

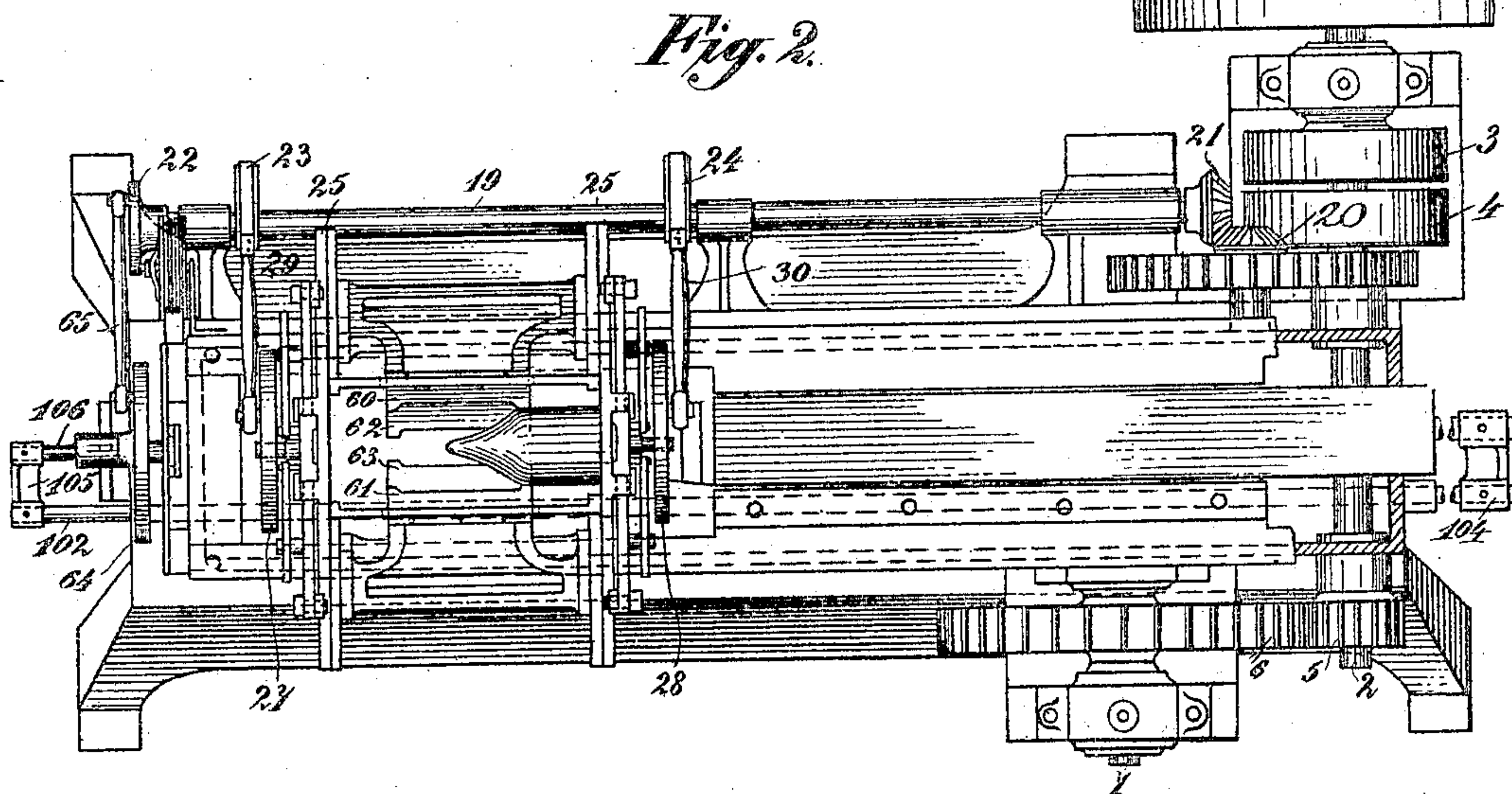
