

(No Model.)

M. W. ILES.
FLOORING FOR BLAST FURNACES.

No. 501,188.

Patented July 11, 1893.

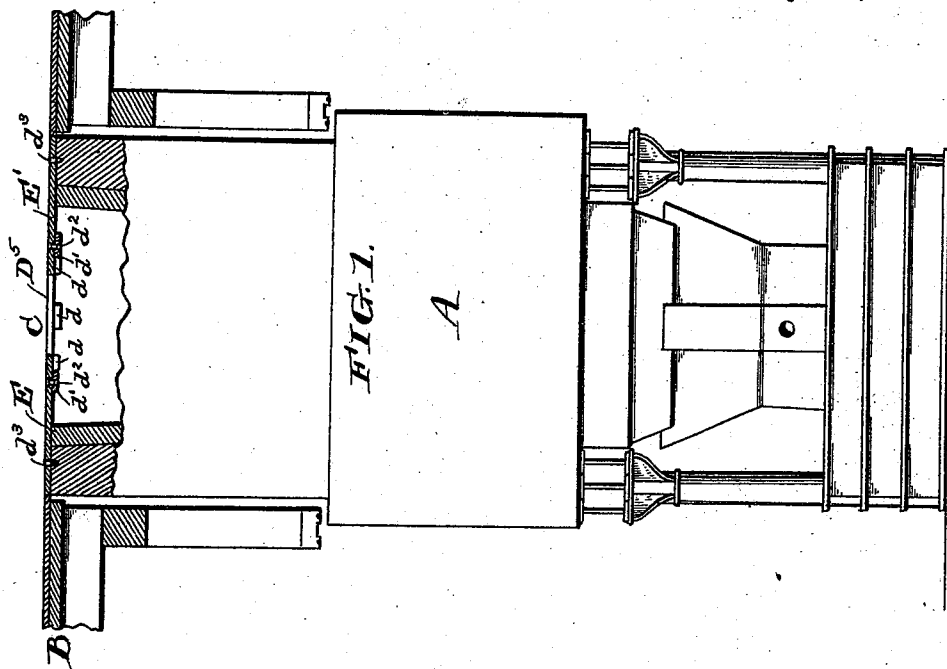
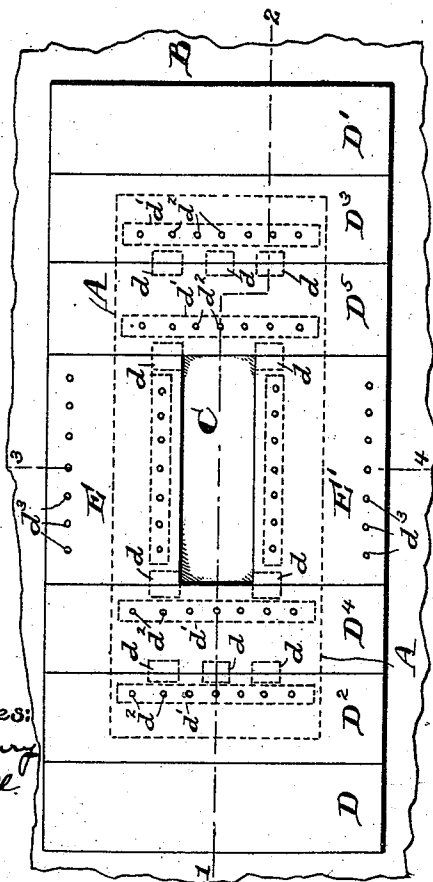


FIG. 2.



Witnesses:
Camp & Dwyer
J. H. Russell

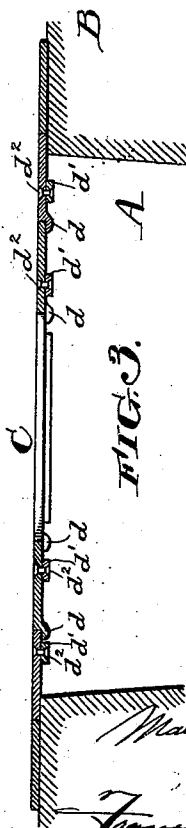


FIG. 3.

Inventor:

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UNITED STATES PATENT OFFICE.

MALVERN W. ILES, OF DENVER, COLORADO.

FLOORING FOR BLAST-FURNACES.

SPECIFICATION forming part of Letters Patent No. 501,188, dated July 11, 1893.

Application filed February 25, 1892. Serial No. 422,768. (No model.)

To all whom it may concern:

Be it known that I, MALVERN W. ILES, of Denver, Arapahoe county, State of Colorado, have invented a certain new and useful Floor-
5 ing for Blast-Furnaces, of which the follow-
ing is a true and exact description, reference
being had to the accompanying drawings,
which form a part of this specification.

