

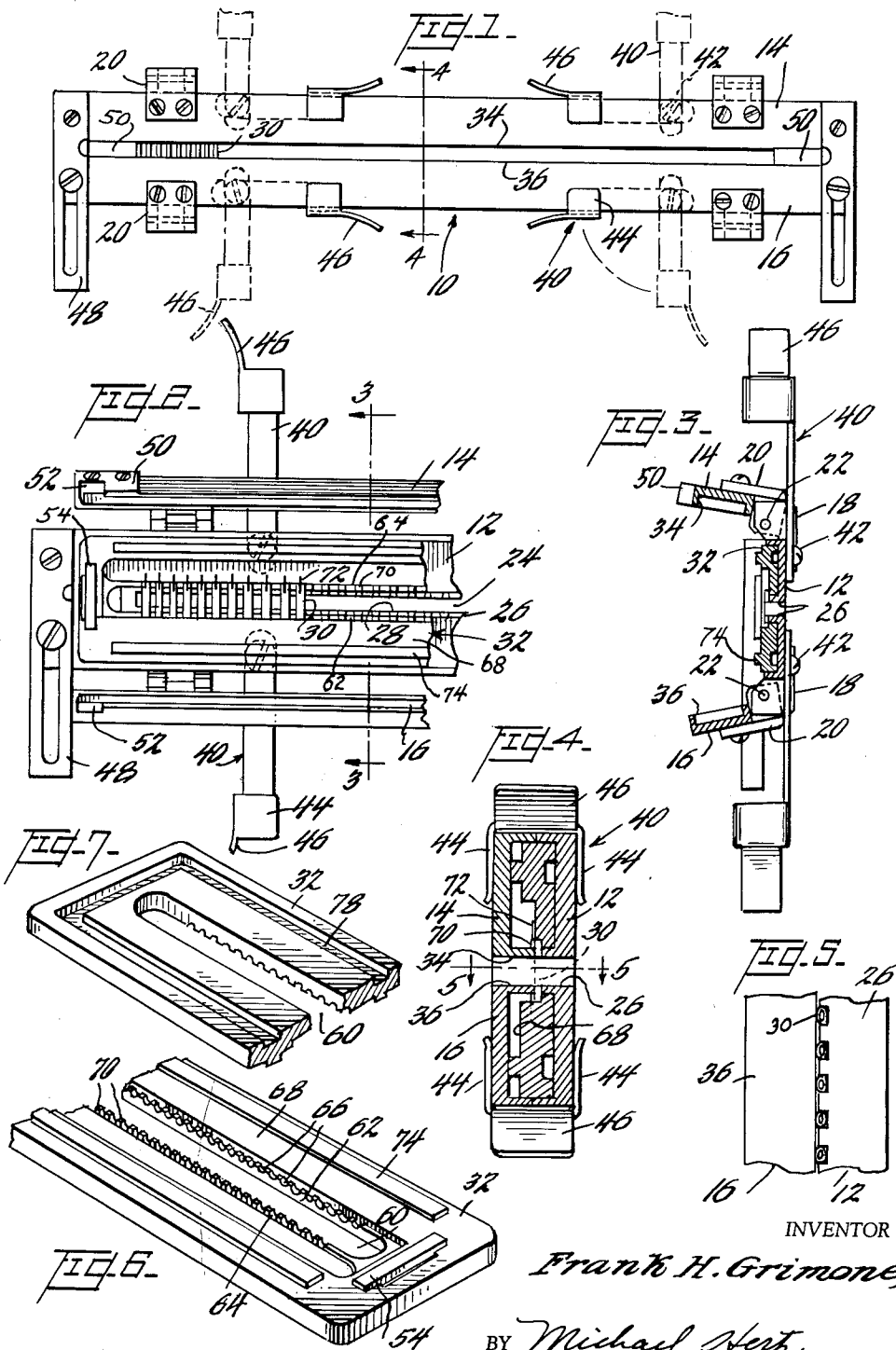
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WORK HOLDERS FOR USE WITH SPRAY DEVICES

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WORK HOLDERS FOR USE WITH SPRAY DEVICES

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5 Claims. (Cl. 118—500)

This invention relates to spray devices, particularly to holders with trays therein adapted to support cathode bases on which electron emissive coatings are to be or have been sprayed.

