(No Model.) 7 Sheets—Sheet 1.

E. NORTON & J. G. HODGSON.

CAN HEADING MACHINE.

No. 522,270. Patented July 3, 1894.

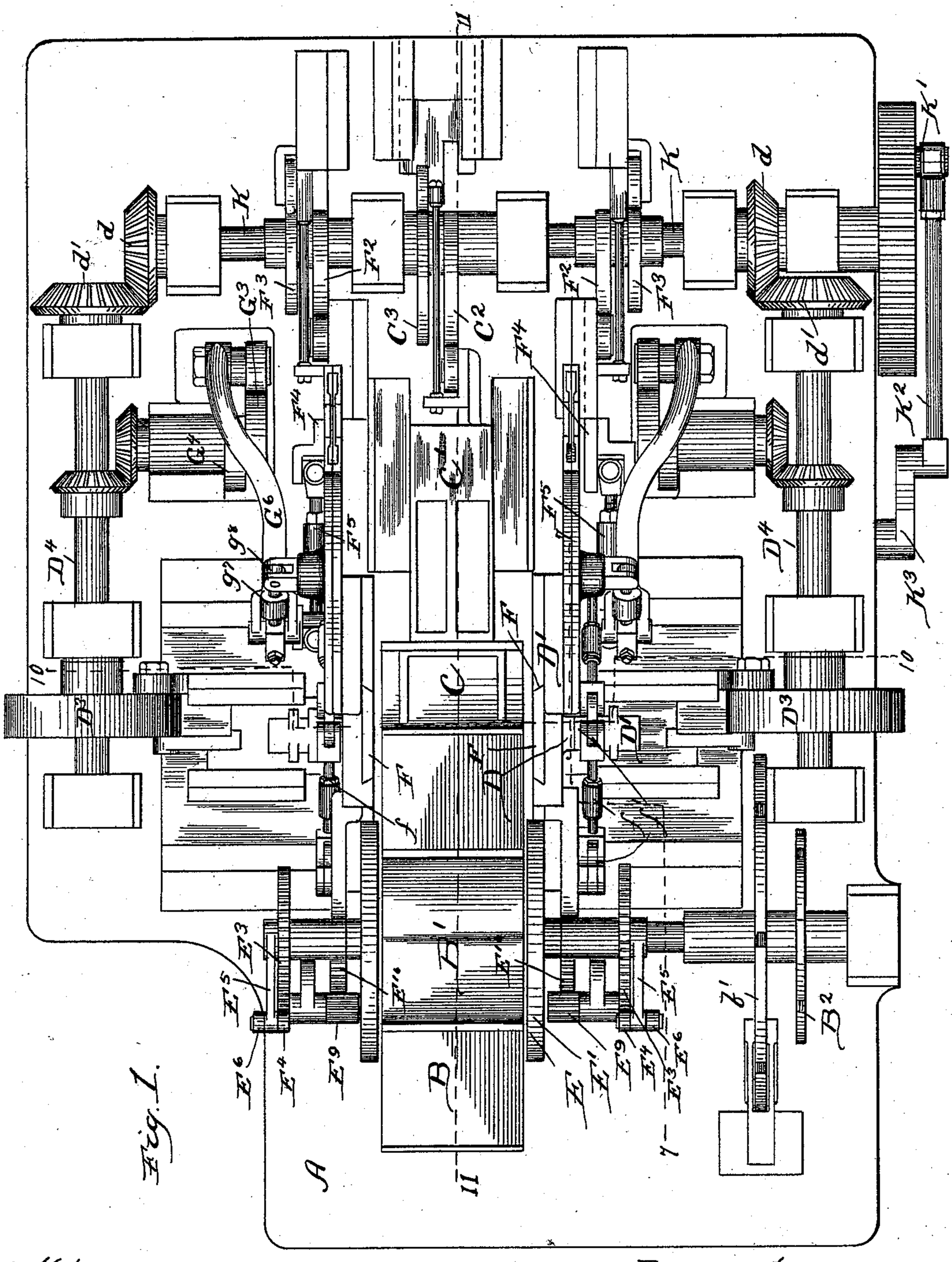


Fig. 1.

Witnesses:
Lew. E. Curtis
A. W. Munday.

Inventors:
Edwin Norton
John G. Hodgson
By Munday, Evarts & Adcock.
their Attorneys.

(No Model.) 7 Sheets—Sheet 2.

E. NORTON & J. G. HODGSON.

CAN HEADING MACHINE.

No. 522,270. Patented July 3, 1894.