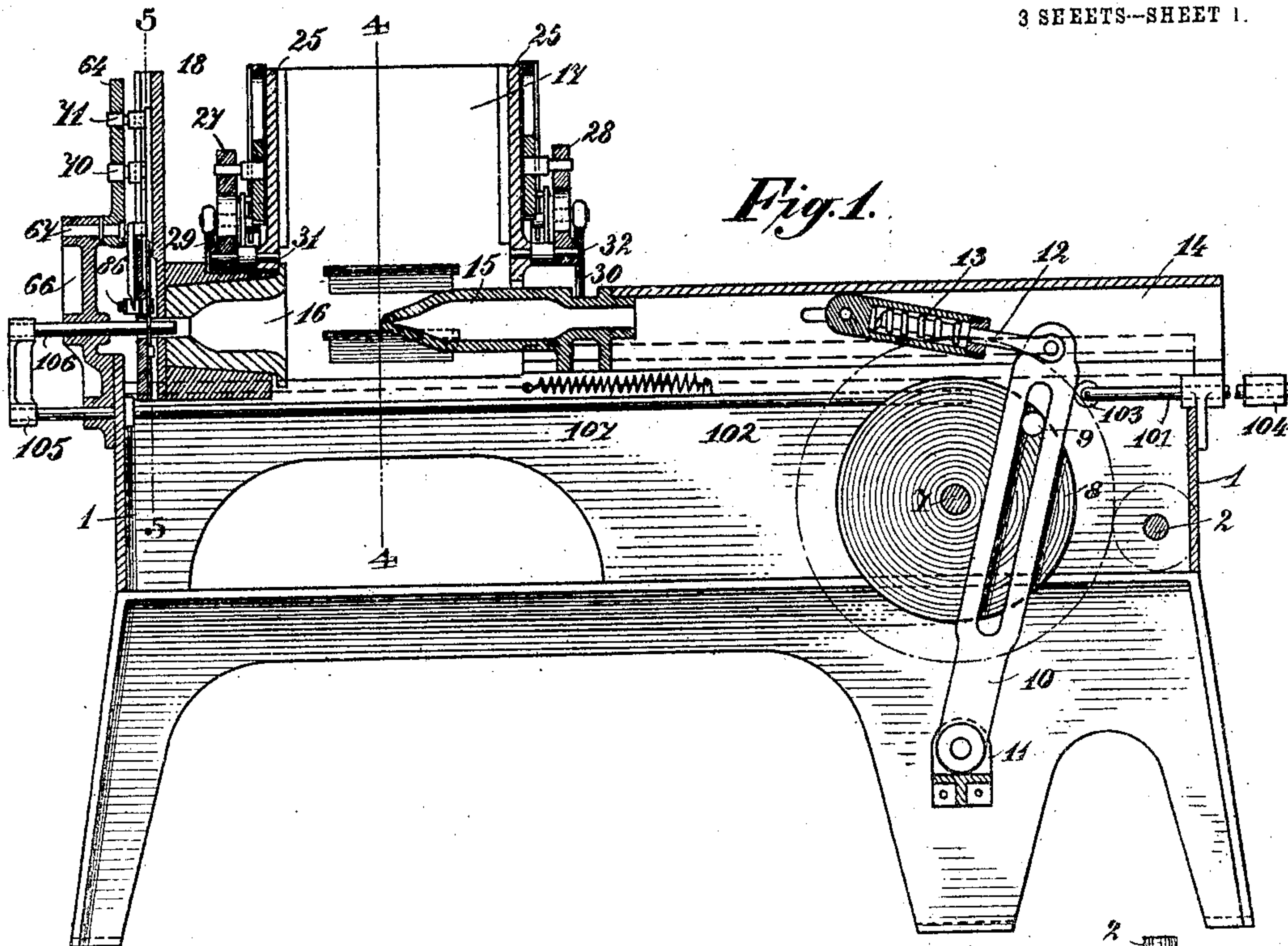
No. 807,679.

