F. RUDOLPHI.

CAN SEAMING MACHINE.

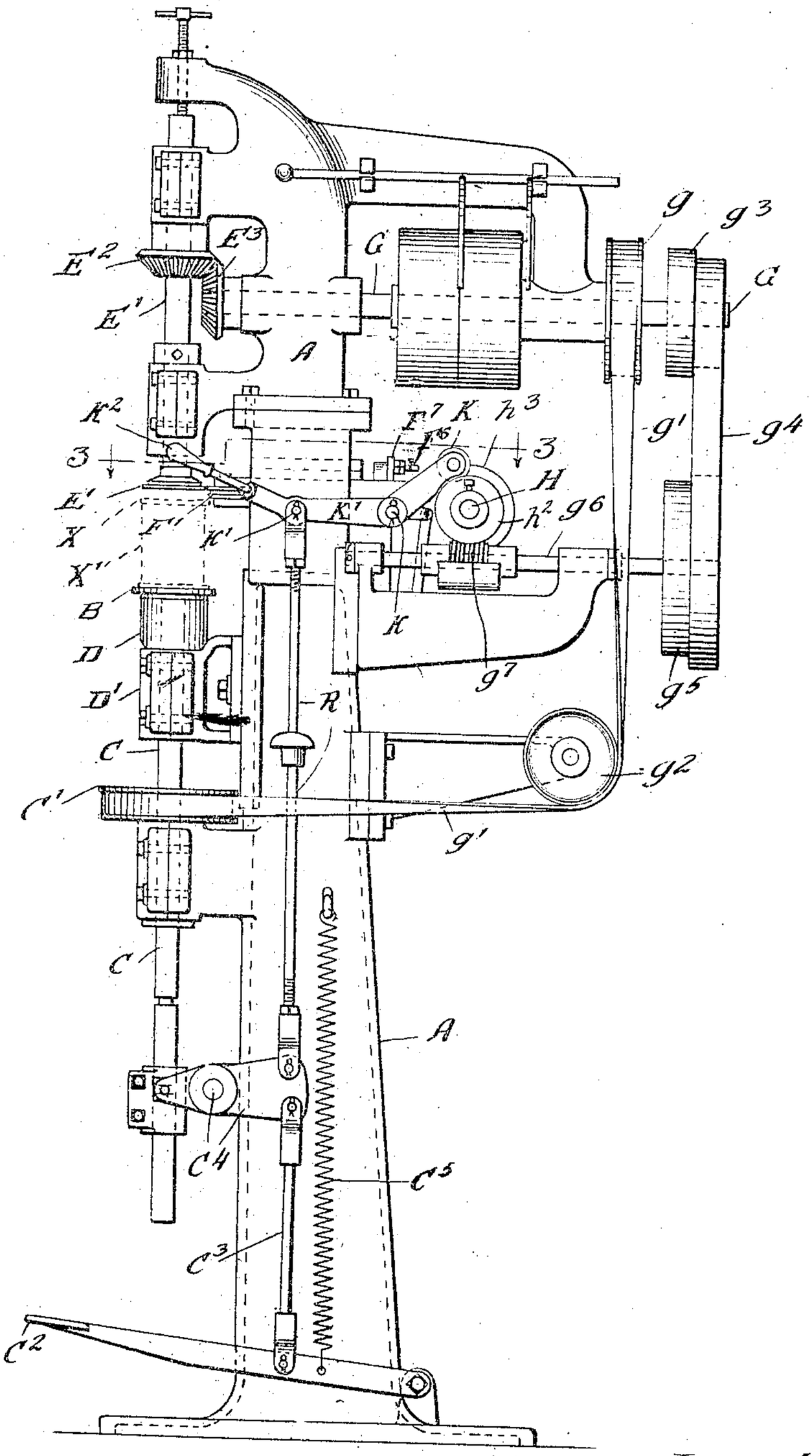
APPLICATION FILED SEPT. 27, 1906.

920,658.

Patented May 4, 1909.

