

No. 684,539.

Patented Oct. 15, 1901.

W. J. CARTWRIGHT.

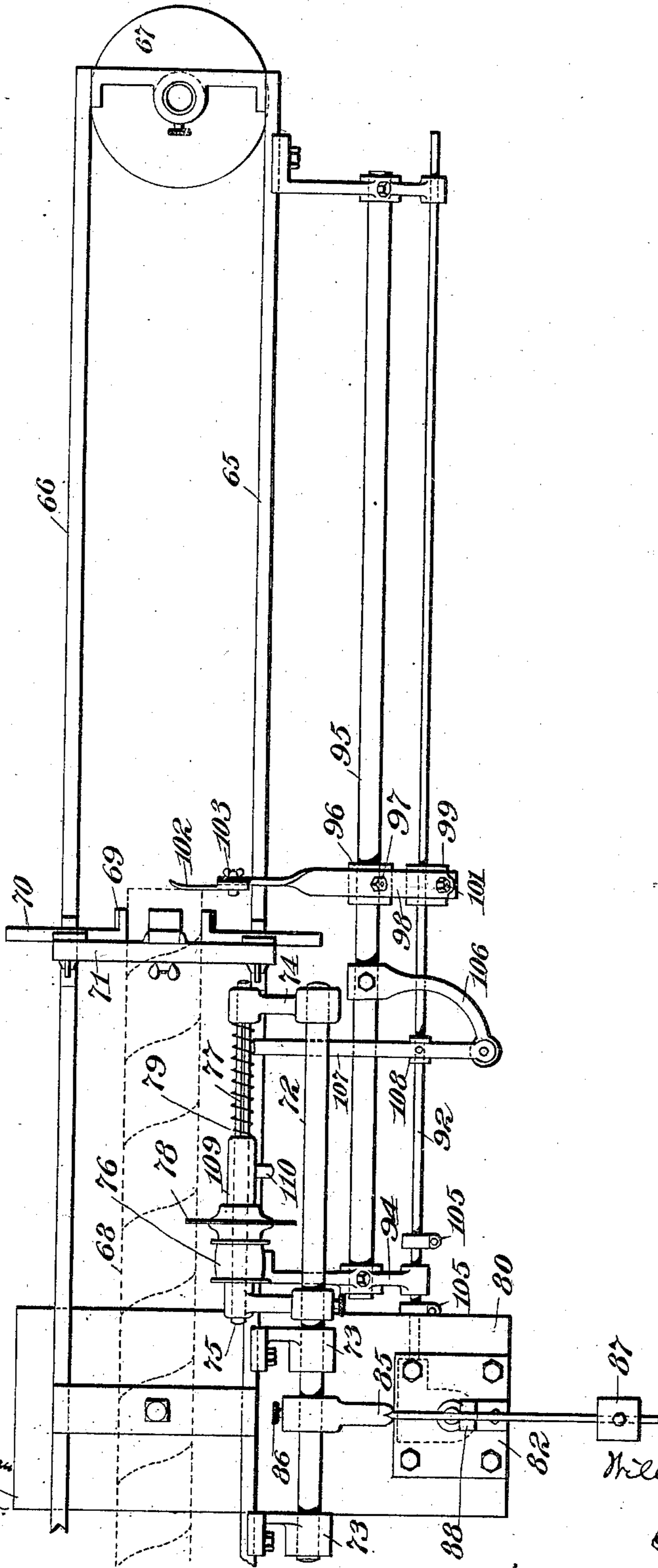
CUT-OFF MECHANISM FOR PAPER TUBE MACHINES, &c.

(Application filed Sept. 27, 1898.)

(No Model.)

