No. 733,983. PATENTED JULY 21, 1903.

A. LOTZ.

CAN BODY BLANK FEED MECHANISM.

APPLICATION FILED OCT. 17, 1902.

NO MODEL. 5 SHEETS—SHEET 1.

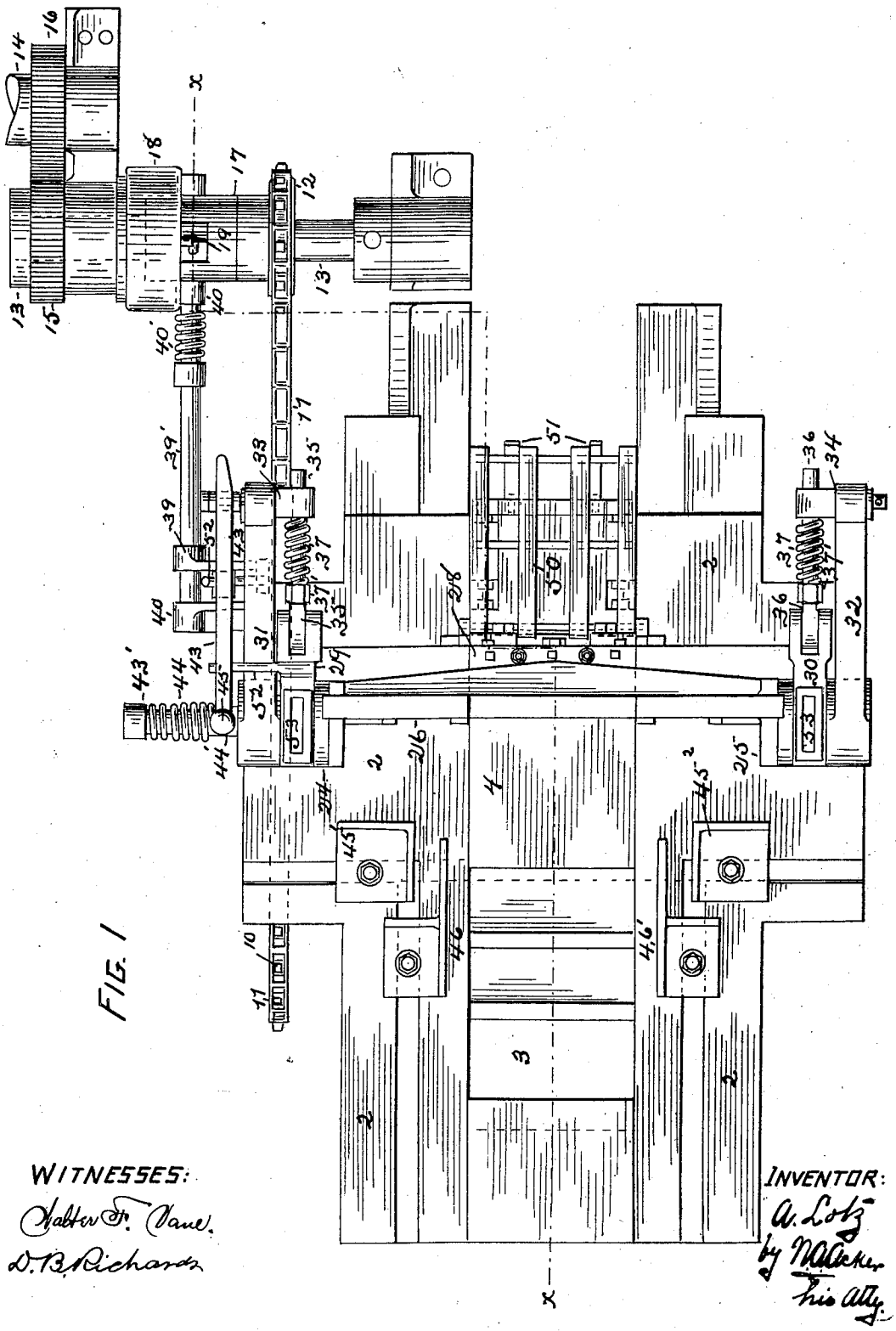


FIG. 1

