

No. 735,978.

PATENTED AUG. 11, 1903.

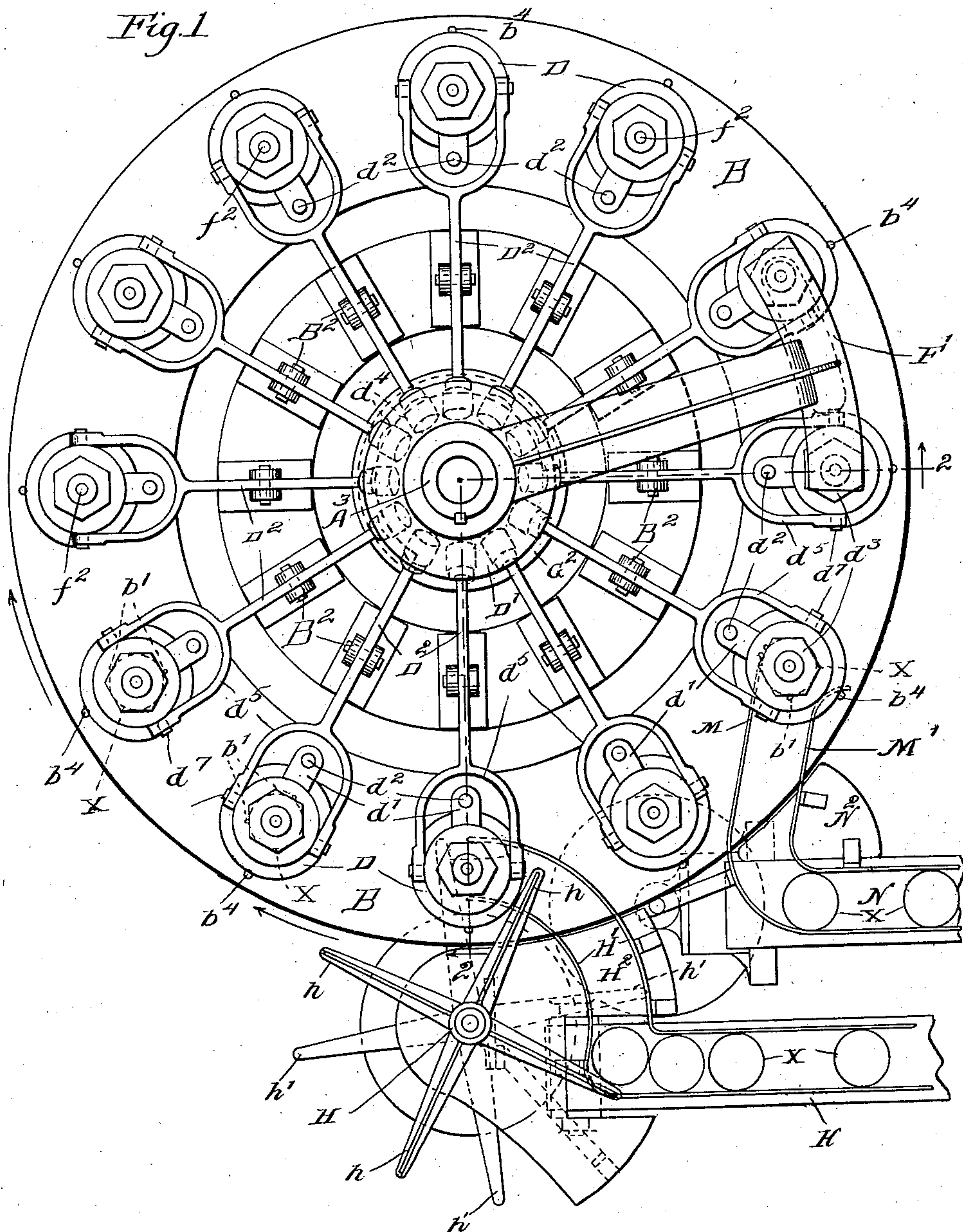
J. G. HODGSON.

AUTOMATIC VACUUM CAN SEALING MACHINE.

APPLICATION FILED JULY 10, 1902.

3 SHEETS—SHEET 1.

NO MODEL.



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3 SHEETS—SHEET 2.

