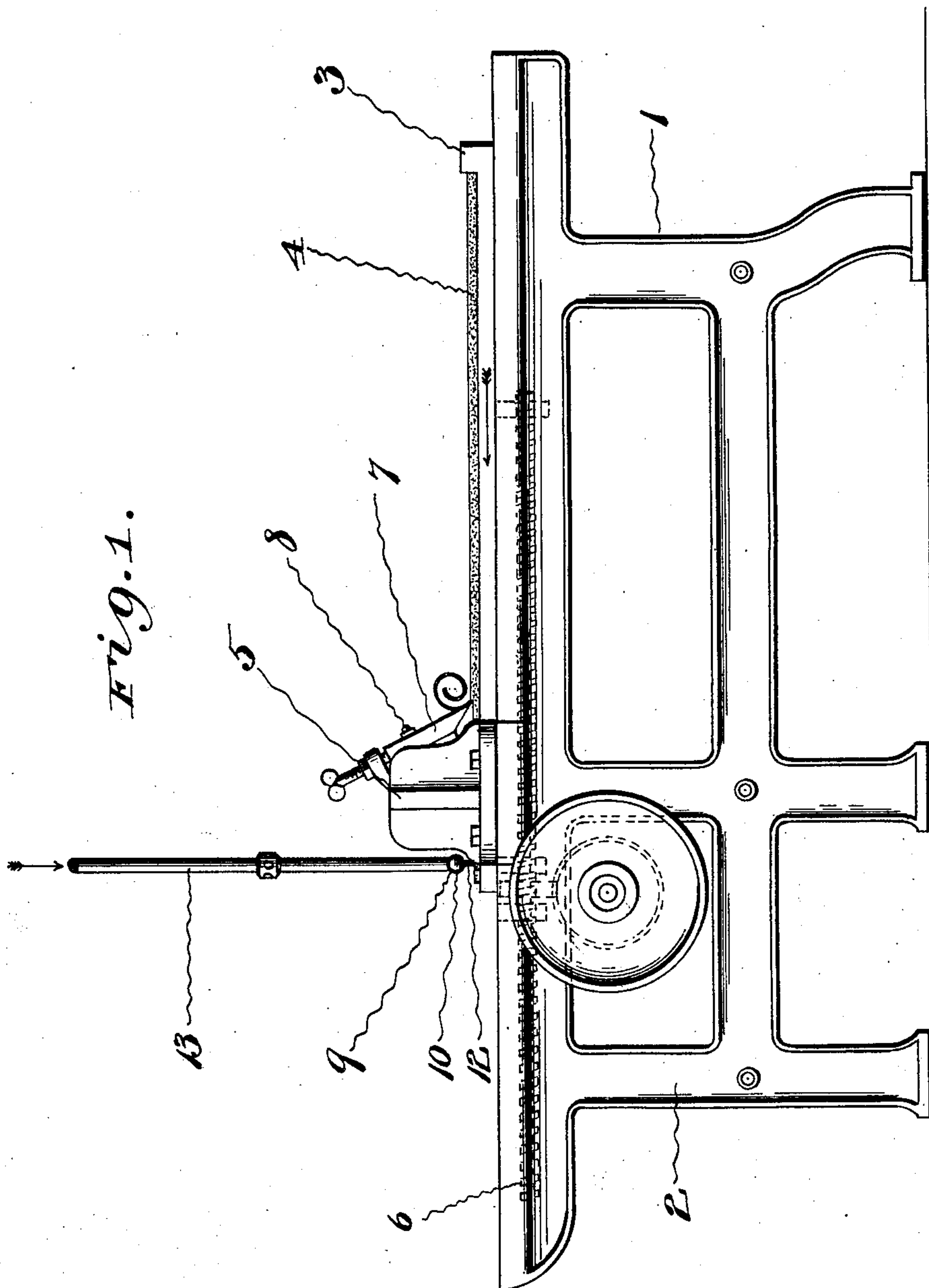


G. E. DUNTON.  
METHOD OF PREPARING MOLDS FOR ELECTROTYPES.  
APPLICATION FILED OCT. 26, 1909.

998,240.

Patented July 18, 1911.

3 SHEETS—SHEET 1.



WITNESSES

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Fig. 2.

