

No. 776,714.

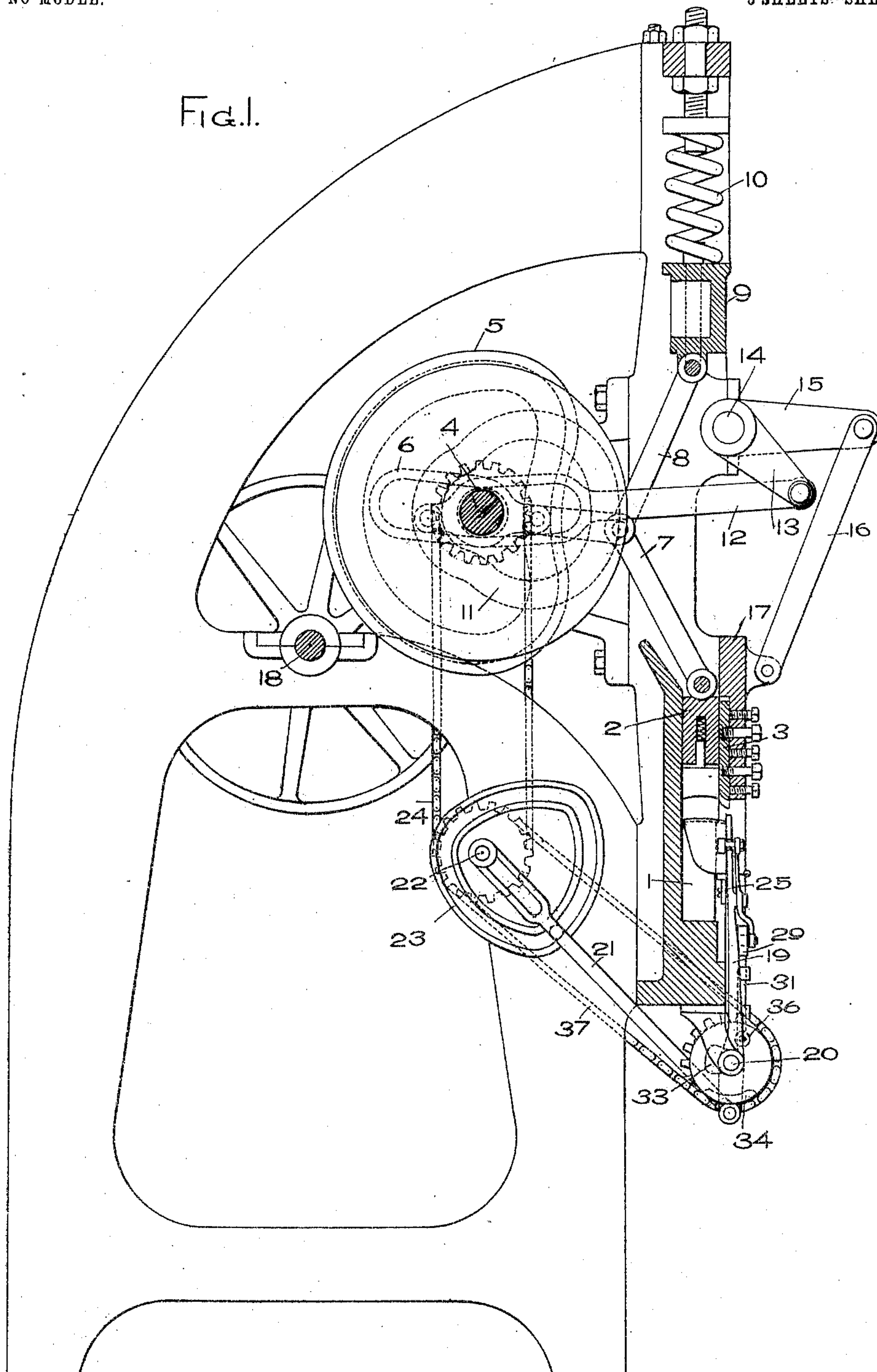
PATENTED DEC. 6, 1904.

