

No. 791,761.

PATENTED JUNE 6, 1905.

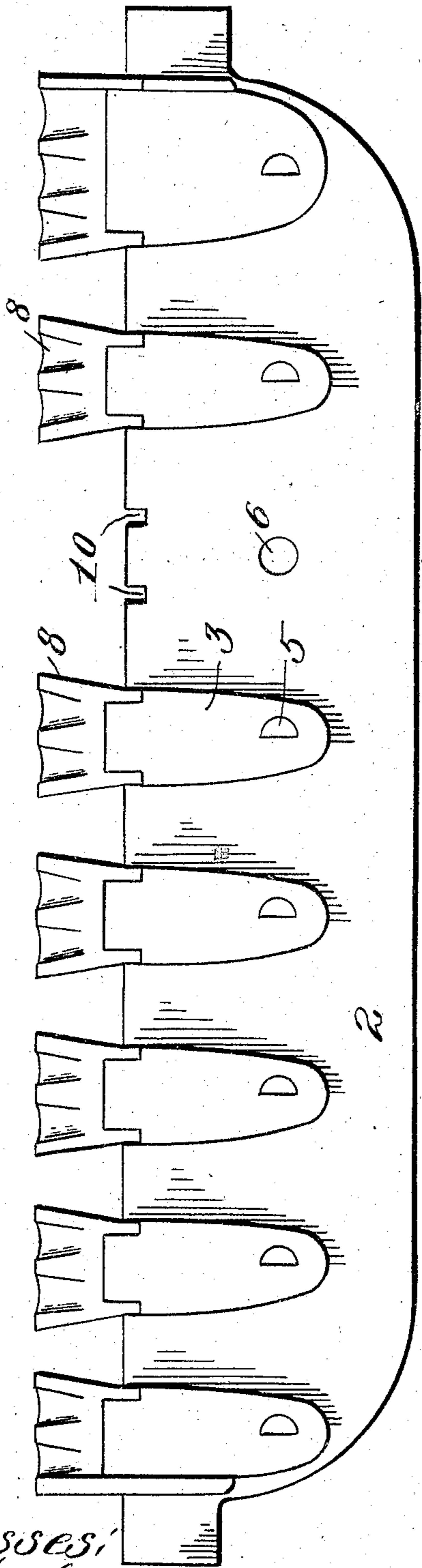
A. C. FLETCHER.

GRATE BAR.

APPLICATION FILED DEC. 8, 1904.

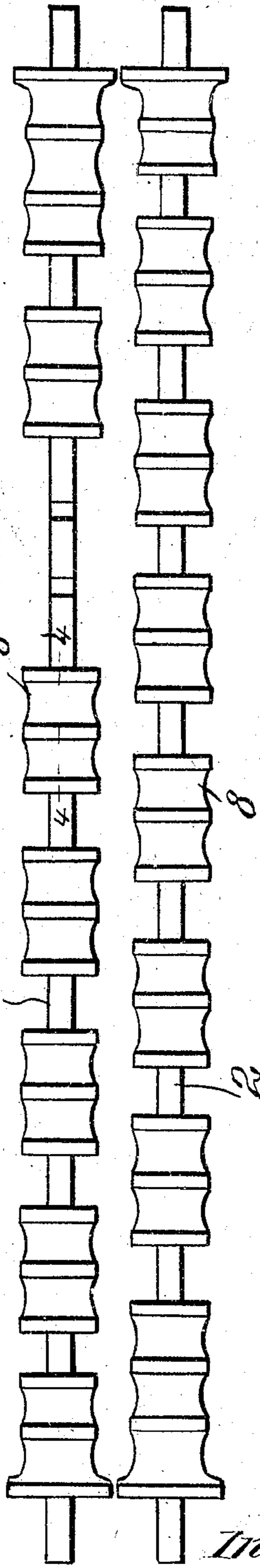
2 SHEETS—SHEET 1.

Fig. 1.



Witnesses:
C. H. Kessler
J. B. Kessler

Fig. 2.



Inventor
Addison C. Fletcher
By James L. Norris
Att'y

A. C. FLETCHER.
GRATE BAR.

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2 SHEETS—SHEET 2.

Fig. 3.