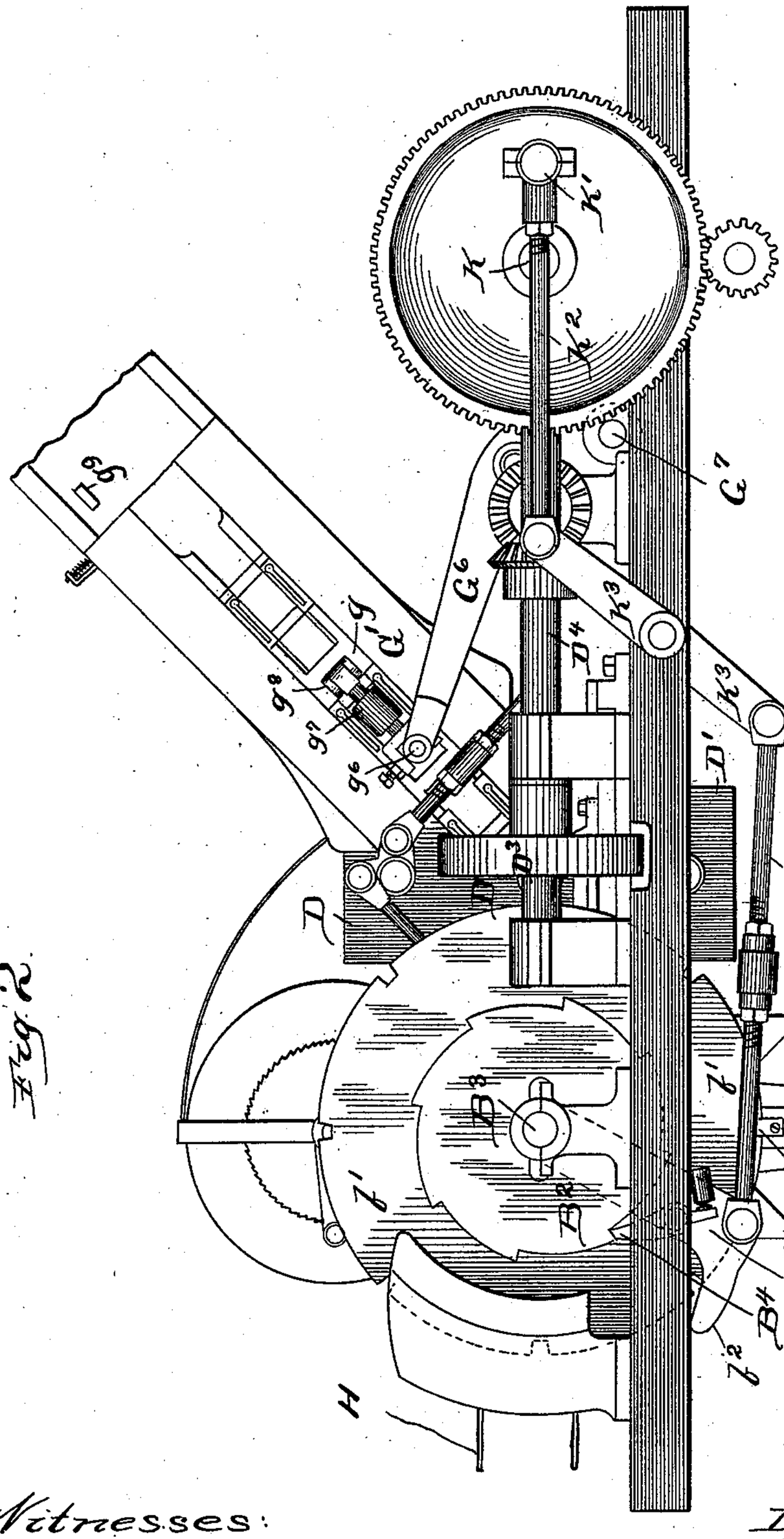


Fig. 2.

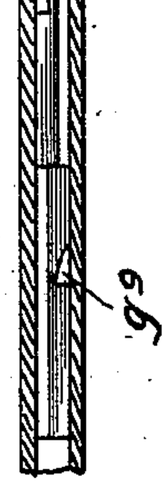


Fig. 9.

Witnesses:
Lew. E. Curtis
A. W. Munday,

Inventors:
Edwin Norton
John G. Hodgson
By Munday, Evarts & Adcock
their Attorneys.

(No Model.) 7 Sheets—Sheet 3.

E. NORTON & J. G. HODGSON.

CAN HEADING MACHINE.

No. 522,270. Patented July 3, 1894.

