G. A. MARSH.

CAN TIPPING MACHINE.

APPLICATION FILED JULY 31, 1911.

1,034,473.

Patented Aug. 6, 1912.

2 SHEETS—SHEET 1.

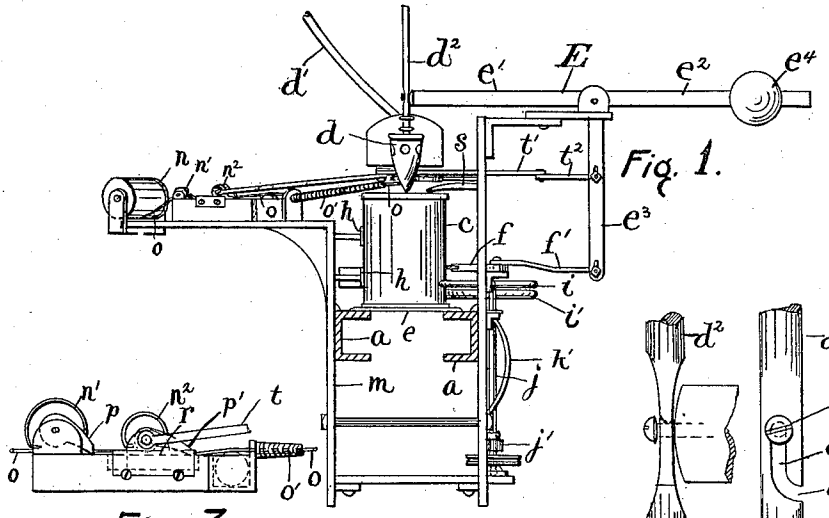

Fig. 1.

Fig. 3.

Fig 4. Fig. 4a.

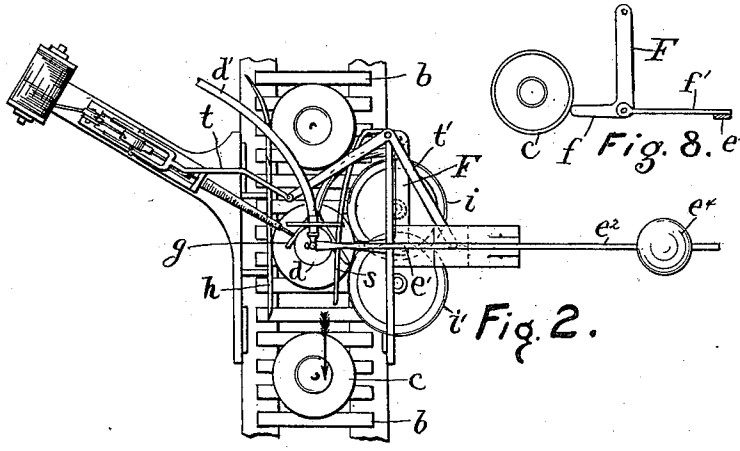

Fig. 2.

Fig. 8.

WITNESSES.

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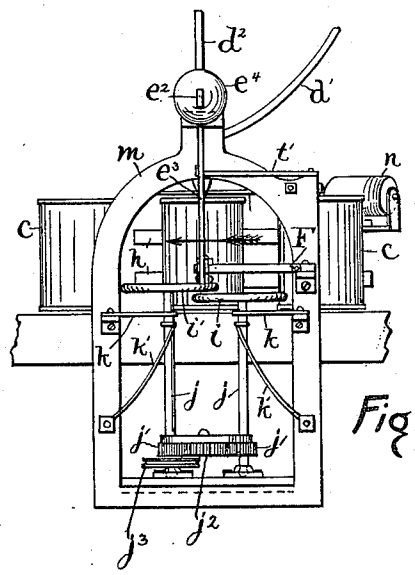

Fig. 5.

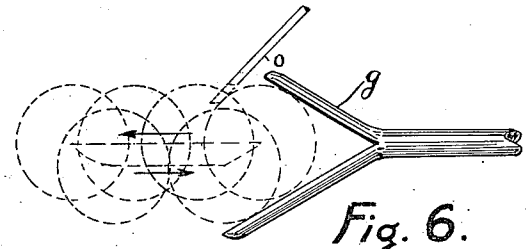

Fig. 6.