4 SHEETS—SHEET 1.

Fig. 1



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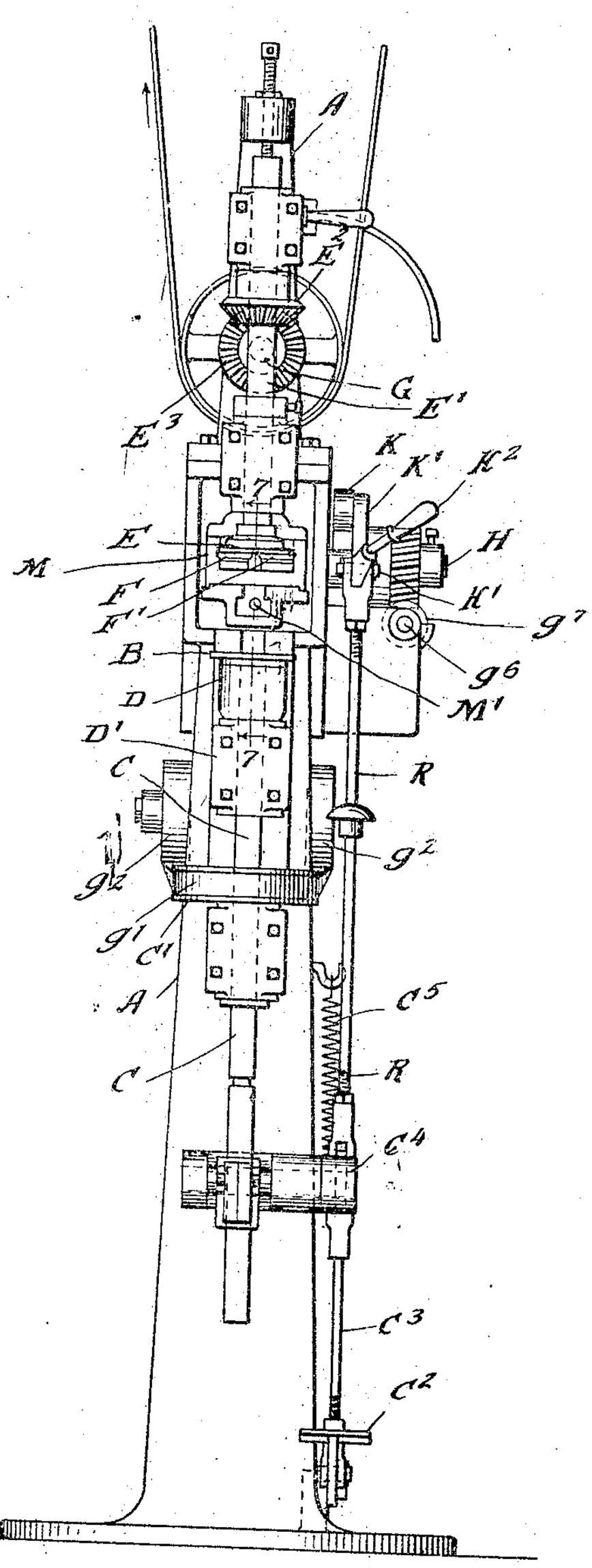
4 SHEETS—SHEET 2.

Fig. 2



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4 SHEETS—SHEET 3.

