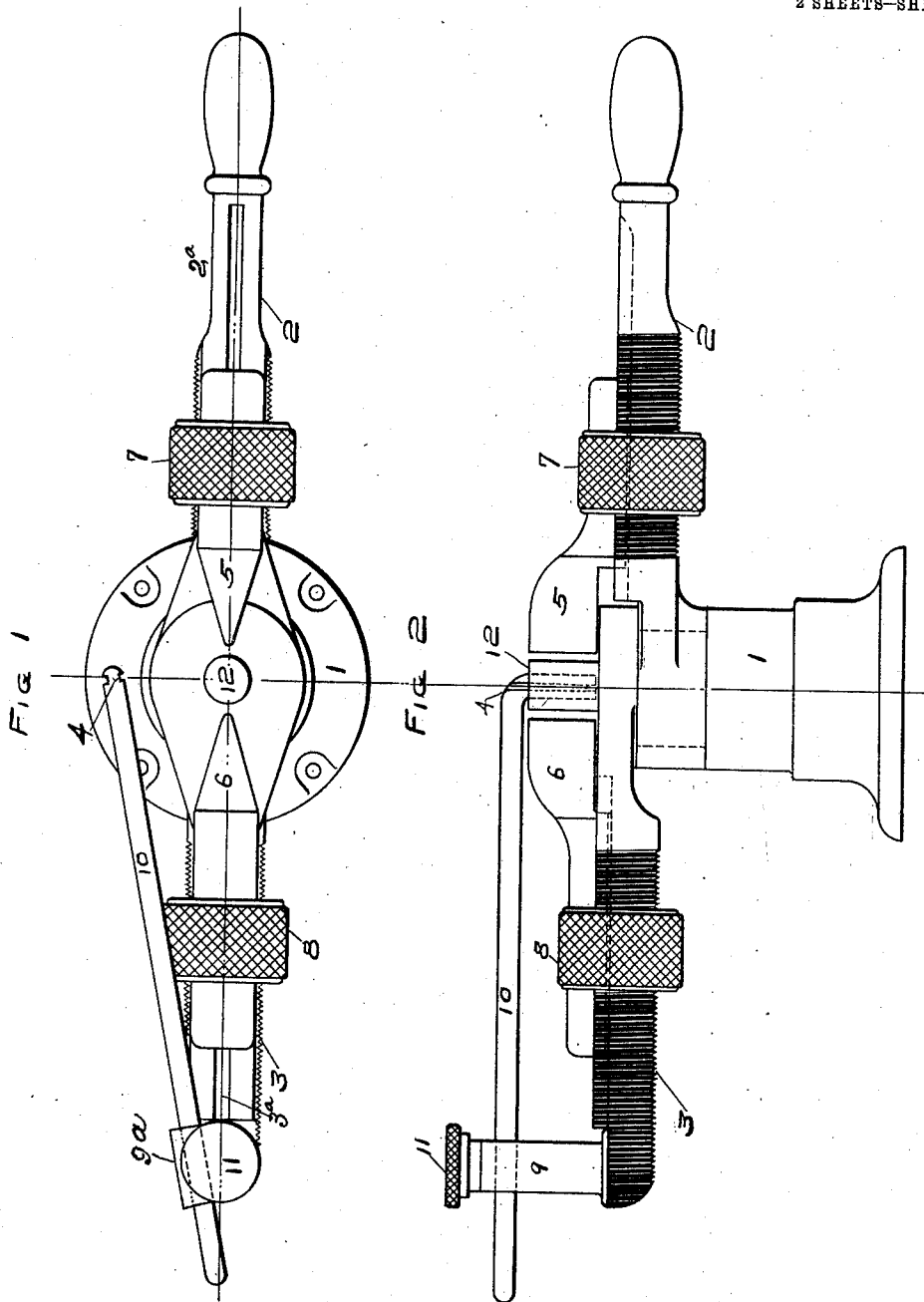


J. A. RICHARDS.
 APPARATUS FOR BENDING PRINTERS' RULES.
 APPLICATION FILED JULY 11, 1910.

998,394.

