

No. 737,009.

PATENTED AUG. 25, 1903.

E. NORTON.

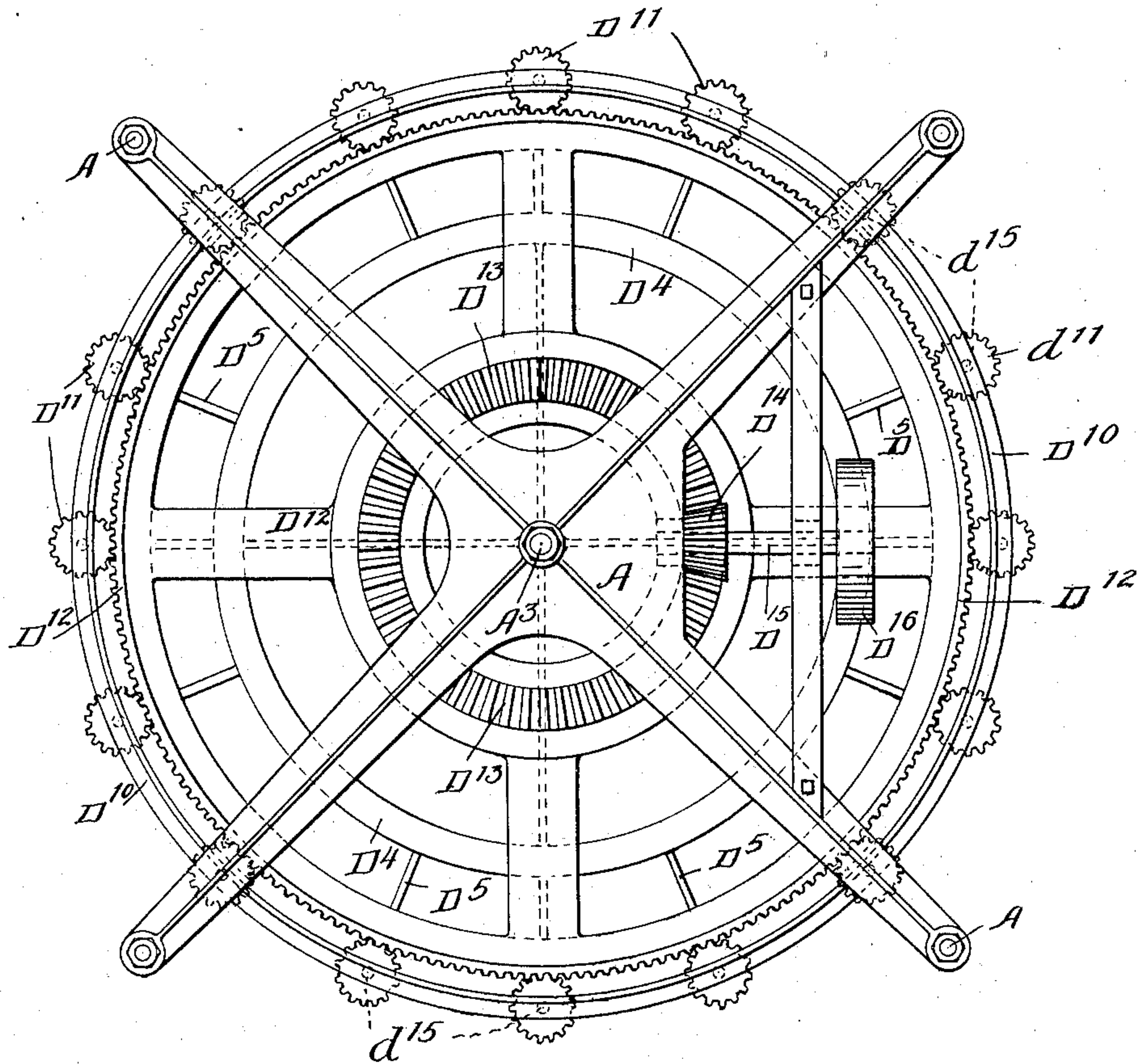
VACUUMIZING AND DOUBLE SEAMING MACHINE.

APPLICATION FILED MAY 2, 1903.

NO MODEL.

5 SHEETS—SHEET 1.

Fig. 1



Witnesses:

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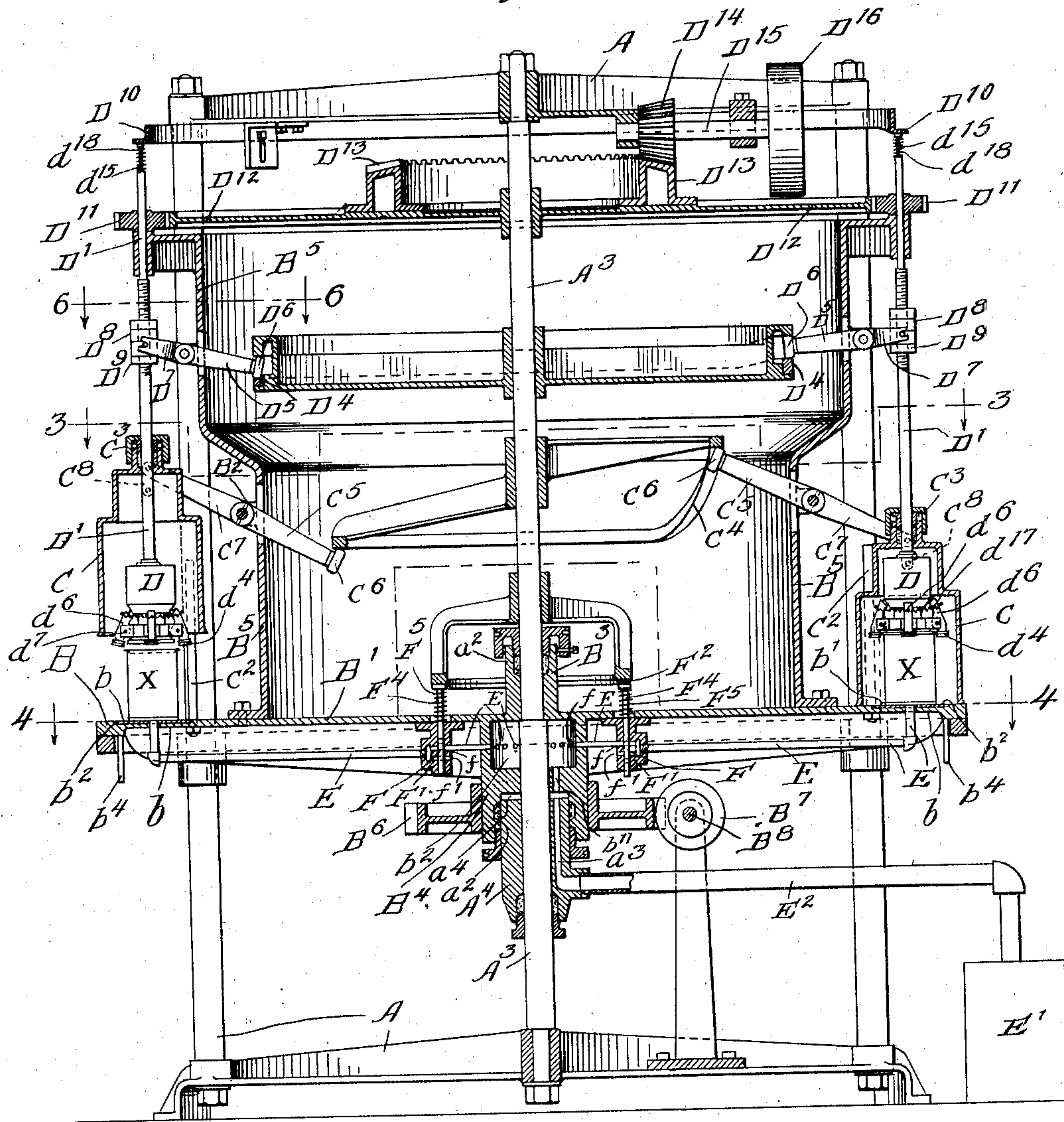
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6 SHEETS—SHEET 2.

NO MODEL.

Fig. 2



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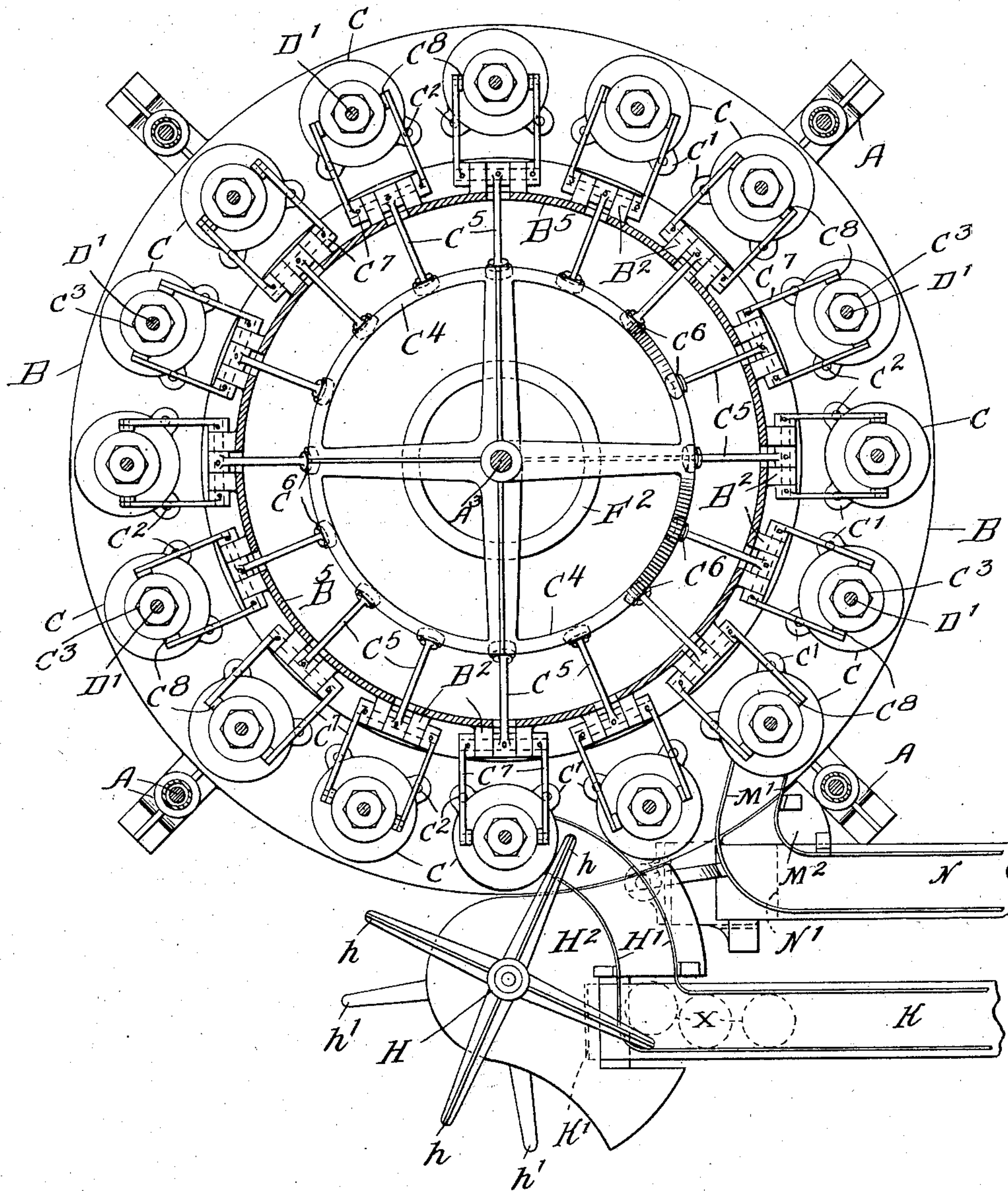
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5 SHEETS—SHEET 3.