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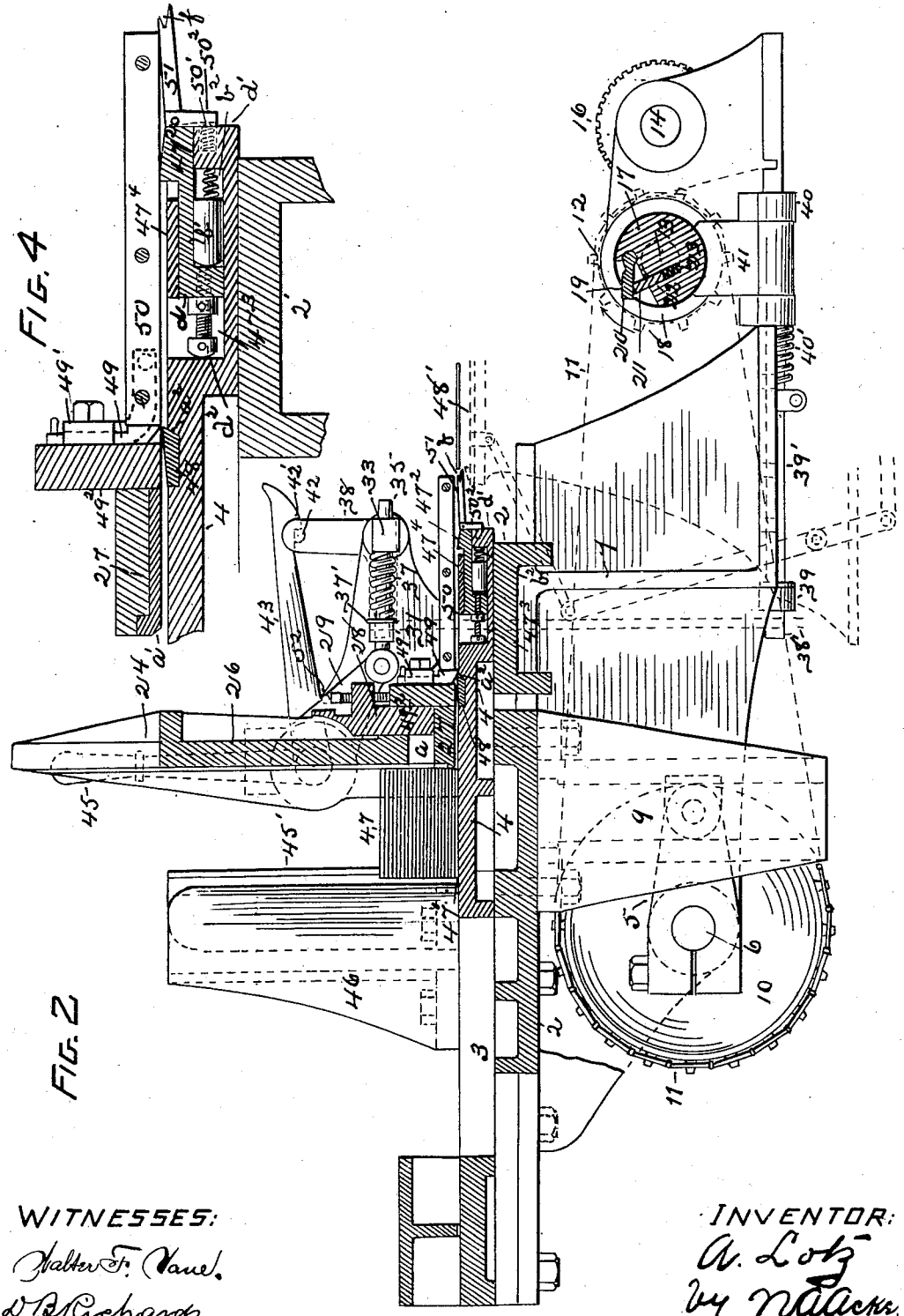


FIG. 4

FIG. 2

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NO MODEL. 5 SHEETS—SHEET 3.

