

F. M. HAWKINS.  
 EXTENSION WRENCH FOR OPERATING TUBE EXPANDERS OR THE LIKE.  
 APPLICATION FILED FEB. 3, 1909.

937,526.

Patented Oct. 19, 1909.

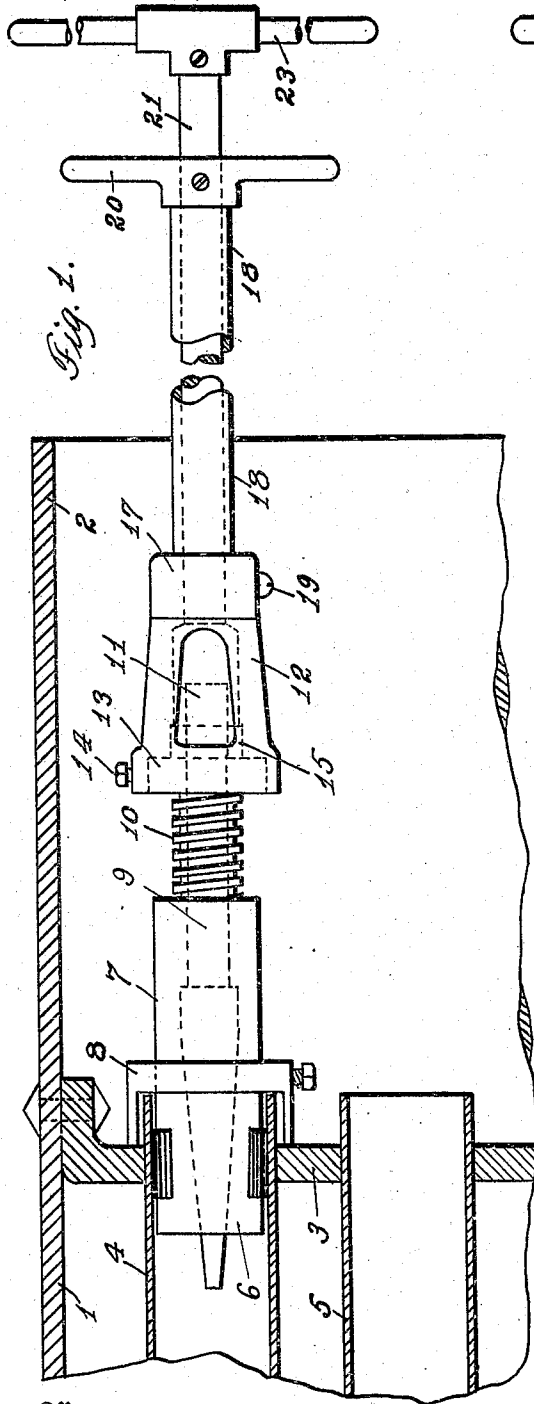


Fig. 1.

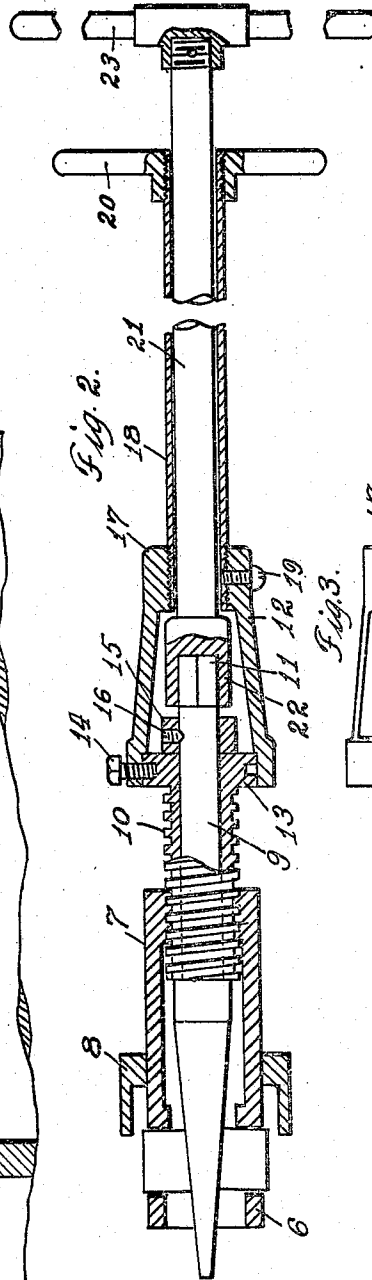


Fig. 2.

