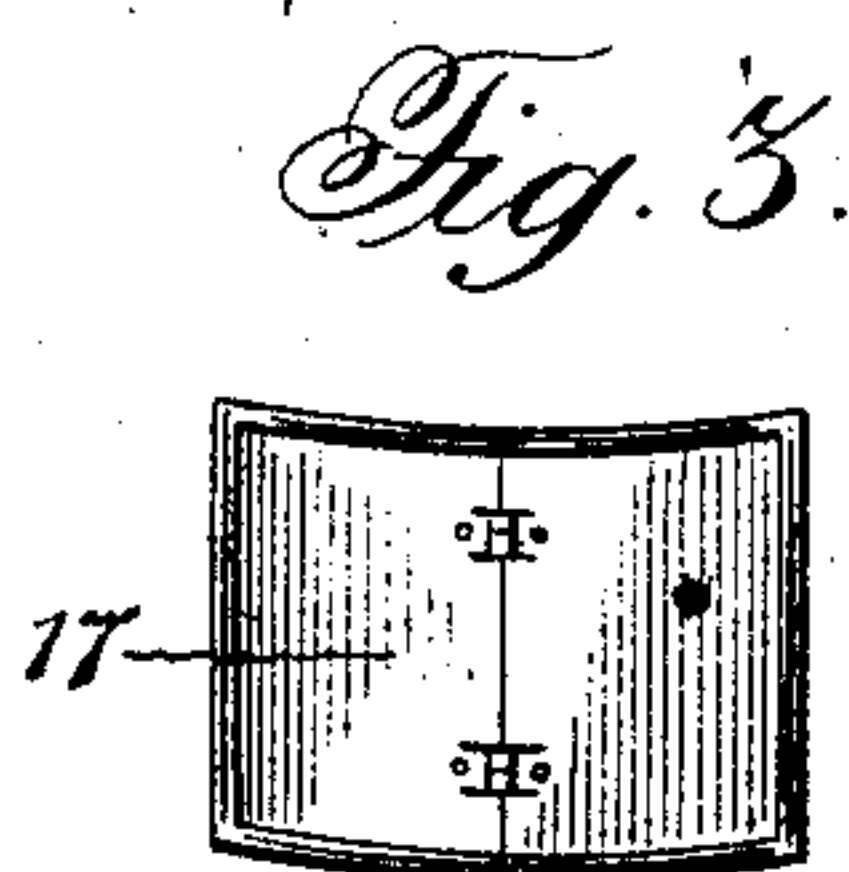
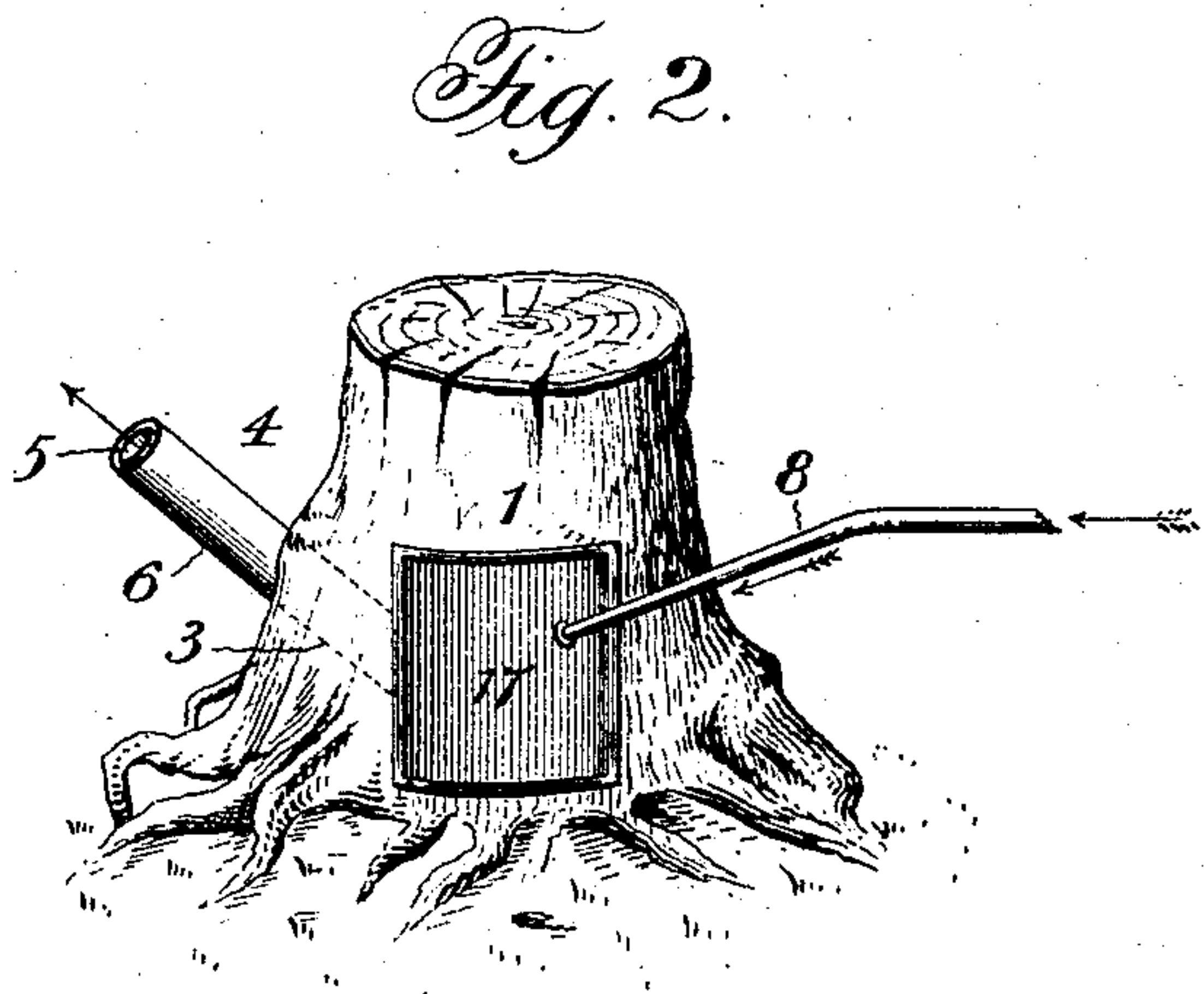
