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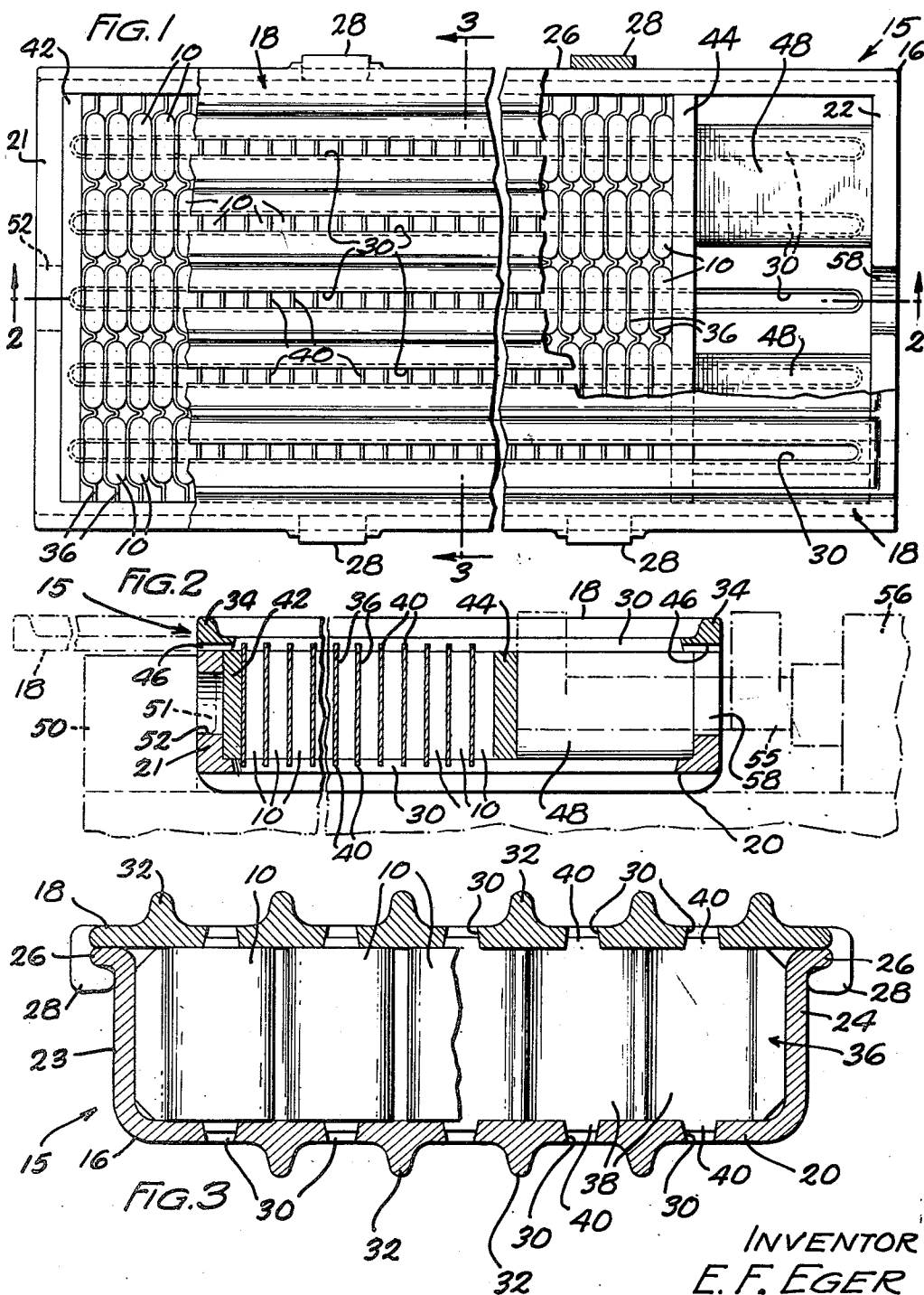
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FIXTURE FOR USE IN COATING PARTS OF ARTICLES

