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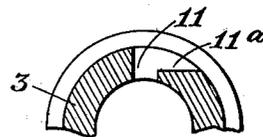
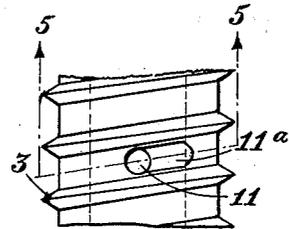
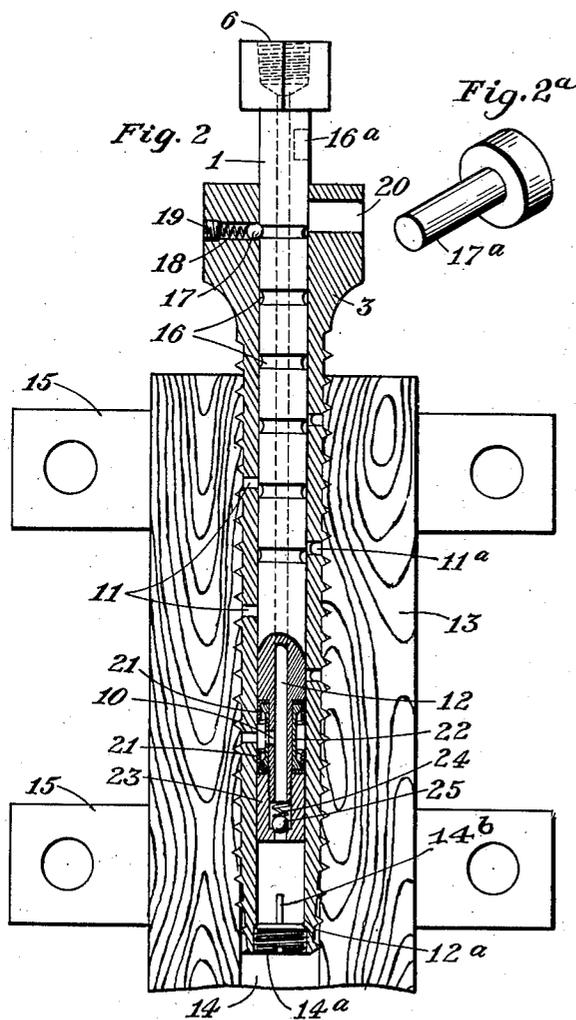
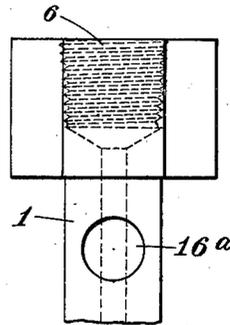
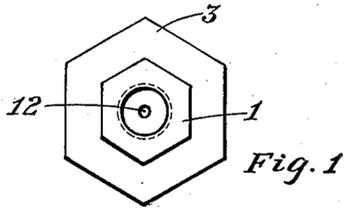
D. AIKEN

1,982,975

PROCESS AND TOOL FOR ERADICATING TERMITES

Filed Nov. 16, 1933

4 Sheets-Sheet 1



WITNESSES  
*Anna Byrne*  
*Agnes O. Slogan*

INVENTOR.  
*Daniell Aiken*  
BY *Barry & Lyr*  
ATTORNEYS.

Dec. 4, 1934.

