(No Model.) 7 Sheets—Sheet 1.

J. W. GHEEN.

MACHINE FOR HEADING AND CRIMPING CANS.

No. 535,694. Patented Mar. 12, 1895.

Fig. 1

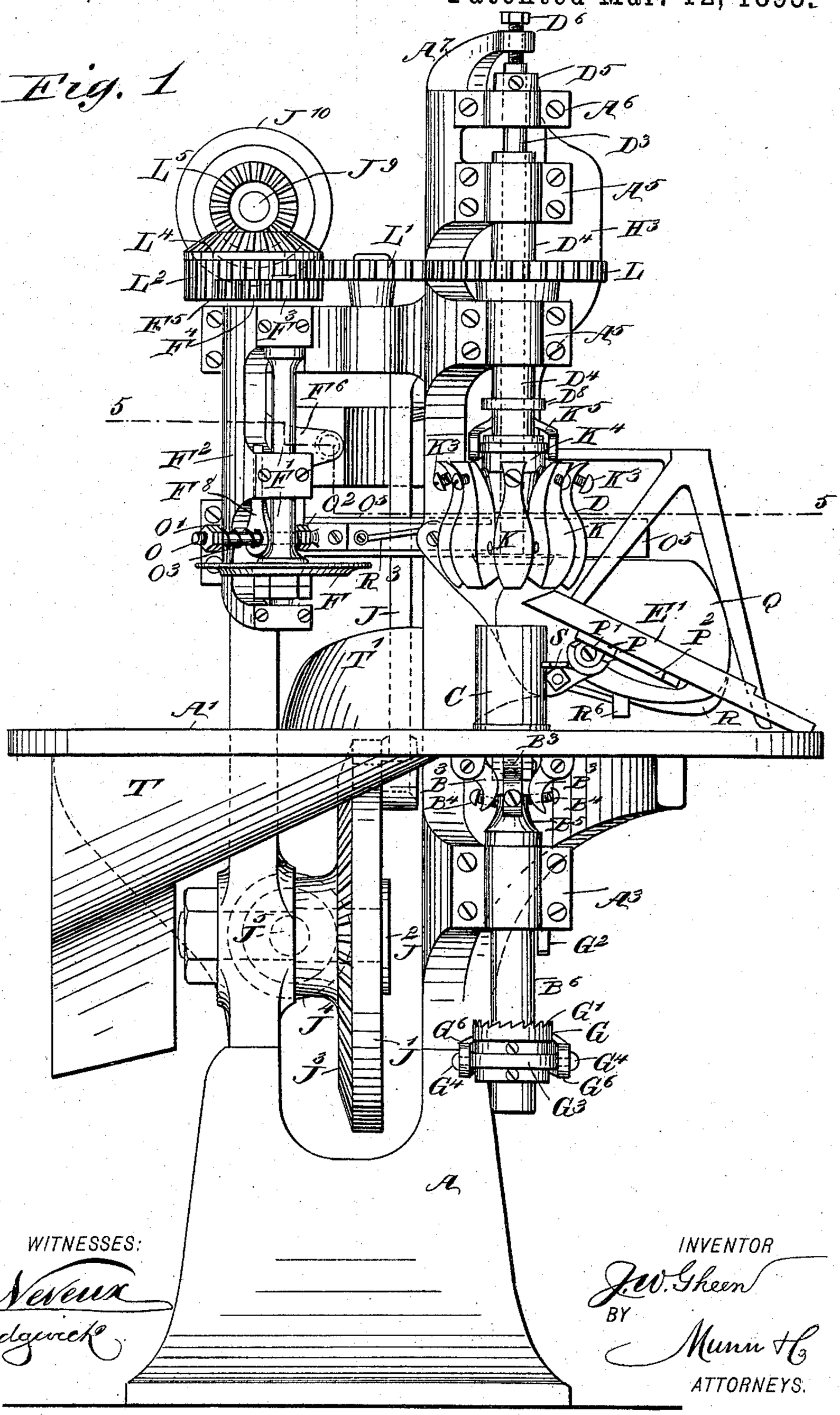

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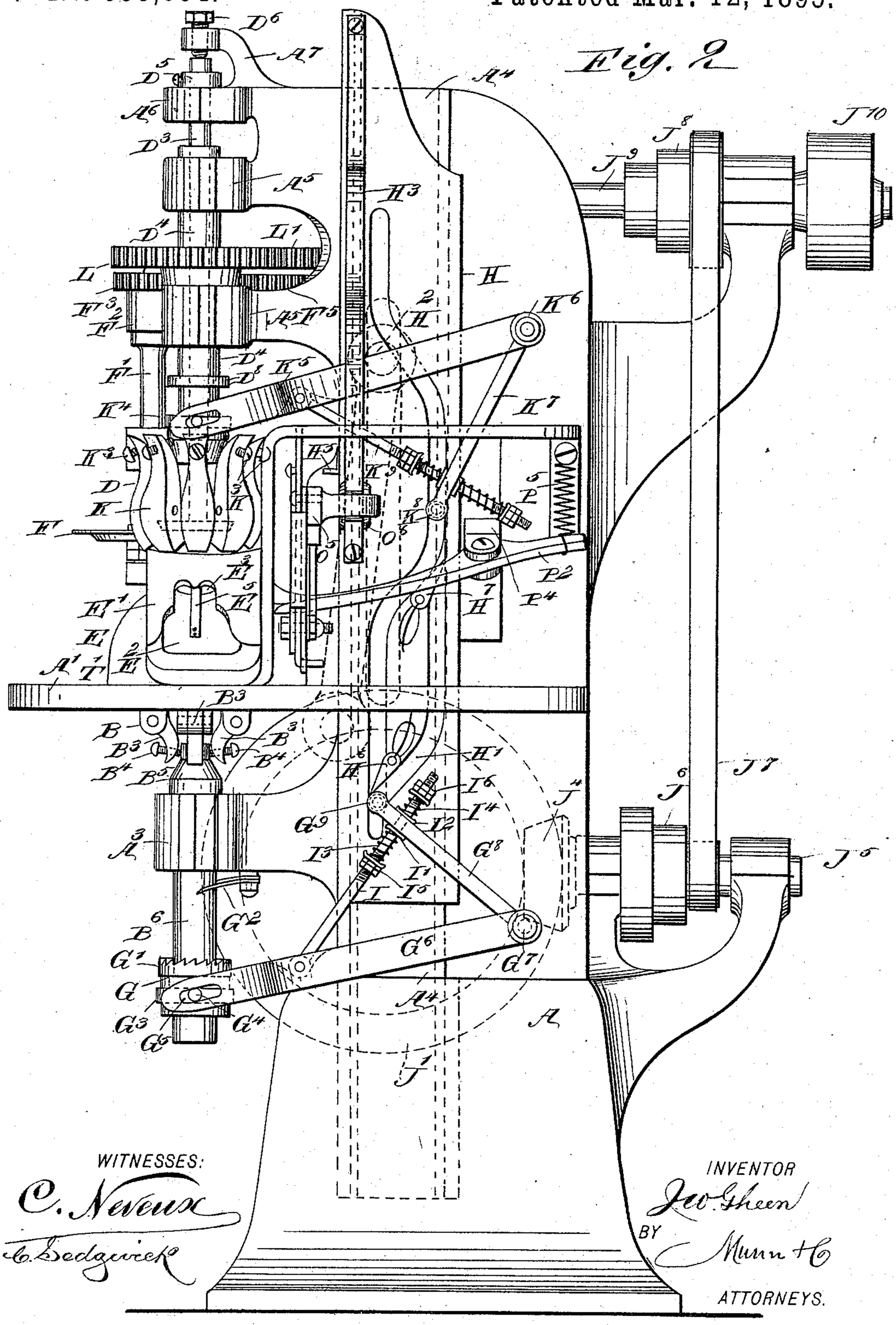
Fig. 2



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MACHINE FOR HEADING AND CRIMPING CANS.

