

June 20, 1939.

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2,162,855

SHEET METAL BENDING MACHINE

Filed April 1, 1938

5 Sheets-Sheet 1

Fig. 1.

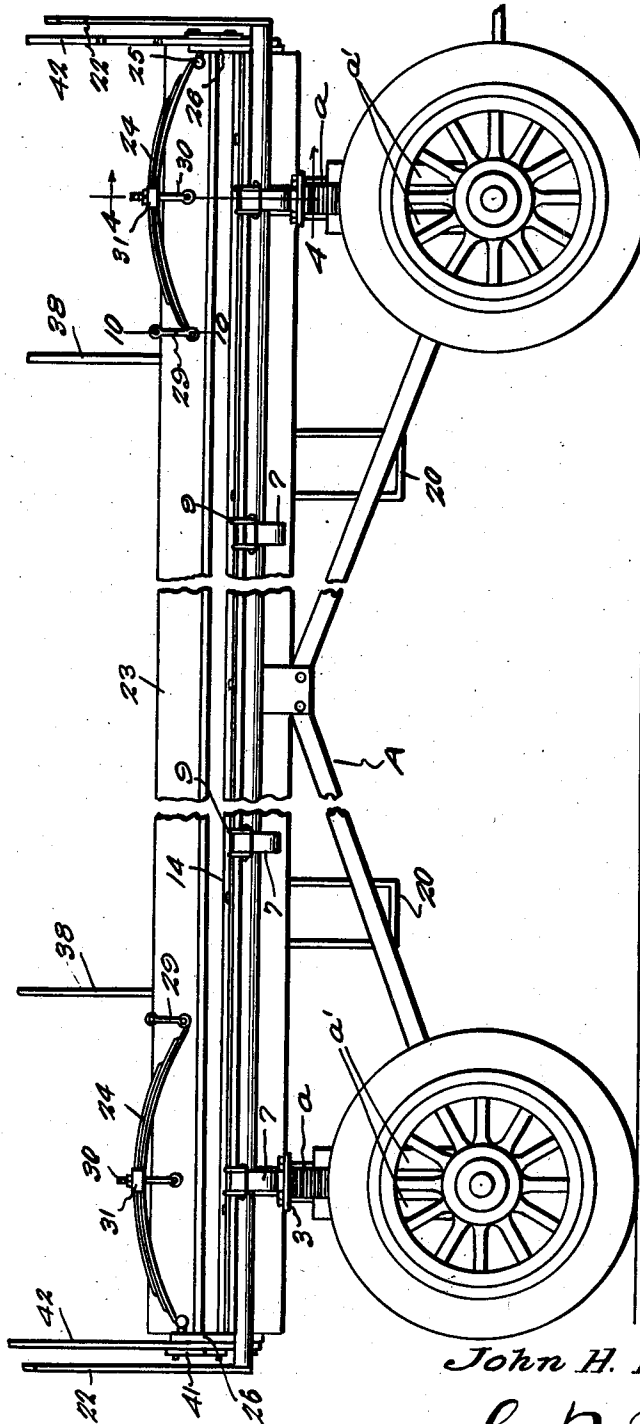
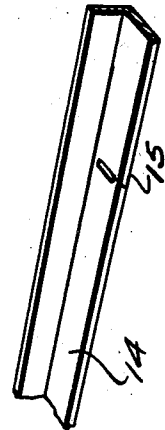


Fig. 11.