W. J. YOUNG.
COUNTER MOLDING MACHINE.
APPLICATION FILED MAY 6, 1903.

NO MODEL.

3 SHEETS—SHEET 1.

Fig. 1.



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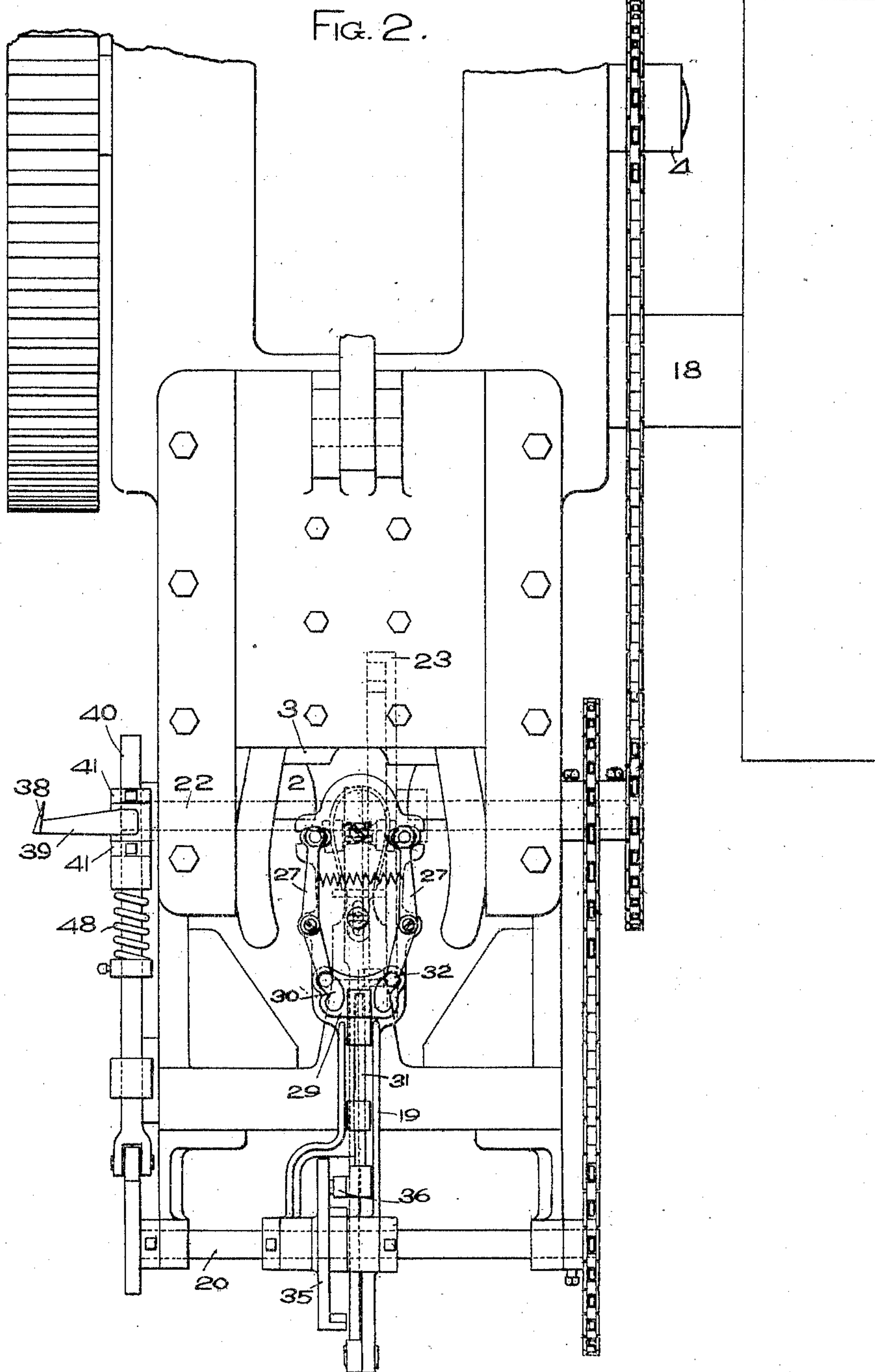
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3 SHEETS—SHEET 2.