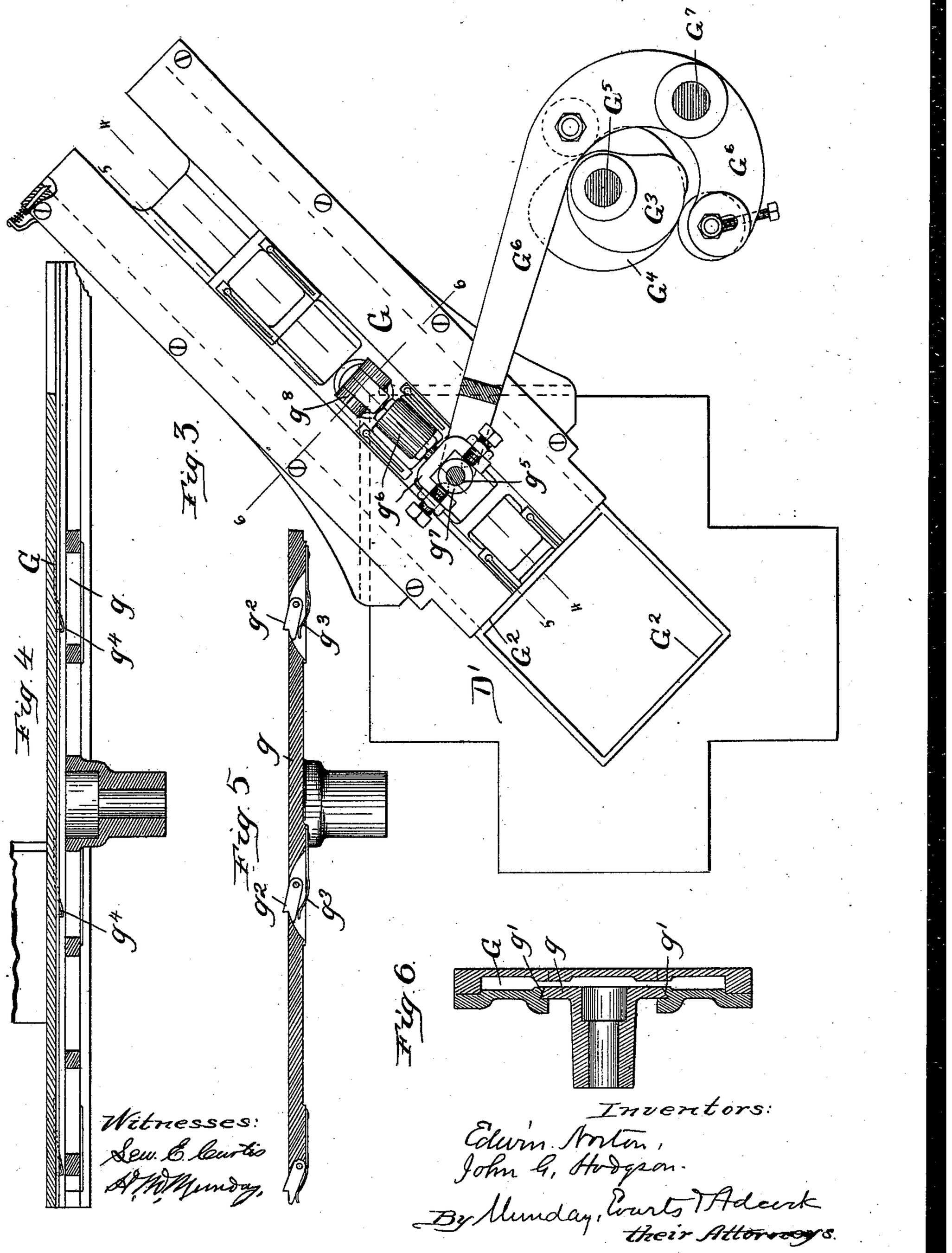


Fig. 3.

Fig. 4.

Fig. 5.

Fig. 6.

Witnesses:
Lew. E. Curtis
A. D. Munday.

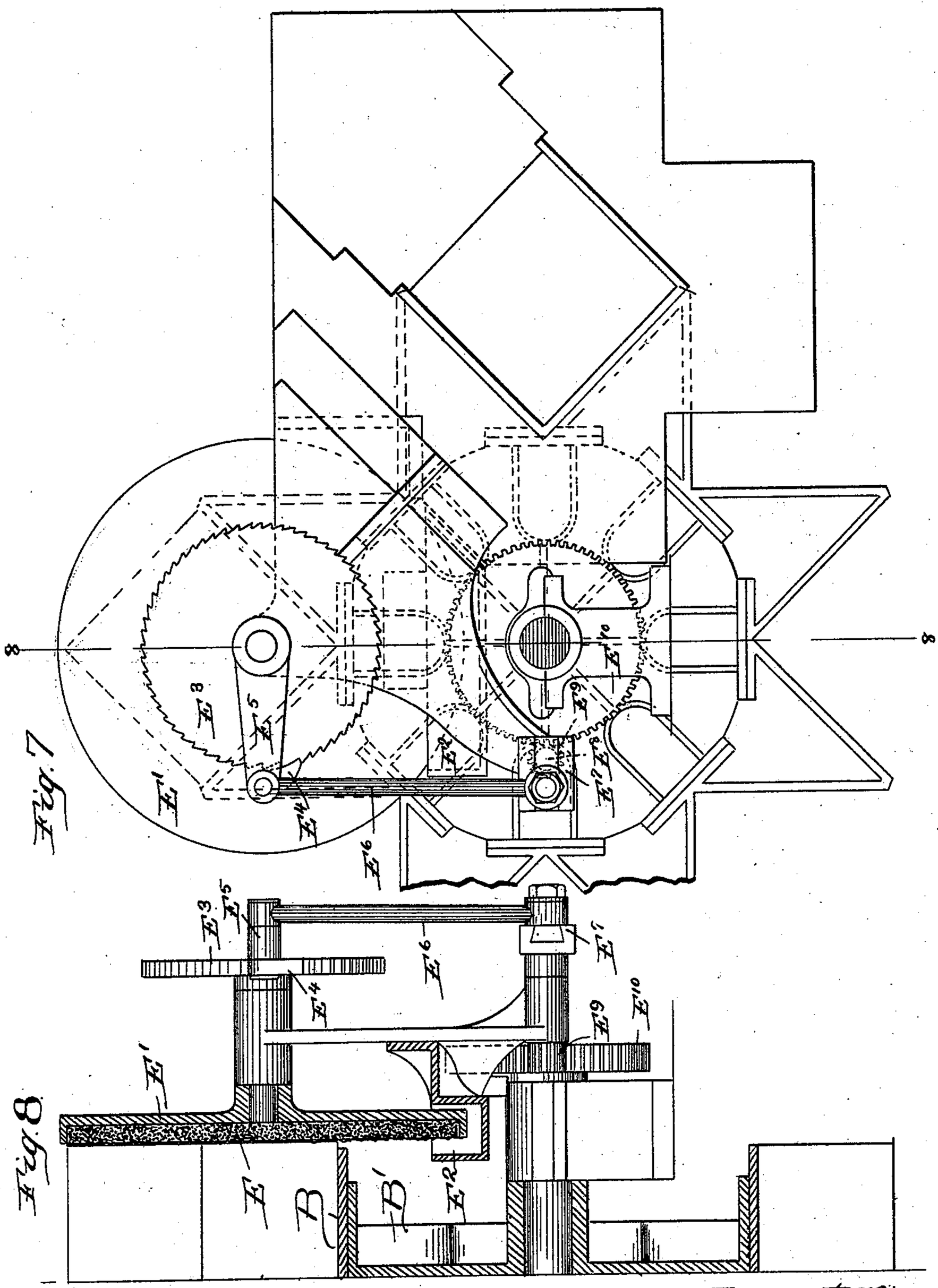
Inventors:
Edwin Norton,
John G. Hodgson.
By Munday, Courts & Adcock
their Attorneys.

(No Model.) 7 Sheets—Sheet 4.

E. NORTON & J. G. HODGSON.

CAN HEADING MACHINE.

No. 522,270. Patented July 3, 1894.



Witnesses:
Lew E. Curtis
A. W. Munday.

Inventors:
Edwin Norton,
John G. Hodgson.
By Munday, Evarts & Adcock,
their Attorneys.

(No Model.) 7 Sheets—Sheet 5.

