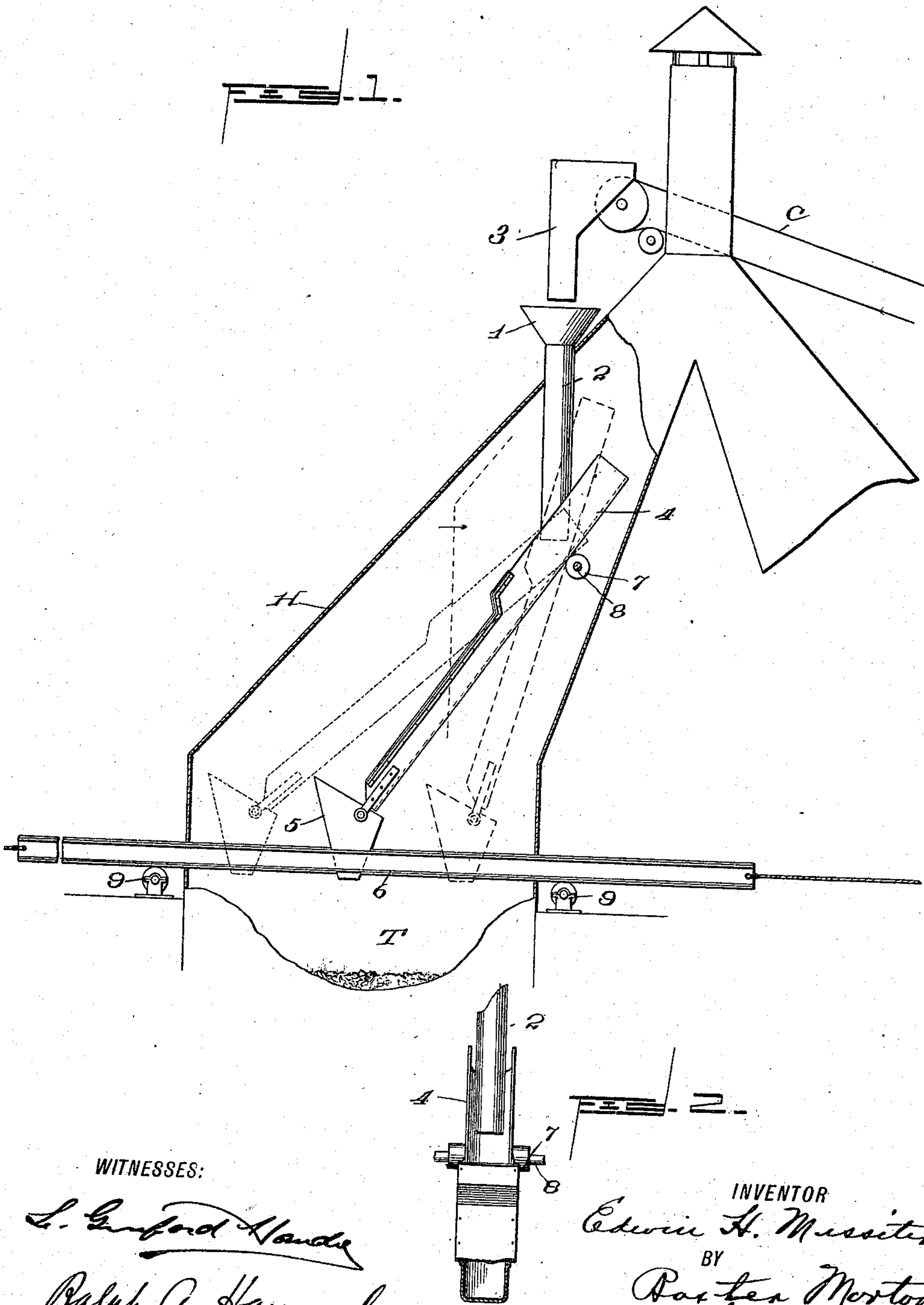


No. 840,574.

PATENTED JAN. 8, 1907.

E. H. MESSITER.
FURNACE CHARGING APPARATUS.
APPLICATION FILED FEB. 7, 1905.

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WITNESSES:

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UNITED STATES PATENT OFFICE.

EDWIN H. MESSITER, OF NEW YORK, N. Y.

FURNACE-CHARGING APPARATUS.

No. 840,574.

Specification of Letters Patent.

Patented Jan. 8, 1907.

Application filed February 7, 1905, Serial No. 244,677.

To all whom it may concern:

Be it known that I, EDWIN H. MESSITER, a citizen of the United States, residing in the city, county, and State of New York, have
5 invented a new and useful Furnace-Charging Apparatus, of which the following is a specification.

This invention relates to furnace-charging apparatus, and particularly to apparatus for
10 charging furnaces for smelting lead, copper, or other metals which are treated in similar manner.

The present invention is closely related to that disclosed in my companion application,
15 Serial No. 244,676, filed on even date herewith; and the specific object of the present invention is to provide a simple, inexpensive, and efficient apparatus which is adapted to be almost wholly inclosed within the
20 hood of a smelting-furnace and by means of which it will be possible to effect the distribution of the charging material within the furnace in the manner best adapted to the conditions existing within the furnace at all
25 times.

With the object above stated and certain others in view, as will hereinafter appear, the invention consists of means at the top of the furnace-hood for supplying and introducing
30 a stream of charging material into the furnace and means inclosed within the hood for effecting the distribution of the charging material over the top of the charge within the furnace.

In the accompanying drawings, forming part of the specification, in which corresponding parts are designated by similar characters of reference, I have illustrated one
35 embodiment of the invention which will be hereinafter described in detail, and the scope of the invention will be clearly defined in the appended claims.