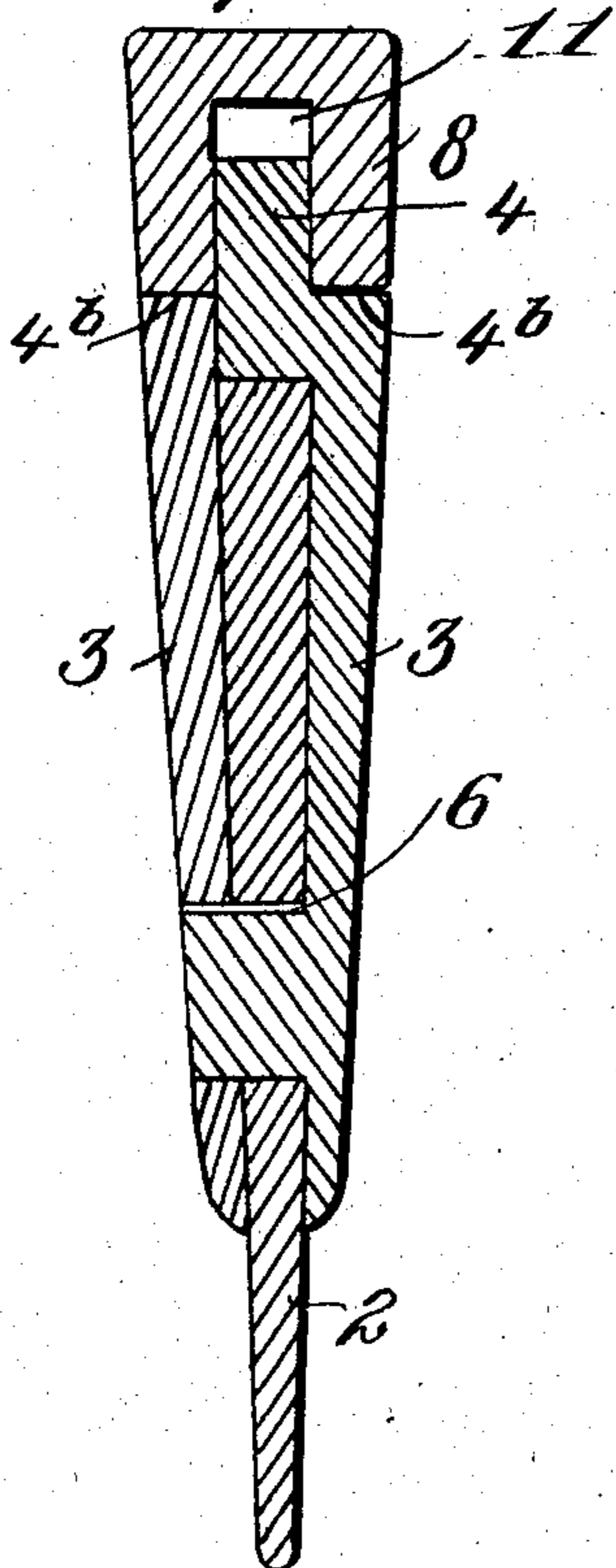


Fig. 4.

