April 2, 1946. W. G. SCHUTT 2,397,695

MOLD OR CONTAINER PACKING

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FIG. 1.

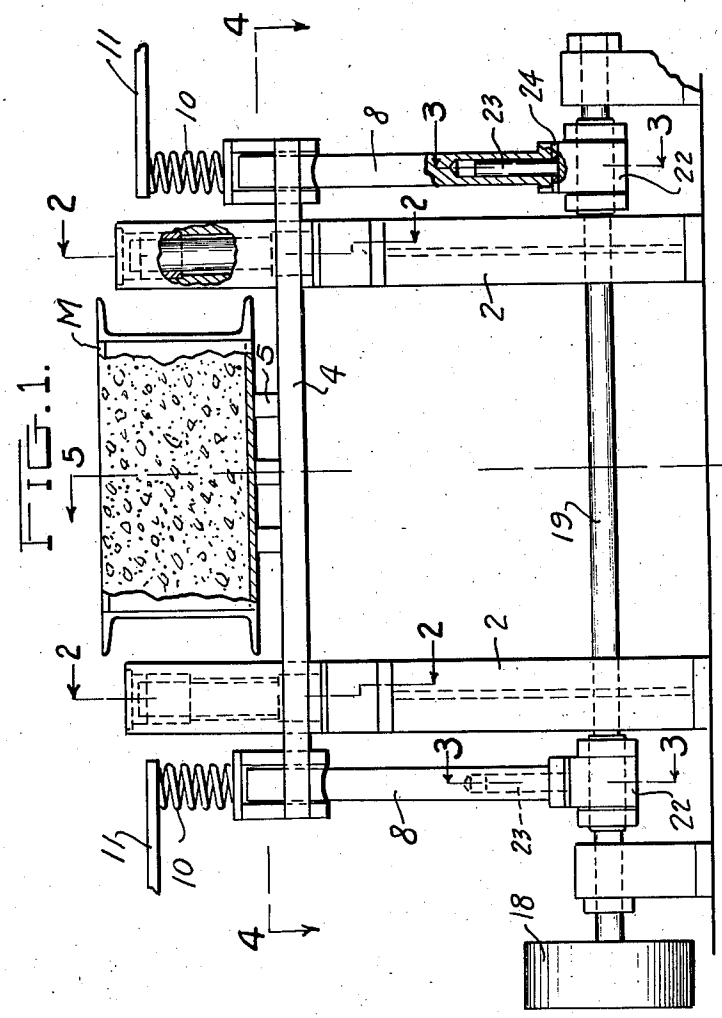


FIG. 2.

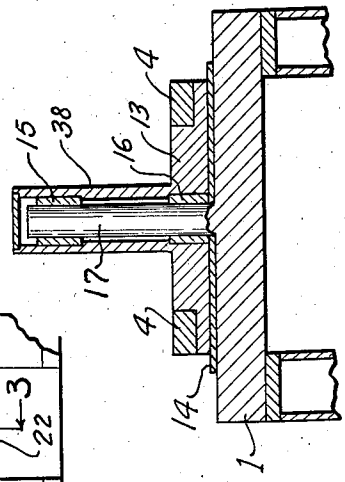
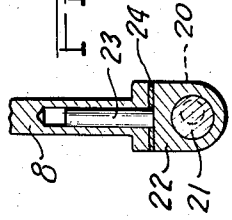


FIG. 3.



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FIG. 4.