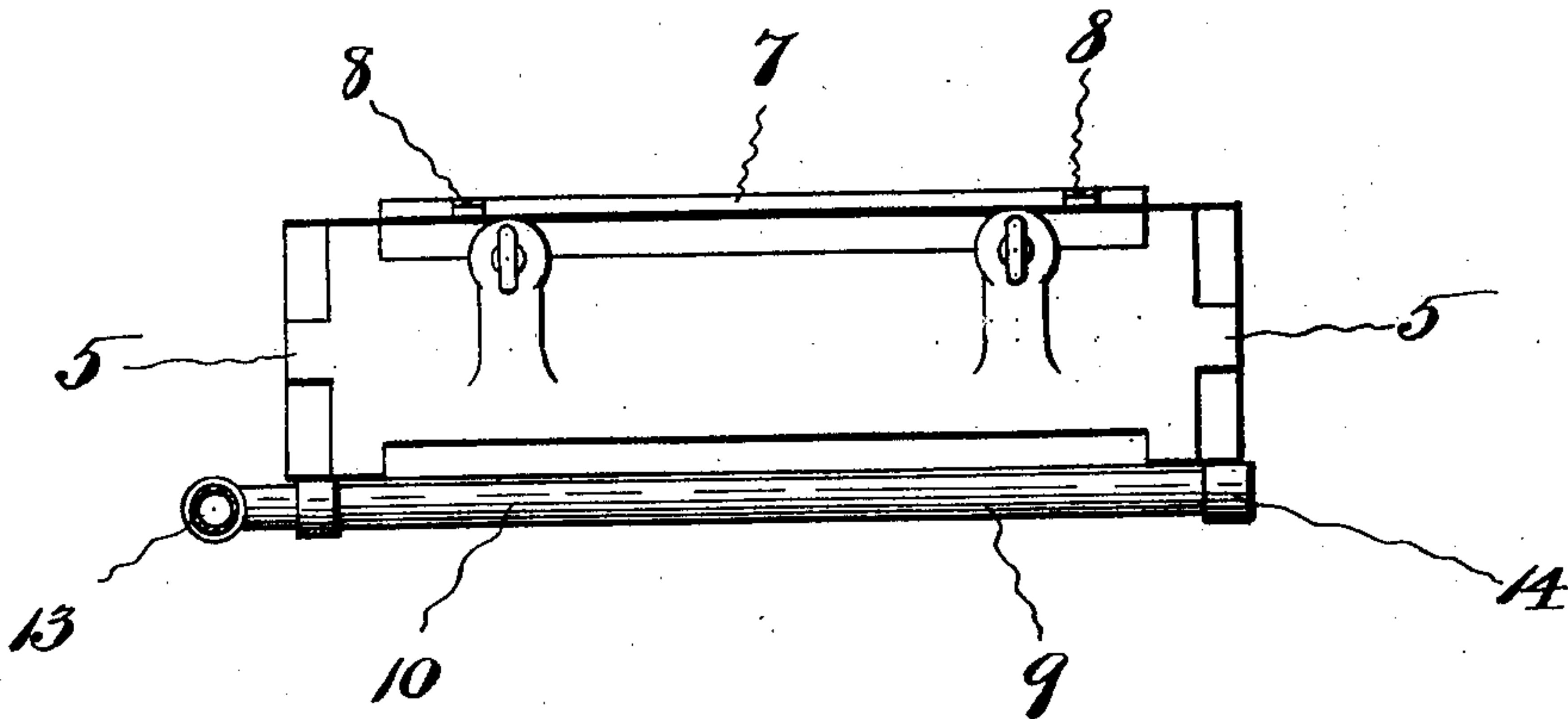


Fig. 3.

