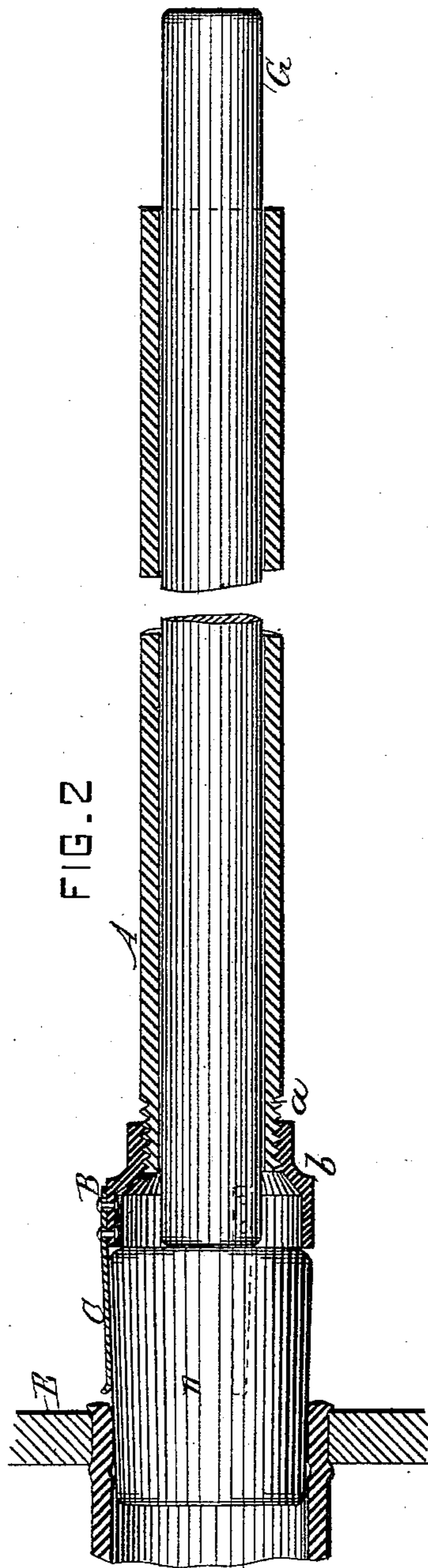
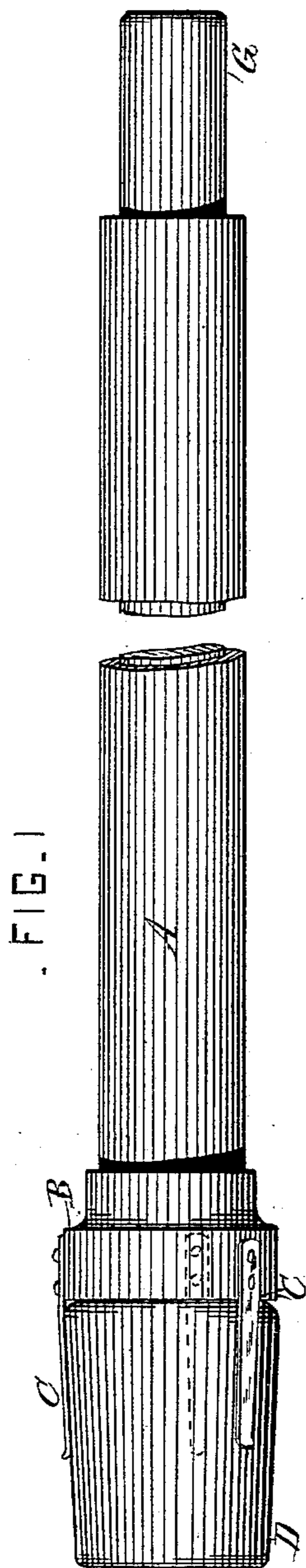


(No Model.)

W. F. SMITH.  
BOILER TUBE STOPPER.

No. 277,365.

Patented May 8, 1883.



Witnesses

Eugene W. Caruso  
A. L. Duffys.

Inventor

William Francis Smith  
per O. E. Duffys  
att'y

# UNITED STATES PATENT OFFICE.

WILLIAM F. SMITH, OF TUCSON, ARIZONA TERRITORY.

## BOILER-TUBE STOPPER.

SPECIFICATION forming part of Letters Patent No. 277,365, dated May 8, 1883.

Application filed January 6, 1883. (No model.)