3 Sheets—Sheet 1.

Fig. 1



Witnesses

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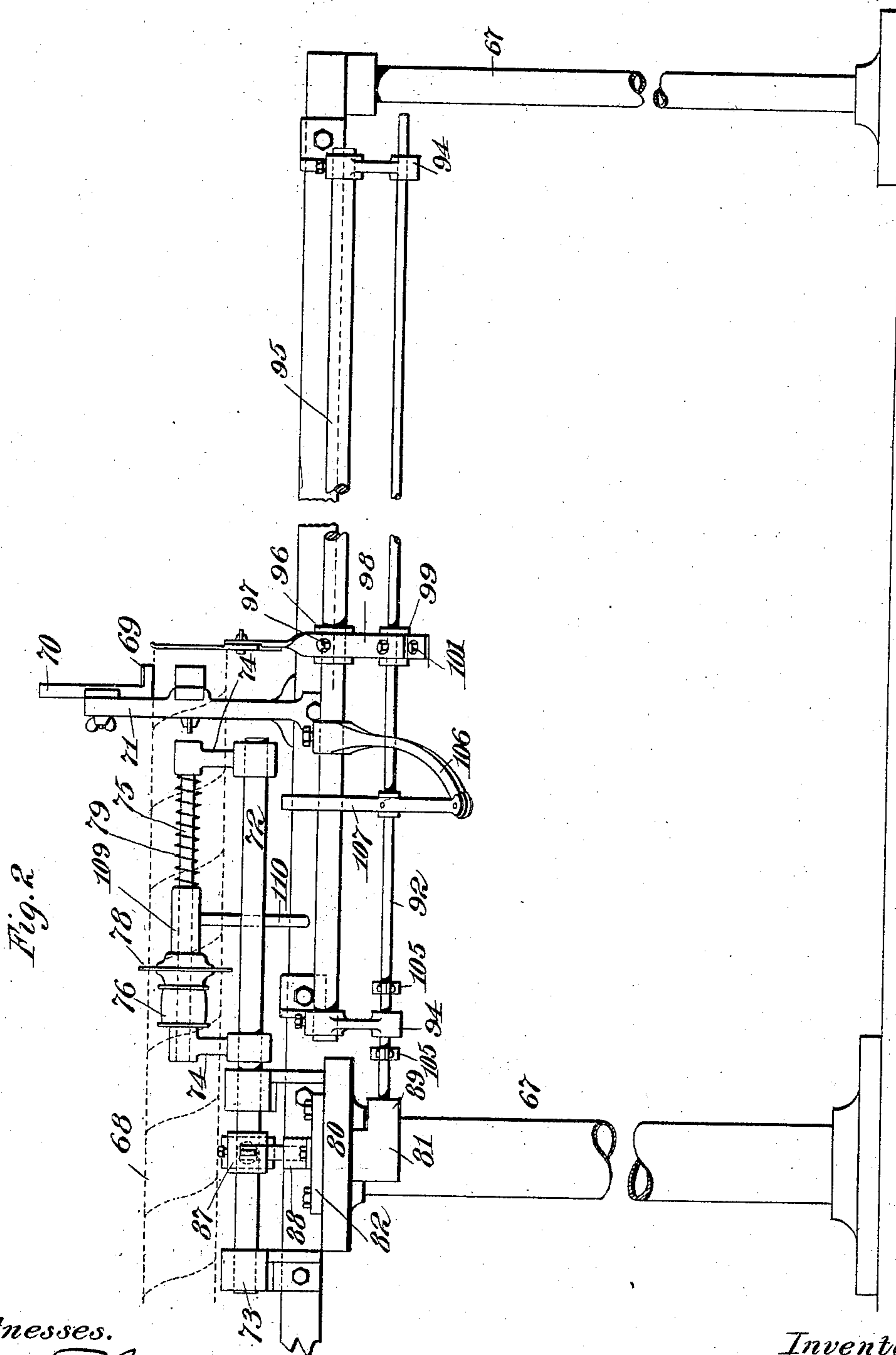


Fig. 2

Witnesses.