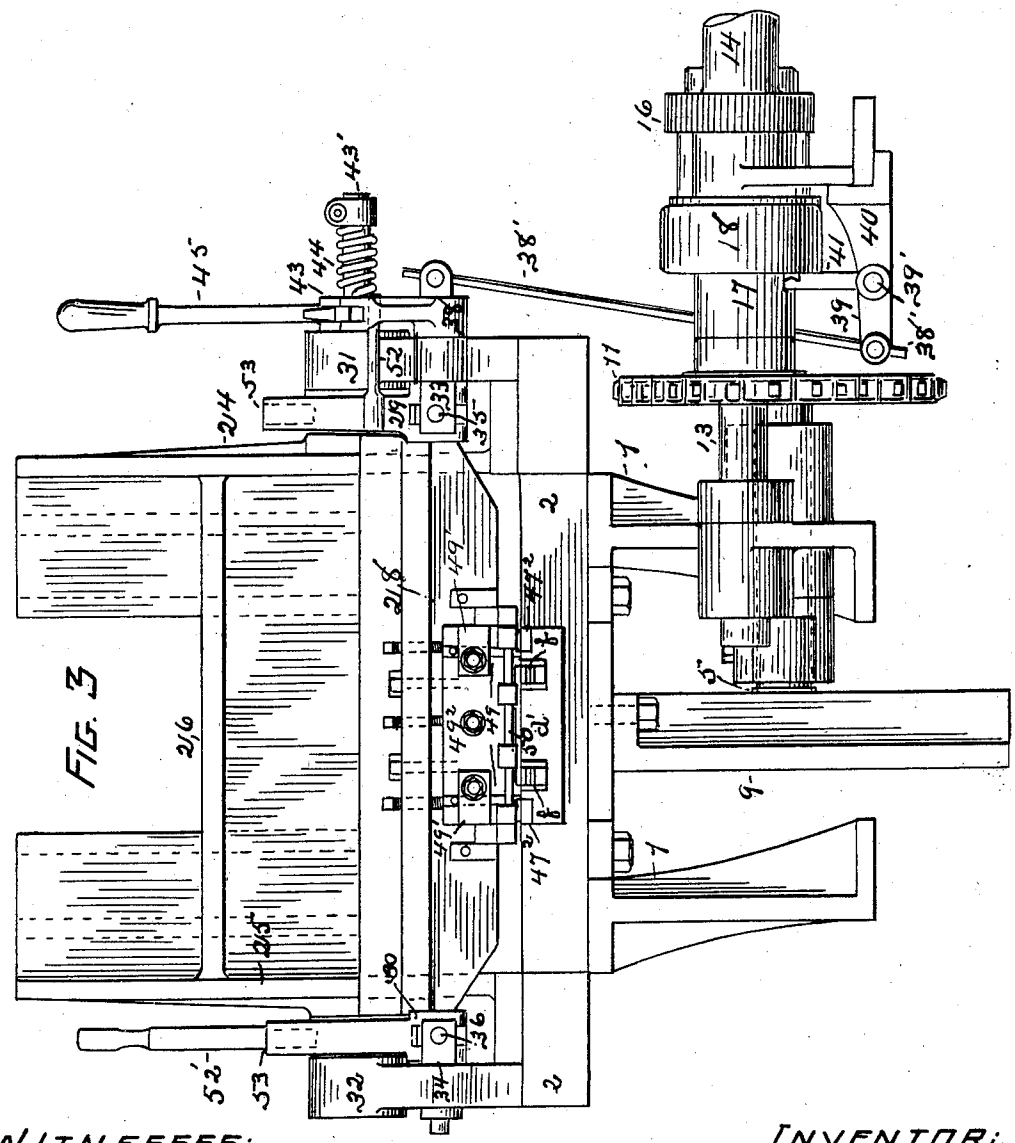


FIG. 3

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No. 733,983. PATENTED JULY 21, 1903.

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NO MODEL. 5 SHEETS—SHEET 4.

FIG. 9

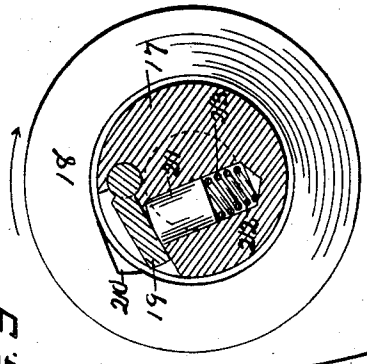


FIG. 5

FIG. 8

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NO MODEL. 5 SHEETS—SHEET 5.

