(No Model.)

3 Sheets—Sheet 1.

E. JORDAN.

HEADING MACHINE.

No. 322,060. Patented July 14, 1885.

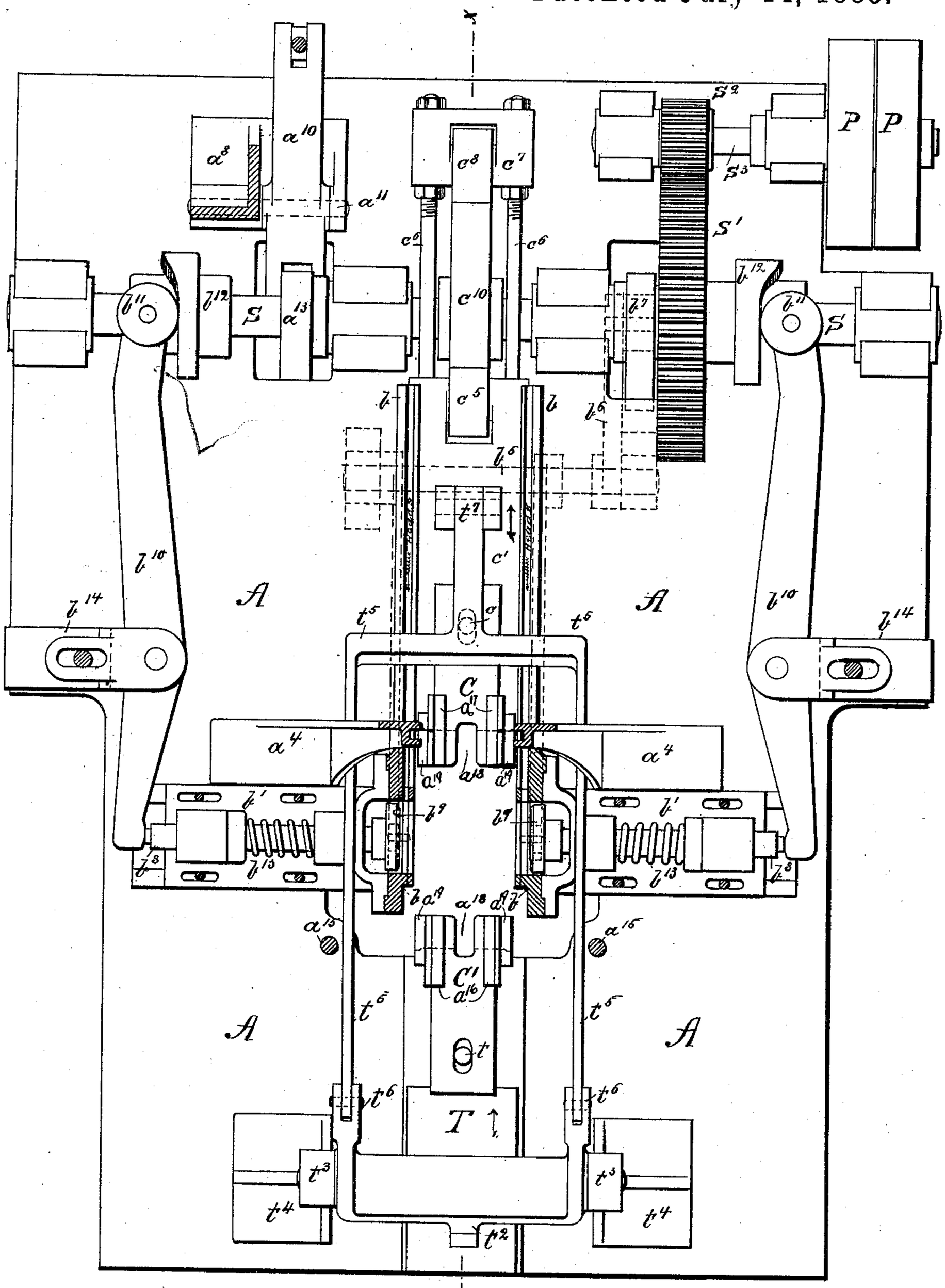

Fig. 1.

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Inventor:
E. Jordan.
by E. W. Blair Atty.

(No Model.)

