(No Model.) 7 Sheets—Sheet 1.

E. NORTON, J. G. HODGSON & F. M. LEAVITT.

MACHINE FOR ROLLING OR CRIMPING END SEAMS OF SHEET METAL CANS.

No. 522,269. Patented July 3, 1894.

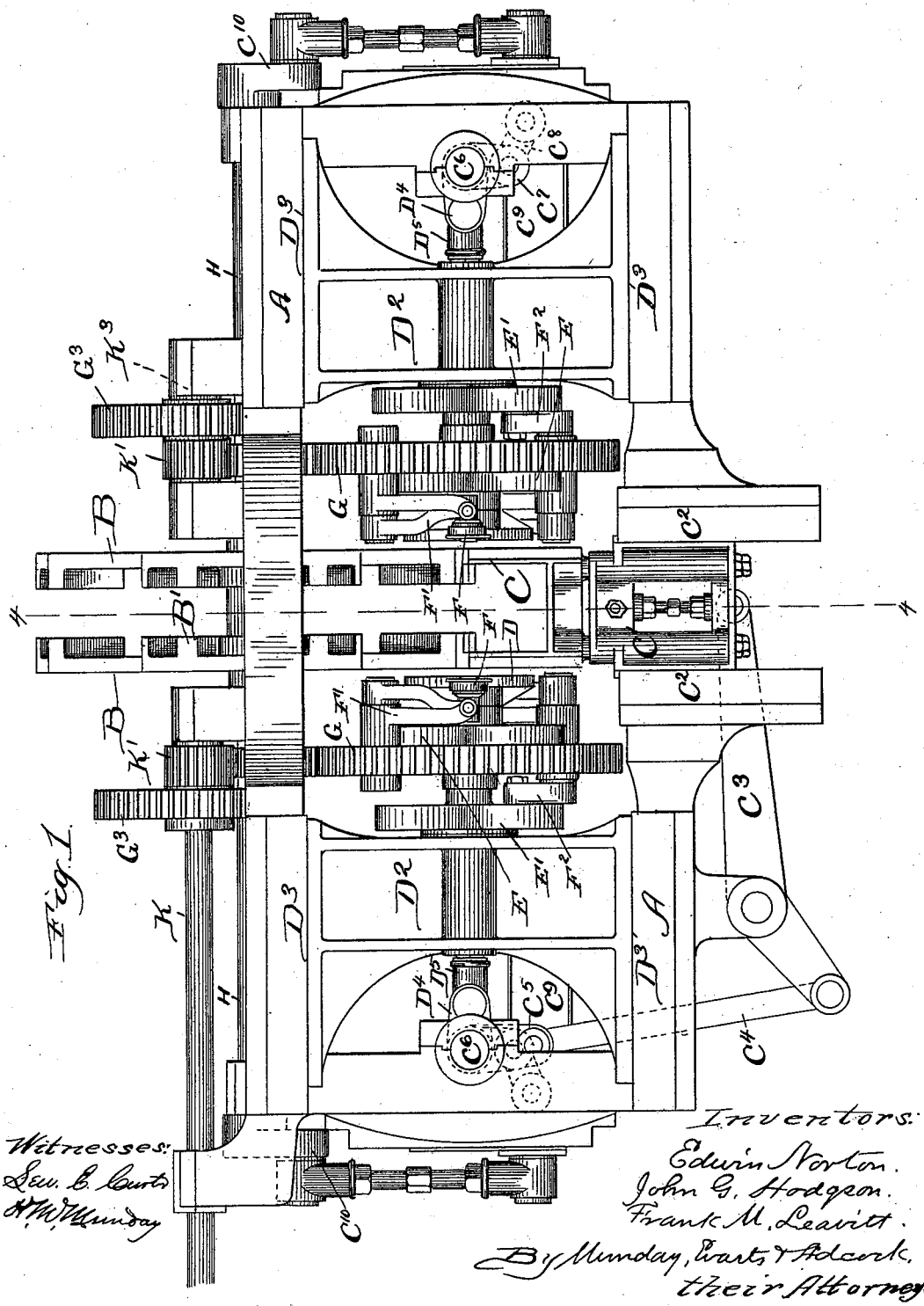

Fig. 1.

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(No Model.) 7 Sheets—Sheet 2.

