No. 719,689. PATENTED FEB. 3, 1903.

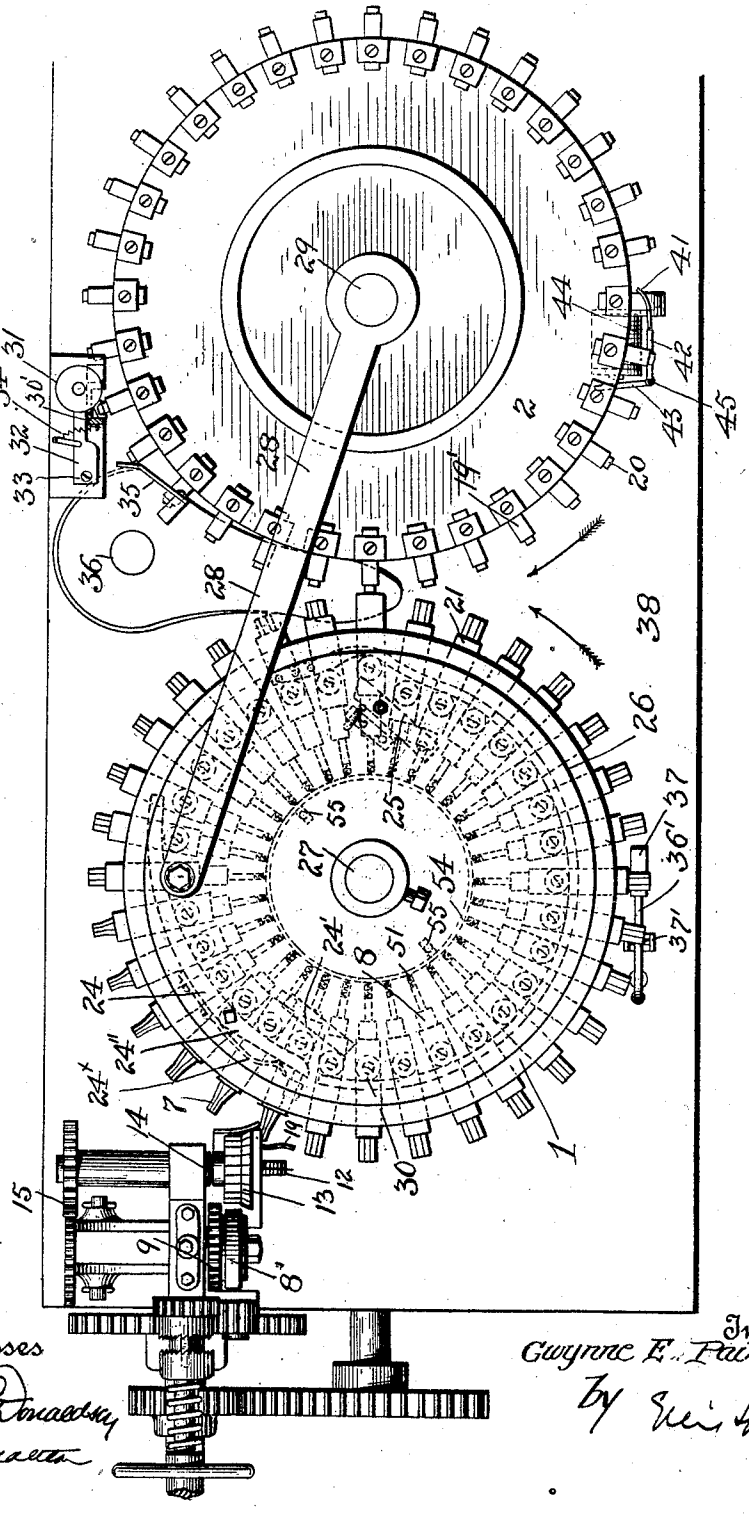
G. E. PAINTER.

MACHINE FOR MAKING BOTTLE SEALS.

APPLICATION FILED MAY 31, 1902.

