

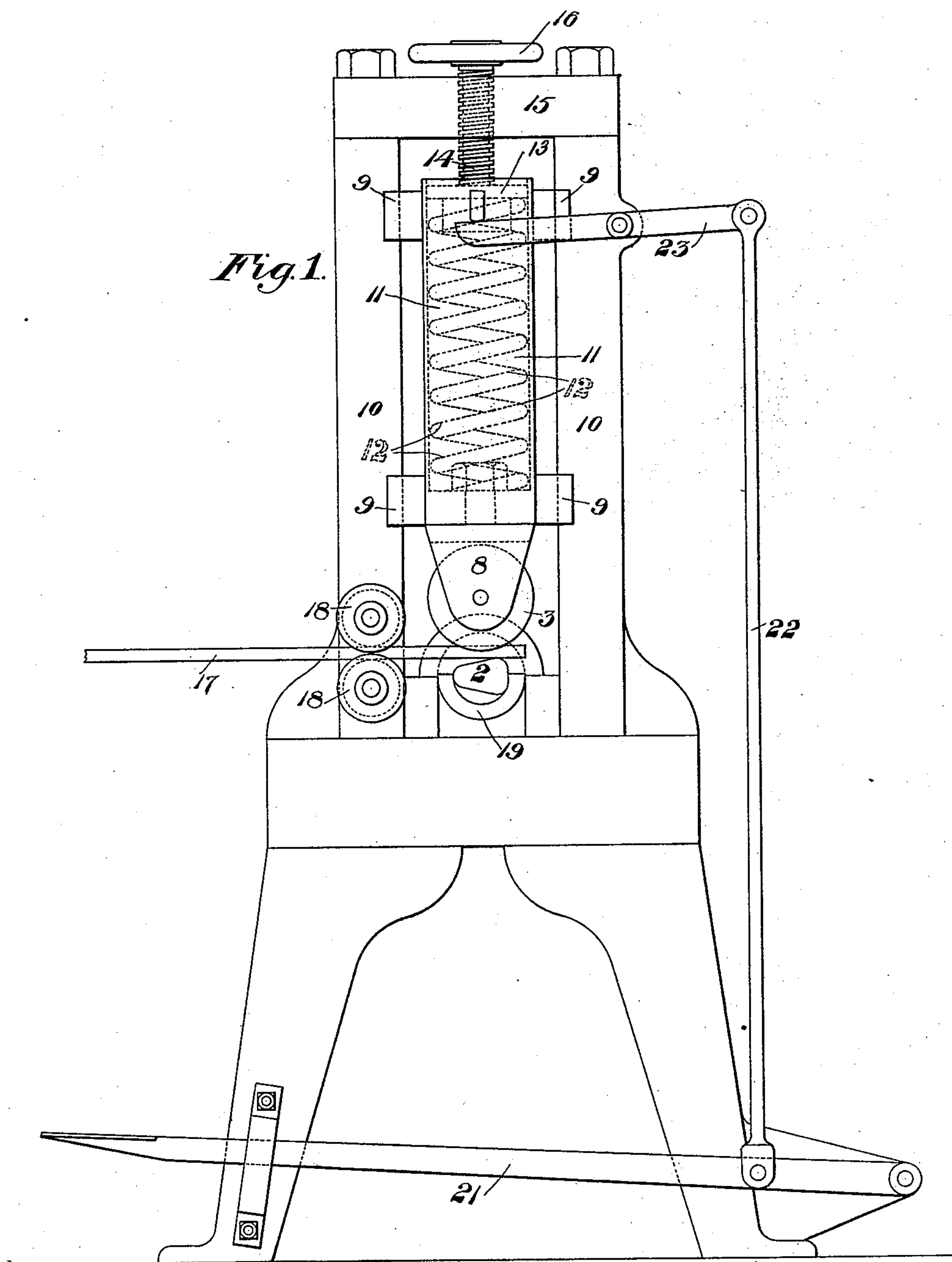
(No Model.)

2 Sheets—Sheet 1.

J. STUBBE.  
MACHINE FOR BENDING CHAIN LINKS.

No. 534,410.

Patented Feb. 19, 1895.



