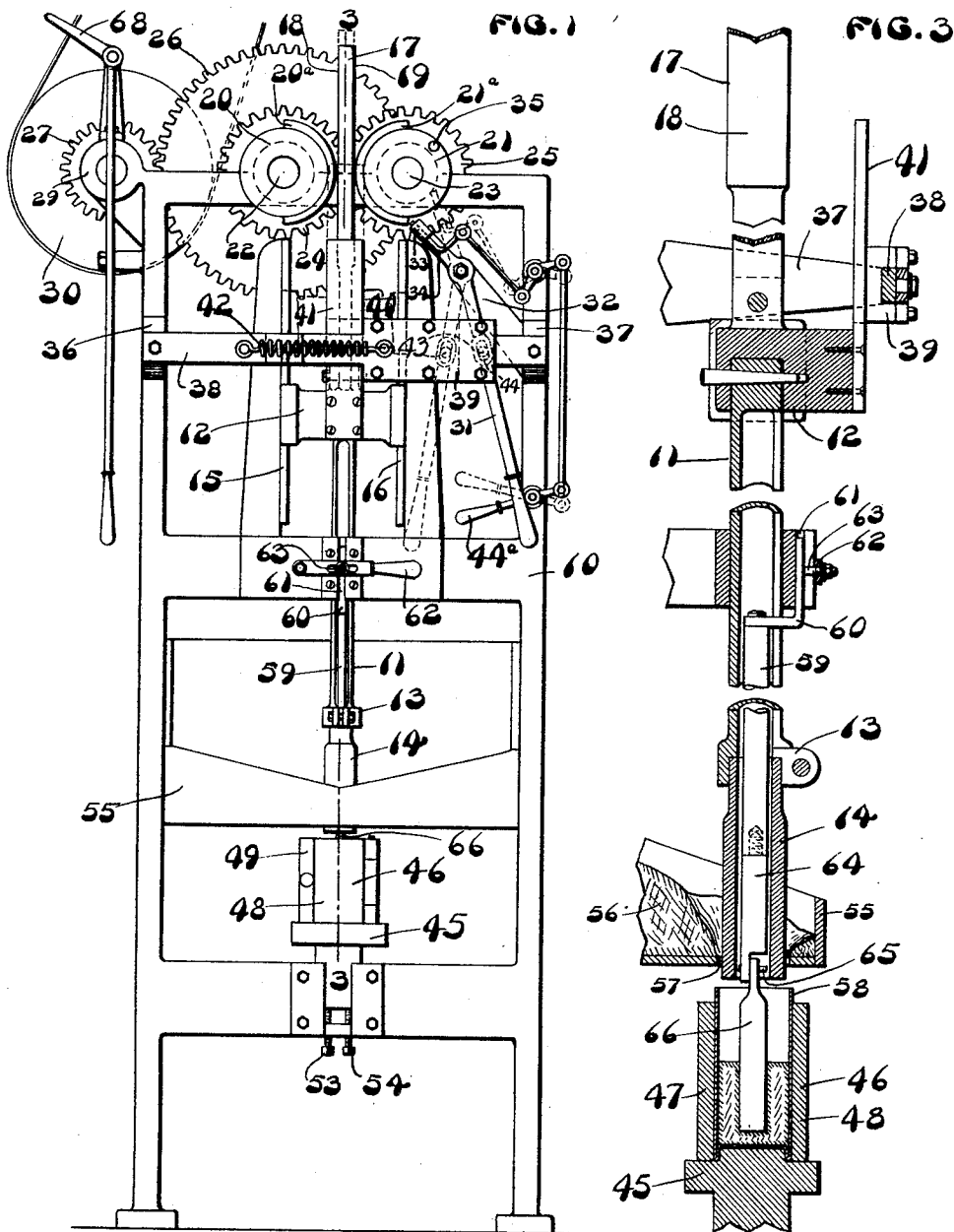


1,055,839.

Patented Mar. 11, 1913.