FIG. 7

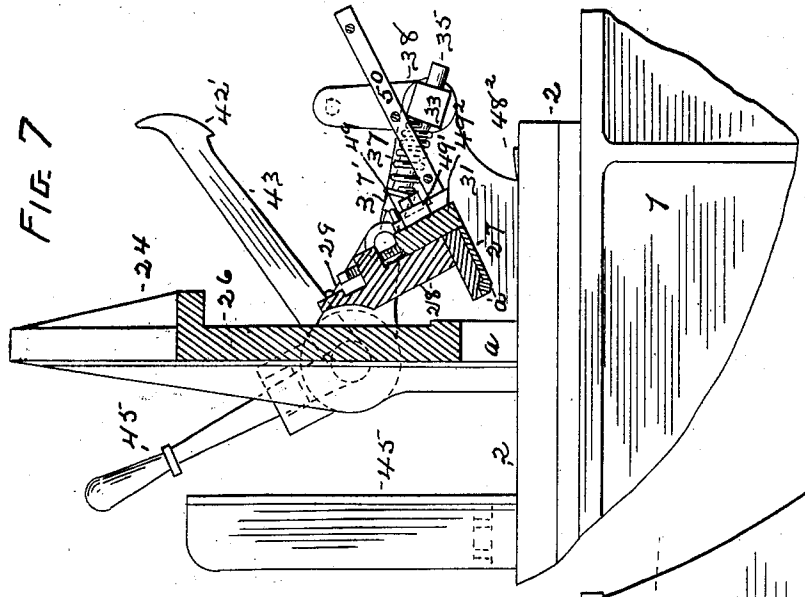
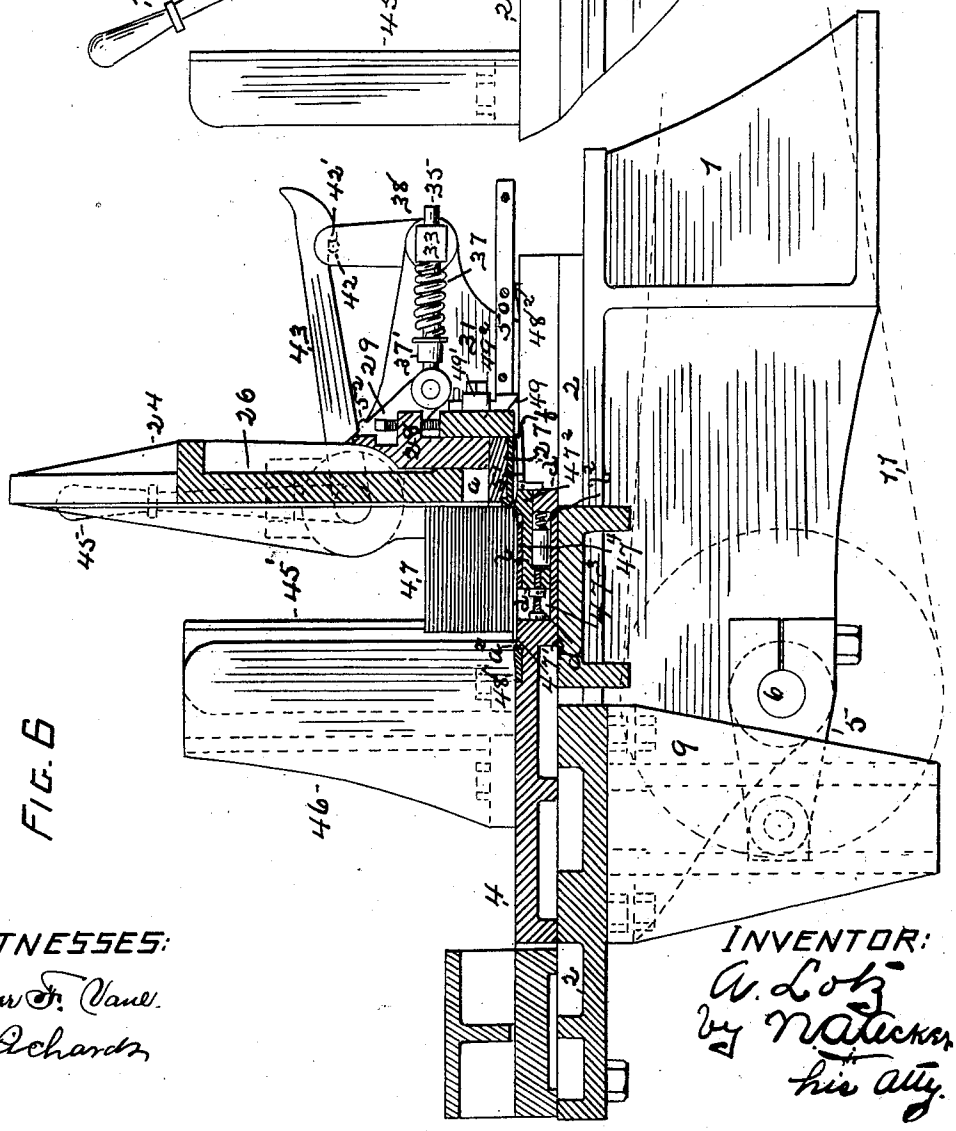


FIG. 6



WITNESSES:

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INVENTOR:

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No. 733,983. Patented July 21, 1903.

UNITED STATES PATENT OFFICE.

AUGUSTUS LOTZ, OF SAN FRANCISCO, CALIFORNIA, ASSIGNOR TO AMERICAN CAN COMPANY, OF SAN FRANCISCO, CALIFORNIA, A CORPORATION OF NEW JERSEY.

CAN-BODY-BLANK-FEED MECHANISM.

SPECIFICATION forming part of Letters Patent No. 733,983, dated July 21, 1903.

Application filed October 17, 1902. Serial No. 127,620. (No model.)

To all whom it may concern:

Be it known that I, AUGUSTUS LOTZ, a citizen of the United States, residing in the city and county of San Francisco, State of California, have invented certain new and useful Improvements in Can-Body-Blank-Feed Mechanism; and I do hereby declare the following to be a full, clear, and exact description of the same.

The present invention is designed more particularly to the feeding or delivering can-body blanks to the forming mechanism for the can-bodies, the object of the invention being to provide means whereby the operation or working of the can-body-blank-feeding mechanism is automatically stopped or brought to a state of rest in case a damaged or mutilated can-body blank is delivered thereto, thereby preventing the said damaged or mutilated can-body blank being fed or delivered to the can-body-forming machinery.