NO MODEL. 3 SHEETS—SHEET 1.

Fig. 1.



Witnesses

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Gwynne E. Painter

By

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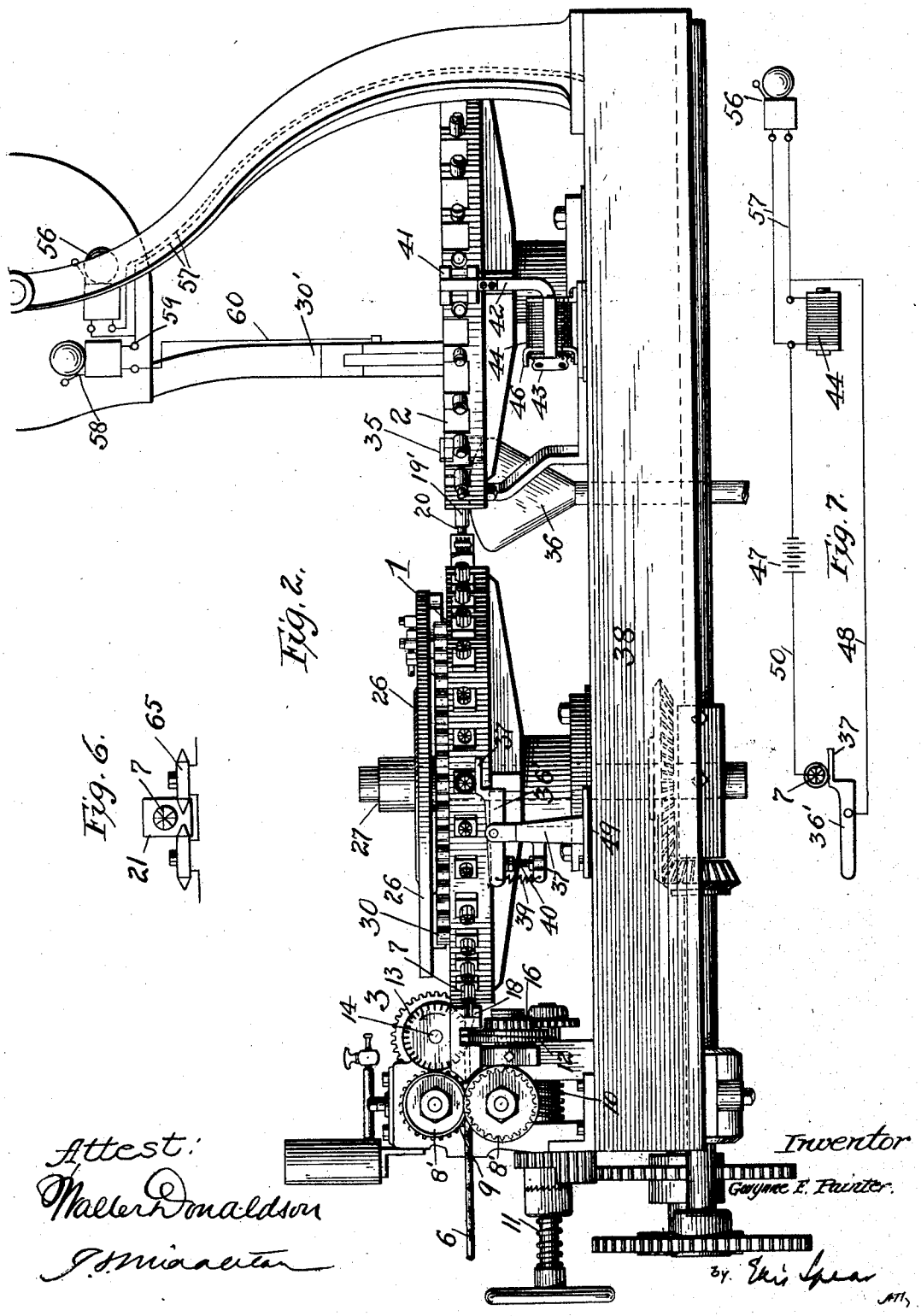


Fig. 2.

