This invention relates broadly to zinc distillation or spelter furnaces of the horizontal or substantially horizontal retort type and more particularly to an improved form of condenser support for use in such furnaces.

Heretofore it has been common accepted practice to use as standard equipment in the above type of furnace what are generally termed a "front plate" and a "front plate casting," the front plate having been formed of refractory material such as fire clay and served as a support for the front or open ends of a pair of retorts, while the front plate casting was formed of cast iron and served as a support for the condensers and also as a brace for the buckstays.

When installed, the front plate was supported on the shoulders of the pillars on each side of the couple and extended outward from under the open ends of the retorts generally about a distance of six inches and connected with the front plate casting by a lap joint, the two forming a shelf say, for example, about thirteen inches wide. This shelf type of support was open to numerous objections, among which was the accumulation of charge and exess luting material under and around the condenser, the removal of which was a very hot and laborious task; the sheltering effect of the shelf with respect to the condenser, thus preventing uniform distribution over the entire length of the condenser of the heat radiated from the furnace front; the cost of construction and installation and rapid deterioration.

The present invention overcomes the foregoing objectionable features by eliminating the shelf formed by the front plate casting and front plate and in place of these parts utilizes as a support for the condenser an open type construction which serves as a brace for the buckstays, while the front plate which serves as a support for the front ends of the retorts is of materially less width than the old type of plate so that it does not extend outward beyond the open ends of the retorts.

With the foregoing and other objects and advantages in view, the invention consists in the preferred construction and arrangement of the several parts which will be more fully hereinafter described and claimed.

To gain an understanding of one particular type of construction which may be adopted in carrying out the features of the invention, reference is had to the accompanying drawings, wherein:

Figure 1 is a sectional elevation of part of a spelter furnace showing a preferred type of the improved condenser support installed therein;

Figs. 2 and 3 are sectional views taken, respectively, on the lines II—I and III—III, Fig. 1.

Figure 4 is a fragmentary detail partly in section showing one of the condensers in elevation and resting on the "grasshopper" support.

The reference numeral 5 designates the rear refractory wall of the furnace, and 6 the retorts, which are supported at their rear ends on ledges built in said wall and at their front ends are supported on plates 7 which rest on shoulders 8 formed on the furnace pillars 9.

The plates 7, in contradistinction to the old type of support, are materially reduced in width so that they do not extend outwardly (to any material extent) beyond the open ends of the retorts and under the condensers 10, as will be clearly seen in Fig. 1.

The preferred construction and method of installation of the condenser supports is clearly shown in Fig. 2. These supports are generally indicated at 12 and, as shown in the present instance, each support consists of two bars 12, preferably of steel and set a suitable distance apart, depending upon the width of the buckstays 13, said bars being tied together by cross bars 12. These bars may be of any desired number and shape, their shape as here shown being one round and one square, the square bar being positioned in front and having the usual angle iron prop or what is termed the "grasshopper" 14 resting thereon, the front end of the condenser resting on said prop. At each end the bars 12 are supported on lugs 15 which may form part of the buckstays 13 and serve as a brace for the latter.
The foregoing type of support entirely eliminates the objectionable shelf feature present in the old support and prevents the accumulation of charge and excess luting material under and around the condenser, and being entirely open, permits the heat radiated from the furnace front to be more uniformly distributed over the entire length of the condenser, thereby increasing its efficiency.

Practical experience has demonstrated that the improved support is stronger and lasts longer than the old type of support, and by its use, installation and maintenance costs can be materially reduced while at the same time the tasks of the furnace attendants are lightened.

What is claimed as new is:
1. In a spelter furnace, the combination with pairs of retorts and condensers mounted in cooperative relation therewith, supporting shouldered pillars and reinforcing buckstays, a supporting plate for each pair of said retorts, said plate resting at its opposite extremities on the shoulders of said pillars with its outermost edge lying in substantially the same vertical plane as the ends of the retorts, and a support for each pair of said condensers formed of spaced steel bars which rest at opposite extremities on lugs forming part of said buckstays.
2. In a spelter furnace, the combination with a retort and condenser mounted in cooperative relation therewith, pillars and reinforcing buckstays, said pillars being provided with shoulders, a supporting plate for said retort, said plate resting at its opposite extremities on said shoulder of said pillars with its outermost edge lying in substantially the same vertical plane as the end of said retort, and a support for said condenser formed of spaced pairs which rest at opposite extremities on lugs forming part of said buckstays.

In testimony whereof, I have hereunto set my hand.

MARION CHESTER SKINNER.