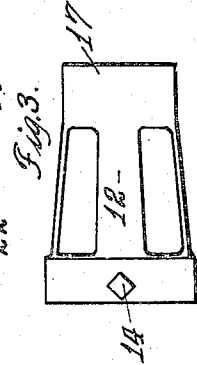


Fig. 3.

Witnesses

Fred A. Schlosser.  
 Linda M. Cross.

Inventor

Frank M. Hawkins

By

John H. Cross  
 his Attorney

# UNITED STATES PATENT OFFICE.

FRANK M. HAWKINS, OF MANSFIELD, OHIO.

EXTENSION-WRENCH FOR OPERATING TUBE-EXPANDERS OR THE LIKE.

937,526.

Specification of Letters Patent.

Patented Oct. 19, 1909.

Application filed February 3, 1909. Serial No. 475,937.

*To all whom it may concern:*

Be it known that I, FRANK M. HAWKINS, a citizen of the United States of America, residing at Mansfield, in the county of Rich-  
land and State of Ohio, have invented cer-  
tain new and useful Improvements in an  
Extension-Wrench for Operating Tube-Ex-  
panders or the Like, of which the following  
is a specification.

My invention relates to a means for oper-  
ating a combined flue expander, roller and  
cutter and is especially adapted to be used  
with the device shown and described in Let-  
ters Patent No. 906,797, granted to me and  
bearing date of the 15th day of December,  
1908.

It is well known to those skilled in the art  
that in rolling or expanding flues or cutting  
flues from a boiler provided with an exten-  
sion front or smoke-box, or other obstruction  
extending beyond the flue sheets, that the  
operator must work in a cramped position  
which materially affects the quality of the  
work and the time required to perform it.

The object of my invention is to provide  
means of operating the flue expander, roller  
or cutter so that the operator who is per-  
forming the work can stand in front of the  
flue sheets of the boiler and out of the range  
of the extension front, smoke-box or other  
obstruction.

In the accompanying drawings Figure 1  
represents a sectional side elevation of part  
of a horizontal boiler and flues which pass  
through the head or flue sheet. It also shows  
a crown sheet or extension front with my  
feed screw expander and cutter inserted in  
one of the flues of the boiler with my oper-  
ating means connected thereto and extend-  
ing beyond said extension front. Fig. 2 is a  
longitudinal section of my flue expander,  
roller and cutter showing the operating  
means connected thereto by a coupling  
sleeve. Fig. 3 is a side view of the coupling  
sleeve.

Referring to the drawings, 1 represents  
the crown sheet of an ordinary horizontal  
boiler and 2 the extension front or smoke  
box, and 3 a boiler head or flue sheet. The  
flues 4 and 5 are connected to the flue sheet  
in the ordinary manner.

In order to show the operation of my de-  
vice I have inserted the end of the cylin-  
drical head 6 of my flue rolling device 7 in  
the flue 4 preparatory to rolling the tube.

Reference numeral 8 represents an adjust-

able guide which regulates the depth that  
the end 6 of the rolling device extends into  
the tube. Attention is called to the fact that  
cutters can be used instead of rollers as de-  
scribed in the Letters Patent hereinbefore re-  
ferred to. A tapered mandrel 9 is loosely  
mounted in the feed screw 10 and the end 11  
is formed rectangular in shape.

A coupling sleeve 12 is provided having  
one end adapted to fit over the periphery of  
the enlarged portion 13 of the feed-screw  
and it is rigidly connected thereto by the set  
screw 14 which passes through a screw-  
threaded aperture in the coupling sleeve  
leaving the end projecting into one of the  
apertures provided in the enlarged portion  
of the feed screw. The mandrel 10 which is  
rotatably mounted in an aperture formed in  
the central portion of the feed screw is re-  
tained in place by the collar 15 and set  
screw 16.