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Fig. 3

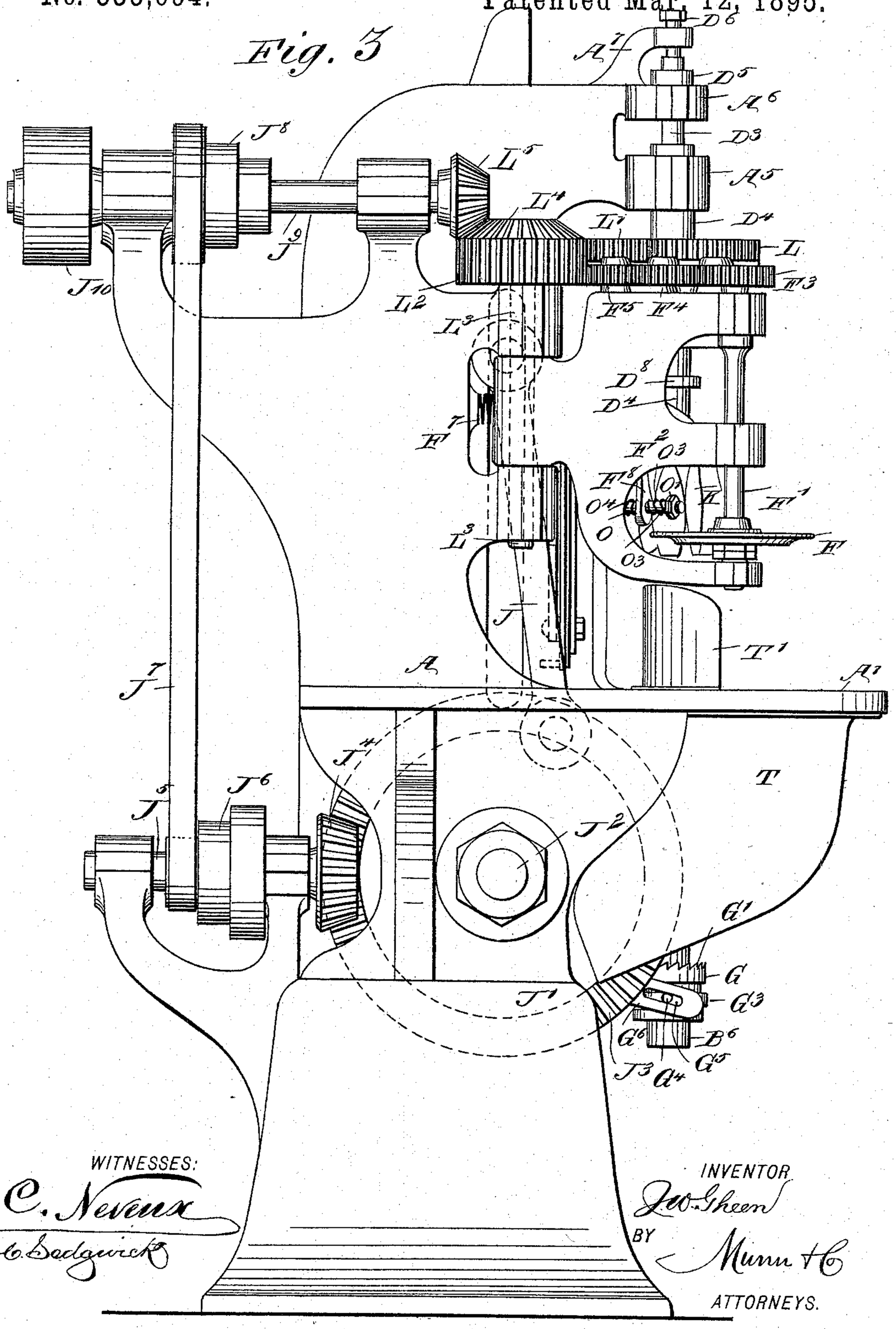

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Fig. 18

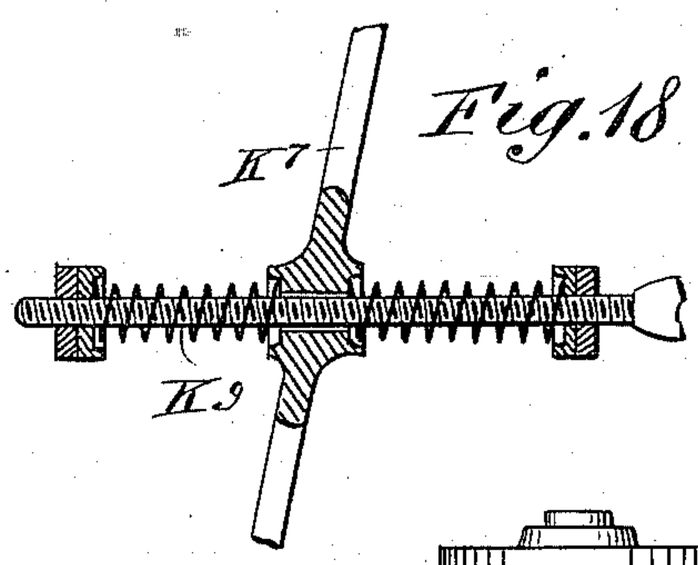

Fig. 19

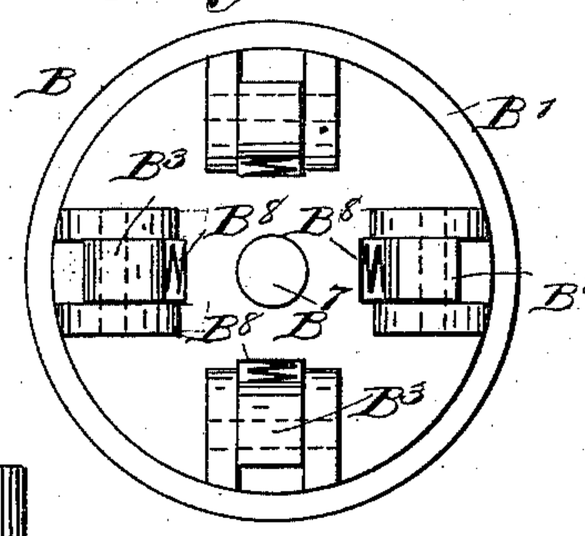

Fig. 20

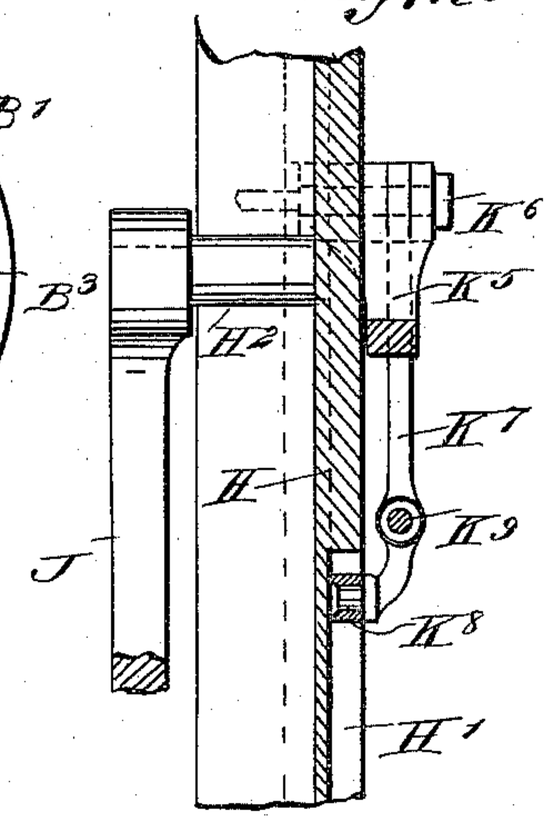

Fig. 4