Fig. 3



Witnesses:

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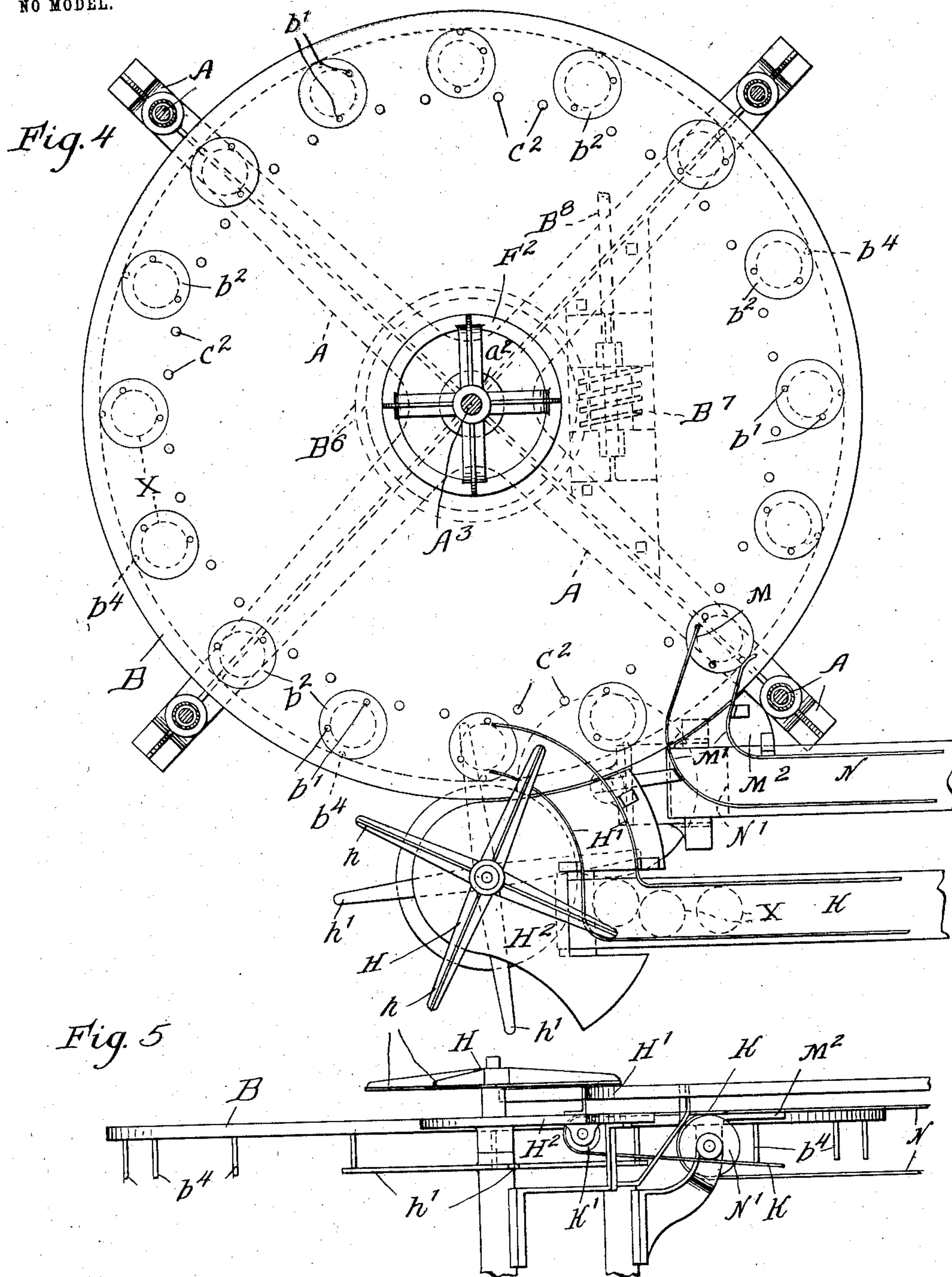
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VACUUMIZING AND DOUBLE SEAMING MACHINE.

APPLICATION FILED MAY 2, 1903.

5 SHEETS—SHEET 4.

NO MODEL.



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UNITED STATES PATENT OFFICE.