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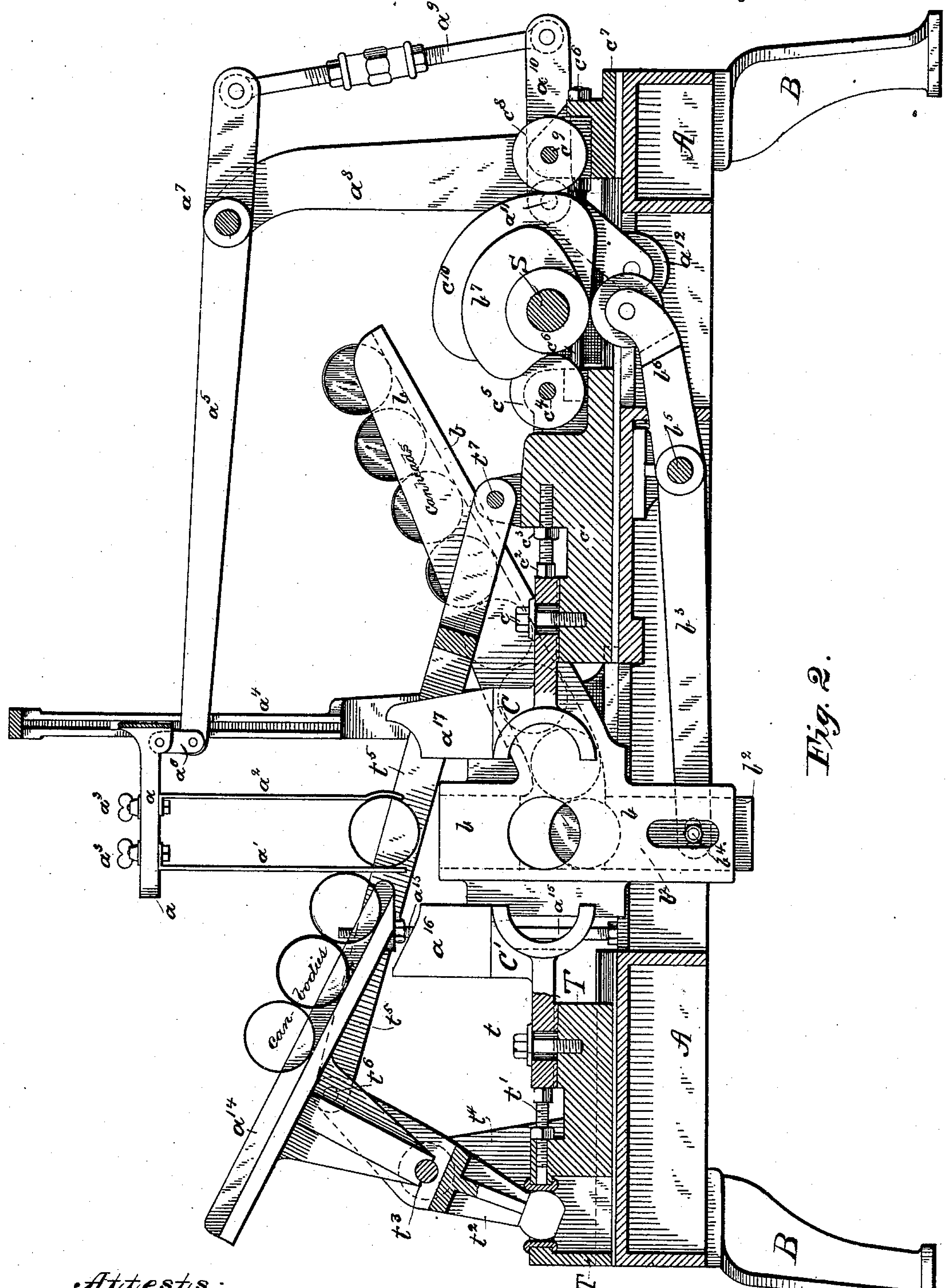

Fig. 2.

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(No Model.)

