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FILM DEVELOPING TANK

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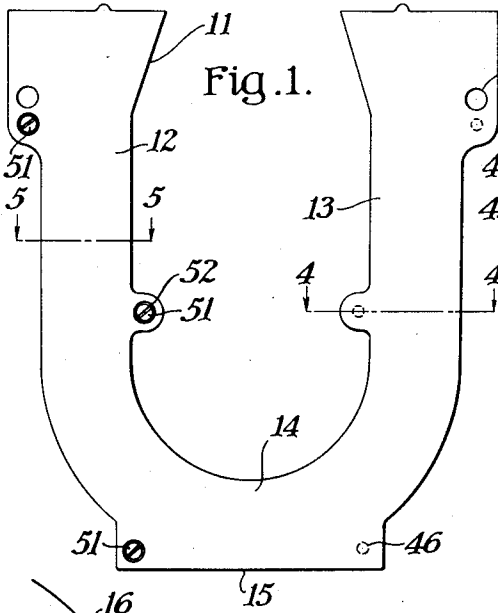
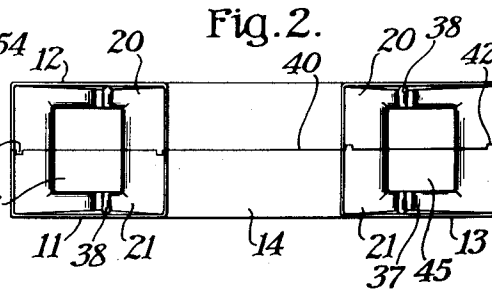


Fig. 4.

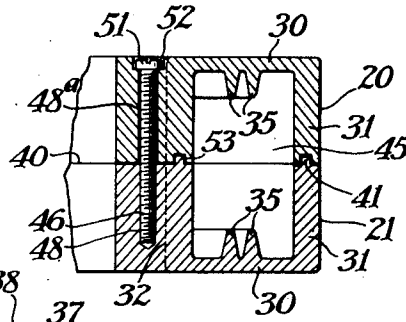


Fig. 3.

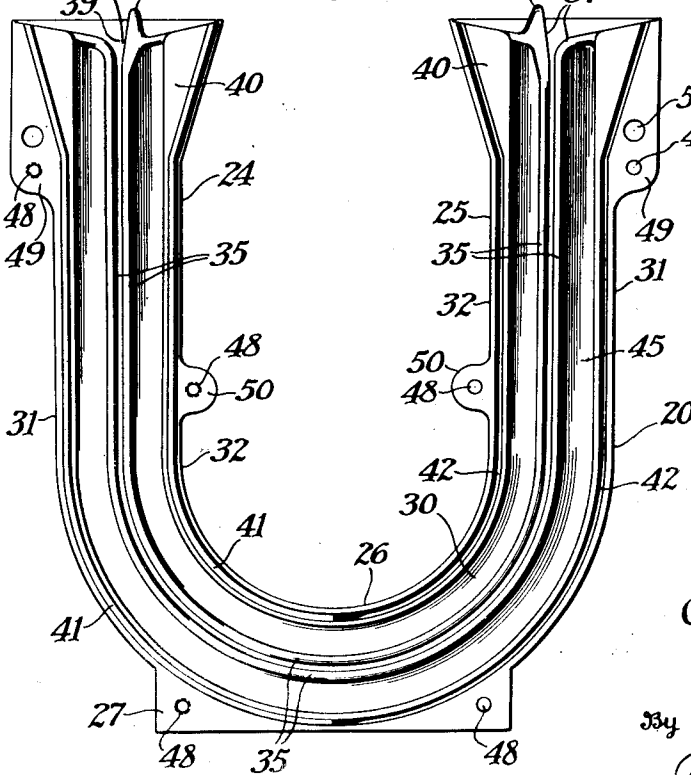


Fig. 5.

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FILM DEVELOPING TANK

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2 Claims. (Cl. 95—94)

The present invention relates to a photographic unit, and more particularly to a novel form of developing tank adapted to contain a developing solution through which an exposed film strip may be passed to developing the latter.

One object of the invention is the provision of a photographic unit which comprises two identically shaped moulded or die cast members which may be assembled to form a hollow fluid and/or light tight container.

Another object of the invention is the provision on each of said members of tongue and groove portions which cooperate with complementary portions on the other members to maintain the members in registering alignment.

A further object of the invention is the provision of a photographic unit which is formed of two members each of which may be made from a single mould, and which, when assembled, form a complete unit.

A still further object of the invention is the provision of a unit of the class described which is simple in construction, inexpensive to manufacture, easy to assemble, and highly effective in use.