2 SHEETS—SHEET 1.



Inventor

Witnesses

W. Thornton Bogert
 C. P. Kropp

Andrew P. Tucker

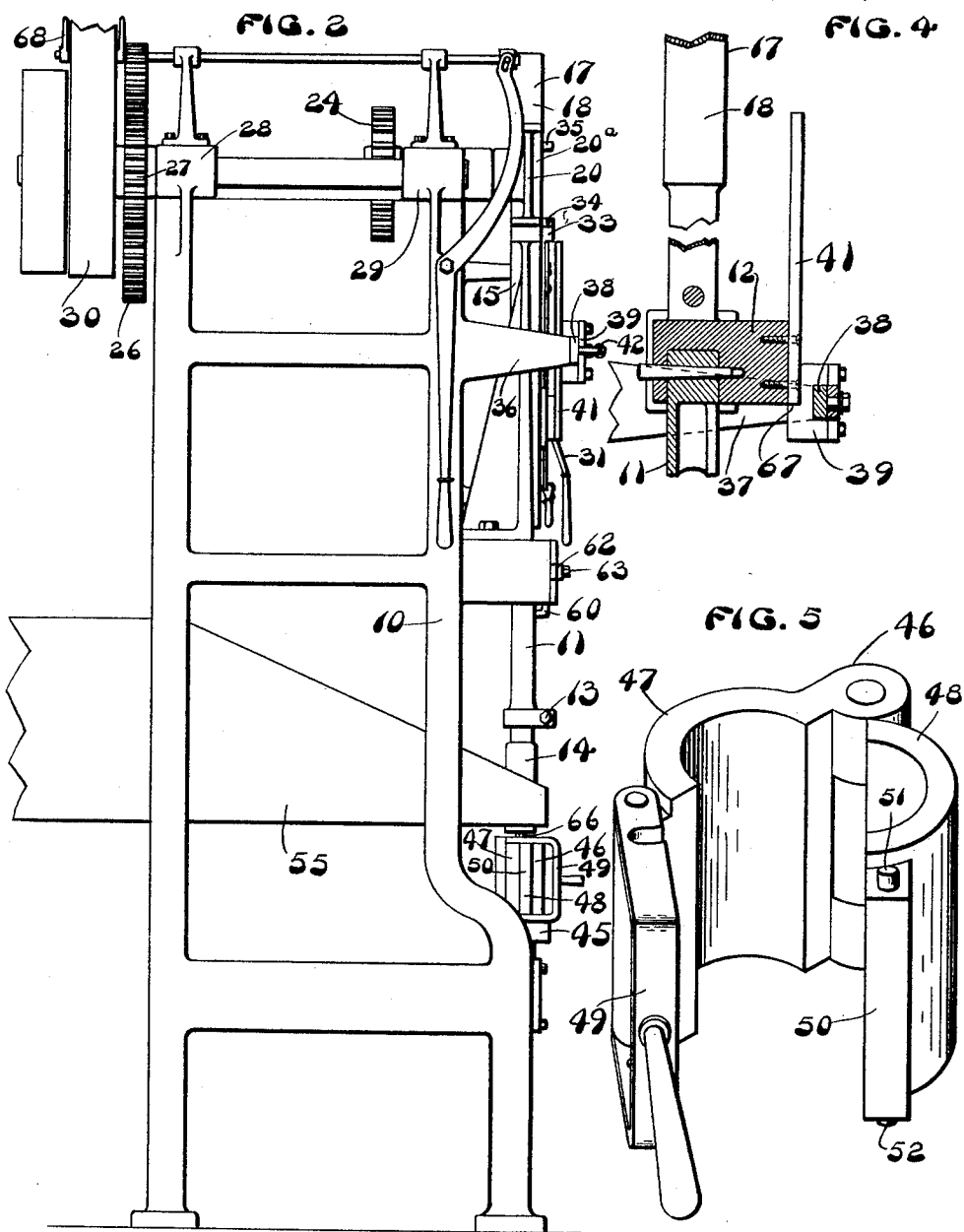
By Walter A. Murray

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2 SHEETS—SHEET 2.