To comprehend the invention, reference should be had to the accompanying sheets of drawings, wherein—

Figure 1 is a top plan view of the improved can-body-blank-feed mechanism. Fig. 2 is a longitudinal sectional view in side elevation, taken on irregular line *x x* of View 1 of the drawings. Fig 3 is an end view in elevation viewed from the delivery end for the can-body blanks. Fig. 4 is a broken detail enlarged longitudinal sectional view of the reciprocation carriage or slide, showing a portion of the frame and of the swinging or tilting head. Fig. 5 is a side view in elevation of the mechanism, taken from the opposite side of the machine from that illustrated in Fig. 2 of the drawings. Fig. 6 is a view similar to that of Fig. 2, the carriage or slide being illustrated on its full outward stroke. Fig. 7 is a broken part-sectional view illustrating the position of the parts when the swinging or tilting head is thrown over its full distance to give clearance for the removal of a damaged or mutilated can-body blank. Fig. 8 is a detail part longitudinal sectional view of the clutch mechanism, and Fig. 9 is a cross-sectional end view of the clutch mechanism for transmitting power of the drive-shaft to the can-body-feed mechanism.

The numeral 1 is used to indicate any suitable style of frame, provided with an upper or bed plate 2, having a clearance-space 3, formed with side ways upon which works the longitudinally-reciprocating carriage or slide 4. This carriage or slide is operated by means of a crank 5, attached to cross-shaft 6, said crank 5 carrying a roll 7, which works within vertical guideway 8 of the extension 9, depending from carriage or slide 4. To cross-shaft 6 is attached sprocket-wheel 10, which is driven by sprocket-chain 11. This chain works over said sprocket-wheel 10 and over the sprocket-wheel 12, working upon the shaft 13. This shaft is driven from power-shaft 14 through the medium of the intermeshing gears 15 16, secured, respectively, to shafts 13 14. The sprocket-wheel 12 is secured to or formed integral with the sleeve 17, loosely mounted upon shaft 13, which sleeve is thrown into locked engagement with or coupled to the clutch collar or gland 18, keyed to the shaft 14 by means of the clutch-pawl 19, hinged to the said sleeve 17, moving into a seat 20, cut in the face of clutch collar or gland 18, Figs. 1, 8, and 9 of the drawings. The clutch-pawl 19 is held into the seat 20 of the clutch collar or gland 18 by the action of the spring-pressed pawl-pin 21. This pin works within a socket 22 in the coupling or clutch sleeve 17, being held outward against the clutch-pawl 19 by the tension of spring 23. The moment connection between the coupling or clutch sleeve 17 and the clutch collar or gland 18 is destroyed the transmission of rotary movement from the power-shaft 14 to the cross-shaft 6 ceases. The manner of operating the clutch-pawl to disconnect same from the clutch collar or gland 18 will be hereinafter described.

From the bed-plate 2 upwardly extends the standards 24 25, which are a distance apart and connected by the vertical cross-plate 26. This plate extends to within a short distance of the bed-plate, so as to leave a clearance-space *a* for the insertion and working of the swinging guide-bar 27, Figs. 2, 6, and 7 of the drawings. Said guide-bar 27 is attached

to a swinging cross-head 28, which in turn is secured to the crank arms or levers 29 30. These crank arms or levers are hinged to studs inwardly projecting from the upwardly-extending side brackets 31 32 of the bed-plate 2. The said crank arms or levers 29 30 thus work or swing between the standards 24 25 and the side brackets 31 32. The free end of each crank arm or lever 29 30 is hinged to one end of a short rod 35 36, which rods connect the said crank arms or levers to oscillatory pins 33 34. These pins work through the side brackets 31 32, Figs. 1, 3, and 5 of the drawings. Upon the connecting-rod 33 34 is secured a spiral spring 37, the tension of which is regulated by the adjusting-nut 37'. By means of the tension of these springs play or movement of the cross-head 28 is prevented, while the same also serve to give rigidity to the toggle connection between the said cross-head 28 and the oscillatory pins 33 34 (formed by the crank arms or levers 29 30 and the rods 35 36) in order that the cross-head and its connected parts may be held in any desired position when swung upward, Fig. 7 of the drawings. The forward end or edge a' of the guide bar or plate 27 is inclined in order to direct the edge of the can-body blank as moved inward downward.

To the free end of oscillatory pin 33 is attached the bell-crank lever 38, one arm of which lever is attached to the upper end of the vertical operating-rod 38', Fig. 5 of the drawings. The lower edge of the said operating-rod 38' connects with the arm 39, inwardly projecting from longitudinal shaft 39'. This shaft works in bearings 40 and has a torsional strain imparted thereto by the torsion-spring 40', so as to hold the rod 38' upward. The forward end of shaft 39' connects with an arm or lever 41, Fig. 3 of the drawings. This arm or lever 41 when thrown upward is in line with and engages the clutch-pawl 19 of clutch-sleeve 17 during the rotation of said sleeve and forces the pawl 19 inward and out of its seat 20, so as to release the clutch-sleeve 17 from locked engagement with the clutch gland or collar 18. When thus released, connection between the shaft 13 and cross-shaft 6 is destroyed, which causes the can-body-feed mechanism to come to a state of rest.