PATENTED DEC. 19, 1905.

H. KRUSE.
MACHINE FOR MAKING BOTTLE WRAPPERS.

APPLICATION FILED APR. 26, 1904.

3 SHEETS--SHEET 1.



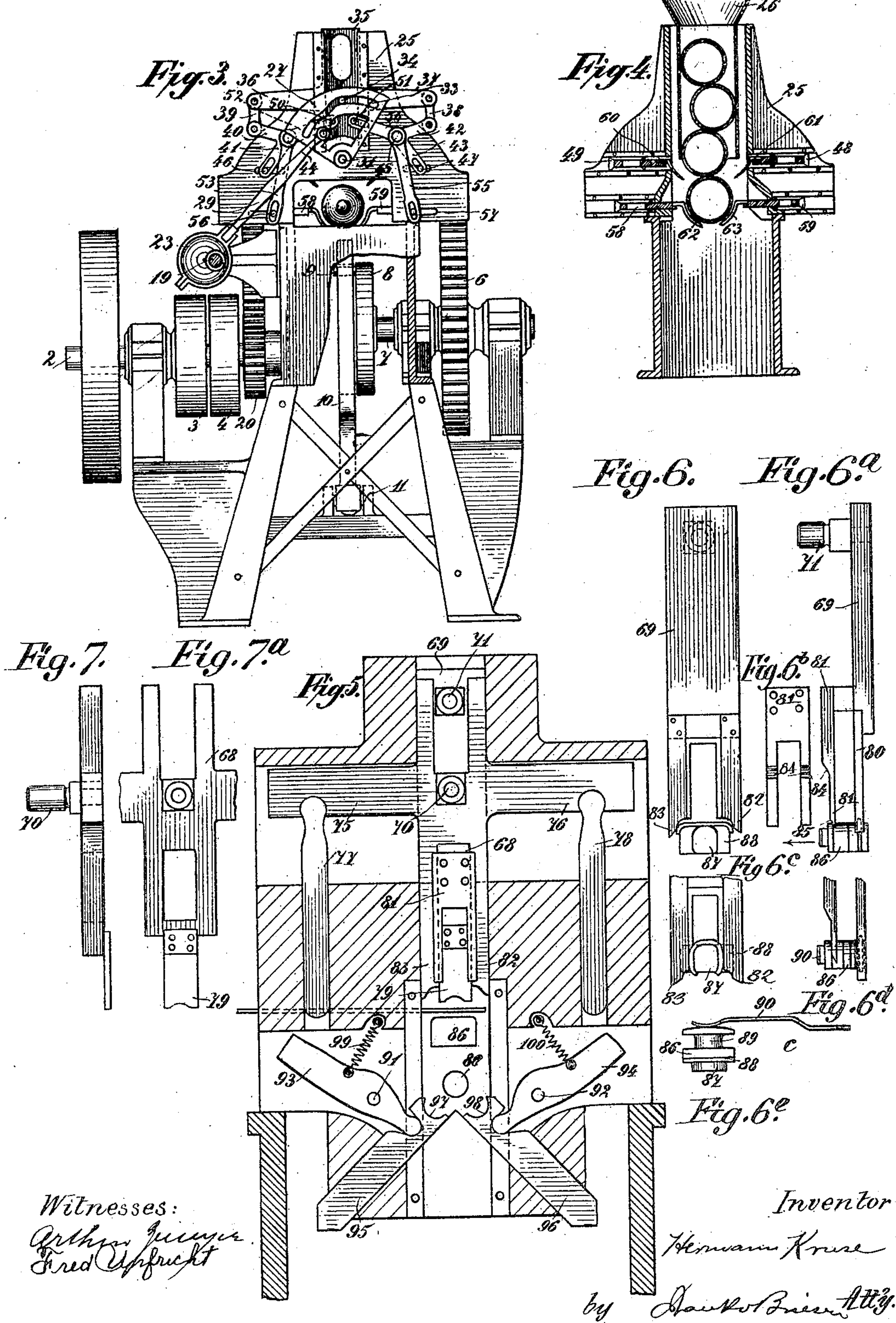
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Inventor:
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H. KRUSE.
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3 SHEETS—SHEET 2.