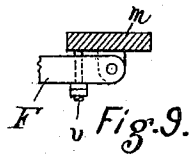

Fig. 9.

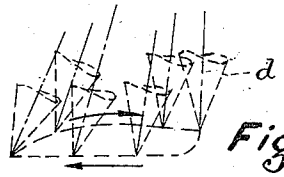

Fig. 7.

WITNESSES

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UNITED STATES PATENT OFFICE.

GEORGE A. MARSH, OF DIXFIELD, MAINE.

CAN-TIPPING MACHINE.

1,034,473. Specification of Letters Patent. Patented Aug. 6, 1912.

Application filed July 31, 1911. Serial No. 641,684.

To all whom it may concern:

Be it known that I, GEORGE A. MARSH, of Dixfield, in the county of Oxford and State of Maine, have invented certain new and useful Improvements in Can-Tipping Machines, of which the following is a specification.

My invention relates to machines for tipping or sealing the vent holes of cans in the operation of canning sweet corn and other food products.

The machine is designed primarily to be used in connection with the capping machines in which the caps are soldered in the cans. The cans as they leave the capping machine pass along on a conveyer and as they travel along this conveyer, the vent holes are sealed with solder.

The type of machine to which my invention belongs is that in which the tipping implement is lowered into the vent hole of the can while the can is in motion and is forced to remain in the vent hole for a limited length of time following the motion of the can, and being automatically returned to its normal position at the end of its travel.

In these machines as heretofore constructed, the tipping iron was actuated by mechanism which was independent of the can, although the motions were carefully regulated to conform to that of the can. In other words, the tipping implement was positively actuated, and its motion was synchronized with that of the can. This required a somewhat complicated mechanism which was expensive to build and difficult to keep in adjustment.

The object of my invention is to simplify the machine by doing away with the positively actuated tipping implement and so arranging it that the tipping implement will be dropped into the vent hole of the can, resting therein, and will be carried along a limited distance by the can itself, the can thus doing the work of the complicated timing mechanism referred to.

My invention may best be understood by reference to the accompanying drawings which show a concrete illustration of a machine constructed in accordance therewith, but it is to be understood that various changes and modifications may be made in the machine without departing from the spirit of the invention as set forth in the claims.

In the drawing, Figure 1 is a vertical section taken through the conveyer and showing my apparatus in elevation, Fig. 2 is a plan of the same, Fig. 3 is an enlarged side elevation of the solder feeding mechanism, Figs. 4 and 4^a are details of the stem of the tipping iron, Fig. 5 is a rear view of my machine taken at right angles to the conveyer, Fig. 6 is a detail of the tipping iron centering device, Fig. 7 is a diagram showing the successive positions of the tipping iron, Fig. 8 is a detail of the guide finger and its relation to the can, and Fig. 9 is a detail section.

The conveyer on which the cans are fed forward consists as here shown, of stringers a on which move a series of lags b connected by sprocket chains in the usual manner but not herein shown, the cans c resting on the lags and being fed thereon. As the cans pass one at a time beneath the tipping iron, the latter is lowered so as to enter the vent hole of each can and is released so that it rests directly on the can and is carried a limited distance thereon. As here shown, the tipping iron d is supplied with gas and air through a supply pipe d', and the iron is provided with a stem d^2 and is suspended loosely thereby from the arm e' of a suitable support.

In order to allow the tipping iron to swing freely and to have a limited amount of vertical movement independently of its support, I connect the stem d^2 with its support by means of a pivot pin d^5 which passes through a vertical slot d^3 in the stem d^2. The lower end of the slot opens at d^4 out of the side of the stem so that the tipping iron may be hooked to the end of the arm e' and unhooked therefrom for the purpose of cleaning the iron and otherwise. Means are provided by which the support from which the tipping iron is suspended shall have a vertical movement, and for this purpose as herein shown, I provide a pivoted T-shaped lever of which e' is one of the horizontal arms extending forward over the can channel; e^2 is another horizontal arm

extending rearward and a third arm e^3 extends vertically downward.