E. NORTON & J. G. HODGSON.

CAN HEADING MACHINE.

No. 522,270. Patented July 3, 1894.

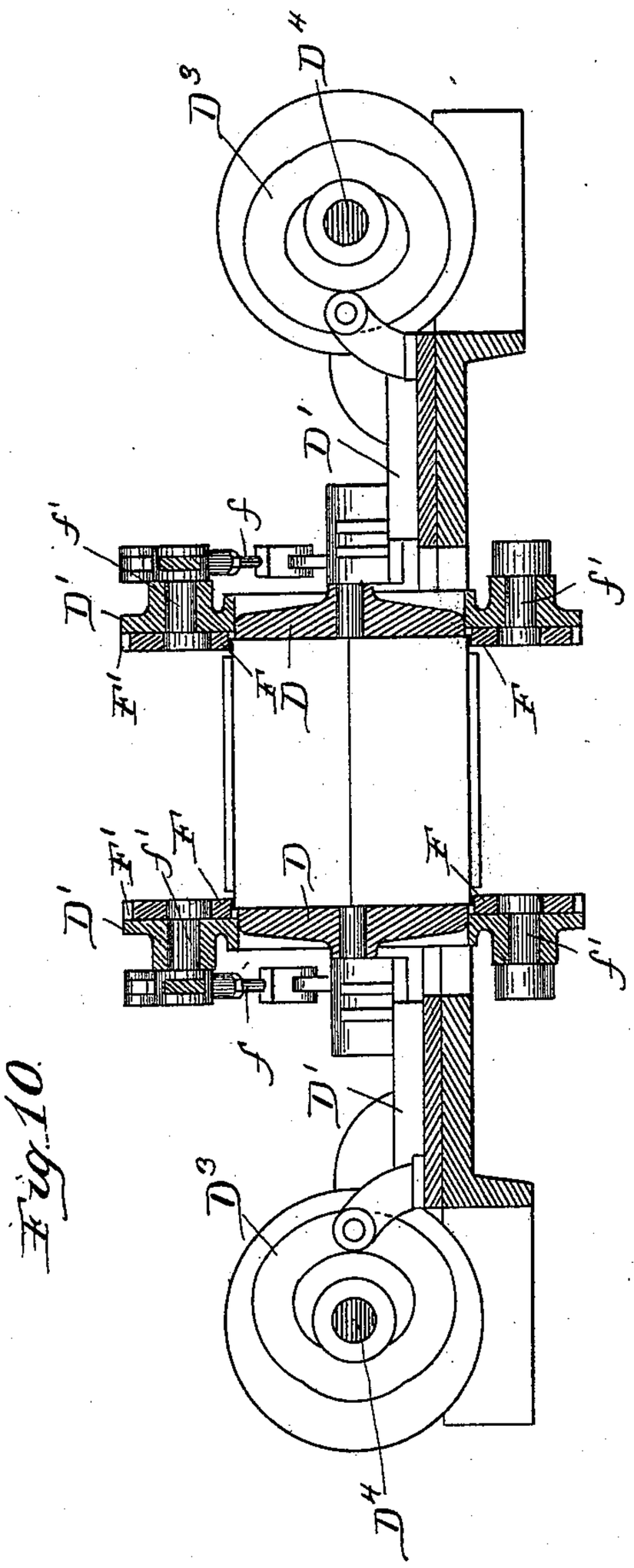


Fig. 10.

Witnesses:
Sew. C. Curtis
A. W. Munday.

Inventors:
Edwin Norton
John G. Hodgson
By Munday, Evarts & Adcock,
Their Attorneys.

(No Model.) 7 Sheets—Sheet 6.

E. NORTON & J. G. HODGSON.

CAN HEADING MACHINE.

No. 522,270. Patented July 3, 1894.

