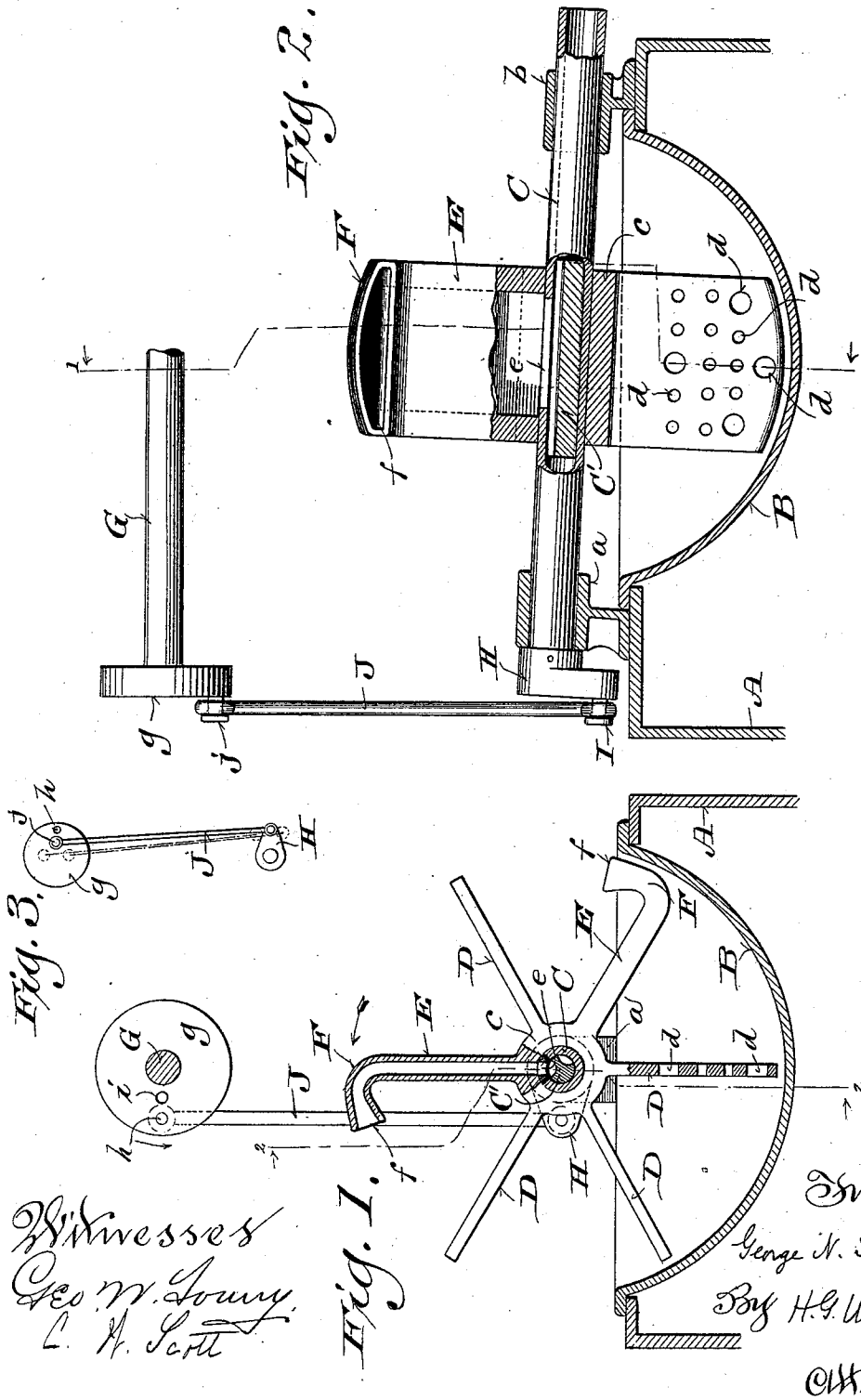


(No Model.)

G. N. SCEETS.
DEVICE FOR MIXING MOLTEN METALS.

No. 534,377.

Patented Feb. 19, 1895.



UNITED STATES PATENT OFFICE.

