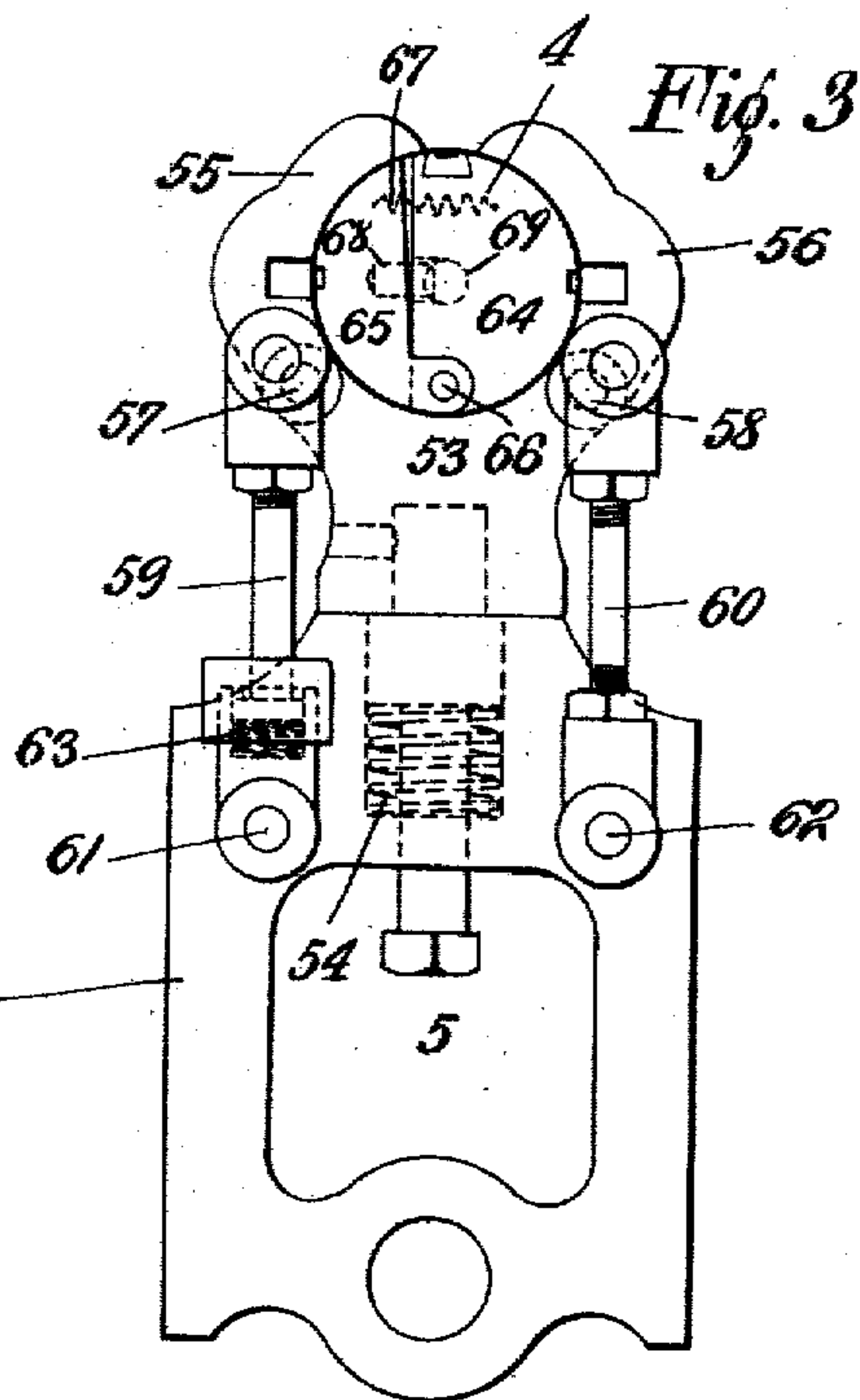
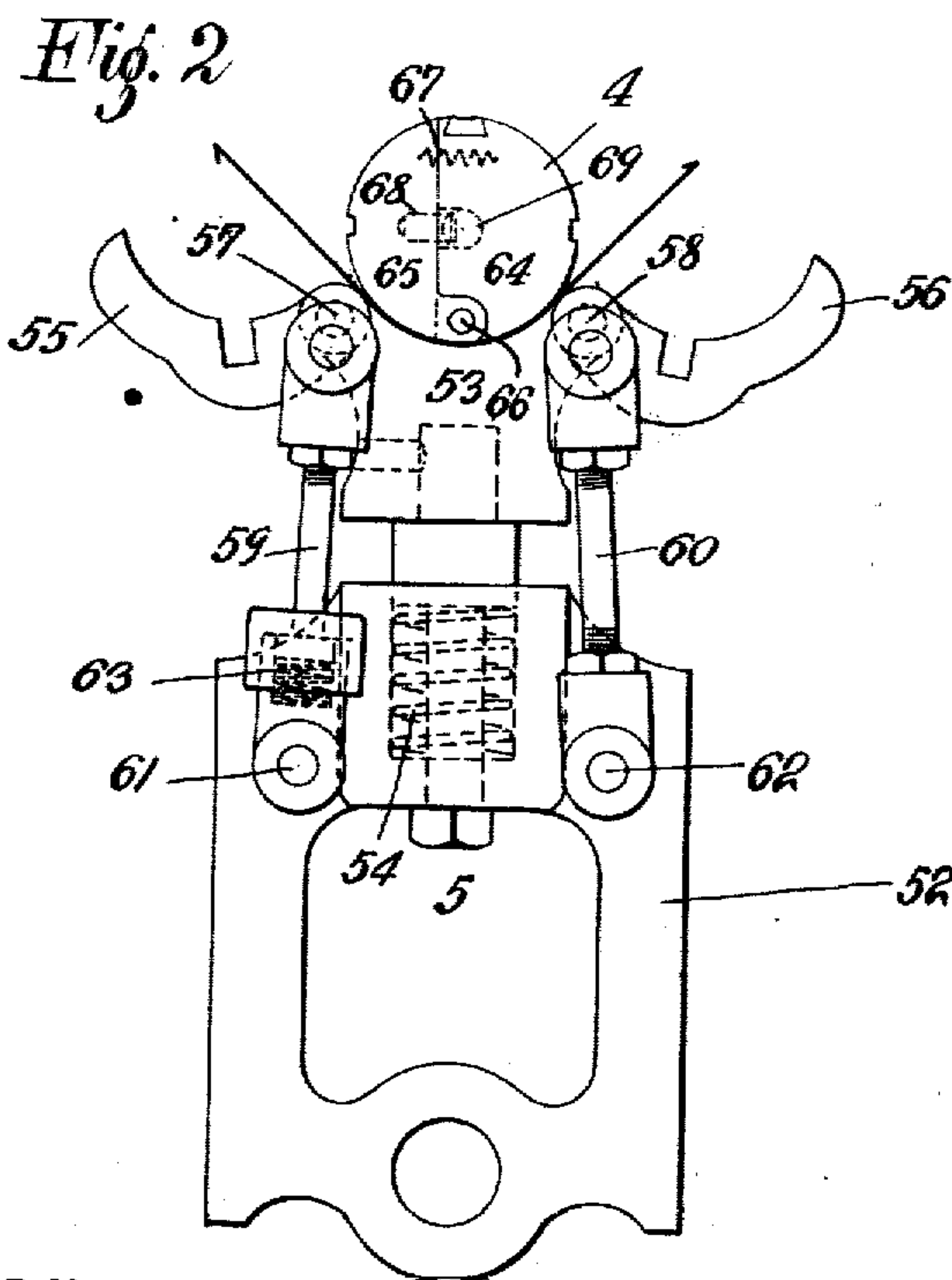