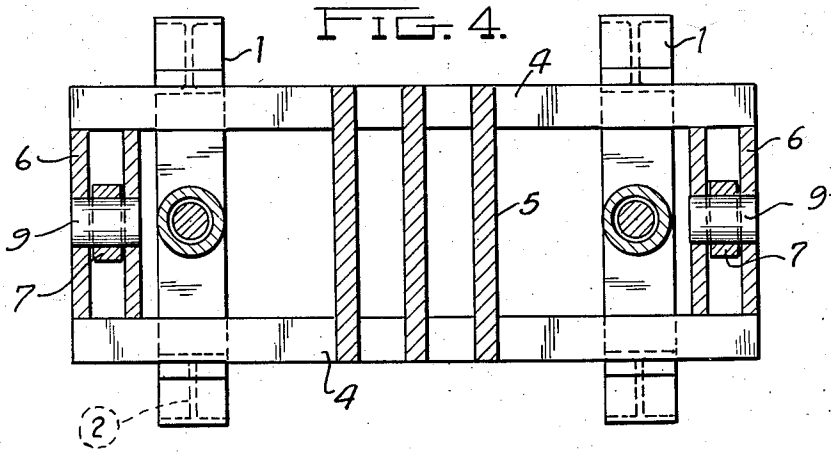


FIG. 5.

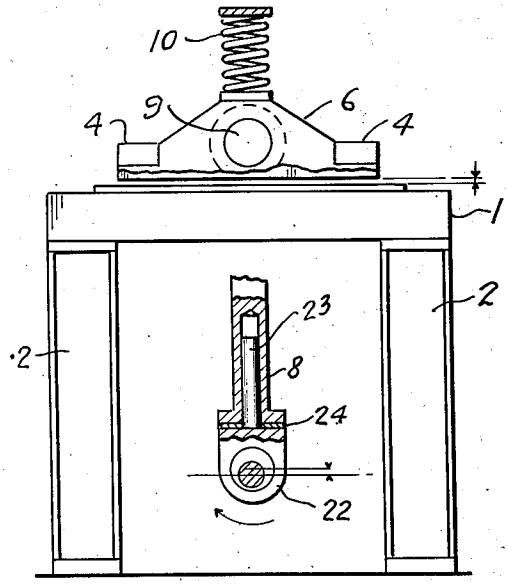


FIG. 6.

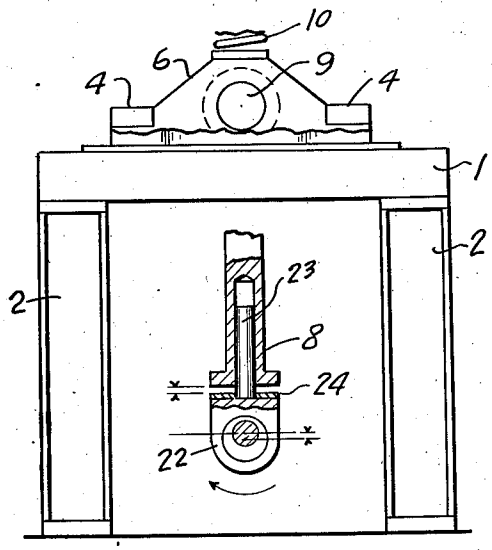
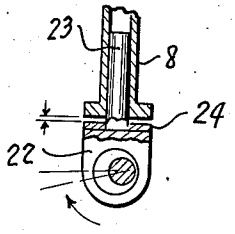


FIG. 7.



