T. F. SISSON.

UNIVERSAL JOLT RAMMING MACHINE FOR CORE BOXES.

APPLICATION FILED OCT. 3, 1910.

985,464.

Patented Feb. 28, 1911.

2 SHEETS—SHEET 1.

Fig. 1.

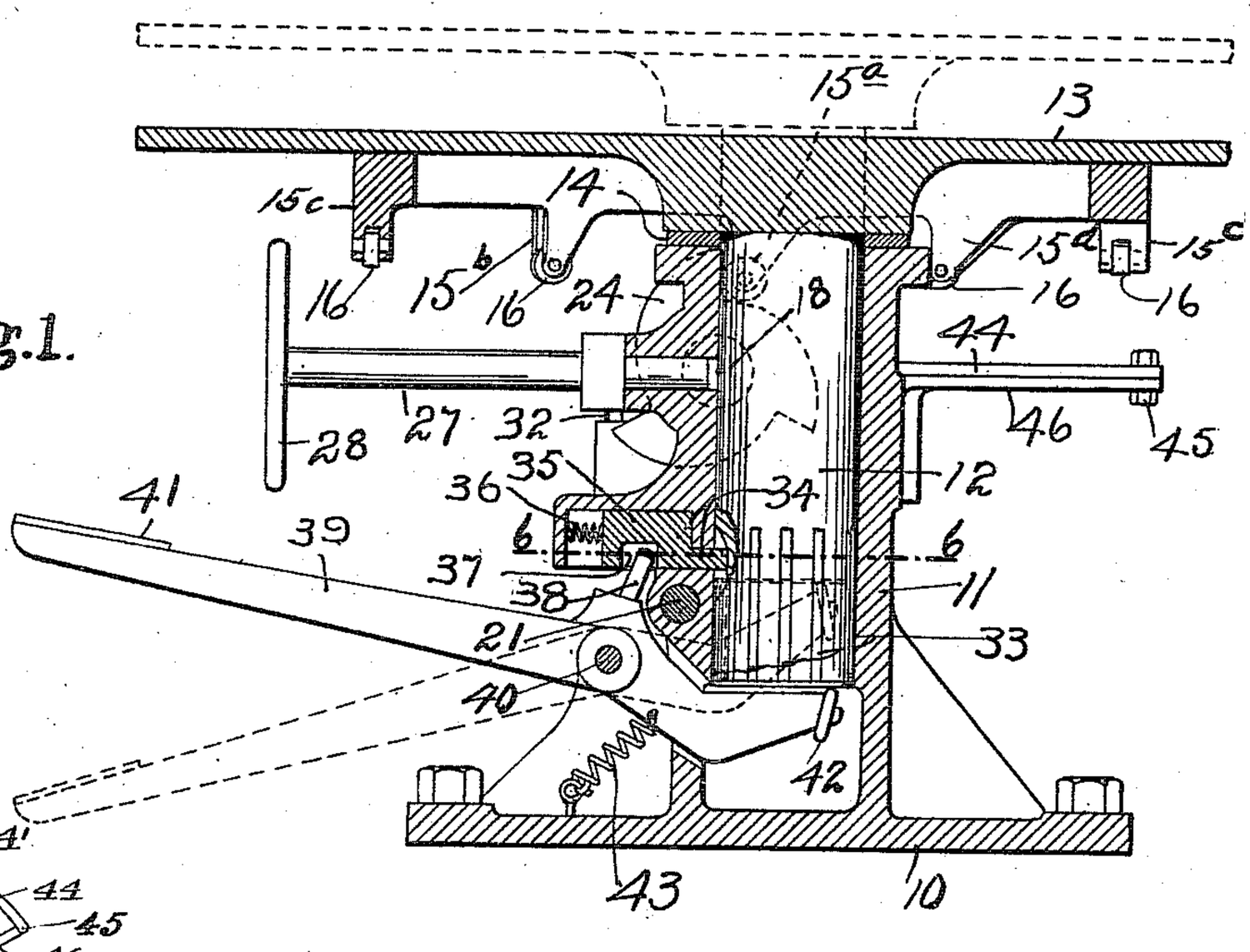


Fig. 8

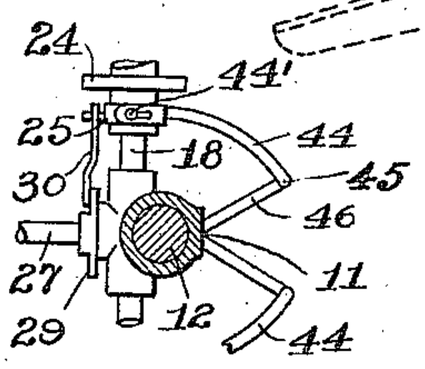
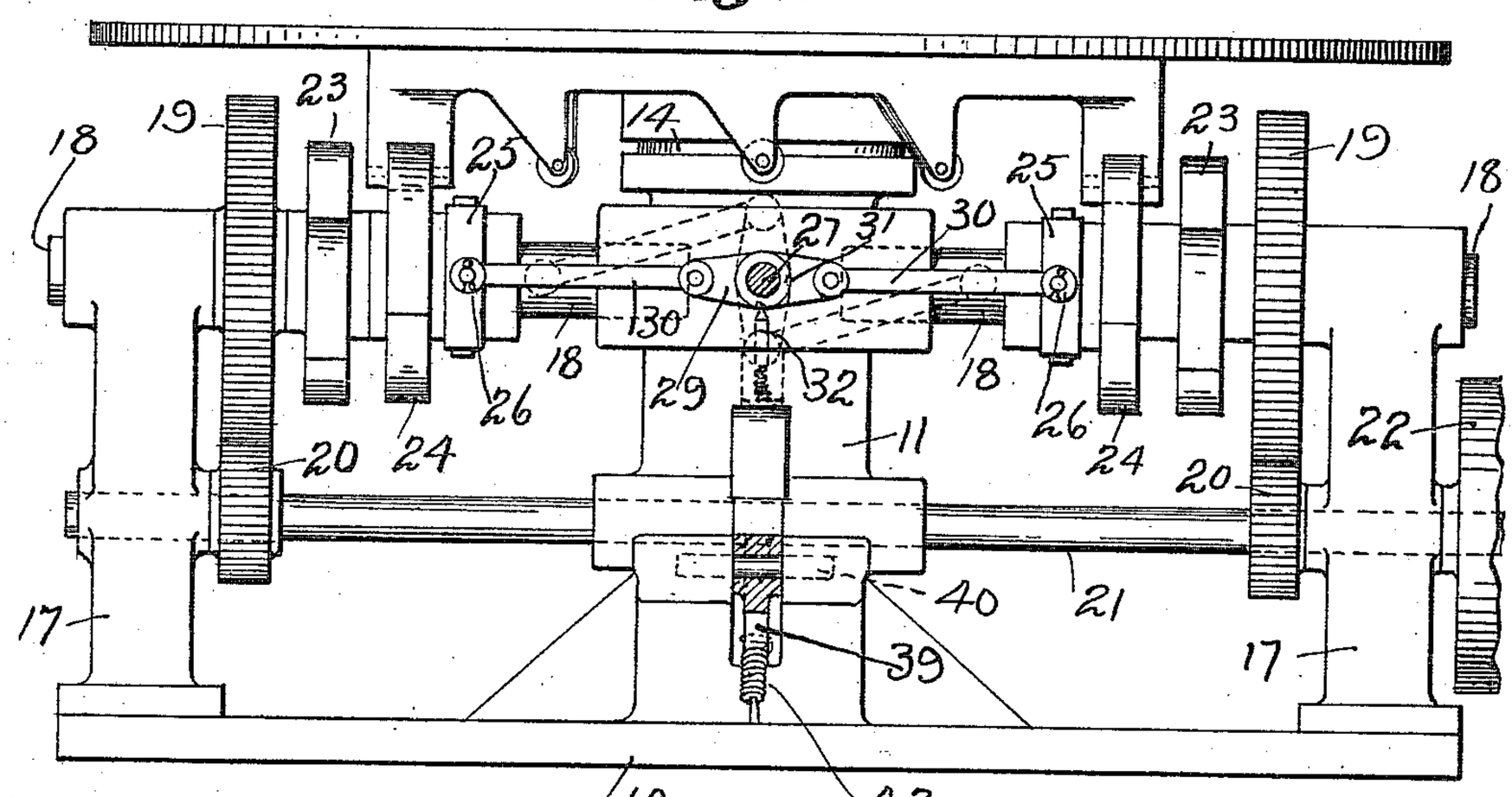


Fig. 2.