EDWIN NORTON, OF NEW YORK, N. Y., ASSIGNOR TO AUTOMATIC VACUUM CANNING COMPANY, OF CHICAGO, ILLINOIS, A CORPORATION OF ILLINOIS.

VACUUMIZING AND DOUBLE-SEAMING MACHINE.

SPECIFICATION forming part of Letters Patent No. 737,009, dated August 25, 1903.

Application filed May 2, 1903. Serial No. 155,327. (No model.)

To all whom it may concern:

Be it known that I, EDWIN NORTON, a citizen of the United States, residing in New York, in the county of New York and State of New York, have invented a new and useful Improvement in Vacuumizing and Double-Seaming Machines, of which the following is a specification.

My invention relates to machines for vacuumizing cans and seaming the covers thereon.

The object of my invention is to provide an automatic machine of a simple, efficient, and durable construction by means of which sheet-metal cans or vessels may be automatically, rapidly, and cheaply vacuumized, hermetically sealed, and the covers thereof double-seamed thereon.

My invention consists in the means I employ to practically accomplish this result—that is to say, it consists, in connection with a continuously-moving carrier having a plurality of seats thereon, each adapted to receive and support a single can or vessel, of a plurality of individually-movable opening and closing receivers mounted on the carrier, an exhaust mechanism and means for automatically opening and closing the exhaust to each receiver as the carrier moves, a double-seaming head inside each receiver having a plurality of successively-operating double-seaming rollers, means for automatically feeding or delivering the cans one by one upon the can-seats of the carrier and for automatically discharging the cans therefrom after they have been vacuumized and the covers double-seamed thereon, and means for operating the receivers and other parts in proper succession to first close the receiver exhaust the air therefrom and from the can therein and its contents, then force the seaming-head down upon the cover of the can to compress the packing interposed between the can and its cover, and thus seal the can *in vacuo* or while the vacuum is maintained in the receiver, then admit air to the receiver, and open the receiver by withdrawing the receiver from around the can while the vacuumized can remains clamped by the seaming-head, and then finally after the receiver is

withdrawn from the can so that the seaming operations and seaming-rollers may be under inspection to successively operate the double-seaming rollers and seam the cover to the can and discharge the vacuumized and seamed can from the machine.

My invention also consists in the novel construction of parts and devices and in the novel combinations of parts and devices herein shown or described.

In the accompanying drawings, forming a part of this specification, Figure 1 is a plan view of a combined vacuumizing and double-seaming machine embodying my invention. Fig. 2 is a central vertical longitudinal section. Fig. 3 is a horizontal section on the broken line 3 3 of Fig. 2. Fig. 4 is a horizontal section on line 4 4 of Fig. 2. Fig. 5 is a detail elevation of the can-feed mechanism. Fig. 6 is a detailed section on line 6 6 of Fig. 2. Fig. 7 is an enlarged detailed central vertical section through one of the receivers. Figs. 8 and 9 are enlarged detail central vertical sections of one of the seaming-heads, showing the seaming-rollers in different positions. Fig. 10 is a horizontal section on line 10 10 of Fig. 8, and Figs. 11 and 12 are detail sectional views of the can before and after the seaming operation.

In the drawings like letters of reference indicate like parts throughout all the figures.

In said drawings, A represents the frame of the machine.

B is a continuously-moving carrier, preferably a rotary turret or wheel, furnished with a plurality of can-seats *b*, having registering pins or devices *b'* for registering the cans with the opposing chucking or clamping disks *d* of the seaming-heads D, which are likewise mounted on the carrier above the can-seats *b*, so as to clamp the cans between them.

C C are a plurality of individually or independently movable vacuum-receivers, each preferably bell-shaped or open at its lower end and mounted on the rotatable carrier B. Each of the receivers C is furnished at its lower end with an elastic or rubber packing *c* to close and seal the receiver tightly against the can-seat *b* of the receiver B, the can-seat

being preferably a portion of the horizontal plate B' of the carrier. If desired, the can-seat *b* may have an inserted thin disk of rubber *b*² to compensate for slight inequalities in the heights of the cans. Each of the receivers C is furnished with suitable guides, as C', reciprocating on corresponding guides C² on the carrier B to guide the up-and-down movement of the receiver. Each of the receivers C is furnished with a stuffing-box C³, through which the operating-shaft D' of the seaming-head D extends. Each of the receivers C is reciprocated or opened and closed, as required, as the carrier B rotates preferably by a stationary cam C⁴ on the frame of the machine through the connecting-lever C⁵, which is furnished with antifriction-roller C⁶ and its opposite end with forks C⁷ and links C⁸, pivotally connecting the same with the receiver C. These operating-levers for reciprocating or moving up and down the receivers are journaled on brackets B² on the carrier B.

Leading to each of the receivers C, preferably through the can-seat *b*, which closes its open end, is an exhaust-pipe E, communicating with the exhaust device E' through pipe E² and the valves F, which control the communication, the valve-shells F' of said valves F having each an exhaust-port *f* and an inlet-port *f*', through which latter air may be admitted to the receiver to break the vacuum after the cover has been seated on the can or vessel by operation of the clamping-disk *d* of the seaming-head D in each receiver. Corresponding ports in the valves F communicate with the ports *f f*' in the valve-shells F', which are mounted on the carrier B. The frame A has a central standard or shaft A³, forming or having a bearing A⁴ for the journals or hub B³ B⁴ of the carrier B and provided with stuffing-box connections *a*² *a*² with said carrier. The exhaust-pipe E², leading to the exhaust device E', communicates, through a channel *a*³ in the sleeve or bearing A⁴, with a chamber *a*⁴, which has a communication *b*¹¹ through the hub B⁴ with a chamber *b*² in said hub B⁴, into which lead the exhaust-pipes E, which extend to each of the receivers and in which pipes E the valves F and valve-shells F' are inserted. The valves F are automatically operated or reciprocated as the carrier B rotates preferably by a stationary cam F², secured to a stationary upright shaft or post A³, which cam the valve-stems F⁴ engage as the carrier rotates. A spring F⁵ on each of the valve-stems moves the valve-stem in the opposite direction.