From the upper arm of the bell-crank lever 38 inwardly projects the stud or pin 42, which pin or stud is engaged by the hooked end 42' of lock-lever 43, Figs. 2, 5, and 6 of the drawings. This lever is pivoted to stud 43', projecting from side bracket 31, and is normally held downward by tension of the spiral spring 44, one end of which is secured to the stud 43' and the opposite end to hinge 44' of the lever 43. From the hinge 44' of lock-lever 43 upwardly extends the arm 45, which serves as a handle for throwing the said lever downward in order to place its hooked end 42' into engagement with stud or pin 42 of the crank-lever 38, Fig. 5 of the drawings.

To the bed-plate 2 the gage-pillars 45' 45^2 for the ends of the can-body blanks and the gage-pillars 46 46' are adjustably secured a slight distance in advance of the cross-plate 26, Figs. 1, 2, 5, and 6. The stack of can-body blanks 47 which are to be fed singly to the can-body-forming mechanism is placed upon the bed-plate 2 between the gage-pillars and the cross-plate 26, Figs. 2 and 6 of the drawings, the same being held against end movement by means of the gage-pillars 45' 45^2, which are adjusted so as to give a clearance therebetween equal to the width of the can-body blanks. The distance or clearance between the adjustable gage-pillars 46 46' is slightly greater than the width of the can-body blanks, Fig. 2 of the drawings, so that the lowermost can-body blank 47' of the stack may be given a slight outward movement upon the return stroke of the carriage or slide 4, so as to force the blank to be next carried toward the can-body-forming mechanism against the gage-pillars 46 46', Fig. 6 of the drawings. The object for thus separating the bottom can-body blank of the stack 47 is to insure only a single can-body blank being advanced or removed from the stack upon the forward stroke of the reciprocating carriage or slide. The lowermost can-body blank is forced against the gage-pillars 46 46' during the return or outward stroke of the reciprocating carriage or slide by means of the dogs 47^2, working within the depressed portion 47^3 of the carriage or slide. These dogs are held in place against upward movement or play by means of the tie-plate 47^4, which rests on the body portion b' of the said dogs. In order that the dogs 47^2 may give longitudinally when the can-body blank is forced against pillars 46 46', so as to prevent mutilation of the said body, a spring-cushion b^2 is interposed between the downward extension d and end d' of the reciprocating carriage or slide, Figs. 2 and 4 of the drawings. The tension of the cushion b^2 may be increased or decreased by means of the regulating-screws d^2.

To the reciprocating carriage or slide 4 is attached the transverse knife 48, the inner edge a^2 of which projects slightly above the upper surface of the carriage or slide in order to engage the outer side edge of the lowermost can-body blank upon the inward stroke of the said carriage or slide. As the carriage or slide is thus moved inward the lowermost can-body blank is removed from the stack of body-blanks and carried toward the delivery-table 48', (situated at the delivery end of the feed mechanism, Fig. 2 of the drawings,) the can-body blank being guided beneath the swinging cross-head 28 by means of the inclined edge a' of the guide-bar 27. Upon the inward stroke of the reciprocating carriage or slide 4 the can-body blank 47' rests between the inner edge a^2 of the knife 48 and

the dogs 47^2. As the said carriage or slide is about to complete its full inward stroke the ends of the can-body blank ride upon the inclines 48^2, located at each side of the slideway in line with the projecting end of the held can-body blank. The inclines as the said carriage or slide moves beyond same raise or lift the forward edge of the body-blank above the dogs 47^2, so that the dogs will clear the edge of the blank upon the return stroke of the said carriage or slide. During the forward stroke of the carriage or slide the vertically-movable stops 49 are raised. These stops 49 work in guides 49′, attached to the block 49^2, adjustably secured to the swinging cross-head 28 by adjusting-screws 49^3, Figs. 2, 6, and 7 of the drawings. The stops 49 are held forced downward by springs (not shown) located within the guides 49′. The moment the reciprocating carriage or slide completes its forward stroke these stops are forced downward immediately back of the can-body blank held upon the carriage or slide. As the carriage or slide makes its return stroke said stops hold the can-body blank from being carried thereby. By means of the frame 50, hinged to the swinging cross-head 28, the can-body blank is held down onto the carriage or slide after being carried past the cross-head, said frame serving as a guide for the can-body blank and preventing same being lifted from its seat.