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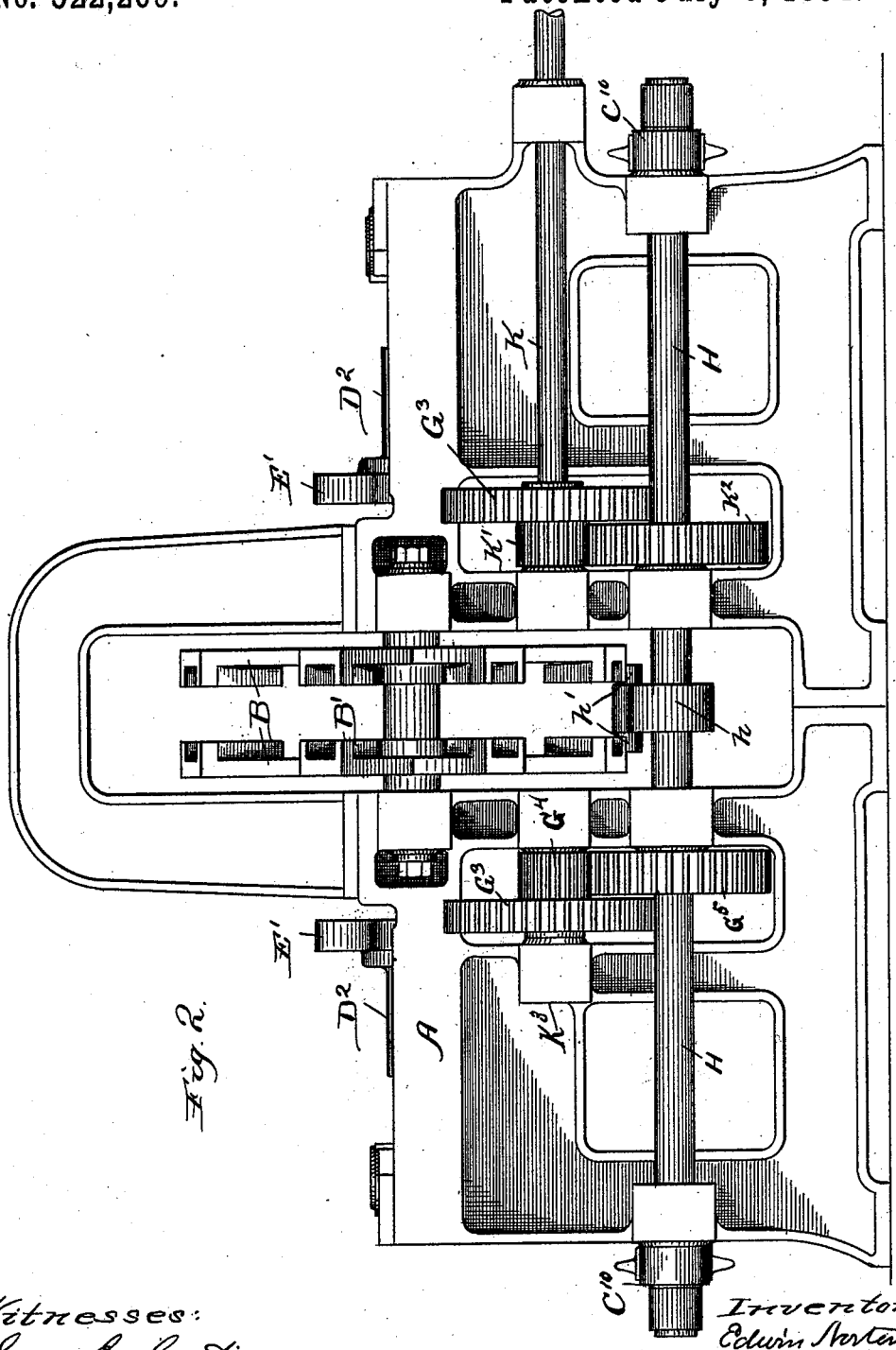

Fig. 2.

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(No Model.) 7 Sheets—Sheet 3.

E. NORTON, J. G. HODGSON & F. M. LEAVITT.

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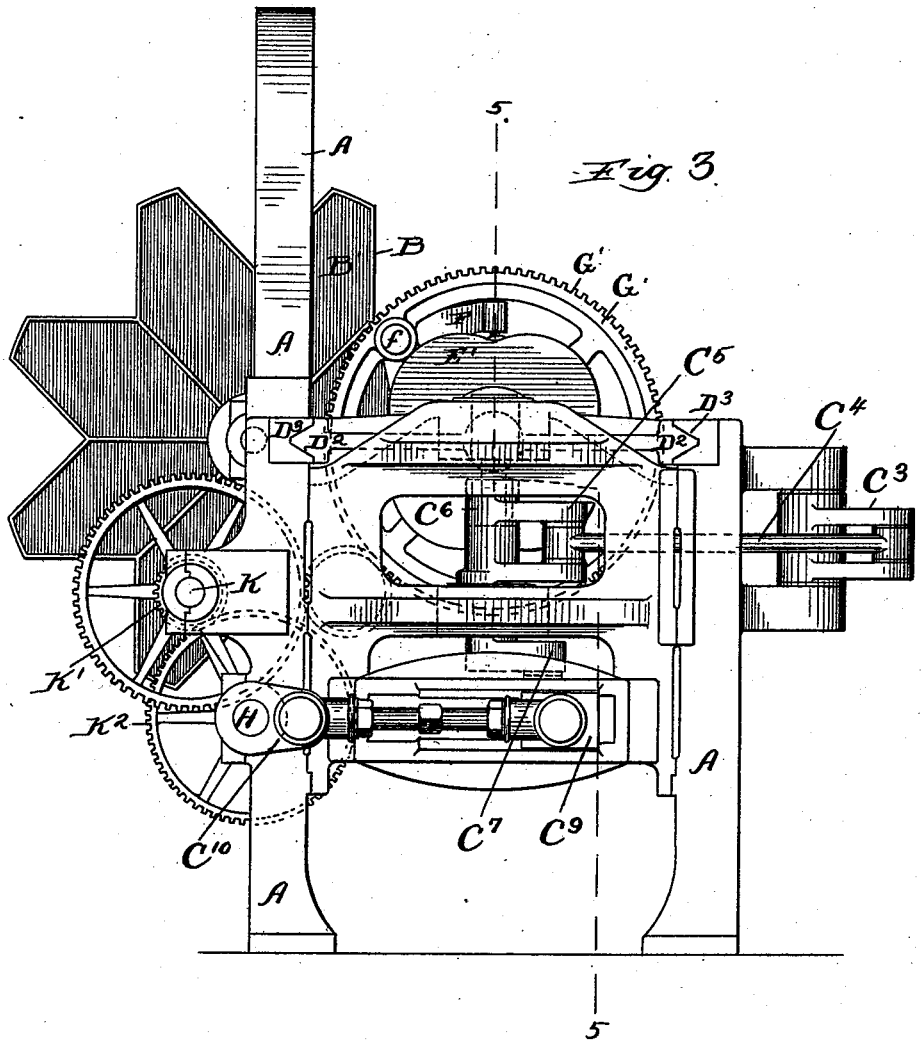
Fig. 3.



