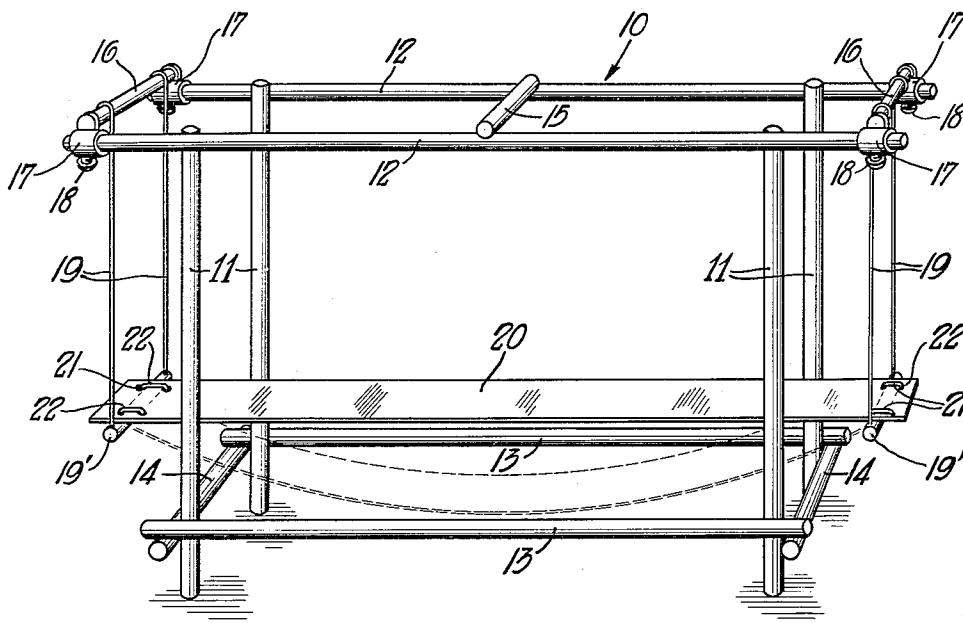


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APPARATUS FOR SUPPORTING SHEET-METAL
SPECIMENS DURING SAG TEST
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APPARATUS FOR SUPPORTING SHEET-METAL SPECIMENS DURING SAG TEST

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1 Claim. (Cl. 73—100)

This invention relates to a support for holding a sheet-metal specimen while it is being subjected to enameling temperature for the purpose of determining its resistance to sagging.

An important quality of sheet steel used in fabricating ceramic enameled ware is its resistance to sagging when heated to the temperatures ordinarily involved in firing the enamel coating. No satisfactory means has been available, however, for determining in advance the sag resistance of a given lot of steel sheets. I have invented a novel support for holding a sheet-metal specimen when heated to enameling temperatures, so as to permit an accurate determination of the property of the metal in respect to sagging.

In a preferred embodiment, the invention comprises generally a frame of such material and construction as to remain rigid at enameling temperatures, provided with a pair of spaced bifilar suspensions or trapezes. An elongated sheet specimen is supported adjacent its ends on the trapezes and is thus free to sag without restraint when heated to the enameling temperature. The precise amount of sag may be thereafter determined by suitable measurement.

A complete understanding of the invention may be obtained from the following detailed description and explanation which refer to the accompanying drawing illustrating the present preferred embodiment. The single figure of the drawing is a perspective view of the supporting frame showing a sheet specimen in position on the suspensions.

Referring now in detail to the drawing, I provide a supporting structure 10 comprising four posts 11 connected by upper and lower longitudinal bars 12 and 13. The ends of bars 12 project beyond the posts. The pairs of adjacent posts are connected by cross bars 14. A similar bar 15 connects the midpoints of the upper longitudinal bars 12 and affords a convenient means for lifting and transporting the frame.

The frame members are rods of heat-resistant steel welded together at their points of contact. The frame is of such size that it can easily be carried by hand and is adapted to stand on the floor or hearth of a furnace in which the temperatures involved in ceramic enameling can be maintained.

Spaced transoms 16 have bushings 17 at their ends adapted to fit on the projecting ends of bars 12. Set screws 18 threaded into radial holes in the bushings permit them to be secured in adjusted position along the bars 12. Each transom is fitted with a bifilar suspension or swinging trapeze 19 of wire including a horizontal bar 19' of porcelain. The wire of the suspension is of Nichrome or similar heat-resisting alloy. The trapezes

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are adapted jointly to support a sheet-specimen 20 when disposed in the frame as a horizontal beam with its ends resting on bars 19'. The specimen has holes 21 punched therein to accommodate staples or forks 22 inserted through the holes and straddling bars 19' to prevent the ends of the specimen from slipping thereon when it sags under heat.

When it is desired to use the device described above, transoms 16 are adjusted to the proper spacing, say ten inches. A thin layer of fire-clay paste is applied to the portions of the specimen which will be engaged by bars 19', to prevent sticking. The specimen should be heat-treated beforehand to relieve any stress therein occasioned by cutting the specimen from the sheet. When the paste has dried, the specimen which is otherwise bare, is mounted on the trapezes and the supporting frame is placed in a heating furnace. The specimen is thereby subjected to a temperature of from 1300 to 1850 F. On being heated for about 10 minutes it loses mechanical strength and naturally sags at the middle under its own weight to a position such as that indicated in dotted lines. The frame and specimen are then removed from the furnace and permitted to cool to room temperature. When the specimen has cooled, the clay is removed therefrom and it is placed on a pair of spaced, parallel horizontal supporting pins. The degree of deflection is then measured by a micrometer-slide comparator and compared with a reading taken from the undeflected specimen before heating.

The supporting structure of my invention has several advantages. In the first place, the sag of the specimen is almost wholly unrestrained by the supports. In addition, the sag occurs over the entire length of the specimen between supports. The specimen will not slip off the supports, furthermore, even when the sag is large. Finally, the test results obtained are more accurate and readily reproducible than those of sag-resistance tests used previously.

Although I have disclosed herein the preferred embodiment of my invention, I intend to cover as well any change or modification therein which may be made without departing from the spirit and scope of the invention.

I claim:

A structure adapted to be placed in a furnace for supporting elongated sheet-metal specimens while being heated to enameling temperatures for sag-resistance testing, said structure comprising spaced parallel horizontal bars, a pair of spaced transoms connecting said bars, a pair of spaced suspensions carried by said transoms, each suspension including a refractory trapeze bar and a pair of wires of heat-resistant alloy connected one adjacent each end thereof, and legs supporting said first-mentioned bars at a level such that said suspensions swing freely, said bars, transoms and legs being composed of heat-resistant steel, whereby they retain their rigidity when the structure is subjected to said temperatures.

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