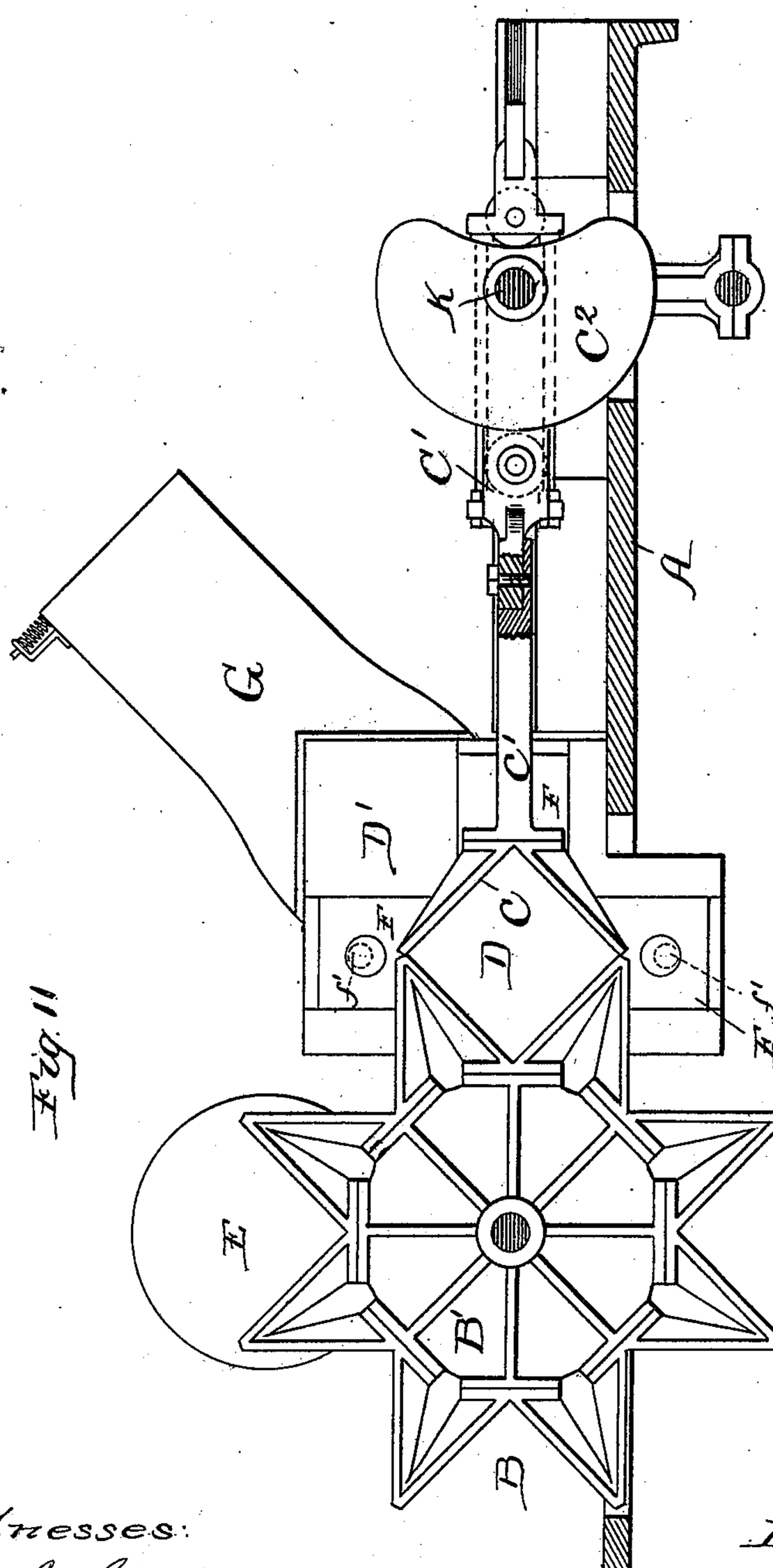


Fig. 1.

Witnesses:
Lew. E. Curtis
A. D. Monday,

Inventors:
EDWIN NORTON
JOHN G. HODGSON
By Munday, Evarts & Adcock
their Attorneys.

(No Model.) 7 Sheets—Sheet 7.

E. NORTON & J. G. HODGSON.

CAN HEADING MACHINE.

No. 522,270. Patented July 3, 1894.

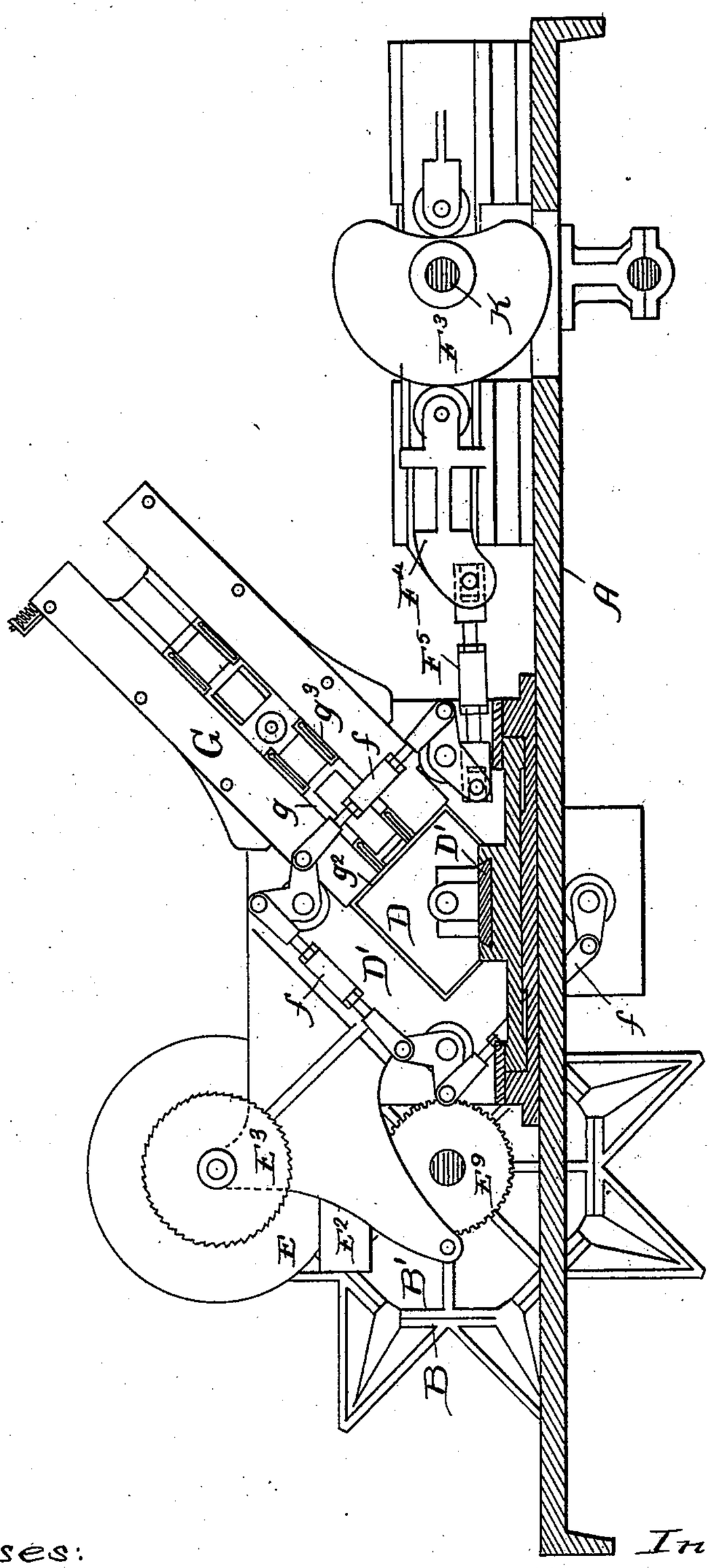


Fig. 12.

