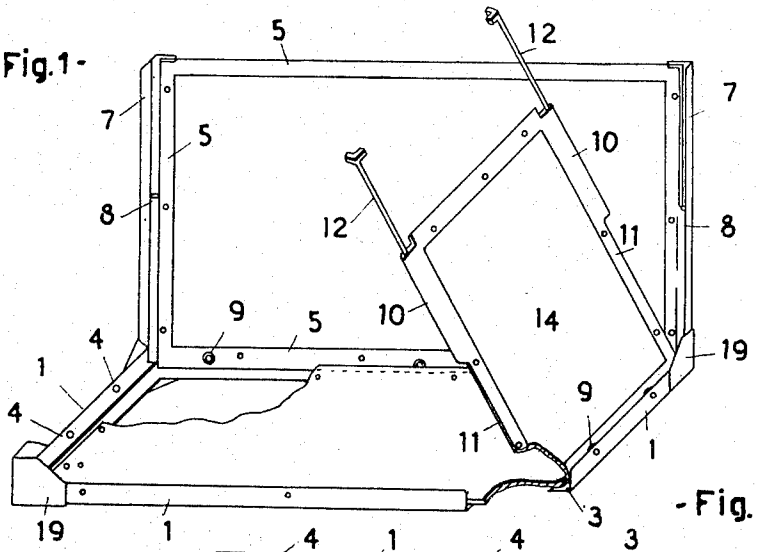
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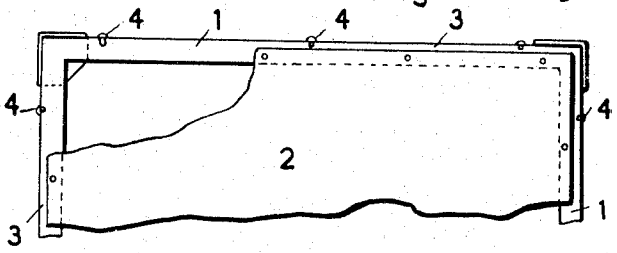
KNOCKDOWN CONTAINER

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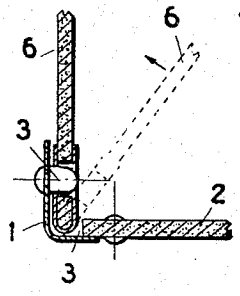
-Fig. 1-



