(No Model.) 4 Sheets—Sheet 1.

E. ELLEFSEN.

CAN HEADING MACHINE.

No. 560,024. Patented May 12, 1896.

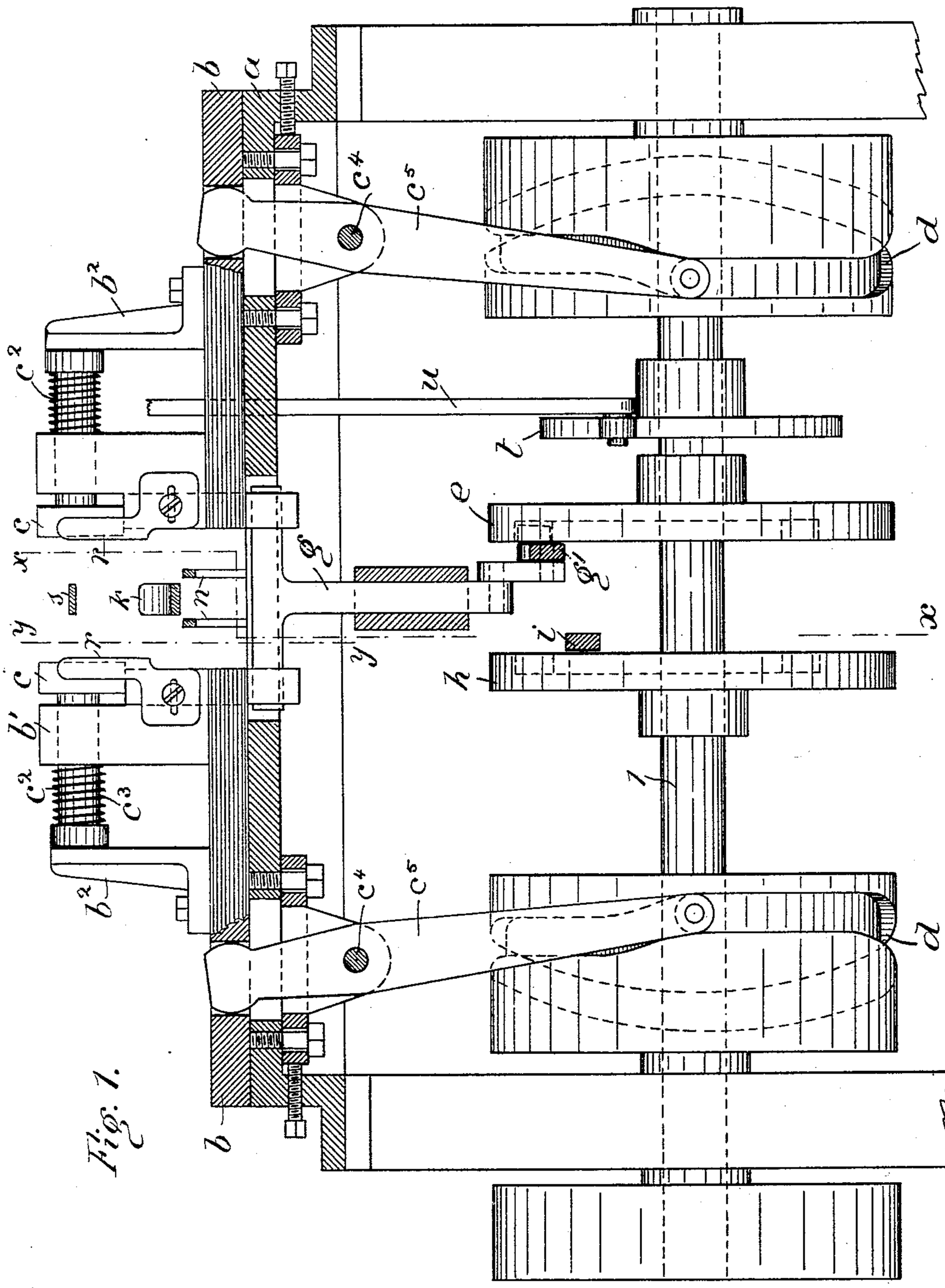

Fig. 1.

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(No Model.) 4 Sheets—Sheet 2.

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Fig. 2.