WITNESSES

*N. B. Corwin*  
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INVENTOR

*John Stubbe*  
*by his Attorneys*  
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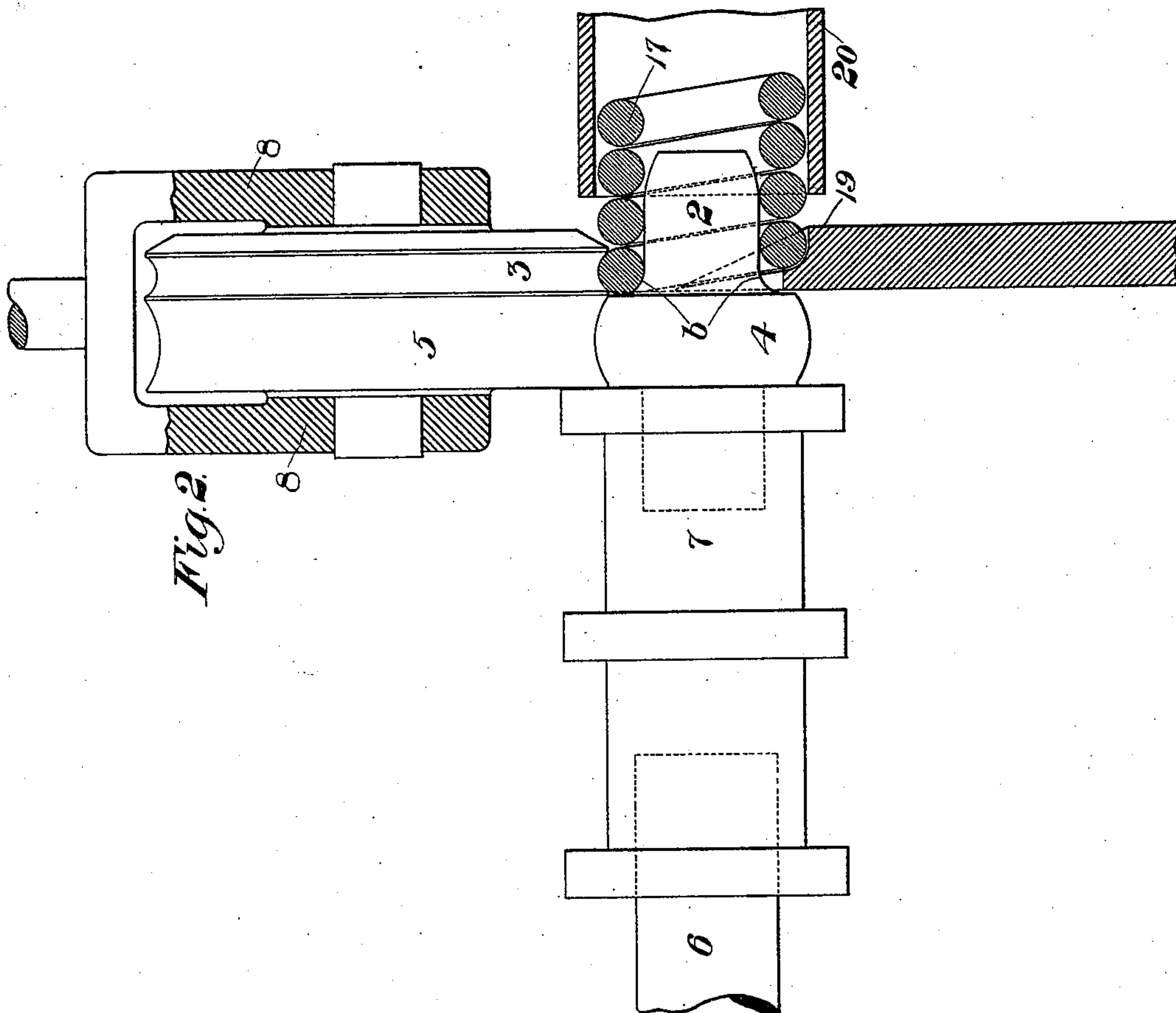