Another object of the invention is to provide a housing unit which may be made of identical parts each carrying rib portions and groove portions positioned to accurately fit, when one part is fitted into the other part.

To these and other ends, the invention resides in certain improvements and combinations of parts all as will be hereinafter more fully described, the novel features being pointed out in the claims at the end of the specification.

In the drawing:

Fig. 1 is a side elevation view of a photographic developing tank constructed in accordance with the present invention;

Fig. 2 is a top view of the tank illustrated in Fig. 1, showing the tongue and groove arrangement by which the two members of the tank are held in registering alignment;

Fig. 3 is a side elevation view of one of the members from which the tank is formed, showing the arrangement of the various parts, the other member being identical in construction;

Fig. 4 is a horizontal sectional view through one leg of the tank, taken substantially on the line 4—4 of Fig. 1, showing the relation of the inner engaging tongue and groove on the two members, and the means for securely clamping the members in assembled relation to form a fluid tight tank; and

Fig. 5 is a horizontal sectional view through

the other leg of the tank, showing the reversed relation of the tongues and grooves on the two tank members.

Similar reference numerals throughout the various views indicate the same parts.

The present invention is embodied in the present instance, by way of illustration, in a film developing tank. This tank is formed of two identically shaped members which may be pressed, moulded, or die-cast. In the preferred embodiment, however, the two members are die-cast so that the same die may be used for forming both parts, the advantages of which are apparent to those in the art. The members are so shaped that when one of the members is inverted and placed on the other member, all parts will be in registering alignment to form a symmetrical hollow container adapted to hold a developing solution through which a film strip may be passed to develop the latter.

The two members are held in alignment by means of a complementary tongue and groove arrangement formed on each unit, as will be later described. While the present construction is shown in connection with a developing tank, and it is apparent that the same structural features may be used in the formation of a wide variety of containers. The present invention is, therefore, to be limited only in so far as is necessitated by the prior art and the scope of the appended claims.

The present embodiment of the invention relates to a U-shaped developing tank, generally indicated by the numeral 11, primarily intended for use in connection with the film handling apparatus shown and described in the applicant's Patent Number 2,135,817, issued November 8, 1938. It is obvious, of course, that such a tank has a wide variety of other applications. The assembled tank is of the shape best shown in Fig. 1 and comprises, in general, spaced members or legs 12 and 13 and a bottom curved connecting member 14 on which is formed a flat portion 15 which enables the completed tank to be supported in vertical position on a table or other suitable structure.

The tank is adapted to hold a quantity of developing fluid or solution through which an exposed film strip 16 may be passed to develop the latent image on the film strip. The latter is inserted through the open upper end of one of the legs 12 or 13, and is drawn through the tank and is finally discharged through the open upper end of the other leg. As both legs are identical in construction, as later described, the film strip

may be fed in either direction through the tank.

The tank 11 is made of a suitable material such, for example, as hard rubber, and comprises two identically shaped members 20 and 21 which when arranged in cooperating arrangement, as shown in Figs. 4 and 5 and later described, form a hollow container adapted to hold a developing solution through which a film strip may be passed. The two tank members 20 and 21 are identical in structure and are, therefore, admirably adapted for manufacturing by the die-cast method. Furthermore, both members can be made from the same mould, the advantages of which will be readily apparent to those in the art. In view of the fact that both members are identical, only one will be described in detail, the corresponding parts of the other member being designated by the same numerals.

Each member 20 and 21 is substantially U-shaped, as shown in Fig. 3, and comprises spaced members 24 and 25 and a curved connecting member 26, the latter being formed with a flat portion 27 which cooperates with a similarly shaped portion on the other member to form the support 15. The members 24, 25, and 26 are formed with a continuous bottom 30 and spaced opposite and continuous sides 31 and 32, all as clearly shown in Fig. 3. The bottom 30 is formed with a pair of spaced upstanding ribs 35 which engage one marginal edge of the film strip 16. These ribs cooperate with the ribs 35 on the bottom 30 of the other tank member, see Figs. 4 and 5, to provide a pair of track-like members which engage the opposite marginal edges 36 of the film strip 16 to smoothly guide the latter during its passage through the tank.

The ends of the tank are identical in structure so that the film strip may be fed in either direction therethrough. However, to facilitate the insertion of the film strip 16 between the ribs 35, the ends thereof are flared out as shown at 37 Fig. 3. One of the ribs 35 is preferably projected slightly beyond the adjacent rib to provide an abutment or lug 38 which is arranged to engage the leading end 39 of the film strip to cam or guide the latter between the ribs 35, as clearly shown in Fig. 3.