Fig 3

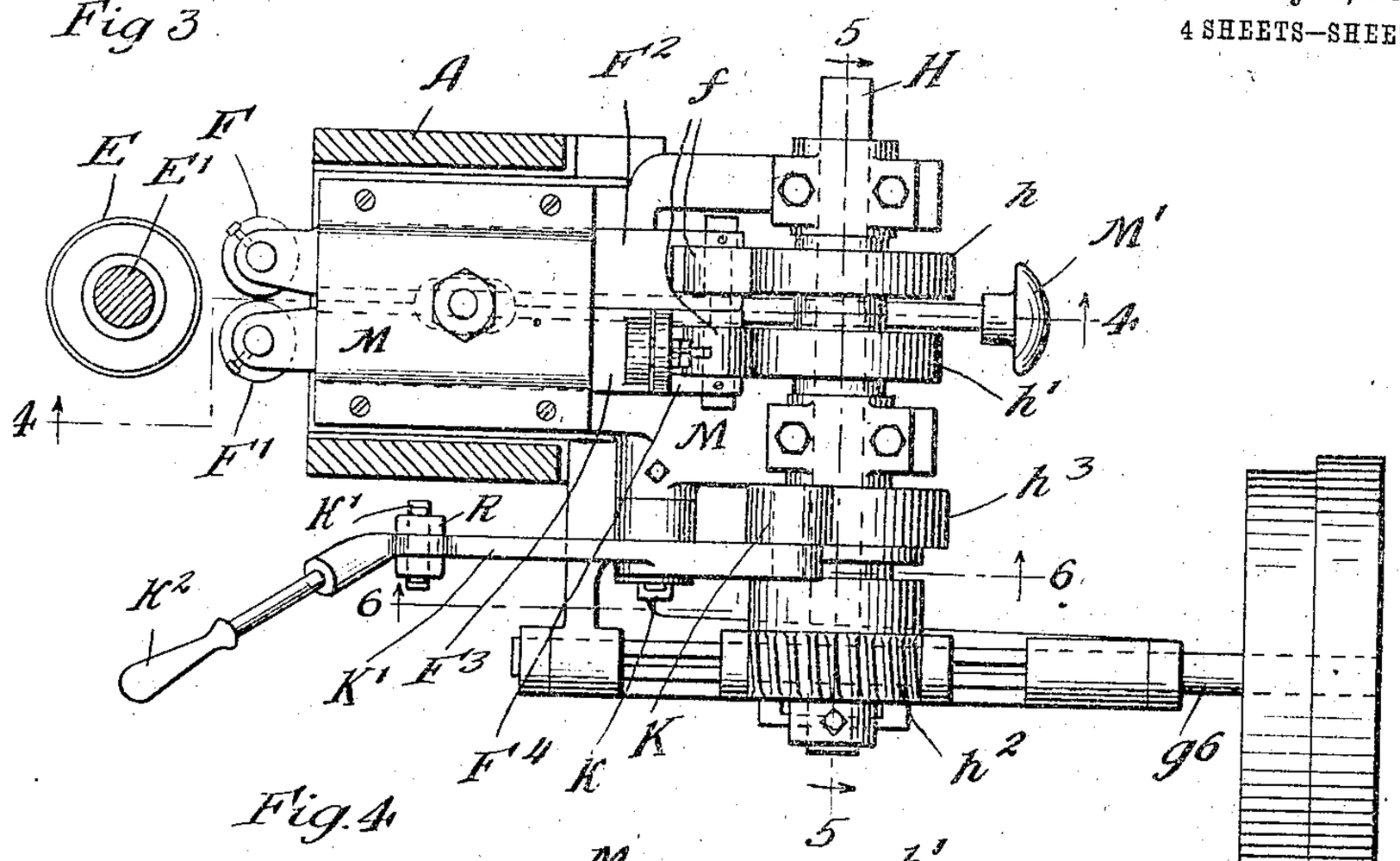


Fig. 4

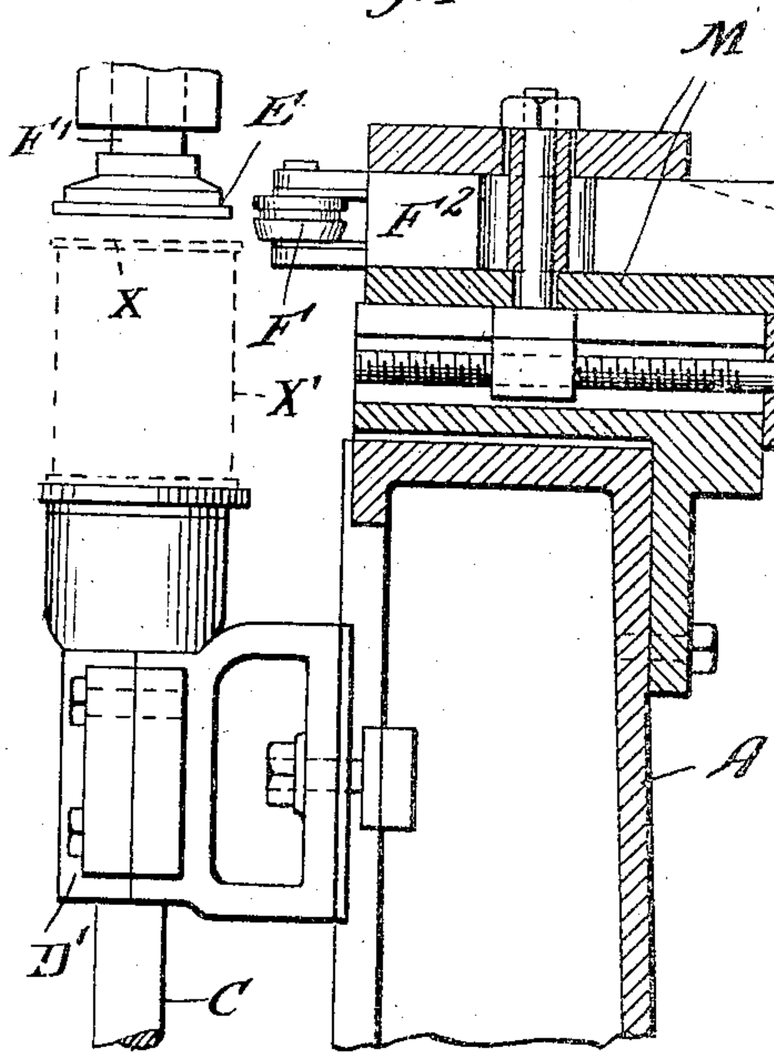