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3 SHEETS—SHEET 3.

FIG. 4.

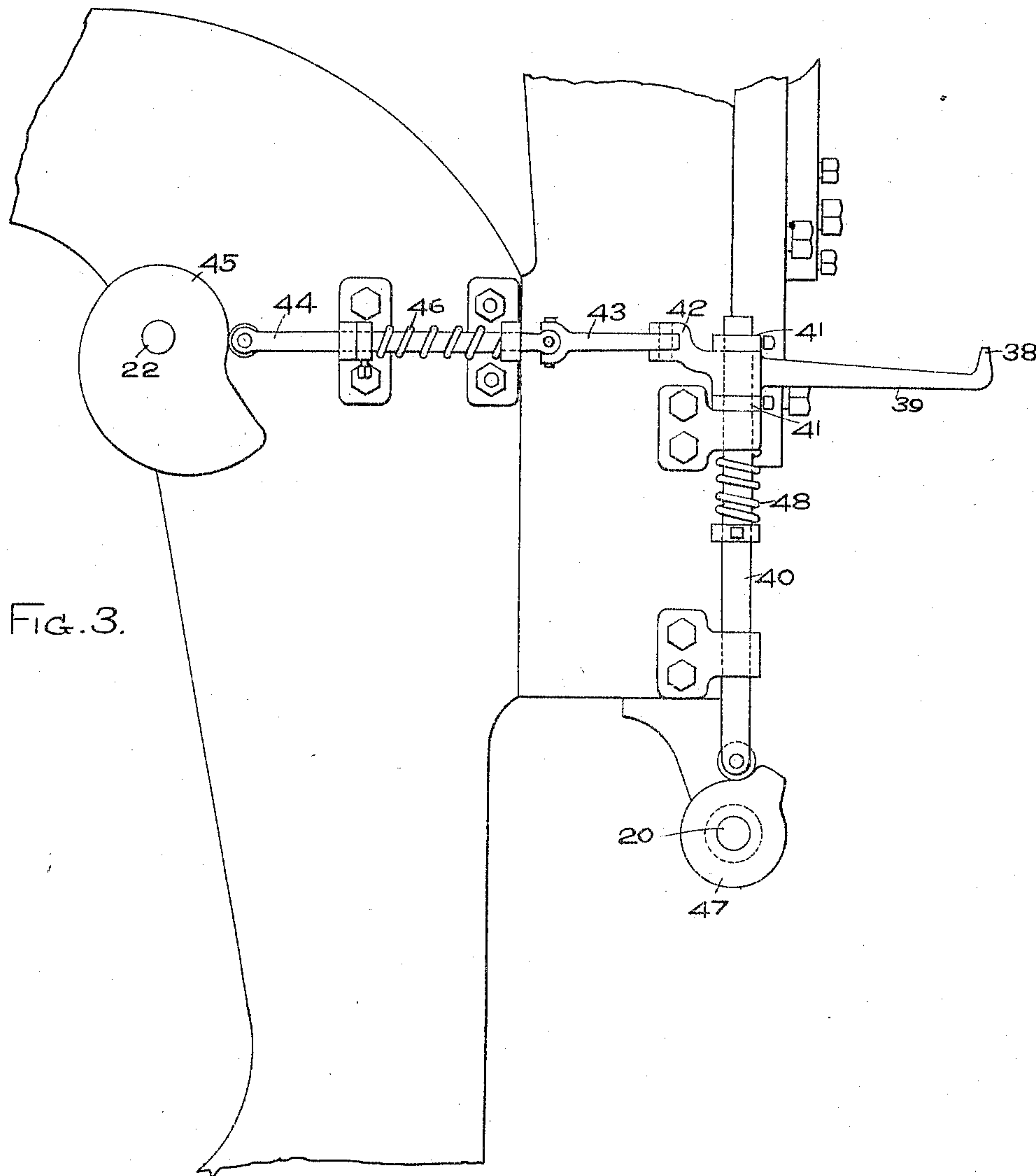
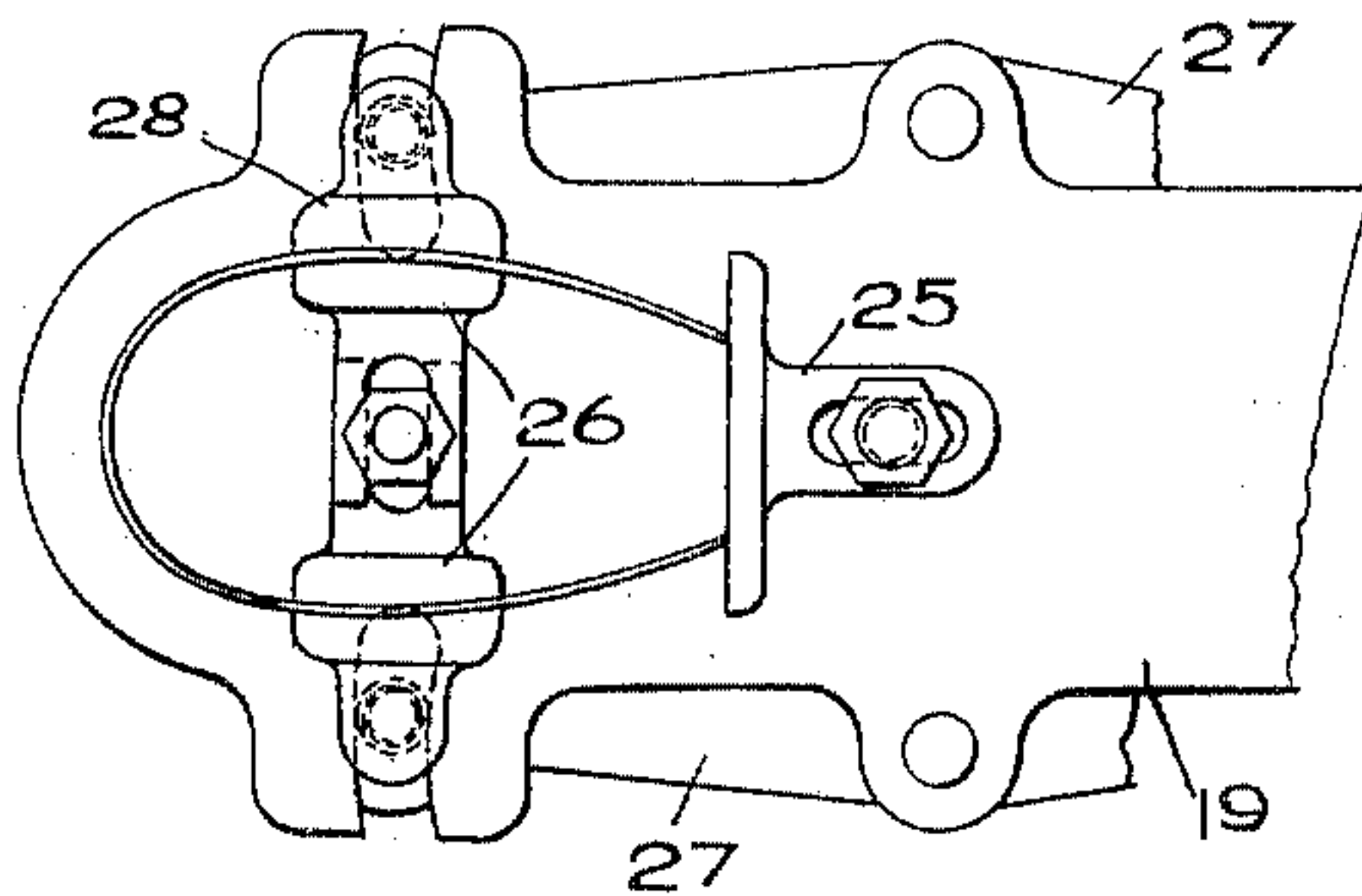