To the end d' of the carriage or slide are hinged the delivery-fingers 51. These fingers are held upward by the pressure of springs 50′, which springs are seated in the face of end d' and bear against the downward extension 50^2 of the said fingers. Each finger has its end slotted or grooved, as shown at f, Figs. 2 and 4 of the drawings, to receive the edge of the can-body blank. These fingers during the return stroke of the reciprocating carriage or slide are carried beneath the held can-body blank, being depressed by the weight of the frame 50. When the said carriage or slide has completed its return stroke, the slotted or grooved end of fingers 51 will have been carried beyond the stops 49, Fig. 6 of the drawings. Being thus relieved of the weight of frame 50, the outer end of each finger is thrown upward by pressure of springs 50′, so as to be in line with the edge of the held can-body blank. Upon the next stroke or inward movement of the reciprocating carriage or slide the slotted or grooved ends of the fingers 51 engage with the outer edge of the can-body blank, so that said can-body blank is forced toward the delivery end of the feeder. These fingers 51 deliver the can-body blanks onto the table 48′. This table constitutes a portion of the can-body-forming mechanism, which, being well known, calls for no description in the present case. Of course instead of delivering the can-body blanks onto the delivery-table 48′ the same may be delivered to any suitable mechanism for forwarding to the can-body-forming mechanism.

The essential feature of the present invention consists of means whereby the drive mechanism is automatically disconnected from the feed mechanism for the can-body blanks in case of a mutilated or damaged body being delivered thereto. The purpose of this is to prevent such damaged or mutilated body being conveyed to the can-body-forming mechanism for the formation of an imperfect can-body and to provide against necessity of stopping the work of the subsequent machinery, such as the heading or ending mechanism, in order to remove such damaged or mutilated can-body, which body, if not removed, is liable to cause considerable damage. In case of a damaged or mutilated body-blank being received by the reciprocating carriage or slide the damaged or mutilated portion thereof will strike against the edge a' of the guide plate or bar 27, as the blank is moved toward or into clearance-space a and binds thereagainst. Inasmuch as the carriage or slide 4 is making its forward stroke the pressure thereof upon the said held can-body blank exerts a force upon the swinging cross-head 28, through the guide bar or plate 27, sufficient to swing same inward or toward the delivery end of the can-body-blank feeder. This swinging or tilting of the cross-head, although slight, throws the crank arms or levers 29 30 upward. As thus thrown upward the pin or stud 52, outwardly projecting from the crank arm or lever 29, upon which rests the lock-lever 43, Figs. 1, 3, 5, and 7 of the drawings, lifts the lock-lever 43 therewith, so as to release its hooked end 42′ from locked engagement with pin or stud 42 of the crank-lever 38. The moment this crank-lever 38 is released the connecting or operating rod 38′ is forced upward by the pressure of torsion-spring 40′ imparting an oscillatory movement to the longitudinal shaft 39′. This movement of the said shaft 39′ operates the arm or lever 41 to throw it upward, Fig. 3 of the drawings, in line with the clutch-pawl 19, Fig. 1 of the drawings. In this position the clutch-pawl 19 during rotation of the clutch mechanism bears against the lever or arm 41 and is gradually pressed inward out of its seat 20, thereby disconnecting the clutch-sleeve 17 from the clutch collar or gland 18. When thus disconnected, transmission of power from shaft 13 to cross-shaft is destroyed, which brings the reciprocating carriage or slide 4 to a state of rest. The feed of the can-body blank is thus automatically arrested. To remove the damaged or mutilated sheet, the operator of the machine inserts a hand-lever 52′ in one of the sockets 53 of the crank-arms 29 30 and bearing thereon throws or turns the swinging cross-head 28 and its connected parts its full upward distance, Fig. 7 of the drawings, so as to permit of the operator inserting his hand for the purpose of removing the damaged or

mutilated can-body blank. It may happen that the can-body blank is caught when almost entirely through the clearance-space *a*, in which case the throwing up of the swinging cross-head will not give ample room for the operator to work in. If not, then the hinged guide-frame 50 may be thrown upward for the better working of the operation. To reset the mechanism, it is only required to return the swinging cross-head to its original position and to lower the lock-lever 43 and place its hooked end 42′ into locked engagement with pin or stud 42. The relocking of the lock-lever imparts an opposite movement to the operating or connecting rod 38′, oscillating shaft 39′ and crank-lever 41 to that just described, which releases the clutch-pawl and permits of its moving into locked engagement with the rotating clutch collar or gland 18, so as to couple the clutch-sleeve 17 thereto. When thus united, movement of the shaft 13 is transmitted to cross-shaft 6 for operating of the reciprocating carriage or slide.

Inasmuch as the before-described mechanism prevents the feeding of damaged or mutilated can-body blanks to the can-body-forming machinery, the same may be said to constitute an automatic deflector for damaged can-body blanks.

Having thus described my invention, what I claim as new, and desire to protect by Letters Patent, is—

1. A can-body-blank-feed machine comprising feed mechanism for the body-blanks, and means for automatically disconnecting the said feed mechanism on the delivery of a damaged or mutilated can-body blank thereto.