Patented July 18, 1911.

2 SHEETS—SHEET 1.



WITNESSES

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INVENTOR

John Arthur Richards

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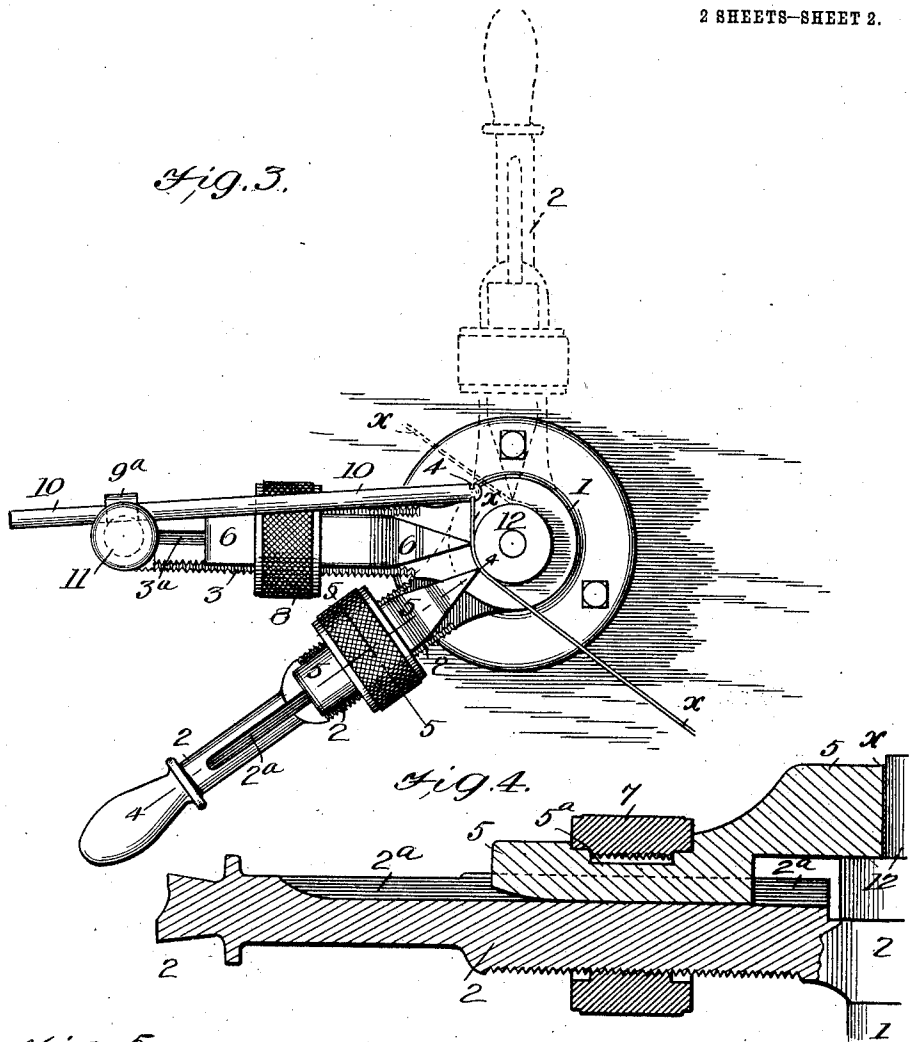


Fig. 5.

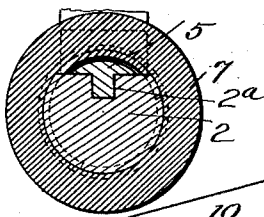
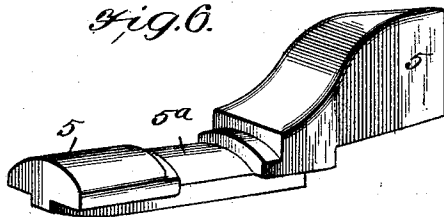
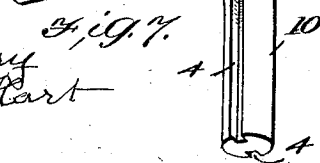


Fig. 6.



