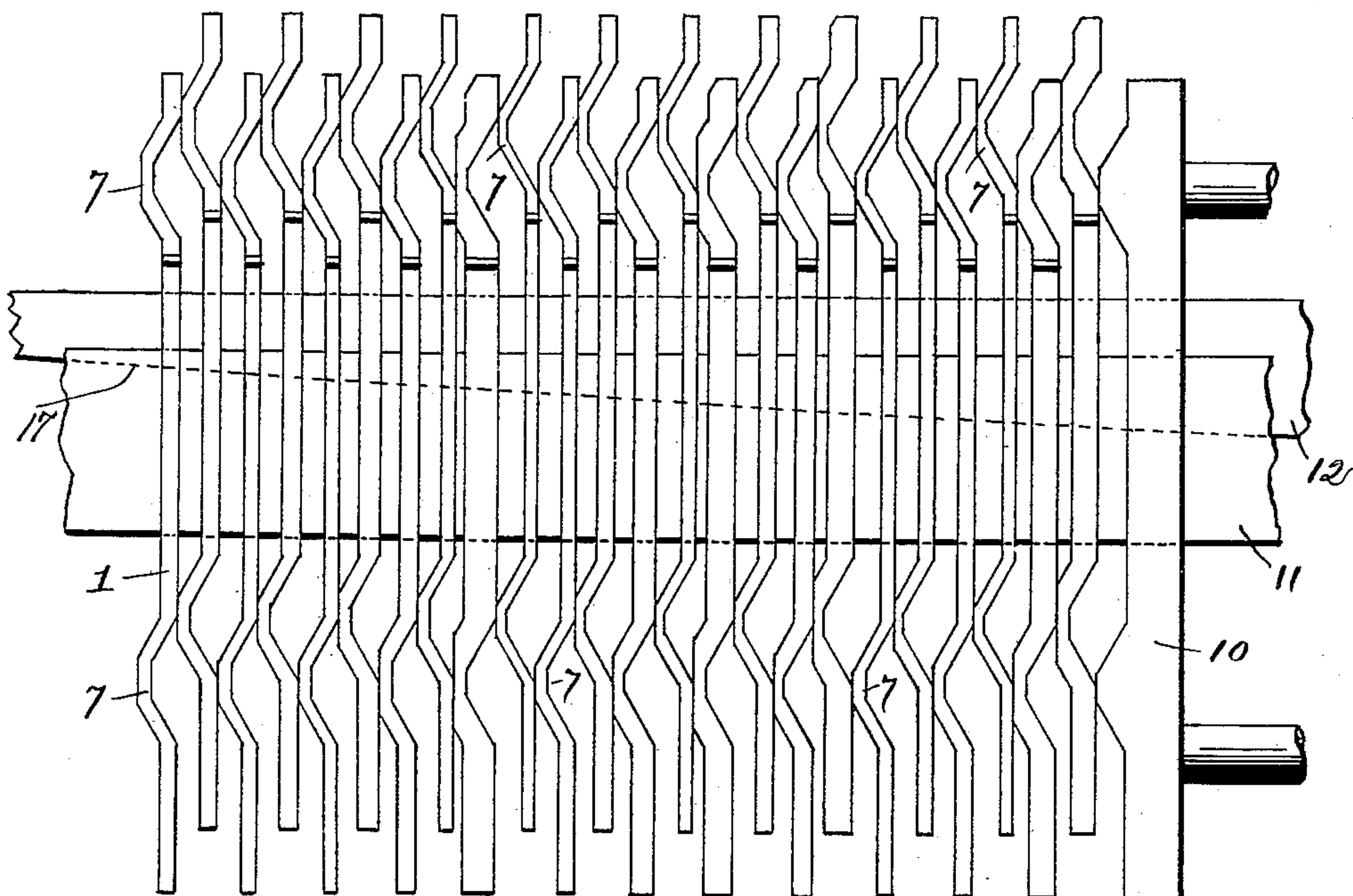
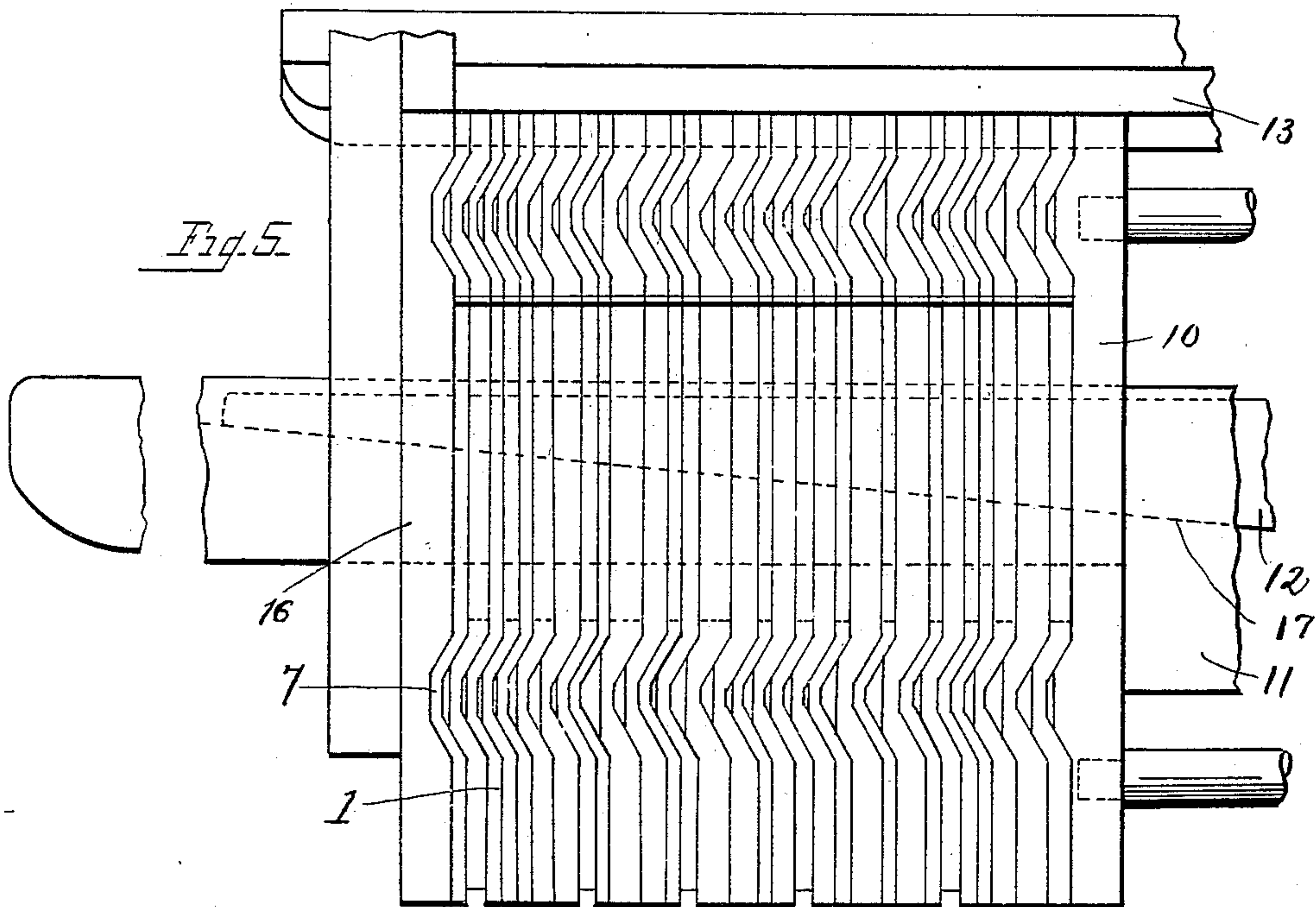
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(No Model.)