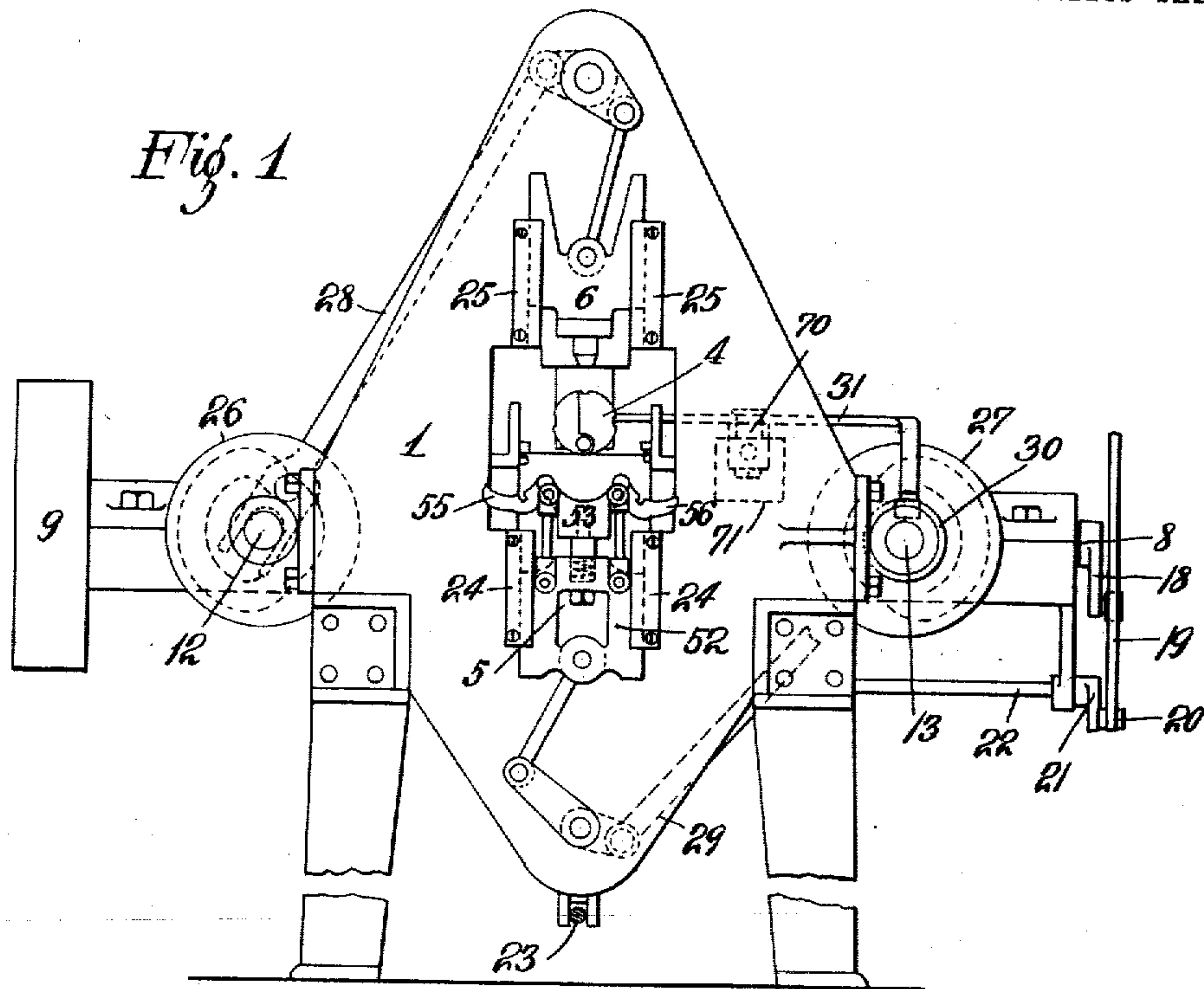