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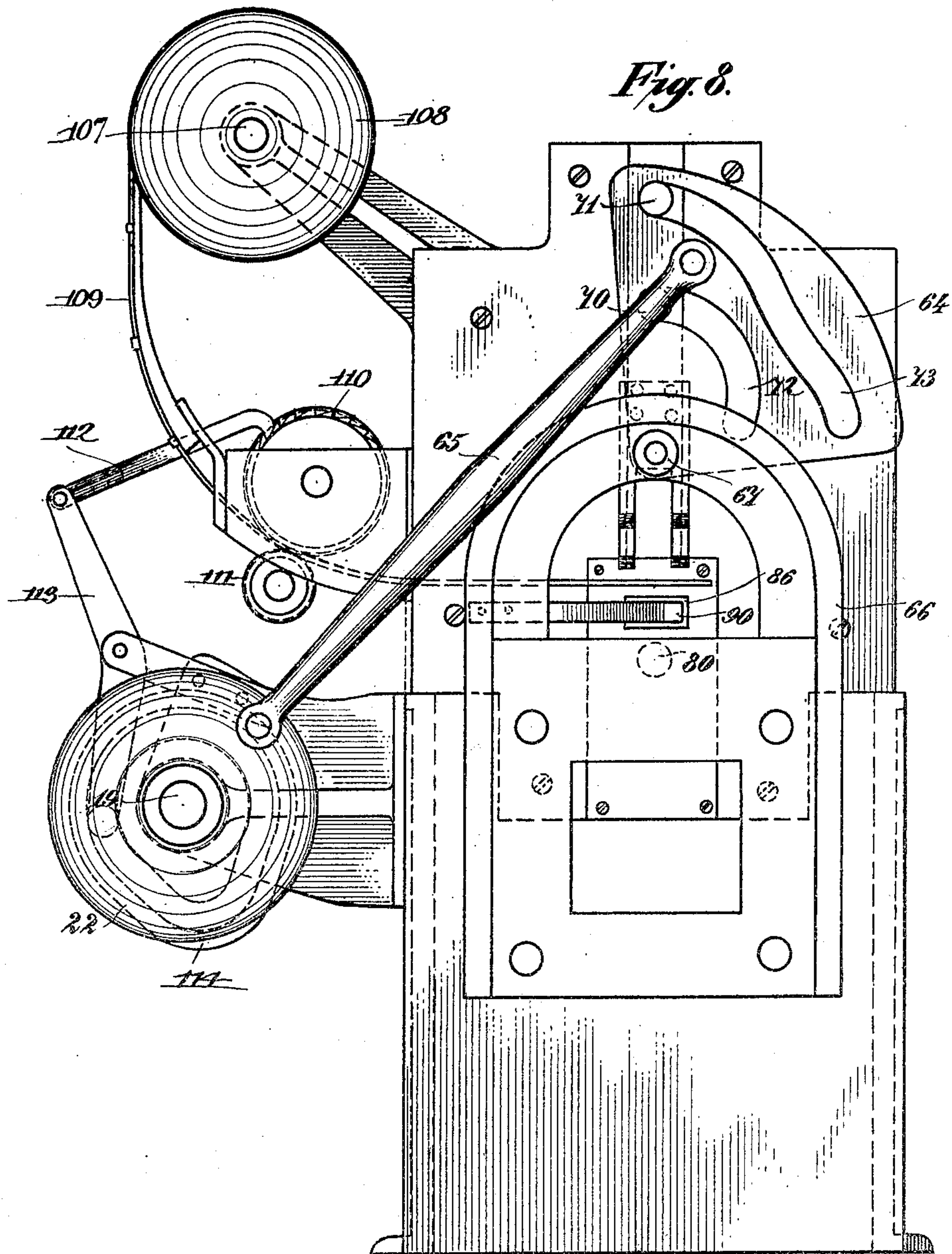
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3 SHEETS—SHEET 3.