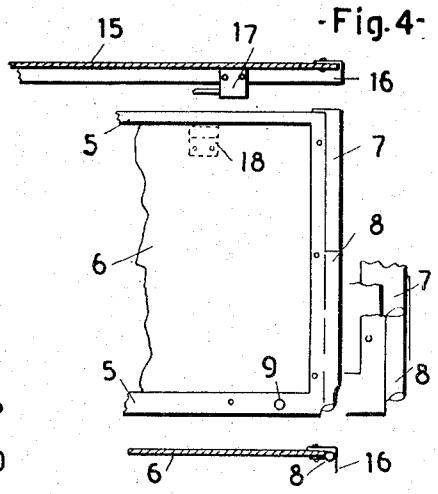
-Fig. 2-



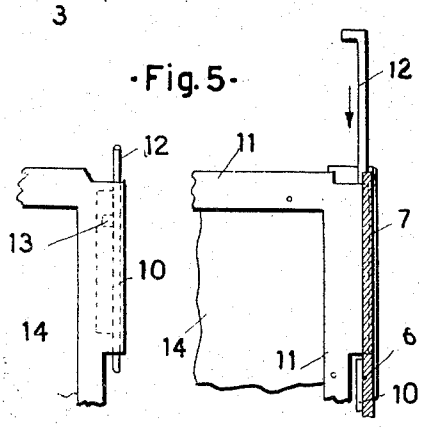
-Fig. 3-



-Fig. 4-



-Fig. 5-



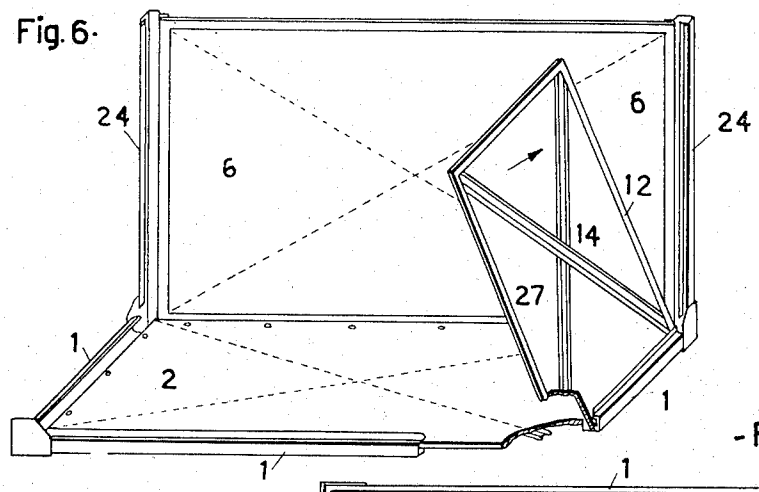
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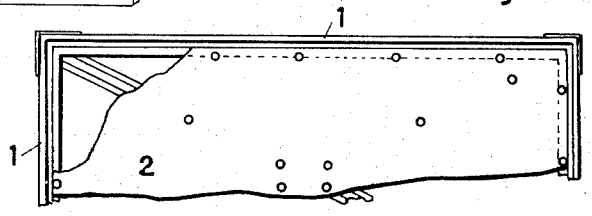
KNOCKDOWN CONTAINER

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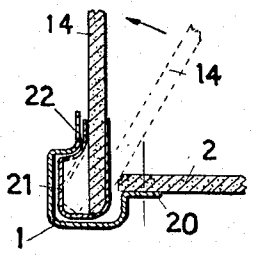
Fig. 6.



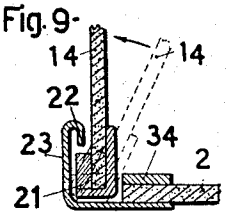
- Fig. 7 -



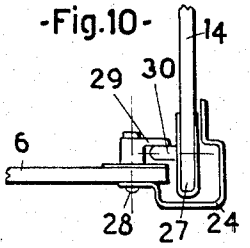
- Fig. 8 -



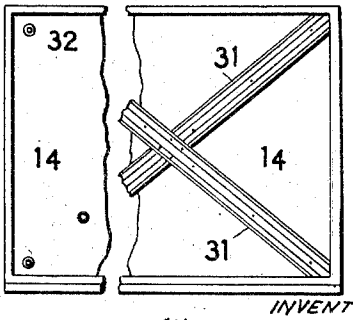
- Fig. 9 -



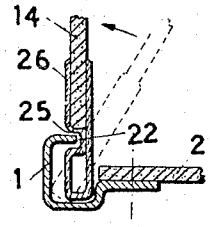
- Fig. 10 -

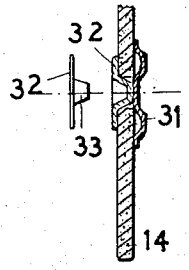


- Fig. 11 -



- Fig. 12 -





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KNOCKDOWN CONTAINER

Antonio Pigatti and Federico Jorio, Vicenza, Italy

Application May 28, 1953, Serial No. 358,076

Claims priority, application Italy May 30, 1952

1 Claim. (Cl. 217—12)

The object of the present invention is to provide a case fit for the packing of goods, or for use in household, whose four walls, bottom and lid consisting of a slab of "Faesite," or the like, are arranged on a metal frame, which parts may be separated from each other, or re-assembled, through simple connecting movements and without the need of having recourse to separate accessories.

This permits of the case being very quickly assembled or disassembled, and the precision of the connecting members is kept invariable; besides that, the risk of bolts, pins, or other separate pieces, going astray, is eliminated, since every connection of the walls is performed by counterparts secured to the metal frames of the faces.