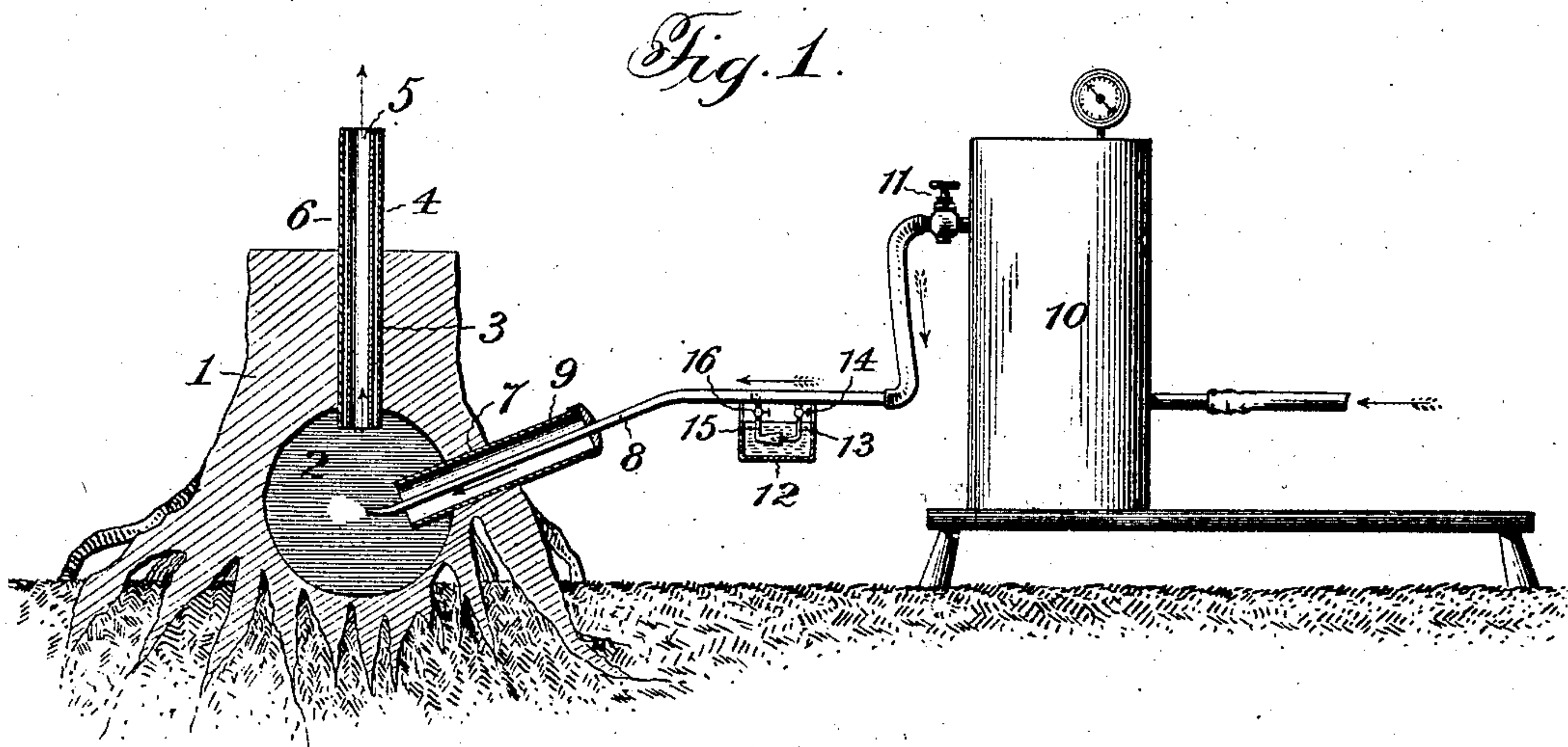