2 Sheets—Sheet 2.



WITNESSES

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UNITED STATES PATENT OFFICE.

ERLE V. BEALS, OF DETROIT, MICHIGAN.

TYPE FOR PRINTING.

SPECIFICATION forming part of Letters Patent No. 632,484, dated September 5, 1899.

Application filed November 1, 1893. Serial No. 489,679. (No model.)

To all whom it may concern:

Be it known that I, ERLE V. BEALS, a citizen of the United States, and a resident of the city of Detroit, county of Wayne, and State of Michigan, have invented certain new and useful Improvements in Type for Printing; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters and figures of reference marked thereon, which form part of this specification.

This invention relates to type of the class that are used in machines in which a line of type is assembled, alined, and justified and an impression or cast taken from it, which impression is subsequently used either to produce a second printing-type or the cast is used to make the impression directly on the paper. In machines of this character a number of pieces corresponding to the common separable type are brought into line and justified—that is, they are brought into perfect alinement and properly spaced to fill a given length of line—and then an impression or cast is taken from them, and the impression or cast is used either directly or indirectly to print, as above noted. The type that are assembled in the first instance may be either cameo or intaglio. With the former the usual custom is to produce as the second step in the process a mold of paper or analogous material. With the latter or intaglio type the usual second step is to produce a line of type-metal type from which the printing is directly done. The improvement which is the object of this invention can be embodied in type of either form, and its specific object is to produce type-bodies with such details of form and shape that they will, first, be retained securely from escape from the receptacles in which they are stored while awaiting their time of use; second, be capable of assemblage in compact form suitable to the production of the impression or cast which is to be made from them, and, third, be capable of ready separation and distribution each to its proper receptacle.

The particular forms of type shown in the drawings have been devised by me to be used

in connection with a matrix-making machine which forms the subject of Patent No. 490,263, granted to me January 24, 1893; but the principles embodied in this invention will be found equally applicable to type adapted to be used in any machine in which the type to be assembled are first brought to a common line and then arranged and justified in the place where they are to be used, and there are many forms of mechanism that can be devised for carrying out the steps preliminary to the final arrangement of the type and production of the mold or cast. The principles of the invention are equally applicable also either to the type itself or to a stem or holder in which is secured the ordinary leaden type in common use.

The bodies of type in common use differ in thickness according to the letters that are to be formed by them, and there are in a complete set, which consists of upper and lower case alphabets, figures, and points, &c., several different thicknesses, and when these various type are assembled to print words and sentences the type are so irregularly arranged that great difficulty is found in automatically returning them to their proper places. In such machines as described in my patent above referred to the proper type to produce a line of print are carried by suitable mechanism approximately into line; but they are scattered or spread over a much greater space than that which they are to occupy when the cast or impression is taken therefrom. When the cast or impression has been taken, the type are again stored, and to return the type the line is spread to occupy the lateral space occupied before it was justified or crowded.

The main object of the invention is to accomplish this result. Some other details of construction which pertain to forming a perfect alinement of the type and securely holding the type in the carrying mechanism are also shown and described.

In carrying out my invention I employ sets of type of which the individual pieces have the thickness proportioned to the face of the letter that is printed from it—that is, the body of each piece has the same thickness that the body of a similar letter of ordinary type would have. The bodies of the type are

not continued back from the face in unbroken planes as is the case with common type, but are broken up into several parts, and in order that my description may be as clear as possible I will call these parts the "main" or "body" part and the "corrugated" parts, distinguishing the body parts as those portions which lie between two parallel planes extending directly back from the face, and the corrugations as those parts which lie outside or athwart of the parallel planes just mentioned. In the forms shown there are in each type three portions, one at each end and one in the middle, which pertain to the body part and two portions which pertain to the corrugated parts, and I will call the portions of the body parts the "front," "middle," and "rear" body parts, and the corrugations the "front" and "rear" corrugations.

Referring to the drawings, Figure 1 is a side elevation of a species of type or die which for convenience I will call "type No. 1." Fig. 2 is a side elevation of a species of type or die which for convenience I will call "type No. 2." Fig. 3 is a side elevation of a spacing-type. Fig. 4 is a perspective of type No. 1. Fig. 5 is a front elevation showing the edges of a number of type assembled and justified. This figure indicates the relative operative position of the type and the mechanism for compressing and justifying the type. Fig. 6 is a front elevation of a line of type separated preparatory to distributing them. Fig. 7 is a diagrammatic view illustrating a means for operating the bar 11 and spline 12.