The seaming-head D inside each of the receivers C is furnished with a can-clamping chuck or disk *d*, having a countersink or shoulder *d*' to fit the countersink of the can-head *x* and cooperate with the double-seaming rollers *d*² *d*³ *d*⁴ *d*⁴. Each of the double-seaming rollers is carried on an operating-lever *d*⁶, pivoted to lugs or ears *d*⁷ on the seaming-head D and operated by cams *d*⁸ *d*⁹ *d*¹⁰ *d*¹⁰

on the vertically-reciprocating slide D², with which each of the seaming-heads D is provided. The cams *d*⁸ *d*⁹ *d*¹⁰ are differently located on the slide D², so as to successively operate the set of double-seaming rollers—that is to say, as the slide D² carrying these cams is depressed it first causes the first double-seaming roller *d*² to engage the flange of the can-head and curl or fold the same partially around the seaming-flange on the head and can-body and then operates the next seaming-roller *d*³, which serves to further fold the seaming-flanges downward and together and then operates the pair of finishing-rollers *d*⁴, which are alike and preferably should be operated simultaneously and serve to finish the seam and compress the folds thereof tightly together. The can-clamping chuck or disk *d* has antifriction or ball-bearing connection *d*¹¹ *d*¹² *d*¹³ with the seaming-head D, so that the chuck-disk *d* and the can may remain stationary or non-rotating while the seaming-head D rotates around it.

The seaming-head D has a spring connection D³ with the cam-slide D², which latter cam-slide is directly secured to the rotating and reciprocating operating-shaft D' of the seaming-head. This interposed spring D³ between the seaming-head and cam-slide causes the seaming-head D or the clamp-disk *d*, carried thereby, to first clamp and compress the cover *x* of the can X down upon the can after the air has been exhausted therefrom and from the receiver and to hold the cover thus sealed to the can while the vacuum in the receiver is being broken and the receiver withdrawn from around the can and then by the further downward movement of the cam-slide D² to operate the seaming-rollers as required. The interposed spring D³ permits the necessary further downward movement of the cam-slide to effect the seaming operation.

The seaming-head is preferably provided with a can-stripper or an ejector-disk *d*¹⁴, having an operating-stem *d*¹⁵, which extends up through the operating-shaft D' of the seaming-head and through the guide-stud *d*¹⁶, with which the clamp-disk *d* is provided. The spring *d*¹⁷, connecting the seaming-roller-operating levers *d*⁶, serve to retract the seaming-rollers. The required up-and-down or reciprocating movement is communicated to the seaming-head shafts D' as the carrier B rotates by a stationary cam D⁴, secured to the stationary shaft or post A³ of the frame and operating through connecting-levers D⁵, having antifriction-rollers D⁶ to engage the cams and forks D⁷, connected to the shaft D' by adjustable collars D⁸ D⁹. The ejector-stem *d*¹⁵ on each of the seaming-heads is operated in one direction by a stationary cam D¹⁰, supported on the frame A, each of the stems *d*¹⁵ having a spring *d*¹⁸ to move the same in the opposite direction. The required rotary movement is communicated to each of the seaming-heads D or its operating-shaft

D' as the carrier B rotates preferably by means of a spur-gear D¹¹, one of each of said shafts D' engaging a rotating gear D¹², which is journaled on the frame of the machine and which is provided with a bevel-gear face D¹³, that meshes with a bevel-gear D¹⁴ on the driving-shaft D¹⁵, carrying a driving-pulley D¹⁶. The carrier B is provided with a shell B⁵ to give proper support to the various operating-levers and parts carried thereby, and this carrier is rotated preferably continuously by a gear B⁶ thereon, which engages the worm B⁷ on a driving-shaft B⁸.

The cans are automatically fed or delivered onto the can-seats *b* of the carrier B from the conveyer-belt K by a movable feeder H, having a series of can-pusher arms *h*, which engage the cans one by one and move them along a curved guideway H' on the carrier B against the registering devices or pins *b'* of the can-seats. The feeder H is preferably given a rotary movement in coöperation with the continuously-rotating carrier by means of operating-arms *h'* on the feeder, which engage the pins or projections *b'* on the carrier B, or any other suitable gearing may be employed for connecting the feeder with the carrier. As the carrier B rotates the cans are automatically discharged one by one therefrom by a can-discharging arm M, projecting in the path of the cans, the same operating in conjunction with a guide M' to deliver the cans upon the can-discharging conveyer or belt N, which travels upon a suitable pulley N'. The can-feed conveyer or belt K travels upon a pulley K', and a plate H², flush with the conveyer-belt K and carrier B, supports the cans as they are moved by the feeder H from the conveyer K to the carrier B. A similar plate M², flush with the discharge-conveyer N and carrier B, bridges the space between the carrier and conveyer N. The conveyers N and K are continuously driven from any suitable source of power.