Thus, a case is provided whose faces, when disassembled and folded up to be sent back empty, require a very small space and, on the other hand, the case, which is entirely provided with metal border frames, when re-assembled, proves to be sturdy and undeformable, so as to be able to stand repeated transportations with the goods contained therein.

The case as devised essentially consists of six walls formed from a strong metal frame, to which in the workshop a slab of "Faesite," or the like, is applied, which walls are built up in such a way as to cause the four walls to suitably engage with the bottom and, besides that, they are conveniently connected between each other along each of the edges.

The whole is completed by the lid which is attached to one of the walls by open hinges and whose frame with a metal angle bar surrounds and secures the edges to the joint of the case as built up.

Referring to the annexed drawings:

Fig. 1 is a partial perspective view of the case, with one of the walls on the point of being assembled;

Fig. 2 is a partial plan view of the bottom of the case;

Fig. 3 is a view of a particular type of pivoted coupling for the walls on the bottom;

Fig. 4 shows in section a portion of the lid and a portion of a wall seen from the inside and in plan, with a female sleeve for the latch;

Fig. 5 shows a portion of a wall with the latch for securing it to the adjacent wall;

Fig. 5*a* is a view of a part of one of the end walls, showing the latch thereon;

Fig. 6 is a partial perspective view of the case as put into effect according to a further form of embodiment, with a wall on the point of being mounted;

Fig. 7 is a partial plan view of the bottom of the case as put into effect according to a second form of embodiment as shown in Fig. 6;

Fig. 8 shows another type of inserting a wall into the specially shaped angle bar of the bottom;

Fig. 9 is a sectional view of still another type of insertion, with a differently shaped angle bar;

Fig. 10 is a plan view of the connection of two walls of the specially shaped angle bar;

Fig. 11 is a view on two faces of a wall, showing the detail of fastening metal spiders by means of a soldered washer;

Fig. 12 is a sectional view of the type performing the coupling to the bottom, in the case of the wall being provided with a groove.

Referring to said drawings, the parts of the case, which are produced in series in the workshop, are formed as follows:

The bottom.—It consists of the frame composed of metal angle bars **1** (Figs. 1 and 2), on whose inner edges, by means of small rivets, or otherwise, the slab **2** of "Faesite" or the like, or of plywood, or other sheet material, is secured, which is to be kept peripherically apart from the vertical wings of said angle bar as shown at **3**. This spacing **3** (Fig. 2) will be proportional to the thickness of the frame of the walls, as this frame has to fit between the perimeter of the "Faesite" slab **2** and the angle bar **1**. To the vertical wings of the four angle bars **1** of the bottom in the workshop the pins **4** (Figs. 1, 2, 3) are secured, which project towards the inside for about a distance corresponding to the thickness of the frame of the walls. On each side of the bottom **2** two or more of these pins **4**, each formed with a beveled head, may be provided. The bottom frame is provided with four cap-shaped angle irons **19** which are secured thereto by soldering, so as to strengthen the edge.

Long walls.—Two of the opposite walls, for instance the longer ones referred to as the side walls, are formed by the metal frame **5**, to which the "Faesite" slab **6** (Figs. 1, 3, 4, 5) is secured, and on whose vertical sides a metal angle bar **7** is fastened by soldering.

On the side near these angle bars the frame **5**, on about half of its length, is shaped as a sleeve or small tube **8** which thus is adhering to the inner edge of each angle bar **7**.

The same frame **5** on the lower horizontal portion is provided with two or more through-holes **9** (Figs. 1, 3, 4), which exactly correspond to the pins **4** arranged stationary on the bottom, so as to cause them to engage with same.

Short walls.—These other two walls of the case, for instance shorter walls referred to as the end walls, are also formed from the "Faesite" slab **14** on the metal frame **11** (Fig. 1), which on the lower side have identical holes **9** to cause them to engage with pins **4** of the bottom. In each frame the vertical sides at the top, on about half their length, are shaped as a sleeve or tube **10**, within which the latch-shaped rod **12** may slide, provided with an appropriate engaging head.

