J. F. LEWIS AND J. W. KAGARISE.

BUCKSTAY.

APPLICATION FILED MAY 9, 1921.

1,426,748.

Patented Aug. 22, 1922.

2 SHEETS—SHEET 1.

Fig. 2.

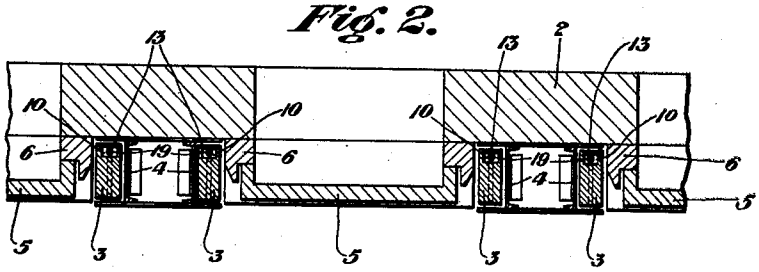


Fig. 1.

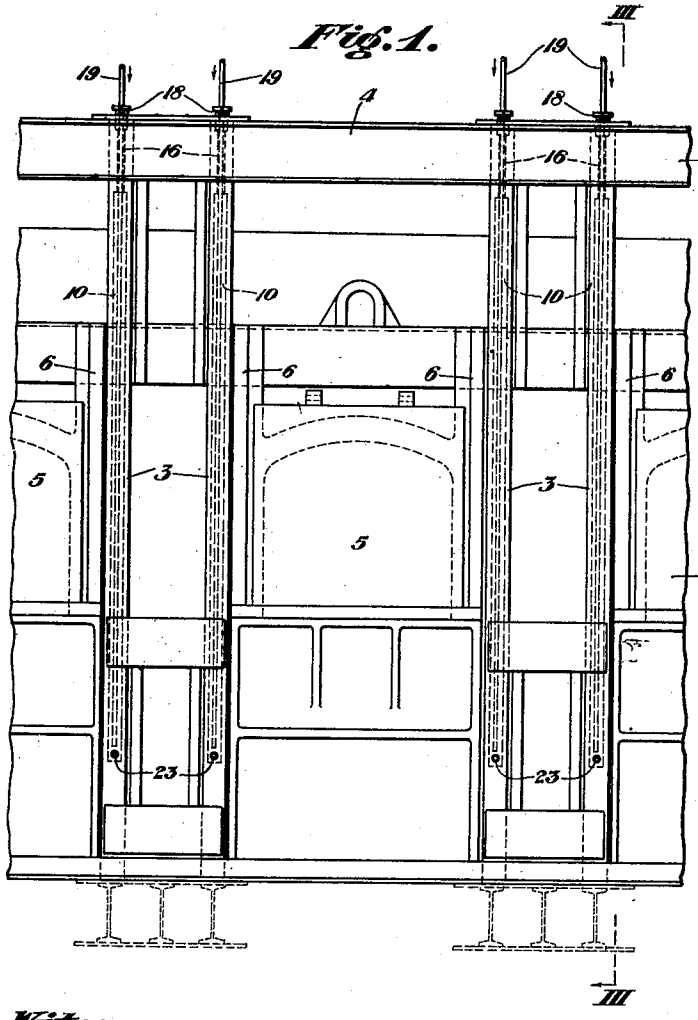
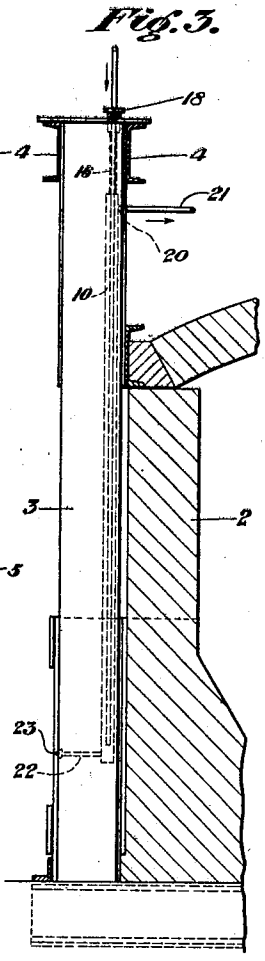


Fig. 3.



Witnesses:

Edwin Trust

Inventors:

John F. Lewis and John W. Kagarise,

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2 SHEETS—SHEET 2.

Fig. 4.