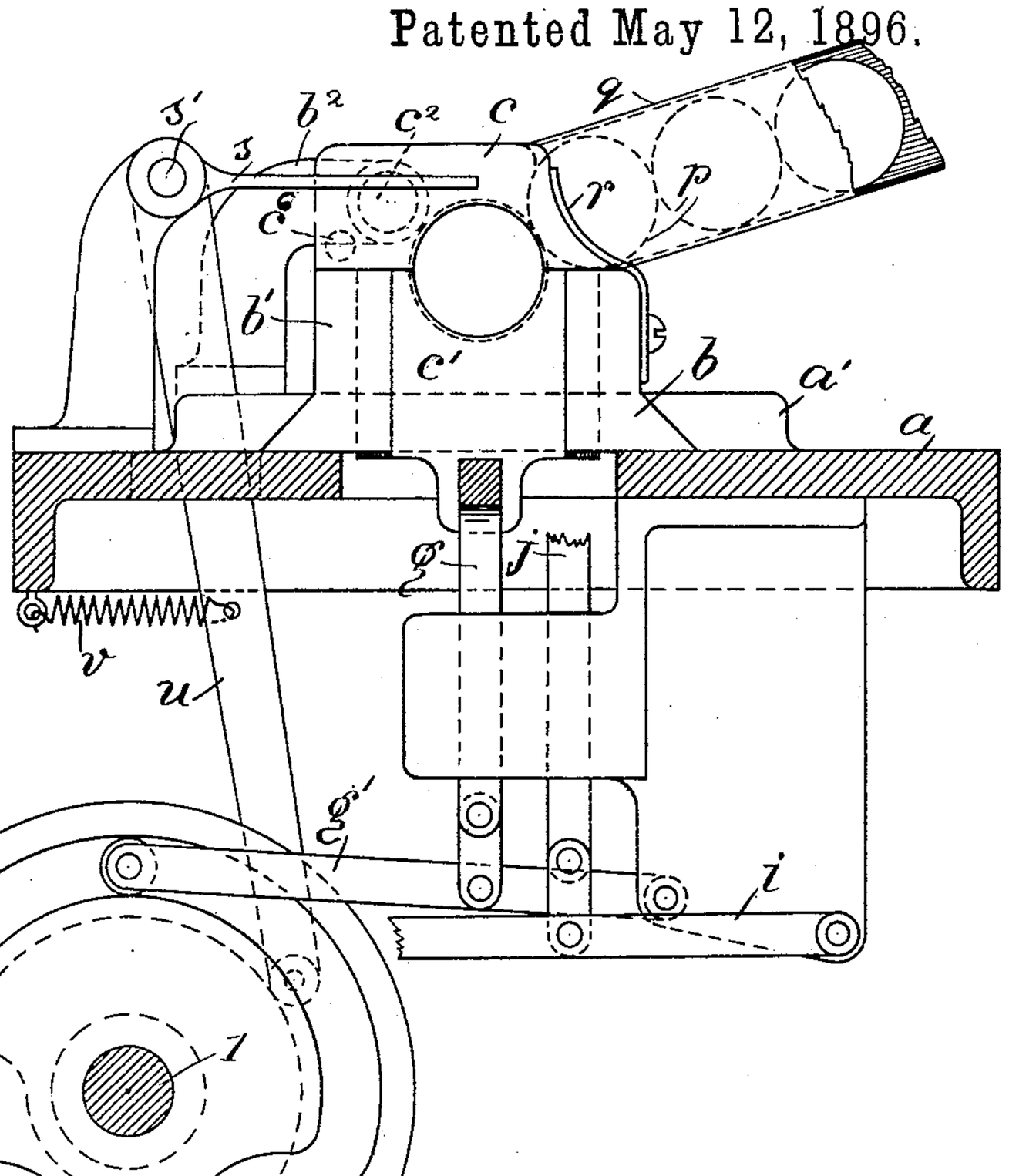