This latch **12** may be guided within its sleeve by the catch **13** (Fig. 5) and has such a size as to be able to enter the tube **8** which is stationary on each angle bar **7** of the first two walls **6**.

The assembling of the case is performed in a simple manner by first introducing the two long walls **6** with their lower edge **5** into the space **3** (Figs. 1, 2, 3), which is provided by the construction between the edges of the "Faesite" slab **2** of the bottom and the respective angle bars **1**; this application is carried out by inclining the wall **6** inwardly by about 45°, as in Figs. 1–3.

Upon shifting the wall in the direction of the arrow in Fig. 3, to bring it into the vertical position, the pins **4** of frame **1** of the bottom will be caused to enter the holes **9** provided in the frame of wall **6**.

Thus, this wall is kept engaged with the pins **4** and is prevented from getting out of alignment through lateral thrusts, since there is provided the abutment formed by the thickness of the "Faesite" slab **2** arranged stationary on frame **1**.

Upon the two walls **6** having been so arranged, the

other two walls **14** will be arranged in the same manner, by causing the holes **9** in the lower side of their frames to be engaged by the pins **4** of the bottom.

To establish the connection between the four walls, it will now be sufficient to cause to coincide, as in Fig. 5, the tube-shaped sleeves **8**, **10** provided for each of the four edges and to introduce the latches **12** into the sleeves **8** of the walls **6**.

The connection thus quickly established is definitely maintained and may be removed only by proceeding inversely to what has been described above, by starting to take out the latches **12** from the sleeves **8**, so as to disengage the walls **14** from the bottom, etc. The case is completed by the lid **15** formed, for instance, from a "Faesite" slab, which in the workshop is secured to a frame composed of a metal angle bar **16** (Fig. 4), said lid being provided, for instance, with pivoted half hinges **17** so arranged as to be introduced into the other female half-hinges **18** secured on one of the walls.

Upon the lid having been thus applied, it will surround with the vertical wing of its angle bar **16** all of the four engaging edges **5–11** of the case, so as to render the latter quite stiff and undeformable.

Said lid will be kept closed by a catch, or otherwise, through the respective eyelet for the lead seal, secured to the wall opposite that of hinge **18**.

According to a modification, in the system for coupling the walls to the bottom, as disclosed hereinbefore, the metal frame of bottom **2** may be formed from specially shaped angle bars (Figs. 6–8), made from bent sheet metal having five edges, so as to constitute a border frame having their angles projecting from the plane of the "Faesite" slab **2** of the bottom and secured thereto by the border **20**. Thus, this specially shaped angle bar **1** appears to be grooved towards the inside.

The corresponding wall, for instance **14** of "Faesite," or like material, at the bottom is provided with the border frame **21** made of specially shaped iron sheet and soldered to the "Faesite" slab, which border frame carries, for instance, a step-shaped projecting part having such dimensions as to enter inside the angle bar **1** into engagement with its free edge **22**.

Thus, the mounting of wall **14** is performed by introducing its border **21** into the angle bar **1**, that is, obliquely as in Fig. 6, or as shown by dotted lines in Fig. 8, whereupon said wall is shifted into the vertical position, as indicated by arrows. Thus, the border **21** is kept engaged with the border **22** of the angle bar of the bottom.

To remove the wall **14**, it will be sufficient to proceed inversely as far as to reach the position indicated by dotted lines, and then take it out from the groove of the angle bar.

An identical embodiment is realized in connection with the four sides of the bottom, so that the four walls are caused to be coupled by the same swinging motion from inside up to the vertical position.

In Fig. 9 a modification to the form of embodiment of the specially shaped angle bar **1** is illustrated, in which, instead, it is formed from a metal sheet **23** having a simple angle, but with the top border turned towards the interior, so as to provide the edge **22** which abuts against the border frame **21** secured on the lower side of wall **14**.

The angle bars **1**, **23** may be secured to the "Faesite" slab **2** by any means, such as rivets, welded washers, or else by the riveted counter-border **34** (Fig. 9), etc.

