

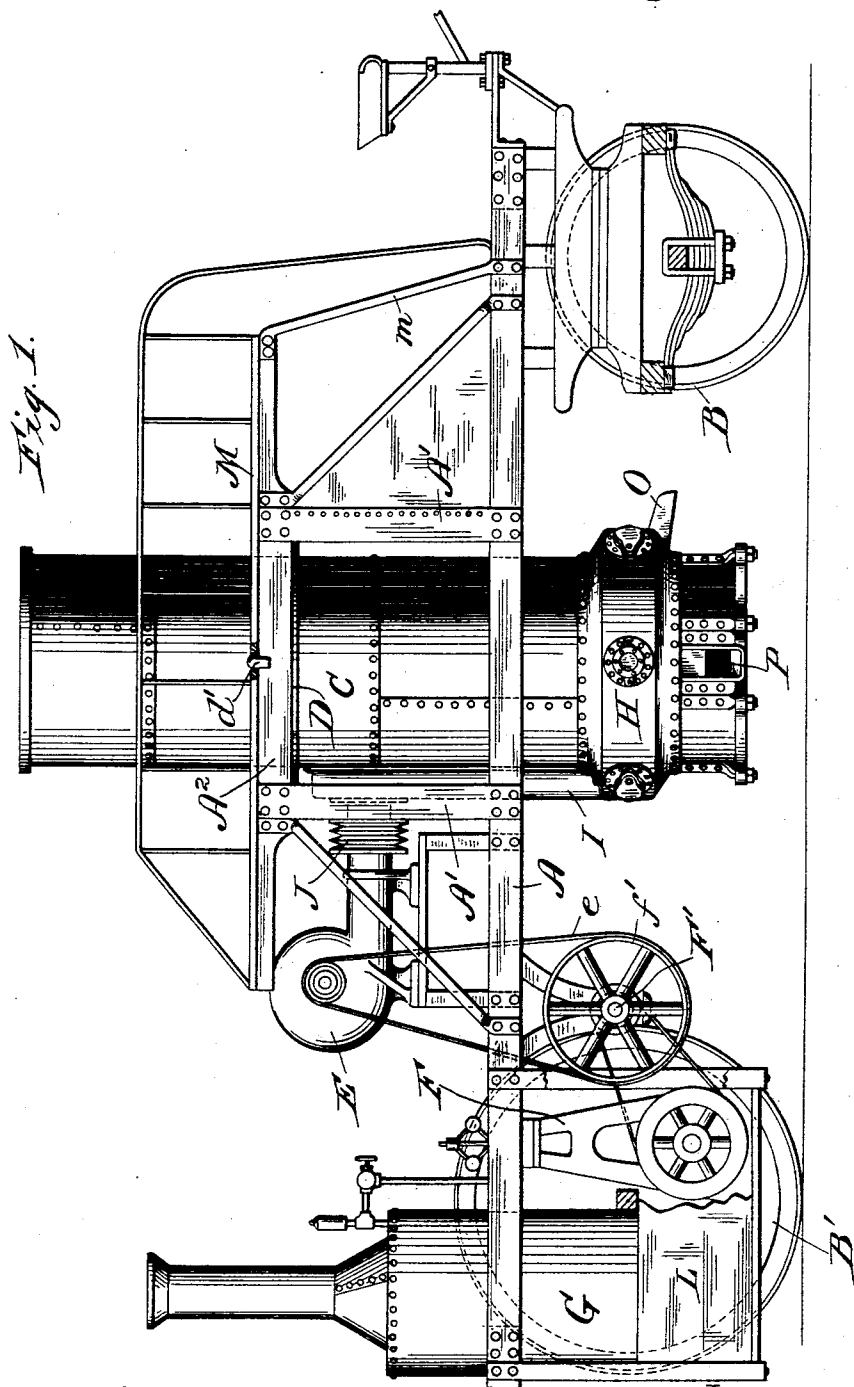
(No Model.)

3 Sheets—Sheet 1.

H. W. FALK.
PORTABLE MELTING FURNACE.

No. 587,718.

Patented Aug. 10, 1897.