Filed March 30, 1950

2 Sheets-Sheet 1



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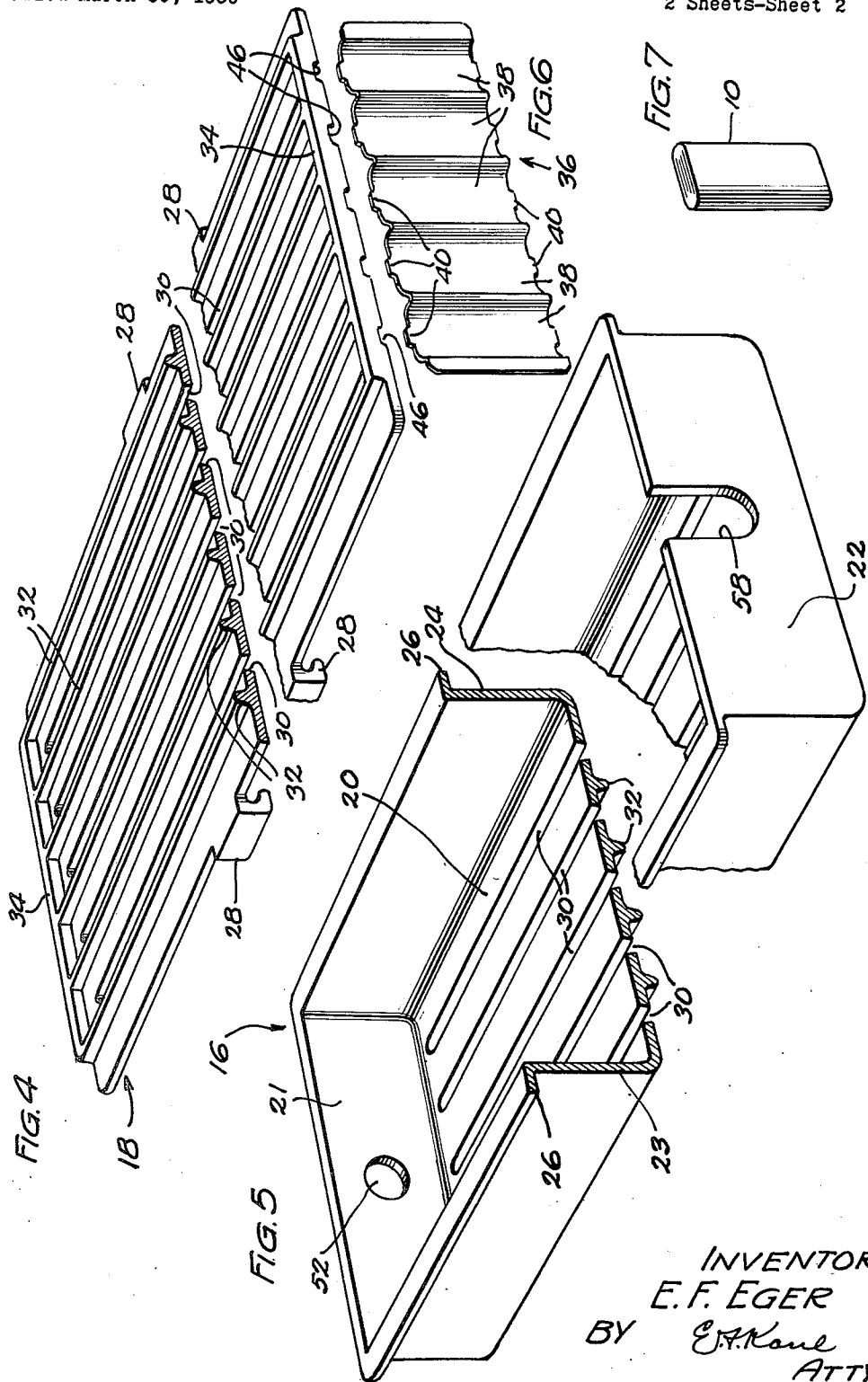
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2 Sheets-Sheet 2



UNITED STATES PATENT OFFICE

2,690,733

FIXTURE FOR USE IN COATING PARTS OF ARTICLES

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9 Claims. (Cl. 118—503)

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This invention relates to a fixture for holding a plurality of wound metallized paper condensers under pressure in rows and for masking the condensers except for a portion of each end thereof to facilitate the application of terminals to the condensers by spraying molten solder to the exposed portions of the ends thereof.