1 indicates the body of a type, and all the type used with the same machine will be alike in length and in depth, but will vary in thickness, as already described. The printing or front end of the type is finished in the shape of a truncated wedge and either has the printing-face of the type on its extreme end or is provided with a recess 2, within which an ordinary type 3 is placed and secured in any approved way. In connection with my machine I intend to use both these forms, using ordinary type secured as described for characters that are not frequently used, and the other form in which the type-face will be of some hard metal for characters more frequently used.

Through the middle body part of each type is a hole 4. In the form called "type No. 1" (shown in Fig. 1) the hole 4 is rectangular and its forward edge lies close to the front corrugation 7. In type of style No. 2 (shown in Fig. 2) the hole consists of a large part 4² and a small part 5. The part 5 runs into the part 4² and is narrower, so that there are formed at the junction of the two parts of the hole two shoulders *a a*. The longitudinal diameters of the two parts 4² 5 of the hole through type No. 2 lie in the same straight line, and the front end of the hole 4² is spaced from the front corrugation 7² by a greater distance than

the corresponding space between the front edge of the hole 4 and the front corrugation 7 on type No. 1, the difference in the space being equal or about equal to the length of the smaller part 5 of the hole through type No. 2. The rear edge of hole 4 is spaced from the rear corrugation 7 by a greater space than that which separates the rear edge of the hole 5 from the rear corrugation 7², the difference between the two spaces being the same as the difference between the two front spaces. One-half of the type used in the machine are made in the style of type No. 1 and one-half of the type are made in the style of the type No. 2 and are stored in the machine in sets, certain sets containing type No. 1 and certain other sets containing type No. 2. In assembling the type for a line they are taken alternately from different sets, so that the assembled line will be composed of the two styles in alternation.

Each type is provided with two or more corrugations 7 or 7², and these corrugations are so made that they will register in the same line across the edges of the type, and the convex side of one corrugation will be entirely received within the concave side of the corresponding corrugation on an adjoining type. The extreme elevation of the corrugation above the plane bounding the opposite side of the body of the type is uniform in all the type—that is, the thickness through the body and the corrugation in one type is the same as the thickness through the body and the corrugation of any other type, irrespective of the variation in the body parts. When the type are assembled and nested, as shown in Fig. 5, they occupy a line-space equal to the aggregate thickness of the body parts of the type, and this will vary with the characters that have been assembled. When they are spread by means which will be described, they occupy a space equal to the combined thickness of the bodies and corrugations of the type, and when so spread each type is in position to move directly into engagement with distributing means.

8 indicates an angular recess in the rear end of each type, within which suitable means, such as an angular rib on a holding-bar 13, called a "base-rod," engages when the type are assembled. The engagement between the angular rib and the angular recesses on the several type forces the rear end of the type into accurate alinement.

9 indicates a lug or stop on the edge of the type-body, preferably on the edge of the middle body part. The purpose of this stop is to cooperate with certain parts in the carrying mechanism of the machine and prevent the improper escape of the type from the same. This lug 9 may be inclined, as shown in Fig. 4.

In Figs. 5 and 6 I have indicated means for forcing together and holding the type and afterward separating and scattering them; but I have not indicated the connected mechanism by which these parts are actuated, be-

cause such mechanism may be variously constructed and forms no part of this present invention.

16 indicates a fixed post or abutting post against which the type are held.

10 indicates a movable post or compressor actuated by any suitable means.