D. AIKEN

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PROCESS AND TOOL FOR ERADICATING TERMITES

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4 Sheets-Sheet 2

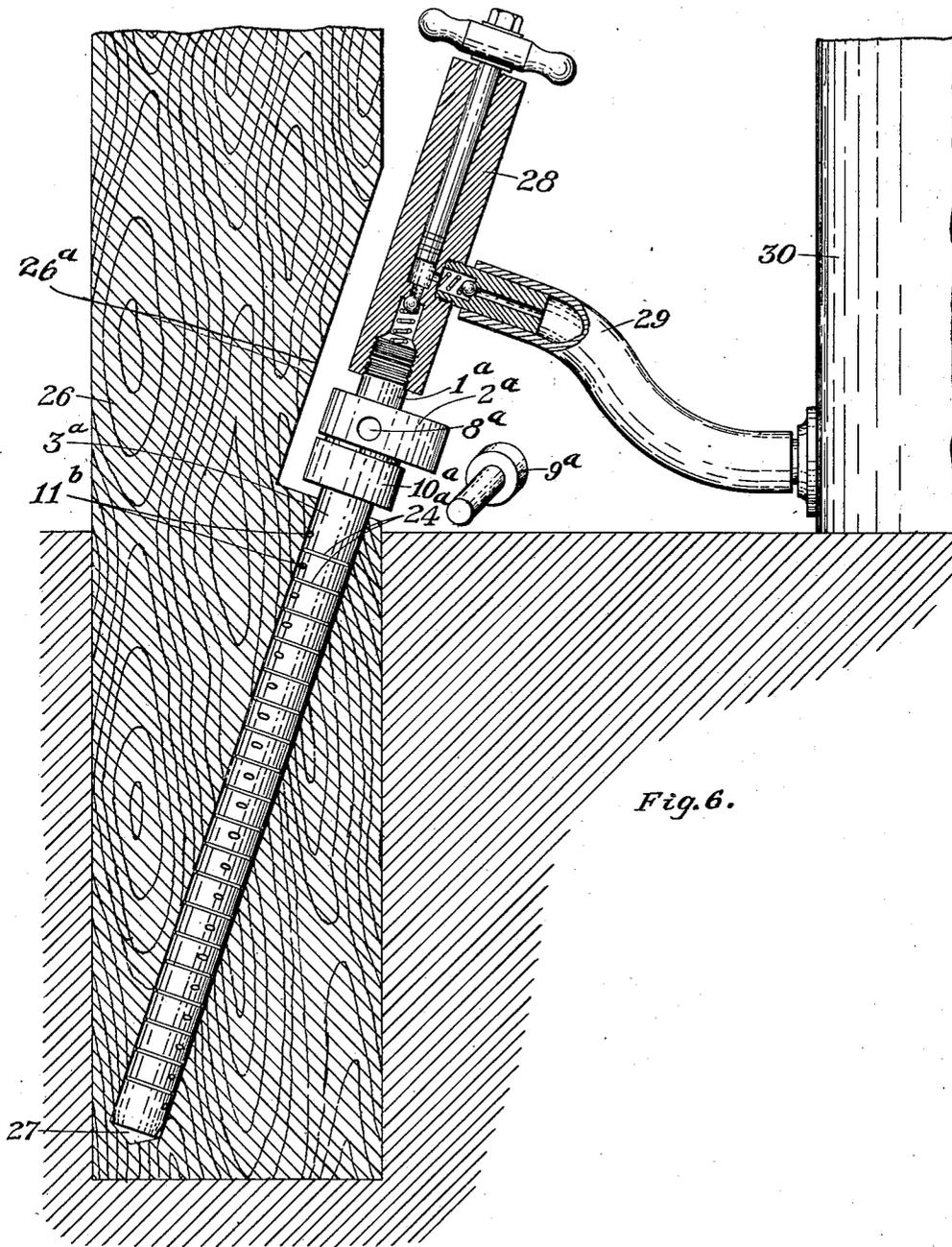


Fig. 6.

WITNESSES

J. A. Mc Grann.  
Anna Byrne

INVENTOR,

Daniell Aiken

BY Barry & Cyr  
ATTORNEYS.

Dec. 4, 1934.