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2 SHEETS—SHEET 2.

Fig. 4.

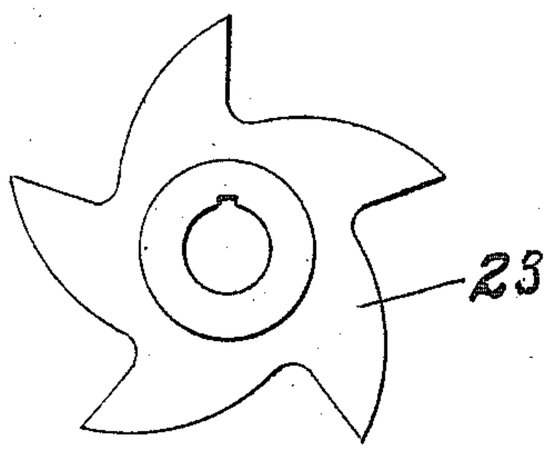


Fig. 5.

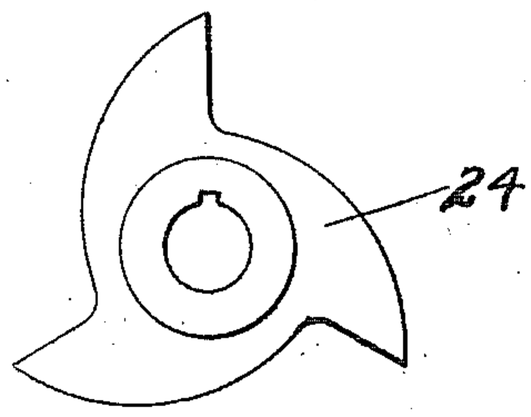


Fig. 3.

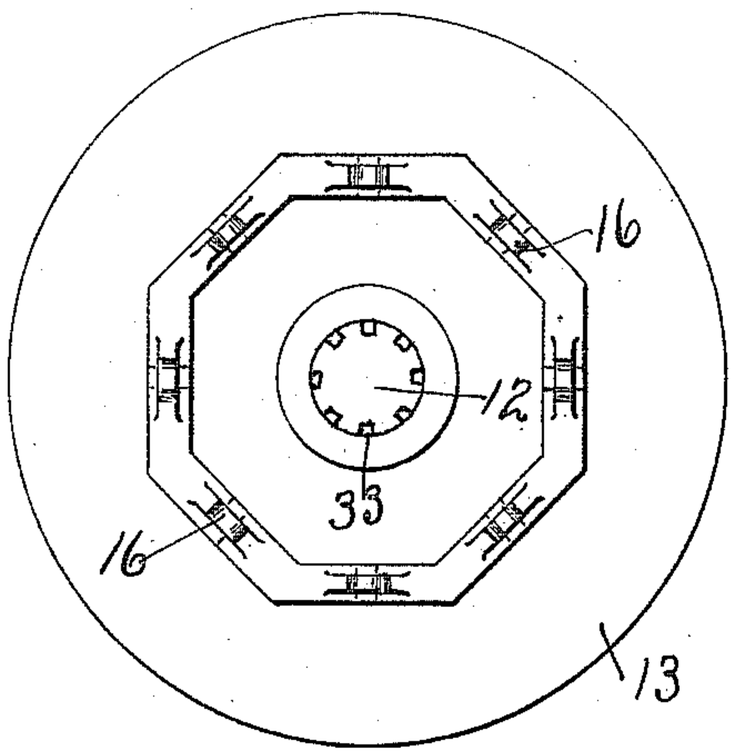


Fig. 6.