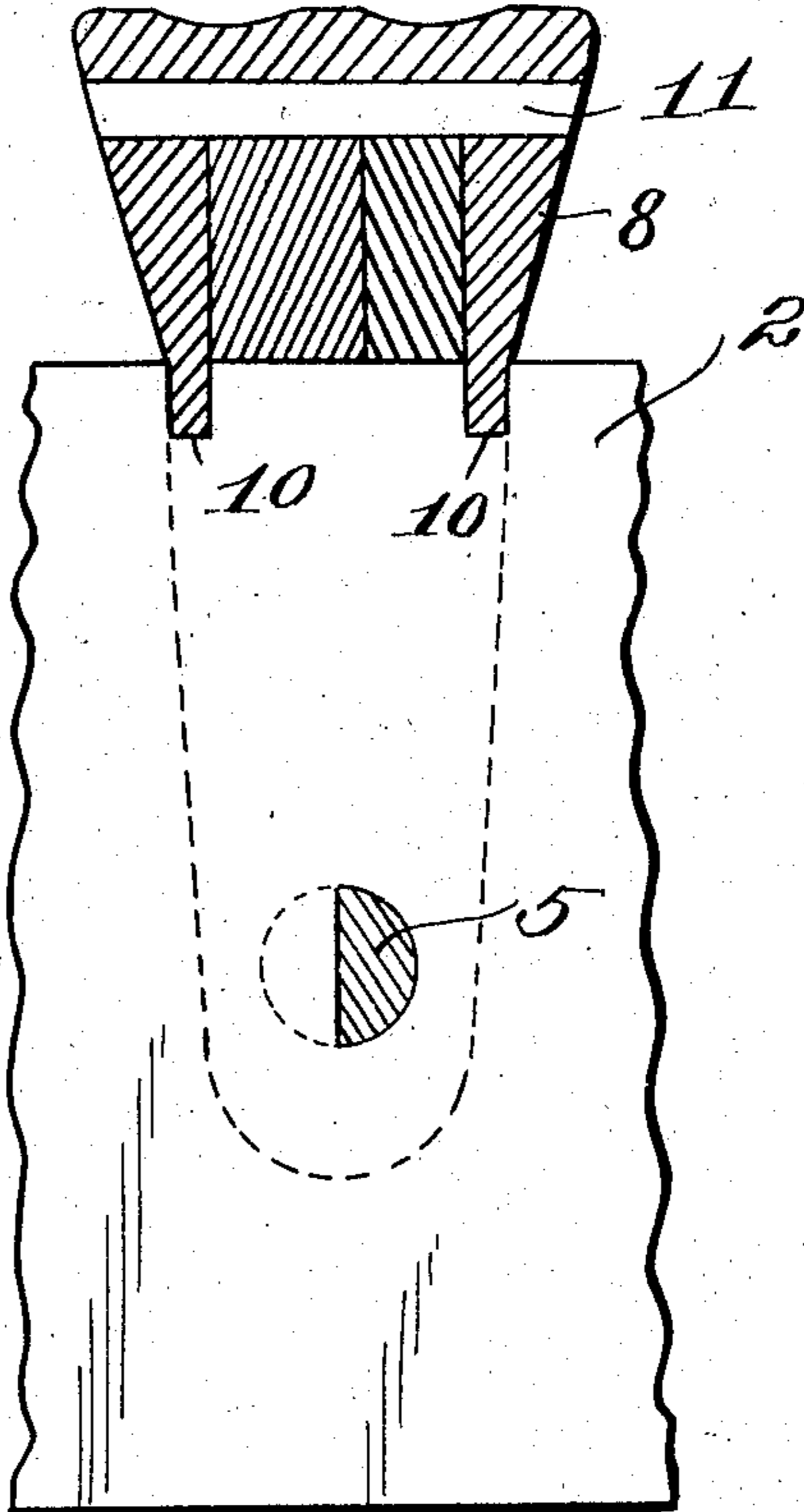


Fig. 6.

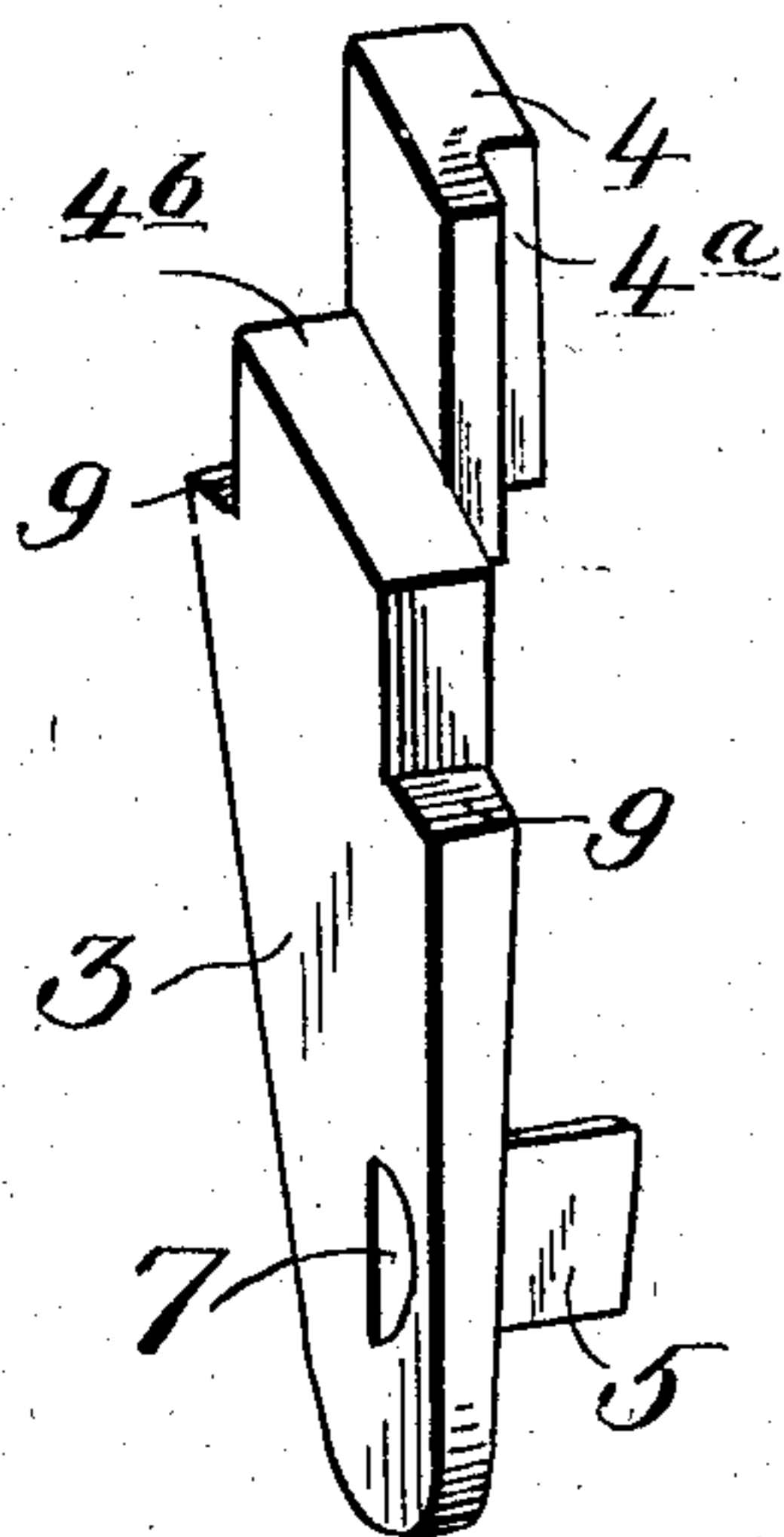


Fig. 5.