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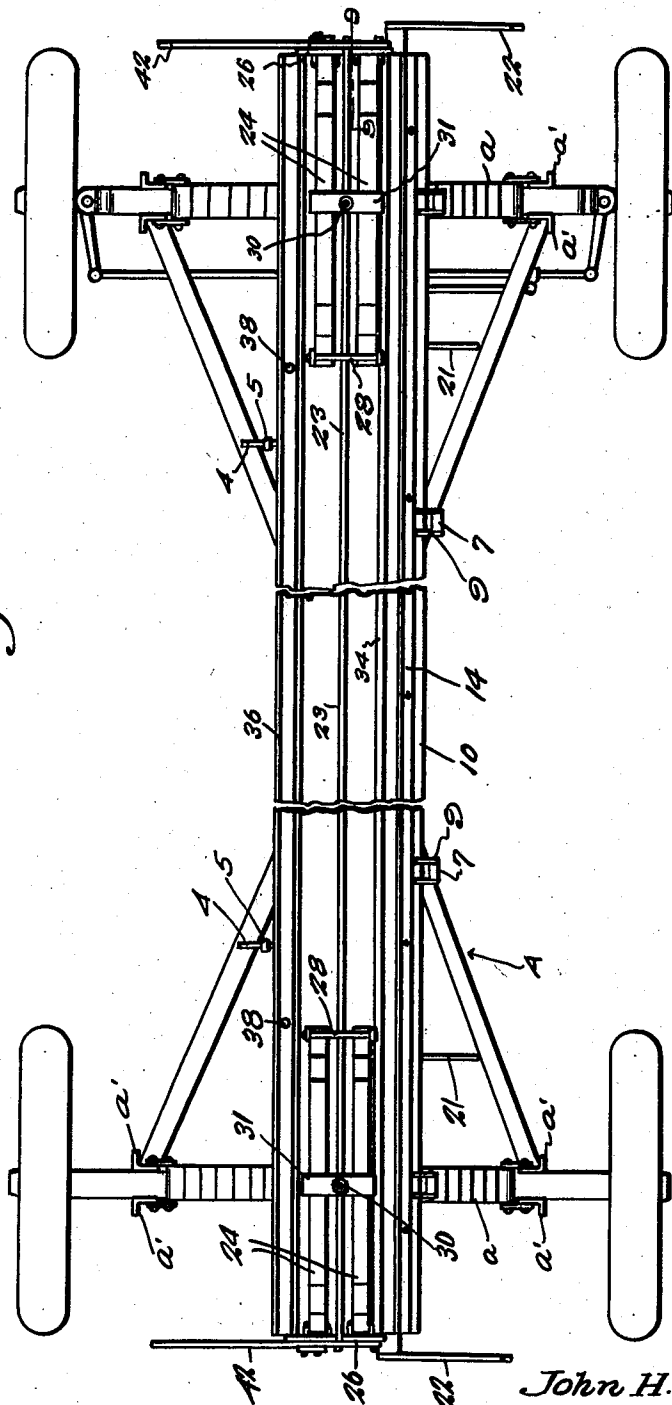
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Fig. 2.



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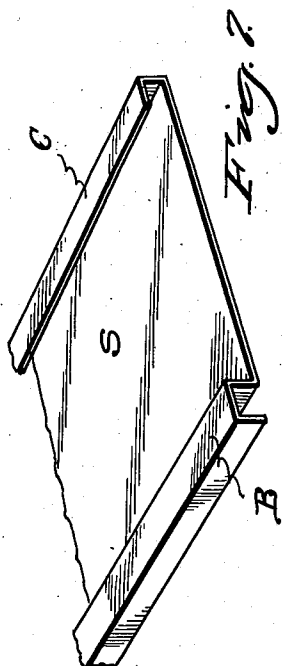
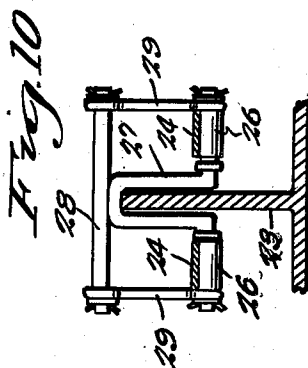
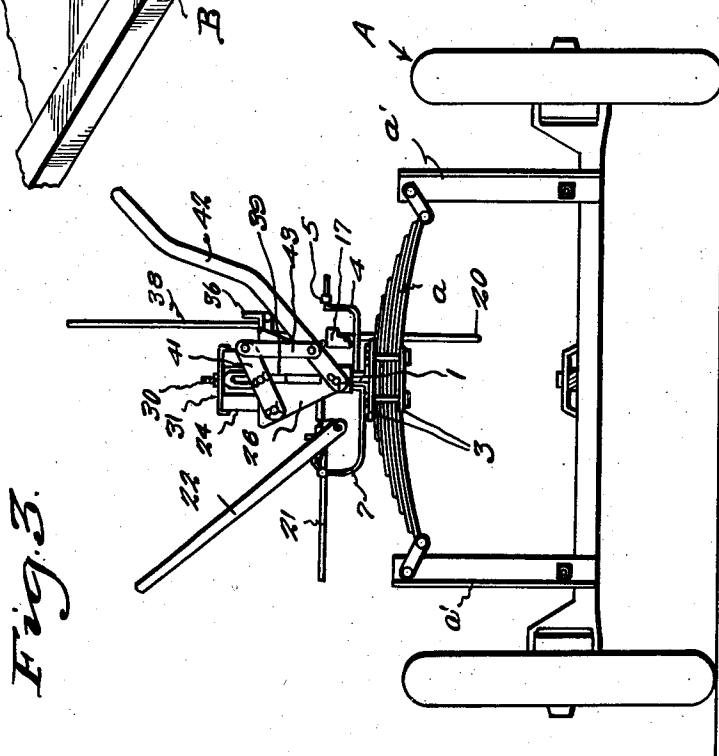
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SHEET METAL BENDING MACHINE