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Fig. 2

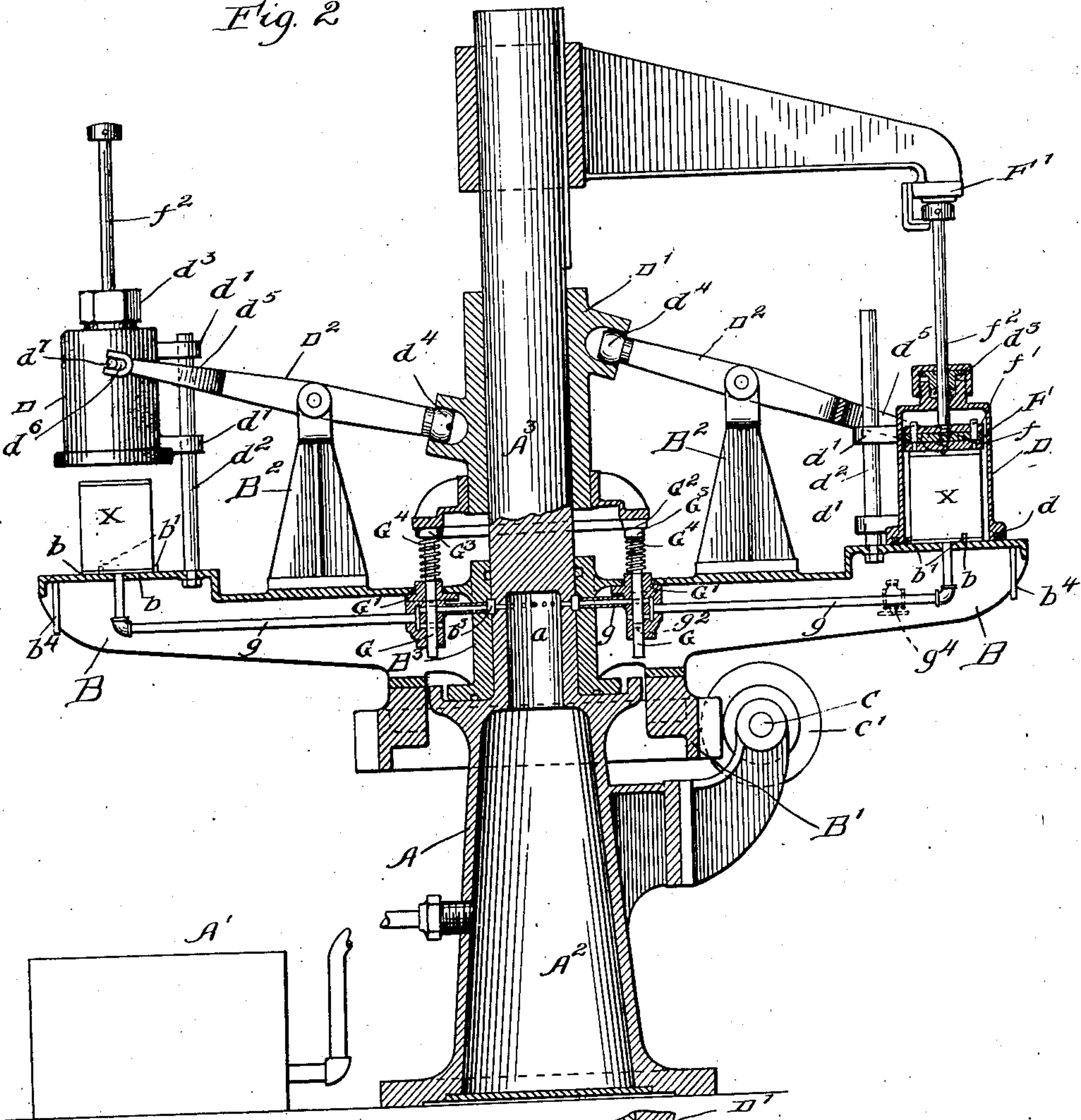
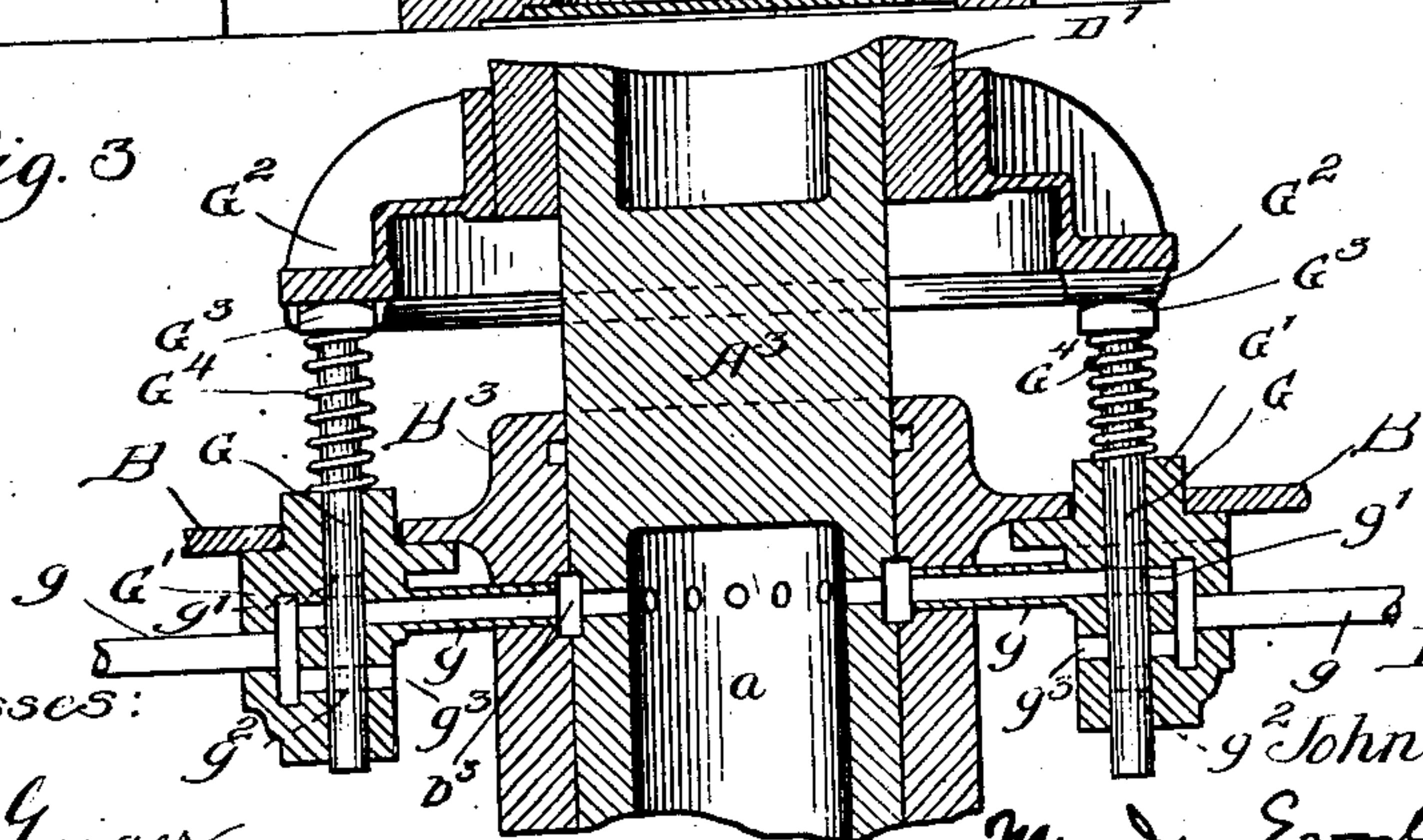


Fig. 3



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3 SHEETS—SHEET 3.

NO MODEL.