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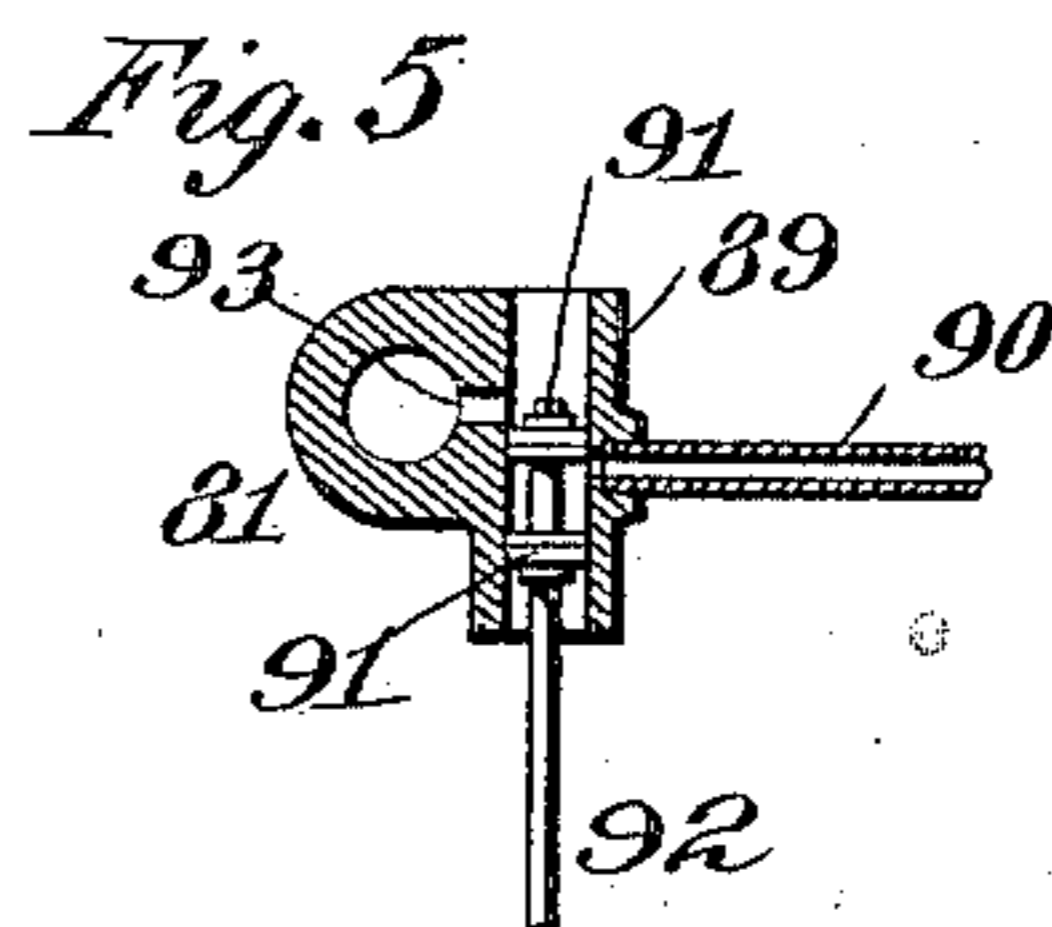
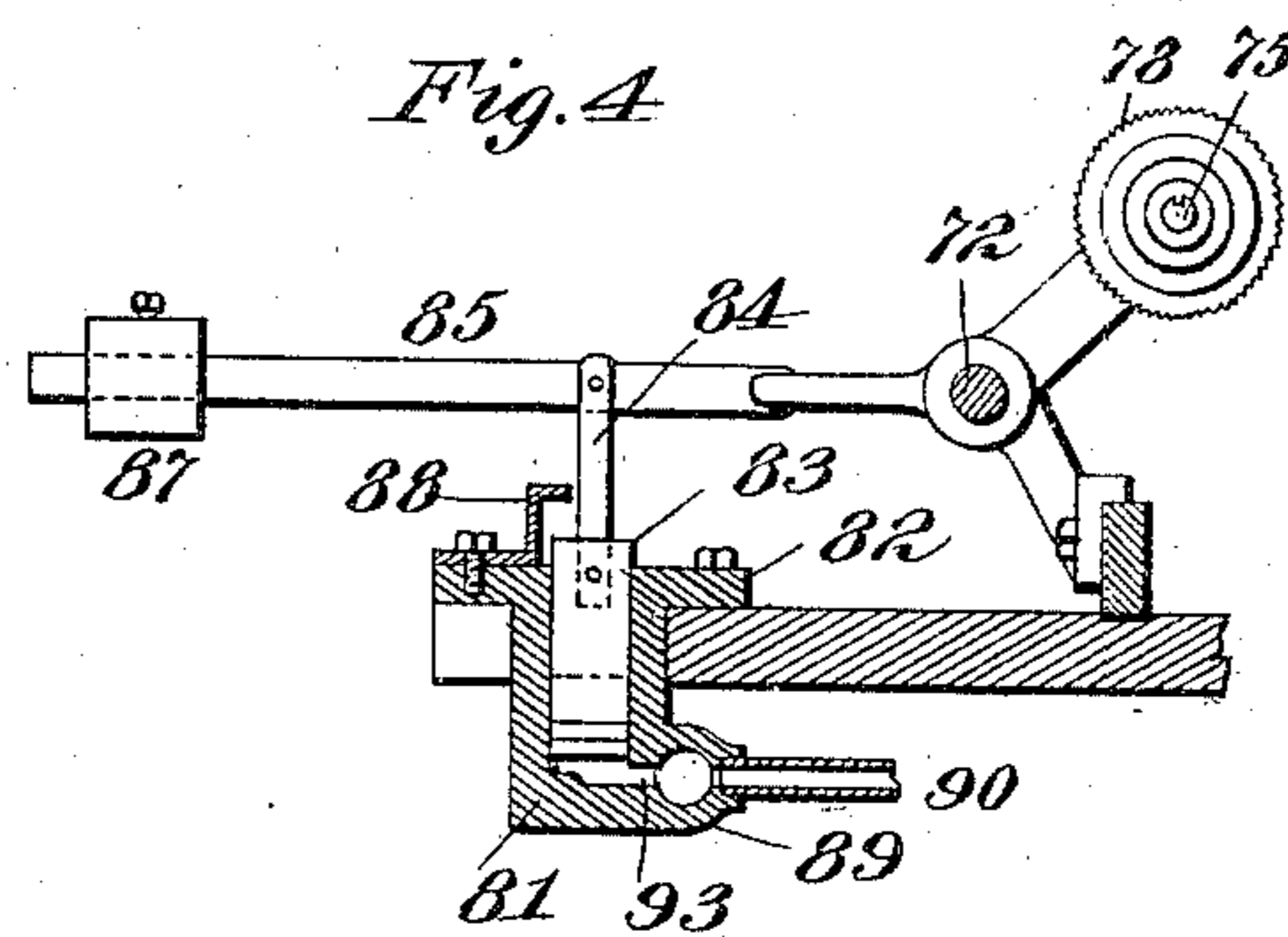
