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HEAT COMPENSATED SUPPORT FOR AN ELONGATED ELEMENT

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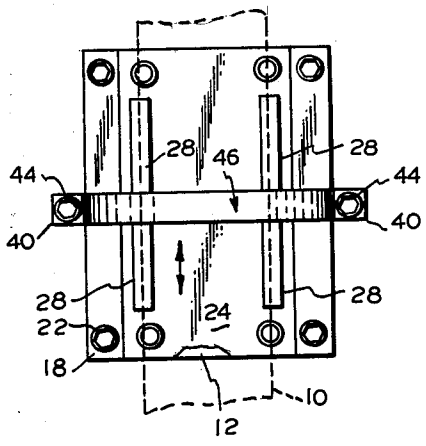


FIG. 2

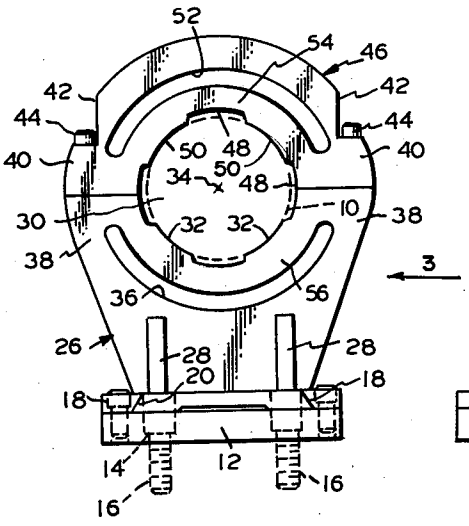


FIG. 1

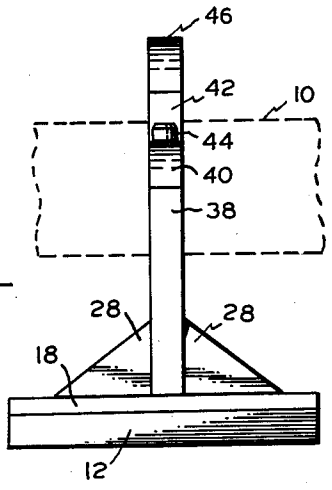


FIG. 3

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HEAT COMPENSATED SUPPORT FOR AN ELONGATED ELEMENT

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This invention relates to a support for an elongated element for special conditions where the elongated element has heat applied thereto and therefore expands either longitudinally or radially or both, and the principal object of the invention resides in the provision of such a support to closely and accurately hold and maintain said elongated member regardless of the conditions of heat involved and also to preserve the original axial alignment of the elongated member. Situations in which such a support is found advantageous among others is in extruding machines for extruding or compounding plastic materials, these requiring the application of heat to the barrel in which the plastic is processed in consequence of which the barrel tends to elongate as well as to expand in a radial direction, the novel support of the present invention however holding the barrel accurately and closely while at the same time expanding with it in a radial direction and moving with it in a longitudinal direction on a sub-support.

Other objects and advantages of the invention will appear hereinafter.

Reference is to be had to the accompanying drawings, in which

FIG. 1 is a view in front elevation illustrating the invention;

FIG. 2 is a plan view thereof, and

FIG. 3 is a view in side elevation, looking in the direction of arrow 3 in FIG. 1.

Referring now to FIG. 1, the barrel or other elongated element which is to be supported as for instance in a horizontal position is shown in dotted lines and is indicated generally by the reference numeral 10. This element may be anything which needs support and to which heat is to be applied or which may generate heat in such a way as to become distorted in some way as for instance expanding in a radial direction or elongating.

In order to hold member 10 in the required position, there is provided some kind of a frame (not shown) and which may be of any description, and on this frame there is provided a plate 12. This plate is applied in fixed position in any way desired but it is preferred that the plate shall be counterbored as at 14 for the reception of cap screws 16 threaded into the frame mentioned above.

The plate 12 is generally rectangular or square and is provided at its side edges with ways 18, 18. These ways are undercut as at 20, 20 and are fixed in position in any way desired as for instance by fasteners 22, 22.

Slidably mounted on plate 12 and held between the ways there is a plate 24 which has side edges conforming to the undercut edges of the ways at 20, and it will be seen therefore that this plate is free to move in the direction of the arrows in FIG. 2 but is rigidly held against any other motion and the ways may be made as tight or as loose as may be necessary in order to closely hold plate 26 with respect to plate 12 but still without forming an impediment to the motion thereof.