No. 811,566.

PATENTED FEB. 6, 1906.

A. KENT.
BODY FORMING MACHINE.
APPLICATION FILED APR. 22, 1905.

2 SHEETS—SHEET 1.



Witnesses
Evan Koenigsberg
Anna Koenigsberg

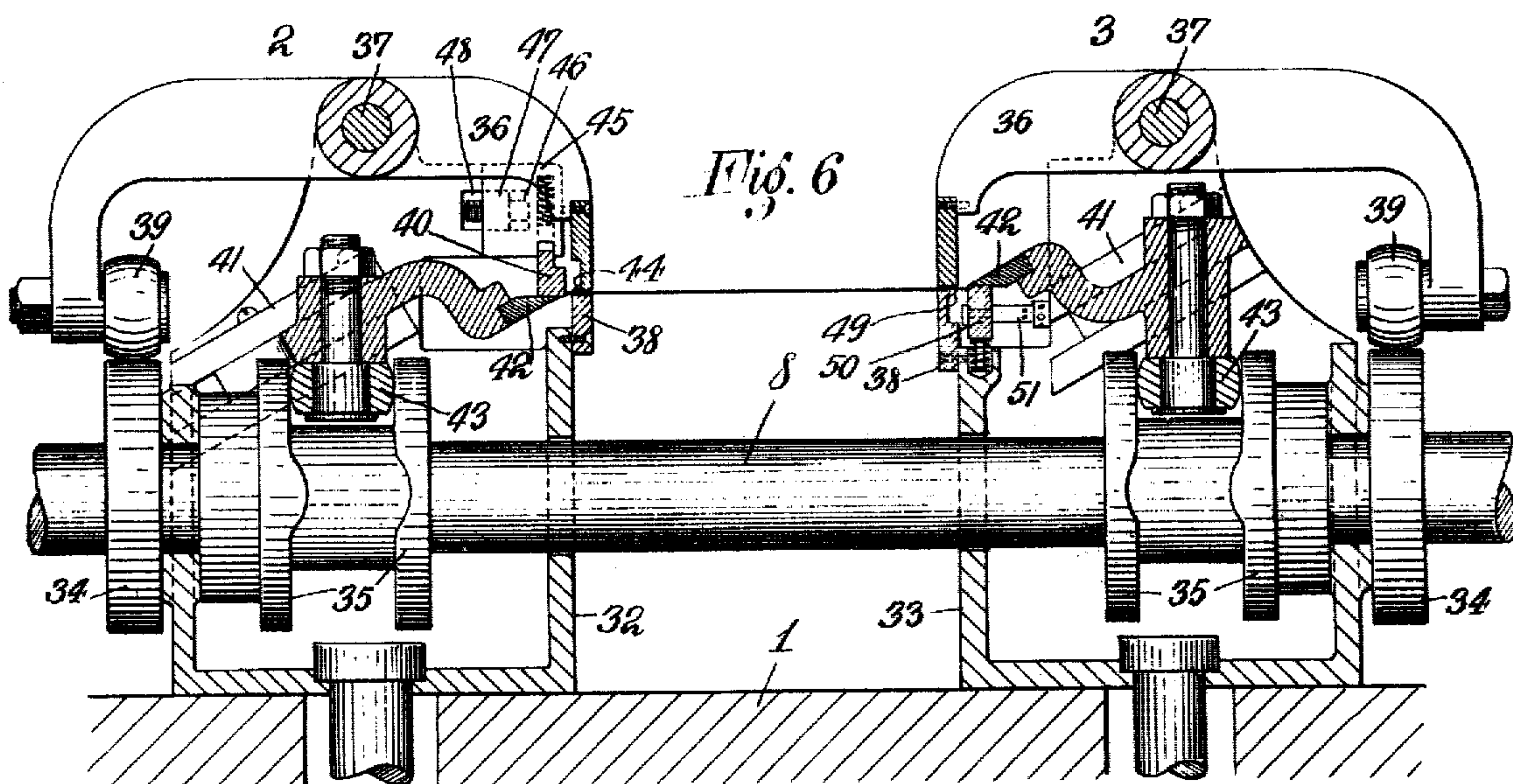
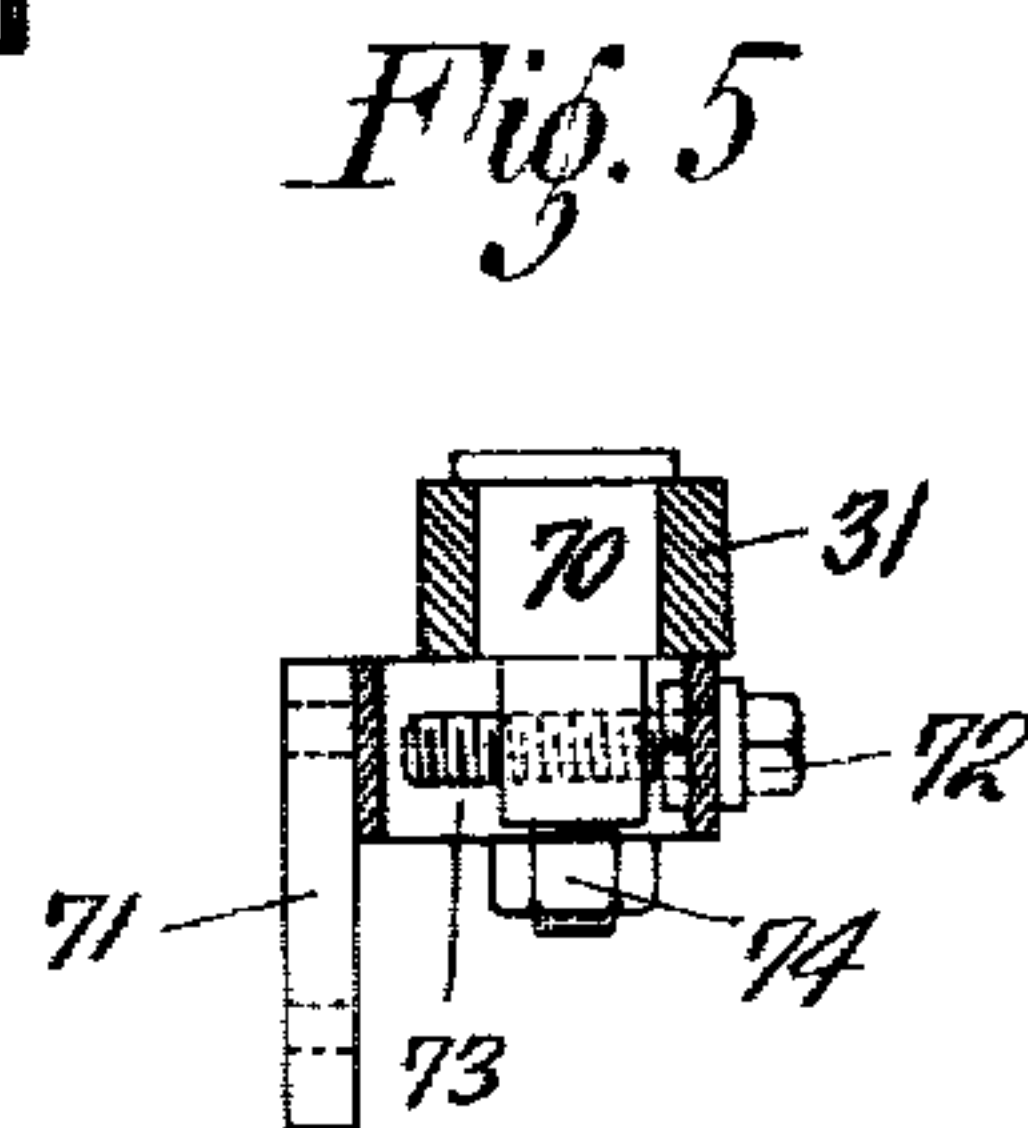