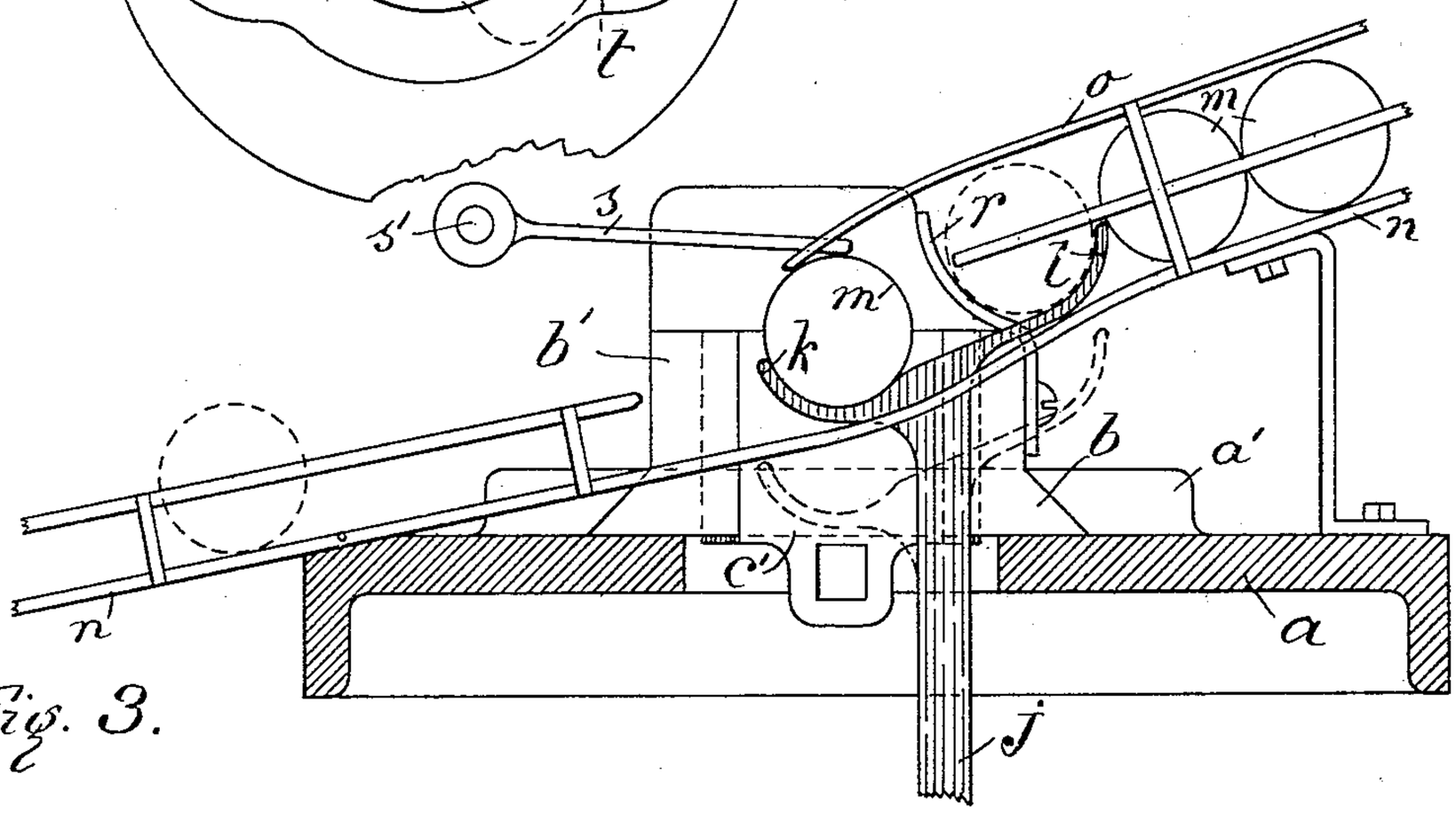