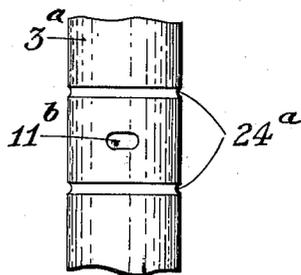
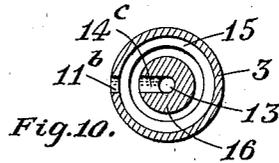
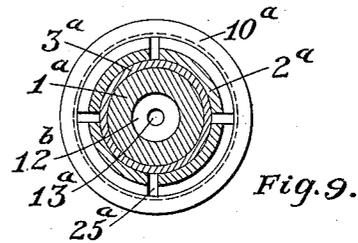
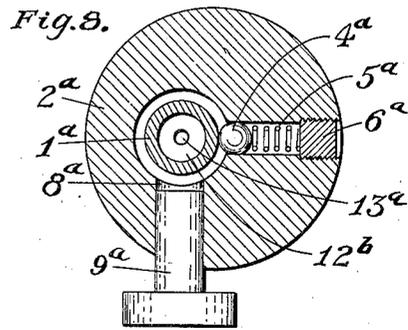
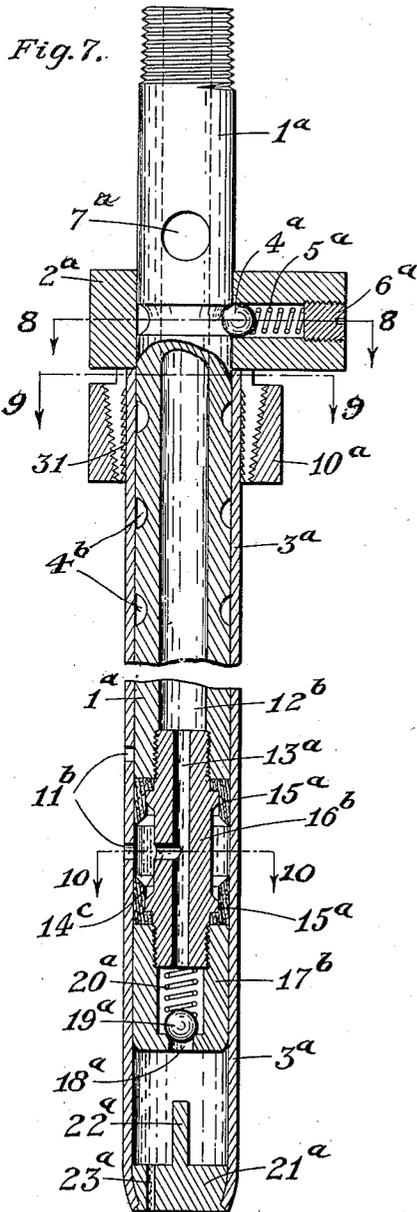
D. AIKEN

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PROCESS AND TOOL FOR ERADICATING TERMITES

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4 Sheets-Sheet 3



WITNESSES

J. A. M. Evans.  
Anna Byrne

INVENTOR.

Daniell Aiken

BY Barry & Lyle  
ATTORNEYS.

Dec. 4, 1934.