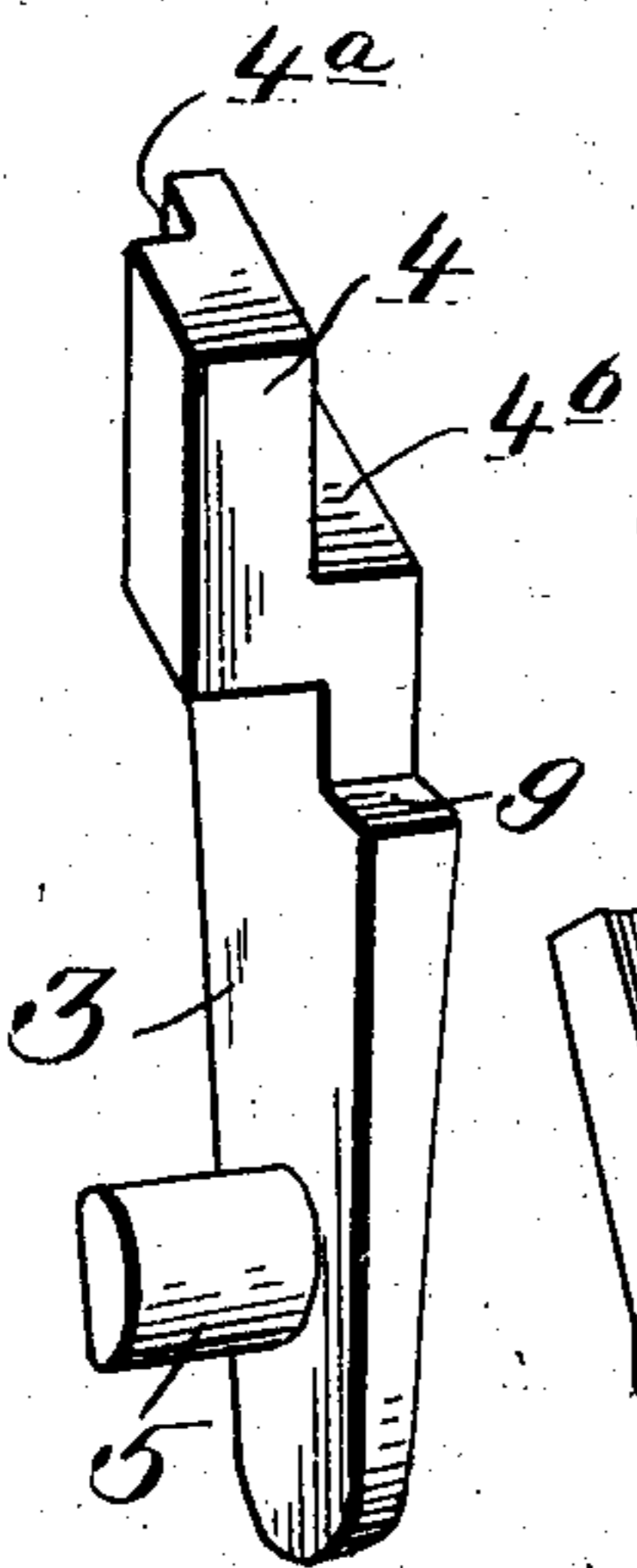
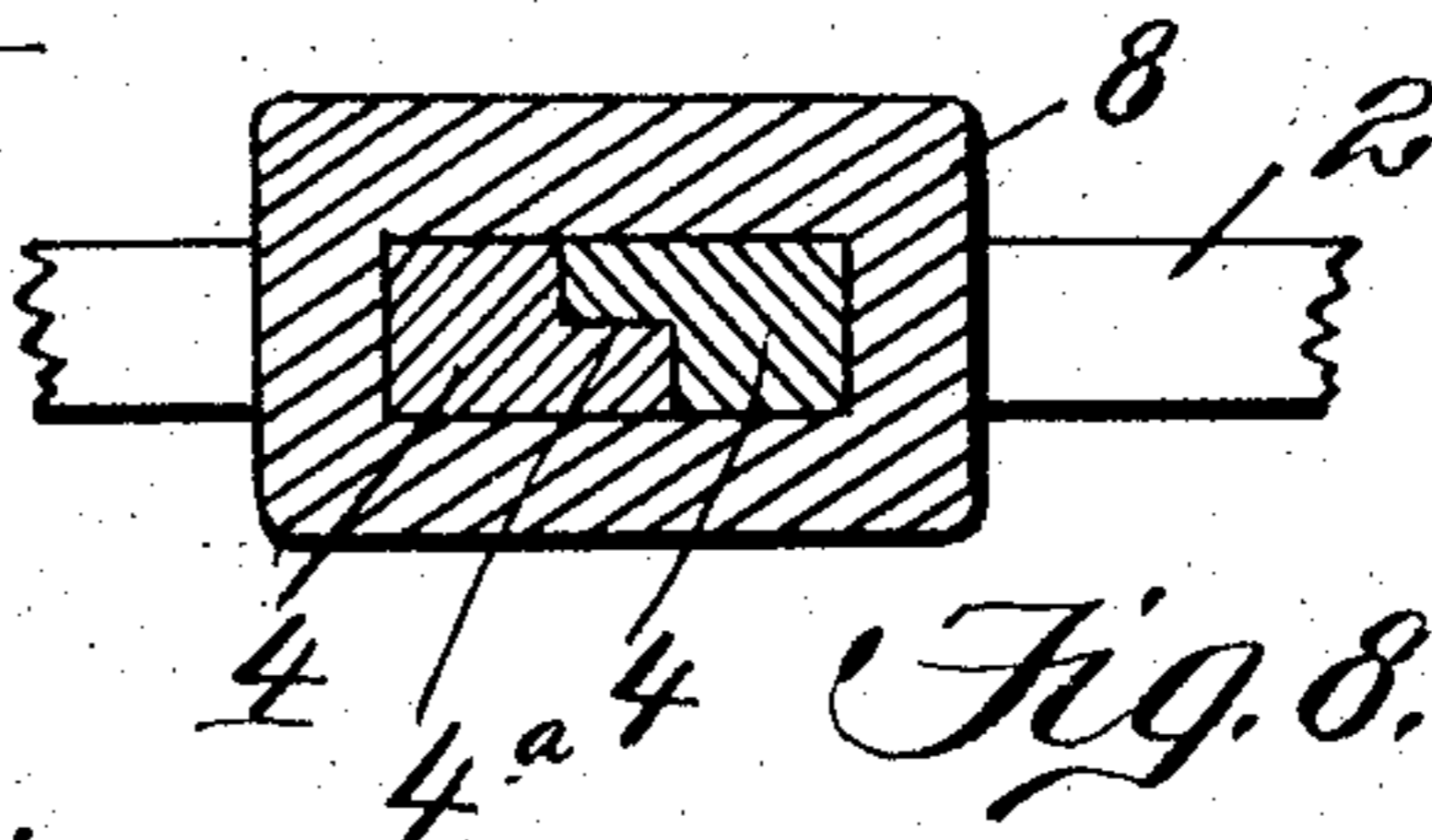


