E. KOEPFER.

APPARATUS FOR IMPREGNATING WOOD.

APPLICATION FILED JUNE 10, 1907.

910,546. Patented Jan. 26, 1909.

Fig. 1.

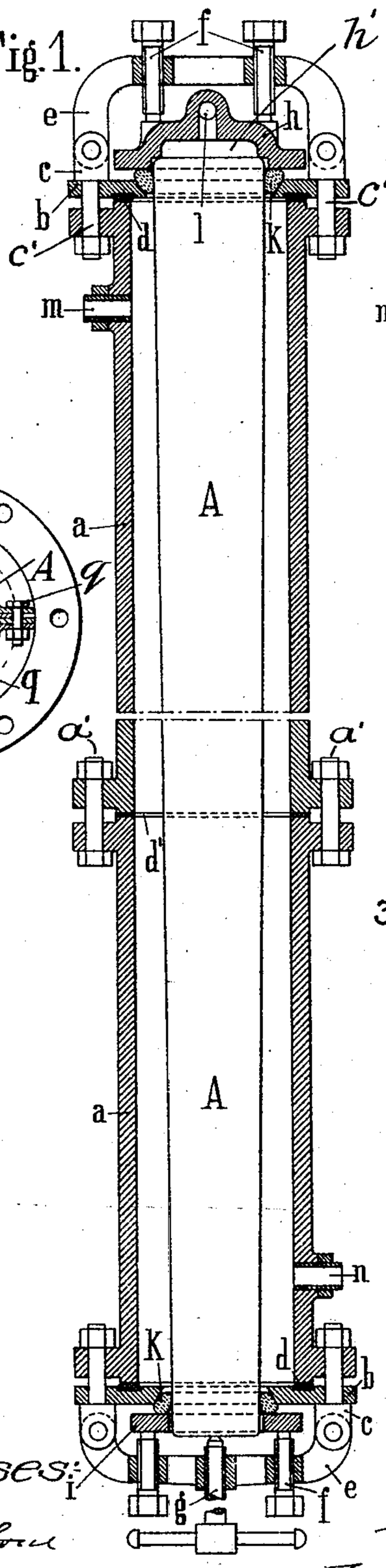


Fig. 2.

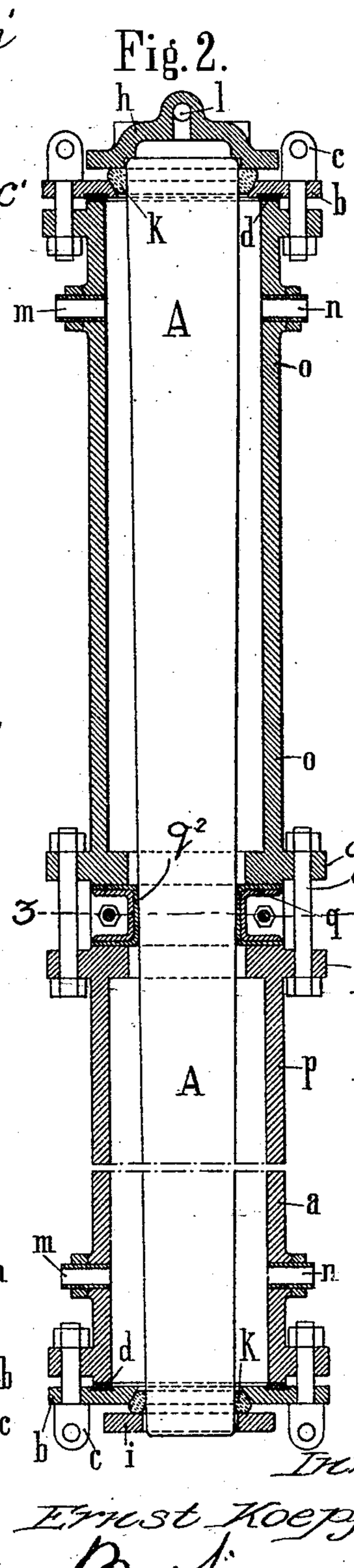
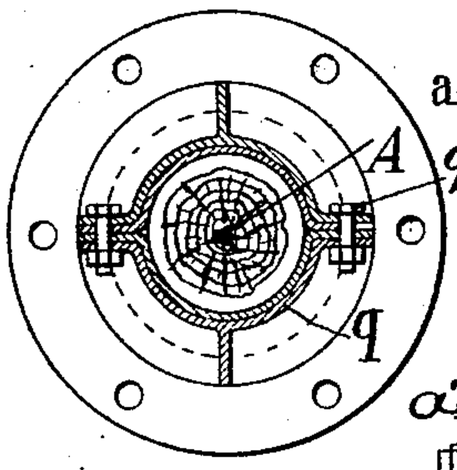


Fig. 3.



Witnesses:
C. M. Crawford
Irving Morgenthal.

Inventor:
Ernst Koepfer
By B. Singer
Attorney

UNITED STATES PATENT OFFICE.