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5 Sheets-Sheet 3



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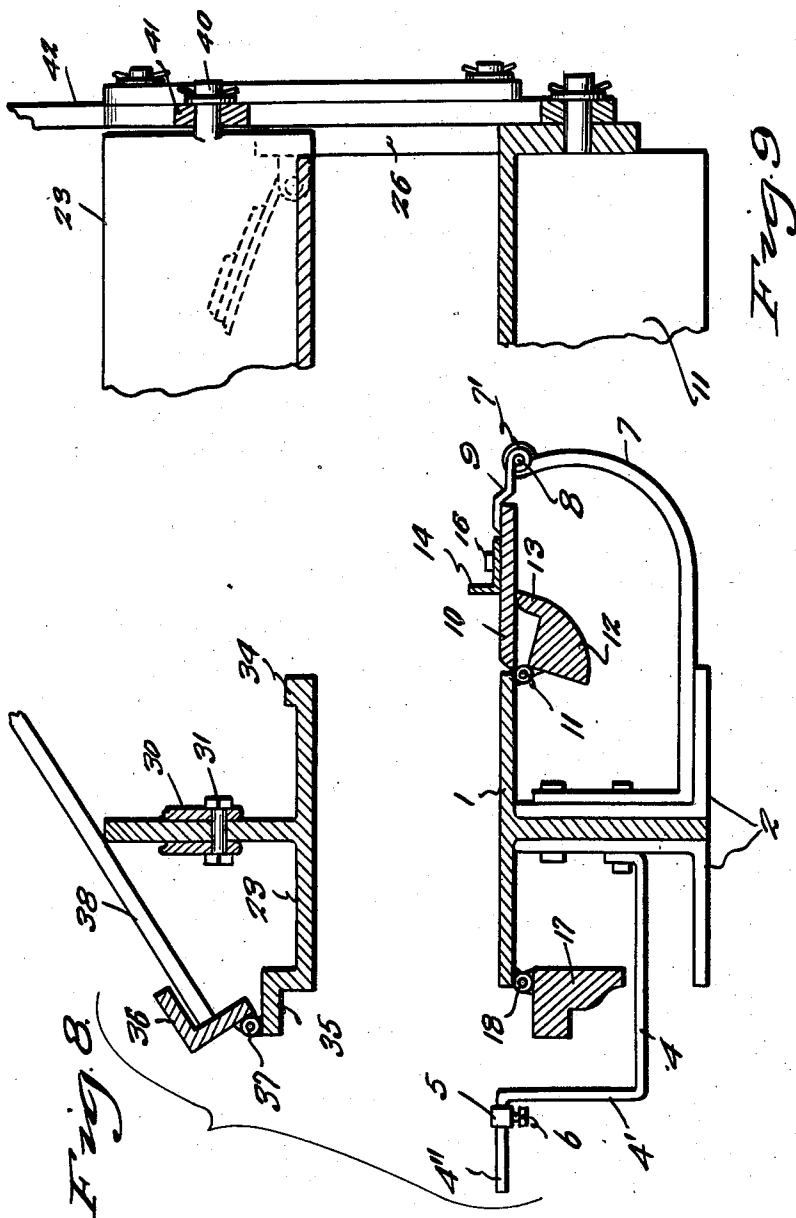
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SHEET METAL BENDING MACHINE

Filed April 1, 1938

5 Sheets-Sheet 5



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SHEET METAL BENDING MACHINE

John H. Nelson, Jr., Cadott, Wis.

Application April 1, 1938, Serial No. 199,535

3 Claims. (Cl. 153—17)

This invention relates to an apparatus for bending sheet metal to provide a channel bend at one edge and an angle bend at the opposite edge so that the angle bend of one sheet will fit in the channel bend of another sheet, whereby the sheets can be connected together, the general object of the invention being to provide means whereby the bends may be made in the sheets very easily and quickly.

Another object of the invention is to place the device on a vehicle so that it can be transported from place to place, thus enabling the work to be performed at the job where the metal is to be used.