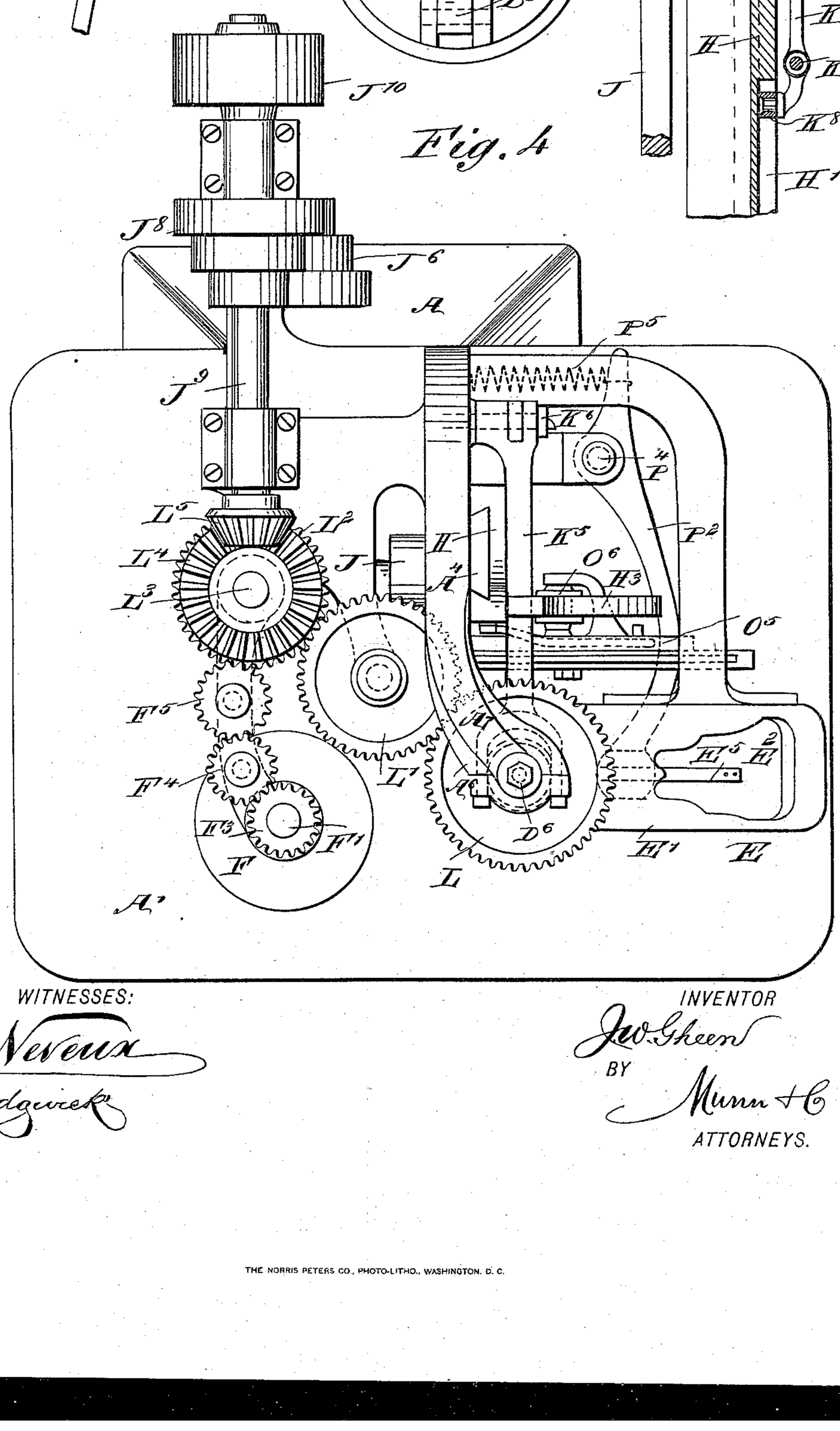

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Fig. 5

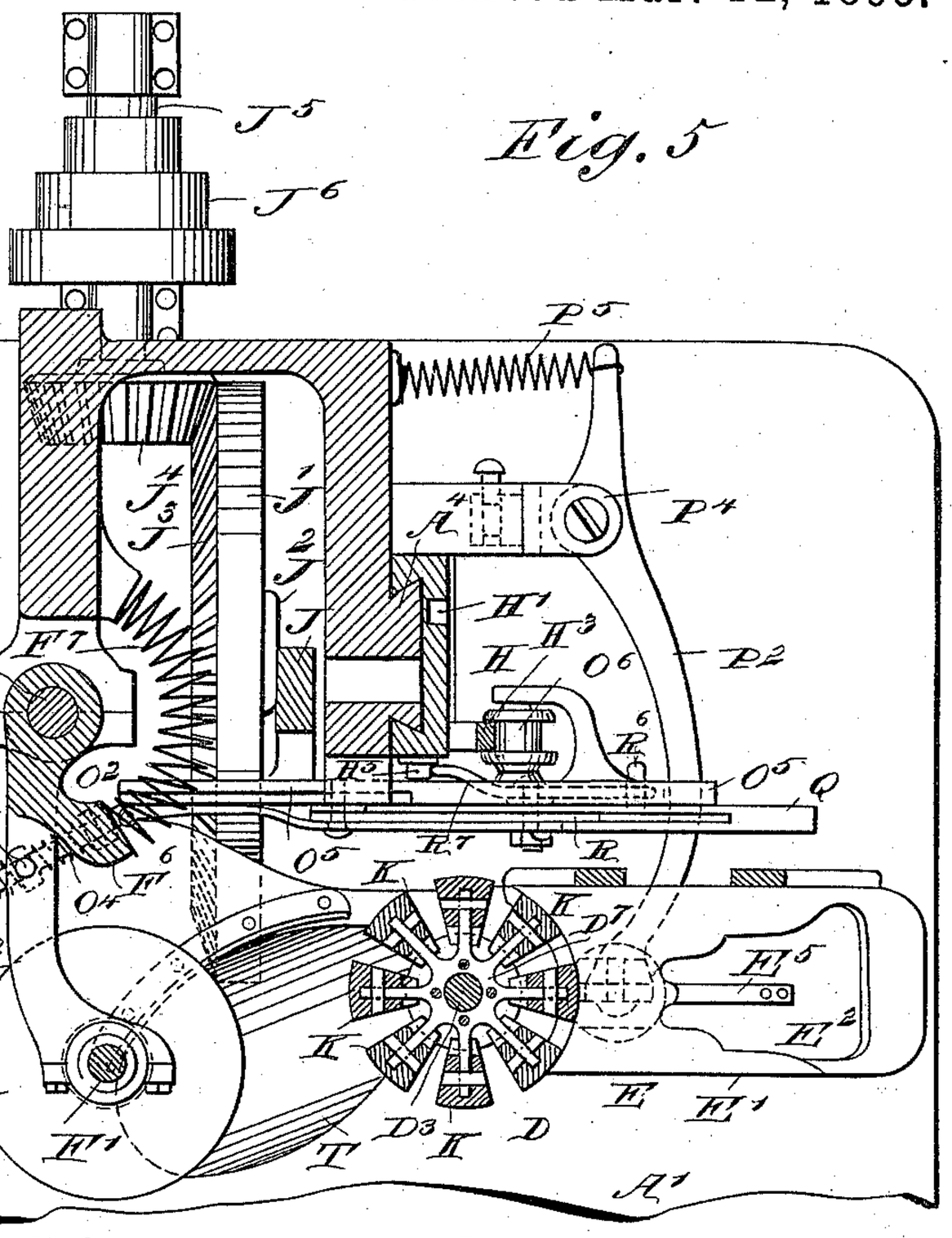
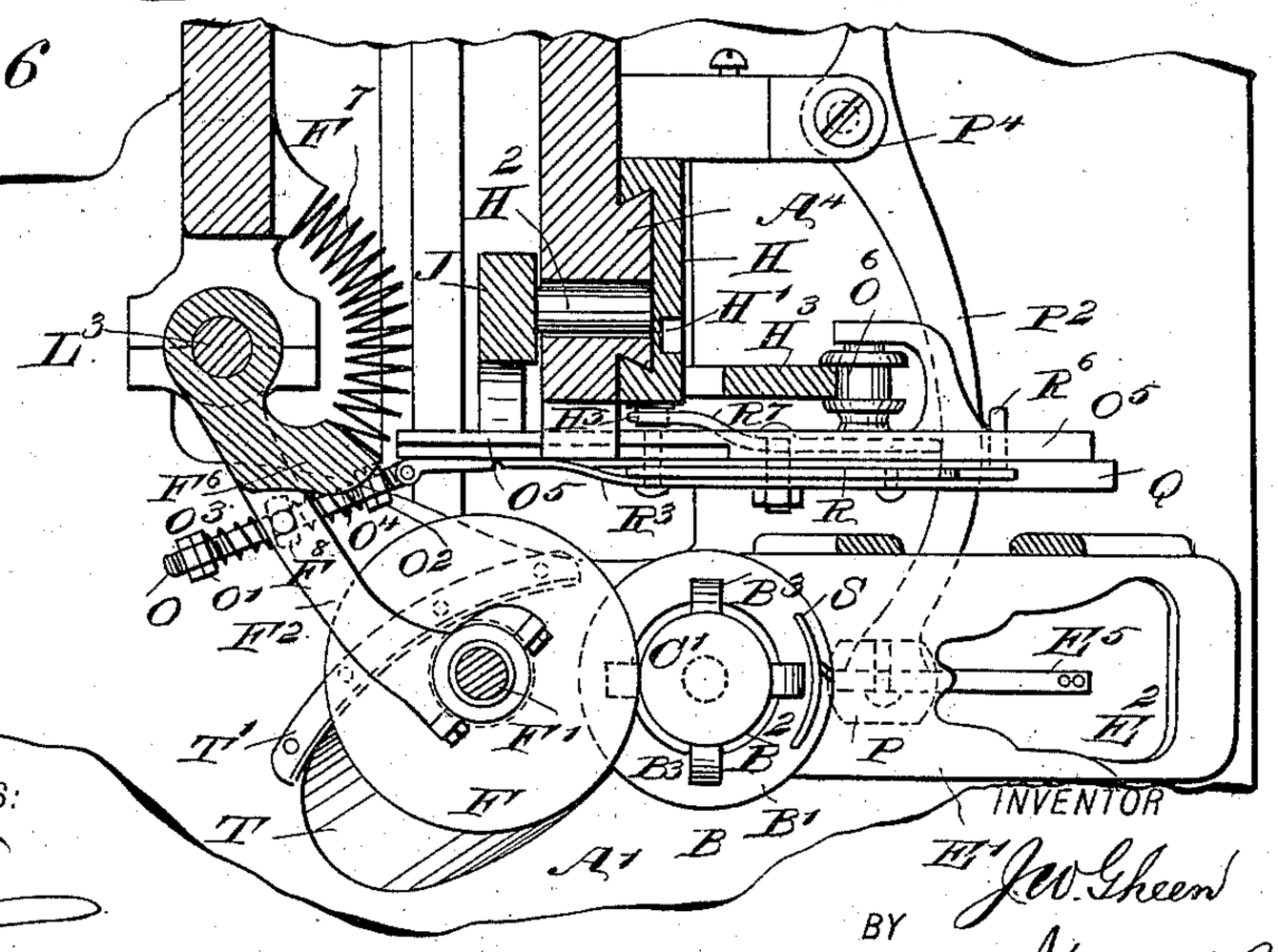


Fig. 6



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MACHINE FOR HEADING AND CRIMPING CANS.

No. 535,694. Patented Mar. 12, 1895.