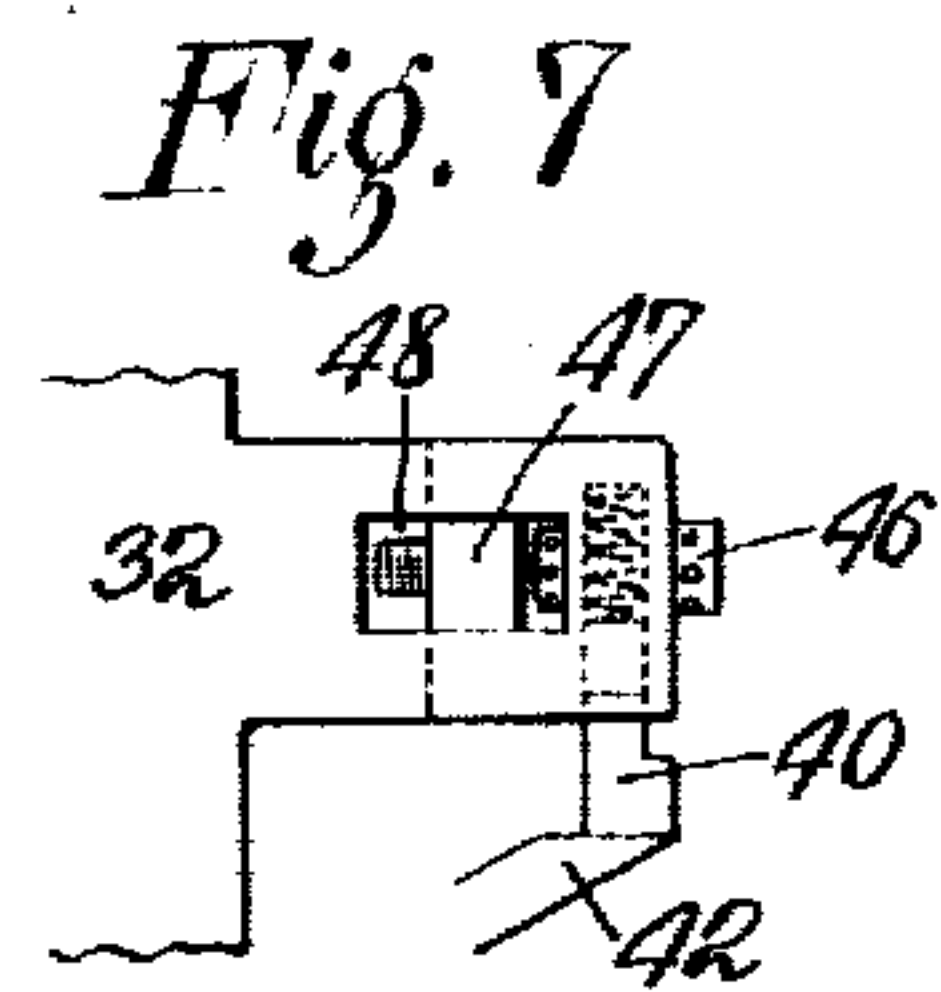
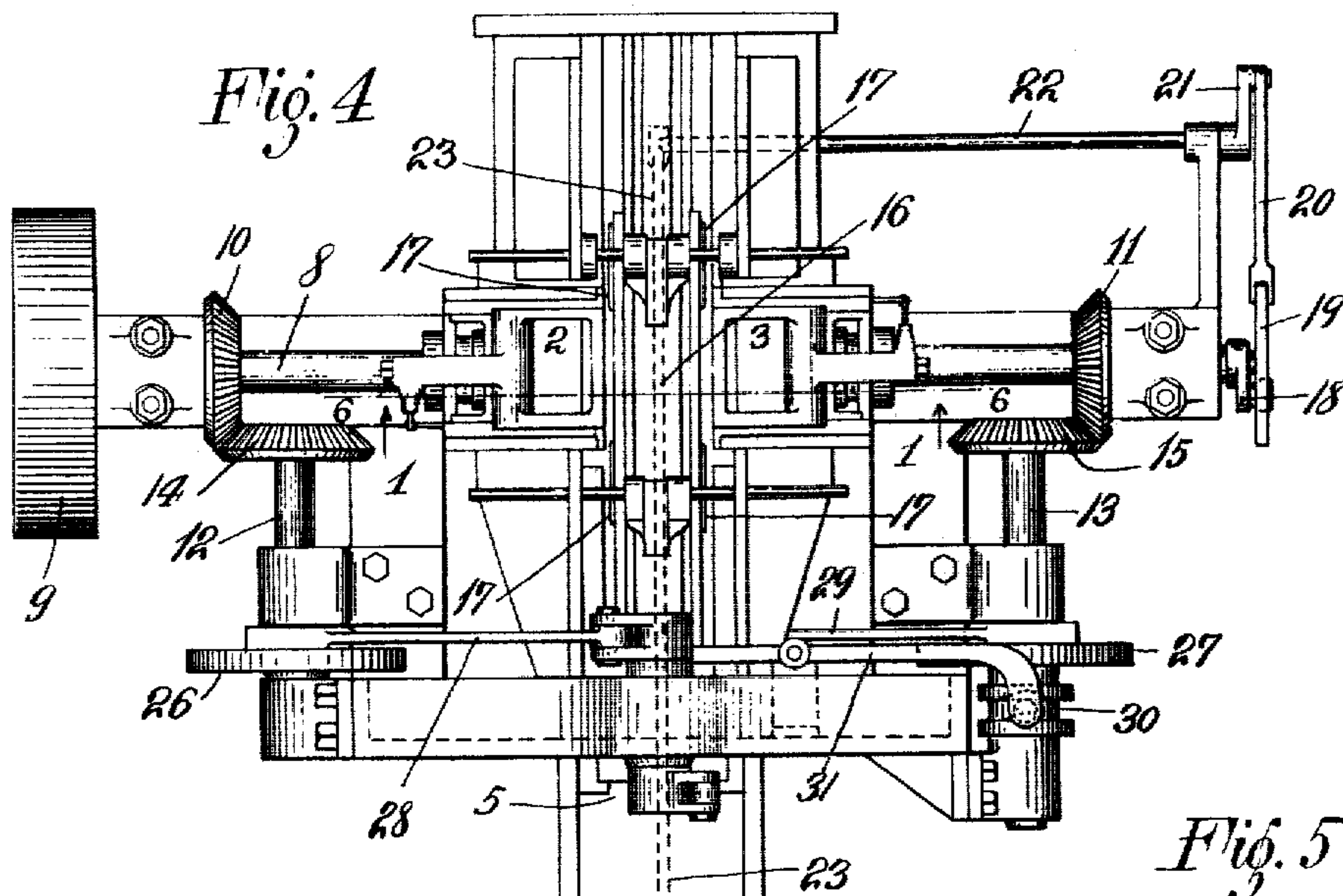
Archibald Kent Inventor
By his Attorneys
DeRen & Spaulding

