Aug. 7, 1928. 1,679,982

A. LENZ

BOOKING CORE MACHINE

Filed Oct. 21, 1925 3 Sheets-Sheet 1

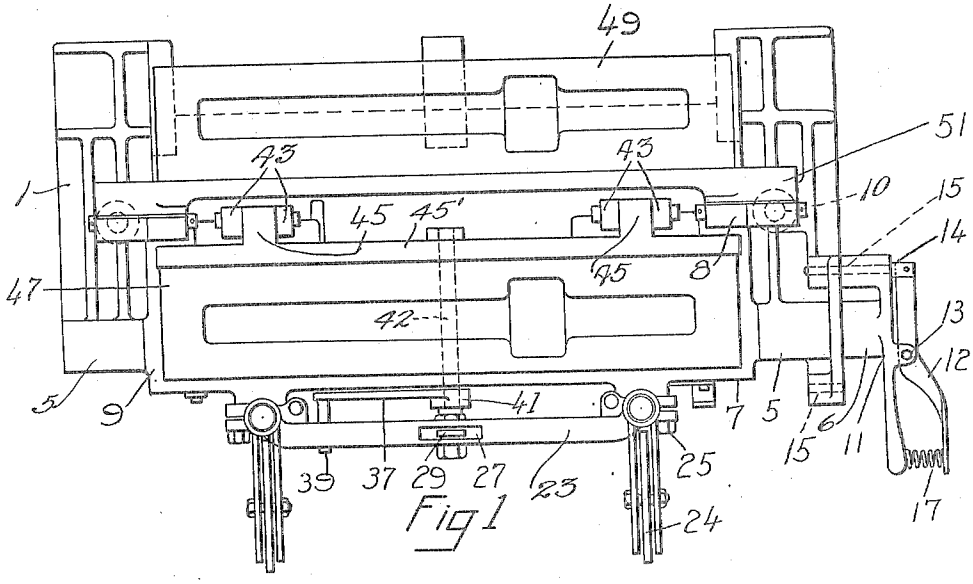


Fig 1

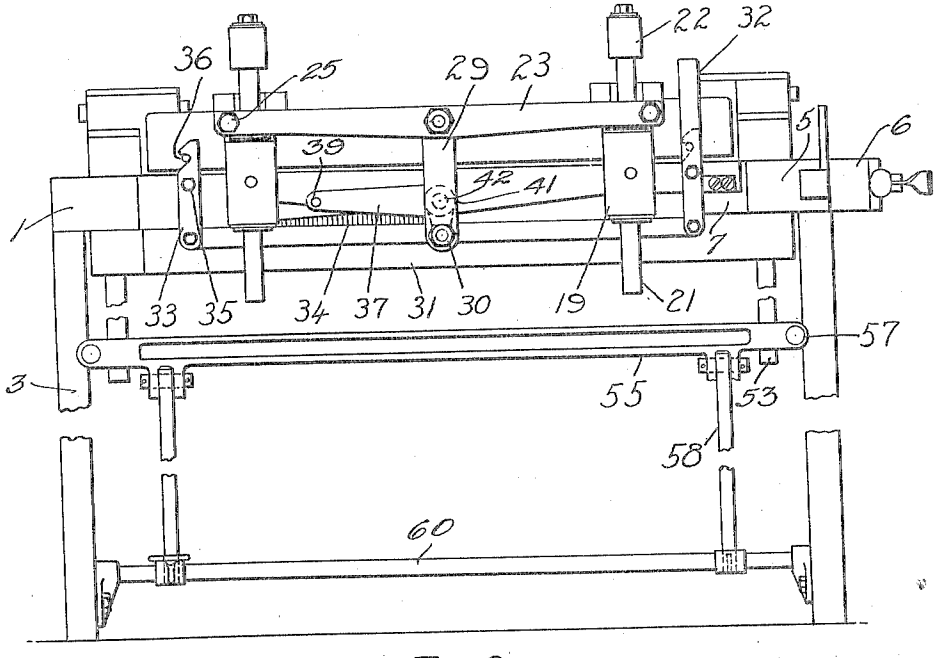


Fig 2

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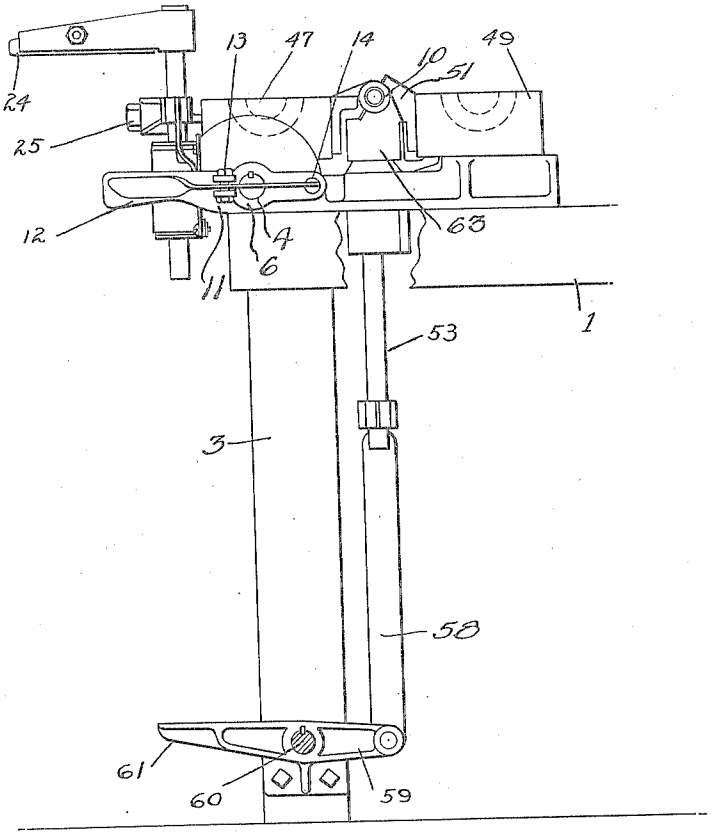


