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APPARATUS FOR EMPTYING PIGMENT CONTAINERS

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FIG. 3

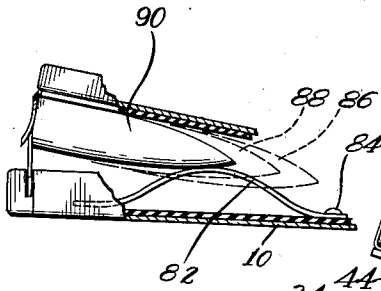


FIG. 1

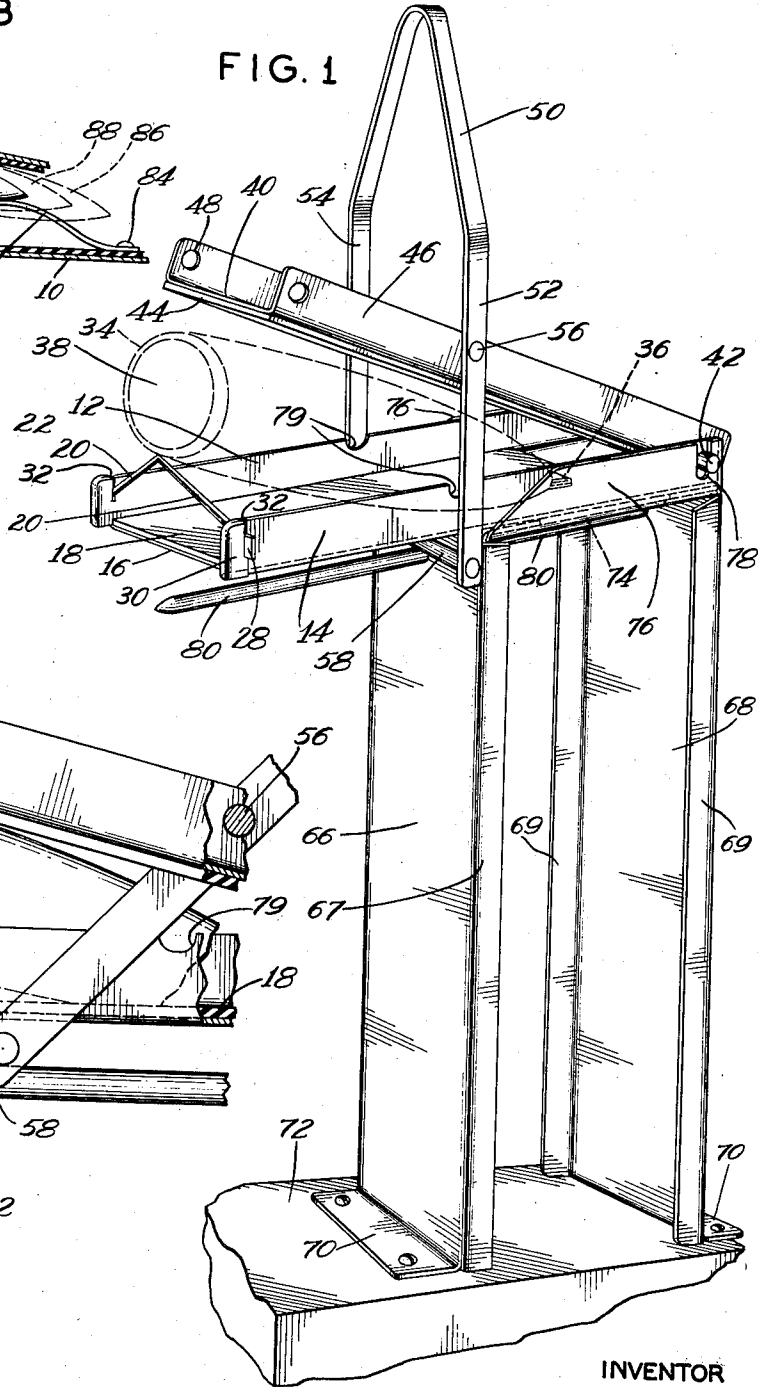
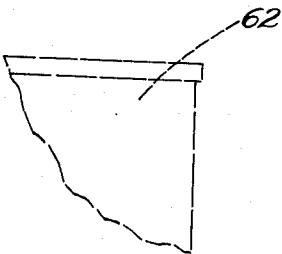
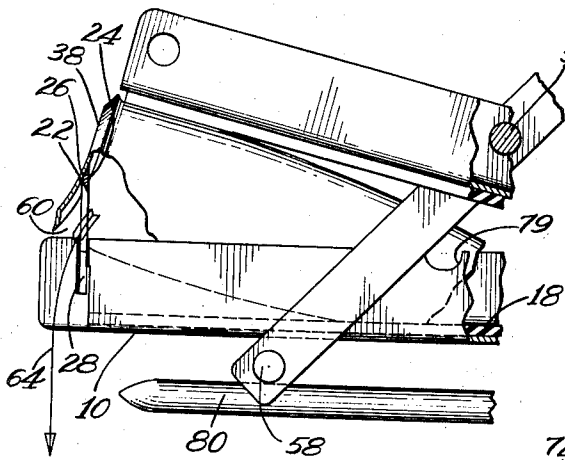


FIG. 2



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APPARATUS FOR EMPTYING PIGMENT CONTAINERS

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7 Claims. (Cl. 214—305)

My invention relates to the preparation of mixed paints and includes among its objects and advantages increased facility in preparing such products.