3 Sheets—Sheet 3.

E. JORDAN.

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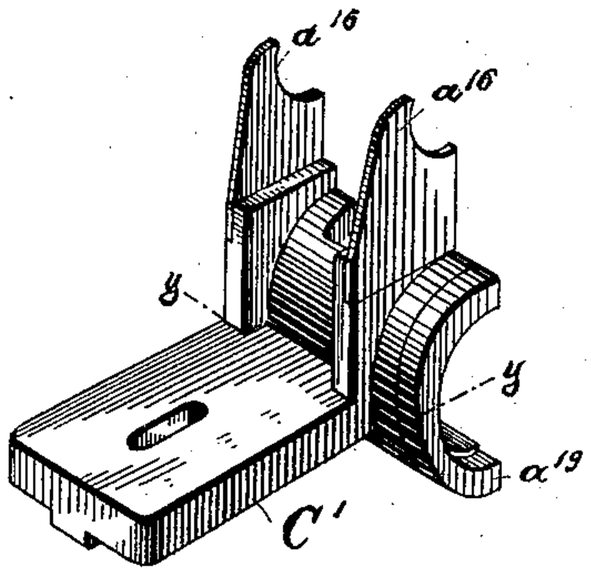

Fig. 3.

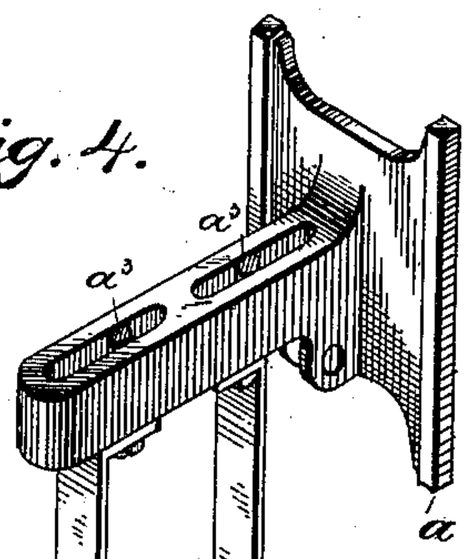

Fig. 4.