Fig. 7

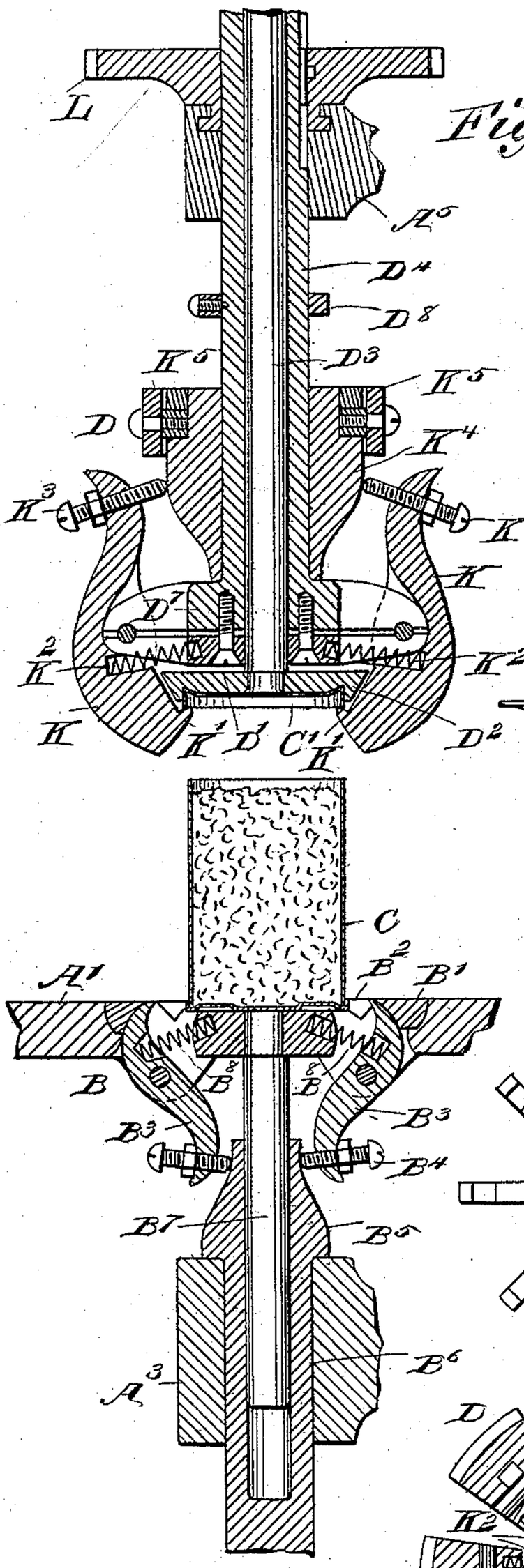


Fig. 8

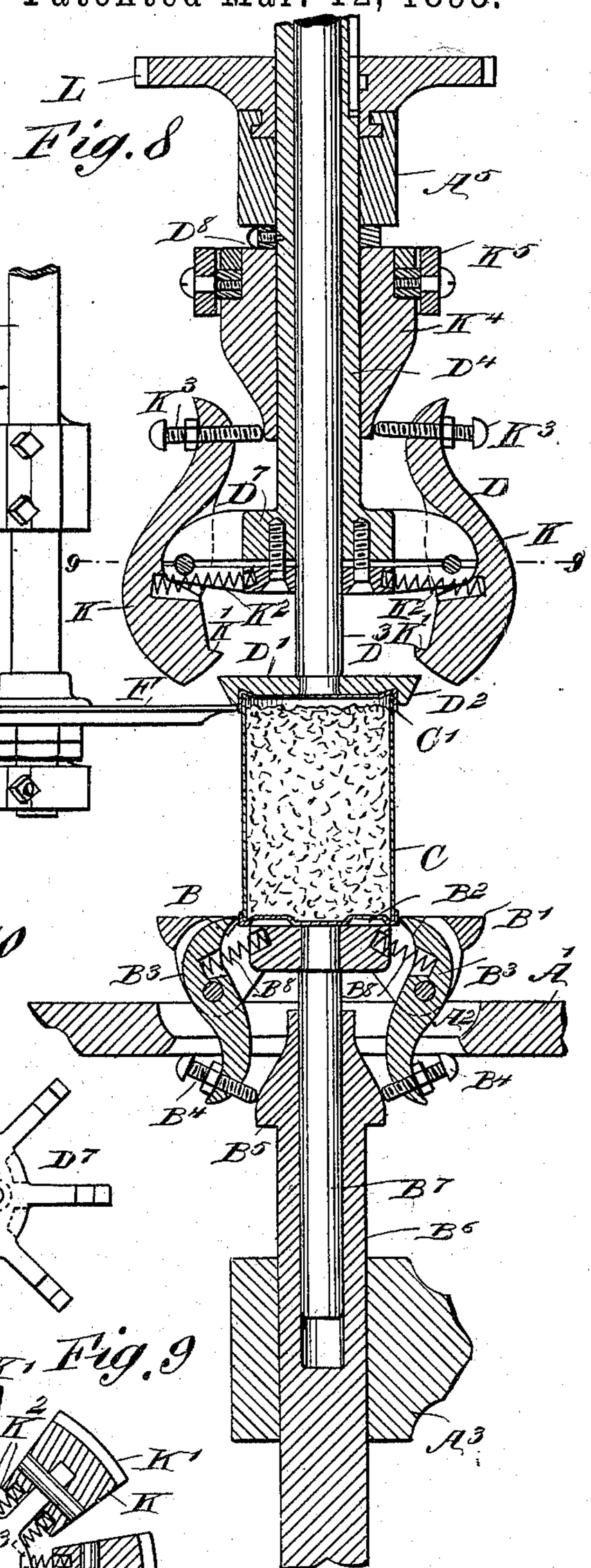


Fig. 10

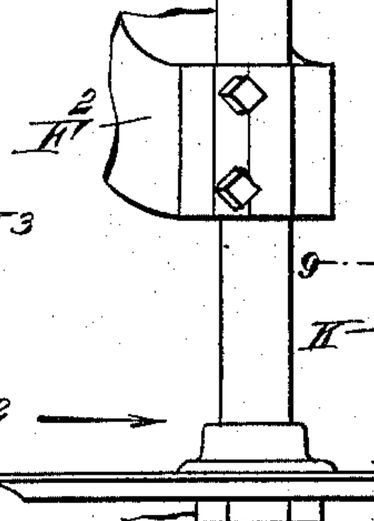
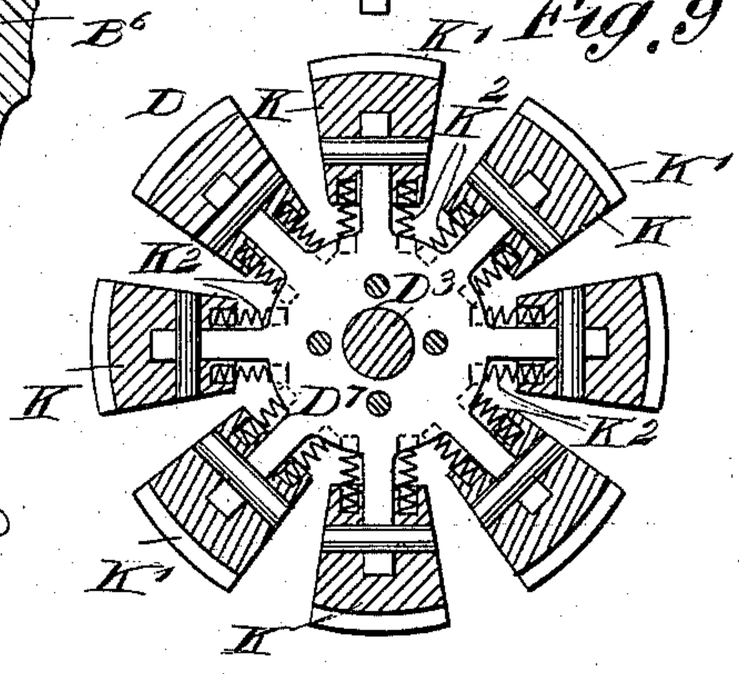


Fig. 9



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MACHINE FOR HEADING AND CRIMPING CANS.