For many years mixed paints have been prepared at the factory ready for use, and packaged in conventional tin containers of various sizes up to a gallon or more. These containers sat on the shelves of the retailers, and the pigment would settle to the bottom, and the purchaser had quite a task stirring up the contents to get the pigment redistributed before use. A recent business development involves packaging the pigments separately in completely sealed containers. This greatly reduces the storage facilities needed by the retailer. He need only carry the conventional tin containers filled with vehicle, such as linseed oil or tung oil and so forth, up to a minor fraction of the number previously needed, and a much larger variety and number of pigment tubes, with a four-ounce tube of pigment containing the right amount of pigment for a gallon of mixed paint, and smaller pigment containers for smaller batches.

Because the pigment in the tubes is concentrated, the opening of the tube and getting the pigment into the vehicle without getting the pigment on the hands of the operator or in other undesired places, and without waste of pigment, is a problem for the retailer or for the consumer who buys substantial quantities of vehicle and pigment tubes and does his own mixing.

In the accompanying drawings:

Figure 1 is a perspective view of equipment for opening a pigment tube and getting the contents into a container;

Figure 2 is a side elevation, partially in section, of the front portion of the cutter of Figure 1; and

Figure 3 is a similar side view indicating a minor modification.

In the embodiment selected to illustrate the invention, the cutter proper includes a base in the form of a shallow trough 10 with side flanges 12 and 14 and a floor 16. The floor 16 carries a liner 18 of rubber or the like.

The flanges 12 and 14 support the narrow, stationary opening knife, which has diagonal side portions 20 joining in an apex at 22. This portion of the knife has a sharp upper edge defined by a vertical rearward face 24 and an inclined front face 26, as clearly indicated in Figure 2. The lower ends of the reaches 20 widen out to form feet 28 which are suitably fastened in the flanges 12 and 14. I have illustrated a reversely turned end portion 30 on the end of the flange 14, and a slot at 32 to receive the foot 28. It is easy to design the parts so that turning the flap 30 back will bring the edge of the flap against the foot 28 and wedge it tightly in place in the slot 32. Alternatively, the flap 30 can extend further back and the foot 28 can be driven into a double thickness of metal.

The apex 22 is centrally located. In Figure 1 I have indicated in dotted lines a four-ounce container 34 laid in place with its crimped end 36 resting on the liner 18 and its flat front end 38 centrally positioned with the apex

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22 in bottom contact with the side of the container just back of the end.

Means are provided for pushing the container 34 down over the knife to sever the flat end and subsequently to flatten the container against the liner 18 and expel the contents. The pressure plate 40 is pivoted on a fixed pivot 42 at the rear end of the floor 16. It carries a downwardly facing liner 44, of rubber or the like. It is stiffened and reinforced by side flanges 46 and 48 extending upwardly. The operating lever is in the form of a yoke 50 having parallel arms 52 and 54 straddling the pressure plate and pivoted on a pivot 56 fastened in the flanges 46 and 48. The lower ends of the arms 52 and 54 are cross-connected by a bar 58 that extends across under the floor 16. Upon reference to Figure 1 it will be apparent that clockwise rotation of the yoke 50 around the pivot 56 will slide the bar 58 forward under the floor 16 and force the pressure plate 40 to rotate counterclockwise around the pivot 42. The parts are designed so that this movement can be continued until the liner 44 is pressed firmly against the liner 18 or whatever there may be left between them.

In Figure 2 the parts are shown in an intermediate position with the top of the container about half way off. The bar 58 is pressing against the bottom of the floor 16 and sliding forward, and the knife has severed about the lower half of the flat end 38 leaving an opening at 60 from which pigment may issue and fall downwardly into a paint can or the like, indicated at 62. Because the knife is made of narrow reaches 20, there is ample clearance for the initial small quantity of pigment, which may be forceably expelled when the knife first opens the container, to find a convenient downward exit in the right direction, as indicated by the arrow 64. Further movement of the pressure plate 40 will complete the separation of the flat end 38, and the adjacent end of the plate 40 will go down past the reaches 20, and the generally cylindrical container will have its flexible wall completely flattened out, and the entire contents of the container will be expelled.