Fig. 7.

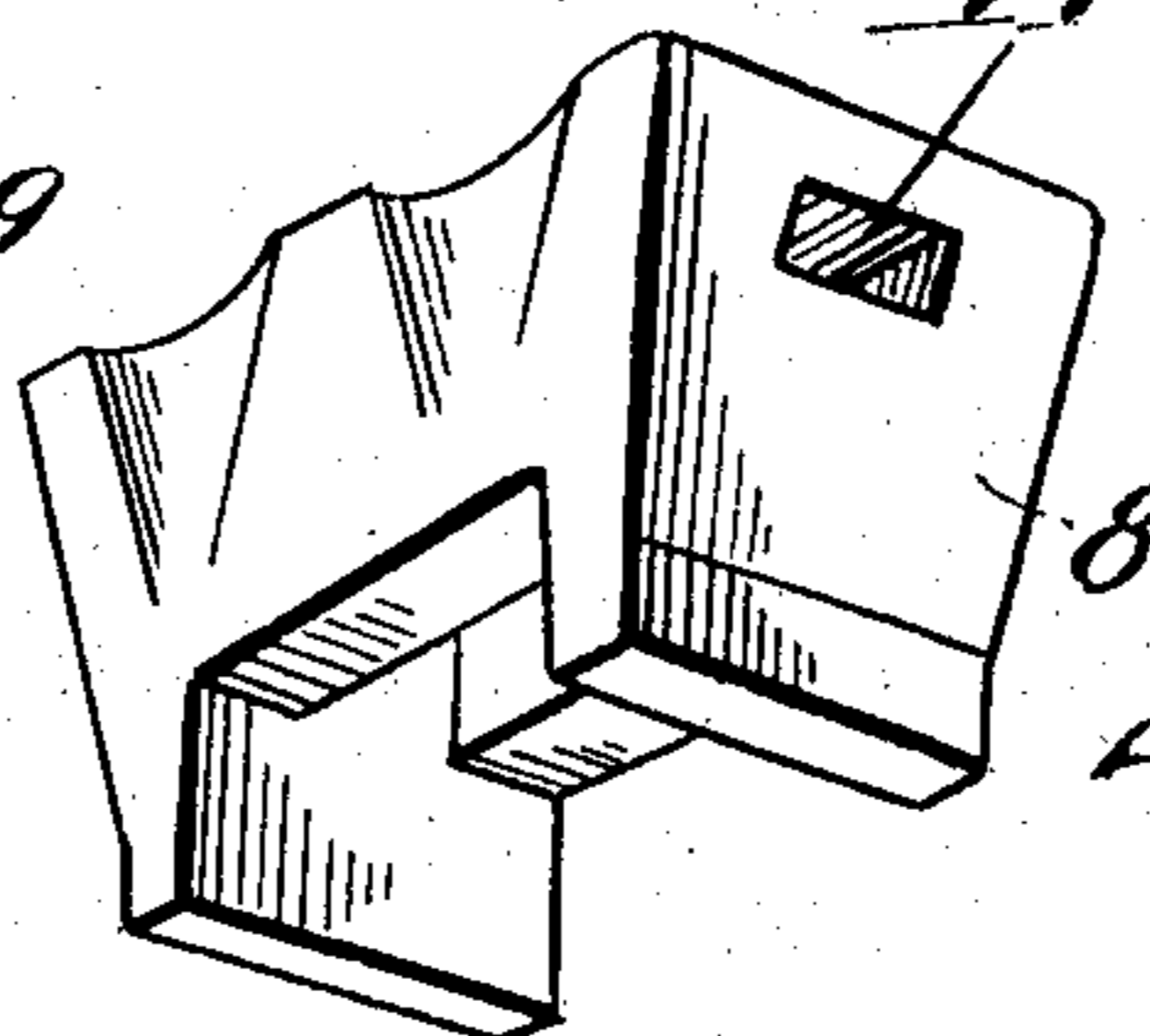
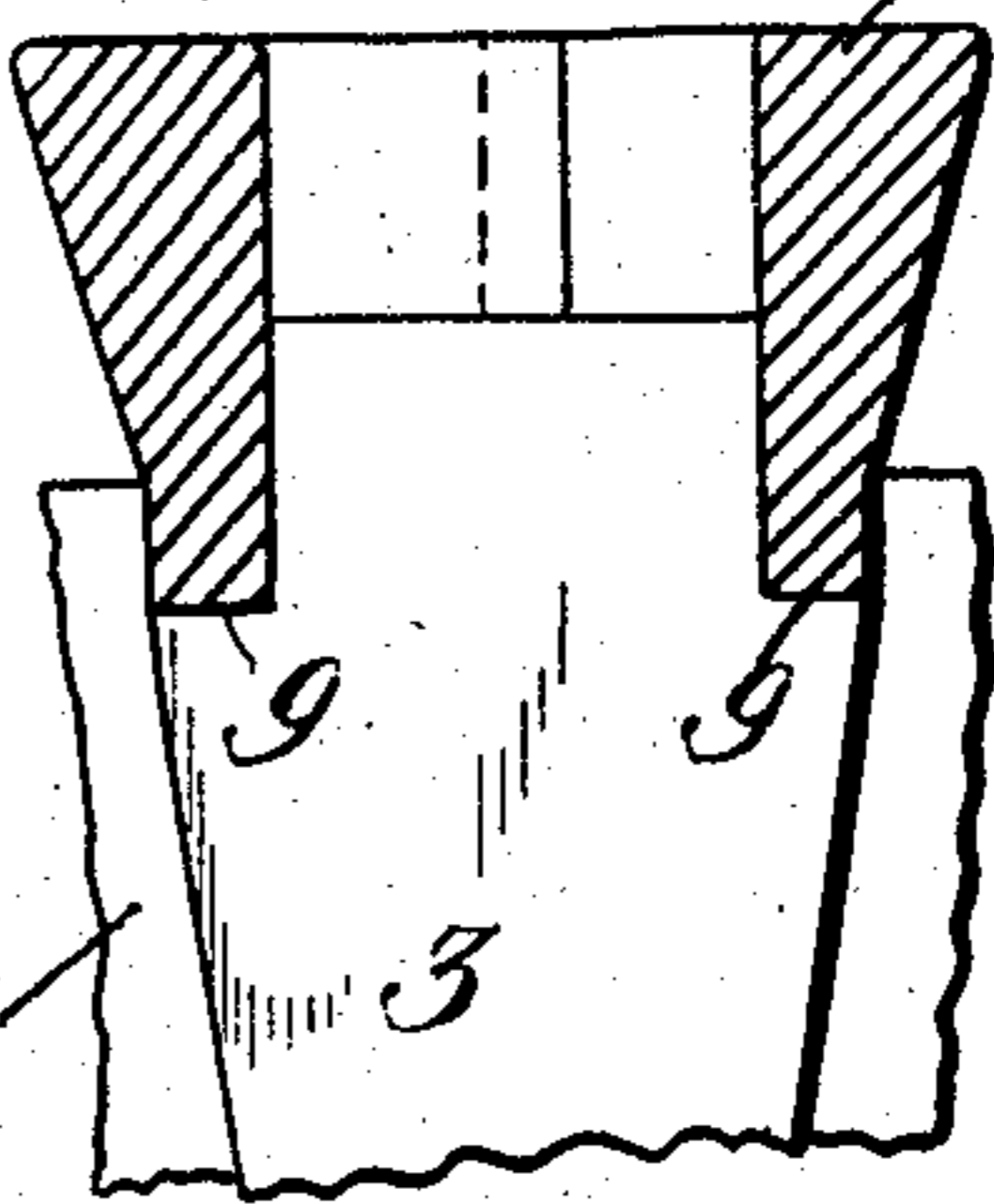


Fig. 8.



Witnesses:
C. H. Hester
[Signature]

Inventor
Addison C. Fletcher
By James L. Norris
[Signature] Atty.

UNITED STATES PATENT OFFICE.

ADDISON C. FLETCHER, OF NEW YORK, N. Y.

GRATE-BAR.

SPECIFICATION forming part of Letters Patent No. 791,761, dated June 6, 1905.

Application filed December 8, 1904. Serial No. 235,991.

To all whom it may concern:

Be it known that I, ADDISON C. FLETCHER, a citizen of the United States, residing at New York, in the county of New York and State of New York, have invented new and useful Improvements in Grate-Bars, of which the following is a specification.