Fig. 3.



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4 Sheets—Sheet 3.

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Fig. 4.

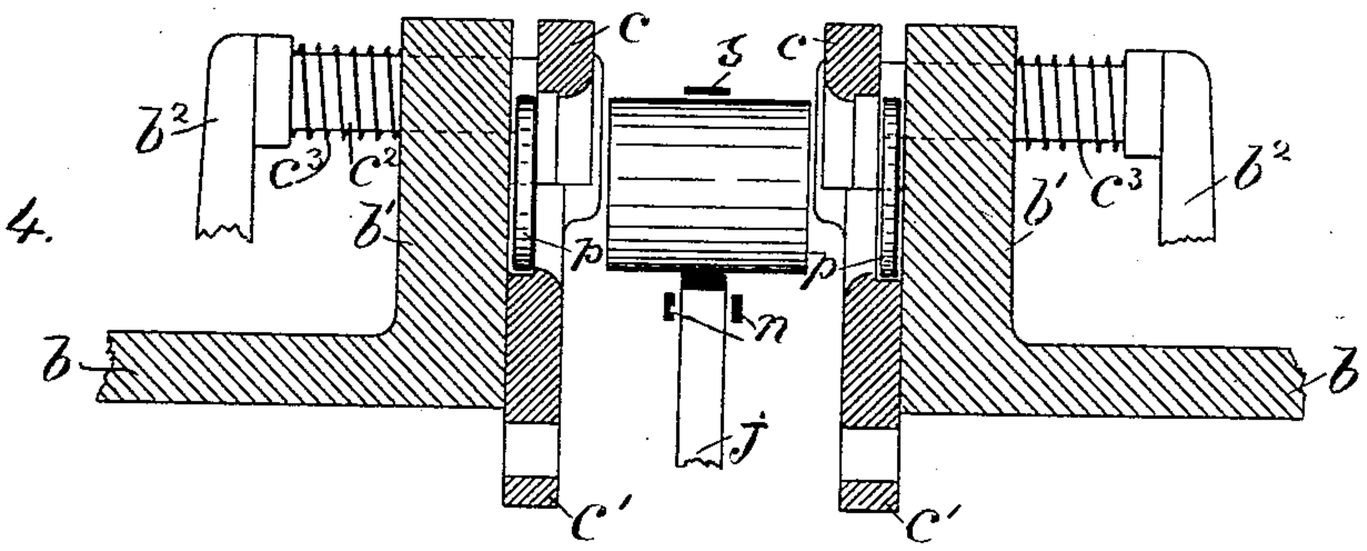


Fig. 5.

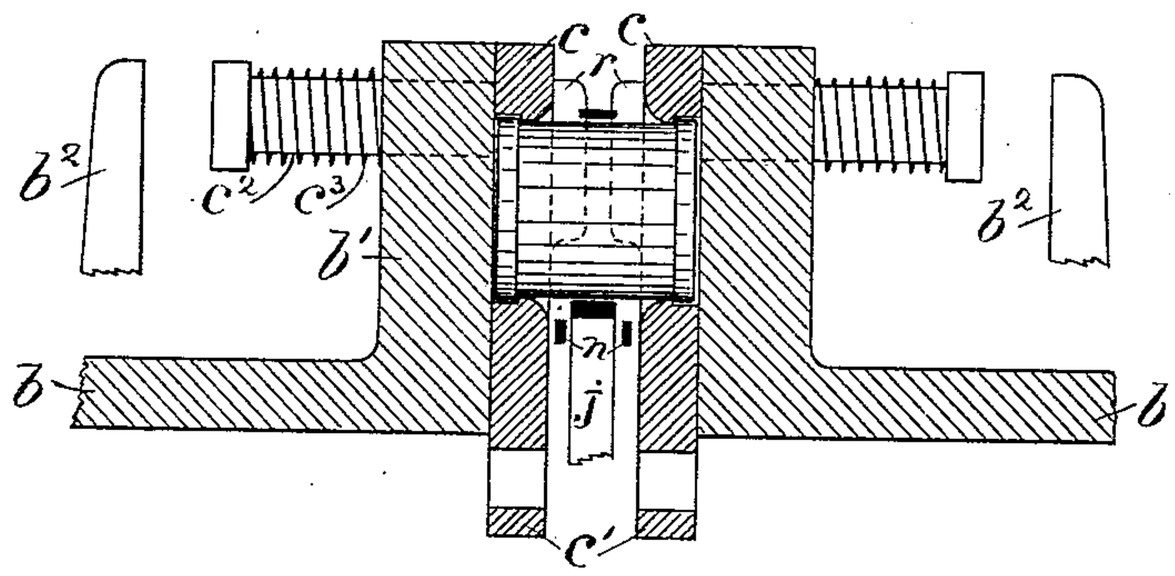


Fig. 6.