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(No Model.) 7 Sheets—Sheet 4.

E. NORTON, J. G. HODGSON & F. M. LEAVITT.

MACHINE FOR ROLLING OR CRIMPING END SEAMS OF SHEET METAL CANS.

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Fig. 4.

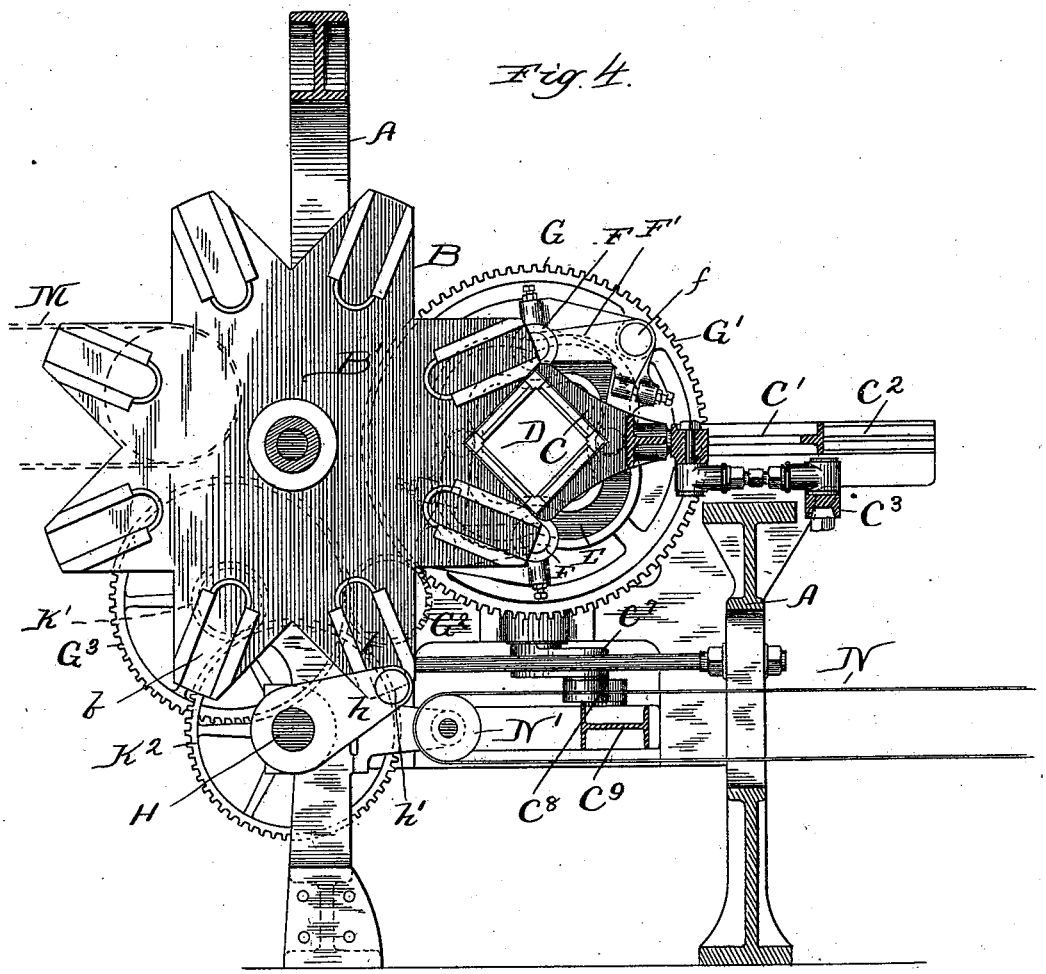
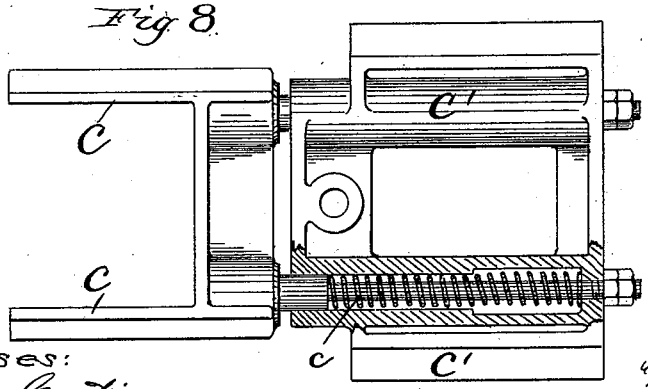


Fig 8.



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(No Model.) 7 Sheets—Sheet 5.

E. NORTON, J. G. HODGSON & F. M. LEAVITT.

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No. 522,269. Patented July 3, 1894.