GEORGE N. SCEETS, OF MILWAUKEE, WISCONSIN, ASSIGNOR OF ONE-HALF
TO JOHN G. THOMPSON, OF SAME PLACE.

DEVICE FOR MIXING MOLTEN METALS.

SPECIFICATION forming part of Letters Patent No. 534,377, dated February 19, 1895.

Application filed October 27, 1893. Serial No. 489,302. (No model.)

To all whom it may concern:

Be it known that I, GEORGE N. SCEETS, a citizen of the United States, and a resident of Milwaukee, in the county of Milwaukee, and in the State of Wisconsin, have invented certain new and useful Improvements in Devices for Mixing Molten Metals; and I do hereby declare that the following is a full, clear, and exact description thereof.

My invention relates to devices for mixing molten metals, and consists in certain peculiarities of construction and combination of parts, as will be fully set forth hereinafter and subsequently claimed.

In the drawings: Figure 1 is a vertical sectional view of a device embodying my invention, taken on the line 1—1 of Fig. 2. Fig. 2 is a view of the same, in side elevation, partly in section on the line 2—2 of Fig. 1. Fig. 3 is a detail view, on a reduced scale, illustrating the operation of my device.

Referring to the drawings, A represents the upper part of a furnace, and B an open melting pot supported thereon, it being understood that in practice there is a fire-bed beneath said melting pot, with proper means for sustaining the combustion of the fuel, and for the disposition of the products of combustion, all of which may be of any ordinary or suitable construction, and which has nothing to do, specifically, with my present invention. Upon the upper side of the furnace A are suitable bearings *a b*, the former rising to a greater height than the latter, and supported in these bearings is a hollow shaft C, having preferably a channeled casting C' inserted therein the bearings being so formed that the said shaft is inclined from one end to the other, as shown in Fig. 2. The central part of this shaft is reinforced, as shown at *c*, to form a hub, from which radiate a number of stirring blades D D, each of which is formed with series of perforations *d d* therethrough. At intervals, between two of these described stirring blades D are arranged hollow blades E, also radially disposed about the said hub *c* and projecting therefrom, and each communicating, by a passage *e*, with the interior of the hollow shaft C. Each of these hollow blades E terminates outwardly in a bent end F, hav-

ing a flaring mouth *f*, which serves as a ladle, as hereinafter explained.

G is a shaft which communicates with the source of power, not shown, and terminates in a disk *g*, which, in the construction illustrated in the drawings, is provided with two holes *h*, *i*, for the reception of a wrist-pin *j*.

H is a crank-arm secured to the inner end of the hollow shaft C, and provided with a wrist-pin I, while J is a pitman connecting the two wrist-pins I and *j*, and in Figs. 1 and 2 the wrist-pin *j* is shown as located in the hole *h* in the disk *g*, adjacent to the periphery of said disk.

The operation of my device will be readily understood from the foregoing description of its construction, taken in connection with the accompanying drawings.

In the melting together of various metals, of different specific gravity, great care has always to be exercised in order to blend the mass into a homogeneous condition, as otherwise the lighter metals are liable to rise to the top, and be carried away with the dross, and to prevent this frequent stirring is necessary. With my device in order to thoroughly mix the contents of the melting pot, I do not wish to wholly revolve the shaft C and the blades thereto attached, but merely to reciprocate said blades back and forth in the molten metal, and hence, at this initial stage when I employ the power-imparting devices illustrated, I would remove the wrist-pin *j* from the hole *h* in the disk *g* and place it in the hole *i*, as shown in Fig. 3, and then, the attached end of the pitman J being so much nearer the center of the disk *g*, when the said disk was revolved on the shaft G (the latter being geared or connected to the source of power so as to move slowly) the crank-arm H and shaft C would not be revolved, but merely reciprocated, carrying the stirring blade D back and forth. In small plants or whenever more convenient, a simple crank-handle may take the place of the wrist-pin I and the crank H, shaft C and attachments may be reciprocated (or rotated, when necessary) by hand. When the melted metal is thoroughly mixed, and in suitable condition for pouring, the shaft C with its blades D E is revolved,

either by hand as just stated, or if by power, the wrist-pin *j* (with pitman *J* attached) is placed in the described outer hole *h* of the disk and power applied, as before. This causes the shaft *C* to revolve, in the direction of the arrow shown in Fig. 1, and as the bent ends of the hollow blades *E* pass through the molten metal, the flaring mouths *f* act as ladles and scoop up the metal, and then, as each hollow blade again assumes an upright position, this metal passes down and into the shaft *C*, through the openings *e* and runs out the inclined lower end into a suitable receptacle. In this manner the melted mass is properly mixed and automatically delivered in a suitable condition for casting.

