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Fig. 1.

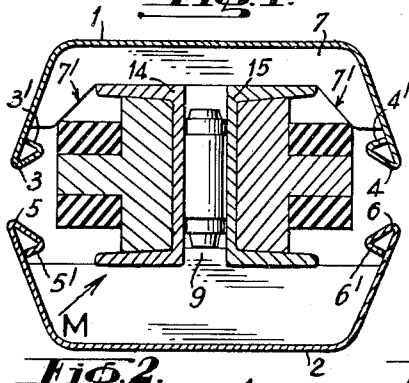


Fig. 3.

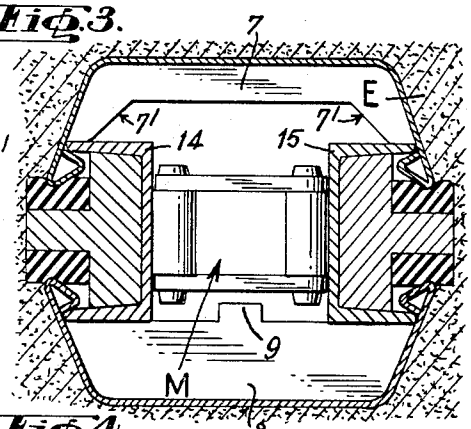


Fig. 2.

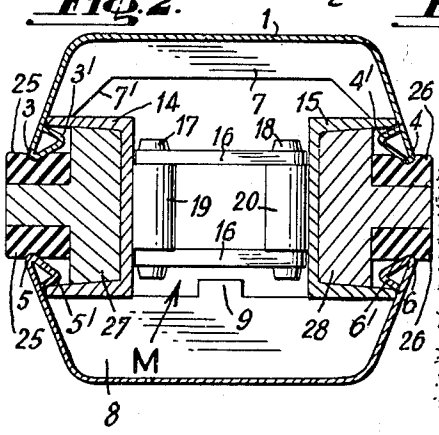


Fig. 4

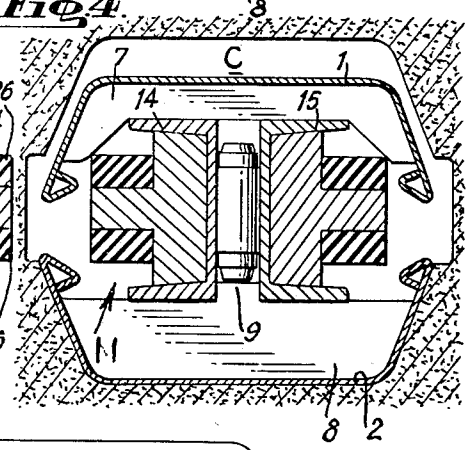


Fig. 5.

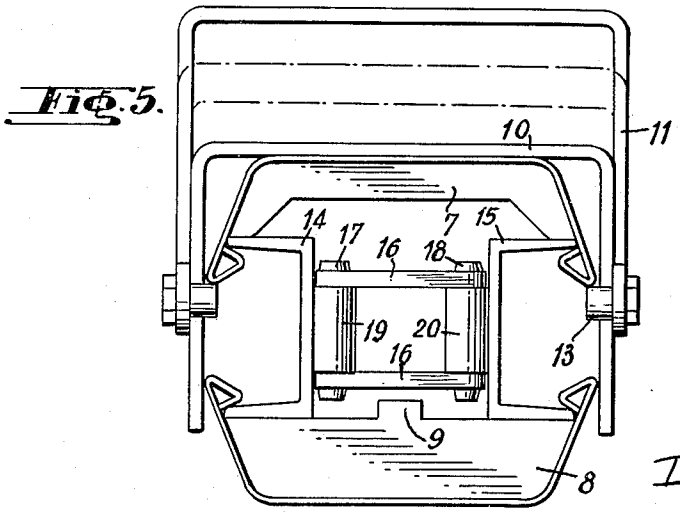


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Fig. 6.