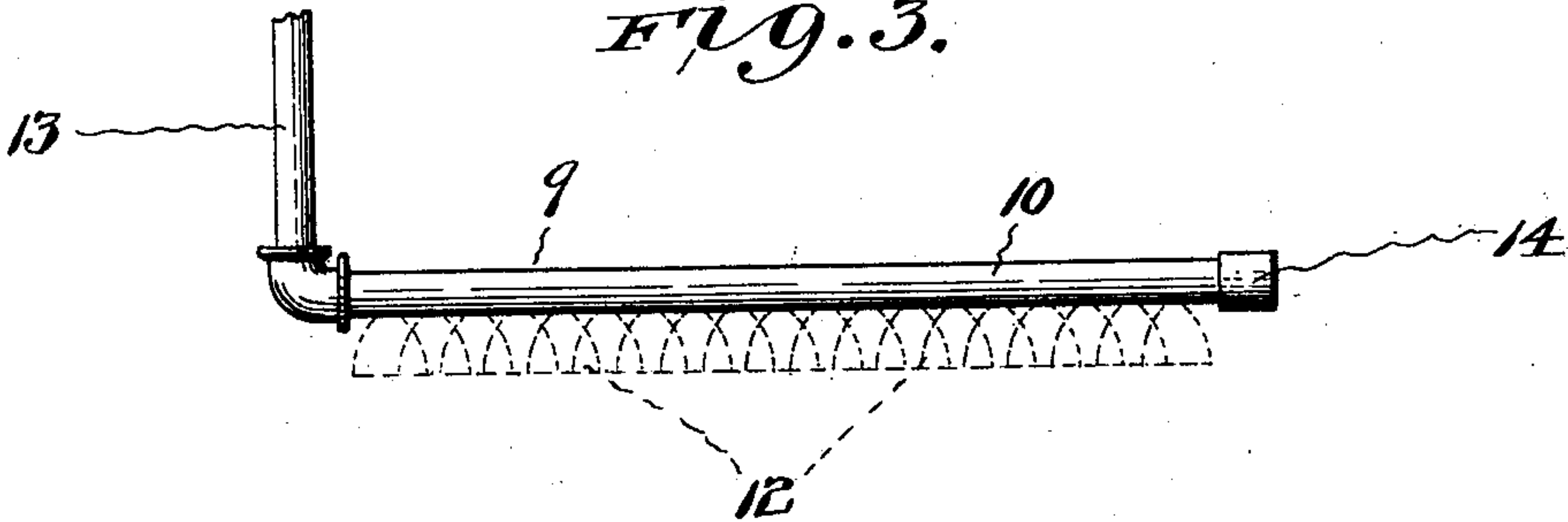
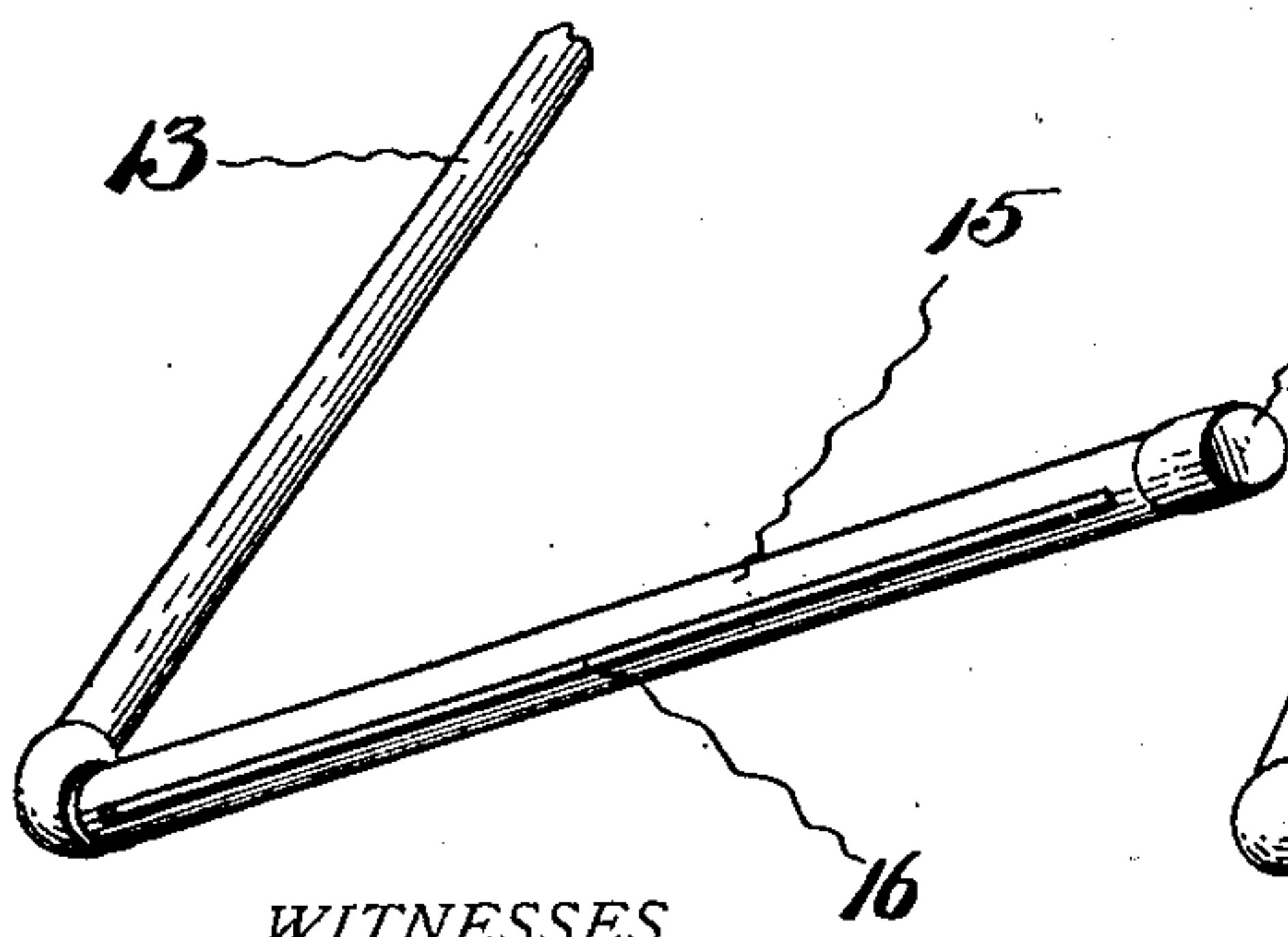


