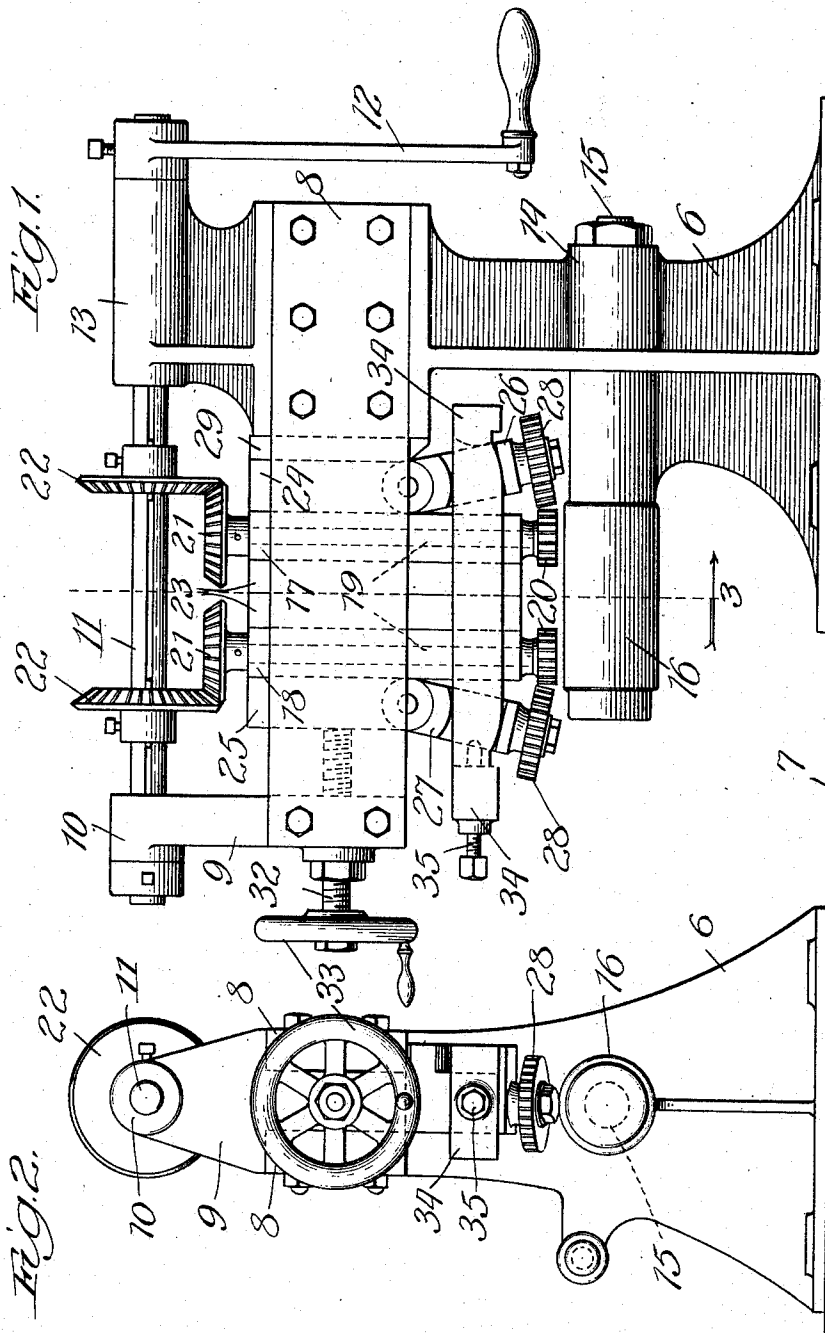


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SHEET METAL BENDING MACHINE.
APPLICATION FILED OCT. 24, 1911.

1,015,429.

Patented Jan. 23, 1912.

2 SHEETS—SHEET 1.



Witnesses:
W. J. Gaylord,
H. J. Chase.