The arm e' as shown, supports the tipping iron, the arm e^2 is provided with a counterweight e^4 and the vertical arm e^3 is connected with a guide which contacts with the side of the can and so controls the motions of the lever E and of the tipping iron. The iron d is kept normally raised a short distance above the cans by the counterweight e^4 and it is depressed or dropped onto the cans by a guide finger which bears against the sides of the cans as they pass along and acts to press rearward the lower end of the arm e^3. As shown, the finger f forms one of the arms of the L-shaped lever F, one end of which is pivoted to the frame of the machine and the other end forming the finger f is turned inward to bear against the side of the can at some point between its ends. A connecting rod f' connects the angle of the lever F with the arm e^3. It will be seen that the weight e^4 bearing down the rear of the lever E tends to hold the guide finger f against the sides of the can, and an adjustable stop v is provided which limits the forward or inward motion of the guide finger. (See Fig. 9.) The tipping iron d is guided or steadied in its normal position by the centering fork g, and the fork is preferably located a little forward of the tipping iron in the line of the can feed so that the iron will hang a little out of plumb and with a good bearing on the sides of the fork.

Means are provided by which the cans are rotated while the tipping iron is in contact with the vent hole. For this purpose, as herein shown, I provide straight lateral guides h h at one side of the line of cans, the guides constituting lateral bearings against which the can may be made to roll as it passes along. The rolling of the cans on the lateral guides is effected by means of rotating guide rolls preferably two in number and placed side by side at one side of the conveyer and opposite the tipping iron. These guide rolls i i are preferably provided with rubber tires so as to grip firmly the can and they are secured on the upper ends of vertical shafts j j having each a pinion j' near its lower end. The pinions are connected by an intermediate gear j^2 whereby they are both given the same direction of rotation. One of the shafts has a pulley j^3 by which motion is imparted by a suitable band or cord from some portion of the machine. Means are provided for pressing the guide rolls normally inward against the cans. As herein shown, the upper end of each shaft j is journaled in a swinging arm k and the shaft and arm are pressed inward against the can by a suitable spring k'.

The parts so far described are mounted on a suitable frame m which is preferably secured to the sides of the stringers a.

A solder feed mechanism is provided of any suitable type to supply solder to the tipping iron. The apparatus shown consists of a spool n on which the wire solder o is wound and a feed tube o' through which it is conducted to a point near the swinging path of the tipping iron. From the spool n solder passes under a roll n' pivoted on the same shaft with a checking pawl p, thence under a roll n^2 which is mounted on a reciprocating carriage r and thence through the tube o'. The journal of the wheel n^2 carries a pivoted pawl p' which serves to feed the wire solder forward as the carriage r reciprocates. The carriage r is reciprocated by means of a connecting rod t, a bell crank lever t' and connecting rod t^2 by which connection is made from the carriage r to the upper portion of the arm e^3. The carriage is thus made to reciprocate a limited distance with the movement of the upper portion of the arm e^3. The solder is thus fed slightly forward at each movement of the tipping iron and the iron in its movement wipes against the end of the wire solder. To counteract any tendency of the can to tilt on the lags by contact with the finger f and rolls i, I provide a horizontal guide s which is secured to the frame of the machine and extends horizontally over the tops of the cans as they pass along, thus preventing them from tilting.

The operation of my tipping machine will be readily understood by what has been said. As the cans pass along beneath the tipping iron, they strike the guide rolls and are rolled along in contact with the guides h rotating on the lags of the conveyer. When the side of the can strikes the end of the finger f the arm e^3 is forced backward and the tipping iron begins to drop until the finger has reached its outer position, the top of the can passing beneath the iron until the tip of the iron has entered the vent hole and the pivot d^5 has descended in the slot d^3, leaving the iron supported directly by the can and free to move with it a limited distance until the pivot strikes the upper end of the slot. When the can has moved this distance turning as it moves, the pivot has reached the end of its slot and the finger f having passed the center of the can allows the weight e^4 to lift the tipping iron. As the tipping iron is lifted, it swings back by gravity to its normal position and centers itself in the centering fork g. The movement of the tipping iron is clearly shown in the diagram of Figs. 6 and 7, where the several positions are shown.

A tipping machine constructed according

to my invention does away with the necessity of positively acting mechanism for causing the iron to follow exactly the motion of the can, and accomplishes the result with a very simple and cheaply constructed device.

The rotation of the can insures the turning of the point of the iron in the vent hole the uniform distribution of the solder and results in the perfect sealing of the can with a minimum quantity of solder.