Fig. 6

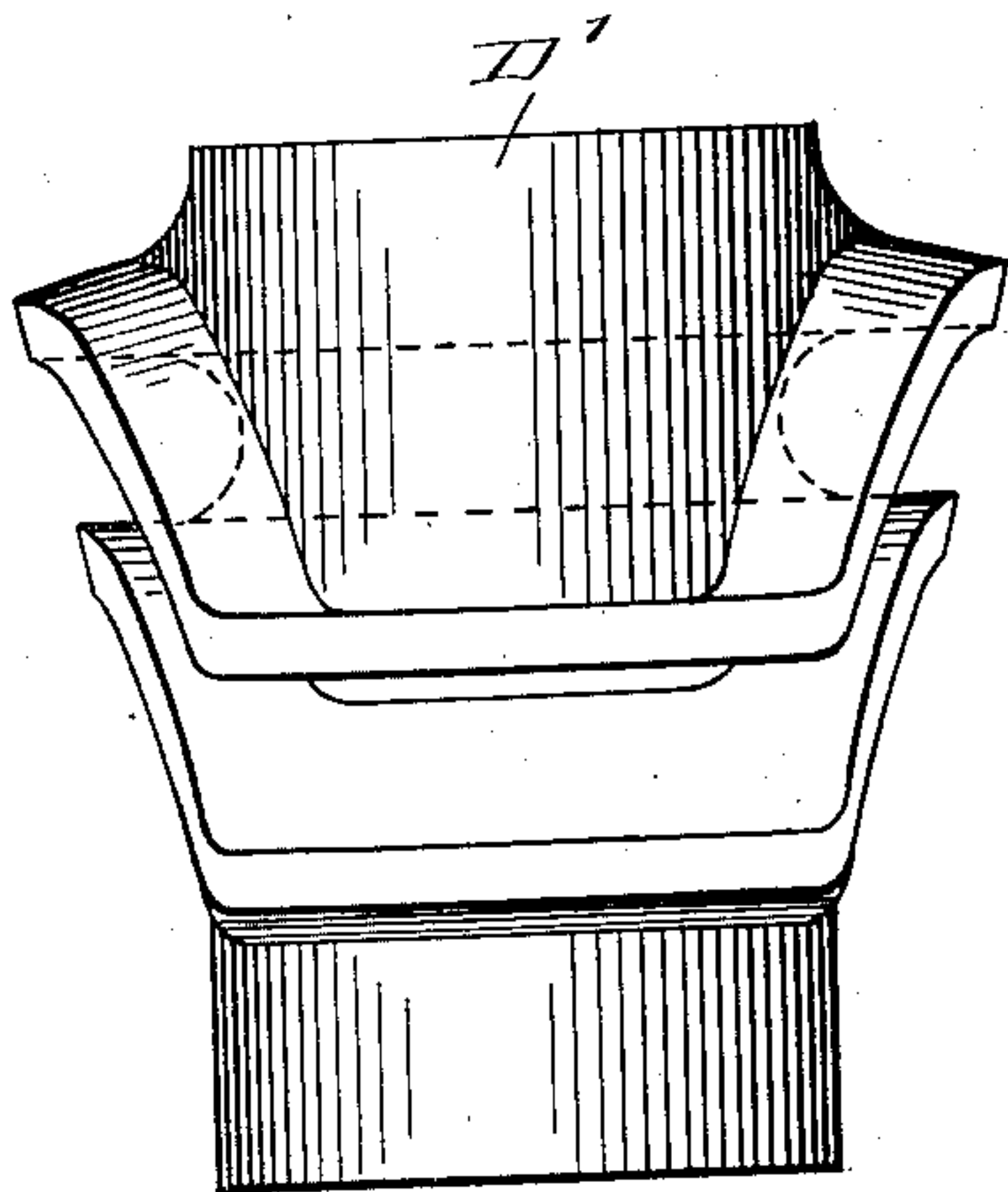


Fig. 7

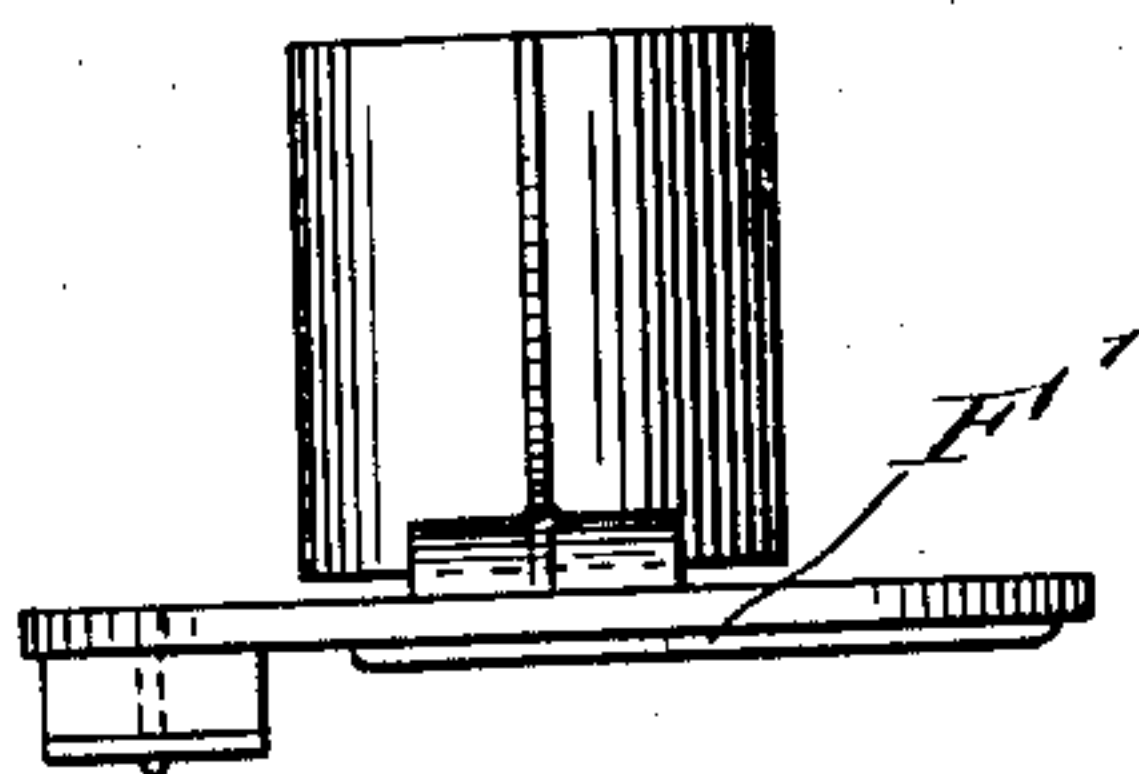


Fig. 5

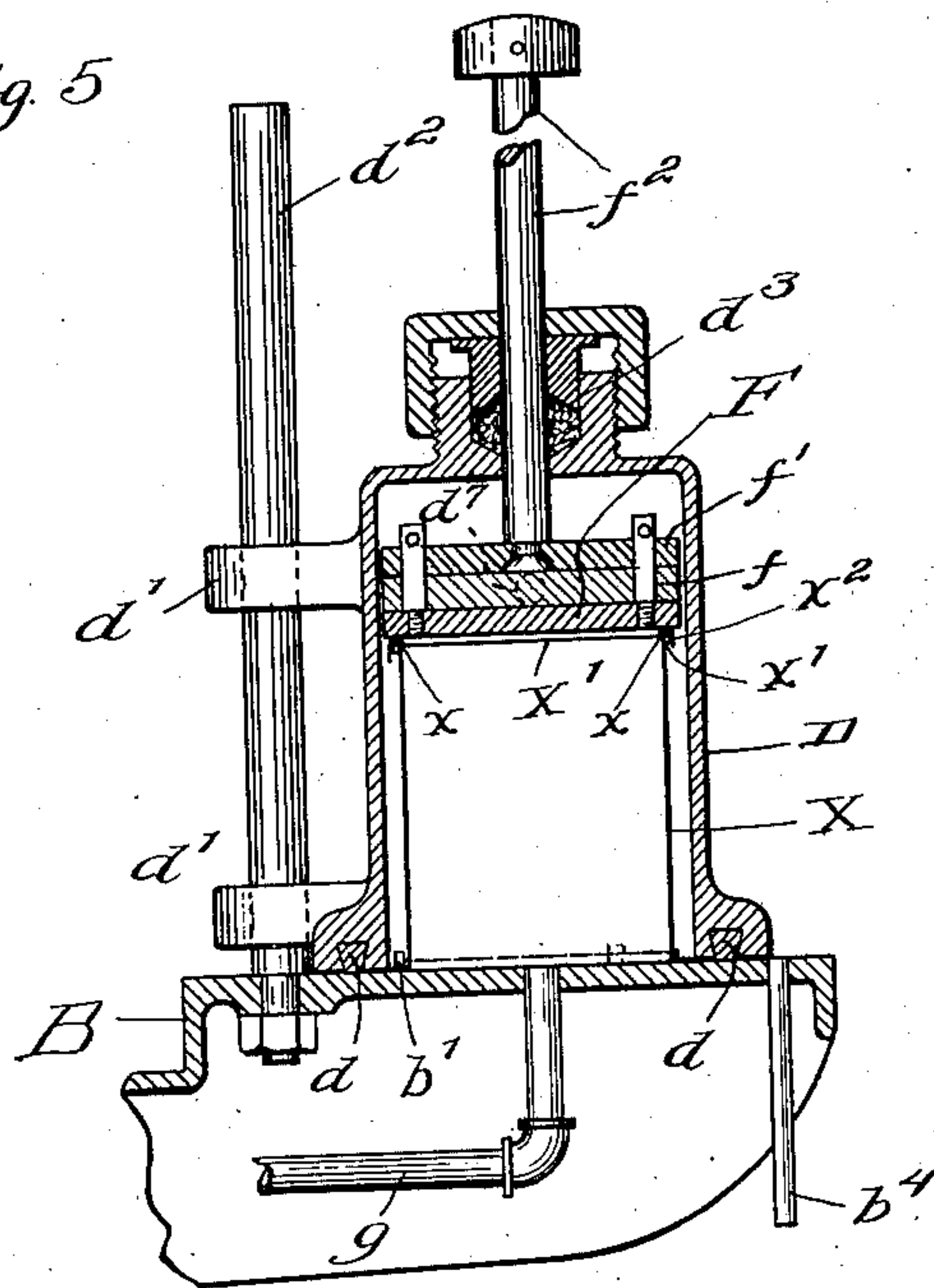


Fig. 4