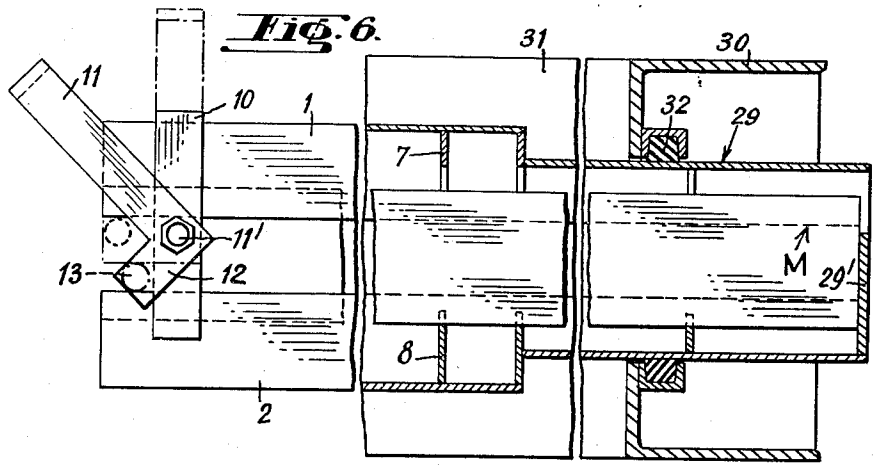


Fig. 7.

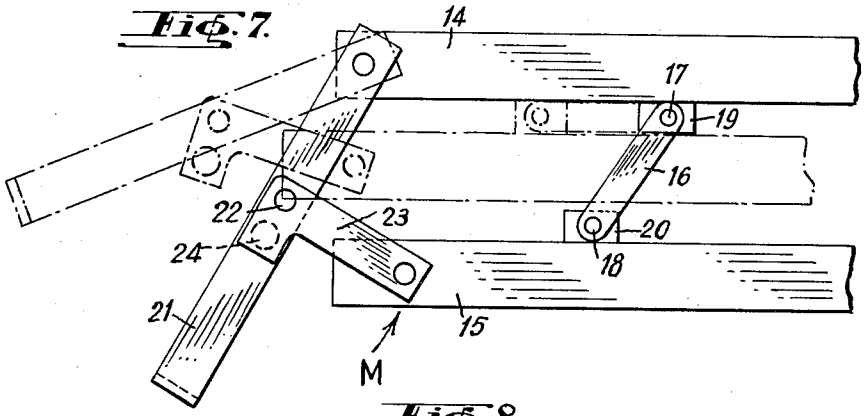


Fig. 8.

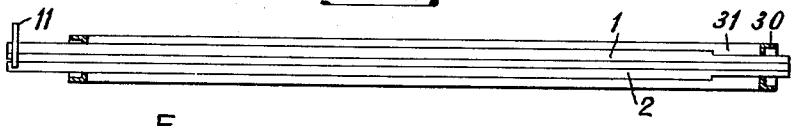


Fig. 9.

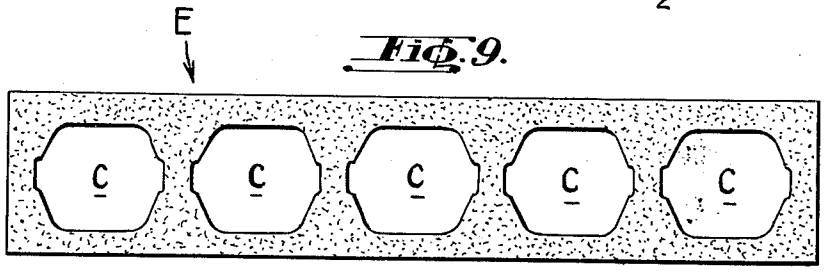


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Fig. 10.