Witnesses:
Lew. E. Curtis
A. W. Munday,

Inventors:
Edwin Norton
John G. Hodgson
By Munday, Evarts & Adcock,
their Attorneys.

UNITED STATES PATENT OFFICE.

EDWIN NORTON AND JOHN G. HODGSON, OF MAYWOOD, ASSIGNORS TO SAID NORTON, AND OLIVER W. NORTON, OF CHICAGO, ILLINOIS.

CAN-HEADING MACHINE.

SPECIFICATION forming part of Letters Patent No. 522,270, dated July 3, 1894.

Application filed July 23, 1892. Renewed March 14, 1894. Serial No. 503,561. (No model.)

To all whom it may concern:

Be it known that we, EDWIN NORTON and JOHN G. HODGSON, citizens of the United States, residing in Maywood, in the county of Cook and State of Illinois, have invented a new and useful Improvement in Can-Heading Machines, of which the following is a specification.

Our invention relates to machines for automatically applying the heads or ends to the bodies of sheet metal cans.

It relates more particularly to the machine heretofore patented to us in Letters Patent of the United States No. 294,065, of February 26, 1884.

The object of our present invention is to provide means for automatically applying acid or other flux to the ends of the can body prior to the application of the seaming of the heads thereto; and also to improve and further perfect the mechanism for automatically feeding the heads into position for application to the bodies.

The present improvement consists in connection with mechanism for feeding or conveying the can bodies into position for the application of the heads and the devices for applying the heads thereto, of a device combined therewith to automatically apply acid or flux to the ends of the can body before the heads are applied. This aciding device preferably consists of a revolving wheel or disk furnished with a pad on its inner face in connection with a trough or vessel for holding the acid or flux, and in which the rim of the disk revolves. The aciding or fluxing device is preferably mounted upon the same reciprocating slide or cross head which carries the head applying piston and the seaming devices, so that one movement of this cross head may serve to apply the flux to the end of one can body and to apply the head to the next succeeding can body.

The means or mechanism employed for holding and truing up the can body while the heads are applied thereto consists, preferably, of two opening and closing half-molds or pockets which surround the can body and true it up into shape to receive the heads by exerting external pressure upon its periphery. One of these part molds is preferably mounted upon a reciprocating slide or cross head and the other upon an intermittently revolving wheel. This intermittently revolving wheel is provided with a series of part molds upon its periphery, each of which coacts in turn with the reciprocating part mold, and this wheel thus serves as the device for feeding or conveying the can bodies first into position for the application of the flux thereto and then into position for the application of the heads thereto.

The means or device for applying and forcing the heads upon the can bodies consists of reciprocating pistons or plungers which are preferably mounted upon the same slides that carry the seaming devices or jaws.

The seaming devices, especially where the cans to be operated upon are rectangular, preferably consist of reciprocating jaws or dies.

In the accompanying drawings which form a part of this specification and in which similar letters of reference indicate like parts, Figure 1 is a plan view of a machine embodying our invention. Fig. 2 is a side elevation. Fig. 3 is a detail elevation showing the can head feed chute and the can head feed device operating in conjunction therewith. Fig. 4 is a section on line 4—4 of Fig. 3. Fig. 5 is a section on line 5—5 of Fig. 3. Fig. 6 is a section on line 6—6 of Fig. 3. Fig. 7 is an enlarged detail section taken on line 7—7 of Fig. 1 and showing an elevation of the fluxing device. Fig. 8 is a section on line 8—8 of Fig. 7. Fig. 9 is a detail view of the can head chute. Fig. 10 is a section on line 10 10 of Fig. 1. Fig. 11 is a section on line 11 11 of Fig. 1 and Fig. 12 is an elevation of the mechanism for operating the crimping or squeezing jaws.

In the drawings A represents the frame of the machine.

B are the half-molds or pockets for holding and sizing the can body, which are mounted upon the intermittently revolving wheel B′.

C is the reciprocating half mold carried by the slide or cross head C′ which coacts with the part-molds B on the wheel B′.

D D are the pistons or plungers for forc-

ing the can heads upon the can bodies, the same being mounted upon the slides or cross heads D′.

F F are the clamping or seaming devices, the same consisting preferably of reciprocating slides mounted in suitable guides F′ on the cross head D′.

E is the aciding or fluxing device consisting, preferably, of a pad or cushion carried by the revolving disk E′, the rim of which revolves in a trough or vessel E^2 for containing the flux.

G is the can head feed chute or passage along which the can heads are fed into position for application to the body of the can. The can head feed chutes G are mounted upon the same reciprocating cross head D′ which carries the pistons D, the fluxing device E and the seaming or crimping jaws F. The can head feed chute G is furnished with a reciprocating feed slide *g* mounted in suitable guides *g′*, the same being furnished with pawls or feed fingers g^2 which are held in place by springs g^3. Corresponding spring pawls g^4 are affixed to the feed chute to prevent the can heads from being withdrawn at the return movement of the can head feed slide *g*. The base or lower end G^2 of the can head feed chute corresponds in size to the can head and registers accurately in line with the can body holding and sizing device B C, so that these two devices G^2 and B C serve to register the can head and can body accurately in line with each other at the time the body and head are forced together by the pistons or plungers D. The squeezing jaws F also may serve as a means for registering the can head and can body together and to cause the flange of the can head to pass around the end of the can body evenly and uniformly, as they are mounted on the cross head D′ concentric with the base G^2 of the can head chute.

So far as performing the function of applying the can head to the can body is concerned, the base G^2 of the can head chute and the squeezing jaws F may both be considered as forming a continuation of the mold B C by which the can body is held and sized in position to receive the heads.