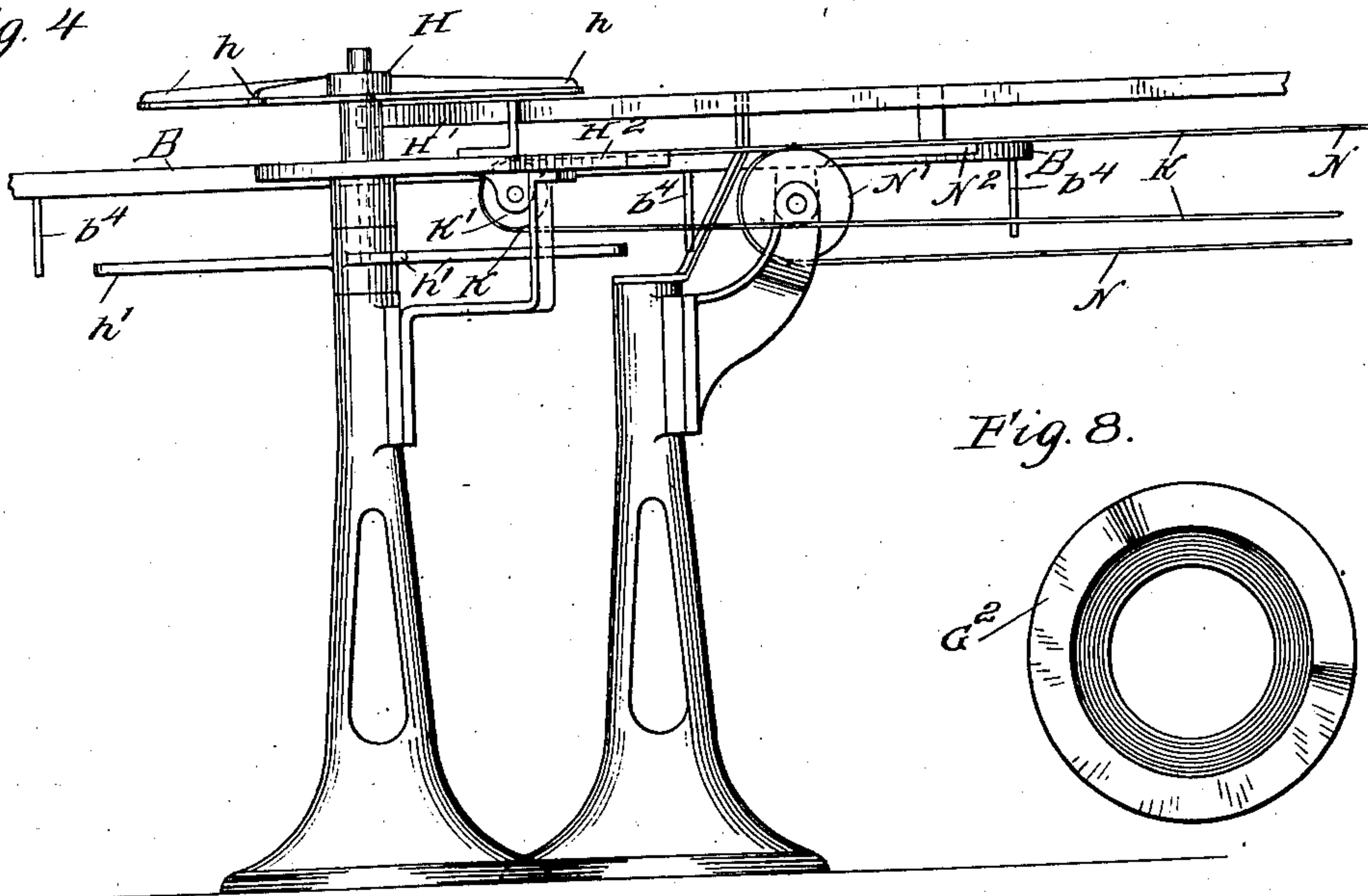
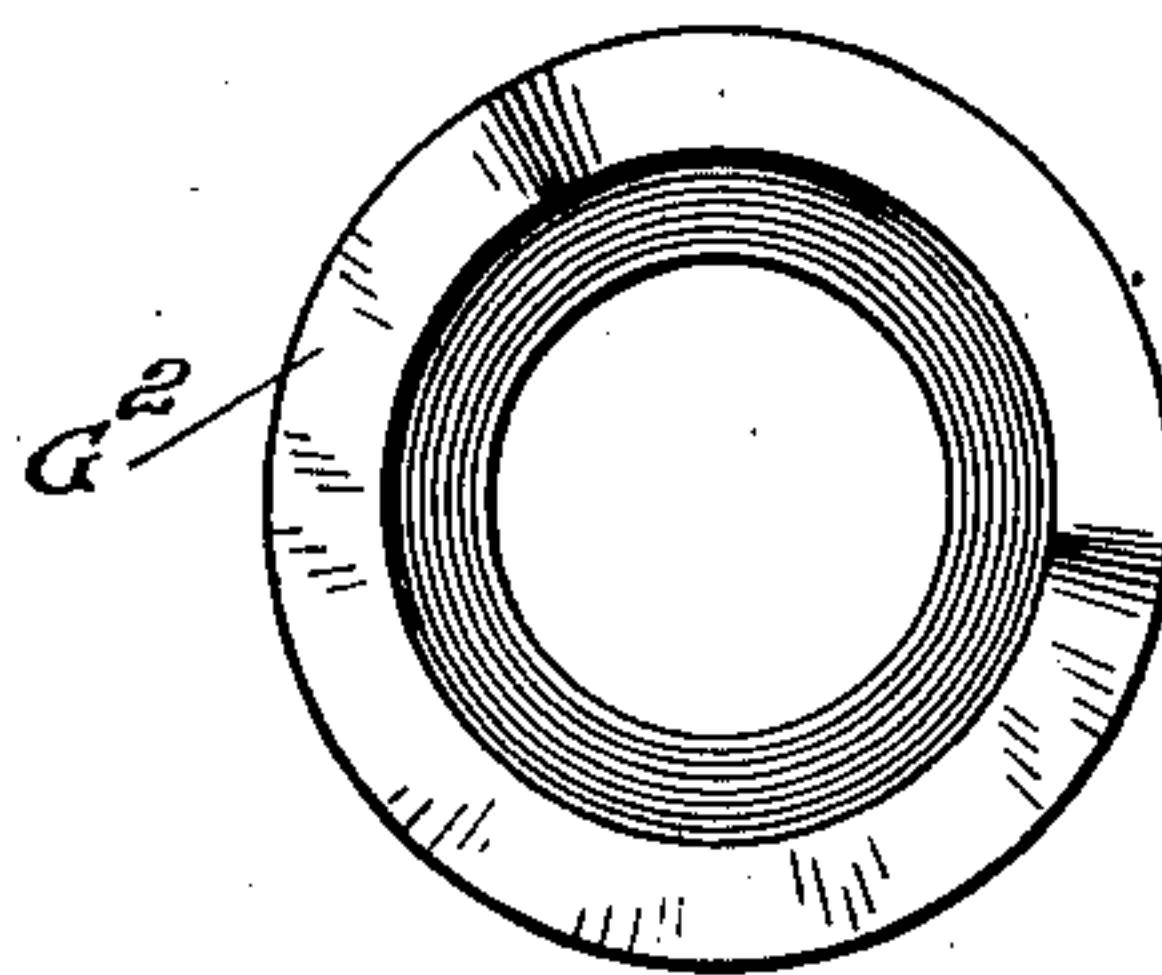


Fig. 8.



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# UNITED STATES PATENT OFFICE.

JOHN G. HODGSON, OF MAYWOOD, ILLINOIS, ASSIGNOR TO AUTOMATIC VACUUM CANNING COMPANY, OF CHICAGO, ILLINOIS, A CORPORATION OF ILLINOIS.