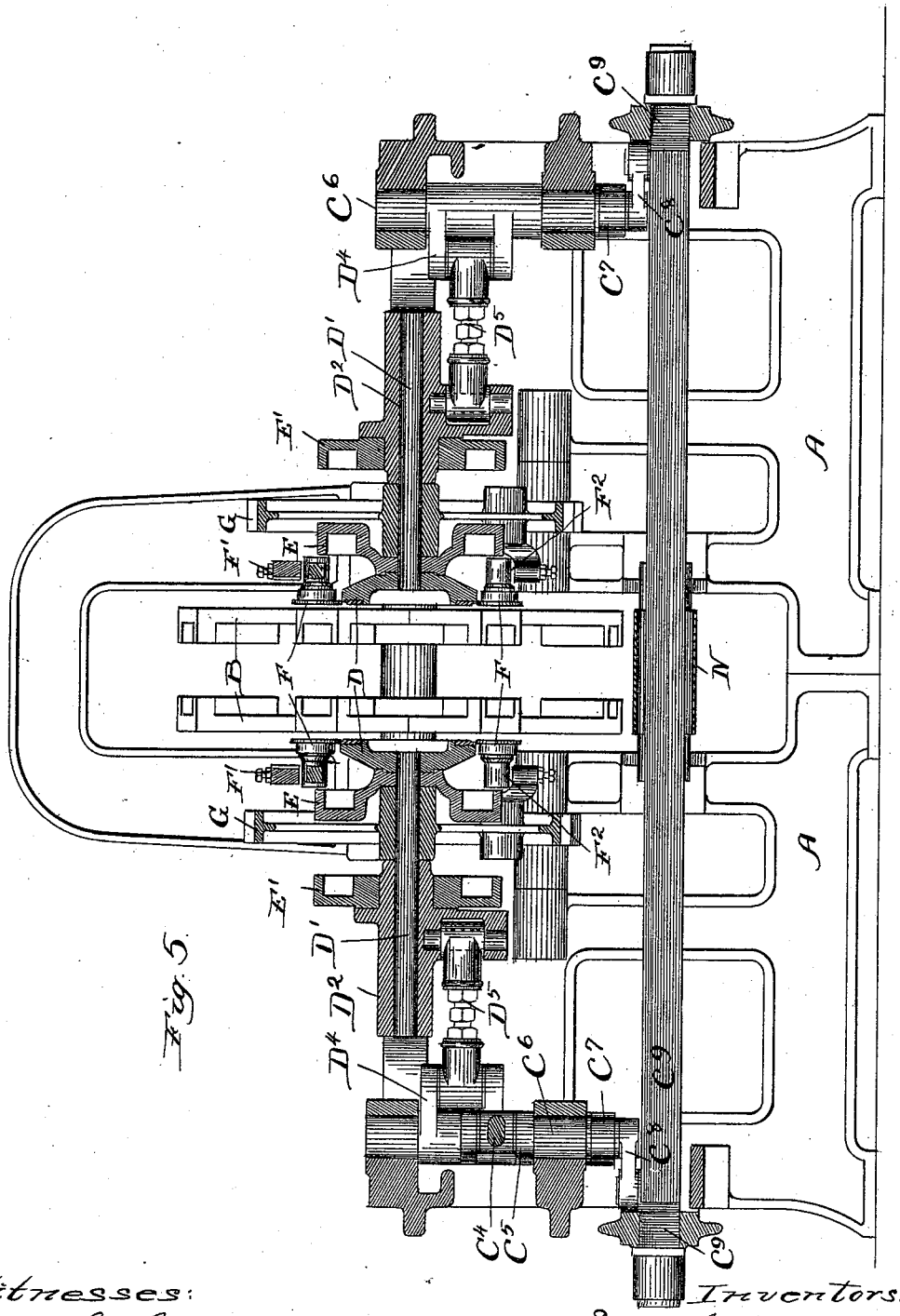

Fig. 5.

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(No Model.) 7 Sheets—Sheet 6.

E. NORTON, J. G. HODGSON & E. M. LEAVITT.

MACHINE FOR ROLLING OR CRIMPING END SEAMS OF SHEET METAL CANS.

No. 522,269. Patented July 3, 1894.