FIG. 3.

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UNITED STATES PATENT OFFICE.

WILLIAM J. YOUNG, OF LYNN, MASSACHUSETTS.

COUNTER-MOLDING MACHINE.

SPECIFICATION forming part of Letters Patent No. 776,714, dated December 6, 1904.

Application filed May 6, 1903. Serial No. 155,887. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM J. YOUNG, a citizen of the United States, residing at Lynn, in the county of Essex and State of Massachusetts, have invented certain new and useful Improvements in Counter-Molding Machines; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

The present invention relates to counter-molding machines, and is intended primarily as an improvement on the machine disclosed in my prior patent, No. 519,936, dated May 15, 1894, although it may be embodied in other forms of counter-molding machines without departing from the spirit thereof.

The objects of the invention are to provide a counter-molding machine which is more completely automatic in its operation than the machine disclosed in my prior patent, which can be operated at an increased speed, which does not require the attendance of a skilled workman, which will act upon a counter-blank in a certain and reliable manner to produce an accurately-molded counter, and which can be operated without any liability of injury to the hands of the attendant.

With these objects in view the invention consists in a counter-molding machine provided with the devices and combinations of devices hereinafter described and claimed, the advantages of which will be obvious to those skilled in the art.

My invention contemplates providing a counter-molding machine with mechanism which is simple in construction and certain, reliable, and satisfactory in operation for presenting a counter-blank to the molding devices in position to be acted upon thereby, so as to produce a perfectly-molded counter. It also contemplates providing a counter-molding machine with simple and improved means for removing the molded counter from the molding devices.

In the illustrated embodiment of the present invention, hereinafter described, the molding devices and the means for actuating the same are substantially the same as the mold-

ing devices and actuating mechanism of the machine of my prior patent above referred to.

The mechanism which I have illustrated for presenting a counter-blank to the molding devices consists of a carrier-arm pivotally mounted below the male mold. This carrier is provided near its free end with gripping devices for grasping the edge of a counter-blank and with a gage for determining the position of the blank on the carrier, the arrangement of the gage and the gripping devices being such that the counter-blank after having been bent into a U shape can be held upon the carrier-arm by the gripping devices with both ends of the blank in contact with the gage and with the body portion of the blank projecting beyond the gripping devices. Mechanism properly timed with relation to the mechanism for actuating the molding devices is provided for oscillating the carrier-arm and for actuating the gripping devices to grasp and release a blank. By the provision of this carrier-arm with its gripping devices and gage the necessity of placing a blank by hand between the male and female molds and of positioning the blank correctly with relation to the molds is avoided, as the blank can be quickly and accurately placed in position on the carrier-arm while the arm is swung away from the molds, and there- after the arm is actuated to place the blank in the correct position between the molds. The operation of feeding the blanks to the machine can be performed more rapidly and accurately than when the blanks are presented directly to the molding devices by hand and without any danger to the hands of the workman, so that the machine can be run at a higher rate of speed and a single workman can operate a number of machines. Also the blanks are more accurately positioned with relation to the molding devices, and the molded counters produced are more uniformly perfect. The arrangement of the gripping devices allows the blank to be inserted between the molds without being displaced with relation to the gripping devices, so that the blank after being placed on the carrier is brought to the correct position with relation to the molding devices in a certain and reliable manner.