## AUTOMATIC VACUUM CAN-SEALING MACHINE.

SPECIFICATION forming part of Letters Patent No. 735,978, dated August 11, 1903.

Application filed July 10, 1902. Serial No. 114,980. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN G. HODGSON, a citizen of the United States, residing in Maywood, in the county of Cook and State of Illinois, have invented a new and useful Improvement in Automatic Vacuum Can-Sealing Machines, of which the following is a specification.

My invention relates to improvements in vacuumizing-machines for sealing and securing covers on cans or vessels—that is to say, to machines for exhausting the air from cans or vessels and from a receiver containing the same and then seating the cover on the can or vessel and restoring the atmospheric pressure to the receiver, whereby the cover is sealed and secured to the can or vessel by the atmospheric pressure.

The object of my invention is to provide a machine of a simple, efficient, and durable construction by which this work may be automatically, rapidly, and cheaply performed.

My invention consists in the means I employ to accomplish this result—that is to say, it consists in the combination, with a continuously-moving carrier having a plurality of seats for the cans or vessels, of a series of individually movable or opening and closing receivers mounted on the carrier and mechanism for automatically opening and closing the exhaust as the carrier moves.

It also consists in the combination, with a movable carrier having a plurality of seats for the cans and a plurality of receivers mounted thereon, of means for automatically feeding or delivering the cans or vessels on the carrier.

It also consists, in combination with the foregoing, of means for automatically discharging the cans from the carrier.

It 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 machine embodying my invention. Fig. 2 is a vertical section on line 2-2 of Fig. 1. Fig. 3 is an enlarged detail vertical section

showing the valves for opening and closing the exhaust. Fig. 4 is a detail side elevation showing the mechanism for feeding and discharging the cans. Fig. 5 is a detail vertical sectional view through one of the receivers. Fig. 6 is a detail elevation showing the cam for operating the receivers, and Fig. 7 is a detail elevation showing the cam for operating the cover-sealing plates, and Fig. 8 is a detail view showing the cam for operating the valves controlling the communications between the receivers and the exhaust.

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

In said drawings, A represents the frame of the machine, A' an exhaust mechanism of any suitable kind, preferably a vacuum-pump, and A<sup>2</sup> an exhaust-chamber, the same being preferably formed in the pedestal portion of the frame.

B is a movable carrier, preferably a rotary turret or wheel, furnished with a plurality of seats *b*, having pins or devices *b'* for registering the cans or vessels with the receivers. The carrier B is continuously rotated from the driving-shaft C through the worm C' thereon and worm-gear B' on the carrier. Mounted on the carrier B are a series of vertically reciprocating or opening and closing receivers D, each having a packing-ring *d* at its open lower end for closing and sealing the same against the can-seat *b* of the carrier. Each of the receivers D is furnished with suitable guides *d'*, reciprocating on suitable guides *d''* on the carrier B to guide the up-and-down movement on the receiver. Each of the receivers D is furnished with a movable cover-seating plate F for properly seating the covers on the cans or vessels after the air has been exhausted therefrom. The sealing-plate F is preferably furnished with a rubber cushion or elastic plate *f*, interposed between it and the cap-plate *f'*, to which the stem *f''* is attached, by which the seating-plate is operated or reciprocated, said stem extending through a stuffing-box *d'''*, with which the receiver D is furnished. The receiver D is reciprocated or opened and closed, as required, as the carrier rotates, preferably by a stationary cam D' on



the frame of the machine, through the connecting-lever  $D^2$ , which is furnished with an antifriction-roller  $d^4$  and with a forked end  $d^5$ , having slots  $d^6$  engaging pins  $d^7$  on the receiver. The operating-levers  $D^2$ —one for each receiver—are journaled on brackets  $B^2$  on the carrier B.

Leading to each of the receivers, preferably through the can-seats  $b$ , which close the same, are pipes  $g$ , communicating with the exhaust device  $A'$  through the valves  $G$ , which control the communication, said valves  $G$  having an exhaust-port  $g'$  and an air-inlet port  $g^2$ , through which air may be admitted to the receiver to break the vacuum after the covers have been seated on the cans or vessels, and thus seal and secure the covers in place by a vacuum or atmospheric-pressure seal. The inlet-ports  $g^2$  in the valves  $G$  communicate with air-inlet ports  $g^3$  in the valve-shells  $G'$ , which are mounted on the carrier B. The frame A has a central standard or shaft  $A^3$ , forming a bearing for the journal  $B^3$  of the carrier B and provided with an annular groove or channel  $a$ , communicating with the exhaust-chamber  $A^2$ , and the journal  $B^3$  is preferably furnished with a corresponding annular groove or channel  $b^3$ , communicating with the pipes  $g$ , which lead to the receivers, and in which pipes the valve-shells  $G'$  and valves  $G$  are inserted. The valves  $G$  are automatically operated or reciprocated as the carrier B rotates, preferably by a stationary cam  $G^2$ , which the valve-stems  $G^3$  engage. The valve-stems  $G^3$  may be furnished with springs  $G^4$  for moving them in one direction.

The cover-seating plates  $F$  are operated or reciprocated as required, preferably by a stationary cam  $F'$  on the frame of the machine engaging the operating-stems  $f^2$  of said plates.

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 and move them along a curved guideway  $H'$  onto the carrier B against the registering devices or pins  $b'$  of the can-seats. The feeder H is preferably given a rotary movement in cooperation with the continuously-rotating carrier by means of operating-arms  $h'$  on the feeder, which engage pins or projections  $b^4$  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 therefrom by a can-discharging arm M, projecting in the path of the cans, the same operating in conjunction with the 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  $K'$ . A plate  $H^2$ , 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  $N^2$ , flush with the conveyer N and carrier B, bridges the

space between the carrier and said belt or conveyer N.

The conveyers or belts N and K are continuously driven from any suitable source of power.

The exhaust-pipes  $g$  are preferably furnished with regulating-valves  $g^4$ .