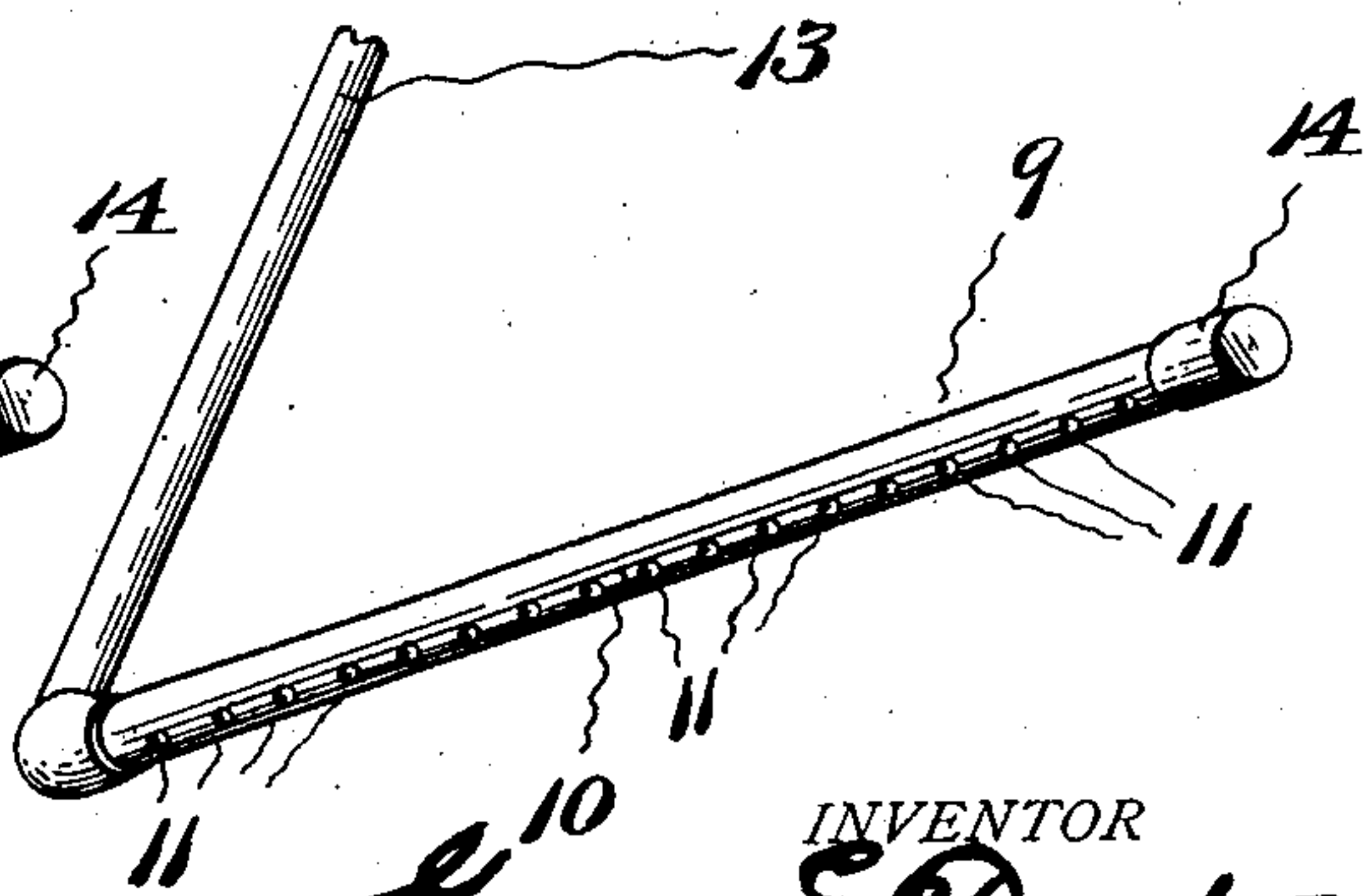
Fig. 7.



WITNESSES

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Fig. 4.