Fig. 6.

Fig. 7.

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NO MODEL. 3 SHEETS—SHEET 3.

Fig. 5.

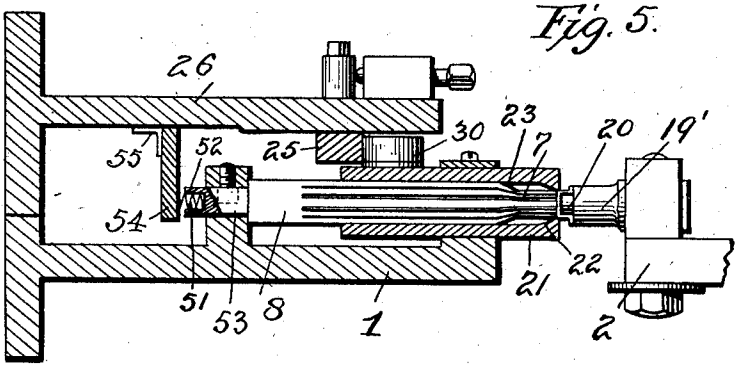


Fig. 3.

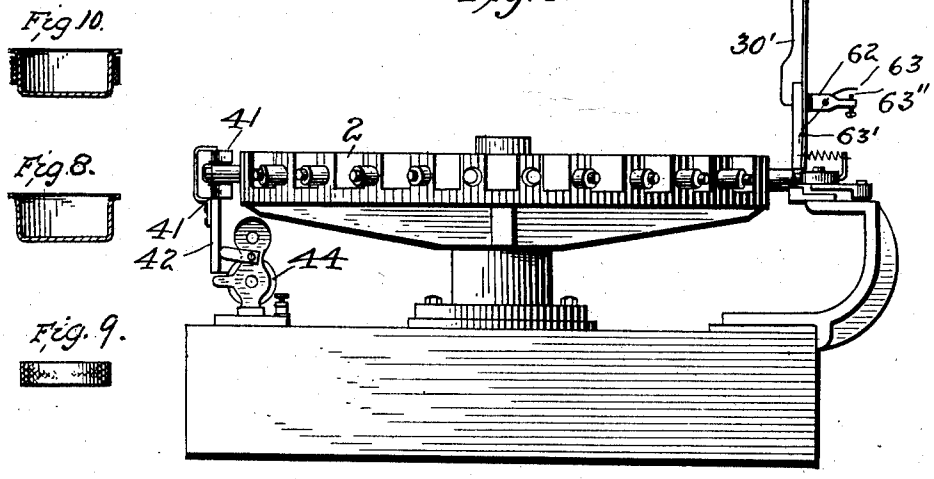
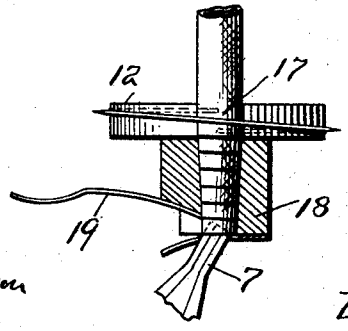


Fig. 10.

Fig. 8.

Fig. 9.

Fig. 4.



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UNITED STATES PATENT OFFICE.

GWYNNE E. PAINTER, OF BALTIMORE, MARYLAND, ASSIGNOR TO THE CROWN CORK & SEAL COMPANY, OF BALTIMORE, MARYLAND.

MACHINE FOR MAKING BOTTLE-SEALS.

SPECIFICATION forming part of Letters Patent No. 719,689, dated February 3, 1903.

Application filed May 31, 1902. Serial No. 109,708. (No model.)

To all whom it may concern:

Be it known that I, GWYNNE E. PAINTER, a citizen of the United States, residing at Baltimore, Maryland, have invented certain new and useful Improvements in Machines for Making Bottle-Seals, of which the following is a specification.