Also the edge **21**, with its step in each wall, may be constructed for instance, as in Fig. 9, with a small L-iron and a border, which are riveted to the edge of the "Faesite" slab, or else with any other section irons or members.

Fig. 12 shows another embodiment of the specially shaped angle bar **1** of the bottom, which at the top terminates with the edge **22** turned towards the interior and which in this case fits into the groove **25** provided in the metal sheet **26** which forms the border frame on the lower side of wall **14**, said groove replacing the previously described step **21** and permitting to achieve the same effect.

The same type of specially shaped angle bar **1**, such as **24** in Figs. 5–10, is secured to the two vertical sides of two opposite walls **6** of the case, which are the first to be mounted on the bottom.

Thus, upon having the other two walls **14** caused to engage with the bottom and to take up the vertical position, they are caused to enter with the border the groove corresponding to each angle bar **24**, thus obtaining for the walls **20** the double abutment capable of withstanding the displacements both towards the inside and the outside.

In effect, the edge **27** sheathed with iron sheet (Fig. 10) of wall **14**, besides striking against the angle bar **24**, towards the inside strikes also against the edge **28** of the "Faesite" slab **6** of the wall.

In order to maintain, without any special stress, this double abutment connection, it will be sufficient to make use, for instance of a catch **29** rotating on the pin **28** secured to wall **6** and acting in opposition to tooth **30** secured by soldering at the top of the border of wall **14**, or else it will be possible to have recourse to a specially shaped pivoted or sliding plate, or to other systems.

In order to stiffen, if necessary, the faces of the case, which consist of "Faesite" or like material, it is possible to diagonally secure to the outside of same two, or more, section metal strips **31** (Fig. 11) having two or more ribs and which are kept firmly adherent on the face of the "Faesite" slab by means of clinched rivets or by stuffed washers **32** welded to metal **31**.

The detail of Fig. 11 shows the washer **32** with a stuffing extension **33** which, by passing into the hole provided in the "Faesite" slab, enters slightly into contact with the specially shaped strip **31** located on its opposite face.

Thus, a simple welding point is brought about and the connection between washer and section metal is established by fusion, so as to have strip **31** firmly secured to the "Faesite" slab. In the same manner the "Faesite" slab can be firmly attached to the metal frames (Fig. 7).

Other soldering points are provided to secure the strips **31** at their crossing points and to the metal frame of the faces, thus considerably strengthening each of the component parts of the case.

It is apparent that by performing the operations as described inversely, the faces of the case will be quickly disassembled.

As already stated, no separate bolt or pin is required to establish the connection of the faces of the case; besides that, these disassembled faces may be stacked on bottom **2**, so that they occupy a volume of only about one tenth of the volume of the case as assembled.

It is to be understood that the case capable of being taken apart, according to the invention, is not limited to the constructional form of embodiment as now described only by way of example, but the idea of engaging into some of the pins internal with respect to the metal frame of the "Faesite" bottom the lower sides of the frames of the four walls, which are then connected between each other along the vertical edge by means of latches internal with respect to said edge, may lead to embodiments even different from the embodiment as disclosed hereinbefore, without thereby departing from the spirit of the invention.

What we claim is:

A collapsible case or similar container comprising, a sheet material bottom having a peripheral edge, a frame of angle bar extending about said peripheral edge of the bottom, the frame having an upstanding stationary flange spaced from the peripheral edge of the bottom to thereby provide a channel between said flange and said edge of the bottom, side walls and end walls having their lower edges enclosed in channel-shaped edging inserted in the

channel, the flange having inwardly-extending spaced pins, the walls and the edging thereon having apertures adjacent to their lower edges and in engagement with the pins, the relationship of the pins and apertures being such that the engagement between them is secured by inserting each wall angularly in the channel and then raising the same to vertical position, the walls being each provided at their opposite ends with sleeves, the sleeves on adjacent walls interfitting, and latches slidable through the sleeve of the interfitted walls to thereby hold the walls together to form a substantially rectangular enclosure.

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