One of the electrodes in an electron tube is a cathode, which may be of the indirectly heated type. Such an indirectly heated cathode comprises a hollow metallic sleeve within which a wire heater may be placed and the sleeve is coated over a selected exterior area with an electron emissive substance, as the triple carbonates of calcium, barium and strontium, in a cellulosic binder. In the prior art these cathode sleeves were coated by arranging the uncoated sleeves in a metallic rack provided with seats for the individual cathode sleeves and then they were locked in place in the rack, leaving only areas of the sleeves exposed which it was desired to coat. The loaded rack was then set on an endless conveyor which carried both the front and rear side of the rack before a spray gun in as many passes as desired to build up the desired thickness of coating on the sleeves. The gun was fed with air and a composition including the triple carbonates suspended in a volatile liquid solution of the binder, usually a cellulose acetate.

In the prior art, after the sleeves had been sprayed, the racks were opened up, and the coated sleeves were dumped into a container and then transported to another machine where they were again arranged in some orderly fashion for feeding them into an electron tube assembly jig or machine.

Thus the dumped sleeves were subjected to rubbing against each other to the detriment of the coatings thereon and considerable handling was involved in rearranging the dumped coated sleeves for proper use at the new location.

It is an object of this invention to provide a device which will not only improve the final tube utilizing the cathode sleeves but also cut down on the amount of handling required between preparing the cathode sleeves for coating and assembling the coated cathode sleeves with the other electrodes of an electron tube.

It is also an object of the invention to provide a convenient storage means for sprayed articles.

In its broadest sense the invention contemplates the use of a tray with means to maintain articles in parallel spaced relationship thereon, the tray being of a form to nest in with and be removable from a holder, the holder then being placed in a machine so that operations, such as spraying, can be performed on the articles in the tray.

For a full understanding of the invention attention is directed to the following specification to be read in conjunction with the accompanying drawing in which:

Fig. 1 is a plan view of the holder closed upon a tray ready for insertion into a spraying machine, only a few cathodes to be sprayed being shown loaded into the tray.

Fig. 2 is a fragmental plan view with the holder open ready for removal of the tray therein.

Fig. 3 is a section on the line 3—3 of Fig. 2.

Fig. 4 is a section on the line 4—4 of Fig. 1.

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Fig. 5 is an enlarged fragmental sectional view taken on the line 5—5 of Fig. 4.

Fig. 6 is a perspective face view of a portion of the tray, and

Fig. 7 is a similar bottom view of the tray.

Now referring to the drawings in greater detail, the holder indicated generically as 10, comprises a base 12 of aluminum or other metal and two metal covers 14 and 16 hinged to the base by pairs of hinge leaves 18 and 20 each pair being pivoted together by a pintle 22. The base is a shallow boxlike member, hollow on its upper surface, and has a central longitudinal slot 24 bounded by an upstanding wall 26 with serrations 28 on its top providing recesses to receive intermediate portions of articles, as cathode sleeves 30, as will be explained later. The covers 14 and 16 are hollow, like the base member, and when the covers are closed onto a tray 32 holding cathode sleeves, the adjacent edges 34 and 36 align themselves with the upstanding wall of the base to leave a slot through which the exposed portions of the cathode sleeves may be sprayed. The free edges of the walls 34 and 36 are smooth to engage upper surfaces of the cathode sleeves held in the tray and in the serrations 28 of the upstanding wall. To hold the covers down onto the base there is provided four locking arms 40 pivoted to the base, as by screws 42, and provided with fingers 44 adapted to straddle the covers and base in the locked position of the arms. Each arm is provided with an arcuate finger 46 to facilitate manipulation of the locking arm. At the ends of the base there are fastened two slotted bars 48, these being used for coupling the holders with the conveyor, not shown, to carry the holder past the spraying nozzles. At each end of the cover 14, there is fastened a filler bar 50 to bridge the space between the covers 14 and 16 when the cover is closed. The walls 34 and 36 of the covers, as well as the filler bars are slotted, as indicated at 52, to fit over a key 54 integral with each end of the tray 32.