My invention relates to the manufacture of bottle-seals, and particularly to the machinery designed to place the gaskets on the cup-shaped seals.

My invention comprises means whereby when a gasket is missing from the machine certain discharge means will be operated to throw off the corresponding sealing-cap before it arrives at the point at which the completed seals are discharged from the machine.

By my present improvement only those seals will be discharged into the receptacle or hopper designed to receive the completed seals which are furnished with their gaskets.

In the accompanying drawings, Figure 1 is a plan view of the machine. Fig. 2 is a side view. Fig. 3 is an end view of the table and one of the rotary carriers. Figs. 4, 5, and 6 are views of details. Fig. 7 is a diagram of electrical connections. Figs. 8, 9, and 10 represent, respectively, a sealing-cap before receiving its gasket, a gasket, and a completed seal.

In the drawings the table or carrier for receiving and conveying the gaskets is shown at 1, and the table or carrier for receiving and conveying the cup-shaped sealing-bodies is shown at 2. These tables rotate in the direction of the arrows, Fig. 1. Cutting and feeding mechanism for the gaskets is represented generally at 3, this being similar in all respects to the cutting and feeding mechanism described in the application above referred to. This cutting and feeding mechanism is intended to cut the gaskets from a rubber tube 6 and feed said gaskets onto the expansible fingers 7 of carrying-arms 8, arranged radially of the conveyer 1. The rubber tube 6 is fed by rollers 8′, geared together, as at 9, the shaft of the lower roller being driven from a worm 10 on a shaft 11, which is driven in any suitable manner. The gaskets are cut by a cutter having an inclined blade 12 coöperating with a cutter-wheel 13, having slits about its periphery to receive the cutting-blade. The wheel 13 is carried by a shaft 14, suitably journaled in the frame, which shaft is driven by gearing 15 from the shaft of the upper roller 8′. The cutter 12 is rotated from the shaft 11 through gearing 16. As shown in Fig. 4, the blade 12 is of spiral form, having a space 17 between its front and rear ends equal to the distance between the slits in the wheel 13, so that as the rear edge of the cutting-blade is leaving one slit in the wheel 13 the front edge will be entering the next slit. The action of the cutter-wheels 12 and 13 is to feed forward the gaskets after they are cut, the said wheel 13 rotating in the direction of the arrow and the inclined side of the cutting-blade acting to push the gasket forward.

At each feeding movement a gasket is forced into position, as shown in Fig. 4, to be engaged by the fingers 7 of one of the arms 8, which fingers as they arrive at the feeding-point are contracted to their smallest diameter and enter the opening in the gasket, as shown in Fig. 4, and sweep the same laterally away from the feed-block 18.

A spring or cam plate 19, fixed to the feed-block, serves to push the gasket sufficiently far onto the spring-fingers to insure its retention thereon. The gasket is now carried by the rotary movement of the table around to the table 2, which has arms 19′ thereon provided with seats 20 at their ends for receiving and carrying the cup-shaped sealing-bodies. The arms 19′ are arranged radially of the table 2, and when one of said arms alines with its corresponding arm 8 on the table 1 carrying the gasket the gasket is pushed from the spring-fingers of the arm 8 onto the outer side of the cup-shaped seal carried by the arm 19′ of the table 2. This transferring action is done by a sleeve 21, sliding on the arm 8 and having a cam-surface 22, Fig. 5, adapted to act against inclined shoulders 23 on the fingers 7 to contract the same, or when the sleeve is moved forward to remove its cam-surface from the shoulders on the spring-fingers the said fingers are free and separate by their own resiliency, and thus expand the gasket and carry it in its expanded condition around to the sealing-body on

the table 2. Each arm 8 is provided with one of these sleeves, and the sleeves are operated longitudinally of the arms by cams 24 25, secured to the under side of a plate 26, which is supported on the post or shaft 27, which carries the table, the said plate being held stationary by means of a link 28, connected therewith and with the post or shaft 29 of the table 2.