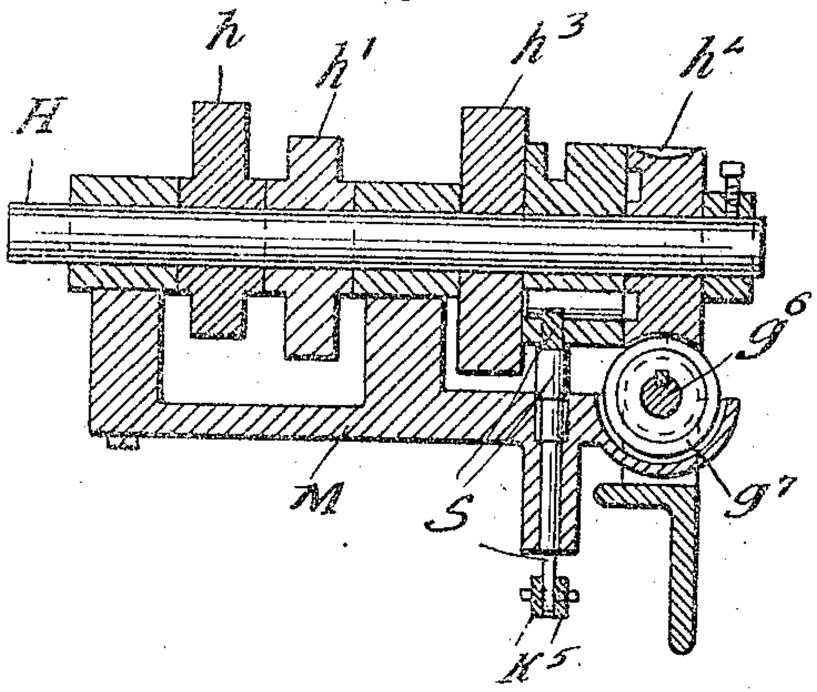


Fig. 5



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4 SHEETS—SHEET 4.