WITNESSES:
H. C. Barry
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INVENTOR
JOHN ARTHUR RICHARDS
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UNITED STATES PATENT OFFICE.

JOHN ARTHUR RICHARDS, OF ALBION, MICHIGAN.

APPARATUS FOR BENDING PRINTERS' RULES.

998,394.

Specification of Letters Patent. Patented July 18, 1911.

Application filed July 11, 1910. Serial No. 571,435.

To all whom it may concern:

Be it known that I, JOHN A. RICHARDS, a citizen of the United States, and a resident of Albion, in the county of Calhoun and State of Michigan, have invented an Improved Apparatus for Bending Printers' Rules, of which the following is a specification.

My invention is an improvement in hand-operated apparatus employed for bending printers' rules and other thin metal bars used for various other purposes; and it is particularly an improvement upon the apparatus forming the subject of Letters Patent, No. 707,744, granted August 26, 1902, to Joel Welty.

The improvement is embodied in the construction and combination of parts herein-after described, and illustrated in the accompanying drawings, in which—

Figure 1 is a plan view of the apparatus. Fig. 2 is a side view. Fig. 3 is a plan view illustrating the operation of the apparatus. Fig. 4 is a longitudinal section of the rotatable arm or lever to which the rule-bender or -former is secured. Fig. 5 is a cross section on the line 5—5 of Fig. 3. Fig. 6 is a perspective view of the rule-bender or -former proper detached from other parts. Fig. 7 is a perspective view of the free bent end of the rule-gage rod.

The vertical standard 1 has a flared base provided with holes to receive screws, or screw-bolts, by which the apparatus is secured to a horizontal bench or table. The said standard has a central opening or recess at the top to receive a die 12 of any form required for shaping printers' rules or other thin metal bars.

The standard has a horizontal arm or lever 3 which is fixed or rigidly secured thereto, and another horizontal arm or lever 2 which is rotatable on the standard. The arm 2 carries the rule-bending or -forming device 5 and the arm 3 carries the gripper or rule-clamp 6. The outer end of the movable arm or lever 2 is constructed as a handle for convenience of operation. Each of the arms or levers is flat on the top, the remaining portion of the body of the same being cylindrical and screw-threaded as shown. It will be observed, however, that the threaded portion of the lever 2 is about half the length of the threaded portion of the other lever. The rule-bender or -former 5 is wedge-shaped at its inner end

and is provided with a longitudinal under rib which slides in the longitudinal groove 2^a of the arm 2. The gripper 6 is similarly formed as to its point or inner end, and is also provided with a rib adapted to slide in the groove 3^a. The ribs and grooves here referred to constitute guides for the rule-gripper and rule-former in their sliding adjustment toward and from the die 12. For the purpose of effecting such adjustment, I apply cylindrical milled nuts 7 and 8, which encircle the threaded portions of the arms 2 and 3, and, when rotated thereon, are obviously moved toward or from the die.

The gripper and former are each provided with a transverse recess as indicated at 5^a in Fig. 6, and into this recess a portion of a nut fits, as indicated in Fig. 4. It will be noted, however, that the bottom of the recess 5^a is smooth or unthreaded, while the nuts 7 and 8 are provided at their edges with smooth or unthreaded projections that work in contact with corresponding surfaces on the gripper and former. These milled nuts may be easily manipulated and constitute a very convenient means for adjusting the rule-gripper and rule-former, and the nut 7 which is applied to the rule-former serves to adjust it very fine or coarse as conditions may require. It will be further seen that the nuts lock the gripper and former in any adjustment in which they may be set.

