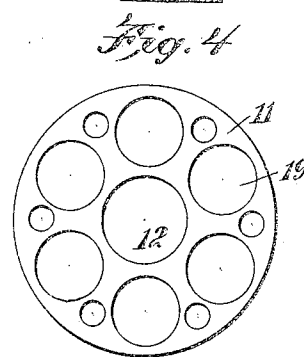
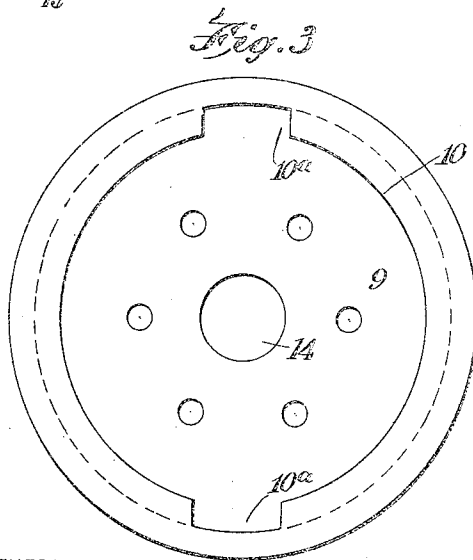
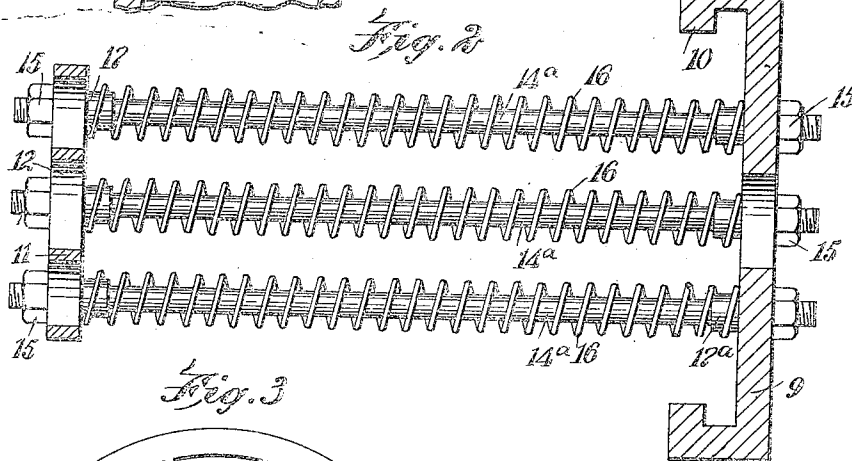
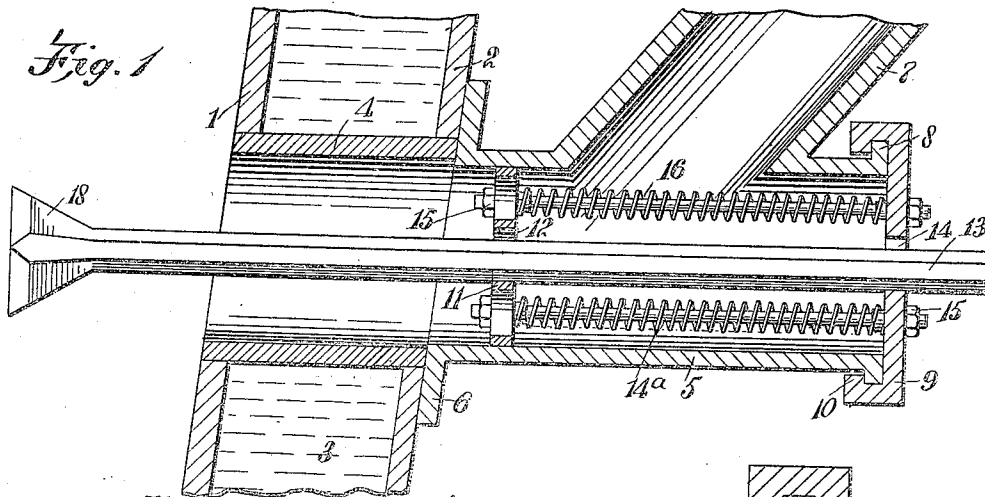


A. C. NEAL.
 DRILL GUIDE.
 APPLICATION FILED AUG. 21, 1909.

942,582.

Patented Dec. 7, 1909.



WITNESSES
V. D. Smith
J. R. Ammen

INVENTOR
Alvin C. Neal
 BY *Wm. D. Co.*
 ATTORNEYS

UNITED STATES PATENT OFFICE.