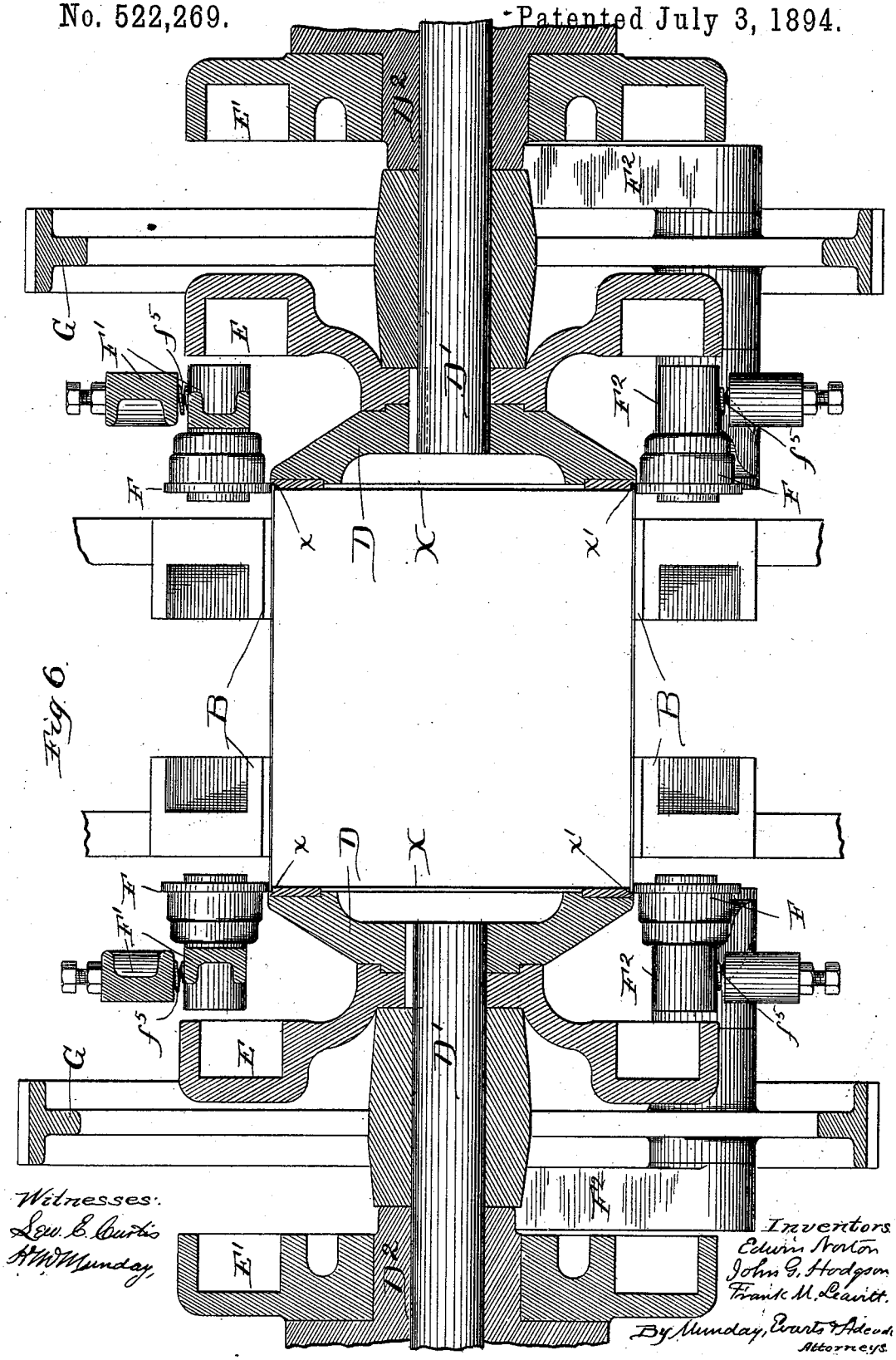

Fig. 6.

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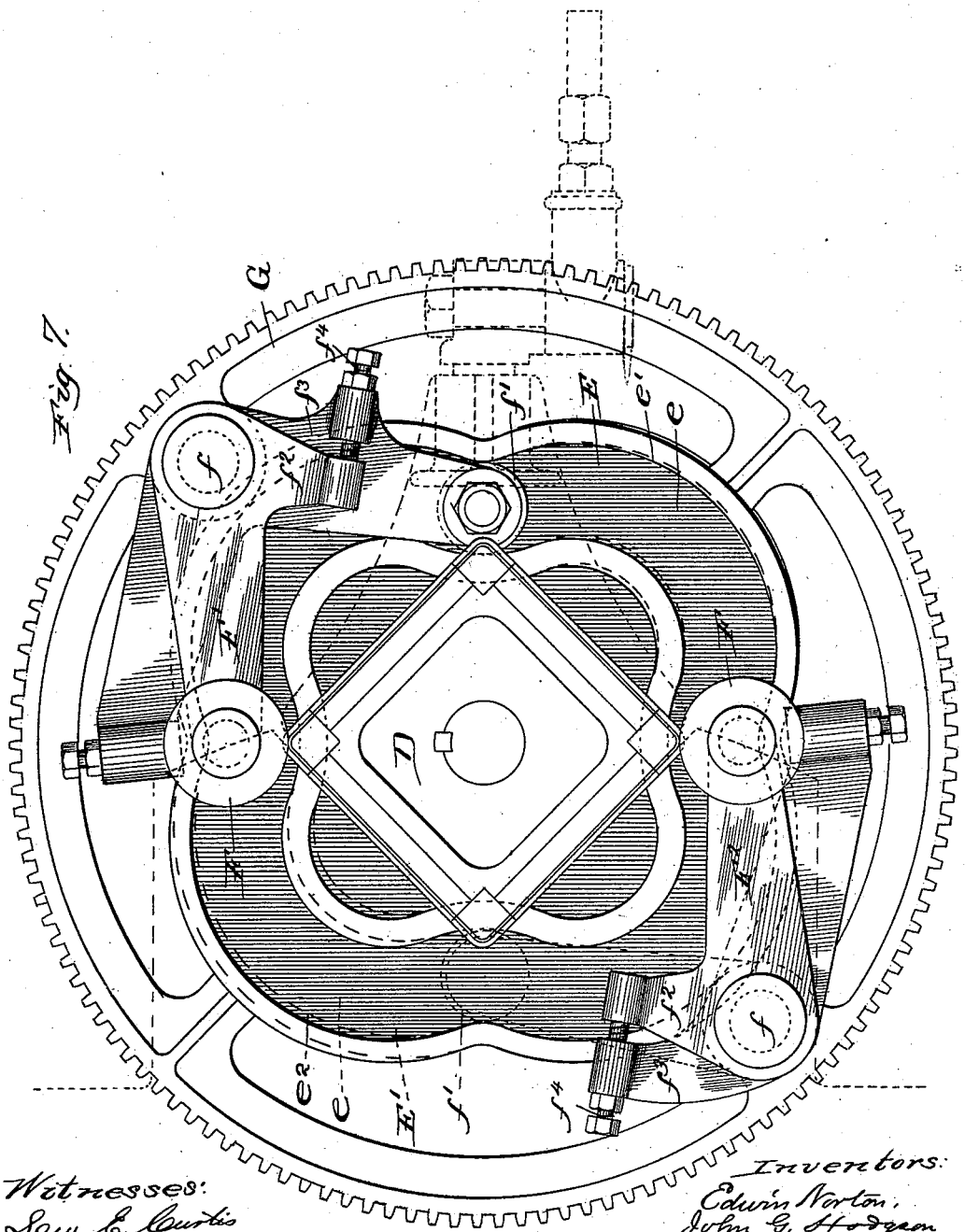
(No Model.) 7 Sheets—Sheet 7.