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Fig. 11

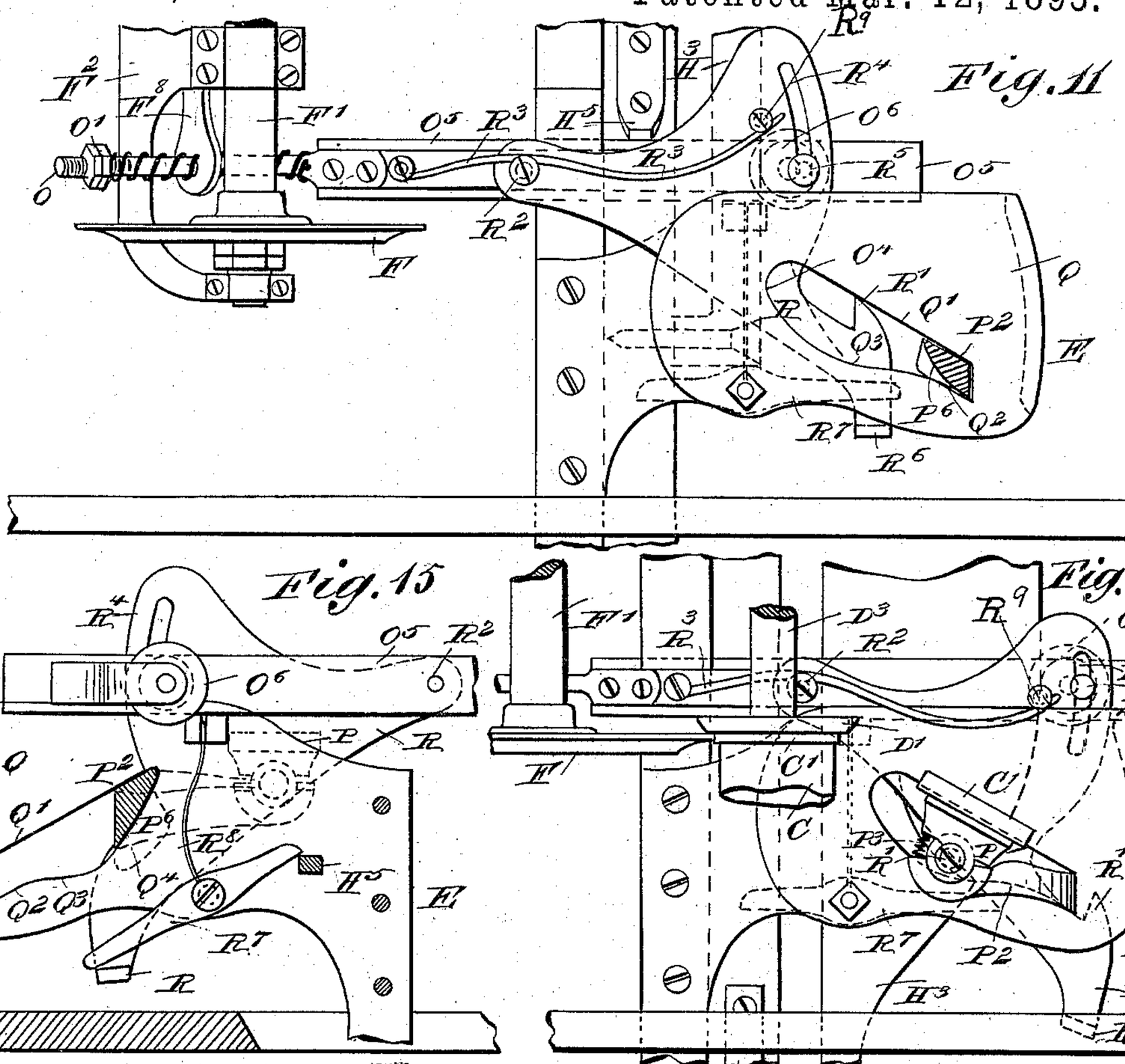


Fig. 15

Fig. 12

Fig. 14

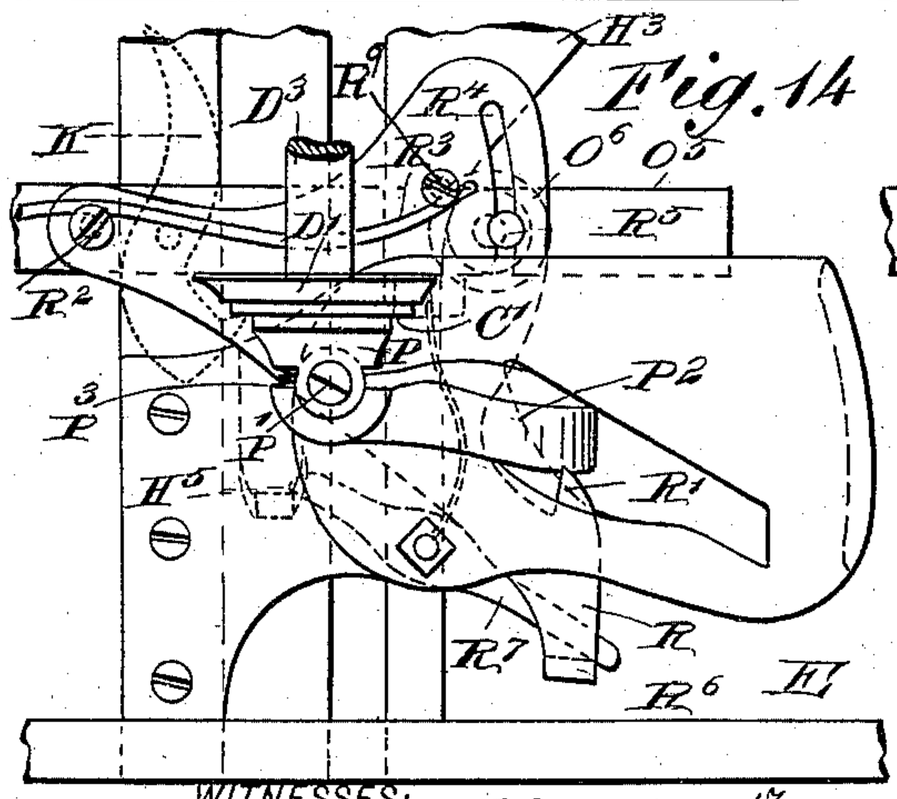


Fig. 13

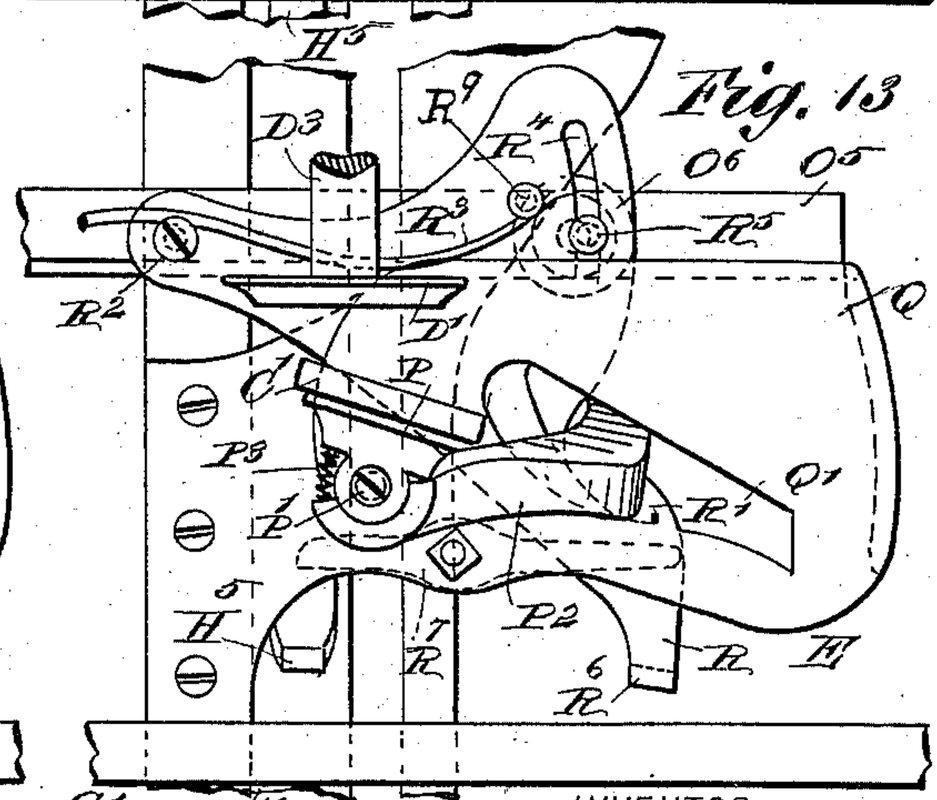


Fig. 16

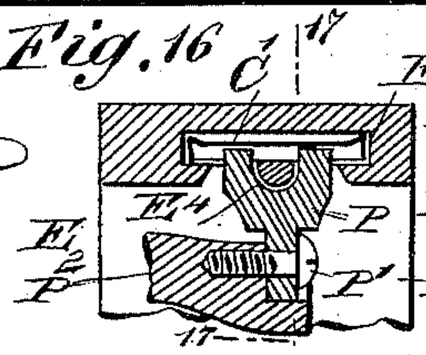
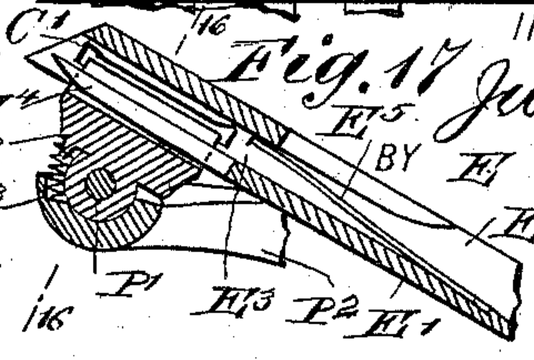


Fig. 17



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UNITED STATES PATENT OFFICE.

JOHN WESTLEY GHEEN, OF PORTLAND, OREGON, ASSIGNOR OF THREE-EIGHTHS TO FRANCIS M. WARREN, OF SAME PLACE.

MACHINE FOR HEADING AND CRIMPING CANS.

SPECIFICATION forming part of Letters Patent No. 535,694, dated March 12, 1895.

Application filed April 25, 1894. Renewed February 11, 1895. Serial No. 538,044. (No model.)

To all whom it may concern:

Be it known that I, JOHN WESTLEY GHEEN, of Portland, in the county of Multnomah and State of Oregon, have invented a new and Improved Machine for Heading and Crimping Cans, of which the following is a full, clear, and exact description.

The invention relates to machines for placing the covers on cans; and its object is to provide a new and improved machine for rapidly and properly placing the cover on the filled can and securely crimping it in position.

The invention consists principally of a can body support provided with a clamping device for holding the can body temporarily in place, and a revoluble cover carrier constructed to so hold the cover that its center will substantially coincide with the center of rotation for the purpose of turning the cover upon the open end of the can body.

The invention further consists of a can body support having a clamping device for holding the can body in place, a revoluble cover carrier for placing and holding the cover in position on the can body, and a revoluble crimping disk adapted to exteriorly press the cover flange on the can body and rotate both the said support and the cover carrier.

The invention also consists of certain parts and details and combinations of the same, as will be fully described hereinafter and then pointed out in the claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar letters of reference indicate corresponding parts in all the figures.

Figure 1 is a front elevation of the improvement. Fig. 2 is a side elevation of the same. Fig. 3 is a similar view of the other side. Fig. 4 is a plan view of the same. Fig. 5 is a sectional plan view of the same on the line 5—5 of Fig. 1. Fig. 6 is a similar view of the same with the parts in a different position and the crimping disk in engagement with the cover flange. Fig. 7 is an enlarged sectional front elevation of the can body support and the cover carrier. Fig. 8 is a similar view of the same with the parts in a different position and the crimping disk in engagement with the cover flange. Fig. 9 is a sectional plan view of the cover carrier on the line 9—9 of Fig. 8. Fig. 10 is an inverted plan view of the spider for carrying the jaws of the cover carrier. Fig. 11 is an enlarged front elevation, with parts in section, of the cover feed mechanism and the mechanism for imparting a swinging motion to the frame carrying the crimping disk. Fig. 12 is a similar view of the same with the parts in a different position. Fig. 13 is a like view of the same with the parts in still another position. Fig. 14 is a like view of the same with the parts in still another position. Fig. 15 is a rear sectional elevation of the same. Fig. 16 is an enlarged cross section of the cover feeding slide and adjacent parts, the section being taken on the line 16—16 of Fig. 17. Fig. 17 is a longitudinal section of the same on the line 17—17 of Fig. 16. Fig. 18 is an enlarged sectional side elevation of the yieldingly mounted link for the reciprocating cam. Fig. 19 is an inverted plan view of the can body support and clamping jaw; and Fig. 20 is a sectional front elevation of the reciprocating cam and adjacent parts.

In the machine hereinafter more fully described, the filled can body is placed by hand on a vertically movable support carrying the clamping jaws for temporarily locking the can body in place on the said support. To one side of the latter is arranged a cover feed, into which the cover is placed by hand and from which the cover is automatically fed to the cover carrier arranged directly above the said can body support. The cover carrier, after receiving the cover, rotates and turns the cover onto the open end of the can body now rising with its support, after which the cover is released by the jaws of the carrier and the crimping disk then presses the cover flange upon the can body and rotates the cover flange, the body and support, to firmly crimp the cover in place on the can body, thus sealing the latter and its contents.

The improved machine is provided with a suitably constructed frame A, carrying a table A′, in which is arranged a circular opening A^2, adapted to form a seat for the disk B′ of the support B for the can body C. (See Figs. 7 and 8.) Directly above the support B is located a cover carrier D, adapted to carry the cover C′ for the can body C, the

cover being delivered to the said cover carrier D from the cover feed E located at one side of the carrier on the table A′, as is plainly shown in the drawings. On the opposite side of this feed E is arranged the crimping disk F, mounted to swing toward and from the flange of the cover C′, as hereinafter more fully described.