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2 SHEETS—SHEET 2.



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UNITED STATES PATENT OFFICE.

ARCHIBALD KENT, OF NEW YORK, N. Y., ASSIGNOR TO JAMES W. KENT,
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BODY-FORMING MACHINE.

No. 811,566.

Specification of Letters Patent.

Patented Feb. 6, 1906.

Application filed April 22, 1905. Serial No. 256,850.

To all whom it may concern:

Be it known that I, ARCHIBALD KENT, a citizen of the United States of America, and a resident of the borough of Brooklyn, county of Kings, city and State of New York, have invented certain new and useful Improvements in Body-Forming Machines, of which the following is a specification.

The present invention relates generally to body-formers for producing the bodies of cans or other vessels from a flat sheet of material.

The object of the present invention is to reduce the number of parts and to simplify the machine as much as possible, at the same time making the machine more effective in its operation and capable of turning out a more perfect product.

To this end the invention consists in the combinations of parts and features of construction, as will more fully hereinafter appear.

In the accompanying drawings the invention has been embodied in a practical machine, showing the preferred form; but it is obvious that a wide departure may be made from the specific construction shown without passing beyond the boundaries of the invention.

In the said drawings, Figure 1 is a rear elevation of a machine with the stripping mechanism removed embodying my invention. Figs. 2 and 3 are detail views of the means for folding the blanks around the horn, showing the parts in two different positions. Fig. 4 is a plan view of the machine, showing more particularly the gearing and transmission mechanism. Fig. 5 is a detail view of the means for adjusting the length of the stroke of the expander for the horn. Fig. 6 is a sectional view taken through the hook-forming members on the line 6-6 of Fig. 4. Fig. 7 is a detail view of one of the adjustable gages of the hook-forming members.

Similar numerals indicate corresponding parts in the different views.

1 indicates a framework of any suitable construction for properly mounting the parts. The main elements carried by this frame are two hook-forming members 2 and 3, the horn 4, the blank-forming mechanism 5 for folding the blank around the horn, the hammer 6, and the stripping mechanism 7. The general arrangement and operation of the machine is

similar to other machines of the same character and may be briefly indicated by stating that 8 is the main shaft, running transversely of the machine and passing through the hook-forming members. Upon this shaft is mounted a pulley 9 or other means whereby motion can be imparted to the said shaft, and, further, two miter-gears 10 and 11 for imparting motion to the two cam-shafts 12 and 13 by meshing with the miter-gears 14 and 15.

Arranged centrally of the machine is a sheet-feeding device 16, having the usual fingers, as 17, for progressing the sheet from one part to the other through the machine. This sheet-feeding device is operated conveniently from the main shaft in the usual manner by means of the crank 18, mounted on the main shaft, and link 19 and rod 20, attached to the crank 21, mounted on the shaft 22 parallel to the main shaft, which latter shaft is provided with a suitable connection, as 23, for operating the sheet-feeding device and also for operating the stripping mechanism in the usual manner.

The forming mechanism 5 travels in the ways 24, and the hammer 6 travels in the ways 25, one above and the other below the horn. Suitable reciprocating motion is imparted to the forming mechanism and hammer by means of the cams 26 and 27 through suitable connections, as 28 and 29, in a well-known manner. Mounted upon the shaft 13 is further a cam 30 for operating the expanding mechanism 31 of the horn.

As previously pointed out, this general arrangement is well known and need not be described more fully here.

The hook-forming members are constructed as follows: Adjustably mounted in the framework on either side of the path of progression of the sheet are the hook-forming boxes 32 and 33. These hook-forming boxes act as standards or frames for supporting the parts comprising the hook-forming members. As the construction of these two hook-forming members is substantially the same, only one will be described, and the difference in structure between the two will then be pointed out later. Passing through the hook-forming boxes is the main shaft 8, which carries the two cams 34 and 35. 36 indicates a clamping-jaw for the sheet pivoted at 37 on the box and adapted to hold the sheet between itself and the stationary clamping-jaw 38, attached

to the box below the plane in which the sheet travels. 39 is a friction-roll moving with the jaw 36 and adapted to be operated by the cam 34 to clamp the sheet in the usual manner. 40 indicates a gage adjustable horizontally and spring-seated, so as to be capable of a vertical movement. The distance of this gage from the clamping-jaws determines the width of the hook to be formed. 41 represents fixed straight guideways inclined throughout their length, in which slides the hook-forming tool 42, having the friction-roll 43. One of the clamping-jaws is provided with a lip or beveled surface 44, and the angle at which the hook-forming tool travels corresponds to the angle of this lip or beveled surface 44. The gage 40 normally projects above or below, as the case may be, the edge of the blank, so as to act as a positive stop. Upon the rotation of the shaft 8 and at the proper moment when the sheet has assumed its position on the lower jaw 38 the cam 34 will cause the upper jaw 36 to clamp the sheet in the proper manner. The action of the cam 35 now causes the hook-forming tool to move in the guides, fixed in an inclined position, and as it moves upward or downward, as the case may be, it will move in under or over the edge of the blank and will cause the gage 40 to recede as it turns the edge of the tin over the lip or beveled surface 44.