Wound metallized paper condensers of the type disclosed in the co-pending application of Fralish et al., Serial No. 143,126, filed February 8, 1950, may have suitable terminals formed thereon by spraying molten solder onto predetermined portions of the ends thereof, which solder spraying operation may be performed in any suitable machine, as, for example, the machine disclosed in the co-pending application of E. F. Eger and C. R. Rasmussen, Serial No. 152,935, now Patent 2,622,554, filed March 30, 1950. To expedite the application of the terminals to the condensers, it is desirable to arrange the condensers in rows and mask all but the predetermined portions of the ends thereof to which the terminals are to be applied.

It is an object of the present invention to provide an effective and efficient fixture for supporting a plurality of articles and masking parts of them during the coating of the unmasked parts.

Another object of the invention is the provision of a fixture for supporting a plurality of paper wound condensers in a row and to mask the condensers, except for predetermined portions of the ends thereof to which terminals are to be applied by spraying molten solder thereto.

In one embodiment of the invention, the fixture for supporting the condensers is in the form of a box-like container having one wall thereof removably attached thereto, the removable wall and wall opposite thereto being provided with a plurality of aligned longitudinally extending slots. The container is adapted to support a plurality of condensers in compressed condition in rows parallel to the slots with the ends of the condensers in engagement with the slotted walls, and with predetermined portions of the ends of the condensers exposed through said slots. In each row adjacent ones of the condensers are separated from each other by metal spacer sheets which extend transversely of the container, and have recesses formed therein for receiving the condensers to space them laterally of the container in alignment with the slots in the walls, and have tabs extending beyond the ends of the condensers into the slots of the opposed walls of the container whereby the fixture with the con-

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densers therein may be moved past a spray gun for supplying molten solder onto the exposed end portions of the condensers to form terminals thereon.

Other objects and advantages of the invention will become apparent by referring to the following detailed description thereof and the accompanying drawings illustrating one embodiment in which

Fig. 1 is a plan view of the fixture with parts broken away and showing a plurality of condensers assembled therein;

Fig. 2 is a fragmentary central longitudinal vertical sectional view of the fixture shown in relation to a press for compressing the condensers in the fixture;

Fig. 3 is an enlarged vertical cross-sectional view of the fixture taken on the line 3—3 of Fig. 1;

Fig. 4 is a perspective view of the tray forming a part of the fixture with parts broken away;

Fig. 5 is a perspective view of the cover portion of the fixture with portions broken away;

Fig. 6 is a perspective view of one of the separator and spacer sheets of the fixture; and

Fig. 7 is a perspective view of a metallized paper condenser of the type which is processed in the present fixture.

Condenser sections 10 (Fig. 7), made according to the method described in the aforementioned co-pending application of Fralish et al., Serial No. 143,126, filed February 8, 1950, have terminals formed at opposite ends thereof by spraying molten metal across predetermined portions of the ends, and in order to confine the spraying of the molten metal to the predetermined portions of the ends of the condensers, they are supported in a fixture 15, which serves to mask the condensers except for portions thereof to which the terminals are to be applied. The fixture 15 comprises a rectangular open tray 16 and a removable wall or cover plate 18, which cooperate to form a closed box-like container for enclosing the condensers. As shown in Fig. 5, the tray 16 comprises a rectangular bottom wall 20, from the edges of which extend end walls 21—22 and side walls 23—24, the latter having laterally extending flanges 26—26 thereon. The cover plate 18 is provided with a plurality of hook-shaped lugs 28—28 along opposite longitudinal edges thereof which cooperate with the flanges 26 to secure the cover plate 18 in closed position on the tray 16 and permit it to be slid longitudinally thereon when applying and removing the cover plate.