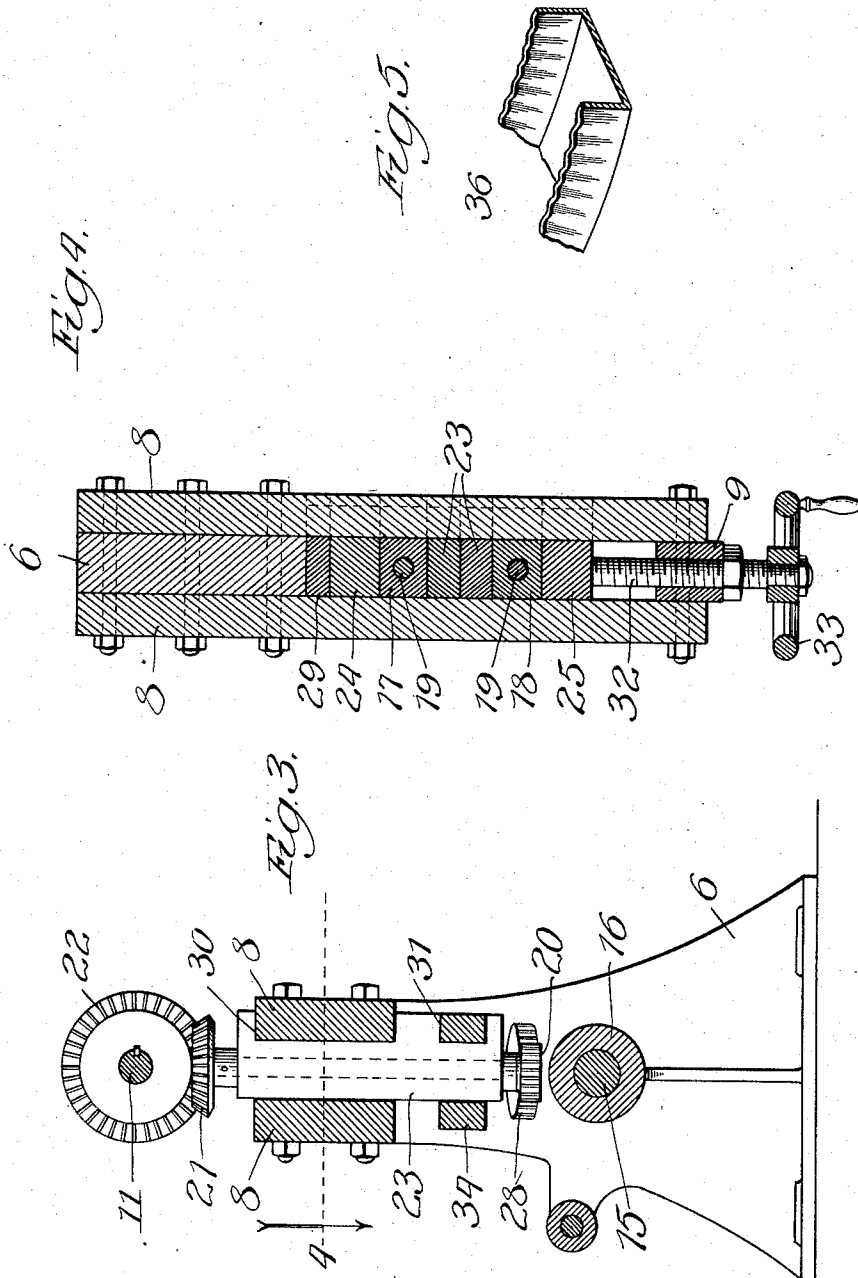
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William H. Fahrney
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UNITED STATES PATENT OFFICE.

WILLIAM H. FAHRNEY, OF CHICAGO, ILLINOIS.

SHEET-METAL-BENDING MACHINE.

1,015,429.

Specification of Letters Patent.

Patented Jan. 23, 1912.

Application filed October 24, 1911. Serial No. 656,451.

To all whom it may concern:

Be it known that I, WILLIAM H. FAHRNEY, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a new and useful Improvement in Sheet-Metal-Bending Machines, of which the following is a specification.