Mounted on plate 24 there is an upstanding transverse plate generally indicated by the reference numeral 26. This plate may be provided with struts or the like 28, 28 to assist in maintaining it in its upright position and this plate is provided at its top edge with a recess 30 which is provided with at least a pair of outstanding projections or abutments 32. The recess 30 is shown as semicircular but need not be of this shape. The abutments 32 are

provided with curved surfaces which extend along the arc of a circle having a radius whose center is at the point 34 and point 34 in FIG. 1 represents the axis of the barrel or element which is to be supported.

The plate 26 is also provided with a generally semicircular gap or opening 36 which is arranged on an arc of a circle having the same center at 34.

The plate 26 also has what amounts to a pair of upstanding arms 38, 38, these being flat-topped and receiving thereon similar arms 40, 40 which may be cut in as at 42 to accommodate fastenings 44, 44 by which an upper plate 46 is fastened to plate 26 as shown in FIG. 1. The plate 46 is an extension of the plate 26 and is coplanar therewith and is also provided with a recess as at 48 complementary to the recess 30. The recess 48 has abutments 50, 50 which have curved surfaces formed on an arc of a circle having a center at 34 and also plate 46 is provided with a semicircular gap 52 which is complementary to that at 36 and is on the arc of the same circle.

It will be seen therefore that the element at 10 is closely engaged by means of the abutments having surfaces at 32, 32 and 50, 50. When the element 10 is heated, this heat is conducted to the corresponding abutments and into the adjacent areas of the plates 26 and 46, but by reason of gaps 36 and 52, the parts of the plates which are indicated at 54 and 56 and are formed by the gaps 36 and 52, are allowed to expand along with the expansion of the element 10 due to the heat mentioned, and it will therefore be seen that regardless of the heat applied or the expansion, a very rigid support is maintained which does not disrupt or damage in any way the element 10 but at the same time continues to hold the same in the four point support described in such a way that the axis 34 is always maintained regardless of the expansion of the element 10.

In many cases the element 10 will elongate under conditions of heat and when this happens due to the firm support of the element by means of the plates 26, 46, the plate 24 will slide along its ways to an extent to allow for this expansion while still gripping element 10, and therefore the apparatus which forms the basis of the present invention provides an accurate support at all times regardless of conditions of heat whether applied or induced relative to the barrel or other elongated element 10.

The element 10 has been indicated as cylindrical, and the gaps 36 and 52, the recesses in plates 26 and 46, and the element-contacting abutments 32 and 50 have all been illustrated as based on such an element, but of course the element can be of other sectional shapes as well, with the other parts conforming thereto.

Having thus described my invention and the advantages thereof, I do not wish to be limited to the details herein disclosed, otherwise than as set forth in the claims, but what I claim is:

1. A support for an elongated element subject to variations due to heat, said support comprising a base, a plate slidable rectilinearly on said base, a second plate mounted transversely of said first plate and at a right angle thereto, said second plate having a concave upper edge, an outwardly extending supporting protuberance on said concave edge, a plate complementary to the second plate, means securing the complementary plate to the second plate in edge-to-edge relation, said complementary plate having a concave edge forming an opening with the concave edge in the second plate, said opening being completely surrounded by the second and complementary plate, a supporting protuberance on the complementary plate, said protuberances together providing supports for said elongated element and rigidly and fixedly contacting and holding the same at spaced points about the periphery thereof, and an elongated gap in each of said second and

complementary plates, said elongated gaps substantially surrounding the opening and providing for a generally even expansion of the edges of the second and complementary plates under conditions of applied heat with respect to said element, the latter being generally parallel to the base and at right angles to the second plate and its complementary plate.

2. The support of claim 1 wherein said first plate is rectilinearly slidable on said base in a direction parallel to the axis of the first opening formed by the second and complementary plates.

3. The support of claim 1 wherein the opening formed by the concave edges of the second and complementary plates is substantially circular.

4. The support of claim 1 wherein the opening formed by the concave edges of the second and complementary plates is substantially circular and the gaps are substantially semicircular and on arcs of a circle having a center substantially at the center of the opening.

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