ALVIN C. NEAL, OF NEW YORK, N. Y.

DRILL-GUIDE.

942,582.

Specification of Letters Patent.

Patented Dec. 7, 1909.

Application filed August 21, 1909. Serial No. 513,913.

To all whom it may concern:

Be it known that I, ALVIN C. NEAL, a citizen of the United States, and a resident of the city of New York, borough of Manhattan, in the county and State of New York, have invented a new and Improved Drill-Guide, of which the following is a full, clear, and exact description.

This invention relates to a device, the purpose of which is to clear the twyers of blast furnaces or other furnaces, of slag, crusts or other obstructions which may have formed in the twyer openings.

This invention presents an improved form of the device described in my patent application, Serial No. 502,214, filed June 15, 1909.

The object of the present invention is to prevent accidents to the drill guide on back strokes of the drill. In other words I provide a construction for holding the inner guide member loosely in position and in such a way that if struck by the head of the drill bit the blow will be cushioned.

The invention consists in the construction and combination of parts to be more fully described hereinafter and particularly set forth in the claims.

Reference is to be had to the accompanying drawings forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the figures.

Figure 1 is a vertical section through the bosh of a furnace taken at one of the twyers; Fig. 2 is an enlarged vertical section through the drill bit, showing the details thereof; Fig. 3 is a front elevation of the cap of the device; and Fig. 4 is an elevation showing the inner guide member or disk.

Referring more particularly to the parts, 1 and 2, indicate respectively the inner and outer walls of the furnace, between which a water jacket 3 is formed. Connecting the walls 1 and 2, a thimble or sleeve 4 is mounted, which forms a twyer opening for the admission of the blast, said twyer opening being in alinement with a twyer 5, the inner end of which is formed into a flange 6, seating against the wall of the furnace. The twyer 5 is provided with an inclined branch pipe 7, through which the blast is supplied. The twyer 5 is of cylindrical form, and its outer extremity is formed with lugs 8. On these lugs 8 there is attached a cap 9 in the form of a disk, presenting a flange 10 en-

gaging the lugs 8 and having notches 10^a to pass the lugs, the cap being secured in place by a simple rotation. On the interior of the twyer 5, and near the inner end thereof, I provide a guide member in the form of a disk 11. This disk has a central opening 12 through which the drill bit 13 passes, and a similar opening 14 is formed in the cap. The cap 9 and the disk 11 are connected by a plurality of bolts 14^a. These bolts pass loosely through the disk and the cap, and are provided on their projecting ends with nuts 15 which fix the distance between them. Each of these guide bolts 14^a is surrounded by a coil spring 16, and the ends of these springs seat at one end over upset or enlarged necks 17 on the bolts, which form seats for the inner guide disk 11. At their other ends loose collars 17^a are provided on the bolts, to center the springs. The drill bit 13 presents an enlarged head 18 at its inner end which is too large to pass through the opening 12. On the back stroke, this head may strike the guide disk 11 and might do injury to the disk or the rods, were it not for the springs 16 which permit the disk to move outwardly under the backward blow of the drill. If the inner guide 11 should be struck, the bolts 14^a simply slide outwardly in the cap 9.

In addition to the opening 12, the guide 11 is provided with a plurality of large openings 19, as indicated in Fig. 4. These openings 19 lighten the plate 11 and also permit the air blast to pass inwardly to throw the dust into the interior of the furnace.

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

1. In a device of the class described, in combination, a member adapted to seat at the outer end of the twyer and affording means for guiding the drill bit, a guide member for the drill bit adapted to enter the twyer, and resilient means connected with said last member tending to hold the same in position.

2. In a device of the class described, in combination, a cap adapted to seat upon the outer end of the twyer, having an opening through which the drill bit may pass, an inner guide member adapted to enter the twyer and also having an opening through which the drill bit may pass, springs disposed between said cap and said inner guide

member tending to cushion a blow delivered on the inner side of said guide member, and means for limiting the inward movement of said guide member with respect to said cap.

- 5 3. In a device of the class described, in combination, a cap adapted to be attached to the outer end of the twyer and having a guide opening for the twyer, a guide disk adapted to enter the twyer and also having
10 a guide opening for the drill bit, guide bolts connecting said cap and said guide disk, passing through the same and having nuts

on the outer side limiting the distance between said cap and said disk, and cushion springs disposed around said guide bolts and tending to cushion a blow delivered on the inner face of said disk. 15

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

ALVIN C. NEAL.

Witnesses:

F. D. AMMEN,
PHILIP D. ROLLHAUS.