WITNESSES,
A. J. Cohen
E. W. Smith

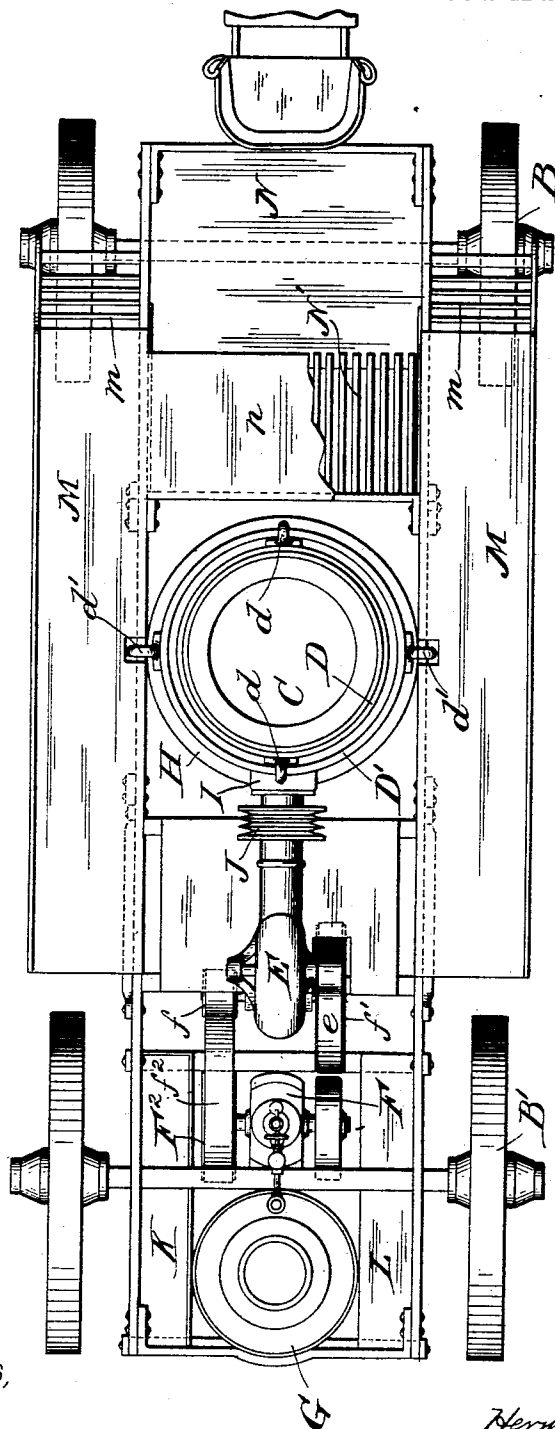
INVENTOR,
Herman W. Falt,
By John E. Wiles,
ATTORNEY.

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Fig. 2.



WITNESSES,
Ed. J. Cohen
E. W. Stout

INVENTOR
Herman W. Falk,
By *John E. Miles,*
ATTORNEY.