INVENTOR

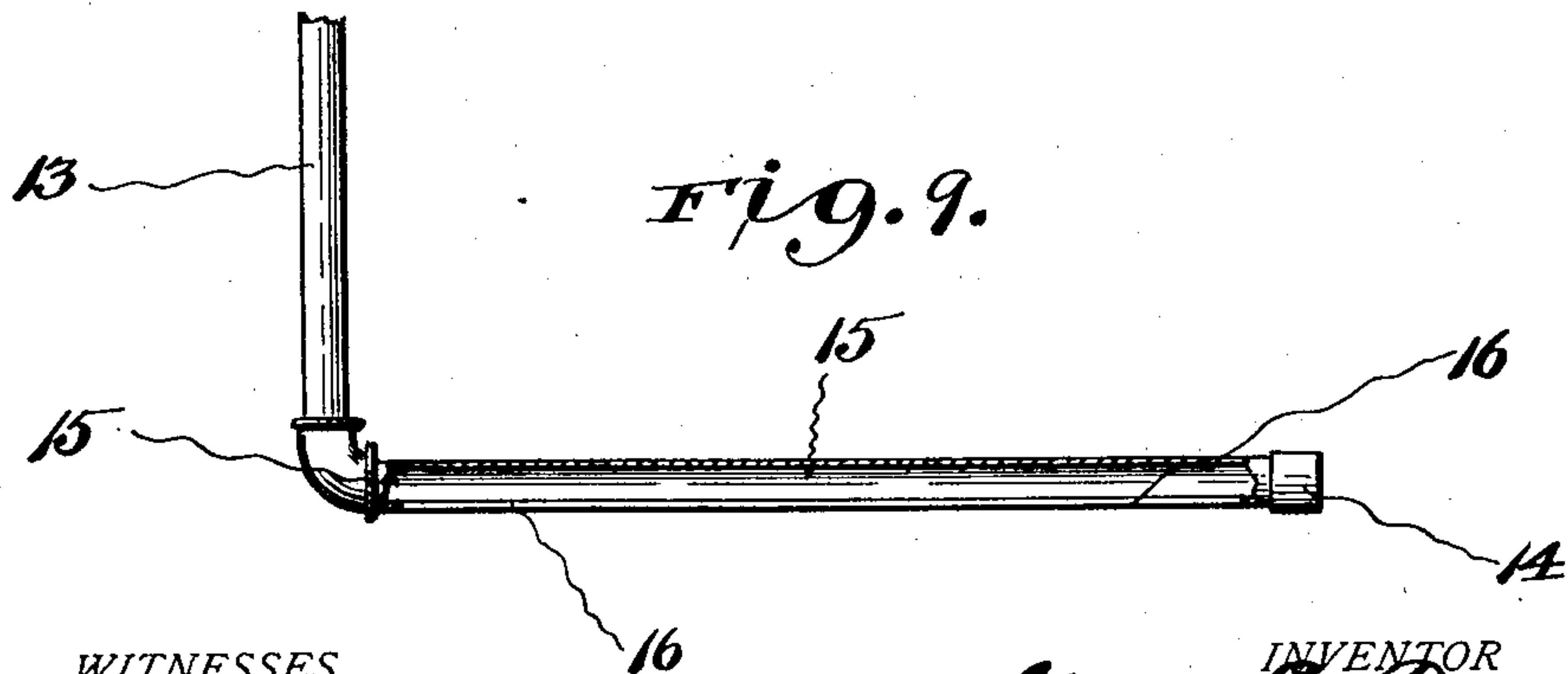
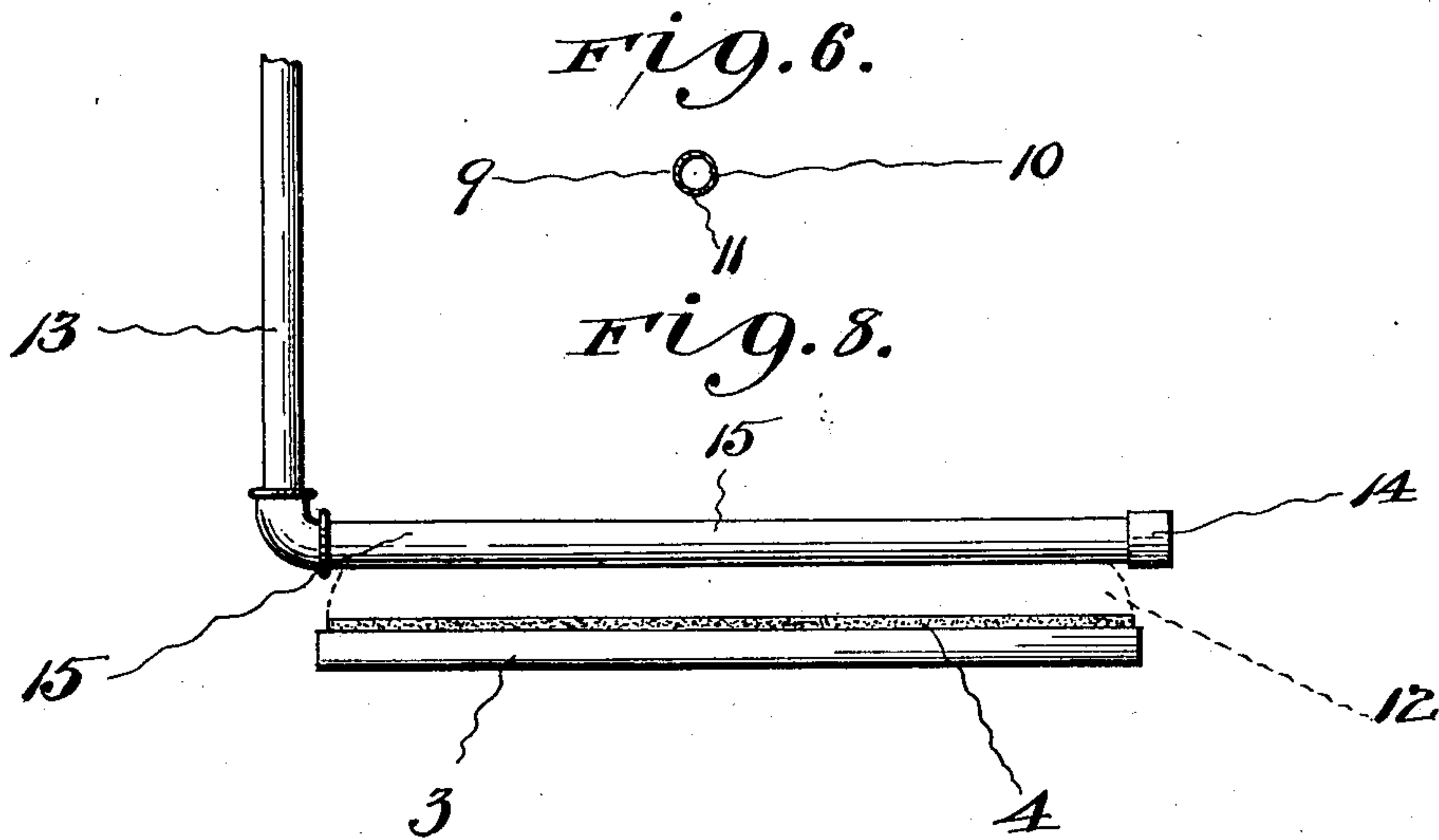