The position of the sleeves in relation to the arms 8 is shown in Fig. 1, from which it will be seen that at the feeding-point where the gaskets are received the sleeve is retracted by its roller 30 engaging the cam-ring 24. The cam is so shaped that immediately after the spring-fingers of the arm 8 receive a gasket the sleeve of said arm will be thrust outwardly a slight distance by the section 24′ of the cam and the spring-fingers will expand at once, thus expanding the gasket and holding the same securely in place while it is being carried to a point diametrically opposite on the table to aline with the cap-carrying arm on the table 2. This feature of expanding the spring-fingers immediately after the gasket is received thereon is of importance, as by this the gaskets are held more securely than is the case where the gaskets are carried on the fingers while the same are in a contracted condition. The spring-fingers remain in their expanded condition until after the gasket has been transferred from them onto the sealing-body carried by the corresponding arm of the table 2. This takes place by the cam 25 moving the sleeve all the way out.

The cup-shaped seals are fed onto the radial arms 19′ of the table 2 by means consisting of a chute 30′, down which the cup-shaped bodies fall with their concave or hollow sides facing the carrier-table 2, the lowermost body being in position to be engaged by the seat or projection 20 on the end of the arm 19′ to be carried thereby. A roller 31, carried by an arm 32, pivoted at 33 and under tension of a spring 34, serves to press the cap onto the end of the arm 19′ as the said arm sweeps by the roller, the said roller acting also as a feed cut-off for the cup-shaped bodies. Each arm 19′ receives one of the cup-shaped seals or bodies as it passes the feed-chute, and said cup-shaped bodies are carried around by the rotary movement of the table 2 to aline, as before stated, with the corresponding gasket-carrying arm of the table 1, the sleeve of which will be operated by the cam 25, so as to transfer the gasket onto the exterior of the sealing cap or cup. After this transferring action takes place the completed gasket is carried by the rotary movement of the table 2 to a discharge cam or finger 35, which engages the seal and discharges it from the arm 19′ into a chute or hopper 36, leading to a suitable receptacle.

It will be noticed from Fig. 1 that the finger 35 extends at an angle to the path of the end of the arm 19′, and, in fact, it crosses the plane of the path of the said end. The edge of the finger being close to the said end, it will engage the seal carried by the said arm 19′, and as the arm moves along the finger will gradually move the seal off therefrom.

It may sometimes happen that the gaskets fail to feed properly and one of the arms 8 will pass the feeding mechanism without receiving its gasket. The sealing-caps, however, we will suppose, have fed properly down the chute 30′ and onto the arms 19′, and it will result that a sealing-cap will be discharged at the point 35 into the hopper 36 without having received its gasket unless, of course, the attendant is watchful enough to prevent this by taking off from the table 2 the sealing-cap corresponding to the empty gasket-carrying arm 8 of the table 1.

In order to prevent the discharge of imperfect seals or seals without their gaskets into the hopper or receptacle designed to receive the perfect articles, I have provided automatic means which will pick off the cup-shaped bodies from those arms of the table 2 which correspond to the arms of the table 1 which from any cause have failed to receive their gaskets, the said picking-off action taking place before the arm carrying the cup-shaped seal or body has arrived at the discharge-point of the completed seals. The means for accomplishing this automatic action consists of a contact-arm 36′, having a contact plate or portion 37 thereon to make electric contact with spring-fingers 7 on any one of the arms 8 which has failed to receive its gasket. The arm 36′ is pivoted to a bracket 37′, secured to the base 38 of the machine, the said arm being pressed by a spring 39 to hold its contact-plate 37 yieldingly in the path of the spring-fingers 7 or the gaskets thereon. A suitable stop 40 limits the position of the plate 37 toward the spring-fingers. When the gasket is present on the spring-fingers of any one of the arms 8, this gasket will act as an insulating medium between the contact-plate 37 and the fingers carrying the said gasket, and electrical contact between the plate 37 and the fingers 7, carrying the gasket, will be prevented. In the circuit of the plate 37 and fingers 7 I locate a pick-off device to engage and discharge the proper cup-shaped seal from the table 2 when an empty gasket-carrying arm arrives at and contacts with the plate 37. This pick-off device comprises fingers 41 adapted to engage the upper and lower edges of the cup-shaped seal, said fingers being carried by an arm 42, connected with an armature 43 of an electromagnet 44, the said armature being pivoted at 45 to the frame 46 and being adapted when drawn toward the electromagnet to move the arm 42, with the fingers 41, away from the carrier-table 2, so that the cup-shaped seal which is now engaged by the fingers 41 will be discharged from the table 2, and from the position of this pick-off device, as shown in