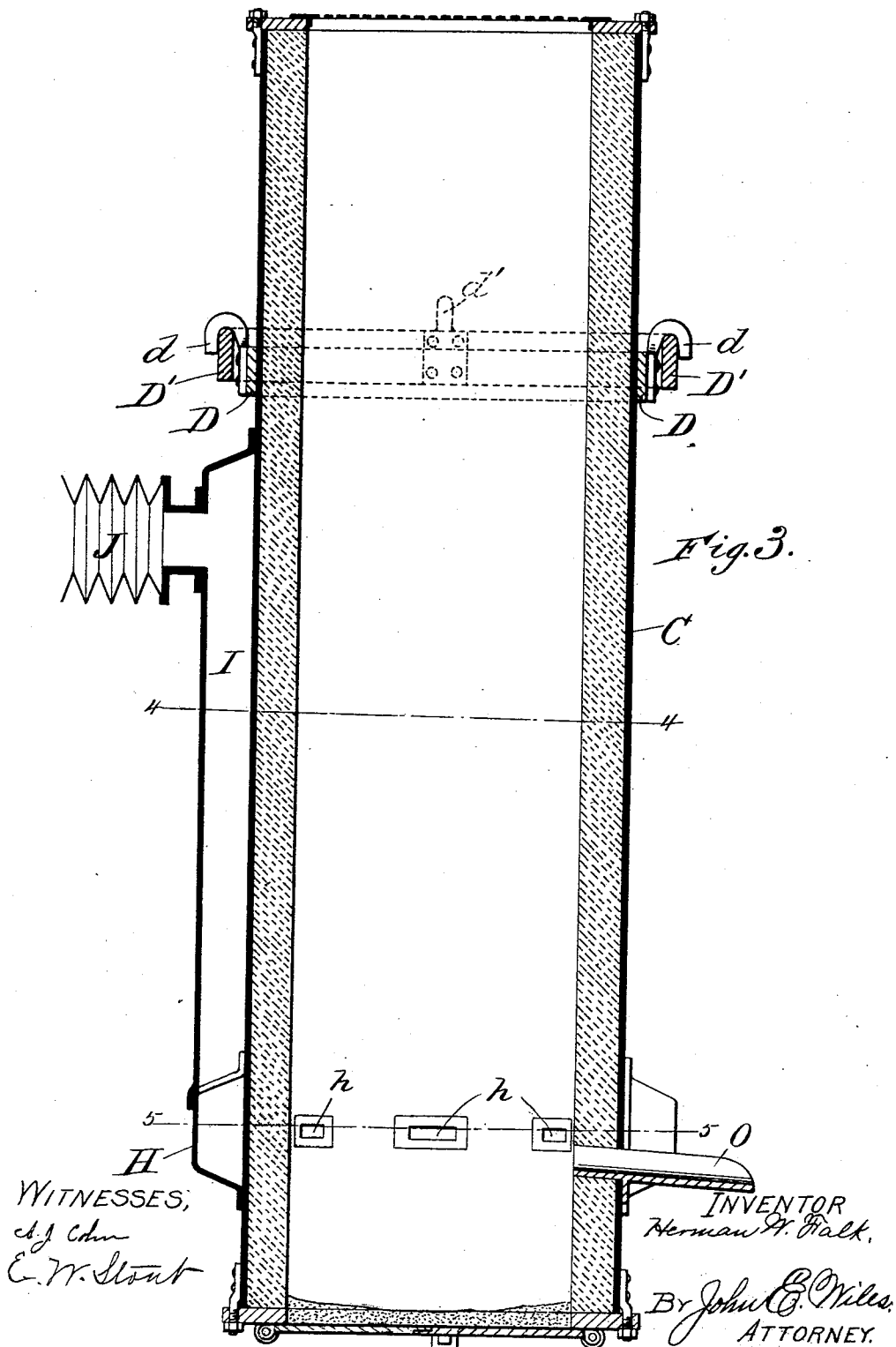
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UNITED STATES PATENT OFFICE.

HERMAN W. FALK, OF MILWAUKEE, WISCONSIN, ASSIGNOR TO THE FALK MANUFACTURING COMPANY, OF WISCONSIN.

PORTABLE MELTING-FURNACE.

SPECIFICATION forming part of Letters Patent No. 587,718, dated August 10, 1897.

Application filed April 22, 1895. Serial No. 546,642. (No model.)

To all whom it may concern:

Be it known that I, HERMAN W. FALK, a citizen of the United States, residing at Milwaukee, county of Milwaukee, State of Wisconsin, have invented a certain new and useful Improvement in Portable Melting-Furnaces; and I declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it pertains to make and use the same, reference being had to the accompanying drawings, which form a part of this specification.

My invention relates to new and useful improvements in the construction of melting furnaces or cupolas for the melting of iron or other metals, and relates more particularly to portable cupolas of such construction as to be readily transported from one locality to another, so as to enable castings to be made upon the spot where they are to be subsequently used instead of being formed in the foundry and then carried to the location where they are to be used, as is ordinarily the case.

In the accompanying drawings, illustrating my invention, Figure 1 is a side elevation of my improved portable cupola and connected mechanism. Fig. 2 is a top plan view of the same. Fig. 3 is an enlarged central vertical sectional view of the cupola proper, taken on line 3 3 of Fig. 4.

Referring by letter to said drawings, A designates a suitable framework which is provided with trucks B B' in a familiar manner, and C designates as a whole the cupola or furnace proper, which is supported upon the frame A in any desired or convenient manner which will permit of a vibrating or swinging movement of said cupola upon its support.

As shown more particularly in Fig. 1, the frame A is provided with uprights A' A', extending to a suitable distance above the level of the main frame and carrying at their upper ends suitable horizontally-disposed frame-pieces A² A², upon which the weight of the cupola is carried.

Upon the outside of the cupola or furnace C is conveniently secured a ring or band D, provided at diametrically opposite points with hooks d d, adapted for engagement, in the manner shown more particularly in Figs. 2

and 3, with a concentric ring D', so as to movably suspend the cupola from said latter ring.

The ring D' is provided at points in its circumference at right angles to the hooks d d with similar hooks d' d' for engagement with the upper edges of the frame-pieces A² A².

By this construction the cupola itself has a pivotal suspension with the ring D', and said ring D' has a similar pivotal support upon the frame, and this permits of the free vibration or oscillation of the cupola upon its support on the frame. This enables the cupola C to always maintain a vertical position, no matter what may be the position of the truck and the supporting-frame.