The tray is a long rectangular member of exterior dimensions to fit snugly in the hollow of the base 10. It is preferably a molded plastic, as for example "Bakelite." It has a longitudinal slot 60 with a serrated bounding wall 62, 64 to closely surround the wall 26 of the base with serrations 66 at the top of wall 62 in register with the serrations 28 atop the wall 26. The serrated bounding wall 62 is backed by a thicker portion of the tray indicated as 68 to provide a base against which the ends of cathode sleeves 30 may butt. The opposite serrated wall 64 has teeth 70 which extend slightly above the level of the adjacent base to accommodate tab elements 72 welded onto the cathode sleeves. These teeth are in line with the serrations 66. The upper surface of the tray is provided with integral longitudinal keys 74 and the lateral keys 54 already described, the keys functioning in cooperation with similarly placed slots 78 in the undersurface of an adjacent tray to facilitate stacking of the trays when removed from the holder.

There is thus provided means whereby inexpensive elements, as the molded trays, are provided for storage of sprayed cathodes. Obviously the holders themselves, which are of metal and machined, could not conveniently be stored in any numbers and furthermore it would be expensive to provide a large number of holders for such purpose.

What is claimed is:

1. A holder and tray for a group of discrete articles which are to be coated over selected areas thereof, said holder having a central longitudinal slot bounded by upstanding walls with serrated tops, said tray nesting in said holder and having a central longitudinal slot bounded by walls surrounding the upstanding walls of the holder and provided with serrations registering with the serrations

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on the upstanding walls of the holder, and masking means forming part of the holder clamping the articles to the tray as well as the tray to the remainder of the holder, said masking means providing a slot in register with the longitudinal slots to enable the articles to be sprayed through said slots.

2. A holder and tray for a group of discrete articles which are to be coated over selected areas thereof, said holder having a base portion with a central longitudinal slot bounded by walls with indentations in the tops thereof for accommodating the articles and maintaining them in spaced relationship to each other, said tray nesting in the holder and having a central longitudinal slot bounded by walls surrounding the walls of the holder and provided with indentations registering with the indentations on the walls of the holder, and a pair of pivoted covers pivoted to the base portion of the holder, said covers when closed on the tray leaving a space between them registering with the longitudinal slot in the base portion.

3. A tray adapted to nest in a holder having a base portion with a longitudinal slot therein and longitudinal upstanding walls bounding the slot, said tray comprising a body rectangular in plan with a central longitudinal slot therein, and serrations in one longitudinal wall of the slot, whereby slender articles may be laid in the serrations in spaced relationship to each other, the serrations being positioned below the top of the wall to permit the ends of the articles to abut the wall at the ends of the serrations and prevent endwise movement of the articles.

4. A tray adapted to nest in a holder having a base por-

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tion with a longitudinal slot therein and longitudinal upstanding walls bounding the slot, said tray comprising a body rectangular in plan with a central longitudinal slot therein, and serrations in one longitudinal wall of the slot, whereby slender articles may be laid in the serrations in spaced relationship to each other, the serrations being in a wall raised above the general level of the tray to enable projections extending from the articles to extend beyond the raised wall.

5. A tray for use in coating articles, adapted to nest in a holder having a base portion with a longitudinal slot therein and longitudinal upstanding walls bounding the slot, said tray comprising a body rectangular in plan with a central longitudinal slot therein, indentations in one longitudinal wall of the slot, whereby slender articles may be laid in the indentations in spaced relationship to each other, one surface of the tray being provided with lateral and longitudinal keys and the opposite surface being provided with registering slots, whereby stacking of the trays in vertical alignment and without relative shifting may be effected.

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