The invention also consists in certain other features of construction, combination and arrangement of the several parts, to be hereinafter fully described, illustrated in the accompanying drawings and specifically pointed out in the appended claims.

In describing the invention in detail reference will be had to the accompanying drawings wherein like characters denote like or corresponding parts throughout the several views, and in which:

Fig. 1 is a side view of the invention.

Fig. 2 is a top plan view thereof.

Fig. 3 is a view looking towards one end of the invention.

Fig. 4 is a section on line 4—4 of Fig. 1.

Fig. 5 is a transverse sectional view through the right side of the device showing the parts in a different position from that shown in Fig. 4.

Fig. 6 is a similar view through the left side of the device.

Fig. 7 is a view of the metal sheet after being operated upon by the device.

Fig. 8 is a transverse sectional view through the device with the parts ready to receive the sheet.

Fig. 9 is a section on line 9—9 of Fig. 2.

Fig. 10 is a section on line 10—10 of Fig. 1.

Fig. 11 is a fragmentary perspective view of the angle stop strip.

In these drawings, the letter A indicates a vehicle which includes the transverse springs *a* having their ends connected by hangers with the uprights *a'*. A centrally arranged, longitudinally extending T beam 1 is supported on the springs by the angle bars 2 which are fastened to the clamping plates 3 of the springs. Rods 4 are connected to one angle bar and extend outwardly therefrom and each rod has an upstanding part 4' terminating in an outwardly extending horizontal part 4'' on which is ad-

justably held a stop collar 5 by means of a screw 6. Rods 7 extend outwardly from the other angle bar and each rod 7 has an upwardly curved outer part terminating in an eye 7' for receiving a hinge pin 8 of a hinge 9, these parts 9 being connected to the outer edge of a plate 10 which is in alignment with the head of the beam 1 when the plate is in horizontal position. When in this position the rounded inner end of the plate will rest on the hinge means 11 of the elongated bar 12 which is of substantially quadrant shape in cross section and at its outer side is formed with a beveled lip 13, the inner side of which forms a right angle with the adjacent face of the bar 12 and the outer face of which is curved to form a continuation of the curved side of the bar. This lip will engage and lift the plate 10 when the bar is swung upwardly, as shown in Fig. 5. An angle shaped stop bar 14 is formed with the transverse slots 15, see Fig. 11, through which pass the screws 16 engaging holes in the plate 10. Thus by loosening the screws the member 14 can be adjusted on the plate and transversely of the plate.

An elongated bar 17 is connected by the hinge means to the opposite side of the head of beam 1, on the underside thereof so that the straight edge 17' of this bar can extend at right angles to the said edge of the beam when the bar is raised, as shown in Fig. 6. This bar is provided with a rectangular shaped tongue 19. Handle bars 20 are connected with this bar 17 for swinging it on the hinge means, and handle bars 21 are connected with the plate 10 for swinging it. Hand levers 22 are connected with the ends of the hinge pin of the bar 12 for swinging this bar.

A second T beam is shown at 23, though this beam is inverted so its head will be over the head of the beam 1 and this beam 23 is supported for vertical movement by a pair of semi-elliptical springs 24 at each end thereof. The outer ends of these springs 24 are connected to the supports 25 carried by an upright bracket 26 at each end of the device, the springs being spaced apart to permit the web or flange of the beam to pass them and the inner ends of the springs are connected to the sleeves 27' on the horizontal ends of a bar 27 having a U-shaped central portion for fitting over the upright flange of the beam, as shown in Fig. 10. A bar 28 is supported upon the bight of this U part and links 29 depend from ends of this bar 28 and engage the ends of the bar 27, as also shown in Fig. 10. The U-shaped head of a bolt 30 fits over each end portion of the vertical flange of the beam where it is se-

cured by a fastener 30' and a channel shaped bar 31 has its central portion held to this bolt 30 by the nuts 32 on the bolt, as shown more particularly in Fig. 4. This bar 31 fits over the central portions of the pair of springs 24 having their outer ends pivoted to the bracket 26. Thus these two pairs of springs yieldingly force the beam 23 downwardly upon the beam 1. Along one side edge the head of beam 23 is formed with an upstanding rib 34 and its other end is formed with an upstanding angle part 35, to the upper horizontal portion of which an angle bar 36 is hinged, as shown at 37. Handle bars 38 are connected to the bar 36 for swinging the same.