The upper edges 40 of the sides 30 and 31 of the member 24, see Fig. 3, are formed with projecting ribs or tongues 41. These tongues extend the full length of the member 24 and substantially half way around the curved connecting member 26, as clearly shown in Fig. 3. The remaining portions of the upper edges 40 of the sides 31 and 32 are formed with slots or recesses 42 which extend the full length of the member 25 and the balance of the way around the member 26, as clearly shown in Fig. 3. Thus each member 20 and 21 has formed on the tops 41 of the sides 30 and 31 a pair of tongues 40 and a pair of recesses 42. These tongues and recesses extend substantially half way around the tank and form complementary members which maintain the two tank members in registering alignment, as clearly shown in Figs. 4 and 5.

The above described members 20 and 21 are thus identical in structure and may, therefore, be die-cast from the same mould. In assembling the tank, one of the members, say the member 20, is inverted and placed in overlying relation on the member 21, see Figs. 2, 4, and 5, so that the sides 31 and 32 of the two members are in

alignment to provide a hollow container or tank having a continuous central opening 45 adapted to receive the developing solution through which the film strip 16 is passed.

When the member 20 is thus inverted, the tongues 41 thereof now register with and extend into the recesses 42 on the member 21, as shown in Fig. 5, while the tongues 41 on the member 21 register with and extend into the recesses 42 on the member 20 as shown in Fig. 4. This interlocking tongue and groove arrangement maintains the members 20 and 21 in assembled relation so that the sides 31 and 32 will be in registering alignment, as clearly shown in Figs. 4 and 5. In addition, such a tongue and groove arrangement also affords a light lock between the members.

The two tank members 20 and 21 are clamped or held together by screws 46 which engage tapped openings 48 formed in the members 27, 20 and similar openings formed in lugs 49 and 50 on the members 24 and 25, as clearly illustrated in Fig. 3. The registering openings in the other tank member may be formed slightly larger than the screws 46 to provide clearance, as shown at 48a, Figs. 4 and 5. The heads 51 of the screws 46 are preferably recessed in countersunk portions 52 of the openings 48a as shown in Figs. 4 and 5. A layer of cement 53 is interposed between the members 20 and 21, as shown in Figs. 4 and 5, to provide a fluid tight joint therebetween when the members are drawn together by means of the screws 46. Openings 54 are formed in the lugs 49 to receive supporting members for the tank, as shown and described in the above-mentioned application to Hughey. Thus a complete liquid tight developing tank may be easily and quickly assembled. As the tank parts are identical in structure they may be inexpensively made from the same mould and may also be assembled by unskilled labor.

It is apparent from the above description that the present invention provides a photographic unit, such as a film developing tank, which is formed from two identically shaped and formed members which are readily adapted for manufacturing by the die-cast method so that only one mould is necessary for forming both parts. Such an arrangement not only materially reduces the cost of manufacturing the tank parts but also facilitates the rapid assembly thereof, the advantages of which will be readily apparent to those in the art.

While one embodiment of the invention has been disclosed, it is to be understood that the inventive idea may be carried out in a number of ways. This application is therefore not to be limited to the precise details described, but is intended to cover all variations and modifications thereof which fall within the spirit of the invention or the scope of the appended claims.

I claim:

1. A film developing tank comprising a pair of identical U-shaped molded members, each of said members comprising a bottom and opposite sides extend upwardly from said bottom, one of said members being inverted and placed in registration with said other member to form a hollow developing container adapted to receive a treating fluid, each of said bottoms being formed with a pair of spaced parallel ribs extending the full length of the container and arranged to engage the marginal edge of a film strip to guide the latter as it is passed through said

container, the top edges of said sides being formed with a recess extending substantially half the length thereof, tongues on the remaining portions of said edges and cooperating with said
5 recesses to maintain said sides in registration, and means cooperating with said tongues and recesses for holding said members in assembled relation.

2. A film developing tank comprising a pair
10 of identical U-shaped molded members, each of said members comprising a bottom and opposite sides, one of said members being inverted and placed in registration with said other member to form a hollow developing container, each of
15 said bottoms being formed with a pair of spaced ribs extending the full length of the container and arranged to engage the marginal edge of

a film strip to guide the latter as it is passed through said container, means associated with said ribs for guiding the film strip therebetween, the top edge of the sides of each of said members being formed with a recess which extends
5 half the length of said sides, a tongue extending the remainder of half of the sides of each of said members and arranged to extend into the recess on the other of said member to retain the member in alignment, adhesive means
10 on the top edges of said member to hold the latter in assembled relation, and means cooperating with said adhesive means for clamping the members together to form a liquid tight
15 container.

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