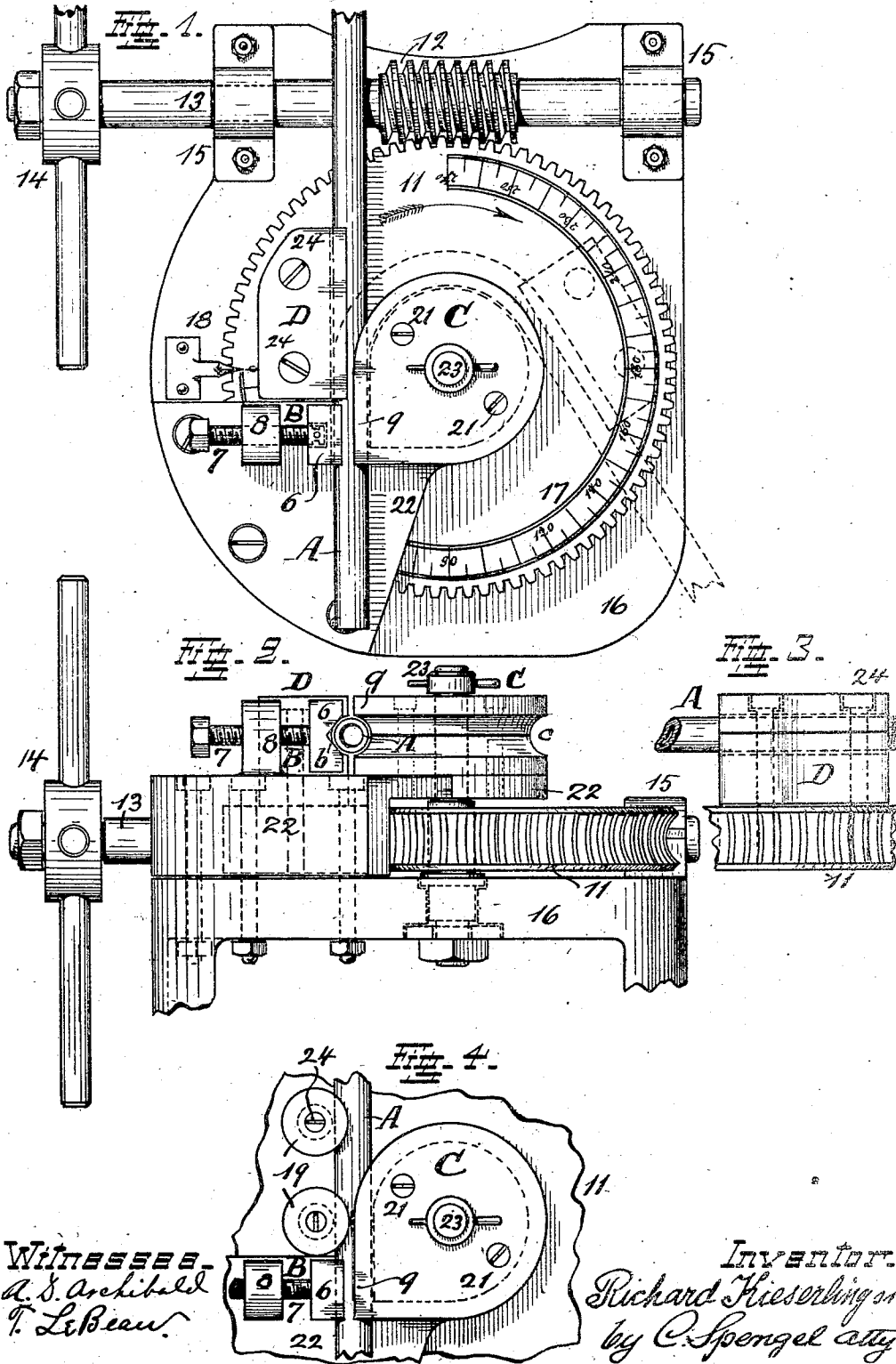


R. KIESERLING, SR.
TUBE BENDING MACHINE.
APPLICATION FILED JAN. 2, 1910.

977,196.

Patented Nov. 29, 1910.



Witnesses.
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UNITED STATES PATENT OFFICE.

RICHARD KIESERLING, SR., OF CINCINNATI, OHIO.

TUBE-BENDING MACHINE.

977,196.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, RICHARD KIESERLING, Sr., a citizen of the United States, and residing at Cincinnati, Hamilton county, State of Ohio, have invented certain new and useful Improvements in Tube-Bending Machines; and I do declare the following to be a clear, full, and exact description thereof, attention being called to the accompanying drawing, with the reference characters marked thereon, which forms also a part of this specification.

* This invention concerns an apparatus for bending rods or tubes and consists of certain features of construction more fully described hereinafter and pointed out in the claim.