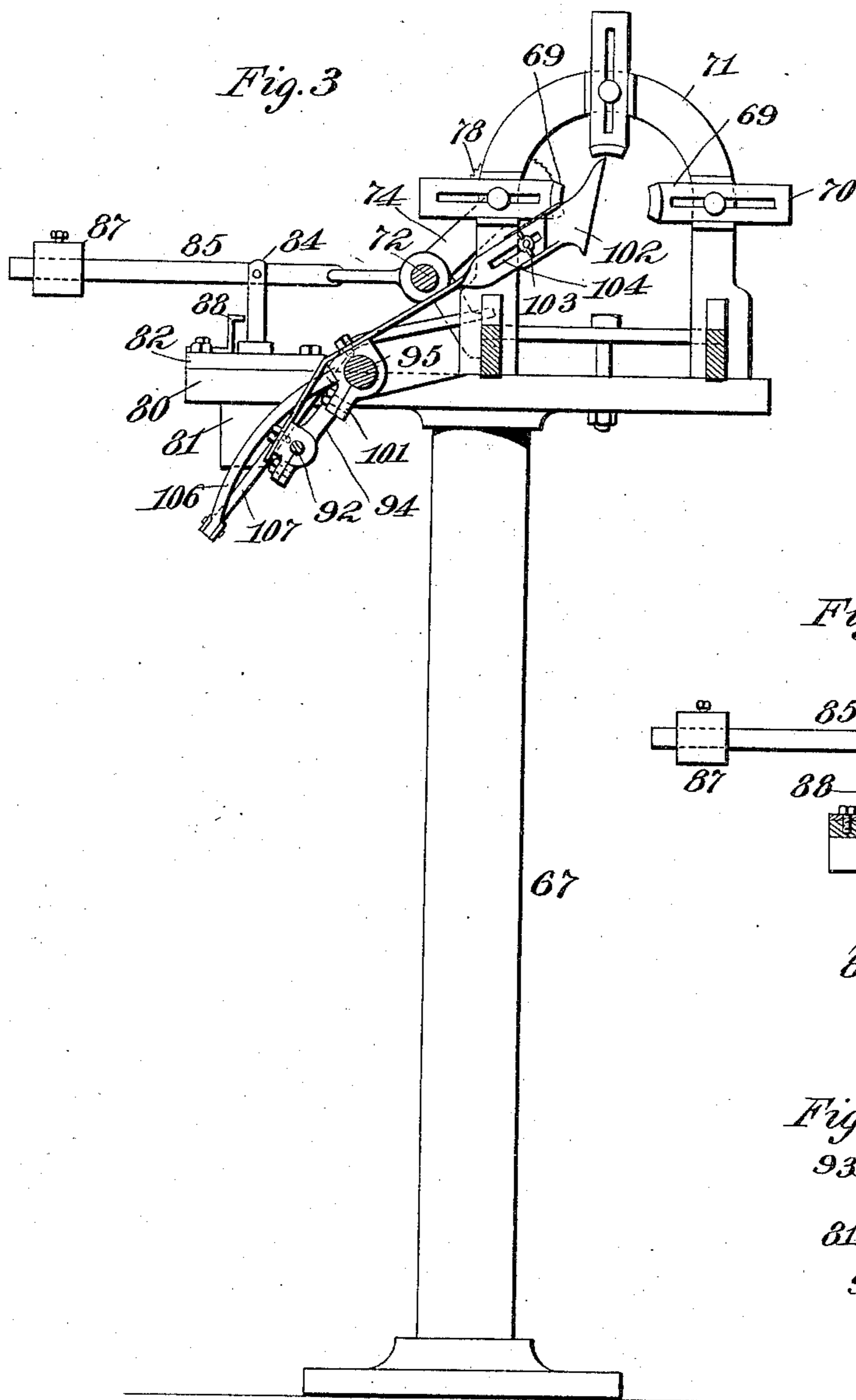
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(No Model.)