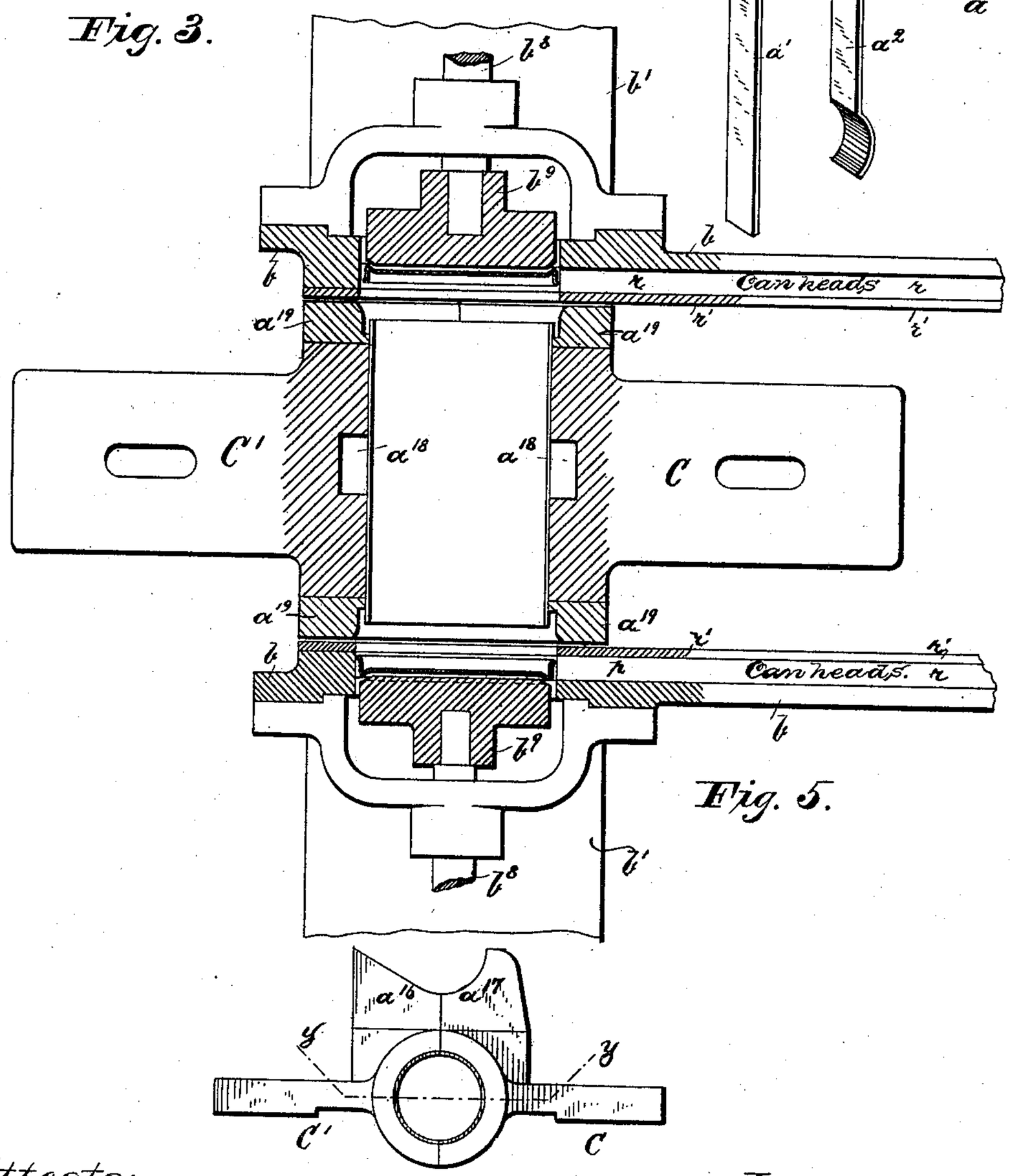

Fig. 5.

Fig. 6.

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UNITED STATES PATENT OFFICE.

EDMUND JORDAN, OF BROOKLYN, NEW YORK, ASSIGNOR, BY MESNE ASSIGNMENTS, TO EDWIN NORTON AND OLIVER W. NORTON, OF CHICAGO, ILLINOIS.

HEADING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 322,060, dated July 14, 1885.

Application filed November 26, 1884. (No model.)

To all whom it may concern:

Be it known that I, EDMUND JORDAN, of the city of Brooklyn, in the county of Kings and State of New York, have invented a new and useful invention in Heading-Machines for Automatically Applying the Heads on the Bodies of Sheet-Metal Cans; and I do declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to make and use the same, reference being had to the accompanying drawings, forming part of the specification.

My invention relates to a machine for automatically forcing the heads on sheet-metal can-bodies; and it consists of the mechanism and mechanical movements hereinafter more fully described.

Figure 1 represents a plan view of my machine in position to receive a can-body and heads with the chute and conveyer removed. Fig. 2 is a sectional view of the machine, taken through line X X, Fig. 1. Fig. 3 is a perspective view of a part-mold for clamping and retaining the can-body. Fig. 4 is a perspective view of a conveyer for transferring the body from the chute to a position between the molds to be clamped. Fig. 5 represents a horizontal central section of a can-body clamped in position by the part-molds to receive the heads, and a horizontal section of the part-molds, taken at line *y y*, Figs. 6 and 3, and sections of the can-heads in position to be forced on the body by the plunger, and also sections of chutes. Fig. 6 represents an end view of the part-molds in a closed or clamped position.

Having described my invention by reference to the figures in the accompanying drawings, I will now proceed to describe the same by reference to the letters marked thereon, in which similar letters refer to corresponding parts throughout the drawings.

A represents the body of the machine, supported on legs B B.

C and C′ represent two part-molds, clamped to their respective reciprocating slides, which are guided in suitable ways and actuated reciprocally, as hereinafter described. The part-mold C, by means of the bolt *c*, is clamped to the slide *c′*, and is adjusted by set-screw c^2 and jam-nut c^3. On the outer end of the slide *c′* is pivoted, at c^4, an anti-friction roll, c^5. Connected with slide *c′* by means of connecting-rods c^6 c^6, and in line with the last-mentioned slide, is another slide, c^7, which carries anti-friction roll c^8, which is pivoted in the slide at c^9. The two slides form a yoke by means of the two connecting-rods before mentioned. Cam c^{10} revolves inside of this yoke, bearing against the anti-friction rolls c^5 and c^8, and imparts a reciprocating motion to the slide and yoke, and is provided with a suitable rest to allow the other parts of the work to be performed. Cam c^{10} is attached to and operated by main shaft S, which receives its motion through the medium of gear S′ on the main shaft, and the pinion S^2, meshing into the gear-wheel and rigidly attached to pinion-shaft S^3, which has suitable bearings in the frame, and is driven by pulleys P P. C′ is also a part-mold, clamped and adjusted to slide T by means of a clamp-bolt, *t*, and set-screw, *t′*. Slide T moves in suitable ways, and has a reciprocating motion imparted to it by a forked lever, t^2, which is pivoted at t^3 to two brackets, t^4 t^4, fastened to the frame A. The lower end of lever t^2 is fitted into a slot in slide T, and the upper forked ends are each pivoted to a forked link, t^5, at t^6 t^6. The opposite end of forked link t^5 is pivoted to slide *c′* at t^7. By these mechanisms, power being applied to cam c^{10}, an opening and closing reciprocating motion is imparted to the part-molds, to allow the can-bodies to enter, to be clamped, and to drop out when the heads are forced on the body.