In the case of the hook-forming member 2 the gage 40 normally rests on top of the forming-tool 42 and is spring-seated in the bracket 45, as shown. The bracket 45 is mounted on the hook-forming box and is adjustable in a horizontal direction by means of the screw 46 passing through the box and through the block 47 of the bracket 45, which bracket is free to move in the slot 48 of the box.

In the case of the hook-forming member 3 the construction is substantially the same, the only difference being that in this case a lip 49 is formed on the clamping-jaw 38 instead of the clamping-jaw 36. Further, the forming-tool moves in a downwardly-inclined direction instead of in an upwardly-inclined direction, as in the case of the member 2. In addition to this the gage 50 is spring-seated in the box, as shown, and is adjustable horizontally by means of the screw 51, by which it is connected to the box.

The blank-forming mechanism 5, which acts to fold the blank around the horn, is constructed in such a manner that the blank is folded uninterruptedly around the said horn. 52 indicates a vertically-reciprocating slider moving in the ways 24 and provided with a primary former 53, having a yielding movement by reason of the spring 54. Carried by this primary former are two wings 55 and 56, which are pivotally attached at 57 and 58. 59 and 60 indicate two connections pivoted at 61 and 62 to the slider 52 and pivoted with their other ends on the wings 55 and 56 eccen-

trically with relation to the pivots 57 and 58. These connections are adjustable by being threaded in opposite directions in a well-known manner. One of these connections is further so constructed as to keep one of the wings slightly ahead of the other, so as to allow the hooks of the blank to properly engage with each other when folding it around the horn. To this end the connection 59 is yielding, while the connection 60 is rigid. In the present instance the spring 63 is provided in conjunction with the connection 59, which tends to keep the wing 55 a slight distance ahead of the wing 56. As the blank comes in position under the horn the slider 52 will be caused to move upward and the primary former 53 will clamp the blank on the horn and partially fold the tin, as shown in Fig. 2. The continued motion of the slider 52 will counteract the effect of the spring 54 and move the slider up close to the primary former, as shown in Fig. 3, this motion causing the wings to turn around their pivots, thereby folding the blank properly around the horn and causing the hooks of the same to interlock. The horn is now expanded, thereby causing the connection 59 to recede slightly, owing to the spring 63. The hammer 6 now descends and clenches the seam, the horn collapses, the slider 52 returns, and the stripping mechanism removes the completed body from the horn in the usual manner.

In the prior art it has been customary to pivot the movable flap of the horn at a point out of alinement with the center of the horn. In the construction of machines where it is desired to present substantially a cylinder when the horn is expanded the pivoting of the flap at this point produces a decided step or recess in the surface of the horn when the latter is collapsed and into which recess the blank is liable to buckle when it is folded around the said horn, thereby preventing the hooks from interlocking and thus spoiling the can-body. In the present instance I provide a horn which presents a substantially continuous surface when in its collapsed position and which when expanded forms substantially a complete cylinder. In the present instance this is accomplished by constructing the horn with a fixed member 64 and a flap or movable member 65, pivoted at 66 on the fixed member, which is a point in vertical alinement with the center of the horn. In this way when the horn is collapsed there is substantially no step or recess formed in its surface, and in this way the spoiling of a great many can-bodies is prevented. The horn is normally held in its collapsed position by means of the spring 67, and the flap 65 is provided with a pin 68, against which acts the tapered plug or expander 69 in a well-known manner for causing the horn to expand. This tapered plug, as previously pointed out, is operated from the cam 30 at

the proper periods by means of the expander-lever 31. This lever 31 is pivoted on the stud 70, mounted on the bracket 71, which is attached to the framework by means of the screw 72, passing through the said bracket and passing through the lower part of the stud 70, which extends into the slot 73 of the bracket 71. By loosening up on the locking-bolt 74 this stud can be adjusted back and forth, whereby the exact amount of expansion of the horn desired can be obtained and whereby any wear of the members can be taken up and compensated for.

What is claimed is—

1. In a machine of the character set forth, a hook-forming member comprising a pair of clamping-jaws for seizing the blank, one of which is provided with a beveled surface over which the blank is folded, a hook-forming tool for folding the edge of the blank over the said beveled surface, fixed straight guideways inclined throughout their length to correspond to the beveled surface of the clamping-jaw in which the hook-forming tool slides, and means for progressively causing the jaws to seize the blank and the hook-forming tool to travel in the guideways so as to fold the edge of the blank over the beveled surface aforesaid.

2. In a machine of the character set forth: a hook-former, comprising a pair of clamping-jaws adapted to hold the blank and one of which is provided with a beveled surface, a yielding gage for determining the width of the hook to be formed, guides fixed in an inclined position, a hook-forming tool traveling in said guides, and means for causing the hook-forming tool to travel in said guides thereby moving the gage out of the way and folding the tin over the beveled surface aforesaid.