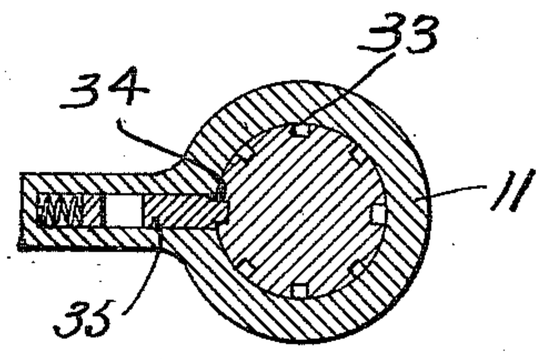
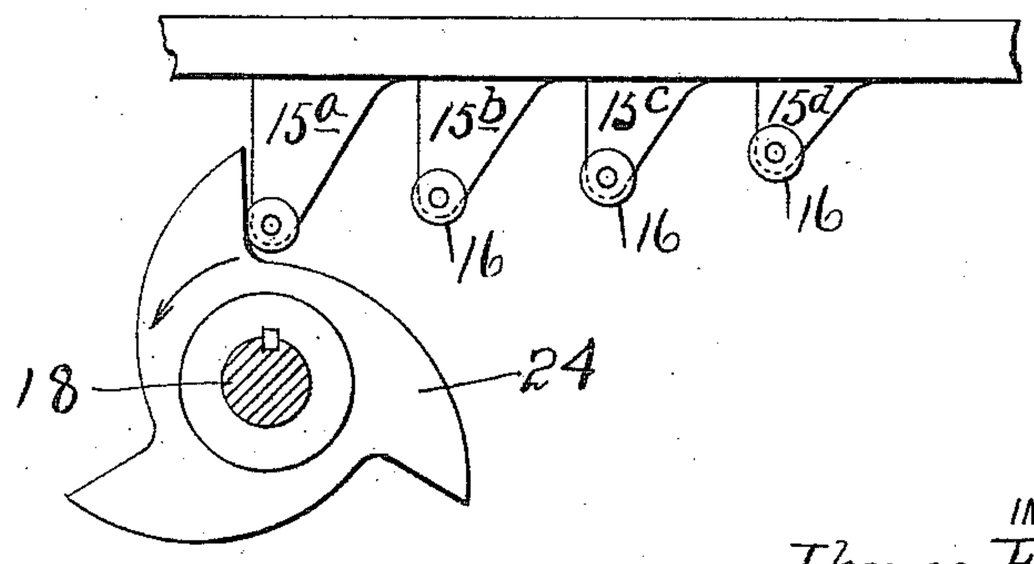


Fig. 7.



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UNIVERSAL JOLT-RAMMING MACHINE FOR CORE-BOXES.

985,464. Specification of Letters Patent. Patented Feb. 28, 1911.

Application filed October 3, 1910. Serial No. 584,985.

To all whom it may concern:

Be it known that I, THOMAS F. SISSON, a citizen of the United States, residing at the city of Providence, in the county of Providence and State of Rhode Island, have invented certain new and useful Improvements in Universal Jolt-Ramming Machines for Core-Boxes, of which the following is a specification, reference being had therein to the accompanying drawing.

Machines for automatically ramming the sand for making molds have been made and are in use, such machines usually employing pneumatic mechanism for operating the table on which the boxes are placed, but such machines are expensive in structure and operation, and are not thoroughly effective for use with core boxes unless the latter are of the simplest nature. Therefore it is still the general practice to ram the sand in core boxes by hand.

The object of the present invention is to provide a mechanically operated jolting or jarring machine which will efficiently ram the sand for the making of all kinds of cores.

To this end the invention consists in the construction and combination of parts substantially as hereinafter described and claimed.

Of the accompanying drawings: Figure 1— represents a vertical section through a machine embodying my present improvements, the line of section being taken substantially through the center of Fig. 2. Fig. 2— is a front elevation of the machine, the hand operated shaft for shifting the cams being shown in section. Fig. 3— is an under plan view of the table and its post, removed from the machine. Figs. 4 and 5— are detail side elevations of two of the cams for lifting the table. Fig. 6— represents a section on line 6—6 of Fig. 1. Fig. 7— is a diagram to illustrate the action of the cams on the tappets of different height or length which project downwardly from the table. Fig. 8— is a top plan view partially in section, illustrating the operation of the guide arm 44.

Similar reference characters indicate the same or similar parts in all of the views.