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UNITED STATES PATENT OFFICE.

HERMANN KRUSE, OF HEMELINGEN, NEAR BREMEN, GERMANY.

MACHINE FOR MAKING BOTTLE-WRAPPERS.

No. 807,679.

Specification of Letters Patent.

Patented Dec. 19, 1905.

Application filed April 26, 1904. Serial No. 205,024.

To all whom it may concern:

Be it known that I, HERMANN KRUSE, builder of machinery, a subject of the King of Prussia, German Emperor, residing at 5 Diedrichstrasse, in the town of Hemelingen, near Bremen, in the German Empire, have invented a certain new and useful Machine for Making Bottle-Wrappers, of which the following is a specification.

10 The invention relates to a machine for making bottle-wrappers from cylinders of corrugated cardboard which have been previously rolled up and connected along their edges. By means of dies or molds and stems these
15 cylinders, either in a dry or steamed condition, are pressed into a shape which corresponds approximately to that of the article to be protected. In the case of manufacturing bottle-wrappers the wrapper, which is otherwise finished, is tied up yet at the pointed
20 end.

The wrappers heretofore employed and similar packings from straw and other material perform their objects only very unsatisfactorily, or they are comparatively expensive. By my improved machine it is possible to manufacture articles of the kind described in the most perfect manner and at very small
25 expense.

30 In the accompanying drawings, Figure 1 is a longitudinal section of the machine. Fig. 2 is a plan view of the same. Fig. 3 is an end view of the machine with parts broken away and in section. Fig. 4 is a sectional view of the device for introducing wrappers, taken on line 4 4, Fig. 1. Fig. 5 is a section on line 5 5, Fig. 1, showing the device for tying the wrappers. Fig. 6 is a detail of the mechanism for bending the wire, showing the wire
35 partly bent. Fig. 6^a is a side view of Fig. 6. Fig. 6^b is a detail of the wedge for removing the anvil. Fig. 6^c shows the lower part of Fig. 6 after the bending of the wire. Fig. 6^d is a side view of Fig. 6^c. Fig. 6^e is a detail of the anvil and spring. Fig. 7 is a side
45 view of the slide for pressing the shaped wire ring around the neck of the bottle. Fig. 7^a is a front view of the same with parts broken away, and Fig. 8 is a detail of the driving
50 mechanism for the tying device.

Upon the frame 1 of the machine the driving-shaft 2, with the pulleys 3 and 4, is journaled. Furthermore, there is secured to the shaft the toothed wheel 5, which transmits
55 movement to the shaft 7, which is also mount-

ed in the frame 1, by means of the gear-wheel 6. On the shaft 7 the disk 8 is secured, which imparts an oscillating reciprocating movement about the pivot 11 to the swinging bar 10. The upper end of the swinging bar reciprocates the carriage 14 by means of the rod 12
60 and of the spring-influenced sleeve 13. The carriage is guided in the frame of the machine so as to move in a straight line, and it is provided with the approximately bottle-shaped stamp 15. Opposite to the stamp the die or mold 16 is arranged. Between the mold and the stamp the introducing device 17 for the wrappers and at the end of the die or
65 mold 16 the tying device 18 is arranged. Both 70 are driven by the crank-disk 22 or by the cams 23 and 24 and by means of the shaft 19, which is arranged laterally in the machine-frame and is coupled with the main shaft by
75 gear-wheels 20 and 21.