Fig. 1, in relation to the discharge-point 35 for the completed seals it will be seen that the cup-shaped sealing-body for which there is no gasket on the table 1 is discharged before it arrives in position to enter the hopper 36 and mix with the perfect articles. The electric circuit is indicated in Fig. 8, consisting of a battery 47, having one pole connected with the electromagnet and the other pole connected with the frame of the machine with which the arms 8 are in electrical connection through the shaft of the table and the intermediate metallic parts. The circuit is completed through a wire 48, connecting the electromagnet with the bracket 37′ of the contact-arm 36′, which bracket is insulated at 49 from the frame of the machine.

It will be seen from this construction and arrangement of parts that when an empty arm 8 arrives at the contact-plate 37 electrical contact will be made and the circuit will be completed through the electromagnet, which will operate the pick-off arm 42 to discharge the cup-shaped body or seal from that arm of the carrier-table 2 which corresponds to the empty gasket-carrying arm. Any suitable receptacle may be arranged to receive the cup-shaped bodies which are picked off from the carrier-table 2, and these bodies may be again fed into the chute 30′.

In order to insure good electric connection between the arms 8 and the stationary parts of the machine to which the battery-wire 50 is connected, I provide springs 51 in sockets 52 in the shanks 53 of the arms 8, said springs bearing upon a rim or flange 54, fixed by brackets 55 to the under side of the top plate 26. These springs will compensate for wear and for any irregularities in the position of the arms 8, and they will maintain electrical contact with the fixed rim or flange 54, which is in electrical connection with the battery.

The cam 24 is provided with a hinged section 24″, pressed inwardly by a spring 24×, by which wear is compensated for.

I provide a signal to give notice when an empty gasket-arm arrives at the contact-plate 37, the said signal consisting of an ordinary electric bell suitably located on any convenient part of the machine, as at 56, to which branch circuit-wires 57 extend. This signal will notify the attendant that the feeding of the gaskets is not being properly performed. A similar signal is used to give notice when the cup-shaped sealing-bodies fail to feed properly down the chute 30′, the said signal consisting of a bell 58, suitably located on any desired part of the machine and having connection 59 with one of the branch wires 57 and having another wire connection 60 with a circuit-closing device pivoted in a bracket 62, supported on the chute 30′, consisting of a finger 63 and a contact point or screw 63″, the said finger resting with its end 63′ normally against the cup-shaped bodies in the chute 30; but when the said cup-shaped bodies are not present in the chute the said finger falls by gravity into contact with the contact point or screw 63″, and thus closes the electric circuit of the bell 58. The circuit is completed through the frame to the battery in any suitable manner.

I do not wish to limit myself to the form of conveyers for the gaskets and the sealing-bodies consisting of the rotary tables, as other forms of conveyers may be employed.

I prefer to have the sleeves slide on guideways 65. (Shown in Fig. 6.)

I do not wish to limit myself to the form of sealing-body shown.

The conveyers constitute, in effect, means for assembling the sealing-bodies and their gaskets.

What I claim is—

1. In combination in a machine for applying gaskets to sealing-bodies, conveyer means for the gaskets and for the sealing-bodies and means for picking off from the conveyer means the sealing-bodies when the corresponding gaskets are missing from the conveyer means, substantially as described.