E. NORTON, J. G. HODGSON & F. M. LEAVITT.

MACHINE FOR ROLLING OR CRIMPING END SEAMS OF SHEET METAL CANS.

No. 522,269. Patented July 3, 1894.

Fig. 7.



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UNITED STATES PATENT OFFICE.

EDWIN NORTON AND JOHN G. HODGSON, OF MAYWOOD, ILLINOIS, AND FRANK M. LEAVITT, OF BROOKLYN, NEW YORK, ASSIGNORS TO SAID EDWIN NORTON, AND OLIVER W. NORTON, OF CHICAGO, ILLINOIS.

MACHINE FOR ROLLING OR CRIMPING END SEAMS OF SHEET-METAL CANS.

SPECIFICATION forming part of Letters Patent No. 522,269, dated July 3, 1894.

Application filed July 23, 1892. Renewed March 14, 1894. Serial No. 503,554. (No model.)

To all whom it may concern:

Be it known that we, EDWIN NORTON and JOHN G. HODGSON, residing at Maywood, in the county of Cook and State of Illinois, and FRANK M. LEAVITT, residing at Brooklyn, in the county of Kings and State of New York, citizens of the United States, have invented a new and useful Improvement in Machines for Rolling or Crimping the End Seams of Sheet-Metal Cans, of which the following is a specification.

Our invention relates to machines for rolling or crimping the seams of sheet metal cans.

In the manufacture of sheet metal cans, and especially large polygonal cans, such for example as those used for petroleum, after the heads have been applied to the can bodies and the seams squeezed to a greater or less extent, it is desirable that the seams or flanges uniting the head and body should be firmly and securely rolled together to the end that the seam may be properly and securely soldered, and to diminish the quantity of solder required for this purpose.

The object of our invention is to provide a machine of a simple, efficient and durable construction which will serve to perform this work automatically and properly.

To this end the machine we have invented comprises a pair of reciprocating dies adapted to fit within the countersunk flanges of the can head and support the same on the inside, rotatable seaming rollers operating in conjunction therewith and mounted upon pivoted levers carried by a revolving wheel or carrier, stationary cams for pressing such rollers against the seam as they are carried around the can by their revolving carrier, a revolving wheel or feed device having half molds or pockets to receive the can bodies from a delivery chute or conveyer and carry them around into position to register with said dies, and a reciprocating half mold or pocket to aid in supporting the can and centering it with the dies, and mechanism for automatically operating these parts.

Our invention consists in the novel devices and novel combinations of parts and devices herein shown and described and more particularly pointed out in the claims.

In the accompanying drawings which form a part of this specification and in which similar letters of reference indicate like parts throughout all the views, Figure 1 is a plan view of our machine. Fig. 2 is a rear elevation. Fig. 3 is an end elevation. Fig. 4 is a central vertical section taken on line 4—4 of Fig. 1. Fig. 5 is a vertical longitudinal section taken on the line 5—5 of Fig. 3. Fig. 6 is an enlarged detail section of the rollers and dies for rolling or crimping the seam. Fig. 7 is a detail elevation of one of the crimping dies and the rollers operating in conjunction therewith. Fig. 8 is a plan view partly in section of the reciprocating half mold or pocket in which the can body is supported in part during the operation.

In the drawings A represents the frame of the machine.

B and C are the half molds or pockets between or by which the can body is held while being operated upon. The half molds or pockets B are several in number and formed in or mounted on an intermittently revolving wheel B′ or other suitable or equivalent device for feeding or conveying the can bodies automatically into position in front of the movable or reciprocating half mold or pocket C and in position to register with the reciprocating dies D which fit in the countersink x of the can heads X so as to support the flanges x' on the inside while being operated upon by the crimping, seaming or squeezing rollers F on the outside. The reciprocating dies D are secured to or carried by bars or shafts D′ connected with reciprocating slides or cross heads D^2 which work back and forth in suitable guides D^3 on the frame of the machine. Carried by this same cross head or the connecting bar D′ forming part thereof, are two stationary grooved cams E and E′ for operating the levers F′ F^2 upon which the crimping rollers F are journaled. The levers F′ and F^2 are bent levers and are pivoted at f to the revolving wheel or carrier G. The levers F′ and F^2 are also each furnished with a stud or projection f', made preferably in the form of an anti-friction roller, which travels in the grooved cam E or E′. The two arms or limbs f^2 f^3 of the levers F′ and F^2 are made