3 Sheets—Sheet 3.



Witnesses:

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# UNITED STATES PATENT OFFICE.

WILLIAM J. CARTWRIGHT, OF NEW YORK, N. Y., ASSIGNOR TO THE UNION PAPER COMPANY, OF NEW YORK, N. Y., A CORPORATION OF NEW YORK.

## CUT-OFF MECHANISM FOR PAPER-TUBE MACHINES, &c.

SPECIFICATION forming part of Letters Patent No. 684,539, dated October 15, 1901.

Application filed September 27, 1898. Serial No. 692,007. (No model)

*To all whom it may concern:*

Be it known that I, WILLIAM J. CARTWRIGHT, a citizen of the United States, residing at New York city, in the county and State of New York, have invented a certain new and useful Improvement in Cut-Off Mechanism for Paper-Tube Machines and Analogous Devices, of which the following is a specification.

My invention relates to an improved cut-off mechanism which is particularly adapted for use in connection with machines for making paper tubing in continuous lengths; but the invention is capable of use in connection with other forms of apparatus for cutting off lengths of material.

The principal object of my invention is to provide a simple and efficient cut-off device by the use of which material formed in the machine, such as continuous paper tubing, may be severed automatically into equal sections or lengths.

A further object of my invention is to provide an improved cut-off mechanism by which the portions or lengths of severed material may be conveniently adjusted within wide limits.

In carrying out my invention I mount a cutting device, such as a rotary saw, in a frame adapted to swing toward and away from the forming material. This frame is connected with a piston which works in a pneumatic cylinder. Interposed in the path of the forming material is a finger or arm having connections with a valve for the cylinder, whereby the end of the material forming in the machine will engage with said finger or arm, allowing the piston to be operated to move the swinging frame and forcing the cutting devices into contact with the forming material.

In carrying out my invention I utilize various details of construction by which the operation of the device will be improved and which will be presently described in detail.

In order that my invention may be better understood, attention is directed to the accompanying drawings, forming a part of this specification, and in which—

Figure 1 is a plan view of a portion of a paper-tube machine with my present improvements applied thereto; Fig. 2, a side elevation of the same; Fig. 3, an end view, partly

in section; Fig. 4, a sectional view through the cylinder, and Fig. 5 a horizontal section taken through the preferred form of valve-chamber.

In all of the above views corresponding parts are represented by the same numerals of reference.

65 and 66 represent the side frames of a paper-tube machine of any suitable type, and 67 67 the standards or supports therefor.

68 (dotted lines) represents a paper tube which is made in any suitable way, as by winding paper spirally around a mandrel and which is projected afterward from the forming devices between the gage-pieces 69 69, carried on slotted arms 70, which are adjustable in an arch 71, as shown. These gage-pieces are adjusted to the required diameter of the forming tube and serve to guide its free end.