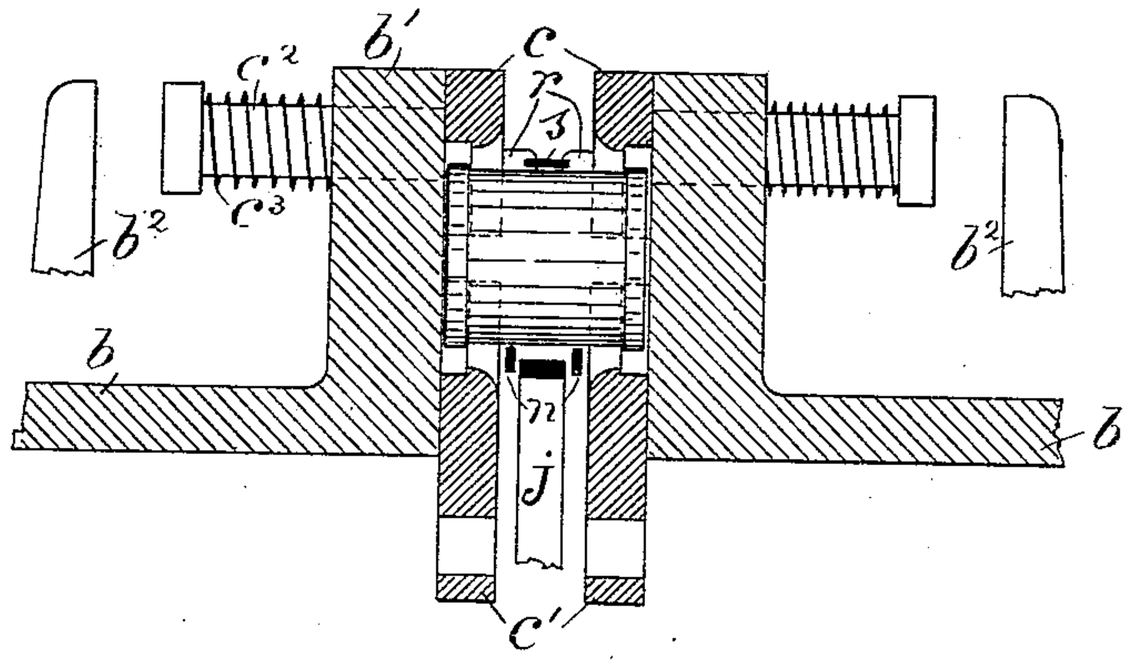
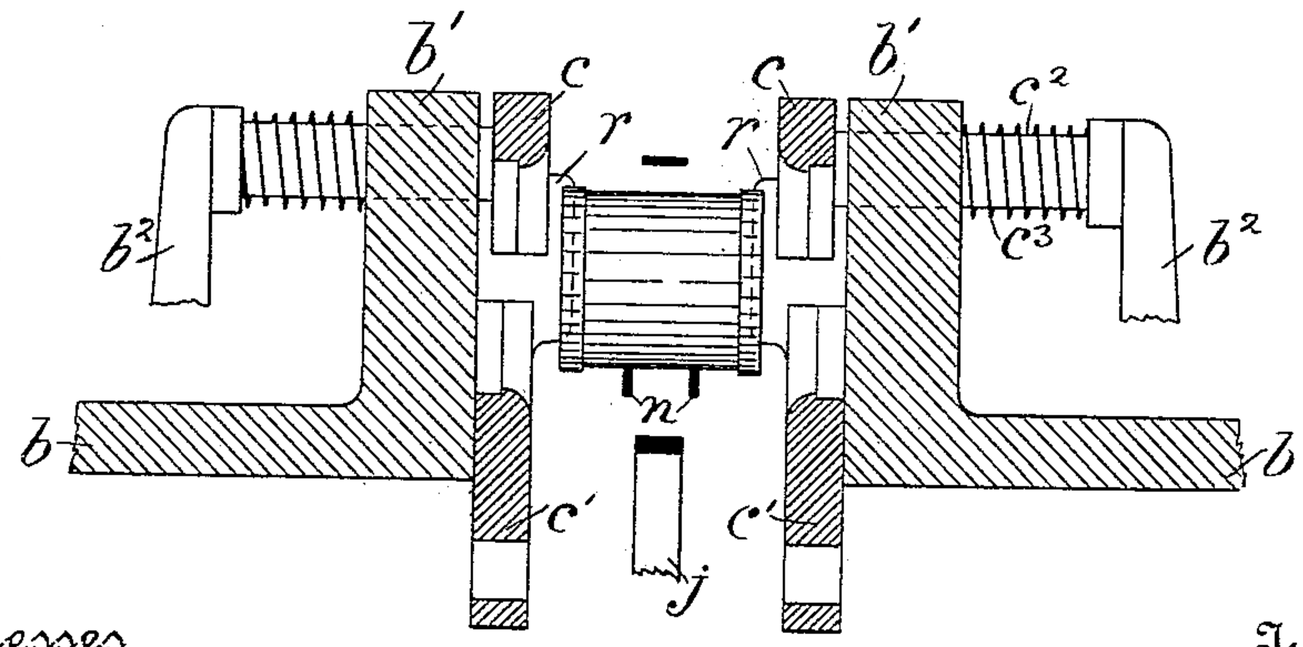