Fig 9

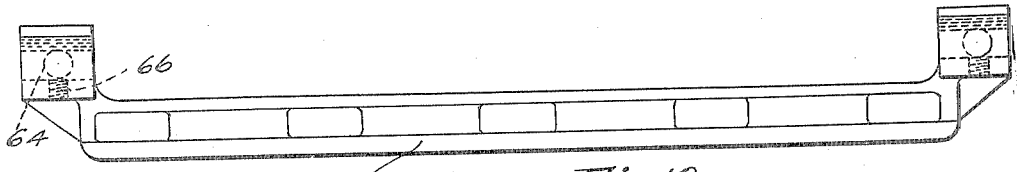


Fig. 10.

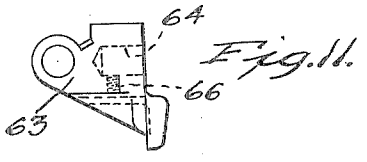


Fig. 11.

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BOOKING CORE MACHINE

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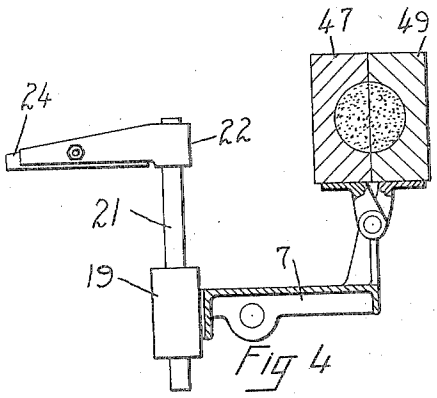