The can support B has its disk B′ formed with a central depression B^2, that forms a firm seat for the can body C, as is plainly shown in Figs. 7 and 8. On the under side of the disk B′ are arranged brackets in which are fulcrumed clamping jaws B^3 adapted to extend with their upper ends through openings in the disk B′, to engage the sides of the can body C, to securely lock the latter in place on the disk B′. The lower end of each clamping jaw B^3 carries a bolt B^4 adapted to be engaged at its inner end by a cam B^5 formed on the upper end of a rod B^6 mounted to turn and to slide in a suitable bearing A^3 attached to the main frame A. Springs B^8 held in the disk B′ press against the upper ends of the jaws B^3, so as to hold the latter normally in an open position, as is plainly shown in Fig. 7. Now, when the rod B^6 is caused to slide upward, the cam B^5 presses the inner ends of the bolts B^4 so as to cause a closing of the jaws B^3, as illustrated in Fig. 8, the upper ends of the said jaws then engaging the sides of the can body C to lock the latter in its place in the depression B^2 in the top of the disk B′. The latter is provided with a centrally and downwardly extending guide rod B^7, fitted loosely into a recess in the rod B^6. When the support B is in its lowermost position, as shown in Fig. 7, then the under side of the cam B^5 rests on the top surface of the bearing A^3, thus limiting the downward sliding motion of the rod B^6. The downward movement of the disk B′ is limited by its seat A^2 in the table A′, the top surface of the disk being flush with the top of the table A′.

On the lower end of the rod B^6 is secured a lifting collar G, formed at its upper edge with ratchet teeth G′ adapted to be engaged by a fixed spring pawl G^2 attached to the under side of the bearing A^3, as is plainly shown in Fig. 2. Thus, when the collar G is lifted and the can body support with its clamps is raised, then the spring pawl G^2 engages the ratchet teeth G′, to prevent the rod B^6, and consequently the entire support, from rotating in the wrong direction at the time the crimping disk F crimps the flanged cover on the can body.

The lifting collar G is formed with an annular recess engaged by a ring G^3 formed on opposite sides with trunnions G^4 extending through slots G^5 formed in the forked ends of an arm G^6 pivoted at G^7 to one side of the main frame A. On the pivot G^7 is fulcrumed a second arm G^8 standing at angles to the arm G^6, as is plainly shown in Fig. 2, the free end of the said arm G^8, carrying a friction roller G^9 adapted to travel in a cam groove H′ formed in the outer face of a cross-head or slide H, mounted to slide vertically on a suitable bearing or guideway A^4 formed on or attached to the main frame A. The cross-head H also carries a fixed arm H^3, for manipulating the frame carrying the crimping disk F and the cover feed, which latter has a tripping mechanism actuated from a lug H^5 on the said cross-head, as hereinafter more fully described. The cam groove H′ is plainly shown in Fig. 2, and is provided with two spring-pressed switches H^6, H^7, for guiding the friction rollers G^9 and K^8 in their upward and downward movements, hereinafter described.

It will be understood that the normal position of the switches is that shown in Fig. 2, and that the roller K^8 moves up and down in the left and upper members of the cam groove. The friction roller G^9, however, moves up in the right-hand member of the cam groove and when it reaches the upper end of the said member it turns the switch H^7, which returns to its normal position as soon as the roller clears it. During the downward movement of the roller G^9, that is, the upward movement of the slide H, the said roller will travel in the left member of the slot H′, and finally press aside the switch H^6 to reach the lower end of the slot, the said switch immediately returning into the position shown in Fig. 2.

The arms G^8 and G^6 are yieldingly connected with each other by a link I pivoted on the arm G^6 and extending through a slot in the other arm G^8. See Fig. 2. On the link I, and at opposite sides of the arm G^8, are arranged collars I′ and I^2 pressed on by springs I^3 and I^4 respectively, coiled on the link I and resting at their outer ends against washers abutting on the nuts I^5 and I^6, held adjustably on the link I to regulate the tension of the said springs I^3 and I^4. Thus, it will be seen that the cam groove H′, on the reciprocation of the cross-head H, causes the friction roller G^9, to impart a swinging motion to the arm G^8, and the latter, by the link I connected with the arm G^6, causes a like swinging motion of the arm G^6, whereby the lifting collar G is moved upward or downward according to the direction in which the arms G^6, G^8, swing.

In order to impart a vertical sliding motion to the cross-head H, I provide the inner face thereof with a pin H^2, extending through a slot in the guideway A^4 to connect at its inner end with a pitman J extending downward and pivotally connected with the face of a crank disk J′ mounted to rotate loosely on a stud J^2, held on the main frame A. See Figs. 1 and 3.

On the inner face of the crank disk J′ is formed a bevel gear wheel J^3 in mesh with a bevel pinion J^4, secured on one end of an auxiliary shaft J^5, extending transversely and mounted to turn in suitable bearings arranged on the rear end of the main frame A. On this shaft J^5 is secured a step or cone pulley J^6, connected by a belt J^7 with a similar pulley J^8 attached to the main driving shaft J^9 car-

rying a driving pulley J^{10} connected by a belt with suitable machinery for imparting a rotary motion to the said shaft J^9. The rotary motion of the latter is transmitted by the pulleys J^8, J^6 and the belt J^7 to the auxiliary shaft J^5, and the rotary motion of the latter is transmitted by the bevel pinion J^4 and bevel gear wheel J^3 to the crank disk J', so that the pitman imparts a reciprocating motion to the cross-head or slide H. The cam groove H' of the latter acts on the friction roller G^9 of the arm G^8, as previously described, so that the lifting collar G is caused to move upward, so that the rod B^6 is raised and by its cam B^5 acting on the bolts B^4, closes the jaws B^3 to engage the side of the can C, so as to lock the same in place on its seat in the disk B'. On the further upward movement of the lifting collar G and rod B^6, the entire support B is lifted with the can body C, as is plainly illustrated in Fig. 8, to then receive the cover C', as hereinafter more fully described. The cover carrier D is also actuated from the main driving shaft J^9 and the cross-head H, as hereinafter described, and the said carrier is provided with a disk D' formed on its under side with an annular depending flange D^2, so as to form a seat for the cover C' with the flange thereof projecting slightly below the lower edge of the flange D^2, as will be readily understood by reference to Figs. 7 and 8. The disk D' is secured on the lower end of a rod D^3 extending upward through a sleeve D^4 mounted to turn in bearings A^5 and A^6 forming part of the main frame A. Near the upper end of the rod D^3 is secured a collar D^5, see Figs. 1, 2, 3, for holding the rod in position, the extreme upper end of the rod abutting against the under side of a set screw D^6 screwing in a bracket A^7 forming part of the frame A. By this arrangement the rod D^3 can be raised or lowered by adjusting the collar D^5 and set screw D^6, so as to hold the disk D' carrying the cover C' in proper position relative to the height of the can body C under treatment.

On the lower end of the sleeve D^4 is formed a spider D^7, in which is journaled a series of clamping jaws K arranged in a circle, as is plainly indicated in Fig. 9, each jaw having on its lower end an inwardly extending lug K' adapted to engage the lower edge of the flange of the cover C', as is plainly shown in Fig. 7, so as to securely hold the cover C' in place on its seat on the under side of the disk D'. The jaws K are normally held in an open position by springs K^2 set in the spider D^7 and extending into recesses in the said jaws, as is shown in Figs. 7, 8 and 9.

On the upper end of each of the jaws K is held adjustably a bolt K^3 adapted to be engaged by a cam K^4 fitted to slide loosely on the sleeve D^4, the said cam simultaneously actuating the several jaws K, so as to close the latter, or to permit the same to open on the upward movement of the cam K^4. The latter is hung in the forked end of an arm K^5, see Fig. 2, fulcrumed at K^6 on one side of the frame A, the said arm extending in front of the cross-head H. A second arm K^7 is likewise fulcrumed at K^6 and carries at its free end a friction roller K^8 traveling in the cam groove H' of the cross-head H, similar to the roller G^9 previously described. The arms K^7 and K^5 are yieldingly connected with each other by a link K^9 of a construction similar to that of the link I previously described, so that a further description is not deemed necessary.

It will be seen that when the cross-head H reciprocates, a swinging motion is given to the arm K^7, and this motion is transmitted by the yielding link K^9 to the arm K^5, so that the cam K^4 is moved up and down on the sleeve D^4, so as to open or close the jaws K, as illustrated in Figs. 8 and 7 respectively. The cam K^4 is also adapted to engage at its upper end a collar D^8 adjustably secured on the sleeve D^4, so that when the cam K^4 has permitted the jaws K to open by the action of their springs K^2 and a further upward motion is given to the said cam, it strikes the collar D^8 and thus lifts the sleeve D^4, whereby the jaws K are carried upward while the rod D^3 remains in its position, with the disk D' below the lower ends of the jaws K, as will be readily understood by reference to Fig. 8. The collar D^8 also serves as a stop for the upward movement of the sleeve D^4 and jaws K, the said collar then resting against the under side of the lowermost bearing A^5 in which the sleeve is mounted to turn.

In order to impart a rotary motion to the sleeve D^4 from the main driving shaft J^9, I provide a gear wheel L, mounted to turn in suitable bearings in the lowermost bearing A^5 for the sleeve D^4, the said gear wheel being connected by a key with a key-way in the sleeve D^4 to permit the latter to slide up and down, as previously described, without disconnecting from the gear wheel L. The latter meshes in an intermediate gear-wheel L', in mesh with a gear wheel L^2 mounted to rotate on a spindle L^3 held in suitable bearings attached to the main frame A. On the upper face of this gear wheel L^2 is formed or secured a bevel gear wheel L^4, in mesh with a bevel pinion L^5 attached to the front end of the main driving shaft J^9, so that when the latter is rotated a rotary motion is transmitted by the pinion L^5 to the bevel gear wheel L^4 and the gear wheel L^2, which latter, by the intermediate gear wheel L', rotates the gear wheel L and consequently the sleeve D^4 carrying the jaws K.