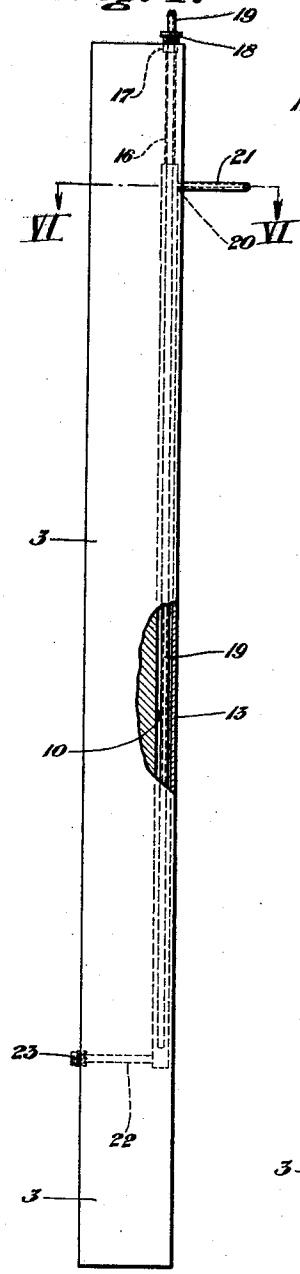


Fig. 5.

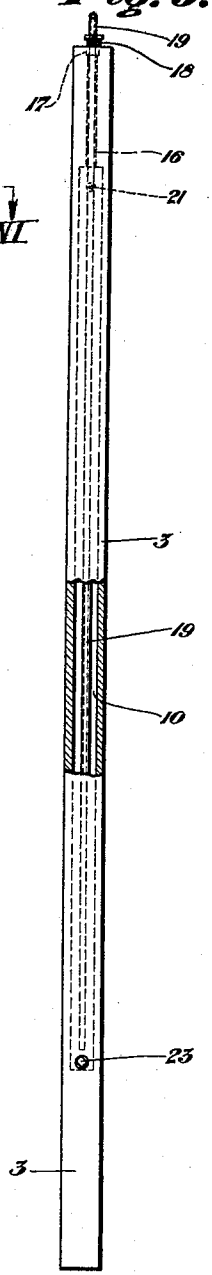


Fig. 6.

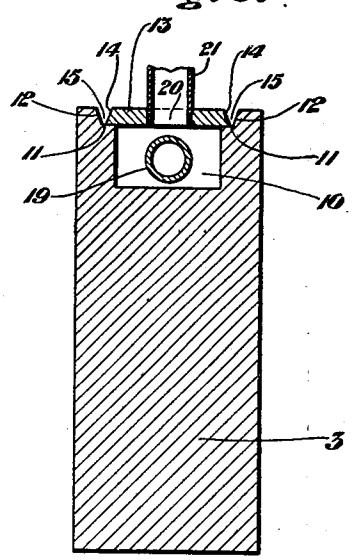
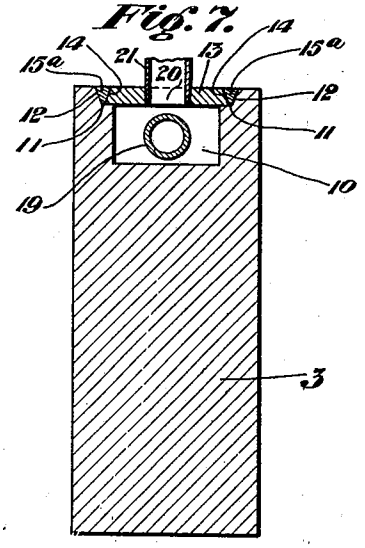


Fig. 7.



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UNITED STATES PATENT OFFICE.

JOHN F. LEWIS, OF NORTH BRADDOCK, AND JOHN W. KAGARISE, OF WILKINSBURG, PENNSYLVANIA.

BUCKSTAY.

1,426,748. Specification of Letters Patent. Patented Aug. 22, 1922.

Application filed May 9, 1921. Serial No. 467,824.

To all whom it may concern:

Be it known that we, JOHN F. LEWIS and JOHN W. KAGARISE, citizens of the United States, and residents, respectively, of North Braddock and Wilkinsburg, both in the county of Allegheny and State of Pennsylvania, have invented certain new and useful Improvements in Buckstays, of which the following is a specification.

Our invention relates to the construction of furnaces and has particular reference to a novel buckstay for use in connection with open hearth furnaces.

One object of our invention is to provide an improved form of buckstay composed of a substantially rectangular rolled or forged steel slab having a novel water passageway therein.

Another object is to provide a buckstay which may be more easily and cheaply manufactured than those heretofore used.

Heretofore buckstays of this class have had an aperture drilled throughout their length to provide a passageway for the cooling water. The drilling of these buckstays requires a great amount of labor and is costly.

To provide a buckstay of reasonable cost and of great durability, we manufacture it of a rolled or forged steel slab, of the required length. This slab, usually rectangular in cross section, is then machined, or forged to form an open recess along one of its narrow faces, and a closing plate is welded over the open recess forming a closed passageway. Suitable holes are then drilled into the passageway and tapped to receive the circulation pipes.