The arrangement of the gripping devices also allows the blank to be firmly held until clamped between the male and female molds, as the gripping devices need not be actuated to release the blank until the molds have been brought into contact therewith.

The carrier-arm above referred to acts only to present a blank to the molding devices, the gripping devices on the arm being actuated to release the blank before the carrier-arm is swung away from the molding devices.

The means which I have provided for removing the molded counter from the molding devices consists of a device which is moved toward and from the molding devices to carry the counter away from the molding devices and which is moved to free the molded counter from the molding devices. As illustrated, this device consists of a finger formed upon the free end of an arm pivotally mounted upon a vertically-movable rod at one side of the molding devices, means being provided for oscillating the arm to cause the finger at the end of the arm to move horizontally toward and from the face of the male mold and for reciprocating the vertical rod to cause the finger to raise the molded counter from the male mold. The provision of this device for removing the molded counters from the molding devices obviates the necessity of removing them by hand, thus relieving the operator of this duty and rendering all the operations necessary to the production of the completed counters automatic, with the exception of that of placing the blanks in position on the carrier-arm, by which they are presented to the molding devices.

Referring now to the drawings accompanying this application, in which is illustrated a counter-molding machine embodying the preferred form of my invention, Figure 1 is a view in sectional elevation of the machine. Fig. 2 is a view in front elevation with the upper portion of the machine broken away and with the mechanism for actuating the molding devices omitted. Fig. 3 is a view in side elevation of a portion of the machine, illustrating the mechanism for actuating the device for removing the molded counters from the molding devices; and Fig. 4 is a plan view of the free end of the carrier-arm by which the blanks are presented to the molding devices.

The molding devices comprise a stationary male mold 1, a reciprocating female mold 2, and a reciprocating flange-turner 3. The female mold 2 is reciprocated by suitable connections from the cam-shaft 4, journaled in the frame of the machine, these connections consisting of a cam 5, secured to the shaft, a link 6, provided with a slot through which the shaft 4 passes, and with a roll or stud engaging the groove of the cam 5 and toggle-arms 7 and 8, the link 6 connecting with the toggle-arms 7 and 8 at the point where they

are pivotally connected to each other, the lower end of the toggle-arm 7 being pivotally connected to the female mold 2 and the upper end of the toggle-arm 8 being pivotally connected to the vertically-movable cross-head 9, held against upward movement by strong coiled springs 10. The flange-turner 3 is also reciprocated from the shaft 4 through suitable connections consisting of a cam 11, secured to the shaft, a link 12, provided with a guiding-slot through which the shaft 4 passes, and with a roll or stud engaging the groove of cam 11, an arm 13 pivotally connected to the link 12 and rigidly secured upon a rock-shaft 14, an arm 15 also rigidly secured upon the shaft 14, and a link 16 connecting the arm 15 with a cross-head 17, to which the flange-turner 3 is secured. The cam-shaft 4 is driven through suitable gearing from a driving-shaft 18, journaled in the frame of the machine.

The construction and mode of operation of the parts above described are the same as the corresponding parts of the machine disclosed in my prior patent with the exception that the female mold and flange-turner are mounted to reciprocate in a vertical plane toward and from the male mold instead of in an inclined plane.