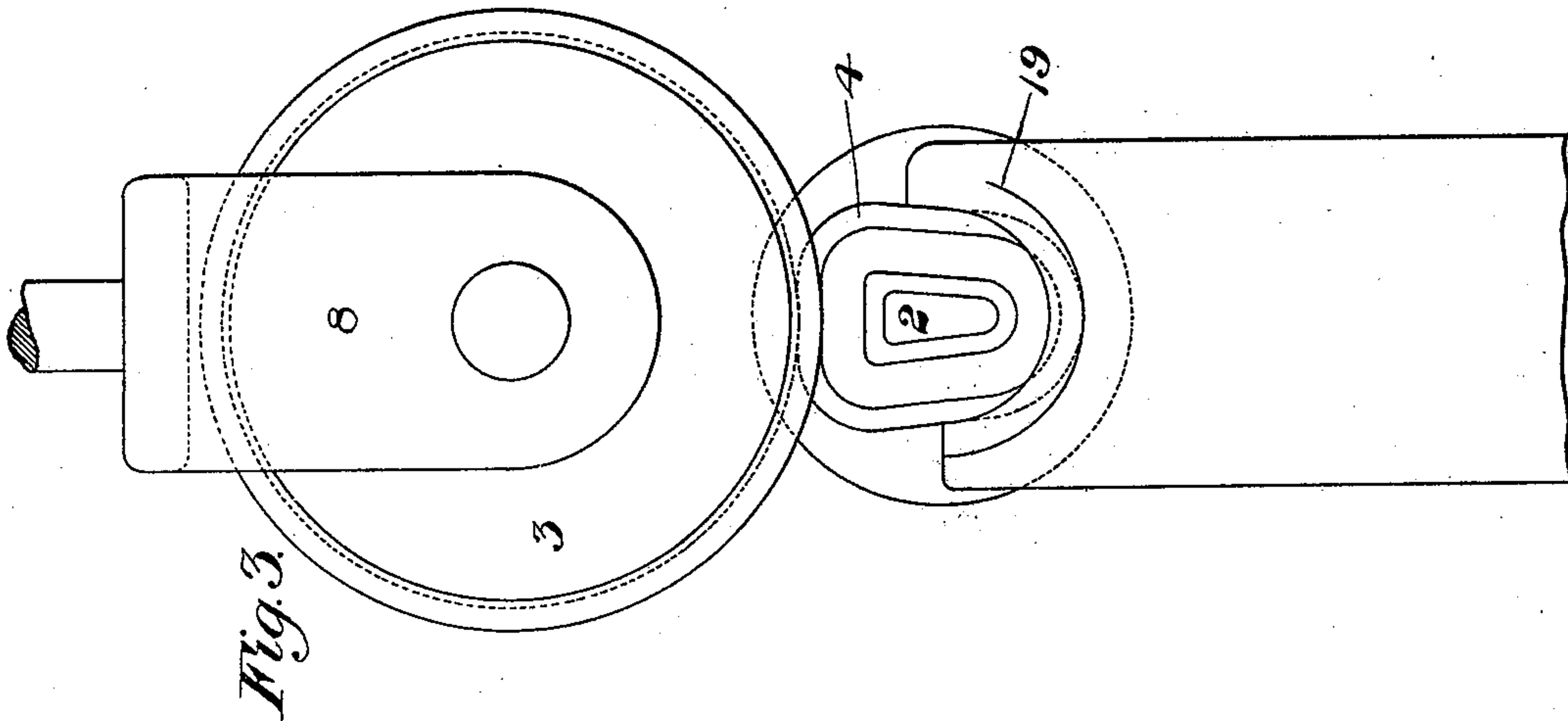
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*H. M. Corwin*  
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INVENTOR