Each bracket 26 has a vertical slot 39 therein through which extends a pintle 40 on each end of the beam 23. A link 41 is pivoted at one end to the bracket and is formed with a hole through which the pintle passes. A hand lever 42 is pivoted to each bracket and a link 43 connects the lever to the other end of the link 41, as shown in Fig. 3. Thus by moving these levers 42 downwardly, the links 41 will be caused to raise the beam 23 above the beam 1.

This device is intended to form the channel bend B in one end of a sheet S and an angle bend C in the opposite edge, as shown in Fig. 7.

In using the device the upper beam 23 is raised by the hand levers 42 and the sheet S of metal placed between the two beams, with one edge engaging the stop strip 14, as shown in Fig. 4. Then the upper beam 23 is lowered to grip the sheet between itself and the lower beam 1. Then the bar 12 and plate 10 are swung upwardly, as shown in Fig. 5, which first bends a portion of the sheet upwardly and then the lip 13 of the bar 12 presses the metal over the rib 34, which forms the angle bend C. Then the upper beam is again raised and the sheet adjusted to place its opposite edge against the stop collars 5. Then the upper beam is lowered to grip the sheet between itself and the lower beam and then the bar 17 is swung upwardly and the angle bar 36 downwardly to form the channel bend B in the sheet as shown in Fig. 6.

It is thought from the foregoing description that the advantages and novel features of the invention will be readily apparent.

It is to be understood that changes may be made in the construction, combination and arrangement of the several parts, provided such changes fall within the scope of the appended claims.

What I claim and desire to protect by Letters Patent is:

1. An apparatus for bending sheet metal comprising a beam having a flat upper part, a second beam having a flat lower part for clamping a part of a sheet between itself and the flat part of the first beam, means for applying pressure to the second beam, means for moving the second beam vertically, a bending bar hinged to one side edge of the first beam and having a bending lip thereon for bending an edge portion of the sheet over an edge of the upper beam, a bending bar hinged to the opposite edge of the first beam and having a tongue thereon for bending the opposite edge of the sheet, auxiliary sheet supports at opposite

sides of the second beam, adjustable abutments carried by said auxiliary supports, one auxiliary support having a pivoted portion extending over the first bending bar and shifted upwardly thereby when the bar is swung upwardly, the second beam having an upstanding angle shape part for receiving the tongue when the second bar is swung upwardly, a third bending bar hinged to the edge of the angle part of the second beam for bending a portion of the sheet over the tongue, and means for moving said bars.

2. An apparatus for bending sheet metal comprising a beam having a flat upper part, a second beam having a flat lower part for clamping a part of a sheet between itself and the flat part of the first beam, means for applying pressure to the second beam, means for moving the second beam vertically, a bending bar hinged to one side edge of the first beam and having a bending lip thereon for bending an edge portion of the sheet over an edge of the upper beam, a bending bar hinged to the opposite edge of the first beam and having a tongue thereon for bending the opposite edge of the sheet, the second beam having an upstanding angle shape part for receiving the tongue when the bar is swung upwardly, a third bending bar hinged to the edge of the angle part of the second beam for bending a portion of the sheet over the tongue, means for moving said bars, arms extending outwardly from a part of the first beam, adjustable stop members on the outer ends of the arms for one edge of the sheet, arms connected with the opposite side of the first beam and extending outwardly in an opposite direction from the first arms, a plate connected to the second arms for swinging movement and normally being in alignment with the flat part of the first beam and an adjustable stop member on the plate.

3. An apparatus for bending sheet metal comprising a vehicle, springs carried thereby, a beam supported from the springs, said beam having a wide flat top, bending bars hinged to the side edges of the said flat top, arms extending from opposite sides of the beam and having their upper ends in substantial alignment with the flat top thereof, adjustable stop means carried by the upper ends of said arms, slotted brackets supported from the ends of the beam and extending upwardly, a second beam having a flat and wide bottom part to cooperate with the flat part of the first beam to form sheet clamping means, pintles at the ends of the second beam extending through the slots, levers pivotally connected to the brackets and engaging the pintles for raising the second beam, leaf springs connected with the brackets and engaging the second beam for pressing the same downwardly, a rib at one edge of the second beam, at the top thereof, for cooperating with one bending bar to form a bend of angle shape in one edge of a sheet, an upstanding angle part at the other edge of the second beam cooperating with the other bending bar to form an angle bend in the opposite edge of the sheet, a bending bar hinged to the edge of the upstanding angle part for bending the angle bend last mentioned into a channel bend and means for manually actuating the bending bars.

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