The operation is as follows: The cans X on the feed-conveyer K 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 can-carrier B and against the registering pins or devices  $b'$  of a can-seat  $b$ , the receiver D being at this time in its raised position. As the carrier B continues its rotation the receiver D is closed down against the can-seat  $b$  by the operating-cam  $D'$ , and then the valve  $G$  is moved by the cam  $G^2$  to open the communication between the receiver D and the exhaust chamber  $A^2$ , the exhaust communication remaining open for about two-thirds of the rotation of the carrier, thus giving ample time for thoroughly exhausting the air from the receiver and the can and its contents, the cover X' being at this time simply loosely in place on the can or vessel X. After the air has thus been exhausted from the can and its contents the cover-seating plate  $F$  is next forced down by its operating-cam  $F'$ , thus seating the cover firmly and evenly on the can and compressing the packing  $x$  between the seating-flanges  $x'$   $x^2$  of the can and cover and holding the same thus compressed until the vacuum is broken and the atmospheric pressure restored to the receiver, when the cover will then be hermetically sealed and secured to the can by the vacuum or atmospheric-pressure seal. As soon as the cover is thus seated on the can by the operation of the cover-seating plate  $F$  the cam  $G^2$  permits the valve  $G$  to be moved in the opposite direction by the spring  $G^3$ , and thus close the communication between the receiver and the exhaust and open the communication between the receiver and the atmosphere through the air-inlet ports  $g^2$   $g^3$ . As soon as this is done the receiver is again raised by operation of the cam  $D'$ , the seating-plate  $F$  being also lifted by its cam  $F'$ . Then as the carrier B continues to rotate the can, now having its cover sealed and secured thereto by a vacuum or atmospheric-pressure seal, is automatically discharged from its carrier by the guide  $M'$  and delivered upon the discharge-conveyer N. The operation thus described in respect to one can and receiver simultaneously takes place for the others, so that a continuous stream or series of cans pass onto, 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 secured thereto, each by a vacuum or atmospheric-



pressure seal, very rapidly and cheaply, and also with great certainty and reliability.

I claim—

1. In a machine for exhausting the air from  
5 and sealing the covers on cans or vessels, the combination with an exhaust, of a continuously-moving carrier having a plurality of laterally-open can-seats to receive the cans horizontally, a plurality of reciprocating receivers  
10 mounted on the carrier and having open lower ends engaging the can-seats and thus inclosing and surrounding the cans, and means for registering the cans under the receivers so that the receivers can close around  
15 the same, substantially as specified.

2. In a machine for exhausting the air from and sealing the covers on cans or vessels, the combination with an exhaust of a continuously-moving carrier having a plurality of laterally-open can-seats to receive the cans horizontally, a plurality of reciprocating receivers  
20 mounted on the carrier and having open lower ends engaging the can-seats and thus inclosing and surrounding the cans, and a feeder for automatically delivering the cans upon the continuously-moving carrier, and means for registering the cans under the receiver so that the receivers can close around  
25 the same, substantially as specified.

3. In a machine for exhausting the air from, and sealing the covers on cans or vessels, the combination with an exhaust, of a continuously-moving carrier having a plurality of laterally-open can-seats, a plurality of reciprocating receivers mounted on the carrier, a  
35 feeder for automatically delivering the cans upon the continuously-moving carrier, and a conveyer for delivering the cans to the feeder, and means for registering the cans under the receivers so that the receivers can close  
40 around the same, substantially as specified.

4. In a machine for exhausting the air from, and sealing covers on cans or vessels, the combination with an exhaust, of a continuously-moving carrier having a plurality of laterally-open can-seats, a plurality of reciprocating receivers mounted on the carrier, and  
45 a device for automatically discharging the cans from the carrier, and means for registering the cans under the receivers so that the receivers can close around the same, substantially as specified.

5. The combination with an exhaust, of a movable carrier having laterally-open can-seats to receive the cans horizontally, a plurality of opening and closing receivers mounted  
55 thereon, and means for automatically feeding the cans or vessels onto the carrier, and means for registering the cans under the receivers so that the receivers can close around the same, substantially as specified.

6. The combination with an exhaust, of a movable carrier having laterally-open can-seats to receive the cans horizontally, a plurality of opening and closing receivers mounted  
65 thereon, means for automatically feeding the cans or vessels onto the carrier, and means

for automatically discharging the cans from the carrier, and means for registering the cans under the receivers so that the receivers can  
70 close around the same, substantially as specified.

7. The combination with an exhaust, of a movable carrier having a plurality of laterally-open can-seats thereon, a plurality of reciprocating receivers mounted on the carrier,  
75 and a stationary cam for reciprocating the receivers as the carrier moves, and means for registering the cans under the receivers so that the receivers can close around the same, substantially as specified.

8. The combination with an exhaust, of a rotary carrier having a plurality of laterally-open can-seats, a plurality of movable receivers mounted on the carrier, and means for  
85 automatically feeding the cans or vessels onto the carrier, and a stationary cam for operating the receivers, and means for registering the cans under the receivers so that the receivers can close around the same, substantially as specified.

9. The combination with an exhaust, of a carrier having a plurality of laterally-open can-seats thereon, a plurality of reciprocating receivers mounted on the carrier, valves  
95 for opening and closing the communications between the receivers and the exhaust, and a stationary cam for operating said valves as the carrier rotates, and means for registering the cans under the receivers so that the receivers can close around the same, substantially as specified.

10. The combination with an exhaust, of a carrier having a plurality of laterally-open can-seats thereon, of a plurality of reciprocating receivers mounted on the carrier, valves  
105 for opening and closing the communications between the receivers and the exhaust, and a stationary cam for operating said valves as the carrier rotates, said valves being also provided with air-inlet ports, and means for registering the cans with the receivers so that the receivers can close around the same, substantially as specified.

11. The combination with an exhaust, of a carrier having a plurality of laterally-open can-seats, a plurality of opening and closing receivers mounted on the carrier, each of  
115 said receivers having a cover-seating plate therein, and a stationary cam for operating said cover-seating plates as the carrier moves, and means for registering the cans with the receivers so that the receivers can close around the same, substantially as specified.