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The cover plate 18 and the wall 20 are provided with a plurality of aligned longitudinally extending slots 30—30 and the walls 18 and 20 adjacent the slots are provided with reinforcing ribs 32—32, the ribs 32 in the cover plate 18 joining with transversely extending ribs 34—34 at the ends thereof. The condenser sections 10 are adapted to be stacked within the tray 16 in rows in alignment with the slots 30 which determine the width of the terminals to be sprayed on the condensers and which are tapered to prevent the adherence of the solder terminal strip to the side wall surfaces of the slots 30 when the condensers and the component parts of the fixture are separated from each other.

In order to facilitate the positioning of the condenser sections 10 in the tray, separator and spacer members 36 are provided comprising sheet metal members adapted to extend transversely across the interior of the tray with the ends of the spacers in engagement with the side walls 23—24. Pockets or recesses 38—38 are formed in the separator sheets to receive the condenser units therein and serve to position them in predetermined spaced relation laterally of the tray, and thus arrange the condensers in rows longitudinally of the container and in alignment with the slots 30. On opposite edges of the separator sheets, tabs 40 are formed which extend into the slots 30 of the cover plate 18 and the wall 20.

In stacking the condenser sections 10 in the tray 16, the tray is first supported at an angle to facilitate the stacking operation and a spacer block 42 of approximately $\frac{1}{4}$ " in thickness is placed against the end wall 21. A spacer plate 35 is positioned in the tray against the block 42 and condensers 10 are positioned in the pockets 38 thereof, after which another spacer is positioned in engagement with the first laterally extending row of condensers and another lateral row of condensers is applied to the recesses 38 thereof, and this process is continued until the tray 16 has been filled with condensers, after which a pressure plate 44 is inserted in the tray between the end wall 22 and the endmost transverse row of condensers. The cover plate 18 may now be slid onto the tray, completely enclosing the condensers except for the portions thereof exposed through the slots 30. After this is done, the condensers will be compressed as described hereinafter. The slotted walls 18 and 20 are spaced apart a distance equal to the length of the condensers being processed so that the ends of the condensers assembled in the fixture are engaged by the walls. Shallow grooves 46—46 formed in the end portions of the cover plate 18 in alignment with the slots 30 therein, permit the cover plate 18 to be applied to and removed from the tray 16 when the separator plates 36 are in position therein.

When the container 16 has been filled with condensers, the condensers are compressed against each other and the end wall 21 under a pressure on the order of 100 pounds per square inch, and are maintained in compressed condition by a plurality of blocks or spacer members 48—48 interposed between the pressure plate 44 and the end wall 22. The compression of the condensers may be accomplished by placing the fixture in a press, indicated diagrammatically in Fig. 2, and comprising a stationary jaw 50, against which the end wall 21 is positioned, and having a boss 51 engageable in the recess 52 in the end wall 21 to prevent displacement of the end portion of the fixture. A head formed on the plunger 55 of a

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fluid actuator 56 of the press is adapted to move through a slot 58 in the end wall 22 into engagement with the end of the cover plate 18 and the pressure plate 44 and apply a predetermined pressure to the plate 44 to cause the compression of the individual condensers between the adjacent separator plates, the blocks 48 being inserted between the wall 22 and the pressure plate 44 before the plunger 55 is retracted. After the plunger 55 has been withdrawn, the cover 18 may be moved into its closed position on the tray 16 and the fixture 15 with the condensers therein may be removed and is ready to have solder sprayed thereon in a solder spraying machine, above referred to, to form terminals on the condensers.

The tabs 40 of the spacer sheets 36 project beyond the end of the condenser sections 10, and as previously mentioned fit in the slots 30 of the cover plate 18 in the wall 20, and these tabs 40 serve to form recesses in the terminal strip of solder which is formed in the slots 30 on the ends of the condensers when the molten solder is sprayed thereon, and these recesses between adjacent terminal portions of the strip of solder facilitate the separation of the condensers from each other when they are removed from the fixture. Although the separator sheets 36 as disclosed herein are designed to accommodate and position five condensers of one size in alignment with the slots 30 in the fixture, other separator sheets 36 are provided having recesses 38 which may be of different sizes and fewer in number, for example three, to accommodate condenser sections of other sizes to position them in alignment with the slots 30 in the fixture.