The object of my invention is to provide a novel and simple construction of machine which shall adapt it for bending sheet-metal into curved shape of any desired radius.

In the accompanying drawings, Figure 1 shows my improved machine by a view in front elevation; Fig. 2 is an end view of the same; Fig. 3 is a section on line 3, Fig. 1; Fig. 4 is a section on line 4, Fig. 3, and Fig. 5 is a perspective view of a broken section of a strip of channel-shaped sheet-metal which has been operated on by the machine.

The machine constructed as shown and hereinafter described presents an embodiment of my invention adapting it especially for bending sheet-metal strips of channel-form.

A substantial standard 6, adapted to be bolted to a suitable foundation, indicated by the floor-line 7, carries all of the operating mechanism. A pair of massive rectangular bars 8, 8, are rigidly bolted through corresponding end-portions to opposite faces of the standard near its upper end to extend horizontally from the standard; and these bars are rigidly connected in their parallel spaced relation by a head 9 bolted between their outer ends, the head terminating at its upper end in a horizontal bearing 10 for one end of a rotary drive-shaft 11, which is journaled at its opposite end, carrying a crank-handle 12, in a suitable bearing 13 on the top of the standard. Another bearing, 14, is provided on the face of the standard below and parallel with the bearing 13, for the shaft 15 of a roller 16 forming the support for the work. Between the bars 8 fit and extend vertically and parallel with each other legs 17 and 18 of rectangular cross-section containing longitudinal central bores, in which are confined, against longitudinal movement and to be rotatably supported, shafts 19 carrying circular toothed crimping-wheels 20 on their lower ends and beveled pinions 21 on their upper ends to mesh with beveled gears 22 carried by and adjustable lengthwise of the shaft 11. Between the inner legs 17 and 18 are confined

spacing-blocks 23, and these legs are clamped between outer legs 24 and 25, having lower pivotal sections or members 26 and 27 adapted to swing back and forth, for their adjustment, relative to the legs 17, 18, and carrying rotatably on their lower-ends toothed crimping-wheels 28 to coöperate with the wheels 20. In Figs. 1 and 4 another spacing block is shown at 29 between the standard 6 and adjacent leg 24. The legs and spacer-blocks contain corresponding recesses in their forward sides, like the recess shown at 30 in Fig. 3, to embrace one of the bars 8 and cause the latter to support them against vertical movement while permitting to them movement lengthwise of the bars 8 for clamping them together and loosening them; and a similar but narrower recess, like that shown at 31, is provided in each spacer and leg below the recess 30 therein, for the purpose hereinafter explained. For releasably clamping together the spacers and legs, a set-screw 32, carrying a suitable hand-wheel 33, is provided to work in the head 9 against the adjacent leg 25. A yoke 34 extends about the portions of the legs and spacers below the bars 8, with one of its sides confined in the recesses 31 to support it against vertical movement while permitting it to be moved lengthwise through the medium of a set-screw 35 working in one end of the yoke against the adjacent leg-section 27.

The operation of the machine is as follows: A channel-shaped strip of sheet-metal, meaning a strip having corresponding parallel edge-flanges, like that shown at 36 in Fig. 5, except that it is straight and the flanges are uncrimped, is fed endwise to the machine with its base applied, for support and guidance, to the roller 16 and its flanges extended between the opposite pairs of toothed wheels 20, 28. The set-screw 35 is thereupon turned to draw the yoke 34 in the direction to turn the leg-members 26 and 27 toward each other and tighten the wheels 28 against the inserted flanges to be crimped. By then turning the handle 12 to rotate the shafts 19 the set of driven wheels 20 advance the strip through the machine and the coöperation of their perpendicular teeth with the teeth of the wheels 28, which are inclined relative to the wheels 20, crimps the flanges and thus bends the strip into curved or arc-shaped form. Obviously, if the teeth of the coöperating wheels 20 and 28 were parallel,