The wrapper-introducing device 17, Figs. 3 and 4, consists of a frame 25, in which the box 26 for the reception of the wrappers is introduced. At the front and at the rear of the frame 25 the swinging arms 27 and 28
80 are arranged, which are made to perform on the pivots 31 32 an oscillating movement by means of the cam-rods 29 30. The swinging bar 27, Fig. 3, is provided with a curved groove 33, engaging with the pin 34 of the
85 slide 35, which is guided in the frame 25. The slide 35 is provided with arms 36 and 37, which are connected, through the rods 38 39, with elbow-levers 40 41 and 42 43, rotatable on the pivots 44 45. The levers are provided with
90 slotted eyes surrounding pins 46 47, which are secured to slides 48 49, guided in the frame. To the frame 35 there are secured two other pins 50 51, which engage with slotted eyes of the levers 52 53 and 54 55. The levers are
95 likewise rotatable on the said pivots 44 45 and are made to engage with the pins 56 57 of the slides 58 59, which are guided in the frame 25, the same as the parts 48 and 49. The slides are provided with retaining-arms 60, 100
61, 62, and 63, by means of which they are capable of engaging and releasing the wrappers. The swinging bar 28, with the parts belonging thereto, is constructed in the same manner as the swinging bar 27, so that a further description of these parts is not necessary.
105

The movement of the tying device 18, Fig. 1 and Figs. 5 to 8, is regulated by the swinging bar 64, to which an oscillating movement on the pivot 67, mounted in the support 66,
110

is imparted by means of the crank-disk 22 and of the rod 65. In the frame of the tying apparatus the slides 68 and 69 are guided, the pins 70 71 of which engage with grooves 72 and 73 of the swinging bar 64. The slide 68 has lateral arms 75 76, upon which the rods 77 and 78 are secured, and at its lower end it is provided with a stamp 79, secured by screw-threads or otherwise and the pressing-surface of which is in the shape of a semicircle.

The slide 69 carries a stencil 80, recessed in the middle and having lateral knife-edges 82 and 83. It is further provided with a wedge 81, also recessed in the middle and having two inclined surfaces 84 and 85. In the lower part of the frame an anvil 86 is arranged, which is displaceable in longitudinal direction and serves for bending the binding wire, which is fed into the machine by a device shown in Fig. 8 and actuated by shaft 19. A roll 108, carrying the wire, is rotatably mounted on a pin 107. The wire 109 passes from this roll to a feeding-disk 110, against which it is pressed by a counter-disk 111. The disk 110 is toothed at its rim, and a pawl 112 engages with its teeth. The pawl is connected to a double lever 113, which is actuated by a grooved disk 114, mounted on shaft 19. The anvil 86 shows two steps 87 88, the shape of which corresponds to the eye-shaped piece of wire to be bent. At 89 the anvil is cut out sufficiently to allow the wedge 81 to pass clear of it. The spring 90 presses upon the outer surface of the anvil. Somewhat below the anvil and laterally arranged in relation thereto studs 91 92 are provided, on which the levers 93 94 are free to rotate. The rounded heads of these studs engage with the recesses of slides 95 96. Return-springs 99 100 retain the levers in their position.

For ejecting the finished wrappers is used the ejector, Figs. 1 and 2. It comprises two rods 101 and 102, slidingly arranged in the frame of the machine and of which the shorter one, 101, is situated opposite to the swinging bar 10 and may be displaced by the aid of the roller 103. This rod is connected to the laterally-arranged rod 102 by means of the cross-head 104. Another cross-head 105 connects the rod 102 with the ejector proper, 106. The spring 107 serves to restore the rods 101 102 to their normal position after each displacement.

The machine operates in the following manner: The wrappers which are to be pressed are placed into the introducing device 17 and are then dropped upon the retaining-arms 60 61 and 62 63, the movement of which is so calculated that every pair of them coöperates in retaining the wrapper, while the other pair is spread apart and drops the wrapper. Assuming that, as shown in Fig. 4, a wrapper has been dropped upon the lowest arm, it will then be exactly in the path of the stamp 15 and is caught by the stamp upon the forward