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# UNITED STATES PATENT OFFICE.

JOHN STUBBE, OF PITTSBURG, ASSIGNOR TO THE BAKER CHAIN AND WAGON IRON MANUFACTURING COMPANY, OF ALLEGHENY, PENNSYLVANIA.

## MACHINE FOR BENDING CHAIN-LINKS.

SPECIFICATION forming part of Letters Patent No. 534,410, dated February 19, 1895.

Application filed May 13, 1893. Serial No. 474,075. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN STUBBE, of Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Machines for Bending Chain-Links, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 shows my machine in front elevation. Fig. 2 is an enlarged side elevation of the mandrel and forming roll, showing the link blank and delivery tube in vertical section. Fig. 3 is an end elevation of Fig. 2.

My invention relates to those machines employed in bending rods about a mandrel in the formation of chain links; and it consists in providing the shaft of the roll which presses down the rod, with an eccentric guide which maintains it at a constant distance from the point of the mandrel against which it presses the link, thereby preventing any distorting or misshaping of the hot rod as it is pressed into helical form. It also consists in the construction and arrangement of the parts as hereinafter more fully described and set forth in the claims.

In the drawings, 2 represents the mandrel, which is of the oblong form shown in Fig. 3.

3 is the roll having a grooved periphery adapted to operate in conjunction with the mandrel to bend the link.

4 is a cam fixed to the mandrel and of the same peripheral outline, and 5 is a circular disk fixed to the roll 3 and bearing on the cam 4. The disk 5 and cam 4 are preferably respectively grooved and tongued so as to interfit peripherally and to steady the operation of the parts. The mandrel 2 and cam 4 are preferably made in one piece and are provided with a removable hollow socket 7, by which they may be set removably on a rotary shaft 6. The mandrel may thus be changed easily and replaced by a mandrel of different size. The roll 3 and disk 5 are journaled in suitable bearings in a head 8, which is provided with suitable slide-bearings 9, and is adapted to move vertically between upright guide-posts 10 of the machine-frame. The upper part of said head is formed with a tubu-

lar barrel 11, containing a spring 12, at the upper end of which is a spring block or head 13 to which is swiveled a vertical screw-shaft 14. This screw works in a nut 15 in the machine-frame, and when it is turned in one direction by means of the wheel 16, it will compress the spring and will thus exert a corresponding downward pressure upon the head 8, disk 5 and roll 3, said down pressure varying with the amount of tension applied to the spring by turning of the screw.

17 is the rod from which the links are formed. It is introduced into the machine between guide rollers 18 and between the mandrel 2 and roll 3.

The operation is as follows:—The mandrel 2 is rotated by power applied to the shaft 6, and the hot rod 17 from which the links are made is fed between the mandrel and the roll 3 as shown. As the mandrel rotates, the roll bearing on the rod bends it around the mandrel into oblong form, and by means of a stationary inclined or helical guide 19 bolted to the machine-frame and situated at the base of the mandrel and extending partly around the circumference thereof, and rod is caused to be bent into a helical form, the helix being continuous until the rear end of the rod has passed through the machine. As the helix leaves the mandrel, it enters a long delivery tube 20, which is driven by gearing, or by the rotation of the helix itself, at substantially the same speed as the mandrel and in the same direction. The helix is thus prevented from being bruised or abraded. The links are cut from the helix in the usual manner. In this operation, the roll is kept constantly at the same distance from the periphery of the mandrel by the action of the cam 4, which, being of substantially the same shape as the mandrel, acts against the spring 12, and raises or lowers the roll conformably to the position of the eccentric mandrel. The hot rod is thus prevented from being crushed and distorted. This constitutes the principal feature of my invention. If desired, by making parts of the periphery of the cam 4 of greater or less eccentricity than the corresponding parts of the mandrel, a greater or less pressure may be applied to certain parts



of the link. Thus a greater pressure may be applied to the sides of the links than to the ends. The mandrel is preferably filleted as at *b* to prevent cutting of the link.

5 In order to provide means for retracting the roll 3 from the blank against pressure of the spring, I employ suitable devices consisting preferably of a foot-lever 21, connected by  
10 suitable mechanism 22, 23, to the head 8, so that by depressing the foot-lever the head may be raised.

The advantages of my invention will be appreciated by those skilled in the art. By my  
15 improvement I am enabled with ease to bend the links when hot without misshaping them, whereas heretofore the common practice has been to bend them cold to avoid as much as possible such misshaping. By bending the  
20 links hot, the work is done more rapidly and economically than has been possible heretofore. My machine is very cheap, durable and efficient, and produces links superior in shape and strength.

I claim as my invention—

25 1. In a chain link machine, the combination with a rotary mandrel, of a roll arranged to press the rod about the same, a guide ar-

ranged to maintain the roll at a constant distance from the mandrel, and a yielding mechanism, substantially as set forth, arranged to  
30 exert a pressure upon the roll and guide; substantially as described.

2. In a chain-link machine, the combination with a shaft carrying a rotary mandrel and cam, of a roll arranged to press the rod  
35 about the mandrel, a disk upon the roll-shaft bearing upon the cam and maintaining the roll at a constant distance from the mandrel, and a yielding mechanism, substantially as set forth, arranged to exert a pressure upon  
40 the roll and disk, as described.

3. In a chain link machine, the combination of a mandrel, a movable head carrying a pressing roll, a spring within a recess of the  
45 head and arranged to act thereon, and a set screw arranged to vary the tension of the spring; substantially as described.

In testimony whereof I have hereunto set my hand.

JNO. STUBBE.

Witnesses:

W. B. CORWIN,  
H. M. CORWIN.