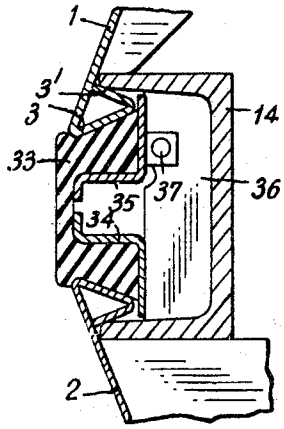



Fig. 11.

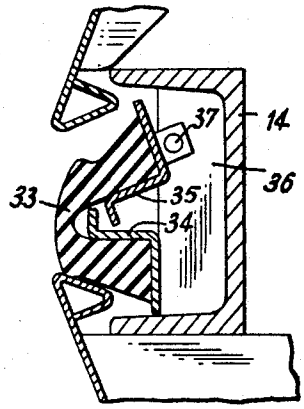



Fig. 12.

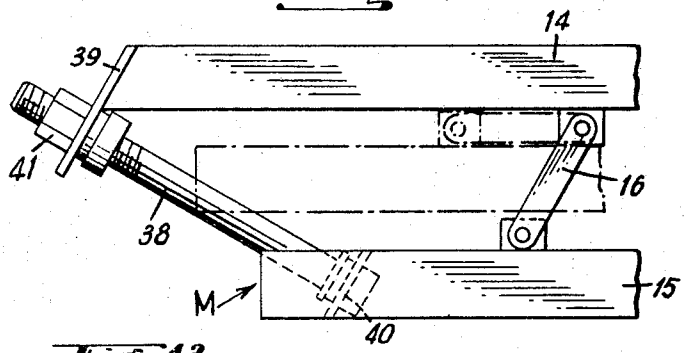
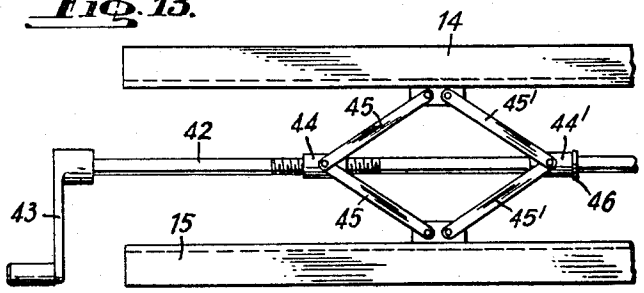



Fig. 13.

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3,497,174

# CORE-FORMER

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Int. Cl. B28b 7/30
U.S. Cl. 249—180 2 Claims

## ABSTRACT OF THE DISCLOSURE

The present invention has for object a core former to form a passage in a construction element of hardening material, said core former comprising two channel-shaped elements turned down one on the other with their edges facing each other, with means for separating or bringing together these two shaped elements in the shuttering or dismantling position, and sealing means to close the free space between the longitudinal edges of the shaped elements in the shuttering position.

Such core formers are known which make use in particular of a tubular element formed of a steel sheet having a longitudinal slot closed by a removable rubber joint. During shuttering of a passage in a concrete element, this packing is placed in the joint to prevent the concrete from penetrating into the tubular element and to hold apart the two longitudinal edges of this element. During dismantling the rubber joint is withdrawn, which permits of flexibly closing the tubular element so as to be able to withdraw it from the hardened concrete. The life of such a core former is limited because it cannot practically be employed more than 500 times. Furthermore, the tubular element being flexible, it is necessary to hold it by outer means to prevent it from warping under the action of the fresh concrete.

The laying of the rubber joint demands rather complicated and delicate work before positioning the core former for the shuttering. The fact that this core former is to be withdrawn after each use limits the weight and consequently the dimensions of the tubular element. It is not possible to produce large sections of passages in view of its relatively low resistance to the presure of the concrete.

The present invention aims at overcoming these disadvantages and the core former which is the object thereof comprises two channel-shaped elements turned down one on the other with their edges facing each other, means for separating or bringing together these two shaped elements one from the other in the shuttering or dismantling position and sealing means to close the free space between the longitudinal edges of the shaped elements in the shuttering position.

The accompanying drawing shows, by way of example, one embodiment of the core former object of the present invention.