The outer faces of the cover plate 18 and the wall 30 are polished to present a smooth surface on which the overspray from the solder spraying machine is deposited during the terminal spraying operation so that, upon completion of the spraying operation and the removal of the condensers from the fixtures, the solder adhering to the plate 18 and the wall 20 may be easily removed therefrom as, by tapping or jolting the tray and the plate 18 to dislodge the hardened solder overspray therefrom.

It is to be understood that the above-described arrangements are simply illustrative of the application of the principles of the invention. Numerous other arrangements may be readily devised by those skilled in the art which will embody the principles of the invention and fall within the spirit and scope thereof.

What is claimed is:

1. A fixture for supporting a plurality of wound metallized paper condensers and masking predetermined portions thereof comprising, a box-like container for enclosing and supporting a plurality of condensers in a row and having portions forming a pair of opposed masking members at least one of which is removable for receiving the ends of said condensers in engagement therewith and provided with slots for exposing a predetermined portion of the ends of said condensers to permit molten solder to be sprayed onto the exposed portions of said condensers, means for removably securing the removable slotted masking member to the container, and spacer sheets extending across said container transversely of the slots in said masking members and having recesses for receiving said condensers to position the condensers in rows in alignment with said slots and in spaced relation to the condensers in adjacent rows and

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for separating adjacent condensers in said rows from each other.

2. A fixture for supporting a plurality of wound metallized paper condensers and masking all but predetermined portions thereof comprising, a box-like container for enclosing and supporting a plurality of condensers and having portions forming a pair of opposed parallel masking members, at least one of which is removable, engageable with the ends of said condensers, said opposed masking members each having a plurality of parallel slots therein with the slots in one member aligned with the slots in the other member, means for removably securing said removable member to said container, a plurality of spacer sheets extending across said container transversely of the slots in said members and having recesses formed therein for receiving said condensers to position the condensers in predetermined relation laterally of the container to form longitudinal rows thereof in alignment with said slots and serving to separate the adjacent condensers in said rows from each other, and tabs on said spacer sheets extending from a pair of opposite edges thereof and spaced apart distances equal to the spacing of the slots in said walls and fitting into the slots in said members.

3. A fixture for supporting wound metallized paper condensers and masking all but predetermined portions thereof, comprising an open tray having a rectangular bottom wall and side and end walls extending from the bottom wall a distance substantially equal to the length of the condensers being processed for receiving a plurality of the condensers therein with the ends of the condensers in engagement with said bottom wall, a cover plate for said tray engageable with the other ends of said condensers, means for removably securing said cover plate to said tray, a plurality of spacer members having ends engageable with the side walls of said tray and having a plurality of recesses in predetermined spaced relation to each other for receiving condensers therein to position said condensers in a predetermined relation transversely of the tray and in rows longitudinally of said tray, said spacers serving to separate the adjacent condensers in said rows from each other, said cover plate and said bottom wall having a plurality of parallel slots disposed in a predetermined relationship to expose a predetermined portion of the rows of the condensers supported in said container, and tabs on said spacer members extending from opposite edges thereof and in a predetermined spaced relation to each other and fitting into the slots in said cover plate and said bottom wall.

4. A fixture for supporting a plurality of wound metallized paper condensers and masking predetermined portions thereof, comprising an open tray having a rectangular bottom wall and side and end walls extending from said bottom wall a distance substantially equal to the length of the condensers being processed for receiving a plurality of said condensers therein with the ends of the condensers in engagement with said bottom wall, flanges extending outwardly from the side walls of said tray and substantially parallel to the top edges of said walls, a cover plate for said tray engageable with the other ends of said condensers and cooperating with said tray to form a container for enclosing said condensers, hook-shaped lugs on the side edges of said cover plate having portions slidably engageable with the flanges on said side walls for re-

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movably securing the cover on the tray, said cover and said bottom wall each having a plurality of parallel slots therein with the slots in the cover aligned with the slots in the bottom wall, and spacer sheets extending across said tray transversely of the slots in said cover and said bottom wall and having recesses for receiving said condensers for positioning said condensers in rows aligned with the slots in said cover and bottom wall.