In the drawings, Figure 1 is a view, principally in side elevation, of the upper part of a
45 smelting-furnace and its hood with the charging apparatus shown in position within the hood, portions of which are broken away to show the structure of the charging apparatus. Fig. 2 is a detail view showing the
50 mode of supporting the upper end of the distributing-trough beneath the spout through which material passes to the distributing-trough.

Referring to the drawings by the reference

characters marked thereon, H designates the
55 hood at the top of the furnace, which may be of any suitable construction, and T designates the top of the charge within the furnace-shaft, which is preferably of the rectangular cross-section commonly adopted in
60 copper and lead furnaces.

In the upper part of the hood H is fixed a hopper 1, from which a spout 2 extends downward some distance within the hood. Above the hopper 1 a conveyer C, which is
65 preferably of the belt type, is arranged to discharge a substantially continuous stream of charging material, and to guide the stream of material into the hopper 1. I preferably employ a special form of hopper 3, suitably supported above the hopper 1 and adjacent to
70 the end pulley of the conveyer.

The structures mentioned in the preceding paragraph serve to supply a substantially continuous stream of charging material and
75 to introduce it within the hood of the furnace. The apparatus for effecting the distribution of the stream of charging material over the top of the charge is almost wholly inclosed within the hood, as shown in Fig. 1. Immediately beneath the spout 2 a trough 4 is provided, which is arranged for periodic movement to and fro over the top of the charge in
80 the furnace, and all the material which passes downward through the spout is deposited in the trough 4. The upper portion of the trough is deeper than the lower portion and is open at the side to receive the lower end of the spout 2 and permit the shifting of the trough with reference to the spout. The lower
90 portion of the trough is provided with a covering along the side to prevent the escape of material from the trough in its movements within the furnace-hood. At its lower end the trough is pivotally mounted upon a hopper 5, which is rigidly attached to a carriage
95 6, arranged for horizontal travel above the charge in the furnace. The upper portion of the trough 4 rests upon a roller 7, mounted upon a shaft 8, which may be supported in
100 any suitable manner within the hood H.

The carriage 6 extends through the slide-walls of the hood and is supported by suitable rollers 9, arranged outside of the hood, as shown. The carriage is of sufficient length
105 to permit the hopper 5, which is mounted midway between the ends of the carriage, to move entirely across the top of the charge in

the furnace, as clearly indicated by dotted lines in Fig. 1. A reciprocatory movement is imparted to the carriage by any preferred form of mechanism for that purpose, the
 5 mechanism described in my above-mentioned companion application being excellently adapted for use with this apparatus. As the means employed for imparting reciprocatory movement to the carriage forms no
 10 part of the present invention, I have not described or illustrated in this application any mechanism for that purpose.

The operation of the apparatus above described will be readily understood from the
 15 description and from the accompanying drawings. The charging material, which must of course be mixed in proper proportions, is carried by the conveyer C to the top of the furnace and is there discharged
 20 through the hopper 3 into the hopper 1, fixed in the furnace-hood. From this hopper the charging material passes downwardly into the conduit or trough 4, through which it descends into the hopper 5, which serves merely
 25 to guide the stream of material directly downward. The hopper 5, being fixed upon the carriage 6, travels to and fro over the top of the charge in the furnace, and the rate of travel of the hopper 5 may be controlled in
 30 such a way that the charging material will be supplied as required at different points on the top of the charge. As the trough 4 has a very steep pitch in all the positions which it takes, the charging material will pass down-
 35 wardly through the trough at a substantially uniform rate regardless of the position of the trough, and no account need be taken of the change of pitch of the trough as the hopper 5 moves to and fro over the charge in the fur-
 40 nace.

While I have described only a single embodiment of the invention, it will be readily seen that other structures differing in details of construction may be made without de-
 45 parting from the spirit of the invention, and I do not, therefore, limit myself to the exact form of the apparatus shown, but reserve the right to make changes therein within the scope of the claims.

Having thus described the invention, what I claim is—

1. In furnace-charging apparatus, the combination with means for introducing charging material within the furnace-hood, of distributing devices inclosed within the furnace-
 55 hood and arranged for periodic movement in a single vertical plane.

2. In furnace-charging apparatus, the combination with a furnace-hood having a hopper fixed therein and adapted to discharge ma-
 60 terial within the hood, of a chute or conduit arranged to receive material from said fixed chute and having its lower end mounted for periodic movement in a single vertical plane.

3. The combination with a furnace-hood
 65 having a charging-aperture therein, of means for discharging material through said aperture and distributing devices within the furnace-hood, said distributing devices being
 70 arranged for reciprocatory movement in a single vertical plane only and adapted to receive material from said charging-aperture in all positions of said distributing devices.

4. In furnace-charging apparatus, the combination with a furnace-hood of a carriage ar-
 75 ranged for reciprocatory movement transversely through said hood, a conduit having its lower end arranged for travel with said carriage and its upper end resting on a fixed
 80 support, and means for supplying charging material to the said conduit at its upper end.

5. In furnace-charging apparatus, the combination with a furnace-hood of a carriage ar-
 85 ranged for reciprocatory movement transversely through the hood at its base, a hopper fixed upon said carriage, a conduit having its lower end pivoted on said hopper, a roller fixed in the upper part of said hood upon
 90 which the upper end of said conduit rests, and means for supplying charging material to said conduit at its upper end.

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

EDWIN H. MESSITER.

Witnesses:

BAXTER MORTON,
 ROSCOE L. PETERSON.