The intermittently revolving wheel B′ which carries the part molds B is operated by a ratchet B^2 on the shaft B^3 of wheel B′, which is engaged by a pawl B^4 pivoted to a swinging arm B^5 which is operated from the crank shaft K by means of the crank K′ thereon, connecting link K^2, lever K^3 and connecting link K^4 extending from the lower arm of said lever K^3 to said swinging arm B^5. The wheel B′ is locked in position by means of a locking pawl or bolt *b* which engages a notched rim *b′* on the shaft of said wheel B′. The locking bolt *b* is withdrawn at intervals by means of a cam or projection b^2 on the swinging arm B^5. The locking bolt *b* is secured to a reciprocating slide b^3, having a pin or projection b^4 with which the cam or projection b^2 on the swinging arm B^5 comes in contact when said arm B^5 is drawn back by the connecting link K^4, as before described, into position for causing the pawl B^4 to engage the next tooth of the ratchet B^2 and turn the wheel B′ another step. The cross head C′ which carries the reciprocating part mold C is operated by cams C^2 C^3 on the crank shaft K.

The cross heads D′ which carry the pistons D, fluxing devices E, the seaming devices F and the can head feed devices G *g* are reciprocated back and forth by means of cams D^3 on the countershafts D^4, said countershafts D^4 being connected by beveled gears *d d′* with the crank shaft K. The crimping jaws F are reciprocated in their guides F′ on the cross head D′ by means of cams F^2 F^3 on the crank shaft K which operate the slide F^4 connected by a link F^5 to one of said crimping jaws F; and the remaining crimping jaws are operated from this crimping jaw by means of the connecting links *f* and crank shafts *f′* which are pivoted to the cross head D′ and which crank shafts are furnished with eccentrics for operating the slides F. The can head feed slides *g* are operated by cams G^3 G^4 on the countershaft G^5 which engage a bell crank lever G^6 pivoted at G^7 to the frame, the upper end of which is pivoted at g^5 to a pivoted link g^6 to which is pivotally connected a second link g^7 which is connected at its opposite end to the slide *g* by a swiveling coupling g^8. By this double link and double pivoted connection of the operating lever G to the feed slide *g*, the radial movement of the operating lever is compensated for, while at the same time the feed slide is permitted to have its necessary transverse movement with the cross head D′ upon which it is mounted.

The fluxing device E is given a step by step revolving movement by means of a ratchet E^3 which is operated by a pawl E^4 pivoted to a swinging arm E^5 which is actuated by a link E^6 from the crank E^7, the shaft E^8 of which is revolved by a gear E^9 which meshes with a gear E^{10} on the shaft of the intermittently revolving wheel B′.

The can bodies are delivered to the can body feed wheel B′ by a feed belt or conveyer H.

The can head feed chute G at the upper portion thereof beyond the can head feed slide *g* which receives the loose heads is provided on opposite sides alternately with can shaped projections g^9 which serve to twist or tilt two adjoining heads in the chute into crossing or intersecting planes for the purpose of preventing one head lapping or slipping beyond another and wedging in the chute. This is clearly illustrated in Figs. 2 and 9. The flanges on the can heads are often so narrow that the heads would tend to slip or lap by each other without this provision, especially where the can head chutes are inclined at an angle to the vertical and are inclined to slide down the chute by their own

gravity. It will of course be understood that the projections g^9 are located the width or diameter of the can head apart so that one projection will operate upon one can head and the other projection operate on the succeeding can head and thus tilt the two so that they will cross each other.

We claim—

1. The combination with a device for holding the can body, of a device for centering the can head in line with the body, a device for forcing the can head upon the body, a device for applying flux to the end of the can body before the application of the can head thereon, and a movable can body carrier or conveyer furnished with can body holding pockets for conveying the can bodies from said fluxing device to said can head centering and applying devices, said fluxing device being arranged adjacent to said can body carrier or conveyer, and each of the can body holding pockets on said carrier coacting in turn with the fluxing device and serving to hold or support the can body while being operated upon by the fluxing device, and also coacting in turn with said can head centering and applying devices, substantially as specified.

2. In a can body heading machine, the combination with a can body feed wheel B′ furnished with can body holding pockets B, of a can body holding device C cooperating therewith, a can head centering device, a can head applying plunger D for forcing the can head upon the body, and a fluxing device E arranged adjacent to said feed wheel B′ and adapted to cooperate in turn with each of said can body holding pockets thereon, said can body holding pockets B serving to hold or support the can bodies, each in turn, while being operated on by said fluxing device, and said feed wheel B′ serving to move or convey the can bodies from said fluxing device to the can head centering device and can head applying plunger, substantially as specified.

3. The combination with a device for holding the can body, of a device for centering the can head in line with the body, a device for forcing the can head upon the body, a device for applying flux to the end of the can body before the application of the can head thereon, means for conveying the can bodies from said fluxing device to said can head centering and applying devices, and a cross head or slide D′ upon which said fluxing device is mounted and by which it is brought into contact with the end of the can body, substantially as specified.

4. In a can heading machine, the combination with a can body feed device, of a device for holding the can body in position, a device for centering the can head in line with the can body, a device for forcing the can head upon the body, and a reciprocating and revolving fluxing device E, substantially as specified.

5. In a can heading machine, the combination of a can body feed device, of a device for holding the can body in position, a device for centering the can head in line with the can body, a device for forcing the can head upon the body, a reciprocating and revolving fluxing device E, and a trough or vessel E^2 for containing the acid or flux, substantially as specified.

6. In a can heading machine, the combination with a can body feed device and a device for holding the can body in position for application of the head thereto, a device for centering the can head in line with the can body, a piston or plunger D for forcing the can head and body together, a cross head or slide D′ for operating the same, and a fluxing device E carried by said cross head, substantially as specified.