Fig. 6

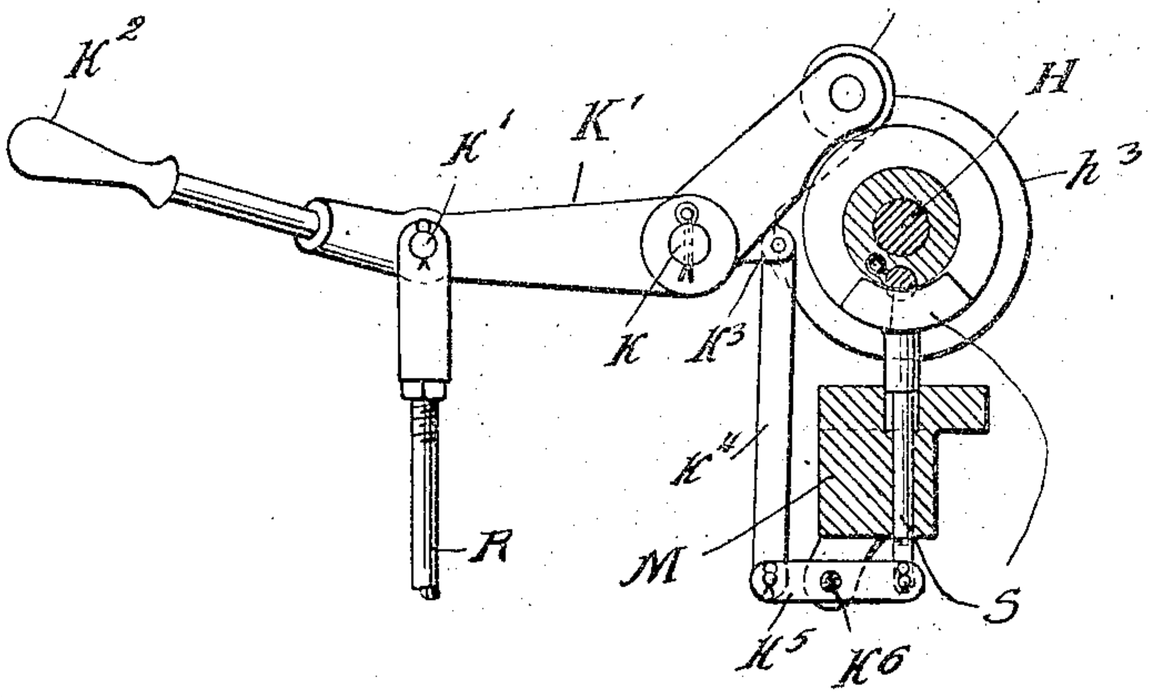


Fig. 8

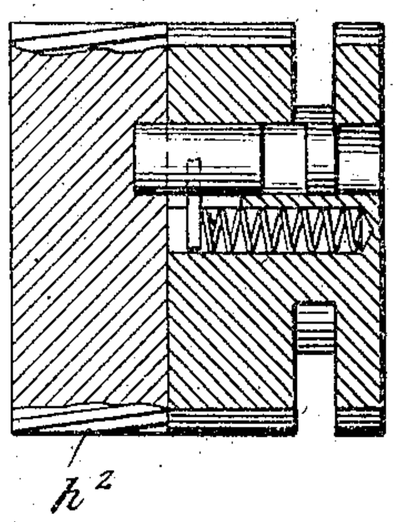


Fig. 7

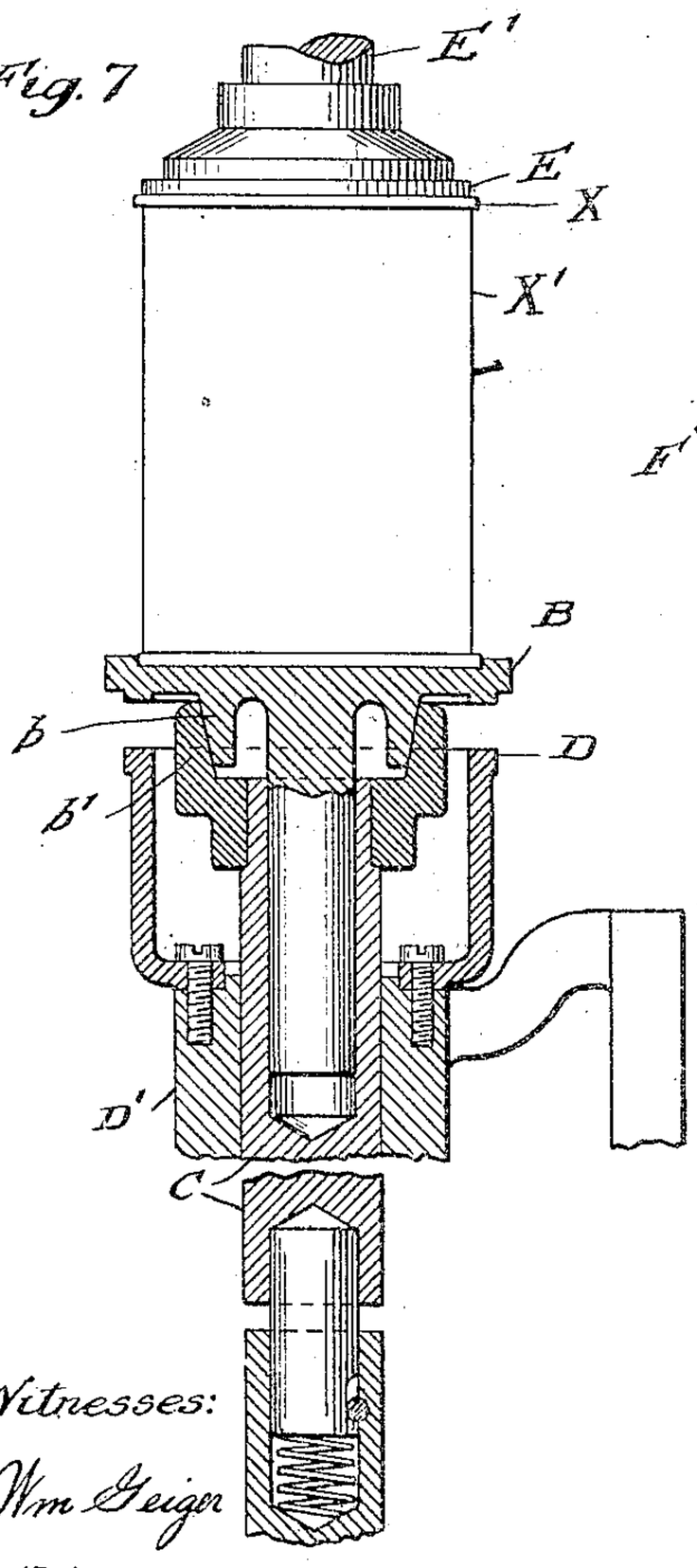
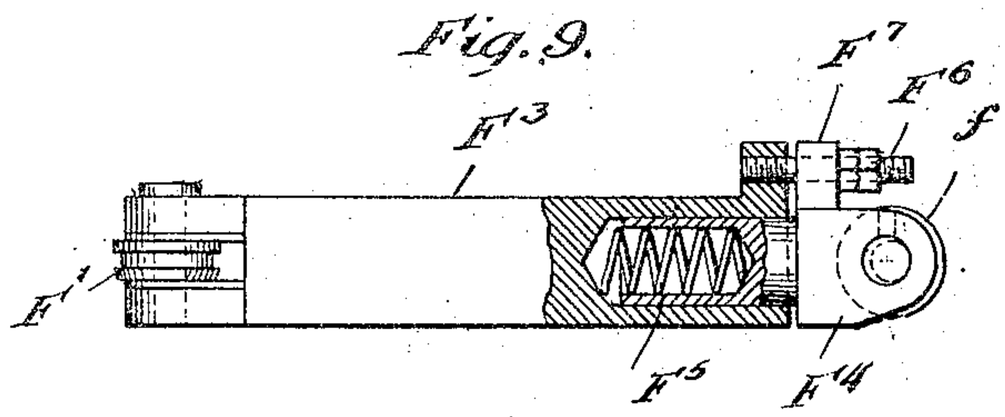


Fig. 9.



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UNITED STATES PATENT OFFICE.

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CAN-SEAMING MACHINE.

No. 920,853. Specification of Letters Patent. Patented May 4, 1909.

Application filed September 27, 1906. Serial No. 336,494.

To all whom it may concern:

Be it known that I, FRANK RUDOLPHI, a citizen of the United States, residing in Chicago, in the county of Cook and State of Illinois, have invented a new and useful Improvement in Can-Seaming Machines, of which the following is a specification.

My invention relates to improvements in can seaming machines of the kind or class in which the can is rotated during the seaming operation.

As heretofore constructed, can seaming machines of the kind or class having rotary can holding chucks which rotate the can during the seaming operation are not well adapted for seaming the upper head or cover upon filled cans, because the rotation of the lower can holding chuck rotates the can before the cover is clamped thereon between the two rotating chucks and thus causes the contents of the can, especially if the same is liquid, to be thrown out by the centrifugal action.

The object of my invention is to provide a can seaming machine having rotary can holding chucks adapted for use in seaming the heads or covers upon filled cans.

My invention consists in the means I employ to practically accomplish this result. That is to say, it consists in connection with the seaming tools mounted as usual in suitable movable tool holders on the stationary frame of the machine, of an upper rotary can holding chuck and a lower rotatable and reciprocating can holding chuck, a rotating shaft for the lower chuck, a friction clutch interposed between said rotating shaft and said lower chuck and a stationary rest or support for the lower chuck so that the lower chuck may remain stationary while the cans are being placed in the machine and taken out, and rotate with its shaft as required when the lower chuck is raised to clamp the can and its cover between the upper and lower chucks. By thus combining with one of the rotating can holding chucks a friction clutch interposed between the chuck and its shaft or spindle, the seaming machine is adapted for operation upon filled cans as the can does not begin to rotate until it is clamped between the chucks and its cover thus forced into tight contact with the upper end of the can body to which it is to be seamed.