72 is a rock-shaft mounted in bearings 73 73, carried by the side frame 65, and 74 74 are two rocker-arms carried by said shaft and movable therewith. Mounted in bearings in the free ends of said rocker-arms is a shaft 75 75, having a belt-wheel 76 thereon, to which power is applied by means of a suitable driving-belt, provision being made to allow the rocker-arms to be moved without affecting the driving of the belt-wheel. The shaft 75 80 is provided with a keyway 77 therein, and a small rotary saw 78 is mounted on said shaft and splined within said keyway, so as to be capable of longitudinal movement with respect to the shaft, but be rotated by the shaft. 85 A spiral spring 79, surrounding the shaft, maintains the saw 78 in normal position, with its boss in contact with the belt-wheel 76. If desired, a cord and weight may be used for this purpose.

80 is a bracket carried beneath the side frames 65 and 66, and mounted on said bracket and projecting through an opening therein is a small pneumatic cylinder 81, the flange 82 of which is bolted to the top of the bracket. This cylinder is open at its upper end and closed at its lower end. Mounted within the cylinder is a plunger-piston 83, the rod 84 of which is connected to an arm 85, which latter arm is connected to the rock-shaft 72 by means of a thumb-screw 86 or in any other suitable way. The arm 85 pro-

jects beyond its connection with the piston-rod and carries a weight 87 for normally maintaining the piston in its lowermost position. A stop 88, bolted to the top of the flange 5 82, is arranged in the path of movement of the piston and limits its upward movement. The cylinder 81 is preferably cast integral with a small valve-chamber 89, preferably open at both ends, as shown in Fig. 5. Leading into this valve-chamber is an air-pipe 90, containing compressed air from a suitable tank or reservoir. Mounted within the valve-chamber is a balanced valve 91, the two portions of which are carried by a valve-rod 92. 15 A port 93 is adapted to be put into communication with the air-pipe 90 to allow compressed air to enter the cylinder to elevate the piston therein upon the movement of the valve-rod 92 toward that port; but upon the 20 return movement to the normal position (shown in Fig. 5) the said port is put into communication with the atmosphere to allow for the exhaust of air from the cylinder, whereby the weight 87 may return the piston 25 to its normal position. The valve-rod 92 is mounted in brackets 94, carried by the side frame of the machine and movable longitudinally therein. Mounted in the same brackets is a stationary rod 95. This rod carries 30 a collar 96, adjustable thereon in any suitable way—as, for example, by means of a set-screw 97—and pivoted to said collar is a lever 98, connected at its lower end to a collar 99, which may be adjusted upon the valve-rod 92 and be secured rigidly to the same in 35 any suitable way—as, for example, by making the collar 99 a split collar, the two sections thereof being clamped together by means of a bolt 100. If desired, the collar 40 96 may also be a split collar, as shown in Fig. 3, the two portions thereof being adapted to be clamped to the rod 95 by means of a bolt 101. The lever 98 carries at its upper end a finger-piece or arm 102, adjustably mounted 45 thereon in any suitable way—as, for example, by means of a thumb-nut 103, the shank of which works in a slot 104 in the upper end of said lever 98. The finger-piece 102 is arranged in the path of movement of the forming tube or other article. Collars 105 are 50 preferably carried on the valve-rod 92 on either side of one of the brackets 94, so as to limit the movement of said valve-rod and prevent overthrow. Extending down from the rod 95 is a bracket-arm 106, the lower end of which is provided with a bearing in which is mounted the lower end of a lever 107, which is connected with a collar 108, secured to the valve-rod. The saw 78 is provided at one side with a collar 109, which 60 slides on the shaft 75 as the saw moves thereon, which collar is provided with a downwardly-extending arm 110, arranged to engage with the upper end of the lever 107 when the saw has moved to its farthest position 65 against the tension of the first spring 79.