adjustable in respect to each other by means of the set screws f^4 for the purpose of adjusting the pressure of the crimping roller F against the can. The two crimping roller carrying levers F′ and F² are exactly alike, except that one is operated by the cam E and the other by the cam E′. The cams E and E′ are also the same excepting that their lower parts *e e* (which operate to withdraw the crimping rollers from the can to permit the same being inserted over and withdrawn from the can) are located diametrically opposite each other as is clearly indicated by the dotted lines marked e' and e^2 in Fig. 7. The cams E and E′ are also of course located on opposite sides of the wheel or carrier G. Two cams are employed with their low portions oppositely located so that at each complete revolution of the crimping roller carrier G, the entire perimeter of the can will be operated upon by one or the other of the two crimping rollers; while at the same time both crimping rollers may be simultaneously withdrawn from contact with the seam so as to permit the reciprocating movement of the crimping rollers by which they are brought over the seam and removed therefrom to permit the discharge of the can. In practice, the carrier G is given two complete revolutions for each can, so that every portion of the perimeter of the can is operated upon twice by one or the other of the rollers; and nearly the whole perimeter is acted upon twice by each roller. The number of revolutions of the carrier G for each can may however be changed or varied, if desired. The levers F′ F² are also furnished each with springs f^5 which serve to press the crimping rollers F against the seam with a uniform pressure and to permit the rollers to yield before any unusual obstruction and to accommodate variations in stock. The spring f^5 is mounted between the arms f^2 f^3 of the levers F′ and F².

The intermittently revolving wheel B′, which carries the half molds or pockets B, is intermittently revolved or operated from the crank shaft H by means of a crank *h* thereon, the pin or anti-friction roller *h*′ of which engages radial slots *b* in the wheel B′. The crank shaft H is driven from the driving shaft K by means of the intermeshing gears K′ and K².

The reciprocating half mold or pocket C, or its cross head C′ is reciprocated in its guides C² on the frame of the machine by means of the lever C³, connecting link C⁴, crank C⁵, crank shaft C⁶, crank C⁷, link C⁸ and reciprocating bar or cross head C⁹ which is operated from the main crank shaft by cranks C¹⁰ at each end thereof.

The reciprocating half mold C has a spring *c* interposed between it and its cross head C′ to compensate for the oscillating or retreating movement due to the crank motions by which it is operated, and thus hold the half mold C in contact with the half mold B for the required time. By use of this spring connection between the half mold and its cross head we are enabled to employ a crank movement for imparting motion to it.

The cross heads D² which carry the dies D are operated from the crank shafts C⁶ by cranks D⁴ thereon connected by links D⁵ to said cross heads.

The crimping roller carriers or wheels G are driven or revolved continuously by means of gears G′ thereon which connect with the gears G² G³, the latter being on the driving shaft K or the corresponding shaft K³ on the opposite side of the wheel. The shaft K³ takes its motion from the crank shaft H through the intermeshing gears G⁴ G⁵.

As the wheel B′ revolves it automatically receives the cans from the can delivery device M, the same being preferably a chute or conveyer and discharges them, after the end seams thereof have been rolled, upon the discharge device or conveyer N, the same being preferably a belt or endless carrier operated by a revolving pulley N′.

The cams E and E′ it will be understood, correspond in shape or outline to the perimeter of the can to be operated upon.

The machine shown is designed for operation upon ordinary petroleum cans which are square or four-sided, and for this reason the cams E and E′ are of a somewhat four-sided outline as is clearly shown in Fig. 7.

We claim—

1. The combination with a device B C for automatically delivering the cans into position for operation, of a pair of reciprocating dies, D, adapted to fit within the countersunk heads of the can, rollers or wheels F operating in conjunction with said dies to roll the seams of the can and mounted upon pivoted levers, revolving carriers or wheels for carrying said levers and seaming rollers around the can, and stationary cams engaging said levers for pressing said rollers against the seam, substantially as specified.

2. The combination with reciprocating dies D D, of a revolving carrier G, a seaming roller carrying lever F′ pivoted to said carrier G and a stationary cam for operating said lever and holding its seaming roller in contact with the can as it is revolved around the same by said carrier G and a can delivery wheel B′ furnished with pockets to receive the cans, substantially as specified.

3. The combination with a pair of reciprocating dies D of a revolving carrier G furnished with two pivoted levers F′ F² mounted thereon, seaming rollers carried by said levers and two cams E E′ for operating said levers as the carrier G revolves, substantially as specified.

4. The combination with a pair of reciprocating devices D of a revolving carrier G furnished with two pivoted levers F′ F² mounted thereon, seaming rollers carried by said levers and two cams E E′ for operating said levers as the carrier G revolves, the low portions *e e*

of said cams being oppositely disposed, so that both said seaming rollers will be retracted from the seam at the same time to permit the insertion and removal of the can, and so that every portion of the perimeter of the can will be acted upon by one or the other of the rollers, substantially as specified.

5. The combination with a pair of dies D of a revolving carrier G furnished with two pivoted levers F′ F² mounted thereon, seaming rollers carried by said levers and two cams E E′ for operating said levers as the carrier G revolves, the low portions *e e* of said cams being oppositely disposed, so that both said seaming rollers will be retracted from the seam at the same time to permit the insertion and removal of the can, and so that every portion of the perimeter of the cam will be acted upon by one or the other of the rollers, means for delivering the can bodies automatically in position between said dies and means for reciprocating said dies, substantially as specified.