Fig 4

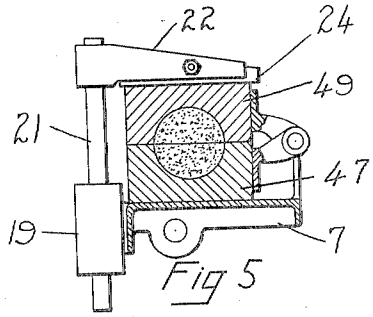


Fig 5

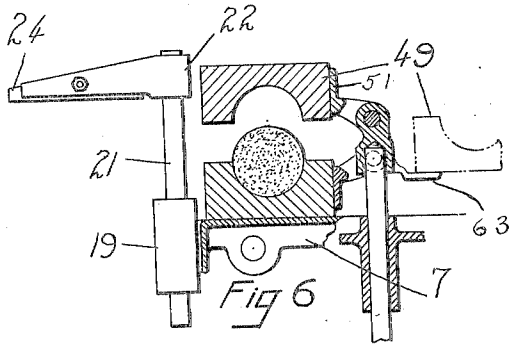


Fig 6

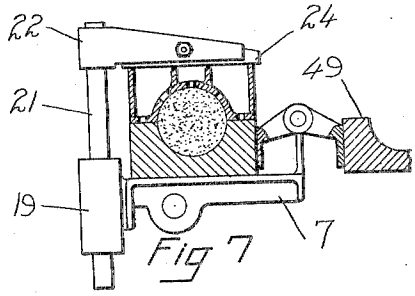


Fig 7

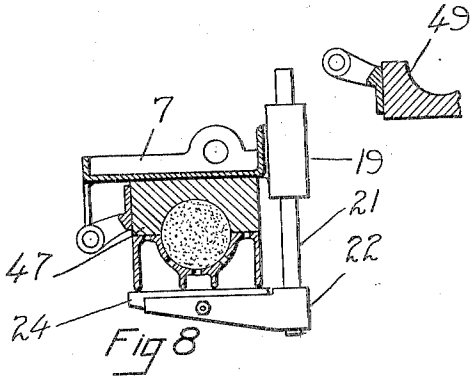


Fig 8

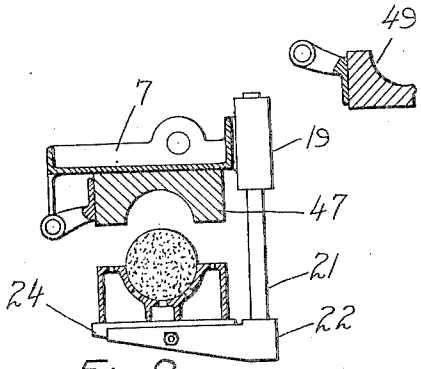


Fig 9

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Patented Aug. 7, 1928. 1,679,982

UNITED STATES PATENT OFFICE.

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BOOKING CORE MACHINE.

Application filed October 21, 1925. Serial No. 64,038.

This invention relates to a booking core machine. In making cores the common practice has been to shape two half cores, bake these half cores and then unite the halves to make a complete core. Considerable labor is required in grinding and matching the core halves to make a complete core. By the present invention it is made possible to save this labor. Two half cores are formed and united before baking, so that the finished core is made without the secondary step of grinding the half cores to fit. To that end there has been invented an apparatus by which the two half cores are formed and united and the core boxes arranged to be removed, whereupon, the completed core is ready to be baked.

For a fuller understanding of the invention the following description is given, in which reference is made to the accompanying drawings.

In the drawings, Figure 1, is a plan view of the apparatus.

Figure 2, is an elevation, looking at the front of the machine.

Figure 3 is a side elevation.

Figures 4 to 9, inclusive, are sectional views, showing diagrammatically, the successive steps in the operation of the machine.

Figure 10 illustrates a detail in plan view and Figure 11 illustrates the same in end elevation.

Referring now to the drawing, numeral 1 represents a main platform or base, supported upon pedestals as at 3. The base is provided at its opposite ends with horizontal bearing members 5. Associated with the base is a rollover table 7, having end members 9 in alignment with bearings 5 of the base. The rollover table is mounted to swing in vertical plane by means of pivot connection with the base, there being a shaft 4 secured to the rollover table 7 passing through bearing 5. Rotating with the rollover table, in a position beyond one end of the base, is a handle 11.

This handle has a hub portion 6 keyed to the shaft 4 as shown in Figure 3. This handle carries a locking lever 12, pivoted at 13 and to one end of the lever is pivoted a locking pin 14, engaging through one of two openings 15 and 15′ in the base member at equal distance from the axis of rotation of the rollover table. The lever is held in its locking position by a spring 17, seated between the handle and one end of the locking lever.

Carried by the rollover table at its front side and at equal distances from its middle portion, are tubular guides 19, through which are slidably mounted spindles 21. Clamping arms 22 are rotatably mounted upon a reduced part at the upper ends of the spindles 21, and these clamping arms carry pivoted equalizers as at 24 for engaging the top of the core box as described hereinafter. The two spindles 21 are connected by a cross bar 23, the ends of which are split and clamped about the spindles by bolts 25 as shown in Figure 1. A slot 27, is extended vertically through the cross bar and pivoted centrally in the slot is the upper end of a push rod 29.

A bell crank lever 37 provided with a handle 39 is pivoted at 41 on the end of a horizontal rod 42 shown in Figure 1 as carried by the rollover table 7. The bell crank lever has a vertical arm extending below its pivot 41 and the lower end of this arm is connected to the lower end of a push rod 29 at 30. A pair of latches 33 pivoted to the rollover table at 35 engage pins 36 on a front core box. The latches are linked together by a connecting rod 31 and are operated by a lever 32.

The parts just described operate as follows:

As the bell crank is swung about its pivot the lower end of the push rod 29 is raised from the position shown in Figure 2. The lower end 30 of rod 29 swings upwardly about pivot 41 as a center. The cross bar 23 and spindles 21 are thus lifted, the spindles 21 sliding through the guides 19. Reverse movement of the bell crank brings down the cross bar 23 and the spindles. If desired a spring 34 may be connected to these parts to assist in holding the cross bar and spindles in position.