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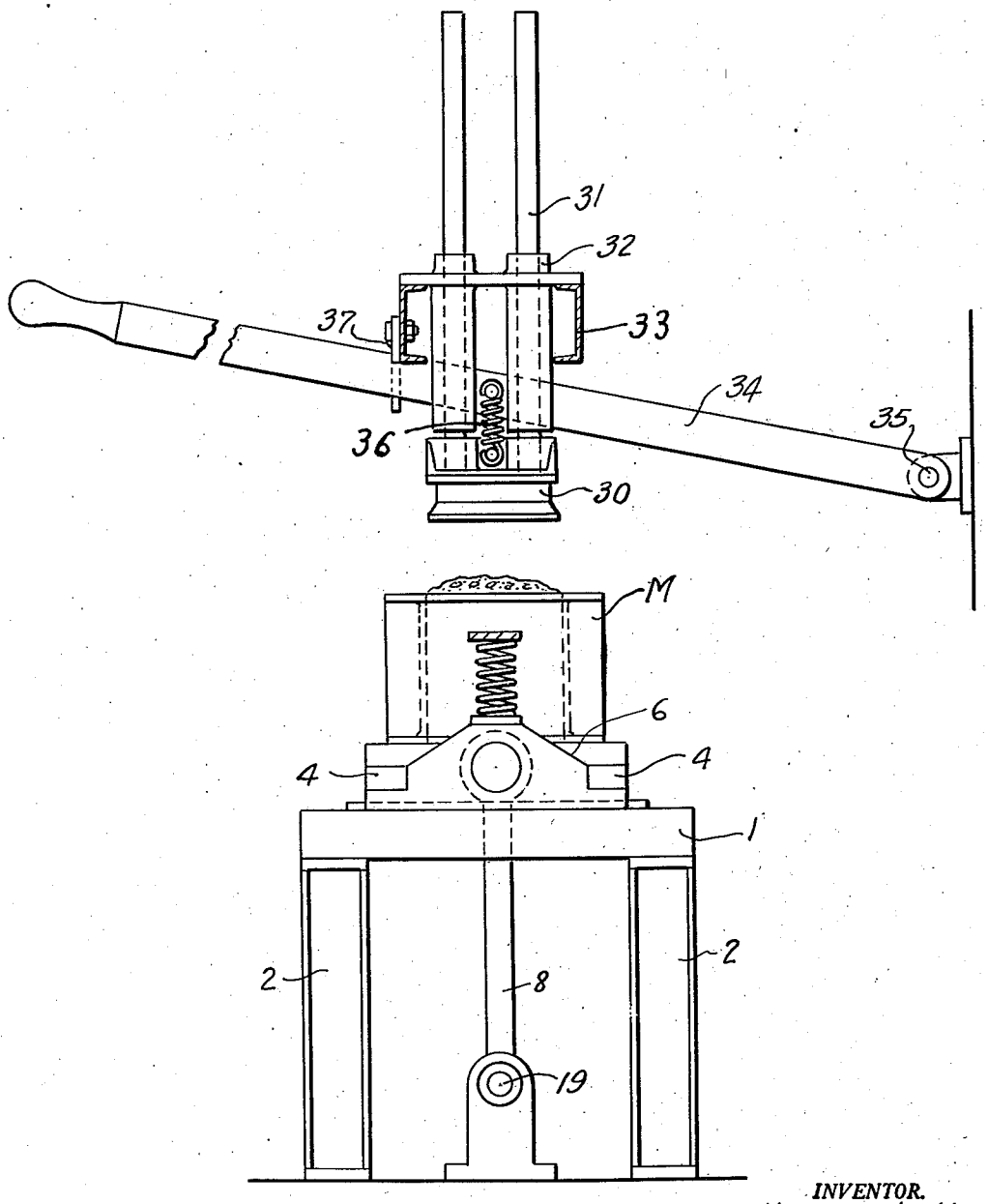
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FIG. 8.



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MOLD OR CONTAINER PACKING

Walter G. Schutt, Adrian, Mich., assignor to Stearns Manufacturing Company, Adrian, Mich., a corporation of Michigan

Application June 7, 1944, Serial No. 539,163

6 Claims. (Cl. 259—72)

This invention relates to double-jolt method and means of consolidating materials in molds or other containers.

The object of the invention is primarily to pack concrete molds for molding blocks, tiles, lintles or other concrete shapes, but obviously the invention has a wider range than this and could be used for packing other containers, such as, plastic molds, barrels, etc.

The object of the new method and new apparatus is to give the mold or other container a sharp jolt in lifting the mold and then a second sharp jolt as the mold or container is dropped back upon the anvil or platform. In lifting the mold or container, the first jolt is followed by a deceleration of the speed of lifting so as to insure the contents of the mold or container remaining in place and not being thrown out.

The nature of the method and character of the apparatus will more fully appear after a specific description is given.

Referring to the drawings:

Fig. 1 is a front elevation of the apparatus, partly in section.

Fig. 2 is a section on the line 2—2 of Fig. 1.

Fig. 3 is a section on the line 3—3 of Fig. 1.

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

Fig. 5 is a section on the line 5—5 of Fig. 1.

Fig. 6 is a similar section showing the same parts in the position they assume during the non-jolting phase of the cycle.