Fig. 7.



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(No Model.)

4 Sheets—Sheet 4.

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CAN HEADING MACHINE.

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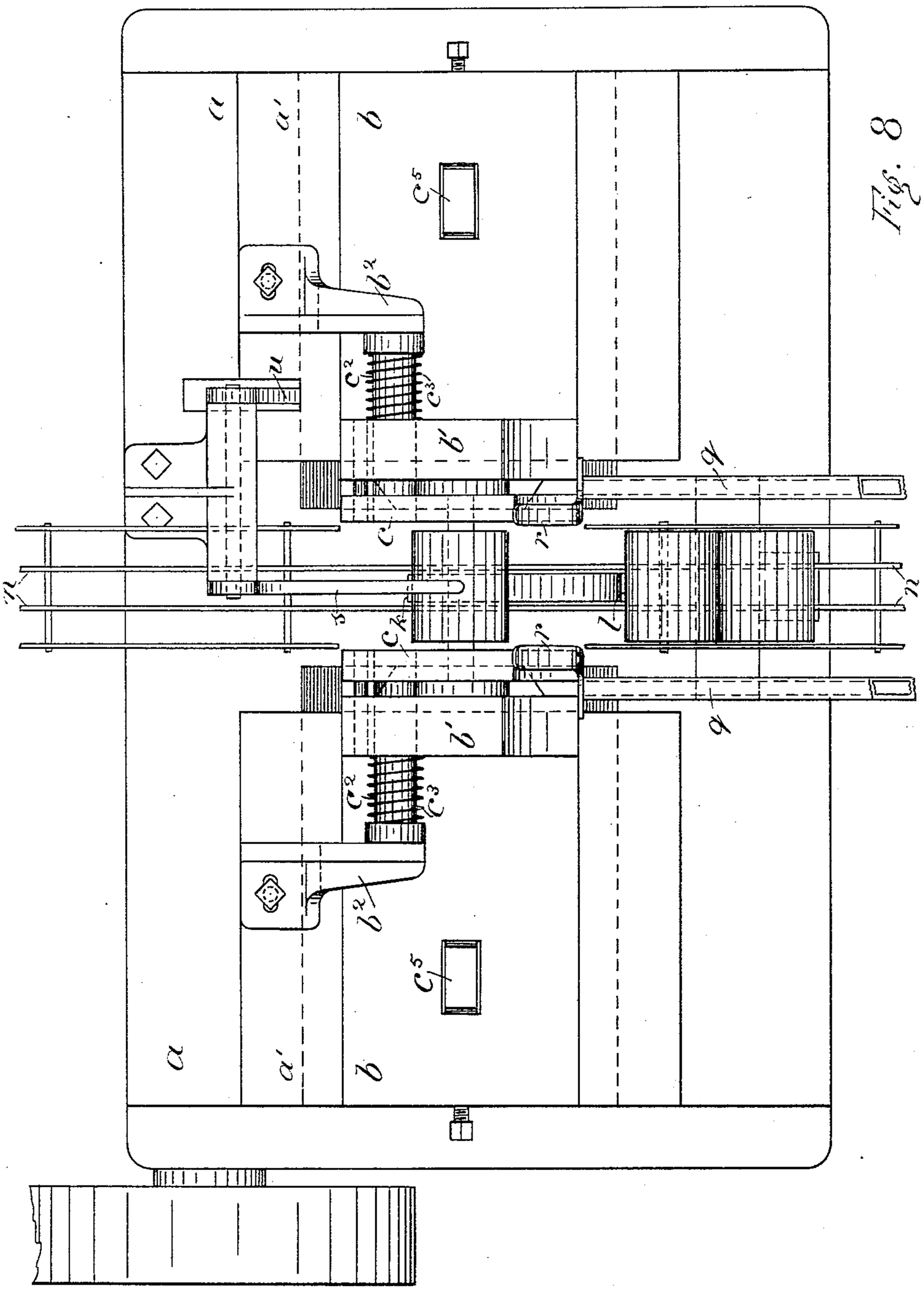

Fig. 8.