While I have shown what I regard as a simple and practical construction, it will be understood that I do not confine myself thereto, as many of the details thereof may be varied without departing from my invention.

The number of blades is immaterial, but when I employ a series of them, I prefer to arrange at least one stirring blade in front of each hollow blade, so as to thoroughly mix the metal immediately before it is ladled up by the latter. If but one or two of these hollow blades *E* be employed on the shaft *C* my device will give satisfactory results, and by reason of the width of the blade, as shown in the drawings, being ordinarily over a third of the greatest diameter of the melting pot *B*, my blade will serve excellently well as stirrers, as necessarily, the greater portion of the contents of the melting pot is broken up, displaced and rearranged every time a single one of my blades *E* reciprocates or moves therethrough but a better and quicker mixing of the contents of the melting pot is obtained by reason of the reciprocation or passage therethrough of the stirring blades *D*, whose efficiency for the most thorough mixing of the contents of the pot *B* is dependent upon the described series of transverse perforations *dd*, extending entirely through said blades, and as the blades *E* are of uniform width throughout their entire length, all of the melted contents which has just been stirred by said blades (or by the blades *D*) will pass into the flaring mouth *f* of the blades *E*, which would not happen, were it not for the described flaring construction of said mouths, and especially would not be the case if said mouths were at the end of simple pipes, instead of flat wide blades, as shown and described.

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

1. In a device for mixing molten metals, the combination with a suitable melting pot, of a revoluble shaft extending transversely entirely across and above said pot, and provided with a channel for said material, and a wide

blade projecting from said shaft, said blade being hollow and communicating with the channel in said shaft and terminating in a mouth for collecting the molten metal in the passage of said blade through the said melting pot, the said blade from the axle to the mouth being everywhere of a width equal to or greater than its diameter at said mouth, whereby the thorough stirring of the molten metal, as well as its collection in said mouth, is insured.

2. In a device for mixing molten metals, the combination with a suitable melting pot, of an inclined revoluble hollow or channeled shaft extending transversely entirely across and above said pot, and a wide hollow blade communicating with the channel in said shaft, and terminating in a bent end and flaring mouth, the said blade from the axle to the mouth being everywhere of a width equal to or greater than its diameter at said mouth, for the insuring of a thorough mixing and collection of said molten metal.

3. In a device for mixing molten metals, the combination with a suitable melting pot of a revoluble shaft supported above the same and provided with a channel for said material, and a series of blades projecting from the said shaft, one or more of said blades being hollow and communicating with said channel and terminating in a collecting mouth, and one or more of said blades serving to stir and mix the contents of said melting pot.

4. In a device for mixing molten metals, the combination with a suitable melting pot, of an inclined revoluble hollow or channeled shaft supported above the same, and a series of blades radially projecting therefrom, certain of the blades being hollow and communicating with the interior of said shaft and terminating in metal collecting mouths, and the other blades being provided with series of transverse perforations.

5. In a device for mixing molten metals, the combination with a suitable melting pot of an inclined revoluble hollow or channeled shaft supported above the same, a series of hollow metal collecting blades projecting from said shaft, and communicating with the interior thereof, a series of stirring blades also projecting from said shaft, at least one of said stirring blades projecting in front of each of the said hollow blades, and adjustable means for oscillating or revolving said shaft and its projecting blades, as described.

In testimony that I claim the foregoing I have hereunto set my hand, at Milwaukee, in the county of Milwaukee and State of Wisconsin, in the presence of two witnesses.

GEORGE N. SCEETS.

Witnesses:

H. G. UNDERWOOD,
GEO. W. YOUNG.