In conjunction with the cupola I provide at a suitable point upon the truck an air-blast appliance E—such, for instance, as a blower-fan—an engine F for actuating said fan, and a steam-boiler G for supplying steam to said engine.

As a matter of convenience and in order to obtain a desired rapidity of rotation of the fan I provide a counter-shaft F', provided with pulleys f f', the former of which is connected by a belt f² with the band-wheel F² of the engine, and the latter is connected by a belt e with the actuating-pulley of the fan E.

As shown in the drawings, a circumferential air-passage H is provided near the base of the cupola C and communicates with the twyers h h in a familiar manner.

A vertically-disposed air duct or passage I is provided upon one side of the cupola and is arranged to receive and conduct the air-blast from the fan E to the passage H, leading to the twyers.

Inasmuch as I provide for a pendulous movement of the cupola, it becomes necessary to provide a flexible air tube or conduit for conducting the air-blast from the fan to the passage I, and for this purpose I may provide any suitable or desired form of flexible connection—such, for instance, as the extensible bellows-shaped tube J, connected at one end with the discharge-pipe of the fan E and at the other end with the duct I. It follows from this construction that when the machine is in operation a continuous air-blast may be delivered to the twyers, no matter what may

be the position of the truck with respect to the cupola.

At convenient points upon the frame are provided a fuel-supply box K and a water-tank L for supplying the steam-generator.

Upon opposite sides of the frame and conveniently near the level of the supports for the cupola I provide suitable platforms M M, to which access is afforded by ladders *m m*, and upon the front part of the main frame A, I provide a platform N for the reception of a supply of metal to be melted and a grating N' for coke.

A transverse platform *n* is provided in front of the cupola and upon which the fuel and metal for charging the cupola may be readily elevated from the platform N and the grating N'.

Just below the level of the twyers I provide a slag-hole provided with a spout O, and at a convenient point in the base of the cupola is located the tap-hole, provided with a spout P. If desired, tap-holes may be provided at opposite sides of the cupola.

In using my improved apparatus the cupola is first charged and the blower started, and when the charge has been melted and partially drawn off additional metal and fuel may be introduced into the cupola in a familiar manner, a sufficient supply of fuel and metal being carried upon the truck for the purpose.

My improved apparatus may be readily transported from place to place and is adapted for use in melting metals of any kind for any purpose, but is designed more particularly for melting iron for the purpose of forming cast joints upon railway-track rails, as is described in a prior application for patent, Serial No. 542,183. For this purpose my improved apparatus is exceedingly valuable and efficient, as by its use I am enabled to maintain a supply of molten metal in the vicinity of the track to which the joints are being applied and to carry said supply of metal from point to point along the track as fast as the joints are completed.

By the described construction of the cupola with the suspension devices for affording a universally-flexible connection between the cupola and the supporting-frame and by the provision of the vertical air-duct I, which ex-

tends upwardly to a point adjacent to the level of the suspension devices, perfect freedom of movement is afforded at the lower end of the cupola, with a comparatively slight degree of movement of the upper end of the air-duct I, and thus I am enabled to provide a short flexible connection J between the air-blast appliance and the air-duct I.

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

1. A portable apparatus for melting metal comprising a suitable truck, a melting furnace or cupola, having a universally-flexible suspension upon said truck, an air-blast appliance, and an extensible and universally-flexible connection between said air-blast appliance and the air-passage of said furnace or cupola, substantially as described.

2. A portable apparatus for melting metal comprising a suitable truck, a melting furnace or cupola having a universally-flexible connection with said truck, a vertical air-duct extending from a point adjacent to said connection between the truck and the cupola, and arranged at its lower end to communicate with the twyers of the cupola, an air-blast appliance and an extensible and universally-flexible connection between the discharge-pipe of said air-blast and the upper end of said air-duct, substantially as described.

3. A portable apparatus for melting metal comprising a suitable truck, a melting furnace or cupola having a universally-flexible suspension thereon, and provided in its lower part with twyers, an air box or duct communicating with said twyers, a vertically-disposed air-duct communicating therewith and leading upward to a point near the level of the connection between said cupola and the truck, an air-blast appliance and an extensible and flexible connection between said air-blast appliance and the upper end of said vertical air-duct, substantially as described.

In testimony whereof I sign this specification in the presence of two witnesses.

HERMAN W. FALK.

Witnesses:

JOHN E. WILES,
E. W. STRUT.