The crimping disk F is secured on the lower end of a shaft F' disposed vertically and mounted to turn in suitable bearings formed in a frame or arm F^2 mounted to swing on the spindle L^3 as a fulcrum. On the upper end of this shaft F' is secured a gear wheel F^3 in mesh with an intermediate gear wheel F^4 journaled on the frame F^2 and in mesh with a gear wheel F^5 likewise journaled on the

frame F^2 and in mesh with the gear wheel L^2 previously described, the said gear wheel L^2 being of a sufficient width to accommodate both gear wheels L′ and F^5, as will be readily understood by reference to Fig. 1.

The frame F^2 is normally held in an outermost position, that is, with the crimping disk F away from the cover carrier, and for this purpose the said frame F^2 is provided on its inner face with a projection F^6 on which presses a spiral spring F^7 secured on the frame A, as will be readily understood by reference to Figs. 5 and 6. The spring F^7 is arranged in the form of a segment of a circle having its center in the center of the spindle L^3, so that the spring readily compresses on swinging the frame F^2 inward to carry the disk F toward and in contact with the flange of the cover C′.

In the frame F^2 is mounted to turn an eye F^8 through which passes loosely a threaded rod O carrying the nuts O′ and O^2 against which press spiral springs O^3 and O^4 respectively, pressing with their inner ends on opposite faces of the eye F^8, so that a yielding connection is established between the rod O and the eye F^8 and consequently with the frame F^2 carrying the crimping disk F. The inner end of the rod O is attached to a longitudinally-extending slide O^5 fitted to slide in suitable bearings in the main frame A, the said slide carrying at its rear face a friction roller O^6 in engagement with a vertically-disposed cam H^3 attached to the cross head H, as plainly illustrated in Figs. 2, 4, 5 and 6.

By the cross head H sliding up and down, the cam H^3 will press on the friction roller O^6 so that an outward movement is given to the slide O^5, whereby the rod O exerts a pull on the eye F^8 and consequently on the frame F^2 to impart a swinging motion to the latter, so as to bring the crimping disk F in contact with the flange of the can cover, as hereinafter more fully described. A return or outward movement of the frame F^2 is accomplished by the action of the spring F^7, so that an inward sliding of the slide O^5 takes place at the time the said frame swings outward and the cam H^3 permits such movement.

The cover feed E is provided with a stationary inclined slide E′ formed in its top surface with an opening E^2 leading to a recess E^3 slotted at the bottom of the slide to form a tongue E^4 as plainly shown in Figs. 16 and 17. In the opening E^2 is arranged a spring E^5 extending with its free end into the recess E^3, so that a can cover placed by the operator in the opening E^2 and pushed forward into the recess E^3 compresses the spring E^5 until the cover has fully entered the recess E^3, as plainly shown in Fig. 17. Into this recess E^3 passes from underneath a cover transferring head P adapted to engage the cover and carry it from the slide E into the cover carrier D, as hereinafter more fully described. This head P shown in detail in Figs. 16 and 17, is pivoted at P′ to the free end of a lever P^2, and the said head is normally held in inclined position to correspond with the upper end of the inclined slide E by a spring P^3 interposed between the head and the lever P^2. The lever P^2 extends rearwardly and is fulcrumed in a swivel P^4 arranged on the side of the frame A in the rear of the cross head H, as plainly shown in Figs. 2, 4, 5 and 6. On the extreme rear end of the said lever P^2 presses a spring P^5, so as to normally hold the head P in the recess E^3 in the slide E^2, as shown in Figs. 5 and 17.

The lever P^2 extends through a slot Q′ in a plate Q secured to the front of the frame A, as illustrated in Figs. 11 to 15 inclusive. In this plate Q extends a lever R provided with a hook R′ adapted to engage the said lever P^2 so as to pull the latter forward to move the head P from the slide to the cover carrier D. The lever R is fulcrumed at R^2 on the slide O^5 previously mentioned and actuated from the cam H^3 of the cross head H. A spring R^3 fastened on the slide O^5 and engaging a pin R^9 on the said lever R serves to hold the latter normally in an uppermost position, as shown in Fig. 11, the movement of the lever being limited by a stop pin R^5 secured on the slide O^5 and engaging a segmental slot R^4 in the said lever R.

Now, it will be seen that when the several parts are in the position illustrated in Fig. 11, and the slide O^5 is moved outward by the action of the cam H^3, then the lever R moves with the slide O^5 and the hook R′ passes under that part of the lever P^2 extending through the slot Q′ to finally snap under the said lever and engage the latter, as illustrated in Fig. 12. Now when the slide O^5 moves inward by the action of the spring F^7 on the arm F^2, then the hook R′ of the lever R carries the lever P^2 with it, thus imparting a swinging motion to the said lever to move the head P out of the recess E^3 with the can cover C′ and under the disk D′ of the cover carrier D. See Fig. 13.

As will be seen by reference to Fig. 13, the head P, with the cover C′ is a suitable distance below the disk D′ and in order to raise the said head P and cover C′, I form the under side of that part of the lever P^2 extending through the slot Q′ with a bevel P^6, and I form the lower edge of the slot Q′ first with the inclined portion Q^2, then with the downward curved portion Q^3 and then the upwardly curved portion Q^4, as plainly shown in Fig. 15. Now, on the further forward swinging of the lever P^2, the latter drops into the curved portion Q^3 at the time the head P is free of the slot E^3. Then the lever P^2 passes up the curved portion Q^4 of the slot Q′ so that not only a forward swinging but also an upward movement is given to the lever P^2, so that the cover C′ is moved into the seat formed in the under side of the disk D′. It is further understood that this movement of the lever P^2 is possible owing to the lever being fulcrumed in the swivel P^4.

In order to trip the lever P^2, after its head

P has delivered the cover C′ to the disk D′ and the jaws K have taken hold of the cover to support it in the cover carrier D, I provide the lever R with a foot or projection R^6 extending rearwardly and adapted to be engaged by a tripping lever R^7 fulcrumed on the plate Q as plainly illustrated in Figs. 11 to 15, inclusive. A spring R^8 presses on this lever R^7 to return to it its normal position. The inner end of this tripping lever R^7 is adapted to be engaged by a lug H^5 secured on the front of the cross head H so that the latter, in moving upward, finally brings the lug H^5 in contact with the inner end of the said tripping lever R^7 (see Fig. 14) to cause the rear end thereof to swing downward and press on the foot R^6 of the lever R, whereby the latter is caused to swing downward and its hook R′ is moved out of engagement with the lever P^2. As soon as this takes place the spring P^5 pulling on the rear end of the lever P^2 causes the forward end of the latter to swing to the right and downward, owing to the peculiar formation of the slot Q′, so that the head P moves out of engagement with the cover C′ and is finally returned to its normal position in the slot E^3 to there engage a new cover pushed in position by the operator in the manner previously described.

On the forward end of the lever P^2 directly under the head P is secured a pusher arm S adapted to engage the finished can to push the same over, so as to throw the can downward into a chute T attached to the under side of the table A′ and leading to one side of the machine. A guard T′ partially surrounds the opening in the table A′ leading to the chute T, so as to prevent the can from rolling over the table instead of passing down the chute T.

The operation is as follows: When the main driving shaft J^9 is rotated, then motion is given to the several devices above described, which permit the operator to place a filled can body C onto the can body support B at the same time placing a can cover C′ into the cover feed E, after which the several devices operate in unison so as to feed the can cover onto the can body, crimp the cover onto the can body to seal the same, finally throwing the finished can over into the chute T, to deliver it to one side of the machine. Now, when the several parts are in the position shown in Figs. 1, 2, 3 and 4, the operator places the filled can C on the support B and at the same time pushes a can cover C′ into the recess E^3 of the slide E′. The head P then takes hold of the cover, moves it from its resting place and places it into the seat of the disk D′, after which the jaws K close so as to engage the flange of the cover, as illustrated in Fig. 7, the head P then returning to its normal position by the action of the lever P^2, as previously described. The can C on the support B is now lifted by the action of the cross head H on the arm G^8, whereby the jaws B^3 first lock the can body in place on the disk B′ so as to prevent the can body from moving relatively to the disk while the latter is being raised. During this time the main driving shaft J^9, in rotating the sleeve D^4, causes a rotary motion of the clamped cover C′ so that the can body C in moving upward comes finally in contact with the rotating can cover while the body is essentially stationary, whereby the can head will readily fit on the upper edge of the can body even if the said edge has irregularities or deviations from its true cylindrical shape. As soon as this has taken place the cam K^4 moves upward so that the jaws K open to release the can cover C′, and when the said cam K^4 finally comes in contact with the collar D^8 it also lifts the sleeve D^4 and the said jaws K into the position shown in Fig. 8. At this time the disk D′ with the can cover C′ has come to a rest, and now the frame F^2 carrying the crimping disk F is caused to swing from left to right, so as to bring the edge of the crimping disk F in contact with the flange of the cover C′, as illustrated in Fig. 8. The frictional contact of the revolving crimping disk F with the flange of the cover C′ causes the latter, as well as the can body C with its contents and the can body support D and disk D′ with its rod D^3, to rotate to firmly crimp the flange of the cover C′ onto the upper end of the can body. When this has been accomplished the frame F^2 swings back from right to left, to disengage the now finished can, after which the can body support B is lowered, thus lowering the finished can and disengaging the crimped cover C′ from the disk D′. As soon as the can body support B has returned into its lowermost position, and the operator has pushed a new can cover into the recess E^3, the head P takes this cover, and the lever P^2 swings from right to left to move the new can cover into position on the disk D′. As the lever P^2 swings in this direction, the pushing arm S engages the side of the finished can so as to throw the same over into the chute T, which delivers the can with its contents to one side of the machine. The operator then places a new can body on the support B and meanwhile the cover C′ is fed into and seated on the disk D′ and engaged by the jaws K, the latter being moved downward by the action of the cross head H and cam K^4, as previously described. Thus it will be seen that the operation can be continuously carried on, as long as the main driving shaft J^9 is rotated.

It is understood that the various mechanisms are timed so as to produce the result in the manner described.