2. A machine for the feeding of can-body blanks, comprising longitudinally-reciprocating feed mechanism for the can-body blanks, mechanism for driving the same, and means for automatically disconnecting the drive mechanism to bring the feed mechanism to a state of rest on the delivery thereto of a damaged or mutilated can-body blank.

3. The combination with the feed mechanism for the can-body blanks, of means for imparting movement thereto, and devices for automatically bringing the feed mechanism to a state of rest upon the delivery of a damaged or mutilated can-body blank thereto.

4. In a can-body-blank-feeding machine, the combination with the longitudinally-reciprocating can-body-blank carrier, of drive mechanism for imparting movement thereto, and means acted upon by the movement of the can-body carrier for automatically bringing the said carrier to a state of rest upon the delivery thereto of a damaged or mutilated can-body blank.

5. The combination with the longitudinally-reciprocating can-carrier, of the swinging cross-head, drive mechanism for the reciprocating can-carrier, and connection between the drive mechanism and the swinging cross-head whereby the drive mechanism is automatically disconnected from the can-carrier upon the cross-head being swung upward.

6. A machine for feeding can-body blanks, comprising a longitudinally-reciprocating carrier for the can-body blanks, means carried thereby for removing a can-body blank and forcing the same toward the delivery end of the machine upon the forward stroke of the carrier, devices for holding the can-body blank against movement during the return stroke of the carrier, mechanism for driving the can-carrier, and means whereby the drive mechanism is automatically disconnected from the can-carrier upon the delivery thereto of a damaged or mutilated can-body blank.

7. In a machine for feeding can-body blanks, the combination with the longitudinally-reciprocating can-body-blank carrier, of the swinging cross-head, of drive mechanism for the can-carrier, controlled connection between the said cross-head and the drive mechanism for the can-body-blank carrier, means for holding the fed can-body blank against movement upon the return stroke of the can-body-blank carrier, and devices whereby the can-body blank is removed from the can-body-feed machine.

8. In a machine for feeding can-body blanks, the combination with a longitudinally-reciprocating can-body-blank carrier, of drive mechanism for imparting longitudinal reciprocating motion to the carrier, means carried thereby for moving the bottom can-body blank a slight distance beyond the stack of blanks upon the return stroke of the carrier, a device attached to the carrier for engaging with the displaced can-body blank upon the forward stroke of the carrier, means for holding the can-body blank in position during the said forward stroke of the carrier, devices whereby the said can-body blank is held against movement upon the return stroke of said carrier, and means whereby the can-body blank is delivered from the feed mechanism upon the next forward stroke of the carrier.

9. In a machine for feeding can-body blanks, the combination with the longitudinally-reciprocating can-body carrier, of a knife attached thereto so that its forward edge projects a slight distance thereabove, dogs secured to the carrier, devices attached to the bed of the machine-frame for raising the front edge of the held body-blank so as to clear the dogs, means whereby the can-body blank is held against movement upon the return stroke of the can-body carrier, and means for imparting movement to the can-body carrier.

10. In a machine for the described purpose, the combination with the longitudinally-reciprocating can-body carrier, of mechanism for imparting reciprocating motion thereto, the swinging cross-head, the vertically-movable stops carried thereby, the guide plate or bar secured to the cross-head, and controlled connection between the swinging cross-head

and the drive mechanism for the can-body carrier, whereby transmission of power for operating the can-body carrier is automatically cut off upon the can-body blank being held against movement through the machine.

11. In a machine for the described purpose, the combination with the swinging cross-head, of the vertically-movable stops secured to the outer face thereof.

12. In a machine for the described purpose, the combination with the swinging cross-head, of the guide-frame attached to the face thereof.

13. In a machine for the described purpose, the combination with the swinging cross-head, of the guide-frame hinged to the face thereof.

14. In a machine for the described purpose, the combination with the swinging cross-head, of the guide plate or bar secured thereto.

15. In a machine for the described purpose, the combination with the drive mechanism, of spring-actuated lock means for throwing the power-transmitting means into or out of locked engagement with the drive mechanism, the swinging cross-head, and connection between the said cross-head and the lock means whereby they are released to automatically move the power-transmitting means out of locked engagement with the drive mechanism upon the upward movement of the cross-head.

16. In a machine for the described purpose, the combination with the drive mechanism, of the power-transmitting means, clutch devices for placing the drive means into and out of locked engagement with the drive means, an oscillatory shaft controlling the movement of the clutch devices, an operating-rod connected to said shaft, a crank-lever to which said rod is attached, a spring-pressed lock-arm which interlocks with said lever, a swinging cross-head, and connection between the swinging cross-head and the lock-arm, whereby said arm is released from locked engagement with the crank-lever as said cross-head is swung upward.

In witness whereof I have hereunto set my hand.

AUGUSTUS LOTZ.

Witnesses:
N. A. ACKER,
D. B. RICHARDS.