Fig. 7 is a detail of the eccentric and the telescoping connecting rod sections just prior to the lifting jolt.

Fig. 8 is a vertical section showing the jolting apparatus used with a packer head.

The machine includes a pair of anvils 1 in the form of cross beams which are supported on legs 2. There are a pair of legs and an anvil at each end of the apparatus. A cradle or table is made up of the two longitudinal bars 4 and the cross beams 5. These bars 4 are connected at each end by a pair of cross heads 6 in which is pivoted the upper end 7 of the connecting rod 8, the connecting rod pin 9 serving to make this connection. The spring 10 bearing against the fixed bracket 11 tends to push the cross head downwardly and thereby push the table or cradle 4 downwardly, causing the anvil bars 13 to rest on the anvils 1 (see Fig. 2). These anvil bars 13 are in the form of a cross beam bridging from longitudinal bar 4 to longitudinal bar 4 at the opposite side of the cradle. A pad or wear plate 14 may be used between the anvil bar and the anvil, if desired. The anvil bar 13 is provided with an upstanding guide tube 38 provided with guide sleeves 15 and 16 for guiding the upstanding post 17 which rises from the anvil.

A pulley 18 may be used to rotate shaft 19 on which are fastened two eccentrics 21 which rotate in the eccentric straps or heads 22. An upstanding connecting rod section 23 slides in a suitable bore in the end of the connecting rod section 8. A pad or wear piece 24 may be provided between the eccentric head and the flanged end of the connecting rod section 8, if desired.

The operation is as follows: The mold or container M rests on the cross beams 5. This may be a mold with or without suitable cores; it may be a container such as a barrel to be packed or any other receptacle requiring the proper shaking and compacting of the material. The shaft 19 is rotated at fairly high speed. This rotates the eccentric 21. When the eccentric is at the bottom of the stroke, as shown in Fig. 6, there is clearance between the pad or wear plate 24 and the end of the connecting rod section 8. As the eccentric rotates clockwise the clearance is decreased, as shown in the detail, Fig. 7. When the high part or center of the eccentric reaches the left-hand horizontal position, or at substantially this point, the wear plate contacts the end of the connecting rod at high speeds and gives the upper connecting rod section a quick lifting jolt which is, of course, communicated to the cradle or table 4 through the head 6. This movement is resisted by the springs 10 so as not to give the cradle a throw, but simply a jolt. This jolt serves to effectively compact the material in the mold or container. However, with the eccentric the maximum speed is when the high portion of the eccentric is in the horizontal position, as shown in Fig. 7. After the high portion of the eccentric passes the horizontal position there is a progressive deceleration which tends to dampen or curtail the throw of the container and its contents to prevent the contents being thrown out at the top. The movement of the eccentric then is reversed as the high point or center of the eccentric reaches the vertical and there is a progressive accelerator in speed until the high portion or center of the eccentric reaches the horizontal position and thereupon the cradle or platform is dropped on the anvil at the highest downward speed of the eccentric and here receives a second jolt.

In Fig. 8 I have shown the use of my improved jolting apparatus with a packer head. This packer head comprises a head portion 30 which is provided with upwardly projecting stems 31 that

are guided in the sleeves 32 supported on the beams 33. A lever 34 is pivoted at 35 and has spring connections 36 with the packer head 30. This lever can be supported in its uppermost position by the swinging latch 37. The jolting or vibration takes place first without the use of the packer head. This causes the mold or container to be filled or partially packed. Excess material is struck off, leaving the mold level full. The latch is then released, allowing the packer head to drop down upon the material in the mold. Pressure then is exerted through the spring connections by means of the lever and the vibration or jolting is continued for the proper length of time. This finish packs the material and brings it down to size and finishes the top. The packer head is then raised and latched in the upper position and the concrete unit stripped from the mold or the filled container removed from the machine. I have shown this in the form of a hand machine, but obviously the operation could be otherwise performed with power and the lever could be replaced by other actuating parts, either hand operated or automatically operated.