My invention relates to the construction
10 and arrangement of the iron flooring plates
used at the top of blast furnaces and has for
its object to provide a flooring at once safer
and more durable than those now generally
used. I accomplish this result by so con-
15 structing the plates that the inner ones, or
those nearest the charging hole, will be, to a
certain extent, supported by the outer plates,
and also by reinforcing the cast iron flooring
plates by wrought-iron strengthening strips
20 secured to them by a line of rivets or bolts so
that even if the plate breaks it will still be
held together and prevented from falling or
permitting a man standing upon it to fall
into the furnace.

25 The nature of my improvements will be
best understood as described in connection
with the drawings in which they are illus-
trated, and in which—

30 Figure 1 is an elevation of the blast fur-
nace, the flooring being shown in section on
the line 3—4 of Fig. 2. Fig. 2 is a plan view
of the flooring; and Fig. 3 a section on the
line 1—2 of Fig. 2.

35 A indicates the blast furnace which may be
of any usual construction.

B is the level of the top of the furnace at
which the material is charged into it; and C
the charging hole formed in the flooring
plates at the center of the shaft.

40 As shown in the drawings I employ eight
floor plates—six being end-plates of which,
however, only four extend over the shaft of
the furnace, and two, side-plates. Of the end
plates, those marked D and D' are shown
45 as plain flat cast iron plates which I may
mention are usually made of about an inch
thickness. D² and D³ extend partly over the
ends of the shaft while the plates D⁴ and
D⁵ extend across the shaft as shown; the
50 side plates E and E' extend from the sides of
the shaft toward its center. Those plates
which extend over the shaft are provided

with reinforcing strips d' made of wrought
iron or steel and secured along the exposed
edge of the plate to which they are applied; 55
they are fastened to the plate by a row of riv-
ets d² as shown. On one or both edges of the
end plates I form projecting lugs d extending
out from the bottom or lower side of the
plate and adapted to lie beneath and in con- 60
tact with the abutting edge of another end
plate or to pass under and support the abut-
ting ends of the side plates E and E' as shown.
By thus constructing and arranging the floor
plates it will be seen that the outer edges of 65
the plates D⁴ and D⁵ are supported by the
lugs on the inner edges of the plates D² and
D³; which edges can be also supported in the
same way by lugs d extending out from the
lower face of the plates D⁴ and D⁵. Similar 70
lugs extending out from the inner edge of the
plates D⁴ and D⁵ pass beneath the abutting
edges of the plates E and E' so that the in-
ner edges of these plates are supported di-
rectly upon the side plates. 75

It is obvious of course that a plate sup-
ported as above indicated cannot sag and also
that even in case of a plate breaking it will
be so supported as to at least greatly dimin- 80
ish the risk of its falling into the furnace or
precipitating a man or material standing
upon it into the furnace. But the danger
from breaking plates may be said to be en-
tirely overcome by the use of the wrought iron
strips riveted to the lower faces of the plates— 85
these strips acting to hold broken sections
of the plates together and being strong enough
in themselves to support any weight which is
likely to be cast upon them.

I have referred to the fastening devices d² 90
as rivets, which are by far the best fasteners,
but it will be understood that bolts or any
equivalent fastening device can be used for
this purpose.

I am aware that it is not new to strengthen 95
iron castings by casting the metal around
bars of wrought iron or by shrinking wrought
iron bands around castings of suitable shape,
but neither of these plans is adapted for use
with furnace floor plates and I believe that 100
such plates have never heretofore been con-
structed of wrought and cast iron as my con-
struction enables them to be.

Having now described my invention, what

I claim as new, and desire to secure by Letters Patent, is—

1. The combination with a furnace having a charging opening as C, of cast iron flooring plates extending over the furnace and around the opening C and having a reinforcing strip of wrought iron or steel secured thereto by means of rivets *d*² all substantially as described and so that the parts of the plate if broken may be held together by the steel or wrought iron strips.

2. As a new article of manufacture cast iron floor plates for blast furnaces having outwardly-extending lugs *d* on a lower edge or edges adapted to extend beneath an abutting

plate, and having a wrought iron or steel strip secured along its edge.

3. A blast furnace flooring consisting of side plates E E' in combination with end plates D⁴ D⁵ provided with lugs *d* *d* adapted to extend under and support the inner edges of the side plates, said side and end plates having wrought iron or steel strips secured along their inner edges, substantially as and for the purpose specified.

MALVERN W. ILES.

Witnesses:

F. D. FRENCH,
JOHN S. WILLIAMS.