6. The combination with a pair of dies D of a revolving carrier G furnished with two pivoted levers F′ F² mounted thereon, seaming rollers carried by said levers and two cams E E′ for operating said levers as the carrier G revolves, the low portions *e e* of said cams being oppositely disposed, so that both said seaming rollers will be retracted from the seam at the same time to permit the insertion and removal of the can and so that every portion of the perimeter of the can will be acted upon by one or the other of the rollers, means for delivering the can bodies automatically in position between said dies and means for reciprocating said dies, said carrier G being connected with or carried by a reciprocating cross head, substantially as specified.

7. The combination with a pair of reciprocating dies D, of cross heads or slides for operating the same, a pair of revolving wheels or carriers G mounted upon said cross heads or slides, seaming rollers and levers for operating the same mounted upon said revolving wheels or carriers G, and cams for operating said levers also carried by said cross heads, substantially as specified.

8. The combination with a pair of reciprocating dies D and cross heads or slides for operating the same, of a pair of revolving wheels or carriers G mounted upon said cross heads or slides, seaming rollers and levers for operating the same mounted upon said revolving wheels or carriers G, and cams for operating said levers also carried by said cross heads, and means for automatically delivering the can bodies into position between said dies, substantially as specified.

9. The combination with a pair of reciprocating dies D, of cross heads or slides for operating the same, a pair of revolving wheels or carriers G mounted upon said cross heads or slides, seaming rollers and levers for operating the same mounted upon said revolving wheels or carriers G, cams for operating said levers also carried by said cross heads, and an intermittently revolving wheel B′ furnished with pockets B for automatically delivering the can bodies into position between said dies, substantially as specified.

10. The combination with a pair of reciprocating dies D, of cross heads or slides for operating the same, a pair of revolving wheels or carriers G mounted upon said cross heads or slides, seaming rollers and levers for operating the same mounted upon said revolving wheels or carriers G, cams for operating said levers also carried by said cross heads, an intermittently revolving wheel B′ furnished with pockets B for automatically delivering the can bodies into position between said dies, and a reciprocating or movable pocket or part mold C, substantially as specified.

11. The combination with a part mold or pocket B of a reciprocating or movable part mold or pocket C, a cross head or device C′ for operating the same furnished with a spring or yielding connection between it and said part mold C and means for operating said cross head C′, substantially as specified.

12. The combination with a part mold or pocket B of a reciprocating or movable part mold or pocket C, a cross head or device C′ for operating the same furnished with a spring or yielding connection between it and said part mold C, and a vibrating lever or crank for operating said cross head C′ and means for communicating motion to said vibrating lever or crank, substantially as specified.

13. The combination with a pair of reciprocating dies D D mounted upon cross heads or slides, a pair of revolving wheels or carriers G mounted upon said cross heads, seaming rollers F F and their operating levers F′ F² mounted upon each of said carriers G, and cams E E′ mounted upon each of said cross heads for operating said levers F′ F², the low portions of said cams E E′ being oppositely disposed so that all said seaming rollers carried by said levers will be withdrawn from the cam at the same time, substantially as specified.

14. The combination with a pair of reciprocating dies D D mounted upon cross heads or slides, a pair of revolving wheels or carriers G mounted upon said cross heads, seaming rollers F F and their operating levers F′ F² mounted upon each of said carriers G, and cams E E′ mounted upon each of said cross heads for operating said levers F′ F², the low portions of said cams E E′ being oppositely disposed so that all said seaming rollers carried by said levers will be withdrawn from the cam at the same time, and mechanism for automatically delivering the can bodies into position between said dies, substantially as specified.

15. The combination with a pair of reciprocating dies D D mounted upon cross heads or slides, a pair of revolving wheels or carriers G mounted upon said cross heads, seaming rollers F F and their operating levers F′ F²

mounted upon each of said carriers G, and cams E E′ mounted upon each of said cross heads for operating said levers F′ F², the low portions of said cams E E′ being oppositely disposed so that all said seaming rollers carried by said levers will be withdrawn from the cam at the same time, and mechanism for automatically delivering the can bodies into position between said dies, said mechanism consisting of an intermittently revolving wheel B′ furnished with half molds or pockets B, and a reciprocating half mold or pocket C coacting therewith, substantially as specified.

16. The combination with a pair of reciprocating dies D D mounted upon cross heads or slides, a pair of revolving wheels or carriers G mounted upon said cross heads, seaming rollers F F and their operating levers F′ F² mounted upon each of said rollers G, and cams E E′ mounted upon each of said cross heads for operating said levers F′ F², the low portions of said cams E E′ being oppositely disposed so that all said seaming rollers carried by said levers will be withdrawn from the cam at the same time, and mechanism for automatically delivering the can bodies into position between said dies, said mechanism consisting of an intermittently revolving wheel B′ furnished with half molds or pockets B, and a reciprocating half mold or pocket C coacting therewith, and a can delivery device and a can discharge device N, substantially as specified.

17. The combination with a pair of reciprocating dies D, of a revolving carrier G, seaming roller F, its lever F′, a stationary cam for operating the same, said lever F′ being made in two adjustable parts or arms f^2 f^3 connected together by an adjusting screw f^4, substantially as specified.

18. The combination with a pair of reciprocating dies D of a revolving carrier G, seaming roller F, its lever F′, a stationary cam for operating said lever F′ being made in two adjustable parts or arms f^2 f^3 connected together by an adjusting screw f^4, and by a spring f^5, substantially as specified.

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