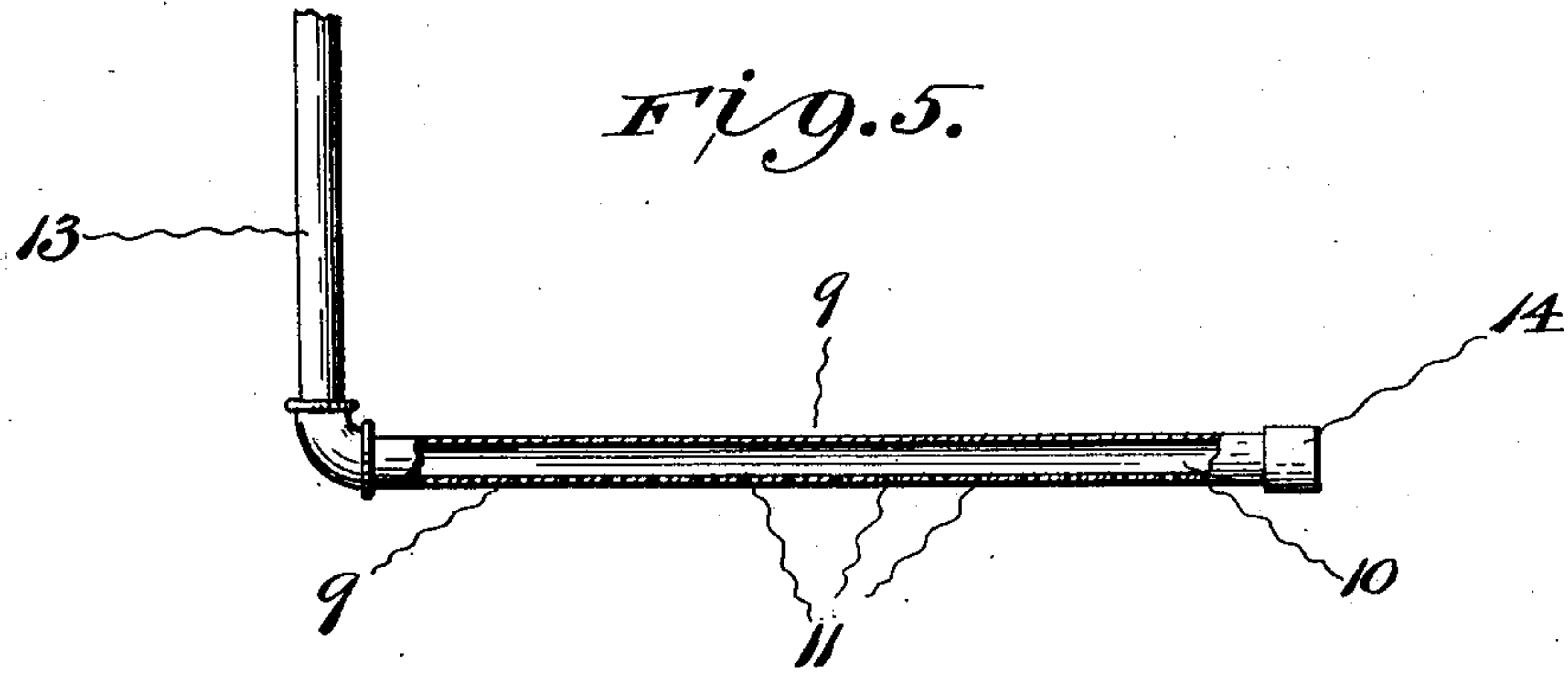
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3 SHEETS-SHEET 3.