FIGS. 1 and 2 are cross sections of this core former in two different positions.

FIGS. 3 and 4 are views similar to FIGS. 2 and 1 respectively in one application of the core former.

FIG. 5 is an end view of this same core former.

FIG. 6 is a partial view in side elevation on a smaller scale and partly in axial section of the core former.

FIG. 7 is a view of a detail of this core former.

FIG. 8 is a diagrammatic view on a still smaller scale of the complete core former.

FIG. 9 is an end view of a construction element produced by means of five core formers such as the one shown in FIG. 8.



FIGS. 10 and 11 are sectional views of a variant of a detail of FIGS. 1 and 2, in two different positions.

FIGS. 12 and 13 are views in side elevation of two variants of FIG. 7.

The core former shown in FIGS. 1 to 8 serves to form a passage C in a construction element E of concrete such as shown in FIG. 9. It comprises two channel-shaped elements **1** and **2**. These two elements **1** and **2** are turned down one on the other with their edges **3**, **4** and **5**, **6** respectively facing each other. Each edge is rolled over itself inwardly of the shaped element so as to form supports **3'**, **4'** and **5'**, **6'** respectively.

The shaped element **1** has on the inside cross ribs **7** regularly spaced along the shaped element, these ribs serving to reinforce this shaped element and as points for the support of a locking mechanism M disposed inside the shaped elements **1** and **2** and serving to lock these shaped elements in the shuttering position shown in FIGS. 2 and 3 by holding a sealing joint between them as will be described in more detail hereafter.

The cross ribs **7** each have inclined edges **7'** serving as guiding means for a part of the mechanism M.

The shaped element **2** also has inside cross strengthening ribs **8** serving to support the locking mechanism M and comprising in the centre a projection **9** for centering this mechanism.

A strap **10** fixed on the shaped element **1** (FIGS. 5 and 6) at one end of the latter supports a U-shaped handle **11**, pivoting at **11'** on each side of the strap **10**. This handle **11** has bent ends **12** each provided with a pin **13** adapted to enter into contact with the corresponding edge of the shaped element **2**. By moving the handle **11** from the vertical rest position in dot and dash lines, to the inclined position in full lines, the pins **13** bear against the edges **5** and **6** of the shaped element **2** and the bent ends **12** acting as levers separate the shaped elements **1** and **2** the one from the other.

The locking mechanism M shown in side elevation in FIG. 7 comprises two U-irons **14** and **15**, turned back to back and connected together by pairs of links **16** distributed at equal distances along these irons. These links **16** are hinged on spindles **17**, **18** passing in bosses **19**, **20** integral with the irons **14** and **15** respectively. The iron **14** carries at one end a pivoting lever **21** hinged at **22** to a shorter lever **23** connected to the iron **15**. These two levers are held in the full line position by a spring stop schematized at **24**.

The irons **14** and **15** serve to support sealing joints **25** and **26** respectively (FIGS. 1 to 4) adapted to close the free space between the facing edges **3**, **5** and **4**, **6** respectively of the shaped elements **1** and **2** as shown in FIGS. 2 and 3. These sealing joints **25**, **26** are formed by strips of flexible material, for example foam rubber, mounted on elements **27**, **28** fixed to the irons **14** and **15**.

The core former shown in FIGS. 6 to 8 has an end of reduced section **29** opposite to the one carrying the control handle **11**. This end **29** passes through a positioning frame of which one of the sides perpendicular to the axis of the core former is shown in section at **30**, and another side parallel to said axis being seen partly at **31**. A sealing joint **32** is disposed between the side **30** and the end **29** of reduced section of the device. The positioning frame may receive five core formers such as the one described with a view to producing a construction element having five passages C as shown in FIG. 9. A plate **29'** is disposed at the end of the shaped elements **1** and **2** and has for purpose to separate these shaped elements before actuation of the lever **11**. The end **29** of reduced section permits of obtaining a larger section in the concrete moulded element, with a view to supporting additional loads.