I provide a gage for determining the location of a bend in a rule, and the construction and operation of the same are as follows. A post 9 is set vertical on the outer end of the fixed arm 3 and is secured thereto detachably by means of a screw-bolt 11 having an enlarged milled head. The bolt passes through the hollow post and enters a threaded hole formed in the outer end of the arm 3. On one side of the post 9 is arranged a clamp 9^a in which the gage-rod 10 is adapted to slide. The latter is provided at its inner end with a vertical prong having longitudinal opposite grooves 4, as indicated in Figs. 2, 3, and 7. The clamp 9^a is formed by jaws constructed on the post 9, the upper one being sufficiently elastic to enable it to be compressed and thus clamp the gage-rod 10 when the bolt 11 is screwed down tightly.

The operation of the apparatus will now be understood from the following statement. In Fig. 3, a printers' rule *x* is shown arranged on one side of the die 12 and its ad-

adjacent end entering one of the grooves 4 in
 the bent end of the gage-rod. It passes
 thence between the gripper 6 and former 5
 and the die 12. When thus arranged, the nut
 5 8 is manipulated to advance the gripper 6
 so that it firmly clamps the rule against the
 die 12. The nut 7 is then adjusted to slide
 the former 5 into easy contact with the rule
x, and thereupon the operator seizing the
 10 handle at the outer end of the lever 2, swings
 the latter around a greater or less distance,
 say to the position indicated by dotted lines
 in Fig. 3, by which operation the rule *x* is
 bent and shaped around the die 12. In this
 15 manner the rule is bent into a circular form.
 It is apparent that if dies of different
 shapes be substituted for the cylindrical die
 12, the devices 5 and 6 may be similarly op-
 erated to impart corresponding shapes to a
 20 rule. Thus, if a square or rectangular die
 be substituted for the cylindrical one, the
 rule would extend across one of the flat faces
 of such die and be clamped against it by
 the gripper 6, and the former 5 would then
 25 be adjusted so that its point would easily
 pass the angles of the die. In other words,
 the point of the former 5 must be adjusted
 so it can sweep and bend the rule around
 the angles of the die. It is apparent that
 30 the gage-rod 10 may be set with its grooved
 end at any required distance from the point
 where the grip is to be made and this will
 determine the distance at which the bend
 of the rule will begin. In other words, by
 35 use of the gage-rod, bends may be accurately
 made in rules at any desired distance from
 the adjacent end of the same. The gage-rod
 is obviously adjustable so that its grooved
 end may be set in any desired position rela-
 40 tive to the end of the gripper 6; and further-
 more, the bent end of the same may be placed
 on the other side of the die from that illus-
 trated in Fig. 3. This is accomplished as

follows. First, loosen the screw 11 which
 passes through the hollow post 9 and screws 45
 into the part 3, which operation allows the
 post 9 to be rotated half way around, so that
 the clamp 9^a is brought on the other or right
 side of the post. Then reinsert the rod 10
 in the clamp 9^a, and it will extend along the 50
 right side of the part 3 in the same way as
 if it be extended along the left side.

While the machine is particularly intend-
 ed for bending printers' rules, it is apparent 55
 that, when made of large size, it may be suc-
 cessfully used for bending much thicker
 bars or rods used for various other purposes.

What I claim is:—

1. An improved rule-bending apparatus,
 comprising a vertical standard having a die 60
 at the top, a rigid horizontal arm provided
 with a screw-threaded body and a slidable
 gripper arranged thereon, a movable hori-
 zontal arm having a similarly threaded body
 and a rule-former slidable thereon, and ro- 65
 tatable nuts applied to said threaded por-
 tions and to recessed portions of the gripper
 and former, all operating as shown and de-
 scribed.

2. An improved rule-bending apparatus, 70
 comprising a vertical standard having a die
 piece at the top, horizontal arms provided
 with an adjustable rule-gripper and -former,
 respectively, and a gage-rod detachably se- 75
 cured to the fixed arm and having its inner
 pendent end provided with a groove for the
 reception of the end of a rule, whereby it
 is adapted to operate in the manner de-
 scribed.

Signed by me at Albion, Calhoun county, 80
 Michigan, this 9th day of July, A. D. 1910.

JOHN ARTHUR RICHARDS.

Witnesses:

F. W. CULVER,
 FLORINE WORTHINGTON.