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# UNITED STATES PATENT OFFICE.

GEORGE E. DUNTON, OF NEW YORK, N. Y.

METHOD OF PREPARING MOLDS FOR ELECTROTYPES.

998,240.

Specification of Letters Patent.

Patented July 18, 1911.

Application filed October 26, 1909. Serial No. 524,712.

*To all whom it may concern:*

Be it known that I, GEORGE E. DUNTON, residing at New York city, county of New York, State of New York, a citizen of the United States, have invented certain new and useful Improvements in Methods of Preparing Molds for Electrotypes; 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 pertains to make and use the same.

My invention relates to an improved method of preparing molds for electrotypes, and more especially to a method of polishing or burnishing and smoothing the surfaces of wax molds used by electrotypers in the molding of their forms.

It has for its object the polishing or burnishing and smoothing of the mold, which may be made of wax or other suitable material, by means of a gas or other flame or flames either at the time it is being shaved or planed or after it has been shaved or planed, thus producing a mold with a perfectly smooth, level and even surface free from pits, indentures or other imperfections and imparting to the surface of the wax a polished or burnished appearance.

It has for its object to provide a method for preparing molds for electrotypes which is exceedingly simple and inexpensive and which accomplishes the desired result perfectly.

In making electrotypes if the surface of the wax mold is smoothed or polished prior to the impression of the form therein from which the electrotypes are made, plates having smoother and more perfect printing surfaces will be produced. The polished wax surface will remain and be carried into the mold against the surface of the form and give the indented portions of the mold a polished, bright and lustrous appearance.

The metal which is deposited electrolytically into a mold which has had the surface of the wax smoothed or polished, prior to the making of the mold, by impressing an original form or cut into the wax, will exhibit certain physical conditions inherent to the state of the surface of the mold, or to that of the wax before the mold has been made. Consequently it is possible to reproduce, by smoothing or polishing the surface of a sheet of wax, before making a mold, a reproduction from the object from

which the mold was made by depositing electrolytically a metal of a suitable nature or texture into the mold said reproduction presenting or exhibiting a smoothed or polished surface or surfaces, comparatively of a higher degree than the surfaces of the original from which the mold was made. The degree of the polish imparted to the deposited metal depending in part on the hardness of the metal deposited, that is as the texture of the metal approaches the crystalline, the brilliancy or luster of the surface of the metal increases, approaching in appearance what is termed a burnished surface.

The method now universally used is as follows: The wax case, which is a thin sheet of copper or electrotype metal having been filled is placed on a table having a rim along its edges and melted wax or other suitable composition having been poured over the surface of the case, it is allowed to cool, set and become hard and then subjected to the knife of a wax shaving machine. By this method all the molds are made to one standard thickness and are primarily given what has been desired to be a smooth surface, but after being subjected to the scraping action of the knife due to its relative position to the bed of the machine and to the fact that it has not been heated, the scraped surface of the wax will be rough and if the knife has been nicked or gapped along its so called "cutting edge" the surface will be streaked, each gap leaving a little ridge along the surface of the wax in the direction in which the knife is carried or the mold travels. It is then generally necessary to again scrape these molds, especially if they are used for the molding of half tones or other fine cuts, by hand.

By my method which in the main is to give the surface of the mold a polished or burnished appearance and at the same time remove any imperfections or uneven places, I employ an open flame or flames or a sheet of flame which come in direct contact with the surface of the mold and preferably situated in proximity to the shaving or planing means of the machine.

Referring to the drawings which illustrate an apparatus for carrying out my method:—Figure 1 is a side elevation; Fig. 2, a detail top plan view of the shaving knife and polishing means; Fig. 3, a rear elevation of the burner. Fig. 4, a detail perspective view of a burner having a series



of holes or jets producing a number of flames, Fig. 5 a longitudinal sectional view of burner, Fig. 6 a cross-section of burner. Fig. 7, is a detail perspective view of a modified form of burner having a slot which produces a single sheet of flame. Fig. 8 a rear view of the modified form of burner and Fig. 9 a longitudinal sectional view of the modified form of burner.

10 In the drawings in which like numerals of reference denote like parts throughout the several views, 1 represents the shaving machine by which I carry out my method, which comprises a frame-work 2 provided with a reciprocally movable bed or table 3 which is designed to carry a wax mold 4, said frame-work having a head or bridge piece 5 extending across the same. The revoluble worm 6 transmits power to the bed or table 3, or in case the bridge piece head or bridge piece is to be reciprocated instead of the bed or table it transmits power to the said head. The head 5 is provided with a shaving knife 7 which is secured thereto by means of screws 8.

The polishing or burnishing burner 9 is preferably placed just at the rear of the shaving knife of any well-known shaving machine and used in connection therewith although of course it could be used separately. The burner 9 comprises a pipe 10 having a series of holes or jet openings 11 in its under surface so placed that the gas flames 12 issuing therefrom will extend over or overlap each other for the purpose of producing a continuous flame from end to end of the burner. A suitable gas supply pipe 13 is secured to one end of the burner 9 while the other end is closed by a cap 14.