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UNITED STATES PATENT OFFICE.

EDVARD ELLEFSEN, OF CHICAGO, ILLINOIS.

CAN-HEADING MACHINE.

SPECIFICATION forming part of Letters Patent No. 560,024, dated May 12, 1896.

Application filed September 23, 1895. Serial No. 563,420. (No model.)

To all whom it may concern:

Be it known that I, EDVARD ELLEFSEN, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Can-Heading Machines, which are fully set forth in the following specification, reference being had to the accompanying drawings, forming a part hereof, and in which—

Figure 1 shows a front elevation of my can-heading machine, partly in section. Fig. 2 is an elevation in transverse section on a plane *x x* of Fig. 1, showing the method of feeding the can ends to the machine. Fig. 3 shows an elevation in transverse section on a plane *y y*, showing the method of feeding can-bodies to the machine. Fig. 4 shows a vertical section of the chucks at their greatest distance apart on the axis of the can-body and a can-body and can ends ready to be united and the arm which pushes the can out of the chucks, the can-holder and can-ways in end view. Fig. 5 shows the chucks at their nearest distance apart, the can-body and its ends united, all the parts being otherwise like those shown in Fig. 4, only with such of them changed in position as have acted. Fig. 6 shows the chucks opened vertically and the can released from the chucks, with all the parts as in the preceding figure, except those which have changed during the act of the operating parts. Fig. 7 shows the chucks opened both vertically and axially or longitudinally with the can ready to roll out, all the parts being the same as in the preceding figure, with the operating parts shown in other positions. Fig. 8 shows my said device in plan view as seen from the top, the position of the chucks, can, and can ends and machinery being the same as is shown in Figs. 1 and 4.

Like letters and figures of reference denote like parts.

The object of my invention is to produce a can-heading machine which will unite, automatically, can-heads to can-bodies after having said parts fed into their respective places. To attain said desirable ends, I construct my said machine in substantially the following manner, namely: On a bed *a* are placed the fixed slides *a'*, which hold the sliding heads *b*, having vertical arms *b'*, carrying upper parts *c*, which, with lower parts *c'*, form a chuck in which said parts are separable both vertically and horizontally, the horizontal line of separation of said parts being in a horizontal plane through the axis of the can, as shown in Figs. 2 and 3, the vertical separation of said parts taking place in a downward motion of the part *c'*, which is connected to and operated by a cam *e* on the driving-shaft 1. Said part *c'* is in a dovetailed slide which forms a part of the arm *b'*. Its beveled sides are shown in Figs. 2 and 3 projecting slightly below the base of the arm *b'* and shaded. Said parts *c'* are connected by a T-shaped pitman-rod *g*, of which each arm of its top or horizontal part passes through and slides freely, but closely, in a square hole of the part *c'*. Said part *g* is connected to a lever *g'* and actuated through it and a cam *e*. Said chucks are actuated by levers c^5, fulcrumed at c^4, connected to said chuck in any suitable manner, as here shown with a swivel-head in a slot. Said lever is actuated at its lower end by a cam with a groove *d*, formed, substantially as indicated, and turned by the shaft 1, through which the proper reciprocating motions of the chuck or chucks are obtained.

The part *c* is attached to a shaft c^2 and dowel c^6, which slide in the arm *b'* and hold the part *c* from turning when moved beyond its part *c'* out of the chuck-plane. Said shaft has a head at its outer end against which and the arm *b'* an expanding spring c^3 presses and keeps the part *c* against the arm *b'* until the head of said shaft contacts with the fixed arm b^2, after which the parts of the chuck separate, as shown in Figs. 1, 4, 7, and 8.