Also carried by the rollover table are two pairs of pivot lugs 43. The lugs of each pair pivotally carry between them lugs 45 of the cross member 45′ carrying the front core box 47, the core box normally resting on the rollover table and being locked thereto by the latches described above.

The second mating core box 49 is carried by a cross bar 51, any suitable fastening

means being used to mount the core box on the bar. Inwardly from each end the cross bar 51 is formed with a pivot eye 8. The two eyes cooperate with two other eyes 10 at the ends of an underlying cross bar 63. By means of the pivotal connection at 8 and 10, bar 51 with the rear core box 49 may be swung from its rearmost position as in Figures 1 and 3 to an upward position or to a forward position as shown for example in Figure 4 and in Figure 5. The underlying cross bar 63 is not fixed in position relative to the base but is vertically movable relative to the base so that its vertical movement raises or lowers the pivotally connected cross bar 51 and with it the rear core box. On the underside of the ends of cross bar 63 there are openings 64 which openings receive the upper ends of the rods 53, said rods 53 being mounted to slide vertically in the base. Rods 53 may be secured in openings 64 by set screws 66. To operate these push rods 53 they are clamped beneath the base to a cross bar 55 by means of bolts 57. Connecting links 58 extend from the cross bar 55 to the inner ends of arms 59 fixed to a rock shaft 60 mounted in the pedestals. The rock shaft is actuated by the pedal 61.

The cross bar 63 serves to provide the pivoted mounting for bar 51 carrying the rear core box, it serves to provide the attachment for the lifting means by which the bar 51 and the rear core box is raised; and it serves as a support for the rear core box when the latter is swung about its pivot to its rearward position shown in Fig. 6.

The operation is best explained by reference to Figures 3 to 9.

With the two core boxes lying face up, as in Figure 3, the front core box resting on the rollover table and the rear core box resting on the cross bar 63 and the base, the material for the core is packed and tamped into each core box. If the shape of the cavity of the core box is such that the second half core box may be swung through 180° to the position shown in Figure 5, the second half core box may be so swung. However, if the cavity is of such shape that the material is likely to slip out the pivots of both core boxes are taken advantage of and the two core boxes are rotated to the position shown by Figure 4, after which the two contacting core boxes are swung from the position of Figure 4 to that of Figure 5. The clamp arms are then swung from the position shown in Figure 4 to that shown by Figure 5 and are then brought down by the action of the bell crank to exert pressure upon the pair of core boxes now resting on the rollover table. Figure 5 shows the parts in this position. By any convenient tapping means, such means forming no part of this invention, the machine is jarred to loosen the upper half of the core from the second core box. The pedal is then operated to raise the bar 63 carrying the pivots for cross bar 51 and the second core box and this second core box is then swung to the dotted line position as shown in Figure 6.

For the purpose of baking the core it is placed in a furnace resting upon a metal frame. This frame is shaped to correspond with the cavity of the half core boxes and is placed upon the core as is shown in Figure 7. The arms are once more swung around and brought down, this time upon the metal frame. The operator then releases the latch on the handle 11 and turns the rollover table through 180°, thus inverting the first core box. This inverted position is shown in Figure 8. The machine is given a second jarring motion, the clamping arms are lowered from the position of Figure 8 to that of Figure 9 thus separating the first core box from the core and leaving the completed core supported by the metal frame resting upon the inverted clamp arms. The metal frame carrying the complete core is now transferred to the furnace for baking. It will be understood that the above description sets forth the structure which is now believed to be the best embodiment of the invention but that various changes and modifications may be made which may fall within the terms of the claims.

What I claim and desire to protect by Letters Patent is:

1. In a core making machine, a base, a rollover table, a core box carried by the rollover table, means associated with the base and rollover table to invert the rollover table and core box.

2. In a core making machine, a rollover table mounted to rotate to an inverted position, a core box carried by the rollover table, a mating core box mounted so as to be mated with the first core box when the rollover table is in normal position.

3. In a core making machine, a base, a core box mounted to be inverted from its normal position, a second core box mounted on the base so as to be mated with the first core box when the first core box is in normal position.

4. In a core making machine a base, a core box, mounted to be inverted from its normal position, a second core box mounted on the base, so as to be mated with the first core box when the first core box is in normal position and also to be raised from its normal position to permit the reversal of the first core box.