The means which I have provided for presenting a blank to the molding devices comprises an arm 19, pivotally mounted upon a shaft 20, journaled in bearings in the frame of the machine below the male mold. The arm 19 is provided with a portion extending below the shaft 20, which is pivotally connected to one end of a link 21. The other end of the link 21 is provided with a guiding-slot through which a shaft 22 passes and with a roll or stud engaging the cam-groove of a cam 23, secured to the shaft 22, the construction being such that during a revolution of the shaft 22 the arm 19 is swung from a horizontal to a vertical position and returned to a horizontal position. The shaft 22 is rotated in timed relation to the shaft 4 by means of a sprocket-chain 24, passing over sprocket-wheels secured to the shafts 4 and 22. The arm 19 is provided near its free end and upon its upper surface with a gage 25, secured thereto so as to be adjustable longitudinally of the arm and with two stationary gripping-jaws 26 secured thereto so as to be adjustable transversely of the arm. Two arms 27 are pivotally mounted upon the arm and beneath the same and are provided at their outer ends with transverse slots, in which are adjustably secured gripping-jaws 28, which cooperate with the stationary gripping-jaws 26. The gripping-jaws 28 are located upon the upper side of the arm 19 and are secured to the arms 27 by means of pins or bolts passing freely through slots in the arm 19.

The construction and arrangement of the gripping-jaws 26 and 28 and the gage 25 are such that a counter-blank after having been

bent into a U shape can be placed between the gripping-jaws with both ends bearing against the gage 25, and when the gripping-jaws 28 are actuated to grasp the blank and the arm 19 is swung into a vertical position the blank is placed between the male and female molds in the correct position to be acted upon thereby. The gripping-jaws 28 are actuated to grasp the blank after having been placed in position by the workman while the arm 19 is in a horizontal position and are actuated to release the blank after the arm has been swung into a vertical position and before it is returned to a horizontal position. For so actuating the gripping-jaws a plate 29, provided with cam-grooves 30 and secured to a rod 31, mounted to reciprocate in bearings on the under side of the arm 19, is provided, the inner ends of the arms 27 being provided with pins 32, which engage the cam-grooves 30, and the construction being such that an inward movement of the plate 29 and rod 31—that is, a movement toward the pivot of the arm 19—actuates the gripping-jaws 28 to grasp a blank, and an outward movement of the plate 29 and rod 31 actuates the gripping-jaws 28 to release the blank. The plate 29 and rod 31 are moved at the proper times during the operation of the machine by means of external and internal cams 33 and 34, formed on a cam-disk 35, secured to the shaft 20 between the arms of the forked inner end of the arm 19, the cams 33 and 34 being arranged to engage a roll or stud 36 upon the inner end of the rod 31. The shaft 20, to which the cam-disk 35 is secured, is rotated in timed relation to the shafts 4 and 22 by means of a sprocket-chain 37, passing over sprocket-wheels on the shafts 22 and 20.

The means which I have provided for removing the molded counters from the molding devices comprises a finger 38, formed upon the outer end of an arm 39, pivotally mounted upon a vertical rod 40 between collars 41, secured to the rod. An arm 42 extends from the hub of the arm 39 and is pivotally connected to a link 43, which is connected, by means of a universal joint, to a rod 44, mounted to slide horizontally in bearings on the machine-frame. The inner end of the rod 44 is provided with a roll which is held in contact with a cam 45 upon the shaft 22 by means of a spring 46, coiled around the rod and interposed between one of the bearings for the rod and a collar secured to the rod. The connections above described between the arm 39 and the shaft 22 are such that during a revolution of the shaft 22 the arm 39 is swung horizontally to move the finger 38 toward and from the molding devices. The rod 40 is provided with a roll which is held in contact with a cam 47 upon the shaft 20 by means of a spring 48, coiled around the rod and interposed between the upper bearing for the rod and a collar secured to the rod, the construction being such that during the rotation of the shaft 20 the

rod 40, together with the arm 39 and the finger 38, are raised and lowered. The cams 45 and 47 are so timed with relation to each other and to the other moving parts of the machine that the arm 39 is swung horizontally to bring the finger 38 in contact with or in close proximity to the vertical face of the male mold 1 below the flange of the molded counter, and is then raised to lift the counter from the male mold after the female mold and flange-turner have moved out of engagement with the counter, and is then swung horizontally to carry the counter away from the molds, and is finally lowered into its original position.