The inner periphery of the end 17 of the  
coupling sleeve is screw-threaded to engage  
with the screw-threaded end of a sleeve or  
tubular member 18 and is securely retained  
in place by a set screw 19. The opposite end  
of the member 18 is screw-threaded and en-  
gages with a screw-threaded aperture formed  
in the operating handle 20.

The above describes the means of feeding  
the mandrel forward to expand the cutters  
or rollers independent of the rotation of the  
mandrel. The sleeve 18 can be made of any  
desired length so that the operator can stand  
outside the range of the extension front, or  
other obstruction, and operate the feed screw  
freely and without inconvenience. The body  
portion 21 of a socket wrench 22 is rotatably  
mounted within the inner periphery of the  
tubular sleeve and is adapted to fit the rec-  
tangular end 11 of the mandrel. The oppo-  
site end of the body portion 21 is provided  
with an operating handle 23. The body por-  
tion 21 extends beyond the end of the tubu-  
lar sleeve 18 and operating handle 20 a suffi-  
cient distance to permit the operating han-  
dle 23 to be operated freely and independent  
of the handle 20.

It will be noted that the means for rotat-  
ing the mandrel 10 for rolling and expand-  
ing the flues and for expanding the cutters  
(not shown) for cutting purposes are tele-  
scoped within each other and project out-  
wardly in direct alinement with each other  
thereby bringing the operating handles of  
the feed screw and mandrel in close prox-

imity to each other and within easy reach of the operator.

The operation of my device is as follows:

When it is desired to roll, expand or cut the tubes, the operating handle 20 is rotated in the usual manner until the rollers or cutters are in proper contact with the flue. The rotation of the handle 20 causes the feed screw to move forward and expand the cylindrical outline of the rollers or cutters. The operating handle 23 is then rotated until the flue is expanded, rolled or cut to the extent desired.

Having fully described my invention, what I claim and desire to secure by Letters Patent is:

1. In an extension wrench for expanders or cutters, the combination of a coupling sleeve, a tubular member connected to said coupling sleeve, an operating handle adapted to rotate said tubular member and sleeve, a wrench having its body portion mounted in said tubular member and an operating handle to rotate said wrench.

2. The combination of an extension wrench for operating expanders or cutters provided with a feed-screw and mandrel; of a coupling member adapted to be connected to the feed-screw, a tubular member secured to said coupling member, a wrench rotatably mounted within said tubular member, means secured to said wrench for rotating it, and means connected to the tubular member to rotate it whereby the mandrel of the expander and the feed screw can be rotated independent of each other at a point remote from the expander or roller.

3. In an extension wrench for operating the feed screw and separate mandrel of a flue expander or cutter, a sleeve, means to couple said feed screw to said sleeve, a tubular member, an operating handle connected to said tubular member and adapted to rotate the feed screw, a wrench mounted in the inner periphery of said tubular member and adapted to engage with one end of the man-

drel, operating means secured to said wrench as and for the purpose described.

4. In an extension wrench for operating a flue expander, roller or cutter, provided with a feed-screw and separate mandrel, a coupling member removably connected to the feed-screw, a tubular member connected to said coupling member, an operating handle to rotate said coupling member and feed-screw, a wrench mounted within said tubular member, means to rotate said wrench, all of which provides means of rotating the mandrel and feed-screw independent of each other.

5. In an extension wrench for operating a flue expander, roller or cutter which is provided with a feed-screw and separate mandrel, a coupling sleeve removably connected to the feed-screw, a tubular member connected to said sleeve, an operating handle connected to said tubular member and adapted to rotate it, a wrench having its body portion mounted in the inner periphery of the coupling sleeve and means secured to said wrench to rotate it, whereby the feed-screw and mandrel can be operated independent of each other and at a point remote from the expander or cutter.

6. In an extension wrench for expanders or cutters provided with a separate mandrel and feed screw, a coupling member adapted to be removably secured to the feed screw, means to rotate the coupling member, a wrench adapted to engage one end of the mandrel and means to rotate said wrench, all of which provides means of rotating the mandrel and feed screw independent of each other and at a point remote from the cutter or expander as described and set forth.

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

FRANK M. HAWKINS.

Witnesses:

JOHN H. COSS,  
PEARL ACKERMAN.