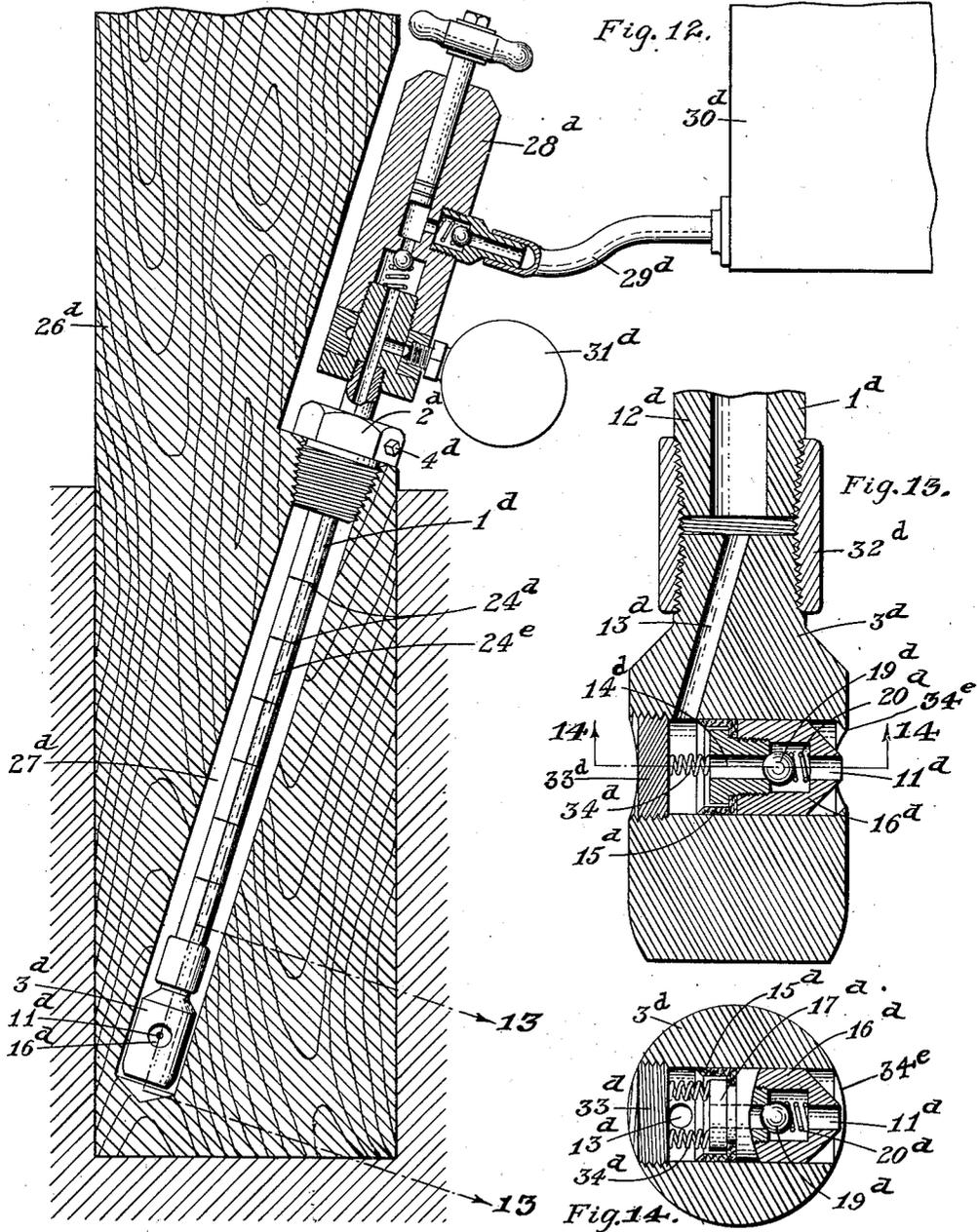
D. AIKEN

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PROCESS AND TOOL FOR ERADICATING TERMITES

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4 Sheets-Sheet 4



WITNESSES

J. A. Mc Grann.  
Anna Byrne

INVENTOR.

Daniell Aiken

BY

Barry & Gyr

ATTORNEYS

# UNITED STATES PATENT OFFICE

1,982,975

## PROCESS AND TOOL FOR ERADICATING TERMITES

Daniell Aiken, San Antonio, Tex., assignor of one-half to Agnes O. Slogan, San Antonio, Tex.

Application November 16, 1933, Serial No. 698,375

18 Claims. (Cl. 99—12)

This invention relates to a tool and process for use in applying insecticides to wood articles or the like, and the present application discloses other novel forms of tools of the general type illustrated and described in my prior application Serial No. 667,309, filed April 21, 1933.

An object of the invention is to furnish a novel tool and process for impregnating posts, timbers, etc. with tar, creosote, paradichloride, orthodichlorobenzine or any chemical termite eradicator.

Telephone and telegraph poles, house columns or any timber set in the ground can be treated by my invention without removing the dirt from around them.

In many cases, timbers not treated by a pressure process have become infested, and the only method known or used prior to my original invention, involved painting or spraying which only achieves temporary results.

A further object of the invention is to provide special tools by means of which an insecticide can be forced under pressure progressively into wood at various spaced points without liability of the insecticide flowing to points where it is unneeded. In other words, the tools which I have invented deliver the insecticide directly into the wood at the points where insects are to be destroyed.

With the above and other objects in view, the invention consists in general of an improved method and means for preserving timber and the like.

In the accompanying drawings,

Fig. 1 is a top plan view of one form of the improved tool involving an outer threaded tube and an inner axially movable control tube.

Fig. 2 is a vertical sectional view partly in elevation of this form of the tool shown introduced into a wood article to be protected.

Fig. 2a is a perspective view of a lock pin for use with the tool.

Fig. 3 is an enlarged elevation of the upper end portion of the inner tube of this form of the invention.