During the operation a convenient manipulation is for the operator to grasp the pigment tube at its near end between the thumb and first finger of either hand, and use the other hand to swing the yoke 50. As soon as the position of Figure 2 is reached, or just a trifle later, the severed lower edge of the end portion 38 will have curved out where a meticulous operator can take hold of it with a finger tip and withdraw it as the knife cuts it off. Alternatively, this small circular bit of metal can be allowed to fall into the container 62 and will never be noticed or get in the way.

It will be obvious that the floor 16 could rest on a shelf or table of any sort of description. In a retail establishment, where the equipment is frequently used, it is convenient to provide a standard and holder for the operating parts. I have illustrated spaced risers 66 and 68 provided with stiffening flanges 67 and 69 and outwardly turned feet 70 for attachment to a table or bench 72. At their outer ends the risers are united by the top cross-piece 74 stiffened by upturned flanges 76 which are notched at 78 to receive the ends of the pivot 42 and hold the operating parts dependably in the position shown. Clearance notches 79 are provided in the flanges 14 to receive the end of pivot 56, so that the yoke 50 can swing all the way down into substantial parallelism with the floor 16.

The operation may be expedited by providing a supporting pin 80 positioned centrally under the floor 10 to underlie the cross bar 58, so that when the yoke is swung up into the position of Figure 1, the yoke and pressure plate 40 will be held up in the positions indicated for convenient and quick insertion of a pigment container.

An efficient mechanical construction is to have the supporting rod 80 continue back as indicated in Figure 1, to get a bearing in both risers 66 and 68. It will be apparent that the operating mechanism can be simply picked up from the position of Figure 1 and taken elsewhere for use whenever desired.

The container 34 illustrated is substantially the relative size of a four-ounce container, and the pigment containers provided include smaller containers down to one ounce and ¼ ounce. It is not at all difficult for a person of ordinary skill to hold such a smaller container in position on the apex 22 of the knife and move the pressure plate 40 down to perform the cutting and flattening operation, releasing the fingers from the end of the container as soon as the knife has cut part way. However, a slightly greater speed and convenience can be secured by providing a wide limber leaf spring 82 riveted at 84 to the floor 10 and curved up as indicated in Figure 3. The dotted lines at 85 indicate the space that would be occupied by the four-ounce container, the dotted lines at 88 indicate the position for a smaller container, and the full lines at 90 indicate the position of a still smaller container. It will be seen that the spring 82 holds up the remote end of the container 90, and that such containers as are indicated at 88 and 86 need only depress the spring slightly to receive similar support.

Others may readily adapt the invention for use under various conditions of service by employing one or more of the novel features disclosed, or equivalents thereof. As at present advised, with respect to the apparent scope of my invention, I desire to claim the following subject matter:

1. Means for emptying a tubular container of thin flexible impervious sheet material comprising, in combination: a horizontal floor member having a width not less than half the circumference of the tube to be emptied and adapted to receive and support a filled tube laid prone on the floor; a cutting knife having a cutting edge in the shape of an inverted V; said knife lying in a plane normal to the longitudinal dimension of said floor; the apex of said knife being above the level of said floor and adapted to cut into the side of a container when said container is placed with one end of the container above said knife and the container axis passing substantially over said apex; a downwardly facing pressure member of a width not less than half the circumference of said con-

tainer; said pressure member having its lower face shaped to fit the upper face of said floor member; and means for guiding said pressure member to keep it transversely horizontal and parallel to said floor member, during downward movement to force said container down onto said knife and subsequently on down to a prone position on said floor member, where said empty container is completely flattened out between said floor member and said pressure member.

2. Means according to claim 1 in which said floor member has a front horizontal edge normal to its longitudinal dimension, and said knife is in a vertical plane adjacent said front edge, whereby material ejected from said container may issue downwardly past the end of said floor member into an unobstructed space.

3. Means according to claim 2 in which said knife is narrow in the plane of its cutting edge, the width of said knife being a minor fraction of the diameter of a filled container; whereby material ejected forcibly at the beginning of the opening movement is directed substantially in a vertical downward direction through a central transverse slit centered below the apex of said knife.

4. Means according to claim 1 in which said floor and pressure member are flat and have stiffening flanges along their longitudinal edges.

5. Means according to claim 4 in which said stiffening flanges nest inside each other and constitute said guiding means for the pressure member.

6. Means according to claim 5 in combination with additional guiding means comprising a pintle on the end of one member remote from said knife; the flanges of the other member having notches to receive said pintle.

7. Means according to claim 6 in combination with an actuating lever of the second class for pushing said pressure member down; said lever having its central pivot fixed in the mid portion of said pressure member, with an upwardly extending reach for manual access by the operator, and a downwardly extending reach; the lower end of said downwardly extending reach having guiding contact with said floor to permit longitudinal shifting movement of the fulcrum while preventing upward movement.

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