7. The combination with a can body feed device and a device for holding the can body, of a piston or plunger D for forcing the can head and body together, a cross head or slide D′ for operating the same, a fluxing device E carried by said cross head, and a seaming or crimping device also mounted upon said cross head, substantially as specified.

8. The combination with a can body feed device and a device for holding the can body, of a piston or plunger D for forcing the can head and body together, a cross head or slide D′ for operating the same, a fluxing device E carried by said cross head, a seaming or crimping device also mounted upon said cross head, and a can head feed chute also mounted upon said cross head, substantially as specified.

9. The combination with a can body feed device and a device for holding the can body, of a piston or plunger D for forcing the can head and body together, a cross head or slide D′ for operating the same, a fluxing device E carried by said cross head, a seaming or crimping device also mounted upon said cross head, and a can head feed chute also mounted upon said cross head, said can head feed chute being provided with a reciprocating can head feed slide, substantially as specified.

10. The combination with a can body feed device and a device for holding the can body, of a piston or plunger D for forcing the can head and body together, a cross head or slide D′ for operating the same, a fluxing device E carried by said cross head, a seaming or crimping device also mounted upon said cross head, and a can head feed chute also mounted upon said cross head, said can head feed chute being provided with a reciprocating can head feed slide furnished with a pawl for engaging the can heads, substantially as specified.

11. The combination with a can body feed

device and a device for holding the can body, of a piston or plunger D for forcing the can head and body together, a cross head or slide D′ for operating the same, a fluxing device E carried by said cross head, a seaming or crimping device also mounted upon said cross head, and a can head feed chute also mounted upon said cross head, said can head feed chute being provided with a reciprocating can head feed slide furnished with a pawl for engaging the can heads, and said can head feed chute having a pawl to prevent the backward movement of the can heads therein, substantially as specified.

12. The combination in a can heading machine of a can head feed chute mounted upon a reciprocating slide or cross head and furnished with a reciprocating can head feed slide, substantially as specified.

13. The combination in a can heading machine of a can head feed chute mounted upon a reciprocating slide or cross head and furnished with a reciprocating can head feed slide, and said can head feed slide being provided with a feed pawl for engaging the can heads, substantially as specified.

14. The combination in a can heading machine of a can head feed chute mounted upon a reciprocating slide or cross head and furnished with a reciprocating can head feed slide, said can head feed slide being provided with a feed pawl for engaging the can heads, and said can head feed chute having a pawl to prevent the backward movement of the can heads therein, substantially as specified.

15. The combination in a can heading machine of a can head feed chute mounted upon a reciprocating slide or cross head and furnished with a reciprocating can head feed slide, and mechanism for reciprocating the cross head upon which said feed chute is mounted, and mechanism for reciprocating the can head feed slide on said chute, substantially as specified.

16. The combination in a can heading machine of a can head feed chute mounted upon a reciprocating slide or cross head and furnished with a reciprocating can head feed slide, mechanism for reciprocating the cross head upon which said feed chute is mounted and mechanism for reciprocating the can head feed slide on said chute, said last mentioned mechanism consisting of an operating lever connected to said feed slide by two double pivoted links, substantially as specified.

17. The combination in a can heading machine of a can head feed chute or passage with a reciprocating can head feed slide G′ for moving the can heads along in said chute or passage, substantially as specified.

18. The combination in a can heading machine of a can head feed chute or passage with a reciprocating can head feed slide G′ for moving the can heads along in said chute or passage, said feed slide being furnished with pawls or fingers for engaging the cans, substantially as specified.

19. The combination in a can heading machine of a can head feed chute or passage with a reciprocating can head feed slide G′ for moving the can heads along in said chute or passage, said feed slide being furnished with pawls or fingers for engaging the cans, and said chute being furnished with spring pawls for preventing the backward movement of the can heads therein, substantially as specified.

20. The combination of an opening and closing two part device B C for embracing and holding the can body, of a device for centering the can head in line with the can body, a device for forcing the can head upon the can body, a can body conveyer, and a reciprocating and revolving fluxing device for applying flux to the end of the can body prior to the application of the head thereon, substantially as specified.

21. The combination of an opening and closing two part device B C for embracing and holding the can body, of a device for centering the can head in line with the can body, a device for forcing the can head upon the can body, a can body conveyer, and a pair of movable fluxing pads E E adapted to be forced against the end of the can body, said pads E E embracing the entire end of the can-body, and a reciprocating and revolving fluxing device for applying flux to the end of the can body prior to the application of the head thereon, substantially as specified.

22. The combination with an opening and closing two part device B C for embracing and holding the can body, of a device for centering the can head in line with the can body, a can head feed chute or device for delivering the can heads to said can head centering device, a device for forcing the can head upon the can body, a can body conveyer, and a device for applying flux to the end of the can body before the application of the head thereon, substantially as specified.

23. The combination with an opening and closing two part device B C for embracing and holding the can body, of a device for centering the can head in line with the can body, a device for forcing the can head upon the can body, a can body conveyer, and a device for applying flux to the end of the can body before the application of the head thereon, and a device for seaming and crimping the head upon the can body, substantially as specified.

24. The combination with a device for holding and supporting the can body, of a revolving and reciprocating can body fluxing disk pad E adapted to embrace the entire end of the can body, and a trough or vessel E^2 for holding the flux and in which the rim of said disk revolves, substantially as specified.

25. In a can heading machine the combination with an opening and closing device for

holding the can body, of a device for centering the can head in line with the can body, a device for forcing the can head and body together, and a can head feed chute G, furnished with oppositely disposed projections g^9 g^9 on the inner side wall of the chute, adapted to engage the flat or disk portion of the can heads and cause the can heads in the chute to cross each other at an angle, and thus prevent their slipping or lapping by each other, substantially as specified.

EDWIN NORTON.
JOHN G. HODGSON.

Witnesses:
H. M. MUNDAY,
EMMA HACK.