Fig. 4 is a similar view of an intermediate portion of the outer tube.

Fig. 5 is a fragmentary transverse sectional view of the outer tube, taken on the line 5—5 of Fig. 4.

Fig. 6 is an elevation, partly in vertical section of the same type of tool shown in Figs. 1 to 5 inclusive, with the main exception that the outer tube has an unthreaded or smooth periphery. In this view the tool is shown in-

serted into a post or the like at an acute angle relatively to the length of the post.

Fig. 7 is a vertical sectional view partly in elevation of the tool shown in Fig. 6.

Figs. 8, 9 and 10 are horizontal sectional views, taken respectively on the lines 8—8, 9—9 and 10—10 of Fig. 7.

Fig. 11 is an elevation of an intermediate portion of the outer tube of this form of the invention.

Fig. 12 is an elevation partly in vertical section of another form of the tool involving only a single tube, and shown introduced into a wood post to be protected.

Fig. 13 is a vertical sectional view of a detail taken on the line 13—13 of Fig. 12.

Fig. 14 is a transverse sectional view of a detail taken on the line 14—14 of Fig. 13.

Referring first to the embodiment of the invention illustrated in Figs. 1 to 5 inclusive, 1 designates an inner tube which slides lengthwise in an outer tube 3 having external threads to be screwed into a bore hole 14 previously made in a wood article 13 to be protected. For the purpose of preventing splitting of the wood during the insertion of the tool, clamps 15 of any suitable type may be used. The outer tube is provided at various points along its length with ports 11 to allow the insecticide to be discharged into the wood, and each of these ports has a slot on the trailing side to prevent the port from being clogged when the outer tube is screwed into the wood.

The upper end of the inner tube has a threaded socket 6 for the purpose of attaching an insecticidal pump, and the lower end of the inner tube has a ball valve 25 normally seated by means of a spring 24. However, when the inner tube is inserted all the way into the outer tube, a stationary pin 14b at the lower end of the outer tube unseats the ball valve, and then the insecticide can pass through the inner tube and a port 12a in the outer tube, into the portion of the bore 14 below the tool. The pin 14b is carried by a threaded plug 14a which is screwed into the lower end of the outer tube, so that the pin may be adjusted for opening the ball valve in an adjustable manner.

For the purpose of preventing the inner tube from backing out of the outer tube while the insecticide is being forced through the port 12a, a lock pin 17a is employed. This pin can be introduced through a hole 20 in the outer tube and into a hole 16a in the inner tube when the latter is in its fully inserted position.

The inner tube preferably consists of two parts, an upper part provided with circumferential spaced grooves 16 and a lower part 23 that is screwed on to the reduced lower end of the upper part, and between these parts, means are provided for discharging the insecticide from the bore 12 of the inner tube through any one of the ports 11 of the outer tube. Such means preferably consists of a spool 22 surrounding the reduced lower end portion of the inner tube, and cooperating with the part 23 and the main portion of the inner tube for holding cup washers 21 in position. This construction prevents insecticide which discharges from the bore 12 through a port 10 from travelling along the bore of the outer tube. In other words, such means compels the insecticide to issue from a particular port 11 without discharging through the other ports 11, and as the screw threads on the outer tube snugly engage the wood, the discharged liquid is forced to concentrate on a particular spot in the wood.

In order that the operator may determine that the port 10 is opposite a particular port 11, a ball detent 17 cooperates with the grooves 16. This detent is arranged in the head of the outer tube and is forced toward the inner tube by a spring 18 which may be adjusted by a threaded plug 19 which is screwed into the head of the outer tube.

In the modification of the invention illustrated in Figs. 6 to 11 inclusive, the screw principle is entirely eliminated, but the plunger form of inner tube is retained. In this form of the invention, 16b is a hollow tube which is threaded at its upper end and screwed into the body 1a of the plunger or inner tube for holding the upper gasket 15a in place. This eliminates the necessity of employing the spool 22 shown in Fig. 2.