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

In the accompanying drawing forming a part of this specification, Figure 1 is a side elevation of a can seaming machine or double seamer embodying my invention and Fig. 2 is a front elevation. Fig. 3 is a horizontal section on line 3—3 of Fig. 1. Fig. 4 is a vertical section on line 4—4 of Fig. 3. Fig. 5 is a vertical section on line 5—5 of Fig. 3 and Fig. 6 is a detail vertical section on line 6—6 of Fig. 3. Fig. 7 is a detail vertical section on line 7—7 of Fig. 2 and Fig. 8 is a plan view partly in section of the clutch mechanism. Fig. 9 is an elevation partly in section of the tool holder.

In the drawing, A represents the frame of the machine.

B is the lower rotary and reciprocating can holding chuck, C its rotary shaft and D the stationary rest or support for this lower chuck B.

E is the upper rotary chuck, E^1 its shaft, F F^1 are the seaming tools or rollers, preferably double seaming tools or rollers, F^3 F^4 movable tool holders in which the seaming rollers are mounted and by which they are brought into contact with the seaming flanges of the can cover X and can body X^1 as the can is rotated by the rotary chucks B, E.

Interposed between the lower rotary and reciprocating can holding chuck B and its rotary shaft or spindle C, I provide a friction clutch b b^1, the member b of the clutch being preferably integral with the chuck B and the member b^1 of the clutch rigidly secured to the rotatable and reciprocating shaft C. The stationary rest or support D for the chuck B is preferably a cylindrical member secured to a bracket D^1 on the stationary frame of the machine. The can holding chuck B normally rests on this stationary support. When the spindle or shaft C of the lower chuck is raised to clamp or chuck the can between the upper and lower chucks, the chuck B is raised from its stationary support and the friction clutch interposed between the chuck and its rotating shaft then causes the lower chuck to rotate with its shaft when the pressure on the members of the friction clutch becomes sufficient for this purpose by reason of the cover being firmly clamped on the can

between the upper and lower chucks. After the seaming operation is completed when the shaft or spindle of the lower chuck is again lowered, the two members of the friction clutch are separated when the chuck B engages its stationary rest or support D. The lower chuck spindle or shaft C is driven from the main driving shaft G, preferably through a pulley g on the driving shaft, belt g^1 passing over idlers g^2 and a pulley C^1 on the shaft C.

The shaft C of the lower chuck may be reciprocated in its bearings on the stationary frame of the machine by any suitable means. I preferably employ a treadle C^2, connecting rod C^3, and lever or rock shaft C^4 for this purpose, the same being returned to position by a spring C^5.

The shaft E^1 of the upper chuck E is rotated or driven by a bevel gear E^2 thereon, meshing with a bevel gear E^3 on the driving shaft G.

The tool holders F^2 F^3 are moved or reciprocated as required preferably by means of cams h h^1 on the cam shaft H which engage anti-friction rollers f on the tool holders. The cam shaft H is intermittently operated or rotated as required from the driving shaft G preferably by a pulley g^3 thereon, belt g^4, pulley g^5 on shaft g^6 which is provided with a worm g^7 engaging the worm gear h^2 on the cam shaft H. The cam shaft H is provided with a stop cam h^3, engaging the roller K on the crank arm K^1 which is pivoted at k to the sliding frame M, said frame being operated by the screw M^1, for cans of various diameters. Pivoted to the arm K^1 at k^1 is a connecting rod R connected to the lever or rock shaft C^4. Through this connection the machine may be started by the downward movement of the hand lever k^2 on the crank arm K^1. The crank arm also has a lug k^3, a connecting link k^4 pivoted at one end to the lug k^3 and at the other end to a pair of rocking links k^5, said rocking links rocking on the pivot k^6 and connected at their other end to the clutch shifter S.

The tool holder F^3 for the closing or finishing seaming roller F^1 is preferably furnished with a supplemental part F^4 carrying an anti-friction roller f and slidably connected with the main portion F^3 of the tool holder, and with a spring F^5 interposed between said parts F^3 and F^4 to give the seaming tool F^1 a cushioning or yielding pressure against the seam and thus enable it to accommodate itself to the side seam of the can body. An adjusting screw F^6 limits the sliding movement of the two parts of the tool holder F^3 F^4 in respect to each other and also regulates the tension of the spring. The part F^4 of the tool holder has a lug F^7 through which the adjusting screw F^6 slidably extends.