Rising from a suitable base 10 is a tubular standard 11, said standard receiving the post 12 of the table 13. An annulus or heavy washer 14, preferably of wrought iron, is inserted between the top of the standard 11 and a flat undersurface of the table around the post 12 to receive the impact or blow of the table when it descends by gravity after having been lifted by the cam mechanism presently described.

Projecting downwardly from the table are tappets 15^a, 15^b, 15^c and 15^d, said tappets being preferably provided with anti-friction rolls 16. The tappets are arranged in a circular series and have different lengths for a purpose hereinafter described. By "different lengths" I mean that the lower ends of the tappets or the rolls carried thereby are in different horizontal planes. To illustrate this in the clearest manner, the diagrammatic view Fig. 7 is presented. In practice I have constructed the table with two diametrically opposed tappets 15^a, the length being such that the rolls 16 thereof will give a two inch lift to the table when the cams presently described engage those two tappets. The other tappets 15^b 15^c and 15^d in such machine as constructed are of a length to cause the table to be lifted one and one-half inch, one inch, and one-half inch, respectively, as will be more fully explained hereinafter. There being eight tappets, they are arranged of course in two series so that the two tappets 15^a will be diametrically opposite each other, the tappets 15^b diametrically opposite each other, the tappets 15^c diametrically opposite each other, and the tappets 15^d diametrically opposite each other.

The base 10 is provided with two side standards 17. In a bearing at the upper end of each standard 17 is supported the outer end of a shaft 18, the inner end of each shaft 18 being mounted in a bearing formed in an upper side portion of the standard 11. Fixed to each shaft 18 is a gear 19, said gears meshing with pinions 20 on a counter shaft 21 supported in suitable bearings provided in the standards 11 and 17, said shaft 21 being driven by any suitable means such as a belt or a pulley 22 (see Fig. 2). Splined on each shaft 18 so as to rotate therewith but capable of being adjusted longitudinally thereof are two cams 23 and 24 (see Figs. 2, 4, 5 and 7). The cams 23 are five-pointed, while the cams 24 are three-pointed. Each pair of cams 23—24 are so

connected or formed that they are simultaneously shifted longitudinally of the shaft 18. As indicated in Fig. 2 the hub or sleeve carrying the cams is provided with a ring or collar 25 within which such hub may rotate, each ring being provided with a pin 26.

Mounted in a bearing provided in the front side portion of standard 11 is a shaft 27 having a hand wheel 28 at its outer end. Secured to said shaft 27 is a hub having two arms 29, said arms being connected by links 30 with the pins 26 of collars 25. By rotating the shaft 27 so as to carry the arms 29 from the full line to the dotted line position shown in Fig. 2, the said arms act through the links 30 to shift each pair of cams so that the cams 23, instead of the cams 24, will be in position to act upon the tappets of the table. To hold the shaft 27 in either one of its positions of adjustment, the hub of the arms 29 may be provided with recesses 31 either one of which may be entered by the tip of a spring pressed bolt 32. The lower end of the post 12 is formed with eight vertical grooves 33 (see Figs. 1 and 3) either one of which may be engaged by a bolt 34. Said bolt, as shown in Fig. 1, has an enlargement or block 35 mounted to reciprocate in a suitable guideway formed in a projection of the standard 11, said block and its bolt being pressed forwardly by a spring 36. The block is formed with a recess 37 in its underside, said recess being engaged by a pin 38 rising from a lever 39 pivoted in a standard at 40 and having a foot piece 41 at its front end. The rear end of the lever projects into the standard 11 below the post 12 and is preferably provided with a roll 42. A spring 43 holds the lever normally in the position shown by full lines in Fig. 1.