ERNST KOEPFER, OF VIENNA, AUSTRIA-HUNGARY.

APPARATUS FOR IMPREGNATING WOOD.

No. 910,546. Specification of Letters Patent. Patented Jan. 26, 1909.

Application filed June 10, 1907. Serial No. 378,233.

To all whom it may concern:

Be it known that I, ERNST KOEPFER, a subject of the German Emperor, and residing at 58 Gymnasiumstrasse, Vienna, Austria-Hungary, have invented a certain new and useful Apparatus for Impregnating Wood, of which the following is a specification.

This invention relates to improvements in apparatus for impregnating wood or other fibrous material with preservatives for the purpose of preventing or delaying decay.

The object of the invention is to provide improved means for retaining the wood or other material in a casing in a manner to facilitate the introduction of the preserving fluid into the cellular tissues of the wood.

The invention will be more fully described in connection with the accompanying drawing and will be more particularly pointed out in and by the appended claims.

In the drawing:—Figure 1 is a vertical sectional view illustrating one embodiment of my invention. Fig. 2 is a similar view illustrating a modified form of my invention. Fig. 3 is a horizontal section taken on line 3—3 of Fig. 2.

Like characters of reference designate similar parts throughout the different figures of the drawing.

As shown in Fig. 1 the invention includes a casing *a* providing a chamber for the material to be impregnated and preferably open at both ends. Closure rings *b* are provided, one for each end of the casing, and said rings are apertured to surround the wood or other material disposed in the casing *a*. Gaskets are interposed between said rings at the ends of said casing and means are provided for clamping said rings on the gaskets and as shown, and at the upper end of said casing, said means comprises bolts *c'* extending through said rings *b* and flanges formed on the casing *a*, each bolt having a nut and a yoke member *c*. A yoke *e* is secured to said yoke member *c* and is provided with tightening bolts *f* the purpose of which will hereinafter appear. A cover *h* incloses the wood A projecting from the upper end of the casing *a* and said cover is recessed to form with the end of the material an inlet chamber *h'* which extends abreast of the cross-sectional area of the wood A. Said cover *h* is provided with an inlet passage *l* for the impregnating fluid which passage delivers to the chamber *h'*. A packing ring *k* surrounds the material and is interposed between the cover *h* and the upper ring so that when the bolts *f* are turned downwardly upon the cover *h* the latter will compress the packing *k* against the adjacent closure ring and the material for the purpose of closing the chamber *h'* and the upper end of the casing *a*.

At the lower end of the casing *a* the closure ring is held in position upon the gaskets by means similar to the parts *c'* and *c* of the upper end of the casing *a* and there is provided a collar *i* which is apertured to surround the material and between which and the adjacent closure ring *b* is interposed a packing *k*. The collar *i* is arranged to expose the material A to the outer air and when the bolts *f* are turned against the collar *i* the packing *k* is interposed between said collar *i* and the adjacent ring and forced into engagement with the material A to close the lower end of the casing *a*. An adjustable support *g* is provided in the lower yoke *e* to engage the material A and support the same in the casing *a*. The casing *a* may be formed in section while the material A is of relatively extensive length and as shown the sections may be united by bolts *a'* and a passage *d'* may be interposed between said sections. As shown in Fig. 1 the casing *a* provides a single compartment surrounding the material A and said compartment is provided with an inlet and an outlet *m*—*n* respectively.

The operation is as follows:—When the material is inserted in the casing *a* as shown in Fig. 1, the passage *l* and the pipe *m* are connected with an air compressor. The air under pressure entering the cover *h* penetrates the wood A and forces the sap longitudinally thereof so that it will flow out at the bottom or exposed face of the wood A. After the sap has been expelled the passage *l* and the pipe *m* are connected with a receptacle containing the impregnating liquid, which receptacle is likewise connected with an air compressor, and the liquid is forced out of the receptacle into the casing *a* and cover *h*. The liquid passes into the cellular tissues of the wood from which the sap has been expelled and when the liquid begins to flow from the lower end of the material A the liquid is prevented from entering the pipe *m* and passage *l* and the pipe *n* is opened to permit the liquid to flow out of the casing *a*. The operation is then completed and the material A is withdrawn from the casing. As shown in Fig. 2 the casing is formed in sec-

tions *o* and *p* and the upper and lower sections *o* and *p* may be provided with devices in all respects similar to the devices shown in Fig. 1 for securing the material A in place. In Fig. 2 each section *o*—*p* is provided with an inlet and an outlet *m*—*n* and the adjacent ends of said sections are flanged at *o'*—*p'* and are secured together at o^2. Interposed between the flanges *o'*—*p'* is a partition which may be in the form of a two-part flanged ring *q*. Said ring *q* may be clamped in place by bolt *q'* and a packing q^2 may be interposed between the ring *q* and the material A and may as shown extend outwardly between the ring *q* and the flanges *o'* and *p'* as clearly shown in Fig. 2. By means of this construction it will be seen that the material A may extend through two separate compartments which are closed to each other.