3. In a machine of the character set forth: a hook-former, comprising a pair of clamping-jaws adapted to hold the blank and one of which is provided with a beveled surface, a yielding and horizontally-adjustable gage for determining the width of the hook to be formed, guides fixed in an inclined position, a hook-forming tool traveling in said guides, and means for causing the said hook-forming tool to travel in said guides thereby moving the gage out of the way and folding the tin over the beveled surface aforesaid.

4. In a machine of the character set forth: the combination of two hook-forming members located on each side of the path of progression of the blank through the machine, comprising two pairs of clamping-jaws having oppositely-disposed beveled surfaces one on one of said jaws of each pair, two pairs of guides fixed in an inclined position, hook-forming tools traveling in said guides, and means for causing the said hook-forming tools to travel in opposite directions in said guides.

5. In a machine of the character set forth: the combination of two hook-forming members located on each side of the path of progression of the blank through the machine, comprising two pairs of clamping-jaws having oppositely-disposed beveled surfaces one on one jaw of each pair, yielding gages adjacent to said jaws for determining the width of the hooks to be formed, two pairs of guides fixed in an inclined position, hook-forming tools traveling in said guides, and means for causing the said hook-forming tools to travel in opposite directions in said guides thereby moving the gages out of the way and folding the blank over the beveled surfaces.

6. In a machine of the character set forth: the combination of two hook-forming members located on each side of the path of progression of the blank through the machine, comprising two pairs of clamping-jaws having oppositely-disposed beveled surfaces one on one jaw of each pair, yielding and horizontally-adjustable gages adjacent to said jaws for determining the width of the hooks to be formed, two pairs of guides fixed in an inclined position, hook-forming tools traveling in said guides, and means for causing the said hook-forming tools to travel in opposite directions in said guides thereby moving the gages out of the way and folding the blank over the beveled surfaces.

7. In a machine of the character set forth: means for folding the blank around the horn, comprising a vertically-reciprocating slider, a primary former spring-seated thereon, two wings pivoted on the primary former, a rigid connection pivoted on the slider with one end and on one of the wings with its other end at a point eccentric to the pivot connecting the wing to the primary former, a yielding connection pivoted with one end on the slider and with its other end to the other wing also at a point eccentric to the pivot connecting the wing to the primary former, and means for reciprocating the slider.

8. In a machine of the character set forth: the combination of a horn, means for folding the blank around the horn, comprising a vertically-reciprocating slider, a plurality of forming members carried by said slider and adapted to act uninterruptedly to fold the blank around the horn upon the movement of the slider, means for expanding the horn, and a vertically-reciprocating hammer for clenching the seam of the body.

9. In a machine of the character set forth: the combination of a horn, means for folding the blank around the horn, comprising a vertically-reciprocating slider, a primary former spring-seated thereon, two wings pivoted on said primary former, pivots and connections between the slider and the wings, and means for operating said slider whereby the primary former acts first to clamp the blank on the horn, and the continued movement of the

slider acts to cause the wings to fold the blank around the horn and to lock the hooks thereof, means for expanding the horn, and a vertically-reciprocating hammer for clenching the seam of the body.

10. In a machine of the character set forth: the combination of a horn, means for folding the blank around the horn, comprising a vertically-reciprocating slider, a primary former spring-seated thereon, two wings pivoted on the primary former, a rigid connection pivoted on the slider with one end and on one of the wings with its other end at a point eccentric to the pivot connecting the wing to the primary former, a vertical connection pivoted with one end on the slider and with its other end to the other wing also at a point eccentric to the pivot connecting the wing to the primary former, means for reciprocating the slider whereby the primary former acts first to clamp the blank on the horn, and the continued movement of the slider acts to cause the wings to fold the blank around the horn and interlock the hooks thereof, means for expanding the horn, and a vertically-reciprocating hammer for clenching the seam of the body.

11. In a machine of the character set forth: the combination with an expansible and collapsible horn, of an expander, an expander-lever connected to the expander, a stud on which said expander-lever is pivoted, means for adjusting the said stud, and a cam for operating the expander-lever.

12. In a machine of the character set forth, a horn comprising a main portion, a movable flap normally collapsed pivoted to the main portion so that when the horn is collapsed it presents a substantially continuous surface and when the horn is in its expanded position it forms a substantially complete cylinder as set forth, and means for moving the flap into its expanded position.

13. In a machine of the character set forth, the combination of two hook-forming members located upon each side of the path of progression of the blank through the machine, comprising two pairs of clamping-jaws having oppositely-disposed beveled surfaces, one on one of said jaws of each pair over which the blank is folded, two hook-forming tools each for folding the respective edge of the blank over the cooperating beveled surface, two fixed straight guideways inclined throughout their length to correspond to the beveled surfaces of the clamping-jaws in which the hook-forming tools slide, and means for progressively causing the jaws to seize the blank and the hook-forming tools to travel in opposite directions in the said guides so as to fold the edges of the blank over the beveled surfaces aforesaid.

Signed at New York this 19th day of April, 1905.

ARCHIBALD KENT.

Witnesses:

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