I claim:

1. In a can tipping machine, the combination of an oscillating tipping implement, means for lowering the tipping implement to enter the vent hole of the can and permit the same to be directly supported by the can and freely movable therewith and a can feeding mechanism for imparting a horizontal motion to the can and through the can direct to the tipping implement.

2. In a tipping machine, the combination of a can feeding mechanism, an oscillating tipping iron, and, means for lowering the tipping iron to enter the vent hole of the can and to be directly supported by the can, and means for lifting said tipping iron after it has been carried a limited distance by the can.

3. In a can tipping machine, the combination of an oscillating tipping implement, means for lowering the tipping implement to enter the vent hole of the can and permit the same to be directly supported by the can and freely movable therewith, a can feeding mechanism for imparting a horizontal motion to the can and through the can direct to the tipping implement and means for lifting the tipping implement after it has been carried a limited distance by the can.

4. In a can tipping machine, the combination of a can feeding mechanism, a tipping iron and means actuated by the moving can for lowering said iron into the vent hole of the can to be directly supported by the can and for lifting it after it had been carried a limited distance by the can.

5. In a can tipping machine, the combination of a can feeding mechanism, an oscillating tipping iron freely suspended above the cans, means for lowering said iron into the vent hole of the can to be directly supported by the can and to be carried by the can a limited distance, means for lifting the tipping iron and allowing it to return by gravity to its normal position and a guide for centering it in its normal position.

6. In a can tipping machine, the combination of a can feeding mechanism, an oscillating tipping iron freely suspended above the cans, means for lowering said iron into the vent hole of the can to be directly supported by the can and to be carried by the can a limited distance, means for lifting the tipping iron and allowing it to return by gravity to its normal position and a forked guide for receiving and centering it in its normal position.

7. In a can tipping machine, the combination of a can feeding mechanism, an oscillating tipping iron above the cans, a single reciprocating guide finger adapted to press against the side of the moving can, means actuated by the guide finger for lowering the tipping iron into the vent hole of the can.

8. In a can tipping machine, the combination of a can feeding mechanism, an arm above the cans, a tipping implement loosely depending from said arm and connected therewith by a slotted joint and adapted to be horizontally movable independently of said arm, means for lowering said arm to cause the tipping iron to enter the vent hole of the can and for raising said arm after the can has moved a limited distance.

9. In a can tipping machine, the combination of a can feeding mechanism, a pivoted counterbalanced arm above the cans, a tipping iron loosely depending from said arm and connected therewith by a slotted joint, a guide finger connected with said arm and adapted to impinge on the side of the moving can and to depress said arm against the counterweight.

10. In a can tipping machine, the combination of a can feeding mechanism, a T-shaped lever pivoted above the cans and having a vertical and two horizontal arms, a tipping iron suspended from one of said horizontal arms, a counterweight on the other, and a guide finger adapted to contact with the side of the moving can and connected with said vertical arm.

11. In a can tipping machine, the combination of a can feeding mechanism, a T-shaped lever pivoted above the cans and having a vertical and two horizontal arms, a tipping iron suspended from one of said horizontal arms and a counterweight on the other, a guide finger adapted to contact with the side of the moving can and connected with said vertical arm, and a wire solder feed connected with said vertical arm.

12. In a can tipping machine, the combination of a can feeding mechanism including a conveyer, a lateral guide for guiding the cans, a tipping iron, adapted to descend into the vent hole of each can, and a spring pressed guide roll opposite said lateral guide for rolling the cans in contact with said guide.

13. In a can tipping machine, the combination of a can feeding mechanism including a conveyer, a lateral guide for guiding the cans, a tipping iron adapted to descend

into the vent hole of each can, a pair of guide rolls rotating on vertical axes and positioned to yielding by contact with each can and roll the can in contact with said guide.

14. In a can tipping machine, the combination of a can feeding mechanism, a vertically movable support above the can, a tipping iron having a stem with a longitudinal slot therein, the lower portion of said slot opening out of the side of the said stem and a pivoting pin passing through said slot for connecting the tipping iron to the support.

In testimony whereof I have affixed my signature, in presence of two witnesses.

GEORGE A. MARSH.

Witnesses:
S. W. BATE,
C. B. CREIGHTON.