This invention relates to grate-bars; and it is of the same general character as that disclosed by Letters Patent No. 432,394, granted to me July 15, 1890, and to which reference may be had.

The grate-bar constituting the present invention comprises a body and a point or points associated therewith; and it is one of the prime objects of the present invention to hold such point or points in as rigid relation with the carrying-body as if the parts were of integral formation, notwithstanding the fact that the point or points are removable. By virtue of the detachability of the points if one of them be injured or worn it can be readily removed and a new one put in its place. Each point in the present case consists of a divided shank and a crown capping said shank, although of course I do not limit myself to such construction. It will be understood, therefore, that the crown is separate from the shank in order that it can be removed therefrom, and this is advantageous in that in case of injury to the crown it becomes necessary to remove only the same.

In the drawings accompanying and forming a part of this specification I illustrate a simple adaptation involving my invention; but I do not restrict myself to the disclosure thus made, for certain variations may be adopted within the scope of my claims succeeding said description.

Referring to said drawings, Figure 1 is a side elevation of a grate-bar involving my invention. Fig. 2 is a top plan view of two bars, one of the points forming a part of one of the bars being removed. Fig. 3 is a vertical sectional view, the section being taken through a point. Fig. 4 is a vertical sectional elevation of an intermediate portion of the grate-bar, the section being taken on the line 4 4 of Fig. 2 and showing the point in section and the body of the bar in elevation. Fig. 5 is a

horizontal section taken through the crown shown in the preceding figures. Fig. 6 is a perspective view of the shank of the point with the sections thereof separated. Fig. 7 is a similar view of the crown; and Fig. 8 is a detail in sectional elevation of a modified structure, a part of the body of a grate-bar and the shank of a point carried thereby being in elevation and the crown capping said shank being in vertical section. Figs. 3 to 8, inclusive, are upon an enlarged scale.

Like characters refer to like parts throughout the several figures.

A grate-bar including my invention will be made up of a body and a plurality of points associated therewith. The said body and points may be made of any desired material—for example, cast-iron. The body illustrated is denoted by 2 and is represented as consisting of an elongated flat bar or plate having gudgeons or equivalent projections at its ends to be supported by a suitable frame.

The points associated with each bar in a grate may of course be of any desired number, and they are in the present instance of compound construction, each being ordinarily made up of a divided shank and a crown. The different parts of the points may very well be made of cast-iron, though this is an immaterial point. The crowns of the points constitute the effective portions thereof, for it is on the upper sides of the crowns that the fuel is sustained.

In Figs. 3 to 7, inclusive, I illustrate a point involving my invention, and I will set forth the structure in detail thus illustrated. The point includes in its make-up what I shall term a "shank" and a "crown," the shank being shown as made of two parts and each being denoted by 3. These shank-sections are represented as being complementary and practically duplicate pieces—that is, each shank-section 3 is substantially the same as the other, by reason of which I can employ the same pattern for casting each. Other obvious advantages follow the duplicate formation of the shank-sections. From the top of each section there extends inward an overhanging head, as 4, the under sides of the heads being adapted in the present case to rest upon the upper edge

of the body 2, thereby forming a support for the shank in addition to another one hereinafter described. The two heads interlock in such a way as to prevent relative lateral motion in one direction. The interlocking relation between the heads is secured in the present case as follows: Each head is rabbeted, as at 4^a, so that the opposite faces of the head will each present a projecting portion and a grooved portion and when the point is applied the said projecting portion of one head will fit within the grooved or channeled portion of the other head, as indicated most clearly in Fig. 5. Each shank-section is represented as having below its head a projection, as 5, the projections being of duplicate formation in the present case and of semicylindrical form, their flat faces abutting, so as to produce, in effect, when the shank-sections are assembled a solid cylindrical pin. The projections 5 are adapted to be seated in an aperture in the body 2 below the upper edge thereof. The aperture is designated by 6 and is represented as a perforation extending entirely through the body 2. The shanks are of substantially plate-like form, and their flat faces are adapted to fit flatwise against the opposite side faces of the body 2 when the point is in assembled relation, at which time the projections 5 will mate and will fit flatwise against each other within the perforation 6. The segmental projections 5 extend entirely through the perforation 6, and each shank-section is provided with a segmental slot, as 7, to receive the free end of the segmental projection of the other shank-section when the point is mounted upon the body 2. By virtue of the engagement between the flat faces of the cooperating projections 5 and the further fact that each projection is fitted at its free end in a seat or slot in the other shank-section and aided by the fact that the heads 4 of the shank-sections rest solidly upon the upper edge of the body 2 I prevent practically any motion that might take place in the shank of the point or either section thereof. To absolutely preclude, however, all possibility of any motion, I prefer to rely upon a crown, as 8, for the divided or multipart shank, the crown in the present instance fitting over the upper interlocked ends of the shank-sections and presenting on its upper side a fuel-supporting surface, and said upper side may be corrugated, as illustrated in Fig. 4, to receive the ash from the fuel.

The crown 8 of the point fits over the mated heads—as illustrated in Figs. 3, 4, and 5, for example—and I ordinarily rely upon a driving fit between the crown and mating heads to hold the parts in proper relation. When the crown is in place, it will aid the two interlocking joints, hereinbefore described, in absolutely preventing any motion of the point or of either section thereof with respect to the other.