The type are brought into approximate alinement between the posts 10 and 16. The base-rod 13 is pushed in behind the type and brought into engagement with the rear ends, and suitable means is brought against the front truncated ends of the type, whereby they are accurately alined and firmly held while the impression or cast is being made. After the impression or cast has been made the type are to be distributed. To accomplish this, I pass through the holes 4 a bar 11, which fills or nearly fills the holes 4, but leaves a space underneath it in the hole 4 and leaves above it unfilled the small hole 5. In one side of the bar 11 is a groove 17, deeper at one end of the bar than at the other, and in the groove is a thin wedge-shaped spline 12. The bar 11 is next withdrawn and draws back with it the compressor 10. It may be either integral with the compressor or independent of it, as may be desired. While the bar 11 is withdrawing the spline 12 is held from withdrawing. Now the endwise movement of the bar 11 and spline 12 with respect to one another causes the upper edge of the spline 12 to rise or fall with respect to the upper edge of the bar 11, and when the compressor and bar 11 are withdrawn and the spline held against withdrawal the upper edge of the spline 12 rises, carrying up with it all of the type of the style No. 1, but passing up into the hole 5 without lifting any type of the style No. 2, the shoulders *a a* engaging on the bar 11 and preventing the dropping of the type of style No. 2. This lifts each alternate type and forces the corrugated parts out of their nested position (shown in Fig. 5) and into their scattered position, (shown in Fig. 6,) where the convex side of each corrugation is shown as engaging with the body part of the adjacent type, and the type are now either directly in engagement each with its own proper carrying means or in a position to be moved immediately into such engagement.

I wish it understood that I do not limit myself to any particular means for effecting the above-described movements of the bar 11 and spline 12, as my invention contemplates any means adapted for the purpose. In Fig. 7, however, I have illustrated diagrammatically a means for accomplishing the purpose, in which A is a rock-shaft to which an arm B is adjustably secured. The arm is loosely connected by a link C with the bar 11 for reciprocating the latter. A gravity-latch D, pivoted to a fixed part, is adapted to engage a projection on the spline 12 and hold it from movement when the bar 11 is drawn to the right, and thereby cause it to rise by reason

of the engaging inclined faces on the bar 11 and spline 12.

It will be readily understood that many minor changes may be made in the various parts without departing from the spirit of my invention.

What I claim is—

1. A type having its front end tapered and having in its rear end an angular indentation, substantially as and for the purpose set forth.

2. A type having a hole therethrough and a corrugated body.

3. A type having a hole through the body thereof and provided with an offset portion.

4. In combination with a type having corrugations and a hole through the body of said type, a type provided with similar corrugations and a hole differently disposed with respect to said corrugations, substantially as and for the purpose set forth.

5. The combination of two classes of type, the one class being provided with corrugations and an intermediate perforated body part, the other class being provided with similar corrugations and an intermediate body part, the perforations being differently disposed in the two classes, but adapted to receive through both of them, a spreading device by which the type may be forced endwise with respect to each other, substantially as set forth and for the purpose specified.

6. In combination with type adapted to be forced endwise with respect to each other and spread laterally, an independent spreading device adapted to so force them endwise, substantially as set forth.

7. A type-holding body having a perforation therethrough and an offset portion and provided with a recess for the reception of an ordinary printing-type.

8. In combination with a type adapted to be stored and carried in a carrier, a lug at an angle to the main body of said type to engage the carrier and adapted to prevent its escape from said carrier, substantially as set forth and for the purpose specified.

9. In combination with two or more type provided with engaging parts, the engaging part of one type being differently disposed with respect to the body of the type from the engaging part of the other type, an engaging device having a movable member which when moved engages with the engaging part of one type and moves it endwise relative to the other type.

10. The combination of two classes of type, the one class being provided with corrugations and with a bearing part by which it may be pushed endwise, the other class being provided with corrugations and a bearing part by which it may be held against end movement, the bearing parts being differently disposed in the two classes and a separating device adapted to engage with and move one of said classes endwise with respect to the other, substantially as described.

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11. A type having a body and angular projections and depressions the combined width of the body and projections being uniform with each of the other type of the set with
5 which it is used, substantially as and for the purpose set forth.

12. A plurality of type having bodies of varying thickness and each type provided with an offset portion the combined width of said
10 offset portion and the body being uniform throughout the whole number of type.

13. As a means for separating one type from adjacent type, a type having an irregular body, and means for moving said type end-wise.

15
In testimony that I claim the foregoing as my own invention I affix my signature in presence of two witnesses.

ERLE V. BEALS.

Witnesses:

FERRIS RANDALL,
CHARLES F. BURTON.