The operation is as follows: The cans on the feed-conveyer K, having each its cover *x* loosely in place thereon, are continuously crowded against the guide H' at the end of said conveyer, so that one of the cans is always in position to be engaged by one of the feeder-arms *h* as the feeder H rotates, and thus be carried by the feeder-arm onto the carrier B and against the registering pins or devices *b'* of the can-seat *b*, the receivers C and the seaming-head D therein being at this time in their elevated or raised position. As the carrier B continues its rotation the receiver C is closed down against the can-seat *b* by the operating-cam C⁴, and then the valve F in the exhaust-pipe is moved by its operating-cam F² to open the communication between the receiver C and the exhaust E' through the intermediate communicating pipes or passages. The exhaust communication with the receiver remains open for a portion of the revolution of the carrier, thus

exhausting the air from the receiver and from the can and its contents, the cover *x* during all this time remaining loosely in place on the can or vessel X. After the air has thus been exhausted from the can and its contents the seaming-head D, with its can-clamping disk *d*, is next forced down by its operating-cam D⁴, thus setting the cover *x* firmly and evenly on the can X and compressing the packing *x'* between the seaming-flanges *x*² *x*³ of the can and cover and holding the same thus compressed until after the double-seaming operation is completed. The controlling-valve F is next again moved by its operating-cam, thus breaking the vacuum and admitting air to the receiver, and then the receiver C is withdrawn from around the can through the action of its operating-cam, and then the cam-slide D² is given a further downward movement through action of the seaming-head-operating cam D⁴ and the double-seaming rollers forced into engagement with the seaming-flanges of the can and cover successively, as before stated, and the seaming operation performed, the seaming-head D rotating continuously through its connecting-gearing. As the carrier B continues its rotation the vacuumized, sealed, and double-seamed can is discharged from the carrier B by the guide M' and delivered upon the discharge-conveyer N. The operation thus described in respect to one can and one receiver and one seaming-head simultaneously takes place for the others, so that a continuous stream or series of cans passes into, through, and off of the machine and continuously without stop or interruption.

By this means the cans or vessels may be vacuumized and their covers hermetically sealed and double-seamed thereon very rapidly and cheaply and also with great certainty and reliability, as the cans and the action of the double-seaming rollers are open to inspection during the double-seaming operation, as the receivers at this time are withdrawn from around the cans.

I claim—

1. In a machine for vacuumizing and seaming covers on cans or vessels, the combination with a carrier having a plurality of can-seats, of a plurality of opening and closing receivers mounted on the carrier, and a plurality of seaming-heads, one inside each receiver, substantially as specified.

2. In a machine for vacuumizing and seaming covers on cans or vessels, the combination with a carrier having a plurality of can-seats, of a plurality of opening and closing receivers mounted on the carrier, a plurality of seaming-heads, one inside each receiver, and a feeder for automatically delivering the cans upon the carrier, substantially as specified.

3. In a machine for vacuumizing and seaming covers on cans or vessels, the combination with a carrier having a plurality of can-seats, of a plurality of opening and closing receivers

ers mounted on the carrier, and a plurality of double-seaming heads, one inside each receiver, substantially as specified.

4. In a machine for vacuumizing and seaming covers on cans or vessels, the combination with a carrier having a plurality of can-seats, of a plurality of opening and closing receivers mounted on the carrier, a plurality of seaming-heads one inside each receiver, a feeder for automatically delivering the cans upon the carrier, and a conveyer for delivering the cans to the feeder, substantially as specified.

5. In a machine for vacuumizing and seaming covers on cans or vessels, the combination with a carrier having a plurality of can-seats, of a plurality of opening and closing receivers mounted on the carrier, a plurality of seaming-heads, one inside each receiver, a feeder for automatically delivering the cans upon the carrier, and a device for automatically discharging the cans from the carrier, substantially as specified.

6. In a machine for vacuumizing and seaming covers on cans or vessels, the combination with a carrier having a plurality of can-seats, of a plurality of opening and closing receivers mounted on the carrier, a plurality of seaming-heads one inside each receiver, and mechanism for operating said parts to first close the receiver, then exhaust the air therefrom and from the can and its contents, then force the cover down on the can, then withdraw the receiver from around the can, and then actuate the seaming-rollers of the seaming-head, substantially as specified.

7. In a machine for vacuumizing and seaming covers on cans or vessels, the combination with a carrier having a plurality of can-seats, of a plurality of opening and closing receivers mounted on the carrier, of a plurality of double-seaming heads, one inside each receiver, and mechanism for operating said parts to first close the receiver, then exhaust the air therefrom and from the can and its contents, then force the cover down on the can, then withdraw the receiver from around the can, and then actuate the seaming-rollers of the seaming-head, substantially as specified.

8. In a can vacuumizing and seaming machine, the combination with a can-seat, of a receiver, an exhaust mechanism, a seaming-head inside the receiver, and operating mechanism for first closing the receiver then exhausting the air therefrom and from the can and its contents, then forcing the seaming-head down upon the can to clamp the cover thereto, then opening the receiver, and finally actuating the seaming-rolls of the seaming-head to seam the can on the cover after the receiver is operated, substantially as specified.

9. The combination with a rotating carrier having a plurality of can-seats thereon, of a plurality of opposing can-clamping disks, a plurality of rotating seaming-heads having seaming-rollers, and a plurality of receivers

surrounding the seaming-heads, substantially as specified.