Inventor

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UNITED STATES PATENT OFFICE.

ANDREW P. TUCKER, OF CINCINNATI, OHIO.

DRY-CELL-PACKING MACHINE.

1,055,839.

Specification of Letters Patent.

Patented Mar. 11, 1913.

Application filed May 22, 1911. Serial No. 628,870.

To all whom it may concern:

Be it known that I, ANDREW P. TUCKER, a citizen of the United States of America, and resident of Cincinnati, county of Hamilton, and State of Ohio, have invented certain new and useful Improvements in Dry-Cell-Packing Machines, of which the following is a specification.

My invention relates to machines for packing electric dry cells.

An object of my invention is to provide a machine which will pack dry cells with less labor and greater speed than has been done heretofore.

Another object of my invention is to provide a machine which will pack dry cells more evenly and with greater solidity.

A further object is to provide a machine which will pack dry cells to produce high amperage.

A further object is to provide a machine which will locate and hold the carbon electrode centrally in the cell, while the cell is being packed.

In the drawings accompanying this application and forming a part hereof, Figure 1 is a front elevation of the machine. Fig. 2 is a side elevation. Fig. 3 is a partial longitudinal section taken on line 3—3 of Fig. 1, upon an enlarged scale. Fig. 4 is a partial longitudinal section of the cross-head connection, but showing the parts in different relative positions. Fig. 5 is a perspective view of the clamp used for holding the dry cell zinc casing, while packing.

The machine comprises a hollow reciprocating packing ram 11 and 14 surrounding a stationary carbon holder 59, rotating friction disks for lifting the ram and then releasing it to permit it to drop by its gravity into the cell that is being filled, an automatic means for stopping the mechanism when the cell has been filled, and a starting mechanism.

The ram consists of a hollow spindle 11, having at the lower end a clamp 13, which is adapted to hold a removable hollow ram head 14. Spindle 11 is secured to a cross-head 12, adapted to reciprocate between guides 15 and 16, mounted on frame 10. Above the cross-head and secured thereto is a friction plate 17, which is provided with surfaces 18 and 19, against which rotating friction disks 20 and 21 are adapted to bear intermittently, by having semi-circular enlargements 20^a and 21^a to contact with plate

17. The disks are mounted on shafts 22 and 23, which are journaled in bearings at the top of the frame. The two shafts are geared together by gear wheels 24 and 25. On the rear end of the shaft 22 is secured the large gear wheel 26. Meshed with this gear is a pinion 27, mounted on a shaft, which is journaled in bearings 28 and 29. To this shaft is also secured the driving pulley 30.

The mechanism used to start and stop the ram is as follows: A lever 31, pivotally mounted on a bracket 32, is provided with a boss 33. Through this boss passes a sliding pin 34, which is adapted to engage a pin 35, affixed to disk 21. To arms 36 and 37 of the frame is secured a bar 38, which carries a sliding trigger 39, which is adapted to bear normally against the side of a trigger plate 41, secured to cross-head 12, the trigger being held against the trigger plate by a spring 42. On the rear surface of the trigger is a pin 43, which engages a slot 44 in lever 31. The sliding pin 34 is operated by a lever 44^a through link connections.

A table 45, upon which is mounted a clamp 46, for holding the zinc casing of the dry cell, during the operation of packing it, is mounted adjustably in the frame 10. The clamp 46, Fig. 5, is so constructed as to have its two members 47 and 48 locked together, when the dry cell is being packed. This is accomplished by means of a U-shaped bar 49, pivotally mounted at both ends, on one member of the clamp. On the other clamp member is formed a rib 50, in the ends of which are secured pins 51 and 52. In the U-bar 49 are cut slots to engage the pins 51 and 52, when the two members are brought together and the U-bar is swung around to the locking position.