A cam *h* on shaft 1 actuates one end of a lever *i*, fixed at its other end, which reciprocates a rod *j* with arms *k l* at its upper end, which hold and start and stop can-bodies as they pass into the machine. Said arms are transverse to the can axis and parallel to the ways *n* and between them and carry the can-bodies slightly above them. They reciprocate according to the form of the cam cut to produce the required motion.

An arm *s* on a shaft *s'* presses upon and moves the headed can out of the machine. To its shaft is fixed a lever *u*, of which the free end plays on a cam *t* with which it is kept

in contact by a coiled spring v, through which the pressure of the arm s is obtained. The can-bodies m and can ends p are held in cages or chutes o and q. The chuck-openings are recessed on their inner ends, so that they may both receive and hold the can ends in place, and the outer ends of said openings are beveled or rounded for the purpose of bringing the axis of the can-body coincident with that of the can ends. The can ends drop into their chucks from a surface coincident with that of a horizontal axial plane of the can-body and the can ends. The arm b' above said plane is concaved to coincide with the circle of the can end, as seen in Figs. 2 and 8. Through said construction the can end in the chuck and the one next to it slide upon each other and the arm b' when the machine is in operation. The upper part c of the chuck extends beyond the said concaved surface. An adjustable stop r, fastened to arm b', projects slightly beyond the farthest inner position of the part c and holds the front can-body in the cage o from entering to the chucks until the arms k l have risen to their highest place.

When motion is given to the shaft 1 through its pulley, all the cams turn with it and move the several parts connected to them and operate substantially as follows, namely: The can-body and its ends being placed as shown in Figs. 4 and 8 the arms b' approach the springs c^3, close the chucks, which then receive the can-body and pass it into the can ends. Then the chucks recede very slightly, just enough to release the ends of the can, enough room being provided in the recesses of the chucks for that purpose. Then the parts c' and s descend and take the can down until it meets the ways n, which lift it from the parts c' as they move still farther. The arms k l begin to descend as soon as the can is held in the chucks, or near that time, and move entirely below the ways, but before said motion of said parts ends the arms b' separate to the position shown in Fig. 7, the arm s returns to its starting-point, and the finished can rolls away, after which the arms k l rise to their full height and receive the foremost can-body from the cage o within them and hold the remainder of the can-bodies outside, after which the receding motion of the arms b' is completed, and thus the can-body in the arm l is released and rolls on the arm k, and at the same time the parts c are fully opened and the can ends dropped into the recesses of the chucks, as before, to repeat the operation, as described. The stops r hold the can-body in front of arm l until the final outward motion of the arms is made. At that time the arms k l are in their place, and then the arm k holds the can-body so that it may pass into the flaring chucks.

What I claim is—

1. The combination with facing centrally-separated chucks adapted to reciprocate axially in entirety, and in parts, in the same and in different chuck-planes, and also in parts, transversely to said axis, of mechanism to arrest and levers, cams and coöperating mechanism to actuate said parts, substantially as specified.

2. The combination with facing centrally-separated flaring chucks adapted to reciprocate axially in entirety and in parts in the same and in different chuck-planes, of can-body and can-end chucks and reciprocating stops operating with said chucks, chutes and can-body supplying mechanism, substantially as specified.

3. The combination with facing centrally-separated chucks adapted in entirety and in part to reciprocate axially in the same and in different chuck-planes, of can-body and can-end chutes, can-body ways and reciprocating arms and stops operating with said chucks, substantially as specified.

4. The combination with an intermittently-reciprocating rod with arms and can-chute parallel to said arms, of reciprocating stops to hold cans and release them to and in said arms, substantially as specified.

5. The combination with an intermittently-reciprocating rod with arms and can-chute parallel to said arms, chutes for can ends, of reciprocating chucks and stops to feed said can bodies and ends and means to release the united parts, substantially as specified.

6. The combination with inclined ways and head with arms parallel with and between said ways, reciprocating with intermittent motion above and below the plane of said ways, of stops moving transversely to said arms exterior to said ways and between said arms, substantially as specified.

7. The combination with facing centrally separated and recessed chucks adapted to reciprocate axially in entirety, and in parts, in the same and in different chuck-planes and also in parts transversely to said axis, of can-body and can-end chutes and reciprocating stops operating with said chucks, chutes and can-body supplying mechanism, substantially as specified.

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Witnesses:
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