The operation of the machine above described is as follows: When the arm 19 is in a horizontal position and the gripping-jaws 28 are separated from the jaws 26, a blank is placed upon the carrier in the position indicated in Fig. 4, the gage 25 serving as a means for insuring the correct position of the blank on the arm. As the shafts 4, 20, and 22 rotate the cam 34 engages the roll 36 and moves the rod 31 and the plate 29 inwardly, thereby actuating the gripping-jaws 28 to grasp the blank. The arm 19 is then swung into a vertical position and the blank, which continues to be firmly grasped by the gripping devices on the arm 19, is placed accurately in position between the male and female molds, as indicated in Fig. 1. The female mold then descends upon the blank, and as soon as the blank is firmly held between the molds the gripping-jaws 28 are actuated to release the blank by the engagement of the roll 36 by the cam 33. As soon as the blank is released by the jaws 28 the arm 19 is returned to a horizontal position, and the flange-turner 3 is actuated to turn the projecting edge of the counter over upon the face of the male mold. The flange-turner is then retracted and thereafter the female mold. After the flange-turner 3 is retracted the finger 38 upon the arm 39 is brought into contact or in close proximity with the face of the male mold below the flange on the counter, and as the female mold is retracted the finger 38 is raised to engage the counter beneath the flange and raise the counter from the mold. The arm 39 is then swung to carry the counter supported upon the finger 38 away from the molds, and as the finger reaches the end of its outward movement the counter is dropped from the finger into a suitable receptacle. A final downward movement is imparted to the arm 39 to bring the finger 38 into its original position.

It will be understood that the mechanism which I have illustrated in the drawings accompanying this application and which I have specifically described embodies my invention in its preferred form only and that while I consider the mechanism illustrated and described to be the best embodiment of my invention that I have yet devised my inven-

tion, except as defined in the claims, is not limited thereto, but may be otherwise embodied without departing from the spirit thereof.

5 Having thus described my invention, I claim as new and desire to secure by Letters Patent of the United States—

10 1. A counter-molding machine having in combination, a male mold, a female mold, a blank-carrier, gripping devices arranged to grasp the edge of a blank and hold the blank on the carrier with its body portion in position to be inserted between the molds without being displaced with relation to said gripping
15 devices, means for actuating said gripping devices, and means for actuating the carrier to place the blank between the molds, substantially as described.

20 2. A counter-molding machine having in combination, a male mold, a female mold, a blank-carrier, gripping devices arranged to grasp the edge of a blank bent into a U shape and hold the blank on the carrier with its body portion in position to be inserted be-
25 tween the molds without being displaced with relation to said gripping devices, means for actuating said gripping devices and means for actuating the carrier to place the blank between the molds, substantially as described.

30 3. A counter-molding machine having in combination, a male mold, a female mold, a blank-carrier, gripping devices arranged to grasp the edge of a blank and hold the blank

on the carrier with its body portion projecting beyond said gripping devices in position 35 to be acted upon by the molds, and means for actuating said gripping devices to hold the blank until clamped between the molds, substantially as described.

4. A counter-molding machine having in 40 combination a male mold, a female mold, a blank-carrier, gripping devices arranged to grasp the edge of a blank bent into a U shape and hold the blank on the carrier with its body portion projecting beyond said gripping 45 devices in position to be acted upon by the molds, and means for actuating said gripping devices to hold the blank until clamped between the molds, substantially as described.

5. A counter-molding machine having in 50 combination a male mold, a female mold, a pivotally-mounted arm provided with a finger to take the molded counter from the male mold, means for swinging the arm about its pivotal axis to move the finger toward and 55 from the face of the male mold, and means for moving the arm longitudinally of its pivotal axis while the finger is in close proximity to the face of the male mold, substantially as described. 60

In testimony whereof I affix my signature in presence of two witnesses.

WILLIAM J. YOUNG.

Witnesses:

FRED O. FISH,

ALFRED H. HILDRETH.