The adjustable table 45 may be raised or lowered by set screws 53 and 54, this adjustment being for the purpose of adjusting the height of the zinc casing 58, from the bottom of a feeding trough 55, from which the electrolyte 56 is fed, through an opening 57, the opening being made just large enough to permit the ram head 14 to pass. The trough is constructed preferably of wood or some other material which is not injured by the action of the electrolyte.

In order to properly place the carbon electrode in the cell and hold it firmly and centrally within the casing, and also to regulate its distance away from the bottom of the

casing, a rod 59 is placed within the hollow spindle 11. This rod is supported by an L-bar 60, which slides in a guide slot 61, in frame 10, and is adapted to be adjusted therein by a lever and pin 62 and 63. At the other end of the rod is detachably secured a tip 64, on which is hung, by a pin 65, the carbon electrode 66.

The removable ram head 14 and removable tip 64 are for the purpose of renewing these parts, when they become eaten away by the action of the electrolyte, thus saving the expensive renewal of a complete ram and carbon holder.

The machine, when not in operation, has the ram raised and locked in that position by the trigger 39, projection 67 of which engages the underface of the trigger plate 41, when the ram is raised high enough to allow the trigger to slip over and arrest the dropping movement of the ram. This position of the trigger and its operating lever 31 being shown in Fig. 4. In this inoperative position, the ram head is raised out of the opening 57 of the trough and enables the operator to affix the carbon to the carbon holder and to locate it properly in relation to the zinc casing. He may now feed the first quantity of paste or mass containing the electrolyte into the cell casing, which has been previously secured in the clamp 46. After this, lever 44^a is moved upward to the position shown in dotted lines, Fig. 1, this movement causing pin 34 to move through boss 33 on lever 31, and to project upward in such a position, as to be engaged by pin 35, during the revolution of disk 21. The continued revolution of disk 21 causes pin 35 to force lever 31 to a position shown in full lines, Fig. 1. This movement of lever 31 in turn causing the trigger 39 to be withdrawn from under trigger plate 41. The ram drops into the cell casing and packs some electrolyte into the casing and around the carbon electrode. As the friction surfaces of disks 20 and 21 engage and disengage friction plate 17, the ram alternately rises and drops. During the period the ram is rising, the operator feeds more electrolyte into the casing, and the ram again drops upon a fresh charge of electrolyte. This alternate feeding and packing operation is carried on until the cell is

filled. As the cell is gradually filled, the ram comes to rest, at each successive packing, in positions higher and higher within the cell casing. Hence, during the packing of a cell, each successive engagement of enlargements 20^a and 21^a is at a point on plate 17 nearer the ram, and as the ram is raised the same amount at each successive engagement of the friction disks with plate 17, by the time the cell has become completely packed, the trigger plate 41 will be raised, when the disks engage plate 17, so that its lower edge is above lug 67 of the trigger, which is pulled over by spring 42, to a position under the trigger plate. This stops the ram's movement. Since the packing ram is raised the same height above the material already packed in the casing, the blows of the ram will be of equal force, and the packing in the cell will be uniform. In order to stop the operating mechanism, a belt shifter 68 is provided.

What I claim is:—

1. In a dry cell packing machine, a ram for packing the cell, means for operating the ram, and means for automatically stopping the operation of the ram, comprising a trigger plate secured to the ram and a trigger adapted to engage the trigger plate.

2. In a dry cell packing machine, the combination of a packing ram, a friction rod to the lower end of which the packing ram is secured, rotating cams engaging the friction rod and adapted intermittently to raise it and to release it to the action of gravity, and a means for arresting the downward movement of the rod, which is put into operation by the rod at a predetermined point of its upward movement.

3. In a dry cell packing machine, the combination of a hollow packing ram having an elongated hollow stem with a longitudinal slot in its side, a carbon holder, an arm engaging the carbon holder and projecting out through the slot in the stem, and a stationary support adjacent to the stem and an adjustable connection between the support and the arm whereby the position of the carbon holder is regulated.

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Witnesses:

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