10. The combination with a rotating carrier having a plurality of can-seats thereon, of a plurality of opposing can-clamping disks, a plurality of rotating seaming-heads having seaming-rollers, a plurality of cam-slides for operating the seaming-rollers, and a plurality of receivers surrounding the seaming-heads, substantially as specified.

11. The combination with a rotating carrier having a plurality of can-seats thereon, of a plurality of opposing can-clamping disks, a plurality of rotating seaming-heads having seaming-rollers, a plurality of receivers surrounding the seaming-heads, and a feeder for automatically delivering the cans to the carrier, substantially as specified.

12. The combination with a rotating carrier having a plurality of can-seats thereon, of a plurality of opposing can-clamping disks, a plurality of rotating seaming-heads having seaming-rollers, a plurality of receivers surrounding the seaming-heads, a feeder for automatically delivering the cans to the carrier, and a device for automatically discharging the cans from the carrier, substantially as specified.

13. The combination of a can seat or support, with a receiver, and a double-seaming head inside the receiver having a plurality of seaming-rollers, operating-levers therefor, and a cam-slide for actuating the operating-levers of the seaming-rollers, substantially as specified.

14. A double-seaming head having a plurality of seaming-rollers and operating-levers therefor pivoted to said head, and a cam-slide for actuating said operating-levers of the seaming-rollers and a spring interposed between said seaming-head and cam-slide, substantially as specified.

15. The combination with a non-rotating can-seat, of a seaming-head having a can-clamping disk and a plurality of seaming-rollers, a plurality of operating-levers therefor and a cam-slide for actuating the operating-levers of the seaming-rollers and a spring interposed between said seaming-head and cam-slide, substantially as specified.

16. The combination with a movable carrier having a can-seat thereon, of a seaming-head having a can-clamping disk, seaming-rollers, operating-levers therefor, and a cam-slide for actuating the operating-levers of the seaming-rollers, and a spring interposed between said seaming-head and cam-slide, substantially as specified.

17. A double-seaming head having a plurality of seaming-rollers and operating-levers therefor pivoted to said head, and a cam-slide for actuating said operating-levers of the seaming-rollers, the cams on said cam-slide successively operating the seaming-rollers and a spring interposed between said seaming-head and cam-slide, substantially as specified.

18. A double-seaming head having a plurality of seaming-rollers and operating-levers therefor pivoted to said head, and a cam-slide for actuating said operating-levers of the seaming-rollers, and a receiver surrounding and inclosing said seaming-head, substantially as specified.

19. The combination with a non-rotating can-seat, of a seaming-head having a can-clamping disk and a plurality of seaming-rollers, a plurality of operating-levers therefor and a cam-slide for actuating the operating-levers of the seaming-rollers, and a receiver surrounding and inclosing said seaming-head, substantially as specified.

20. The combination with a carrier, of a plurality of receivers for simultaneously exhausting the air from a plurality of cans, and a plurality of seaming-heads inside the receivers for simultaneously seaming a plurality of cans, substantially as specified.

21. The combination with a carrier, of a plurality of receivers for simultaneously exhausting the air from a plurality of cans, and a plurality of double-seaming heads inside the receivers for simultaneously seaming a plurality of cans, substantially as specified.

22. The combination with a carrier, of a plurality of receivers for simultaneously exhausting the air from a plurality of cans, and a plurality of seaming-heads inside the receivers for simultaneously seaming a plurality of cans, and a feeder for automatically delivering the cans to the receiver, substantially as specified.

23. The combination with a carrier, of a plurality of receivers for simultaneously exhausting the air from a plurality of cans, and a plurality of seaming-heads inside the receivers for simultaneously seaming a plurality of cans, and a discharge device for automatically delivering the cans from the carrier, substantially as specified.

24. The combination with a horizontally-moving can-carrier having a can-seat adapted to close the lower end of a receiver, with a reciprocating receiver mounted on the carrier and having an open lower end, and a seaming mechanism inside the receiver, substantially as specified.

25. The combination with a horizontally-moving can-carrier having a can-seat adapted to close the lower end of a receiver, with a reciprocating receiver mounted on the carrier and having an open lower end, and a double-seaming mechanism inside the receiver, substantially as specified.

26. The combination with a horizontally-moving carrier having a can-seat adapted to close the lower end of a receiver, with a reciprocating receiver having an open lower end, a roller-seaming head inside the receiver having a can-clamping disk for seating the cover on the can and clamping the can, an exhaust mechanism, and a valve for controlling the admission of air to the receiver, substantially as specified.

27. The combination with a carrier having a plurality of can-seats, of a plurality of open-ended reciprocating receivers, and a plurality of seaming-heads inside the receivers, substantially as specified.

28. The combination with a carrier having a plurality of can-seats, of a plurality of open-ended reciprocating receivers, a plurality of seaming-heads inside the receivers and furnished each with a can-clamping disk and a plurality of seaming-rollers, substantially as specified.

29. The combination with a carrier having a plurality of can-seats, of a plurality of open-ended reciprocating receivers, a plurality of seaming-heads inside the receivers furnished each with a can-clamping disk, and a plurality of successively-operating double-seaming rollers, substantially as specified.

30. The combination with a rotating carrier having a plurality of can-seats thereon, of a plurality of opposing can-clamping disks, a plurality of rotating seaming-heads having seaming-rollers, a plurality of receivers surrounding the seaming-heads, an exhaust mechanism, and a plurality of valves for controlling the exhaust and admission of air to the receivers, substantially as specified.