40 In Figs. 7, 8 and 9 of the drawings, a modified form of burner is shown which comprises a burner 15 having an elongated slot 16 in its under side, which may be of any desired length, and which produces a continuous unbroken sheet of flame from end to end of the same. By my method I provide what I designate as a brush flame, a long, thin flame which in its length will cover the entire dimension of the sheet of wax, either the length or width without any break or interruption, a flame which shall cover at one time a given dimension of a surface without interruption or break along a prescribed or predetermined line of action. This flame may be composed of a number of smaller flames or jets, arranged side by side with the flame from each overlapping or commingling with the one next to it on either and both sides so that the heating portion of each flame may extend to and meet that of the flame next beside it on either side, thus the heating quality or property of the flame will be the same or practically so from end to end, or throughout its entirety. The same results may also be pro-

duced by a burner having one very thin slot extending longitudinally throughout its length on one side resulting in one elongated thin flame. As seen in Figs. 7, 8 and 9 I provide means for imparting to this flame a continuous uninterrupted motion or movement over a given surface in a line perpendicular to the length or base line of the flame. It will become evident that with a flame of sufficient unbroken length to cover one dimension of the surface of the sheet of wax, say the width and by moving this flame over the surface of the wax in a direction perpendicular to the width of the surface, the surface of the wax may be slightly and evenly melted throughout or over the entire surface of the prospective mold. The result becomes apparent, a perfectly smooth surface, even at all points in temperature and slightly softer than the interior or wax at the back of the sheet. It is possible to produce quite the same results by either causing the flame to be carried or moved over the surface of the wax as already set forth, or by fixing the flame stationary and causing the wax to be moved under the flame. In either of the above instances the flame or flames will be applied over the entire surface of the mold.

It is my intention to attach this polishing or burnishing device to the so-called "wax-shaving machines" which are already in use in the electrotyping business with the main idea of saving labor and expense by combining the operations of shaving followed by the polishing or burnishing in the one operation of this machine as will be hereinafter more fully set forth. It is a fact that in some of these machines the head carrying the cutting or shaving knife, is moved mechanically over the sheet of wax, while in others the sheet of wax is moved mechanically actuated bed under the knife carrying head, which is stationary. As my polishing or burnishing device is to be attached to this head, following and behind the knife it can be applied to either type of machine without changing its fundamental principle of operation.

My method of procedure is as follows:— First a molding composition is prepared by melting suitable wax and gum ingredients in a kettle heated by steam or other means. Thin sheets of metal are placed on a special table and the melted composition is then poured or flowed over the surface of the metal sheets and allowed to cool or set. When the wax has cooled sufficiently to permit the metal sheet to be lifted from the table without injury to the wax, it will be found upon examination, in fact it is very evident, that the surface will be very rough, presenting a decided irregular, cellular formation which seems characteristic to both mineral and insect secreted waxes. To do away with



or to remove this irregularity or rough surface, the mold or the sheet of wax is shaved. The top strata of wax is cut off by what is known in the electrotyping trade as a wax-shaving machine. This gives to the sheet of wax an even surface, its smoothness dependent upon the condition of the cutting edge of the knife in the shaving machine, but it does not polish the surface of the wax and it generally streaks and leaves more or less fine ridges in the surface of the wax, although it removes the pronounced cellular wax formation from the surface of the wax. I attach one of my burners to the head of the wax-shaving machine behind the knife parallel to and on a line above the cutting edge of the knife with the flame directed downward, so that as the sheet of wax passes under the knife it will come in direct surface contact with the gas flame, as it passes along. The burner being set sufficiently close to the surface of the wax to allow the flame to melt the wax as the sheet passes under the flame or as to the flame, of course implying that the head carrying the knife and burner moves, passing over the sheet of wax or that the bed of the machine carrying the sheet of wax moves passing under the knife and burner. Thus I am able to do the shaving and the polishing and burnishing of the surface of the wax at one and the same time, thereby saving time and producing better results. The mold or sheet of wax having been placed on the bed of the machine, power is applied and the bed moves under the knife bringing the surface of the wax in contact with the cutting edge of the knife which shears or scrapes off a thin shaving and the scraped surface continues under the flame from the gas burner which melts

the surface wax and the mold comes out with a perfectly smooth polished surface.

In using the burner with the series of flames each flame should be of the same power and size and the ends should be even and in using the burner with the longitudinal slot the sheet of flame should be of equal size and power from end to end to prevent unevenness in the temperature of the surface of the wax which would produce an unevenness of the impression between the harder and softer portions of the wax.

What I claim is:—

1. The method of preparing molds for electrotypes, consisting in polishing or burnishing the surface of a mold, located in a substantially horizontal plane, by subjecting its surface to an even degree of heat from a continuous line of flame or flames extending across one surface dimension of the mold and applied over the entire surface of the mold in the direction of its other surface dimension, substantially as described.

2. The method of preparing molds for electrotypes, consisting in polishing or burnishing the surface of a mold, located in a substantially horizontal plane, by subjecting it to an even degree of heat from a continuous line of flame or flames extending across one surface dimension of the mold and applied over the surface of the mold by moving the mold in the direction of its other surface dimension, substantially as described.

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

GEORGE E. DUNTON.

Witnesses:

HENRY BECKER,  
NETTIE F. FAIRCHILD.