The upper portion of each shank-section 3,

below the head thereof, is somewhat reduced, as illustrated clearly in Fig. 6, in order to produce in the present instance two opposite lateral shoulders, as 9, upon each shank-section, which present seats for the lower edges of the ends of the crown 8. It will be understood that the crown illustrated in Figs. 1 to 7 is chambered and that the chamber does not extend entirely through the said crown depthwise thereof. The mating heads 4, however, fit snugly within the chamber, or there is a driving-fit engagement between the parts, as will be understood from what I have heretofore explained. I do not wholly rely, however, upon the driving fit between the crown and the shank of the point to hold the crown against motion, for I may interlock the crown with the body 2, for example, by fitting the front and rear ends of the former in notches, as 10, in the latter, and thereby produce a means on the body to limit the motion of the crown. The shoulders 9, as will be understood, extend outward from the opposite sides of the body 2, and their upper faces will be flush with the bottoms of the notches 10, it being understood that the lower edges of the front and rear ends of the crown rest on the shoulders 9 and on the bottoms of the two notches. The presence of the overhanging heads 4 at the top of the shank-sections 3 produces shoulders or ledges, as 4^b, and when the parts are in assembled relation the sides of the crown 8 rest upon these shoulders or ledges 4^b. A double bearing is thereby provided for the crown.

By the construction described I provide a device wherein the crown of a point may be removed readily without disturbing the remainder of said point or whereby I can remove the whole point, as occasion may require. I support the crown and point at several places. I firmly interlock the sections of the divided shank of the point at at least three places and when the parts are assembled prevent motion of the shank and of either section of the shank or crown with respect to the other. When the parts are in assembled relation, the point and grate-bar body present a structure that is equally strong and substantial as one that is integral.

I extend through the crown an air duct or passage, as 11, through which air can circulate and aid in maintaining the crown 8 relatively cool. This air duct or passage 11 extends in the present case from what may be considered the front to the rear of the crown—that is, longitudinally of the body 2—although this relation is not essential. The upper edges of the mating heads 4 when the crown is fitted in the same are substantially flush with the bottom of the duct or passage 11.

In the structure illustrated in Fig. 8, which is a slight modification, I dispense with the air-duct 11 and extend the mating heads 4 to

the upper surface of the crown, whereby the said upper surfaces will lie in a substantially common horizontal plane.

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

1. A grate-bar comprising a body and a point carried by said body, the point consisting of a divided shank and a crown, the sections of the shank extending upwardly above the upper edge of the body, and the crown being detachably fitted to said upper ends.
2. A grate-bar comprising a body and a point carried thereby, the point consisting of a shank in sections and a crown, each section of the shank having a projection, and the body being apertured below its upper edge to receive the said projections, the sections of the shank extending upwardly above the upper edge of the body, and the crown detachably fitting said upper ends.
3. A grate-bar comprising a body and a point carried thereby, the point including a divided shank and a crown separate from the shank and inclosing the upper ends of the sections of the shank.
4. A grate-bar comprising a body and a point carried thereby, said point being composed of a divided shank and a separate crown, the sections of the shank engaging each other at vertically-separated points to mutually limit the motion of each other, and the crown inclosing the upper ends of the shank-sections.
5. A grate-bar point comprising a shank composed of substantially duplicate sections, and a crown separate from the shank to inclose the upper ends of the shank-sections.
6. A grate-bar point composed of a divided shank and a crown separate from the shank, the sections of the shank engaging each other at separated points, and the crown inclosing the upper ends of the shank-sections.
7. A grate-bar comprising a body and a point carried thereby, the point being made up of a divided shank and a crown, the crown inclosing the upper ends of the sections of

the shank above the upper edge of the body, and the latter having means to limit the motion of the crown.

8. A grate-bar comprising a body and a point carried thereby, the point being made up of a divided shank and a crown, the crown inclosing the upper ends of the sections of the shank above the upper edge of the body, and the latter having notches to receive the lower edge of the crown.

9. A grate-bar comprising a body and a point, the latter having a divided shank and a crown, the crown being separate from and clamping the upper ends of the shank-sections, said crown having an air-duct extending entirely through the same.

10. A grate-bar comprising a body and a point carried thereby, the point being composed of a divided shank and a crown separate therefrom, the crown inclosing the upper ends of the shank-sections, and the latter being shouldered to provide a bearing for the crown.

11. A grate-bar comprising a body and a point, the latter being made up of sections and a crown, the sections being on opposite sides of the body, each having means to limit the motion of the other, and the body having means to limit the motion of the shank, the sections of the shank extending above the upper edge of the body, and the crown inclosing the upper ends of the sections.

12. A grate-bar comprising a body and a point carried thereby, the point being composed of a divided shank and a crown separate therefrom, the sections of the shank bearing against each other at vertically-separated points, and the crown clamping the shank-sections together.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

ADDISON C. FLETCHER.

Witnesses:

HEATH SUTHERLAND,
BRUCE S. ELLIOTT.