The operation of the apparatus shown in Fig. 2 is as follows:—The passage *l* of the cover *h* is first connected with the receptacles containing the impregnating liquid under pressure and the inlet *m* of the section *p* is connected with an air compressor. The liquid will penetrate as far as the ring *q* and will pass out of the wood peripherally and will be discharged through pipe *n* in the section *o* after the upper section of the wood is impregnated the devices holding the same are released and the wood is withdrawn. It will thus be seen that in this form of the apparatus it is possible to impregnate only one part of the wood A allowing the remaining part to retain its natural state or condition. Apparatus shown in Fig. 2 may also be used for compeletely impregnating a pole throughout its length in the same manner as the apparatus in Fig. 1, it being merely necessary to disconnect the sections *o* and *p* and insert an ordinary packing such as *p'*, shown in Fig. 1 so that there will be a single closed compartment in the sections *o*—*p*. It will thus be seen that the apparatus shown in Fig. 2 may be used in cases where it is desired to completely impregnate a pole throughout its length with one material and then subsequently impregnate one portion of the pole with another material.

I claim:—

1. An apparatus for impregnating wood or other fibrous material comprising in combination, a casing providing a chamber for the material to be impregnated and open at both ends, closure rings for the ends of said casing provided with apertures reduced with respect to said casing chamber and surrounding the material projecting therefrom, gaskets interposed between said rings and the ends of said casing, means for clamping said rings upon said gaskets, a collar for one end of said casing provided with an aperture surrounding the projecting material, packing interposed between said collar and closure rings, means forcing said collar against said packing to engage the same with said closure ring and the material to close said casing chamber, a cover inclosing the material projecting from the other end of said casing and provided with a recess forming with said end of the material an inlet chamber, said cover being provided with an inlet passage delivering to said chamber, packing surrounding the material, means forcing said cover against said packing to compress the same against the adjacent closure ring and the material and to close said inlet chamber and said casing chamber, a partition engaging the material and dividing said casing into a plurality of compartments, and inlets and outlets for each of said compartments.

2. An apparatus for impregnating wood or other fibrous material comprising in combination, a casing open at both ends and providing a chamber for receiving the material to be impregnated, means for closing one end of said casing, a closure ring for the other end of said casing provided with an aperture reduced with respect to said chamber and surrounding the material projecting therefrom, a gasket interposed between said ring and casing, means for clamping said ring upon said gasket, a cover inclosing the projecting material and provided with a recess forming with the end of said material and inlet chamber, said cover being provided with an inlet passage delivering to said chamber, packing surrounding the material, means forcing said cover against said packing to press the same against said closure ring and material to close said inlet chamber and said casing chamber, a partition engaging the material and dividing said casing chamber into a plurality of compartments, and inlets and outlets for each compartment.

3. An apparatus for impregnating wood or other fibrous material comprising in combination, a casing open at both ends and providing a chamber for receiving the material to be impregnated, means engaging the material and closing one end of said chamber, a cover inclosing the material projecting from the other end of said casing and provided with a recess forming with said material an inlet chamber, said cover being provided with an inlet passage delivering to said chamber, a packing surrounding the projecting material, means forcing said cover against said packing to close said inlet chamber and said casing chamber, a partition engaging the material and dividing said casing chamber into a plurality of compartments, and inlets and outlets for each of said compartments.

4. An apparatus for impregnating wood or other fibrous material comprising in combination, a casing open at both ends and providing a chamber for receiving the material to be impregnated, means for closing one end of said chamber, a cover inclosing the mate-

rial projecting from the other end of said casing and provided with a recess forming with the projecting end of the material and inlet chamber, said cover being provided with an inlet passage delivering to said chamber, a ring of packing surrounding the material, means forcing said cover against said packing to close said inlet and casing chambers, and an inlet and an outlet for said casing chamber.

5. An apparatus for impregnating wood or other fibrous material comprising in combination, a casing open at both ends and providing a chamber for receiving the material to be impregnated, closure rings for the ends of said casing provided with apertures reduced with respect to said chamber and surrounding the material, gaskets interposed between said rings and casing, means for clamping said rings upon said gaskets, a collar for one end of said casing provided with an aperture surrounding the projecting material, packing interposed between said collar and closure ring, means forcing said collar against said packing to engage the same with said closure ring and the material to close said chamber, a cover inclosing the material projecting from the other end of said casing and provided with a recess forming with the end of the material an inlet chamber, said cover being provided with an inlet passage delivering to said chamber, a ring of packing surrounding the material, means forcing said cover against said packing ring to compress the same against the adjacent closure ring and the material to close said inlet chamber and casing chamber, and an inlet and an outlet for said casing chamber.

In testimony whereof I have hereunto signed my name to this specification in the presence of two subscribing witnesses.

ERNST KOEPFER.

Witnesses:
ROBT. W. HEINGARTNER,
AUGUST FUGGER.