Instead of a plate **29'** one could dispose, for example,

a transverse tube on which would rest the upper shaped element, this tube being removed after actuation of the inner mechanism.

The operation of the core former device described is the following:

To bring the shaped elements **1** and **2** from the position of FIG. 1 to that of FIG. 2, the mechanism M still remaining in the full line position, one moves the handle **11** from the position in dot and dash lines to the position in full lines (FIG. 6). The lever **21** is then actuated from the position in dot and dash lines to that in full lines of FIG. 7 to separate the irons **14** and **15** laterally one from the other, the pairs of links **16** then having the inclined position shown in full lines. During this separating movement, the sealing joints **25** and **26** have been forced between the edges **3**, **5** and **4**, **6** and at the end of the stroke, the ends of the irons **14** and **15** have come to bear against the supports **3'**, **5'** and **4'**, **6'** respectively of the shaped elements **1** and **2** (FIG. 2).

The concrete is then cast around the core former as shown in FIG. 3. To dismantle the device, one moves the lever **21** into the position in dot and dash lines in FIG. 7, thus bringing back the irons **14** and **15** into their position near to one another as shown in FIG. 4. The shaped element **1** frees itself and comes to rest on the locking mechanism M. The device may then be withdrawn from the pipe line C to be re-employed.

In the variant of FIGS. 10 and 11, the elements supporting the sealing packing **33** comprise two angle irons **34** and **35** of which one **34** is fixed on a support **36** integral with the iron **14** and the other **35** pivots at **37** on this support **36**. In the closed position of the joint (FIG. 10), the element **35** is blocked by the edge **3** of the shaped element **1**. When the locking mechanism is loosened and the iron **14** separates from the support **3'**, the element **35** rocks and disengages the packing **33** of the joint as shown in FIG. 11.

FIG. 12 shows a variant of the locking mechanism M in which one makes use, instead of a working lever, of a screw **38** disposed between a plate **39** integral with the iron **14** and a stop **40** integral with the iron **15**. By screwing more or less the nut **41**, one separates or one brings nearer in a corresponding manner the irons **14** and **15**.

In the variant of FIG. 13, the U-irons **14** and **15** are operated by means of a jack with a deformable parallelogram comprising a threaded rod **42** actuated by a handle **43** to move a tapped sleeve **44** carrying two links **45** connected to the irons **14** and **15**. A second pair of sleeves **45'** hinged on the one hand to the irons **14** and **15**, and on the other hand, to a stop sleeve **44'**, held on the threaded rod **42** by a ring **46**, forms the two sides of the deformable parallelogram. Several of these parallelograms may be distributed along the irons **14** and **15**.

The core former described has the advantage of being strongly built, rigid and of simple operation, capable of being re-employed at least 2000 times. Due to its rigidity it can stand the pressure of the fresh concrete without necessitating special supporting means.



It may be "dilated" by the action of a simple lever after having inserted it in the casting frame without it being necessary to employ a slit mould.

On the other hand, it is possible to produce passages of very large cross section due to the solidity of the former.

What I claim is:

**1.** A core former for forming a passage in a construction element of hardening material comprising two channel shaped elements turned down one on the other with their longitudinal edges facing each other, means for separating and bringing toward each other said two channel shaped elements in the shuttering or dismantling position, sealing means to close the free space between the longitudinal edges of said channel shaped elements in the shuttering position, said sealing means comprising a locking mechanism having two U-irons turned back to back and extending over the whole length of the channel shaped elements, pairs of links connecting said U-irons, operating means to permit movement of the U-irons one relative to the other, a sealing packing integral with each of said irons to close the space between the longitudinal edges of the channel shaped elements, each of said sealing packings being mounted on two similar elements, one of which is fixed on an associated U-iron and the other of which is pivoted to said U-iron.

**2.** A core former according to claim **1** in which the operating means comprises a lever hinged at one end of one of the U-irons and connected to another lever itself hinged at the corresponding end of the other U-iron.


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