movement of the same, is pushed into the mold 16 and pressed, the spring-acting sleeve 13 compensating any differences in the strength of the cardboard. The ejector 106 has by the action of the return-spring 107 been moved away from the neck of the mold, which is now filled out by the neck of the wrapper and beyond which the head of the wrapper will still project somewhat, so that the head may be tied, as will be described hereinafter. After the tying and pressing of the wrapper has been finished the swinging bar 10 withdraws the carriage 14, so that the stamp 15 will be moved away from the mold 16. After it has left the mold entirely the swinging bar 10 strikes against the roller 103 and moves the rods 101, 103, and 106 to the right. In so doing the rod 106 meets the head of the finished wrapper and pushes it out from the mold, and in the meantime the swinging bars 27 and 28 by means of the slide 35 and by means of the levers 52 53 54 55 have spread the slides 58 59 apart, so that the arms 62 63 will allow the finished wrapper to drop through between them. In the meantime the slide has turned the levers 40, 41, and 42 by means of its arms 36 37 and by the rods 38 39, while the slides 47 48 are moved against each other, so that their arms 60 and 61 will catch and retain the next wrapper. Upon the withdrawal of the stamp the upper arms will then be spread apart again, the wrapper drops down upon the lower arms, which have now been pushed together, and it is then engaged by the stamp.

The tying operation at the head of the wrappers is effected in the following manner: By the wire-feeding device the wire is advanced at certain intervals and made to engage with the step 88 of the anvil 86. Then the swinging bar 64 depresses the slide 69 by the operation of the groove 73 while the edge of the knife 83, attached to said slide, cuts off the wire. Thereupon the wire is bent over the step 88 of the anvil 86 into the shape shown in Fig. 6 on the upper left hand by means of the knives 82 83. In the meantime the wedge 85 commences to move the anvil toward the left hand by engaging behind its lugs arranged at both sides of the recess 89. The eye then moves down from the step 88 and slides upon the step 87, where it is bent into the shape shown in Fig. 6^a. Upon the further descent of the slide 69 the wedge 84 meets the lugs of the anvil 86 and moves the latter so far that the eye slides down from the step 87 and remains suspended by its tension between the knives 82 83. Upon the further descent of the slide the knives 82 83 carry the eye along and place the same upon the neck of the wrapper. Then the slide 68 is operated. Upon its descent the stamp 79 forces the eye onto the neck of the wrapper. At the same time the rods 77 78 turn the levers 93 94, so that the slides 95 96 are raised and finish the bending of the eye around the neck by means of

their claws 97 98. The claws are recessed at their working surfaces along part of the screw-thread, so that the projecting ends of the wire will place themselves aside of each other.

5 Now the tying of the wrapper is finished. The slides are raised again, the levers 93 94 are withdrawn by the springs 99 100, so that the slides 95 96 will also release the wrapper and the wrapper may be pushed out from the mold
10 by the ejector 106.

What I claim, and desire to secure by Letters Patent of the United States, is—

1. In a machine for shaping bottle-wrap-
pers from hollow paper cylinders, &c., means
15 for feeding the cylinder, combined with means for forming a neck on one end of the cylinder, and means for tying a wire around such neck, substantially as specified.

2. In a machine for shaping bottle-wrap-
pers from hollow paper cylinders, &c., a pair
20 of reciprocating slides having retaining-arms, combined with a die and stamp for forming a neck on one end of the cylinder, and means

for tying a wire around such neck, substantially as specified. 25

3. In a machine for shaping bottle-wrap-
pers from hollow paper cylinders, &c., means
for feeding the cylinder, combined with means
for forming a neck on one end of the cylinder, means for cutting a wire, and means for
30 tying the cut wire around the neck of the cylinder, substantially as specified.

4. In a machine for shaping bottle-wrap-
pers from hollow paper cylinders, &c., means
for feeding the cylinder, combined with a die
35 and stamp for forming a neck on one end of the cylinder, means for tying a wire around such neck, and means for ejecting the tied cylinder from the die, substantially as specified.

In witness whereof I have hereunto signed
my name in the presence of two subscribing
witnesses. 40

HERMANN KRUSE.

Witnesses:

C. DIEDERICH,

FR. HOYERMANN.