When the parts are in the positions indicated by full lines in Fig. 1, and when power is supplied to the shaft 21, the shafts 18 are rotated and the three-pointed cams 24 act on the tappets 15^a and lift the table, the latter being guided and prevented from rotating by means of the bolt 34 entering one of the grooves 33. Any core boxes mounted on the table will be vertically reciprocated, and the drop will be considerable each time that the cam points pass the tappets. The extent of drop and the jar resulting from the impact of the table on the annulus 14 will quickly jar or jolt the sand thoroughly and efficiently in the core box or boxes. Different sizes, shapes or forms of core boxes require different treatment, some requiring less vertical movement than others. Since the table can never descend below a certain plane, rotative adjustment of the table so as to bring a different pair of tappets in position to be acted upon by the cams, will result in varying the force of impact because the tappets of lesser height, when in position over the cams, will result in the table being lifted a lesser amount. As an illustration of the need for varying the amount of impact which is controlled by the rotative adjustment of the table and its tappets, it may be mentioned that when a core box includes considerable wood in its construction, the blow is softened or muffled by the wood and in that case a heavier jar is required.

The operation for forming some cores should be more rapid than others. By mounting cams such as those shown at 23 and 24 so that they can be instantly adjusted, the desired or necessary change of speed is quickly effected. Since the points of the cams cannot, of course, be in alinement, and since the table cannot be rotated to change its adjustment when in lowered position, the lever 39 is provided. When a change is to be effected, the operator depresses the outer end of the lever so that the inner end, or the roll 42 carried thereby, will engage the lower end of the post 12 far enough so that the tappets of the table will clear the cams. This manipulation of the lever also causes the pin 38 to withdraw the bolt 34 so that the table can be rotated to bring any desired pair of tappets in position to be acted upon by the cams. And of course while the table is elevated, the cams may be shifted by means of the hand shaft 27.

The collars 25 on the hubs of the rotatable cam 24 are held against rotation, but permitted to move longitudinally on said shaft, by means of the arm 44, which arms are pivoted at 45 at one end to the arm 46, extending rearwardly from the standard 11, and are forked and slotted at the opposite end to engage pins 44′ in the collar 25. It is found in practice necessary to hold these collars 25 against rotation in order that the longitudinal movement of the cams may be effected through them and the connecting links 30 in the manner above described.

It will be understood of course that as many core boxes as the table will hold may be simultaneously treated to jar or jolt the sand firmly to position, so as to require no hand ramming.

I claim:

1. A machine of the character described comprising a vertically movable table, cam and tappet mechanism for raising it, an abutment to receive the impact of the table when the latter descends by gravity, the cam and tappet mechanism being variable to change the plane to which the table is elevated, and means whereby the extent of the repeated elevations of the table may be kept uniform for an indefinite length of time.

2. A machine of the character described comprising a vertically movable table, a circular series of tappets carried by said table, and two pairs of cams of different contour to act on said tappets to raise the table, the

cams being interchangeably mounted and shiftable to bring either pair under the tappets.

3. A machine of the character described comprising a vertically movable table having a circular series of tappets, two pairs of cams of different contour for acting on said tappets to raise the table, the cams being interchangeably mounted and shiftable to bring either pair under the tappets, and an abutment to receive the impact of the table when the latter descends by gravity.

4. A machine of the character described, comprising a vertically movable table having a circular series of tappets of different height, means for rotatively adjusting the table, a pair of cams to act on said tappets to raise the table, and an abutment to receive the impact of the table when the latter descends by gravity.

5. A machine of the character described, comprising a vertically movable table having a circular series of tappets, and a plurality of cams of different forms for acting on said tappets to raise the table, means being provided for shifting the positions of said cams.

6. A machine of the character described, comprising a vertically movable table having a circular series of tappets, two pairs of cams under the table, the cams of each pair differing from each other in form, means for simultaneously rotating said cams, and means for shifting the positions of said cams to interchange them as to their operative positions relatively to the tappets.

7. A machine of the character described, comprising a tubular standard, a post mounted in said standard and having a table at its upper end, said table having a circular series of tappets of different heights, the post being formed with vertical grooves, a movable bolt to engage either one of said grooves, and cams for coöperating with the tappets to raise the table.

8. A machine of the character described comprising a tubular standard, a post having vertical grooves and mounted in said standard, a table carried by said post and having a circular series of tappets of different heights, a bolt adapted to enter either of the grooves in the post, a lever having an arm extending under the post and having a projection to actuate the bolt to withdraw it, and cams to coöperate with said tappets to raise the table.

In testimony whereof I affix my signature in presence of two witnesses.

THOMAS F. SISSON.

Witnesses:

HOWARD E. BARLOW,

E. I. OGDEN.