*To all whom it may concern:*

Be it known that I, WILLIAM FRANCIS SMITH, of Tucson, in the county of Pima and Territory of Arizona, have invented certain new and useful Improvements in Boiler-Tube Stop-  
pers; and I do hereby declare that the follow-  
ing is a full, clear, and exact description of the  
invention, which will enable others skilled in  
the art to which it appertains to make and  
use the same, reference being had to the ac-  
companying drawings, and to the letters of  
reference marked thereon, which form part of  
this specification.

This invention has relation to tube and flue  
pluggers for steam-boilers, condensers, or other  
vessels having flues or tubes which are subject  
to be cracked by pressure or danger of burst-  
ing.

It is well known to engineers and others  
that it often happens that tubes and flues give  
way under pressure, and when cracked or  
burst they leak steam or water, or both, or  
other contents of the vessel having multitubu-  
lar structure, and often to such an extent as  
to cause the fires of the furnace to be extin-  
guished, the leakage greatly lessening the  
pressure of steam in the boiler, and frequently  
filling the engine-room with steam to such an  
extent as to be beyond endurance. It is also  
well known that plugs have been inserted in  
boiler-tubes, and also means for holding them  
in position, which have more or less merit, and  
which are more or less objectionable. There-  
fore to overcome these objections and to make  
a sure and safe boiler-plugger is the object of  
my invention.

To this end my invention consists in provid-  
ing a guide-handle of tubular construction, hav-  
ing on one of its ends a screw, and a screw-  
threaded tubular projection fitting thereto, the  
diameter of which is greater than the handle.  
Upon this projection I securely fasten spring  
finger pieces, which are flexible laterally, and  
adapted to clutch a plug of suitable dimen-  
sions, and of any suitable material, and in such  
manner that when the said plug is inserted in  
the mouth of the tube or flue the rammer, which  
passes through the tubular handle, is capable  
of knocking it home, all of which will be more  
fully hereinafter described.

In the drawings illustrating my invention,  
Figure 1 represents a side elevation, showing  
the device ready for use. Fig. 2 shows a lon-  
gitudinal section of my apparatus with the  
rammer and plug in position.

Like letters denote like parts in all the fig-  
ures.

A is the tubular handle; B, the tubular pro-  
jection; C, the spring finger pieces, and D the  
plug. E represents a portion of the tube-sheet  
of a boiler, and F a portion of a flame-tube,  
and G the rammer.

The handle A is provided with a male thread,  
a, at one of its ends, and the projection B with  
a corresponding female thread, b, which are  
screwed together. The section B is much larger  
in diameter than the handle, and is sufficiently  
large to clutch a boiler-plug by means of the  
extending fingers C. These fingers are flexi-  
ble and will yield to more or less pressure, ac-  
cording to the size of the plug. The plugs are  
generally tapering for the more ready inser-  
tion of them into the tube.

The rammer G is a long metallic rod of some-  
what greater length than the handle, and is  
parallel its entire length. It may, however,  
have a heavy metallic head upon its outer end,  
for the purpose of rendering it heavier for a  
more ponderous blow.

The operation is as follows: The parts be-  
ing all together, as shown by Fig. 1, the plug is  
inserted into the mouth of a leaking tube, as  
shown by Fig. 2. The rammer is then partly  
drawn out of the tubular handle, and then shot  
back with considerable force against the outer  
end of the plug, thus driving the plug home.  
The movement imparted to the rammer is simi-  
lar to that of ramming a load into a gun from  
the muzzle.

The tubular handle and rammer may be of  
any desired length, and should always be suffi-  
ciently long to prevent the operator being  
burned by the steam should the boiler be in  
operation. Hollow plugs may be substituted  
for the solid plug when it is simply required to  
stop a leak in the tube. When this is neces-  
sary the plug may be entered in the mouth of  
the tube by hand, and then driven home by  
the rammer. The spring-fingers may be dis-  
pensed with when the plug is inserted by hand.

In this way the working utility of the tube is but little impaired, the flame passing through the hollow portion, and, if it be a condenser, either the steam or water may circulate through it.

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

1. The combination, in a tube-plugger for steam-boilers, of the tubular handle, the pro-  
10 jection B, and the rammer G, as set forth.

2. In a plugging apparatus for leaking tubes,

the combination of the tubular handle, the annular projecting piece B, provided with the spring finger pieces, and the rammer, co-operating with each other as described.

In testimony that I claim the foregoing as my own I affix my signature in presence of  
15 two witnesses.

WILLIAM FRANCIS SMITH.

Witnesses:

WM. H. CULVER,

E. W. ARAM.