a represents a reciprocating conveyer, to which are fastened thin flat springs *a′* and a^2. *a′* is straight, and a^2 has a curved or bent end, as shown in Fig. 4. These springs are adjustable by means of thumb-screws a^3 a^3, to accommodate different sizes of can-bodies. The conveyer is guided in two uprights, a^4 a^4, fastened to the frame, and receives its reciprocating motion through a lever, a^5, which is connected at one end with conveyer *a* by means of a link, a^6. Lever a^5 is pivoted at a^7 to bracket a^8, fastened to the frame. The lever a^5 re-

ceives its motion through an adjustable connecting-rod, a^9, connected at one end to lever a^5, and at the opposite end to a lever, a^{10}. This lever is also pivoted on the lower part of the bracket a^8 at a^{11}. Its opposite end carries an anti-friction roll, a^{12}, working on the face of a can, a^{13}, rigidly fastened to the main shaft S.

a^{14} represents an incline adjustable chute for conveying the can-bodies under the conveyer. This chute at one end rests on shaft t^3, the opposite end being supported by two upright bolts, a^{15} a^{15}. The lower ends of these bolts are tapped into the frame, and the upper ends carry adjusting-nuts for adjusting the chute to different inclinations. When the part-molds C and C′ are closed, as shown in Fig. 6, the reciprocating conveyer is at the highest point, thereby allowing the can-body to roll down the incline chute and come to a rest on the projecting lugs on the half-molds.

a^{16} a^{16} and a^{17} a^{17} represent the lugs. Just preceding the opening of the part-molds the conveyer descends and embraces the can-body at rest on the projecting lugs. The half-molds then recede, and the can-body is then conveyed to the center of the two part-molds by the downward motion of the conveyer and held in that position until the part-molds clamp the can-body firmly between them. (Recesses a^{18} a^{18} are provided in the part-molds to receive the two conveyer-springs while the part-molds are closed. The two part-molds are provided on each side with steel face-plates a^{19} a^{19} a^{19} a^{19}, in order to be less subject to wear.) The conveyer then returns to the highest point, thereby allowing another can-body to roll down the chute and come to a rest on the projecting lugs, as before mentioned. A cycle of these operations is continued.

b b represent two inclined chutes for conveying the can-heads into proper position to be forced on the can-bodies. These chutes should be of the required size to carry the can-heads. They are provided with recesses r r, which are covered by plates r' r', to guide the can-heads while rolling down the chute. These chutes at their lower ends are each attached to an adjustable frame, b' b', as and for the purpose hereinafter set forth. Each of these chutes at the lower end carries a reciprocating slide, b^2 b^2, one of which is shown in Fig. 2. Each of these slides is connected by means of stud-bolt b^4 with levers b^3 b^3, one of which is shown in Fig. 2. The levers b^3 b^3 are rigidly attached to rock-shaft b^5, working in suitable bearings in the frame.

b^6 is another lever rigidly attached at one end to rock-shaft b^5, and the opposite end carries an anti-friction roll, working on the face of a cam, b^7, rigidly attached to the main shaft S. By means of the mechanism described an intermittent reciprocating motion is imparted to the slides b^2 b^2. Each of the frames carries an intermittently-reciprocating plunger, b^8 b^8, provided on the inner ends with the heads b^9 b^9, fitting the can-heads. The frame b' b' and the chutes b b, attached to them, are adjustable inward and outward on the frame A by means of bolts and slots.