5. A fixture for supporting a plurality of wound metallized paper condensers and masking predetermined portions thereof, comprising an open tray having a rectangular bottom and side and end walls extending therefrom a distance substantially equal to the length of the condensers being processed for receiving a plurality of said condensers therein with the ends of the condensers in engagement with said bottom wall, flanges extending outwardly from the side walls of said tray and parallel to the top edges of said walls, a cover plate for said tray engageable with the other ends of said condensers and cooperating with said tray to form a container for enclosing said condensers, hook-shaped lugs on the side edges of said cover plate slidably engageable with the flanges on said side walls for removably securing the cover on the tray, said cover and said bottom wall each having a plurality of parallel slots therein with the slots in the cover aligned with the slots in the bottom wall, a plurality of spacer sheets extending across said container transversely of the slots therein and having recesses for receiving condensers to position the condensers in predetermined relation laterally of the container to form longitudinal rows of condensers in alignment with said slots and serving to separate the adjacent condensers in said rows from each other, tabs spaced apart from each other on opposite edges of said spacer sheets projecting into the slots in said cover and said bottom wall, said condensers being compressible against one end wall, and means interposed between the other end wall and said condensers for maintaining said condensers in compressed condition.

6. A fixture for supporting a plurality of wound metallized paper condensers and masking all but predetermined portions thereof comprising a box-like container for enclosing and supporting a plurality of condensers and having portions forming a pair of opposed parallel masking members, at least one of which is removable, engageable with the ends of said condensers, said opposed masking members each having a plurality of parallel slots therein with the slots in one member aligned with the slots in the other member, means for removably securing said removable member to said container, and a plurality of spacer sheets extending across said container transversely of the slots in said walls and having recesses formed therein for receiving said condensers to position the condensers in predetermined relation laterally of the container to form longitudinal rows thereof in alignment with said slots and to separate the adjacent condensers in said rows from each other.

7. A fixture for supporting articles and masking all except limited areas on opposite ends thereof during the application of material onto said limited areas comprising a box-like receptacle having three pairs of opposed parallel masking members including a top member and a bottom member, said top member being removable, means for removably securing said top

member to said receptacle, the top and bottom masking members being spaced apart a distance equal to the length of said articles for receiving said articles therebetween and having a plurality of aligned slots therein, spacer sheets extending across said receptacle transversely of said slots and having recesses engageable with said articles for positioning said articles in rows in alignment with said slots to expose said limited areas of said articles, and means positioned between the ends of said rows of articles and one of said members opposite the ends of the rows of articles for holding the articles in said rows under pressure longitudinally of said rows.

8. A fixture for supporting articles and masking all except limited areas on the ends of said articles during the application of material onto said limited areas comprising a box-like receptacle having three pairs of opposed parallel masking members including a top member and a bottom member, said top member being removable, means for removably securing said top member to said receptacle, the top and bottom masking members being spaced apart a distance equal to the length of said articles for receiving said articles therebetween and with one of said pair of masking members having a plurality of slots therein, and spacer sheets engageable with the receptacle and having portions formed to engage three sides of said articles for positioning

said articles in rows in alignment with said slots to expose said limited areas of said articles and to separate said articles in said rows from each other.

9. A fixture for supporting a plurality of articles and masking all except limited areas on the ends of said articles during the application of material onto said limited areas comprising a box-like container for enclosing said articles and having top and bottom masking members spaced apart a distance equal to the length of said articles for receiving said articles therebetween and with one of said pair of masking members having a plurality of slots therein and with the top masking member being removable, means for removably securing said top masking member to said container, and a plurality of spacer sheets extending across said container and having recessed portions thereof engageable with the articles to position the articles in rows in alignment with said slots and to separate the adjacent articles in said rows from each other.

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