5. A booking core machine comprising a base, a first core box, a second core box, a pivot for the second core box whereby it may be swung into position over the first core box, and a pivotal connection, whereby the first core box may be independently swung to an inverted position,

6. A booking core machine comprising a base, a first core box, a second core box, pivots for each core box whereby the core boxes may be swung into face to face contact, a pivotal connection whereby the first core box may be independently swung to an inverted position.

7. A booking core machine comprising a base, a first core box, a second core box, pivots for swinging the core boxes into face to face contact, means for bodily lifting the second core box and pivotal means to independently swing the first core box to an inverted position.

8. A booking core machine comprising a base, a core box, a second core box, means for swinging the core boxes into engagement, means for clamping the boxes together to make the completed core, means for bodily lifting the second core box, other pivotal means to independently swing the first core box into an inverted position.

9. A booking core machine comprising a base, a core box, a second core box, means for bringing the core boxes together to make a complete core, means for clamping the boxes together to complete the union of the half cores, means for bodily lifting the second core box, a frame or core holder to replace the second core box, pivotal means for bringing to an inverted position as a unit, the first core box, the completed core, the frame and the clamp, means for lowering the clamp whereby the first core box will be separated from the core now carried by the frame.

10. A booking core machine, comprising a base, a member carried by the base upon a horizontal pivotal connection, a core box carried by said member, a vertically adjustable member carrying, by a horizontal pivotal connection, a second core box, vertically adjustable means carried by said member for clamping the boxes together in the normal position and for separating the core from the first core box in the inverted position.

11. In a booking core machine a first core box, a second core box, a member to which said second core box is pivoted, means for raising the member and its core box, consisting of a rock shaft carried by the machine, means to rock the shaft and linkage between the rock shaft and the member.

12. In a booking core machine a base, a rollover table, carried by a horizontal pivot on the base, a first core box upon the rollover table, a second core box mounted, to be placed in inverted position upon the first core box, clamps carried by the rollover table and vertically adjustable to clamp the two core boxes together and manually operated means to actuate the clamps.

13. In a core making machine, a base, a rollover table, pivoted to the base to swing in a vertical plane, a core box carried by the rollover table, reciprocating clamps carried by the rollover table to engage the core box and means to reciprocate the clamps.

14. In a booking core machine, a base, a rollover table pivoted to the base to swing in a vertical plane, a first core box, carried by the rollover table, a second core box mounted to be inverted over the first core box, guides on the rollover table, vertically reciprocating rods carried by the guides, clamping arms swinging horizontally mounted on the upper ends of the rods and means to reciprocate the rods.

15. In a booking core machine, a base, a rollover table, a first core box on the table, a second core box mounted to be placed over the first core box, vertically reciprocating rods carried by the table, clamps carried by the rods to hold the core boxes together, a cross bar clamped to the reciprocating rods, a push rod pivoted to the cross bar, a bell crank lever pivoted to the rollover table, one of its arms connected to the push rod to actuate the reciprocating rods and clamp the arms.

16. In a booking core machine, a base, a rollover table, a core box, pivoted to the rollover table to swing vertically, the rollover table pivoted to the base to swing vertically and carry the core box to an inverted position.

17. In a booking core machine, a base, a rollover table, a core box pivoted to the rollover table to swing vertically, a latch pivoted to the rollover table and engaging a pin on the core box, a lever to actuate the latch, a pivotal connection between the base and rollover table whereby the latter may be inverted.

18. In a booking core machine, a base, a rollover table, a core box pivoted to the rollover table to swing vertically, the rollover table pivoted to the base, also to swing vertically and carrying with it the core box, a handle rigid with the rollover table to rotate the same, and a locking latch associated with the handle to lock the rollover table to the base in upright position and in inverted position.

19. In a booking core machine, a base, a first core box, a second core box, means to bring the second core box into face to face contact with the first core box, means to remove the second core box from the core, means to invert the first core box with the core, means to separate the first core box from the core.

20. In a booking core machine, a base, a first core box, a second core box, means to unite the core boxes and complete the core, means to remove the second core box from the core, a frame shaped to fit the core and to be substituted for the second core box, means to invert the first core box with the core, means to separate the first core box

from the core, whereupon the core carried by the frame is ready for baking.

21. In a booking core machine, a base, a rollover table pivoted to the base, a core box pivoted to the rollover table, a member movable relatively to the base, a second mating core box pivoted thereto, movement of the movable member functioning to bring the pivots of the core boxes into or out of alignment.

22. In a booking core machine, a base, a rollover table pivoted thereto, a core box carried by the rollover table, a second core box mounted so as to be brought into face to face contact with the first core box and means to raise the second core box from the first.

In testimony whereof I affix my signature.

ARNOLD LENZ.