b^{10} b^{10} represent two levers, carrying on one end rolls b^{11} b^{11}, working against the side faces of cams b^{12} b^{12}, rigidly attached to the main shaft S. The other ends of the levers b^{10} b^{10} work against the end of the plunger b^8 b^8, imparting an inward reciprocating motion. The outward or return motion of the plungers is imparted by springs b^{13} b^{13}. Levers b^{10} b^{10} are pivoted in brackets b^{14} b^{14}, adjustable inward and outward on the frame, to allow for the adjustment of the adjustable frames b' b' and to get the levers in a proper relative position to them. The heads of the cans roll by their own gravity down the incline chutes and on top of the slides b^2 b^2, these slides fitting the periphery of the heads. Simultaneously with the clamping of the can-body between the reciprocating part-molds the can-heads are raised by means of the slides b^2 b^2 and the operating mechanism therewith connected to a position opposite the ends of the can-body ready to be forced on. Directly following this movement the plungers b^8 b^8 and plunger-heads b^9 b^9 move inward, forcing the heads on the can-body. The plungers, plunger-heads, slides, and part-molds all recede and allow the can-body, with the heads applied, to drop from the molds and out of the machine.

The machine, as shown in the accompanying drawings, is suitable for round cans only; but it is obvious that by some small changes in the feeding device the machine can be built suitable for heading square, oblong, and any other shaped can.

What I claim as new, and desire to secure by Letters Patent, is—

1. In a can-heading machine, the combination, with two reciprocating part-molds, of a reciprocating device for conveying the can-body to a position between said part-molds and holding it there while said molds move forward to clamp the can-body, substantially as specified.

2. The combination, with two part-molds, of a reciprocating device for conveying the can-body to a position between said part-molds and holding it there until clamped thereby, substantially as specified.

3. The combination, with two reciprocating part-molds provided with a rest or support for the can-body above them when closed, of a reciprocating conveyer provided with spring fingers or arms for holding the can-body and suspending it between said part-molds when they open, substantially as specified.

4. The combination, with two reciprocating part-molds provided with a can-body rest or support when closed, a chute for delivering the can-bodies to said rest, and a reciprocating conveyer having spring-arms to grasp the can-body and suspend it between said part-molds, substantially as specified.

5. The combination, with a pair of part-molds, of a device for suspending the can-body between said part-molds as they close to clamp the can-body, said part-molds being provided with slots or openings to admit said can-body-suspending device, substantially as specified.

6. The combination, with a pair of molds for clamping the can-body, of a plunger-head and a slide to adjust the can-head opposite the mold, substantially as specified.

7. The combination, with a pair of can-body-clamping molds, of a plunger-head, a reciprocating slide to move the can-head opposite the mold, and a chute for delivering the can-heads to said slide, substantially as specified.

8. The combination, with two reciprocating part-molds, C C′, of slides c' and T, upon which said part-molds are mounted, pivoted lever t^2 and link t^5, connecting said slides, and a cam for operating them, substantially as specified.

9. The combination of reciprocating part-molds C C′ with slides T and c' c^7, cam c^{10}, and pivoted lever t^2 and link t^5, substantially as specified.

10. The combination, with a pair of molds for clamping the can-body, of a pair of plungers and plunger-heads and a pair of levers, b^{10}, and cams b^{12}, for operating said plungers, substantially as specified.

11. The combination, with a pair of can-body-clamping molds, of a chute for the can-heads, a slide for moving the can-head opposite said molds, and a lever and cam for operating said slide, substantially as specified.

12. The combination, with two part-molds, of a can-head chute, a slide to move the can-head opposite the mold, a lever and cam for operating said slide, a plunger and plunger-head, and a cam and lever for operating said plunger, substantially as specified.

13. The combination, with two part-molds, of a reciprocating conveyer to convey to and hold the can-body between said molds and a cam and lever for reciprocating said conveyer, substantially as specified.

14. The combination, with two part-molds, of reciprocating conveyer a, provided with spring-fingers a' and a^2, said spring a^2 having a curved end, substantially as specified.

15. The combination, with two part-molds, of a reciprocating conveyer, a, having adjustable spring-fingers a' and a^2, substantially as specified.

16. In a can-heading machine, the two reciprocating part-molds C and C′, provided with rests or supports a^{17} and a^{16} for the can-body when said part-molds are closed, substantially as specified.

EDMUND JORDAN.

Witnesses:

EDWIN H. RISLEY,

WM. G. WILLS.