I claim:—

1. In a seaming machine, the combination with the seaming tools, independent holders for said seaming tools, and means for independently operating said seaming tool holders, of a pair of rotary can holding chucks, and a positively rotating shaft and a clutch interposed between one of said can holding chucks and said shaft for rotating it, and means for reciprocating one of said chucks, substantially as specified.

2. In a seaming machine, the combination with a seaming tool, a removable holder for said seaming tool and means for operating said tool holder, of a rotary can holding chuck, a rotatable and reciprocating can holding chuck, a reciprocating and positively rotating shaft or spindle for said chuck and a clutch interposed between said rotatable and reciprocating can holding chuck and the shaft or spindle for operating it, substantially as specified.

3. In a seaming machine, the combination with a seaming tool, of a rotary can holding chuck, a rotatable and reciprocating can holding chuck, a reciprocating shaft or spindle for said chuck, a friction clutch and a stationary rest or support engaging said rotary and reciprocating chuck when retracted, substantially as specified.

4. In a can seaming machine, the combination with a seaming tool, of an upper rotary can holding chuck, a lower rotary and reciprocating can holding chuck, a shaft or spindle therefor, a stationary rest or support for said lower chuck and a friction clutch between said lower chuck and its shaft, substantially as specified.

5. In a can seaming machine, the combination with a seaming tool, of an upper rotary can holding chuck, a lower rotary and reciprocating can holding chuck, a shaft or spindle therefor, a stationary rest or support for said lower chuck, a friction clutch between said lower chuck and its shaft, means for continuously rotating the upper chuck, and means for continuously rotating the shaft or spindle of the lower chuck, substantially as specified.

6. In a can seaming machine, the combination with a seaming tool, of an upper rotary can holding chuck, a lower rotary and reciprocating can holding chuck, a shaft or spindle therefor, a stationary rest or support for said lower chuck, a friction clutch between said lower chuck and its shaft, means for continuously rotating the upper chuck, means for continuously rotating the shaft or spindle of the lower chuck, and means for operating the seaming tools, substantially as specified.

7. In a seaming machine, the combination with the seaming tool of a rotary can holding chuck, an opposing rotary and reciprocating can holding chuck, and mechanism for rotating and reciprocating said last mentioned chuck, provided with means for causing the cover to be clamped on the can body

before the chucks impart a rapid rotary movement to the can, said means comprising a clutch interposed between the rotary and reciprocating chuck and its operating shaft, substantially as specified.

8. In a seaming machine, the combination with a seaming tool, of a rotary can holding chuck, a rotatable and reciprocating can holding chuck, a reciprocating shaft or spindle for said chuck, a clutch and a stationary rest or support engaging said rotary and reciprocating chuck when retracted, substantially as specified.

9. In a can seaming machine, the combination with a seaming tool, of an upper rotary can holding chuck, a lower rotary and reciprocating can holding chuck, a shaft or spindle therefor, a stationary rest or support for said lower chuck and a clutch between said lower chuck and its shaft, substantially as specified.

10. In a can seaming machine, the combination with a seaming tool, of an upper rotary can holding chuck, a lower rotary and reciprocating can holding chuck, a shaft or spindle therefor, a stationary rest or support for said lower chuck, a clutch between said lower chuck and its shaft, means for continuously rotating the upper chuck, and means for continuously rotating the shaft or spindle of the lower chuck, substantially as specified.

11. In a can seaming machine, the combination with a seaming tool, of an upper rotary can holding chuck, a lower rotary and reciprocating can holding chuck, a shaft or spindle therefor, a stationary rest or support for said lower chuck, a clutch between said lower chuck and its shaft, means for continuously rotating the upper chuck, means for continuously rotating the shaft or spindle of the lower chuck, and means for operating the seaming tools, substantially as specified.

12. In a seaming machine, the combination with can holding chucks, of a plurality of seaming tools, a plurality of independently movable holders for the seaming tools, said holder for the finishing or final seaming tool being provided with a supplemental part slidably connected with the main portion of the holder, a spring interposed between the main portion and the supplemental part of the holder, and separate cams for operating said seaming tool holders, substantially as specified.

FRANK RUDOLPHI.

Witnesses:
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