2. In combination in a machine for applying gaskets to sealing-bodies, a conveyer for the gaskets, a second conveyer for the sealing-bodies, means for transferring the gaskets from the gasket-conveyer onto the sealing-bodies, means for discharging the completed seals and means for picking off from the conveyer a sealing-body when its corresponding gasket is missing from the gasket-conveyer, substantially as described.

3. In combination, in a machine for applying gaskets to sealing-bodies means for assembling the gaskets with the corresponding sealing-bodies and for applying said gaskets to said bodies and means for discharging a sealing-body when its corresponding gasket is missing from the assembling means, substantially as described.

4. In combination, means for assembling two members such as a gasket and a sealing-body and for applying said gasket to the sealing-body and means for discharging one of said members when its corresponding member is missing from the assembling means, substantially as described.

5. In combination, conveyer means for the sealing-bodies and their corresponding gaskets, means for placing the said gaskets on the said sealing-bodies, means for discharging the complete seals, and means for discharging a sealing-body previous to its arrival at the discharge-station when its corresponding gasket is missing from the conveyer means, substantially as described.

6. In combination, means for assembling two members such as a sealing-body and its gasket, electrically-operated means for discharging one of the members when its corresponding member is missing from the assembling means and a circuit-closer controlling the circuit in which the electrically-operated

means is included, said circuit-closer being kept open by one of the members and closing the circuit when said member is missing, substantially as described.

7. In combination, means for assembling a sealing-body and its gasket and for applying the gasket to the said sealing-body, electrically-operated means for discharging a sealing-body when its corresponding gasket is missing and a circuit-closer in the circuit with the said discharging means, said circuit-closer being controlled by the gasket, substantially as described.

8. In combination, a conveyer for the sealing-bodies, a conveyer having arms upon which the gaskets are carried, an electrically-operated device for discharging a sealing-body from its conveyer, and a circuit-closing member adapted to contact with the gasket-carrying arm when the gasket is missing therefrom, said electrically-operated device circuit-closer and gasket-carrying arm being in circuit, substantially as described.

9. In combination, means for assembling two members such as a sealing-body and a gasket, said means including projecting arms, and electrically-operated means for removing members from said arms, substantially as described.

10. In combination in a machine for uniting two members as a sealing-body and a gasket, a conveyer for the sealing-bodies, a conveyer for the gaskets and means for giving notice when one of the members is missing from the machine, substantially as described.

11. In combination in a machine for uniting two members as a sealing-body and a gasket, a conveyer for the sealing-bodies, a conveyer for the gaskets and means for giving notice when one of the members is missing from the machine, said means consisting of a signal-bell and an electric circuit and circuit-closer controlling the same, substantially as described.

12. In combination, a conveyer for sealing-bodies, a conveyer for gaskets having arms with expansible fingers, means for feeding gaskets onto the expansible fingers and means for spreading the fingers immediately after leaving the feeding means to hold said gaskets securely, substantially as described.

13. In combination, a conveyer for sealing-bodies, a conveyer for gaskets having arms with expansible fingers, sleeves movable longitudinally of the arms and a cam for operating the sleeves, said cam having a spring-pressed pivoted section, substantially as described.

14. In combination in a machine for uniting two members as a sealing-body and a gasket, a conveyer for sealing-bodies, a conveyer for gaskets having arms for holding said members, means for transferring the gaskets from the gasket-conveyer onto the sealing-bodies, electrically-operated means for discharging one of the members when its corresponding member is missing from the machine, a circuit-closer and a circuit which includes the arms of one set of members, said arms carrying springs and a ring with which the springs engage, substantially as described.

15. In combination in a machine for applying gaskets to sealing-bodies, a chute for the sealing-bodies, a circuit-closer controlled by the passage of the sealing-bodies along the said chute and a bell in the said circuit, substantially as described.

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

GWYNNE E. PAINTER.

Witnesses:
RICHARD C. MEEKER,
MURRAY HANSON.