The main purpose of this modification is to eliminate the necessity of having to screw the tool into a hole 27 in the timber 26. In large work, where the holes will be six to eight feet long, friction increases rapidly as the tool is screwed into the timber. To avoid this objection, I propose to use for the outer tube 3a a pipe made of lead or any other suitable substance and to put grooves 24a at spaced points circumferentially around the same. In practice, these grooves are filled with a suitable sealing compound, and the pipe is slipped into the previously prepared hole in the timber, so as to obtain as close a fit as possible. This causes the tool to seal itself, and the insecticide will penetrate the timber by passing through the ports 11b in the outer tube. These ports are positioned between adjacent grooves and they permit the insecticide to be injected into the hole at various points while the sealing compound in the grooves prevents the insecticide from travelling lengthwise of the outer surface of the tube 3a.

Sealing or cementing compounds may be eliminated by using an outer tube of lead or the like, for after the outer tube is inserted, it may be expanded to cause its outer surface to snugly engage the surface of the bore hole. Obviously, the advantage of using lead is that it spreads and automatically seals between the pipe and the timber. A drive fit with seal or iron pipe can also be used. It will be noted, however, I have a plug 21a with a projection 22a which is placed in the bottom of the lead pipe, and the lower end of the pipe is closed in around the plug

to form a tapered end, so that the outer tube will slip in easily. The plug has an aperture 23a corresponding to the aperture 12a in Fig. 2 to permit the insecticide to escape into the bottom of the hole 27, when the plunger is forced downwardly a sufficient distance to allow the pin to halt the downward movement of the valve 19a so that the insecticide may flow through the bore 12b of the inner tube, the bore 13a of the tube 16b, and the port 18a to the bore 23a.

In this modification, the tube 16b joins the upper portion 1a of the plunger and the lower portion 17b which forms a cage for the valve. A spring 20a in the cage functions to yieldingly hold the valve in closed position.

Cup washers 15a are secured in position by means of shoulders on the tube 16b, and this tube has a port 14c to place the bore of the plunger in communication with any one of the ports 11b of the outer tube. A head 2a has depending toothed segments 31 which are caused to grip the outer surface of the outer tube by means of a lock nut 10a which acts to contract the toothed segments.

The head carries a ball 4a which can interlock with any one of the circumferential grooves 4b of the inner tube, and the ball is pressed against the inner tube by means of a spring 5a which is adjusted by means of a threaded plug 6a that is screwed into the head. A pin 9a operates in a guideway 8a of the head and can engage a hole 7a in the plunger for the purpose of holding the plunger in its lowermost position while the insecticide is being dispensed through ports 18a and 23a.

A suitable pump 28 for introducing the insecticide into the inner tube may draw such fluid from the tank 30 through a pipe 29, and at this point it will be noted that this type of pump may also be used with the tool shown in Figs. 1 to 5 inclusive.

After the timber is treated with a tool of the type shown in Figs. 6 to 11 inclusive, the plunger 1a and head 2a can be removed, and the pipe 3a and plug 21a can be left remaining in the hole. The pipe may be left full of insecticide, and the upper end of the pipe may then be corked or plugged. Afterwards, the bench 26a in the timber may be filled with a suitable cement or high temperature asphalt filling. Subsequently, the filling and cork may be removed, and the head and plunger may be again attached, so that the timber can be treated at intervals in years to come.

It will be noted that the head 2a is eccentrically arranged with reference to the tubes, so as to eliminate as much cutting of the post as possible, and to provide a sufficient housing for the parts 4a, 5a and 6a.

In the form of the invention illustrated in Figs. 12 to 14 inclusive, a single tube 1d is used in place of the two tubes, and this single tube slides in a hollow screw 2d which is screwed into the upper end of the bore 27d that is made in the post 26d. Horizontal lines 24d and a vertical line 24e are placed on the outer surface of the tube to serve as an indicator to guide the operator in placing the insecticide at desired points. A screw 4d may be placed in the member 2d for the purpose of locking the tube in any desired position.

In this embodiment, the lower end of the tube is joined by a collar 32d to a foot member 3d having a passageway 13d leading to a port 14d in a piston 16d. This piston slides in a trans-

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verse bore in the foot member, and it has a frusto-conical outer end portion provided with a port 11*d*. A ball valve 19*d* is arranged within the piston, and a spring 20*d* yieldingly holds the ball in position to close the port 14*d*. Other springs 34*d* connect the piston to a threaded plug 33*d*, and these springs function to pull the piston inwardly to its innermost position. A lip 34*e* at the outer end of the bore limits the outward movement of the piston. A threaded member or head 17*d*, in which the port 14*d* is arranged, acts to clamp a cup washer 15*d* against the main portion of the piston.