The operation of the improved cut-off de-

vice will be as follows: The gage-pieces 69 are first set so as to snugly receive the tube or other forming article and to prevent the 70 tube or other forming article from shifting laterally under the effect of the cut-off mechanism. The lever 98 will be adjusted on the bar 95 of the valve-rod with a sufficient distance between the finger 102 and the saw to 75 provide for the desired length of tubing or other material to be cut off. As the forming tubing or other material is produced in the machine and passes between the gage-pieces 69 the end of said tubing or other material 80 will engage with the finger-piece 102, moving the lever 98 on its fulcrum and shifting the valve-rod toward the cylinder, so as to open communication between the air-pipe 90 and the interior of said cylinder. Compressed air 85 will now elevate the piston 83 and through its connection with the arm 85 will rock the rock-shaft 72, carrying the rocker-arms 74 and engaging the saw 78 with the material. In the case of a paper-tube machine wherein 90 the tubing is made by winding a strip or strips of paper on a mandrel and whereby the tube is continuously rotating it will only be necessary to move the saw sufficiently to cut through the thickness of the tube, since the 95 rotation of the tubing will result in the saw engaging its entire periphery. In case my improved cut-off device is used in connection with solid material forming in a machine, this movement of the saw may and should be 100 made sufficient to pass through the entire thickness of the material, as will be understood. If, however, the forming solid material partakes of a rotation the extent of movement of the saw need only be sufficient to 105 reach the axis of the material. The engagement of the saw with the material will quickly sever the same into the desired length. As the material progresses through the machine it will force the saw against the tension of the 110 spring 79 until the arm 110 has engaged the upper end of the lever 107. This engagement will return the valve-rod 92 to its normal position, cutting off the air-supply and placing the cylinder into communication with 115 the atmosphere to allow it to exhaust. The weight 87 will now depress the piston and return the rock-shaft to its original position, so as to withdraw the saw from the material. As soon as the saw has been thus freed from 120 the material the spring 79 will return it to its original position ready for a new operation.

Having now described my invention, what I claim as new, and desire to secure by Letters Patent, is as follows: 125

1. In a cut-off device for a machine for forming material in continuous lengths, the combination with a rotating saw movable toward and away from the forming material, a rock-shaft, rocker-arms on said rock-shaft in which 130 the saw is mounted, a pressure-cylinder, the piston of which is connected to said rock-shaft, a valve mechanism for said cylinder, a valve-rod connected to said valve mech-

anism, a supporting-rod extending parallel to said valve-rod, and a finger-piece or arm arranged in the path of movement of the forming material pivoted on said supporting-rod and connected to said valve-rod, substantially as set forth.

2. In a cut-off device for a machine for forming material in continuous lengths, the combination with a rotating saw movable toward and away from the forming material, a rock-shaft, rocker-arms on said rock-shaft in which the saw is mounted, a pressure-cylinder, the piston of which is connected to said rock-shaft, a valve mechanism for said cylinder, a valve-rod connected to said valve mechanism, a supporting-rod extending parallel to said valve-rod, and a finger-piece or arm arranged in the path of movement of the forming material pivoted on said supporting-rod and connected to said valve-rod, said finger-piece or arm being adjustably mounted on the supporting-rod and being adjustably connected to the valve-rod, whereby the material may be severed into sections of the required length, substantially as set forth.

3. In a cut-off device for a machine for forming material in continuous lengths, the combination with a rotating saw movable toward and away from the forming material, a rock-shaft, rocker-arms on said shaft in which the saw is mounted, the said saw being movable longitudinally with the forming material, a pressure-cylinder, the piston of which is connected to said rock-shaft, a valve mechanism for said cylinder, a valve-rod connected to said valve mechanism, a supporting-rod extending parallel to said valve-rod, a finger-

piece or arm mounted on said supporting-rod and connected to said valve-rod, a bracket carried by said supporting-rod, and a lever mounted in said bracket and connected to said valve-rod, the said lever being arranged in the path of longitudinal movement of the saw, substantially as set forth.

4. In a cut-off device for a machine for forming material in continuous lengths, the combination with a rotating saw movable toward and away from the forming material, a rock-shaft, rocker-arms on said shaft in which the saw is mounted, the said saw being movable longitudinally with the forming material, a pressure-cylinder, the piston of which is connected to said rock-shaft, a valve mechanism for said cylinder, a valve-rod connected to said valve mechanism, a supporting-rod extending parallel to said valve-rod, a finger-piece or arm mounted on said supporting-rod and connected to said valve-rod, a bracket carried by said supporting-rod, and a lever mounted in said bracket and connected to said valve-rod, the said lever being arranged in the path of longitudinal movement of the saw, the finger-piece or arm being adjustably mounted on the supporting-rod and adjustably connected to the valve-rod whereby the material may be severed in sections of the required length, substantially as set forth.

This specification signed and witnessed this 15th day of September, 1898.

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Witnesses:

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