12. The combination with a rotating carrier  
125 having a plurality of can-seats, a plurality of reciprocating receivers mounted on the carrier, an exhaust device, a connecting-pipe between the exhaust device and each receiver, a valve in each connecting-pipe for controlling the communications between the receiver  
130 and the exhaust and outer air, and a stationary cam for operating said valves, and means for registering the cans with the receivers so



that the receivers can close around the same, substantially as specified.

13. The combination with a rotating carrier having a plurality of laterally-open can-seats, of a plurality of movable receivers mounted on the carrier, an exhaust device, communications between the exhaust device and said receiver, valves for controlling said communications, a stationary cam for operating said valves, and a stationary cam for opening and closing the receivers, and means for registering the cans with the receivers so that the receivers can close around the same, substantially as specified.

14. The combination with a rotating carrier having a plurality of laterally-open can-seats, of a plurality of movable receivers mounted on the carrier, an exhaust device, communications between the exhaust device and said receiver, valves for controlling said communications, a stationary cam for operating said valves, a stationary cam for opening and closing the receivers, a plurality of cover-seating plates in said receivers, and a stationary cam for operating said cover-seating plates, substantially as specified.

15. The combination with a rotating carrier having a plurality of laterally-open can-seats, of a plurality of movable receivers mounted on the carrier, an exhaust device, communications between the exhaust device and said receivers, valves for controlling said communications, a stationary cam for operating said valves, a stationary cam for operating the receivers, a plurality of cover-seating plates in said receivers, a stationary cam for operating said cover-seating plates, and a feeder for automatically delivering the cans to the carrier, and means for registering the cans with the receivers so that the receivers can close around the same, substantially as specified.

16. The combination with a rotating carrier having a plurality of laterally-open can-seats, of a plurality of movable receivers mounted on the carrier, an exhaust device, communications between the exhaust device and said receiver, valves for controlling said communications, a stationary cam for operating said valves, a stationary cam for operating the receivers, a plurality of cover-seating plates in said receivers, a stationary cam for operating said cover-seating plates, a feeder for automatically delivering the cans to the carrier, a device for discharging the cans from the carrier, and means for registering the cans with the receivers so that the receivers can close around the same, substantially as specified.

17. The combination with an exhaust, of a carrier having a plurality of laterally-open can-seats, of a plurality of movable receivers mounted thereon, means for moving the receivers to open and close the same against the can-seats, and a feeder for delivering the cans upon the carrier, and means for registering the cans with the receivers so that the

receivers can close around the same, substantially as specified.

18. The combination with a carrier having a plurality of laterally-open can-seats, of a plurality of receivers mounted thereon, means for opening and closing the receivers against the can-seats, a feeder for delivering the cans upon the carrier, an exhaust device, and valves for opening and closing the communications between the exhaust device and the receivers, and means for registering the cans with the receivers so that the receivers can close around the same, substantially as specified.

19. The combination with an exhaust, of a carrier having a plurality of laterally-open can-seats, of a plurality of movable receivers mounted thereon, means for opening and closing the receivers against the can-seats, a feeder for delivering the cans upon the carrier, cover-seating plates in the receivers, and means for operating said cover-seating plates, and means for registering the cans with the receivers so that the receivers can close around the same, substantially as specified.

20. The combination with a carrier having a plurality of laterally-open can-seats, of a plurality of receivers mounted thereon, means for opening and closing the receivers against the can-seats, a feeder for delivering the cans upon the carrier, an exhaust device, valves for opening and closing the communications between the exhaust device and the receivers, cover-seating plates in the receivers, and means for operating said cover-seating plates, and means for registering the cans with the receivers so that the receivers can close around the same, substantially as specified.

21. The combination with a carrier having a plurality of laterally-open can-seats, of a plurality of receivers mounted thereon, means for opening and closing the receivers, a feeder for delivering the cans upon the carrier, an exhaust device, valves for opening and closing the communications between the exhaust device and the receivers, cover-seating plates in the receivers, means for operating said cover-seating plates, and a device for discharging the cans from the carrier, and means for registering the cans with the receivers so that the receivers can close around the same, substantially as specified.

22. The combination with an exhaust, of a movable carrier having a laterally-open can-seat, an opening and closing receiver mounted thereon, and a feeder for automatically delivering the cans one by one to the carrier under the receiver, and means for registering the cans under the receiver so that the receiver can close around the same, substantially as specified.

23. The combination with an exhaust, of a continuously-moving carrier having a plurality of laterally-opening can-seats, of a plurality of reciprocating receivers thereon, a



feeder for automatically delivering cans one by one upon the carrier under the receivers, and means for registering the cans under the receivers so that the receivers can close around the same, substantially as specified.

24. The combination with an exhaust, of a carrier having a plurality of laterally-open can-seats thereon furnished with can-registering pins or devices, of a plurality of movable receivers on the carrier, and a feeder for delivering the cans or vessels onto the carrier, said can-registering devices being inside the receivers when the receivers are closed, substantially as specified.

25. The combination with an exhaust, of a carrier having a plurality of laterally-open can-seats thereon furnished with can-registering pins or devices, of a plurality of movable receivers on the carrier, a feeder for delivering the cans or vessels onto the carrier, and a conveyer for delivering the cans to the feeder, said can-registering devices being inside the receivers when the receivers are closed, substantially as specified.

26. The combination with an exhaust, of a carrier having a plurality of laterally-open

can-seats thereon furnished with can-registering pins or devices, a plurality of reciprocating receivers on the carrier, a feeder for delivering the cans onto the carrier, a conveyer for delivering the cans to the feeder, and a guideway for the cans to direct the same against the registering devices of the can-seats, said can-registering devices being inside the receivers when the receivers are closed, substantially as specified.

27. The combination with an exhaust, of a carrier having a plurality of open can-seats thereon furnished with can-registering pins or devices, a plurality of reciprocating receivers on the carrier, a feeder for delivering the cans or vessels onto the carrier, a conveyer for delivering the cans to the feeder, and a curved guideway for the cans for directing the same against the registering devices of the can-seats, said can-registering devices being inside the receivers when the receivers are closed, substantially as specified.

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