In this form of the invention, a pump 28*d* receives the insecticide through a pipe 29*d* from a tank 30*d* and forces the same into the tube 1*d*. A pressure gauge 31*d* may be placed on the lower end of the pump to indicate pressure conditions within the tool. In this embodiment, I employ the control principle with a single tube. When pressure is applied, the liquid will be forced down through the bore 12*d* of the tube and through the passageway 13*d*. This pressure will be exerted behind the head 17*d* of the piston, so that the latter may be pushed outwardly until its point or tapered end penetrates the wood, and at this time the ball valve 19*d* will open to allow the liquid to flow through the port 11*d*. As soon as the insecticide is applied to a particular spot of the bore 27*d*, the pressure is released, and this allows the springs 34*d* to pull the piston inwardly. Then the tube 1*d* is shifted so as to bring the piston into position to treat another spot.

Where an unthreaded outer tube is employed (Figs. 6 to 11) and the outer tube is driven into the hole, grooves similar to those at 11*a* in Figs. 4 and 5 can be employed in connection with the ports in the outer tube, but of course, such grooves would extend toward the top of the outer tube instead of in a circumferential direction.

From the foregoing it is believed that the construction, operation and advantages of the new tools will be apparent to those skilled in the art, and it is manifest that changes may be made in the details disclosed, without departing from the spirit of the invention, as expressed in the claims.

What I claim and desire to secure by Letters Patent is:

1. A tool of the character described, comprising a tube adapted to be inserted into a bore in a wood article or the like to be protected, an outer member associated with the tube, means operatively connected to the outer member for latching said tube in various positions in said bore, and means for controllably feeding an insecticidal fluid under pressure into the bore of the tube.

2. A tool of the character described, comprising an outer tube having a closed end provided with an aperture, a hollow plunger movably mounted in the outer tube, a valve for controlling communication between the interior of the plunger and said passageway, and means functioning due to movement of the plunger toward the closed end of the tube for opening said valve.

3. A tool of the character described, comprising an outer tube having spaced ports in its wall, a hollow plunger slidably mounted in the tube and having an aperture to permit an insecticide to flow from the interior of the plunger to any one of the ports of the outer tube, and

packing means on the plunger at opposite sides of said aperture to restrict the flow of the insecticide lengthwise of the outer tube.

4. A tool of the character described, comprising an outer tube having spaced ports in its wall, a hollow plunger slidably mounted in the tube and having an aperture to permit an insecticide to flow from the interior of the plunger to any one of the ports of the outer tube, and packing means on the plunger at opposite sides of said aperture to restrict the flow of the insecticide lengthwise of the outer tube, said outer tube being provided externally with means to restrict the flow of the fluid lengthwise thereof.

5. A tool of the character described, comprising an outer tube having spaced ports in its wall, a hollow plunger slidably mounted in the tube and having an aperture to permit an insecticide to flow from the interior of the plunger to any one of the ports of the outer tube, and packing means on the plunger at opposite sides of said aperture to restrict the flow of the insecticide lengthwise of the outer tube, the outer tube having external screw threads.

6. A tool of the character described, comprising an outer tube having spaced ports in its wall, a hollow plunger slidably mounted in the tube and having an aperture to permit an insecticide to flow from the interior of the plunger to any one of the ports of the outer tube, and packing means on the plunger at opposite sides of said aperture to restrict the flow of the insecticide lengthwise of the outer tube, the outer tube being provided with external recesses adapted to contain a sealing medium.

7. A tool of the character described, comprising an outer tube having spaced ports in its wall, a hollow plunger slidably mounted in the tube and having an aperture to permit an insecticide to flow from the interior of the plunger to any one of the ports of the outer tube, packing means on the plunger at opposite sides of said aperture to restrict the flow of the insecticide lengthwise of the outer tube, and latching means for securing the plunger at various positions in the outer tube.