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PATENTED MAR. 21, 1905.

W. KEYWOOD & V. ELMER.
PROCESS OF BURNING THE ROOTS OF STUMPS.
APPLICATION FILED JUNE 22, 1903.



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UNITED STATES PATENT OFFICE.

WILLIAM KEYWOOD AND VIRGIL ELMER, OF TACOMA, WASHINGTON.

PROCESS OF BURNING THE ROOTS OF STUMPS.

SPECIFICATION forming part of Letters Patent No. 785,616, dated March 21, 1905.

Application filed June 22, 1903. Serial No. 162,572.

To all whom it may concern:

Be it known that we, WILLIAM KEYWOOD and VIRGIL ELMER, citizens of the United States, residing at Tacoma, in the county of Pierce and State of Washington, have invented certain new and useful Improvements in Processes of Burning the Roots of Stumps, of which the following is a specification.

This invention relates to a novel process of burning the roots of stumps.

It is usual in destroying stumps, when the same are not forcibly removed from the ground by grubbing apparatus, to burn the stumps; but this is generally done by burning the tops of the stumps from the surface of the ground, and such method is absolutely ineffective for the destruction of the roots or the loosening of that portion of the stump below the surface of the ground.

It is therefore the object of the present invention to provide a novel process by means of which it is possible to overcome the objectionable features attending the usual method of removing stumps and at the same time to effectually destroy the roots of the stumps, whereby the latter may be removed without the employment of the surface fires and in an expeditious and easy manner.

The present invention also contemplates a process wherein the burning is entirely accomplished at the interior of the stumps and independently of atmospheric conditions.

With these general objects in view, and others which will appear as the nature of the process is better understood, the invention consists in the novel process hereinafter fully described, illustrated in the accompanying drawings, and pointed out in the appended claim.

In the drawings, Figure 1 is a sectional elevation illustrating the apparatus by means of which the herein-described process is carried into effect. Fig. 2 is a side elevation of the stump, illustrating the closing-plate applied thereto and also showing a modified arrangement of the vent-pipe. Fig. 3 is a similar view illustrating another form of closing-plate.