Having thus fully described my invention, I claim as new and desire to secure by Letters Patent—

1. A machine of the class described, comprising a can body support, and a revoluble carrier constructed to so hold the cover that the center of rotation will substantially coincide with the center of the cover, to turn the

cover onto the open end of the can, substantially as described.

2. A machine of the class described, comprising a can body support, having longitudinal guided movement in the frame of the machine in the direction of the axis of the can body, and a revoluble cover carrier whose axis of rotation is located essentially in the continuation of the axis of the can body support, the said carrier being constructed to so hold the cover that the center of rotation will essentially coincide with the center of the cover, to turn the cover onto the open end of the can while the latter is moved toward the cover, substantially as described.

3. A machine of the class described, comprising a can body support and a cover carrier adapted to rotate about axes that are essentially in alignment with each other, sleeves in which the said support and carrier are loosely mounted, and a revoluble crimping disk adapted to press the cover flange onto the can body and rotate the can with the body support and the cover carrier, substantially as described.

4. A machine of the class described, comprising a revoluble cover carrier and a rotatable can body support whose axes are essentially in alignment with one another, the can body support having longitudinal movement toward the cover carrier, and means for locking the can body support against rotation when the can is substantially in engagement with the cover held in the rotating cover carrier, to turn the cover onto the can body while the latter is held against rotation, substantially as described.

5. A machine of the class described, comprising a can body support, a cover carrier, means for moving one of the said parts toward the other to place the cover on the can body, a stationary cover feed, and a movable head having movement from the cover feed to the cover carrier to convey the covers from the former to the latter, substantially as described.

6. A machine of the class described, provided with a can body support, comprising a disk forming a seat for the can body, spring-pressed jaws on the said disk and adapted to clamp the can body in place on the disk, and means, substantially as described, for closing the said jaws and lifting the said disk, substantially as shown and described.

7. A machine of the class described, comprising a disk formed on its under side with a seat for the can cover, the said disk being mounted to rotate loosely, a can body support provided with a disk for receiving the can body, and clamping jaws for holding the said can body in place on the said disk, the said can body support being mounted to rotate loosely, and a revoluble crimping disk adapted to engage with its peripheral edge the flange of the can cover held in the said first named disk, substantially as shown and described.

8. A machine of the class described, provided with a cover carrier, comprising a disk formed on its under side with a seat for the can cover, a rod mounted to rotate loosely and carrying the said disk, a sleeve mounted to turn on the said rod and fitted to slide thereon, and jaws pivoted on the said sleeve and adapted to engage the flange of the can cover to hold the latter in place on its seat on the said disk, substantially as shown and described.

9. A machine of the class described, provided with a cover carrier, comprising a disk formed on its under side with a seat for the can cover, a rod mounted to rotate loosely and carrying the said disk, a sleeve mounted to turn on the said rod and fitted to slide thereon, jaws pivoted on the said sleeve and adapted to engage the flange of the can cover to hold the latter in place on its seat on the said disk, and a cam for closing and opening the said jaws and lifting the said sleeve, substantially as shown and described.

10. A machine of the class described, provided with a cover carrier, comprising a disk formed on its under side with a seat for the can cover, a rod mounted to rotate loosely and carrying the said disk, a sleeve mounted to turn on the said rod and fitted to slide thereon, jaws pivoted on the said sleeve and adapted to engage the flange of the can cover to hold the latter in place on its seat on the said disk, a cam for closing and opening the said jaws and lifting the said sleeve, a reciprocating cross head, and an arm adapted to receive a swinging motion from the said cross head and connected with the said cam to actuate the latter in the manner described, substantially as shown and described.

11. A machine of the class described, provided with a cover carrier, comprising a disk formed on its under side with a seat for the can cover, a rod mounted to rotate loosely and carrying the said disk, a sleeve mounted to turn on the said rod and fitted to slide thereon, jaws pivoted on the said sleeve and adapted to engage the flange of the can cover to hold the latter in place on its seat on the said disk, a cam for closing and opening the said jaws and lifting the said sleeve, a pivoted arm carrying the said cam, a cross head mounted to slide and having a cam groove, and a second arm carrying a friction roller engaging the said cam groove and yieldingly connected with the said first named arm, substantially as shown and described.

12. A machine of the class described, provided with a cover carrier, comprising a disk formed on its under side with a seat for the can cover, a rod mounted to rotate loosely and carrying the said disk, a sleeve mounted to turn on the said rod and fitted to slide thereon, jaws pivoted on the said sleeve and adapted to engage the flange of the can cover to hold the latter in place on its seat on the said disk, a cam for closing and opening the said jaws and lifting the said sleeve, a piv-

oted arm carrying the said cam, a cross head mounted to slide and having a cam groove, a second arm carrying a friction roller engaging the said cam groove and yieldingly connected with the said first named arm, and spring-pressed switches on the said cross head and extending into the said cam groove, substantially as shown and described.

13. A machine of the class described, provided with a can body support, comprising a disk having a seat for the can body, jaws pivoted on the said disk and adapted to clamp the said can body in place on the said disk, a cam for opening and closing the said jaws, a sleeve mounted to rotate loosely and carrying the said cam, a lifting collar secured on the said sleeve, and means, substantially as described, for imparting an up and down motion to the said lifting collar, substantially as shown and described.

14. A machine of the class described, provided with a can body support, comprising a disk having a seat for the can body, jaws pivoted on the said disk and adapted to clamp the said can body in place on the said disk, a cam for opening and closing the said jaws, a sleeve mounted to rotate loosely and carrying the said cam, a lifting collar secured on the said sleeve, means, substantially as described, for imparting an up and down motion to the said lifting collar, and a locking device for the said lifting collar, to prevent the latter from rotating in a wrong direction when in its uppermost position, as set forth.

15. A machine of the class described, provided with a can body support, comprising a disk having a seat for the can body, jaws pivoted on the said disk and adapted to clamp the said can body in place on the said disk, a cam for opening and closing the said jaws, a sleeve mounted to rotate loosely and carrying the said cam, a lifting collar secured on the said sleeve, a pivoted arm carrying in its forked end the said lifting collar, a second arm having a yielding link connection with the said first named arm, and a reciprocating cross head formed with a cam groove engaged by a friction roller on the said second arm, substantially as shown and described.

16. A machine of the class described, provided with a cover feed, comprising a stationary cover-receiving slide, a head adapted to engage the cover in the said slide, and a lever hung on a swivel and carrying the said head, to move the cover from the said slide to the cover carrier, substantially as shown and described.

17. A machine of the class described, provided with a cover feed, comprising a stationary cover-receiving slide, a head adapted to engage the cover in the said slide, a lever hung on a swivel and carrying the said head, to move the cover from the said slide to the cover carrier, and a second lever having a hook adapted to engage the said first named lever to impart a swinging motion thereto, and a guide plate having a slot through which passes the said first named lever, the said slot having a cam-shaped bottom adapted to be engaged by the said first named lever, substantially as shown and described.

18. A machine of the class described, provided with a cover feed, comprising a stationary cover-receiving slide, a head adapted to engage the cover in the said slide, a lever hung on a swivel and carrying the said head, to move the cover from the said slide to the cover carrier, a second lever having a hook adapted to engage the said first named lever to impart a swinging motion thereto, a guide plate having a slot through which passes the said first named lever, the said slot having a cam-shaped bottom adapted to be engaged by the said first named lever, and a tripping device for the said second lever to release the latter from the said first named lever, substantially as shown and described.

19. A machine of the class described, provided with a cover feed, comprising a stationary cover-receiving slide, a head adapted to engage the cover in the said slide, a lever hung on a swivel and carrying the said head, to move the cover from the said slide to the cover carrier, a second lever having a hook adapted to engage the said first named lever to impart a swinging motion thereto, a guide plate having a slot through which passes the said first named lever, the said slot having a cam-shaped bottom adapted to be engaged by the said first named lever, a tripping device for the said second lever to release the latter from the said first named lever, and a spring connected with the said first named lever to return the latter on being released by the said tripping device, as set forth.

20. A machine of the class described, provided with a crimping device, comprising a crimping disk mounted to rotate, a pivoted frame carrying the shaft for the said crimping disk, a slide connected with the said frame, and a cam having a reciprocating motion and adapted to actuate the said slide, so as to impart a swinging motion to the said frame carrying the crimping disk, substantially as shown and described.

21. A machine of the class described, provided with a crimping device, comprising a crimping disk mounted to rotate, a pivoted frame carrying the shaft for the said crimping disk, a slide connected with the said frame, a cam having a reciprocating motion and adapted to actuate the said slide, so as to impart a swinging motion to the said frame carrying the crimping disk, and a spring pressing on the said frame for returning the latter to its normal position, substantially as shown and described.

22. A machine of the class described, provided with a crimping device, comprising a crimping disk mounted to rotate, a pivoted frame carrying the shaft for the said crimping disk, a slide connected with the said frame, a cam having a reciprocating motion and adapted to actuate the said slide, so as

to impart a swinging motion to the said frame carrying the crimping disk, a spring-pressed lever fulcrumed on the said slide and provided with a hook, and a second lever provided with a head for carrying a can cover, the said second lever being adapted to be engaged by a hook on the first named lever to impart a swinging motion to the said second lever, substantially as shown and described.

23. A machine of the class described, provided with a crimping device, comprising a crimping disk mounted to rotate, a pivoted frame carrying the shaft for the said crimping disk, a slide connected with the said frame, a cam having a reciprocating motion and adapted to actuate the said slide, so as to impart a swinging motion to the said frame carrying the crimping disk, a spring-pressed lever fulcrumed on the said slide and provided with a hook, a second lever provided with a head for carrying a can cover, the said second lever being adapted to be engaged by a hook on the first named lever to impart a swinging motion to the said second lever, and a tripping device adapted to be actuated from the said slide to release the said first named lever to disengage the latter from the second lever, substantially as shown and described.

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Witnesses:
J. T. TATE,
R. C. WRIGHT.