8. An insecticide applying tool comprising an outer tube having a closed end provided with a passageway and a pin, an inner tube slidably mounted in the outer tube and having a spring pressed valve adapted to be opened by said pin when the inner tube is inserted for a certain distance into the outer tube for placing the interior of the inner tube in communication with said passageway, and locking means for holding the tubes in fixed relation while said pin is holding the valve unseated.

9. An insecticide applying tool comprising an outer tube, a head having an aperture there-through, resilient toothed segments depending from the head and surrounding the upper portion of the tube, a lock nut for clamping the segments to the tube, and an inner tube slidable through said aperture and in the outer tube.

10. An insecticide applying tool comprising an outer tube, a head having an aperture there-through, resilient toothed segments depending from the head and surrounding the upper portion of the tube, a lock nut for clamping the segments to the tube, and an inner tube slidable through said aperture and in the outer tube, said aperture being eccentrically arranged,

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and means carried by the head for latching the inner tube at various points of adjustment.

11. An insecticide applying tool comprising a slidable tube provided with a hollow piston slidably mounted at the foot thereof and movable in a plane perpendicularly to the axis of the tube, said piston having a pressure operated valve, and the outer end of the piston being adapted to bite into the wood of a bore in a wood article or the like when the piston is projected.

12. An insecticide applying tool comprising a slidable tube provided with a hollow piston slidably mounted at the foot thereof and movable in a plane perpendicularly to the axis of the tube, said piston having a pressure operated valve, the outer end of the piston being adapted to bite into the wood of a bore in a wood article or the like when the piston is projected, and means functioning to yieldingly hold the piston normally in a fixed position.

13. An insecticide applying tool comprising a slidable tube provided with a hollow piston slidably mounted at the foot thereof and movable in a plane perpendicularly to the axis of the tube, said piston having a pressure operated valve, and the outer end of the piston being adapted to bite into the wood of a bore in a wood article or the like when the piston is projected, said piston being formed of a plurality of detachably connected sections functioning to hold a packing gasket in position.

14. An insecticide applying tool comprising a hollow member adapted to be connected to one end of a bore hole in an article to be protected, a tube slidable in said member, a pump connected to the outer end of the tube, a foot member secured to the inner end of the tube, said foot member having a bore arranged perpendicularly to the axis of the tube, a passageway placing the interior of the tube in communication with the bore, a hollow piston in the bore adapted to be projected outwardly when pressure is exerted within the tube and passageway, the outer end of the piston being provided with a circular edge adapted to bite into the wood of the bore when the piston is projected, a valve in the piston for normally closing communication therethrough, and a spring in the piston for normally seating said valve.

15. A method of eradicating boring insects in a wood article or the like, comprising forming a bore in said article, introducing a confined body of insecticidal fluid into the bore of the article, discharging portions of said fluid from said confined body at certain times into the wood successively from predetermined points along the sides of said confined body of fluid, moving said confined body lengthwise into the bore of the wood, and discharging another portion of said fluid from an end of said confined body at another time, while preventing the fluid from moving lengthwise in the bore surrounding said confined body of fluid.

16. A method of eradicating boring insects in a wood article or the like, comprising forming a bore in said article, introducing a confined body of insecticidal fluid into the bore of the article, discharging portions of said fluid from said confined body into the wood successively from predetermined points along the sides of said confined body of fluid, moving said confined body lengthwise into the bore of the wood, and discharging another portion of said fluid from an end of said confined body.

17. An insecticide applying tool comprising an outer tube provided with a head, said tube having spaced ports in its wall, an inner tube slidably mounted in the outer tube and provided with spaced circumferential grooves, said inner tube having a port to permit an insecticide to flow from the interior of said tube to any one of the ports in the outer tube, and means carried by the head and cooperating with said grooves for holding the port of the inner tube in register with any one of the ports of the outer tube.

18. An insecticide applying tool comprising an outer tube adapted to engage the bore of a wood article or the like, an inner tube slidably mounted in the outer tube and adapted to contain a body of fluid, said outer tube having a tapered extremity, and an apertured plug engaging the inner walls of said tapered extremity for placing said inner tube in communication with the bore of the wood article.

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