The construction of our improved buckstays will be fully understood by reference to the accompanying drawings, in which:—

Figure 1 is an elevation of part of an open hearth furnace showing buckstays embodying our invention.

Figure 2 is a sectional plan through part of an open hearth furnace showing buckstays embodying our invention, in position thereon.

Figure 3 is a sectional elevation through the furnace of Figure 1 on the line III—III of Figure 1.

Figure 4 is a side elevation of one of the buckstays.

Fig. 5 is a front elevation of one of the buckstays.

Figure 6 is a cross section on the line VI—VI of Figure 4.

Figure 7 is a similar cross section on the line VI—VI of Figure 4 showing the welding metal applied to hold the cover plate in position.

Referring more particularly to the drawings, the numeral 2 designates the wall of the furnace which is of usual construction. Extending along the furnace wall 2 is a series of vertical buckstays 3 secured to the girder 4 along the tops thereof.

The usual doors 5 are mounted to reciprocate vertically in the door frames 6 which are secured to the buckstays 3.

The buckstays constructed according to this invention are formed of a slab of metal either rolled or forged to a substantially rectangular shape. A substantially rectangular open sided recess 10 is then machined, forged, or otherwise formed in the face of the stay adapted to abut the furnace wall. The side and end walls of the recess 10 are offset causing the open side of the recess to be of greater dimensions than the main portion thereof and forming shoulders 11, the side walls of which are beveled outwardly as at 12.

A cover plate 13 is mounted on the shoulders 11 and is of such size as to completely close the open side of the recess 10. The edges of the cover plate 13 are beveled as at 14 to co-operate with the beveled portion 12 of the recess walls and form a V-shaped retaining pocket 15 for the reception of welding metal 15^a used to weld the plate in position. It will readily be understood that by welding the plate 13 in position a permanent, tight and practically integral construction is obtained.

An inlet port 16 is formed through the end of the stay and communicates with the recess 10 and has its outer end counterbored and threaded to form a seat 17 for the pipe union 18. An inlet pipe 19 of such diameter as will freely pass through the port 16 and of such length as will terminate just short of the lower end of the recess 10 when in position is screwed into the small end of the pipe union 18 and the union is screwed into position into the seat 17 and a feed water or supply pipe 19 is threaded into the outer or large end of the union 17.

An outlet port 20 is formed in the cover plate 13 adjacent the upper end of the re-

cess 10 and an outlet pipe 21 is screwed therein. A second outlet or drain and cleanout port 22 is formed through the outer face of the stay and into the recess adjacent the bottom thereof, and is provided with a screw plug 23 or other removable closure adapted to be opened when it is desired to flood or clean out the recess.

The many advantages of a buckstay constructed as shown will be readily appreciated by those skilled in the art. The recess 10 may be formed quickly and cheaply, and may be so shaped that the greatest amount of cooling area may be had.

While we have shown one particular embodiment of our invention, it will be understood that we do not wish to be limited to the exact construction shown since various modifications may be made without departing from the spirit of our invention as defined in the appended claims.

We claim:—

1. A buckstay formed of a substantially rectangular rolled metal slab having an open-sided recess machined therein, a cover plate welded over the open side of said recess, and water connections to said recess.

2. A substantially rectangular buckstay formed of wrought metal, and having an open-sided rectangular recess formed in one face and terminating short of the ends thereof, said recess being of greater dimensions adjacent its open side forming shoulder offsets in the side walls thereof, a cover plate arranged over the open side of said recess and resting on said shoulder offsets, said plate being welded to said buckstay to form a permanent joint therewith, and water connections to said recess.

3. A buckstay formed of wrough metal, and having an open-sided recess formed in one face and terminating short of the ends thereof, said recess being of greater dimensions adjacent its open side forming shoulder offsets in the side walls thereof, a cover plate arranged over the open side of said recess and resting on said shoulder offsets, said plate being welded to said buckstay to form a permanent joint therewith, and water connections to said recess.

4. A buckstay formed of wrought metal, and having an open sided recess formed in one face and terminating short of the ends thereof, said recess being of greater dimensions adjacent its open side forming shoulder offsets in the side walls thereof, a cover plate arranged over the open side of said recess and resting on said shoulder offsets, said plate being welded to said buckstay to form a permanent joint therewith, water connections to said recess, said connections comprising an inlet pipe led through the end wall of said recess and extending downwardly through said recess to a point adjacent the bottom thereof, an outlet pipe led from said recess at a point adjacent the top thereof, and a drain and cleanout pipe leading through the closed wall of said recess from the front wall of said buckstay.

In testimony whereof we have hereunto signed our names.

JOHN F. LEWIS.
JOHN W. KAGARISE.