31. The combination with a rotating carrier having a plurality of can-seats thereon, of a plurality of opposing can-clamping disks, a plurality of rotating seaming-heads having seaming-rollers, a plurality of receivers surrounding the seaming-heads, and stationary cams for operating the receivers and seaming-heads as the carrier rotates, substantially as specified.

32. The combination with a rotating carrier having a plurality of can-seats thereon, of a plurality of opposing can-clamping disks, a plurality of rotating seaming-heads having seaming-rollers, a plurality of receivers surrounding the seaming-heads, an exhaust mechanism, a plurality of valves for controlling the exhaust and admission of air to the receivers, and stationary cams for operating said receivers, seaming-heads and valves as the carrier rotates, substantially as specified.

33. In a machine for vacuumizing and seaming covers on cans or vessels, the combination with a carrier having a plurality of can-seats, of a plurality of opening and closing receivers mounted on the carrier, a plurality of seaming-heads, one inside each receiver, a stationary cam for operating the receivers, and a stationary cam for operating the seaming-heads, substantially as specified.

34. The combination with a carrier having a plurality of can-seats, of a plurality of open-ended reciprocating receivers, a plurality of seaming-heads inside the receivers furnished each with a can-clamping disk, a plurality of successively-operating double-seaming rollers, and a plurality of valves controlling the admission of air to the receivers, substantially as specified.

35. The combination with a carrier having

a plurality of can-seats, of a plurality of open-ended reciprocating receivers, a plurality of seaming-heads inside the receivers furnished each with a can-clamping disk, a plurality of successively-operating double-seaming rollers, a plurality of valves controlling the admission of air to the receivers, and stationary cams for operating the receivers, seaming-heads and valves, substantially as specified.

36. The combination with a carrier having a plurality of can-seats, of a plurality of open-ended reciprocating receivers, a plurality of seaming-heads inside the receivers furnished each with a can-clamping disk, a plurality of successively-operating double-seaming rollers, a plurality of valves controlling the admission of air to the receivers, stationary cams for operating the receivers, seaming-heads and valves, and a can-feeder, substantially as specified.

37. The combination with a carrier having a plurality of can-seats, of a plurality of open-ended reciprocating receivers, a plurality of seaming-heads inside the receivers furnished each with a can-clamping disk, a plurality of successively-operating double-seaming rollers, a plurality of valves controlling the admission of air to the receivers, stationary cams for operating the receivers, seaming-heads and valves, a can-feeder, and a conveyor for delivering the cans to the feeder, substantially as specified.

38. The combination with a carrier having a plurality of can-seats, of a plurality of open-ended reciprocating receivers, a plurality of seaming-heads inside the receivers furnished each with a can-clamping disk, a plurality of successively-operating double-seaming rollers, and a plurality of cam-slides, one for each seaming-head, substantially as specified.

39. The combination with a carrier having a plurality of can-seats, of a plurality of open-ended reciprocating receivers, a plurality of seaming-heads inside the receivers furnished each with a can-clamping disk, a plurality of successively-operating double-seaming rollers, a plurality of cam-slides, one for each seaming-head, and a spring or yielding connection between each cam-slide and its seaming-head, substantially as specified.

40. The combination with a carrier having a plurality of can-seats, of a plurality of open-ended reciprocating receivers, a plurality of seaming-heads inside the receivers furnished each with a can-clamping disk, a plurality of successively-operating double-seaming rollers, a plurality of cam-slides, one for each

seaming-head, a spring or yielding connection between each cam-slide and its seaming-head, and a plurality of ejectors, one for each clamping-disk, substantially as specified.

41. The combination with a carrier having a plurality of can-seats, of a plurality of open-ended reciprocating receivers, a plurality of seaming-heads inside the receivers furnished each with a can-clamping disk, a plurality of successively-operating double-seaming rollers, a plurality of cam-slides, one for each seaming-head, a spring or yielding connection between each cam-slide and its seaming-head, a plurality of ejectors, one for each clamping-disk, and stationary cams for operating said receivers, seaming-heads, and ejectors, substantially as specified.

42. The combination with a carrier having a plurality of can-seats, of a plurality of open-ended reciprocating receivers, a plurality of seaming-heads inside the receivers each having seaming-rollers, operating-lever therefor, and a cam-slide for actuating said levers, substantially as specified.

43. The combination with a carrier having a plurality of can-seats, of a plurality of open-ended reciprocating receivers, a plurality of seaming-heads inside the receivers each having seaming-rollers, operating-lever therefor, a cam-slide for actuating said levers, an exhaust, and a plurality of valves, one for each receiver, substantially as specified.

44. The combination with a carrier having a plurality of can-seats, of a plurality of open-ended reciprocating receivers, a plurality of seaming-heads inside the receivers each having seaming-rollers, operating-lever therefor, a cam-slide for actuating said levers, an exhaust, a plurality of valves, one for each receiver, and stationary cams for operating said receivers, seaming-heads and valves, substantially as specified.

45. The combination with a carrier having a plurality of can-seats, of a plurality of open-ended reciprocating receivers, a plurality of seaming-heads inside the receivers each having seaming-rollers, operating-lever therefor, a cam-slide for actuating said levers, an exhaust, a plurality of valves, one for each receiver, stationary cams for operating said receivers, seaming-heads and valves, and a feeder for delivering the cans to the carrier, substantially as specified.

EDWIN NORTON.

Witnesses:

LAWRENCE A. NORTON,
WILLIAM R. ADAMS.