Referring to the drawings, the numeral 1 designates a stump which in the practice of

the herein-described process is provided at its interior with a cavity 2, said cavity being formed in any suitable manner, but being arranged, preferably, at the lower portion of the stump and in proximity to the roots thereof. The stump 1 is also provided with a vent-aperture 3, in which is introduced a vent-pipe 4, which comprises an inner section 5 and an outer section 6, said sections being spaced from each other, as clearly shown. The purpose of forming the vent-pipe of sections is to provide for an air circulation between the pipes, and thereby prevent the latter burning out, and in this connection it may be stated that said pipes may be formed of any suitable material, either metal or plastic, to adapt the same for the purpose for which they are intended. The stump 1 is also provided with an inlet 7, which is formed at a point adjacent to the roots of the stump, and arranged in said inlet is the discharge end of a compressed-air pipe 8, which is provided with a jacket 9. The compressed-air pipe 8 connects with a reservoir 10, charged from a suitable compressor with a supply of compressed air, and said pipe 8 is provided with a valve 11, whereby the flow of air therethrough may be controlled.

At times in the operation of the herein-described process the roots and stumps are wet and soggy, and thereby are not readily burned, and in order to promote combustion and at the same time insure burning of the wet and soggy roots a supply-tank of gasoline (designated by 12) is arranged upon the pipe 8, said tank including therein an inlet-nozzle 13, controlled by a valve 14, and a discharge-nozzle 15, controlled by a valve 16, the inner end of the discharge-nozzle 15 being enlarged and receiving the reduced end of the inlet-nozzle 13. The nozzles 13 and 15 thereby form an ejector, the compressed air flowing through the nozzle 13 into the delivery-nozzle 15, creating a suction in the gasoline, which latter is forced through the delivery-nozzle 15 into the compressed-air pipe 8 and is conducted thereby to the cavity 2 in the stump.

In order to exclude atmospheric conditions from the interior of the stump, the cavity 2 is provided with a removable cover 17, which

cover is designed to completely inclose the cavity 2, and, if desired, said cover may be formed in sections, as shown in Fig. 3, in order to provide for varying sizes of cavities. Moreover, the compressed-air pipe may be introduced to the cavity 2 through the cover; but it is preferable to introduce the same through the side of the stump.

Under ordinary conditions the practice of the herein-described process is as follows: After the formation of the cavity 2, together with the apertures 3 and 7, the compressed-air pipe is forced through the aperture 7, so as to project into the interior of the cavity 2. A fire is then started in said cavity, and the removable cover 17 is applied to the cavity to completely inclose the latter. Compressed air is then admitted to the cavity by opening the valve 11 of the pipe 8, and this compressed air promotes the combustion the products of which latter pass off through the vent-pipe 4. This vent-pipe also serves the purpose of preventing the burning out of the stump, and the flames are thus retained within the cavity 2 and attack the roots of the stump to such an extent as to completely consume the same, and thus release the stump or place the latter in such condition as to be readily removed when pressure is applied thereto. Under ordinary conditions the valves 14 and 16 are closed, so that no gasolene is introduced to the compressed-air pipe 8; but in the event that the stump and the roots are

wet and soggy the valves 14 and 16 are opened to the desired extent, and thus a proportionate amount of gasolene is fed to the compressed-air pipe 8 and by the latter fed to the interior of the cavity 2, so that the combustible liquid will provide fuel for drying out the dampness, and thus render the roots and the interior of the stump subject to the action of the flames. In this connection it will also be observed that any other combustible liquid might be employed as a substitute for the gasolene, and the scope of the invention is in no wise restricted to the use of this fluid.

Having thus described the invention, what is claimed as new, and desired to be secured by Letters Patent, is—

The process of burning the roots of stumps, which consists in forming a cavity in the body of the stump to be treated, providing a vent for said cavity, igniting the stump in said cavity, closing the cavity, and introducing a blast of air to said cavity, said blast prior to its delivery to said cavity being charged with an ignitable fluid, whereby the combined mixture is designed to act upon the stump for the dual purpose of drying and burning the same.

In testimony whereof we affix our signatures in the presence of two witnesses.

WILLIAM KEYWOOD.
VIRGIL ELMER.

Witnesses:

A. A. KNIGHT,
R. A. STEBBINS.