It should be understood that the specific jolting apparatus, as here shown, is merely illustrative and that it may be considerably varied in arranging the position of the parts, the actuating members, etc., and that it is not necessary to my invention in its broadest aspect to use eccentrics as the actuators as equivalent means may be substituted, and that it is not necessary to have a direct thrust connection between the revolving actuator and the cradle as this could be worked out in other forms of transmitting the actuating thrust from the rotating actuator to the cradle. I have found the apparatus described and illustrated is effective for the purpose I have in view, but this can be considerably modified but still come within the spirit of my invention.

What I claim is:

1. In apparatus for compacting a mold or container, the combination of a cradle or table arranged to support a mold or container having material to be compacted, one or more anvils upon which the table rests and means for translating continuous rotative movement into controlled reciprocatory movement and having lost motion connections with said table for picking up the table and rapidly raising the table and then dropping the table sharply on the anvils, providing in the rapid-raising operation one jolt, and in the sharp-dropping operation the second jolt, and springs for opposing the overthrow of the table and for causing the table to follow the actuating means in the downward movement.

2. In apparatus for compacting a mold or container, the combination of a table or cradle for supporting a mold or container having material to be packed, one or more anvils on which the cradle loosely rests, a rotating actuator for translating continuous rotative movement into controlled reciprocatory movement and provided wtih suitable lost motion connections with the table or cradle for first lifting the table with a sudden jolt and then dropping the table on the anvils with a second sharp jolt, the said actuator, through part of its cycle of operation, having no actuating connections with the cradle to allow the cradle to be at rest during part of the cycle of rotation of the actuator, and means opposing the overthrow of the table and for causing the table to follow the actuator in downward movement.

3. In apparatus for compacting a mold or container, the combination of a table or cradle for supporting a mold or container having material to be packed, one or more anvils on which the cradle loosely rests, a rotating eccentric actuator provided with lost motion connections with the table or cradle for first lifting the table with a sudden jolt and then dropping the table on the anvils with a second sharp jolt, the said actuator, through part of its cycle of operation, having no actuating connections with the cradle to allow the cradle to be at rest during part of the cycle of rotation of the actuator, the said transmission connections being a connecting rod and a cross head, said connecting rod made up of two connecting rod sections in telescoping relation which permits actuating movement in only one direction.

4. In apparatus for compacting a mold or container, the combination of a table or cradle for supporting a mold or container having material to be packed, one or more anvils on which the cradle loosely rests, a rotating actuator provided with lost motion connections with the table or cradle for first lifting the table with a sudden jolt and then dropping the table on the anvils with a second sharp jolt, the said actuator, through part of its cycle of operation, having no actuating connections with the cradle to allow the cradle to be at rest during part of the cycle of rotation of the actuator, and one or more springs for pressing the cradle or table downwardly to limit the upward throw of the table or cradle and to cause the table or cradle to follow the actuator in its downward movement at a speed controlled by the rotative speed of the actuator.

5. In apparatus for compacting a mold or container, the combination of a table or cradle for supporting a mold or container having material to be packed, one or more anvils on which the cradle loosely rests, a rotating eccentric provided with lost motion connections with the table or cradle for first lifting the table with a sudden jolt and then dropping the table at a regulated speed on the anvils with a second sharp jolt, the said eccentric, through part of its cycle of operation, having no actuating connections with the cradle to allow the cradle to be at rest during part of the cycle of rotation of the eccentric.

6. In an apparatus for compacting a mold or container, the combination of a table or cradle for supporting a mold or container having material to be packed, an anvil on which the table or cradle loosely rests, and means for jolting the table or cradle comprising a rotating eccentric and an eccentric strap having a lost motion connection with the table or cradle arranged to give the same a sudden jolt at a point in the revolution of the eccentric where the eccentric has a high speed lifting effect and means for yieldingly pressing the table or cradle downwardly to prevent the overthrow of the table and its contents and for keeping the table in speed with the downward travel of the eccentric after it has reached its highest point whereby the mold and its contents are subjected to a second jolting when the table is pressed downwardly at a controlled speed upon the anvil by the combined action of the eccentric and the yielding means.

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