In the drawing, Figure 1 shows a top-view of the apparatus. Fig. 2, is a side-view thereof. Fig. 3, is a side-view of one of the members used in the construction, and Fig. 4, shows the center portion of a top-view similar to Fig. 1 illustrating a modified construction.

A indicates a piece of rod or tubing to be bent. For such purpose the same is held between two opposite members, one of which, B, consists of an adjustable jaw 6 carried on the end of a screw 7 which is movably seated in a post 8. The jaw complementary to jaw 6 is held stationary and constitutes part of the forming member C which, by its shape, determines the shape and size of the bend to be produced. Accordingly a part of the side of this forming-member is straight as shown at 9 to form this complementary jaw. In their opposite sides, these jaws have grooves *b* and *c* respectively, which are complementary to each other and fitted to accommodate the diameter of the work to be received between them. In depth these grooves and particularly the one in jaw 6 are limited so as not to interfere with the free clamping action of this jaw when the same, by means of screw 7, is moved against the work. Groove *c* in the forming member extends all around the side of the same. The work is bent by means of a bending jaw D shown in top-view in Fig. 1, and in rear side-view in Fig. 3. The bending jaw has a groove similar to groove *c* and complementary thereto and in the normal position of the parts, before operation is started, this groove is aligned with the grooves in the clamping jaws 6 and 9 as shown in Fig. 1, to permit a proper insertion of the work which at that

time occupies the grooves in the clamping jaws and in the bending member.

The bending operation consists of carrying bending-member D around the forming-member C with the work between them, as shown in dotted lines in Fig. 1 and as far as is necessary, limited of course by the possible extent of this motion. This extent is however such as to permit the end of the bent portion to approach the side of the part held stationary in the jaws, so that practically a closed loop may be formed if necessary. However in most cases the bend does not need to exceed one in which the bent portion is parallel to the part held in the jaws. To move the bending jaw in this manner, it is secured to a gear-wheel 11 which is rotated by a suitable machine-element operatively connected to it. Worm-gear is the most suitable driving method, and accordingly a worm 12 is shown as meshing into this gear. This worm is rotated by a shaft 13, manipulated by a hand-wheel or hand levers 14. The shaft is supported in bearings 15 connected to a bed 16. The gear-wheel which is mounted on a post rigidly connected to this bed as shown, carries a scale 17, whereby in connection with a stationary pointer 18, the extent of the bend may be noted, enabling thereby the operator to bend angles of any desired degree obtainable within the capacity of the device.

In Fig. 4, the bending member is shown as being constituted by two rollers 19.

Work of different diameters requires clamping, bending and forming members with grooves sized accordingly, for which reason these members are removably connected, to be substituted by others having grooves of the necessary size. For such purpose jaw 6 may be taken off of the end of screw 7. Member C is secured by screws 21 to a bracket 22 the removal of which screws, together with nut 23, permits removal and substitution. Bracket 22 is bolted to bed 16 opposite the face of wheel 11 and extending laterally over part of the same sufficient to form this support for member C, this extending part being shaped complementary to said member. The bending member is secured by screws 24 to the upper side of the gear-wheel. Limited variations in size however require no substitution, since a close fit of the grooves to the work is not necessary and sizes smaller than the largest receivable in

any given case may still be taken as long as the clamping-jaws are able to grasp them.

When work is bent beyond an angle of 180 degrees, it cannot be readily removed unless the members between which it has been bent are separated. For such purpose the forming member as well as the bending-member consists each of two parts divided horizontally on a plane which lies through the deepest part of the grooves in these members, so that the upper half of each member may be taken off to release the work. This is possible as soon as the screws which hold these members in place are removed.

Having described my invention, I claim as new:

In a tube-bending machine, the combination of a bed-frame, a vertical post rigidly secured thereto, a worm-wheel mounted on this post, a bracket rigidly secured to the bed-frame opposite the face of the worm-wheel and extending laterally over a part thereof, a forming-member rigidly secured to the upper side of this extended part of the bracket, the side of which member is shaped circular except where part of it is left straight to form one of two complementary clamping jaws, this part, as well as the circular part of the side of this mem-

ber being provided with a semi-circular groove, and that part of the bracket which supports the circular part of the forming-member being also circular and congruent thereto, a grooved clamping-jaw provided opposite to the clamping-jaw formed by the straight part of the forming-member and complementary thereto, a screw on the end of which it is supported, a post on the upper side of the bracket in which this screw is mounted so as to permit adjustment of the clamping-jaw carried on it with reference to the clamping-jaw formed by the straight part of the forming-member, a bending-member grooved complementary to the forming-member, connected to the worm-wheel and adapted to occupy an initial position opposite the grooved side of the forming-member where the straight part thereof merges into the circular part and means to rotate the worm-wheel so as to carry the bending-member around the circular part of the forming-member and the circular part of the bracket on which it is supported.

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

RICHARD KIESERLING, Sr.

Witnesses:

C. SPENGEL,
T. LE BEAU.