no curvature of the strips would be produced. The extent, meaning shortness or length, or radius, of the curve may be varied, to shorten it, by tightening the wheels 28 against the flanges thereby to bend the flange-sections more deeply, and thus more of the metal, between the intermeshing teeth, and to lengthen it by lessening such tightening, thereby to bend the flange-sections less deeply and thus with less of the metal between those teeth. By thus varying the degree of tightness of the same wheels 28, of course the possible range of variation in curvature is comparatively small. However, the extent of curvature may be that of any desired radius by employing wheels 28 of greater or smaller diameter. The desired result may also be accomplished with the leg-sections 26 and 27 depending perpendicularly, or parallel with the legs 17 and 18, provided the peripheries of the wheels be beveled to render the teeth upon them slanting.

What I claim as new and desire to secure by Letters Patent is—

1. In a metal-bending machine of the character described, the combination of a standard, bars extending in parallel spaced relation from the standard, vertical shafts rotatably supported between said bars, toothed wheels on said shafts, pivotal members supported on said bars to extend inclinedly relative to said shafts, toothed wheels journaled on said members to extend inclinedly relative to said first-named wheels and cooperate therewith to crimp the flanges of channel-form sheet-metal fed between the teeth of the opposing wheels and thereby curve the work, and means for rotating said shafts.

2. In a metal-bending machine of the character described, the combination of a standard, bars extending in parallel spaced relation from the standard, pairs of inner and outer legs supported in spaced relation to extend vertically between the bars, shafts extending lengthwise through and journaled in the inner legs, toothed wheels on the lower ends of the shafts, means for rotating said shafts, pivotal sections depending from the outer legs, toothed wheels journaled on said sections to incline relatively to and cooperate with said first-named wheels, and means for tightening said inclined wheels against the work.

3. In a metal-bending machine of the character described, the combination of a standard, bars extending in parallel spaced relation from the standard, pairs of inner and outer legs confined in spaced relation to extend vertically between the bars, shafts extending lengthwise through and journaled

in said inner legs, toothed wheels on the lower ends of the shafts, means for rotating the shafts, pivotal sections depending from the outer legs, toothed wheels journaled on said sections to incline relatively to and cooperate with said first-named wheels, a yoke supported to extend about said legs and sections and be movable lengthwise, and a set-screw working in one end of the yoke against the adjacent pivotal leg-section, for the purpose set forth.

4. In a metal-bending machine of the character described, the combination of a standard, bars extending in parallel spaced relation from the standard, pairs of inner and outer legs with spacers therefor supported to extend vertically between said bars and be movable lengthwise thereof, a bearing at the outer ends of the bars, a clamping-screw working in said bearing against the adjacent outer leg, shafts extending lengthwise through and journaled in said inner legs, toothed wheels on the lower ends of the shafts, means for rotating the shafts, pivotal sections depending from the outer legs, toothed wheels journaled on said sections to incline relatively to and cooperate with said first-named wheels, and means for adjusting said sections toward each other to tighten the wheels thereon against the work, for the purpose set forth.

5. A metal-crimping machine comprising, in combination, a standard having upper and lower shaft-bearings, a work-supporting roller journaled in the lower bearing, a pair of bars extending horizontally in parallel spaced relation from the standard and having a head at their outer ends, a set-screw working in said head, provided with a shaft-bearing alining with said upper bearing, a shaft journaled in said last-named bearings, pairs of inner and outer legs and spacers therefor extending vertically between said bars and movable lengthwise thereof to be releasably clamped together by said set-screw, shafts extending lengthwise through and journaled in said inner legs and geared to said shaft, toothed wheels on the lower ends of the shafts, pivotal sections depending from the outer legs, toothed wheels journaled on said sections to incline relatively to and cooperate with said first-named wheels, a yoke supported on said legs and sections to extend about them and be movable lengthwise thereon, and a set-screw working in one end of the yoke against the adjacent pivotal section, for the purpose set forth.

WILLIAM H. FAHRNEY.

In the presence of—

JOHN WILSON,

R. A. SCHAEFER.