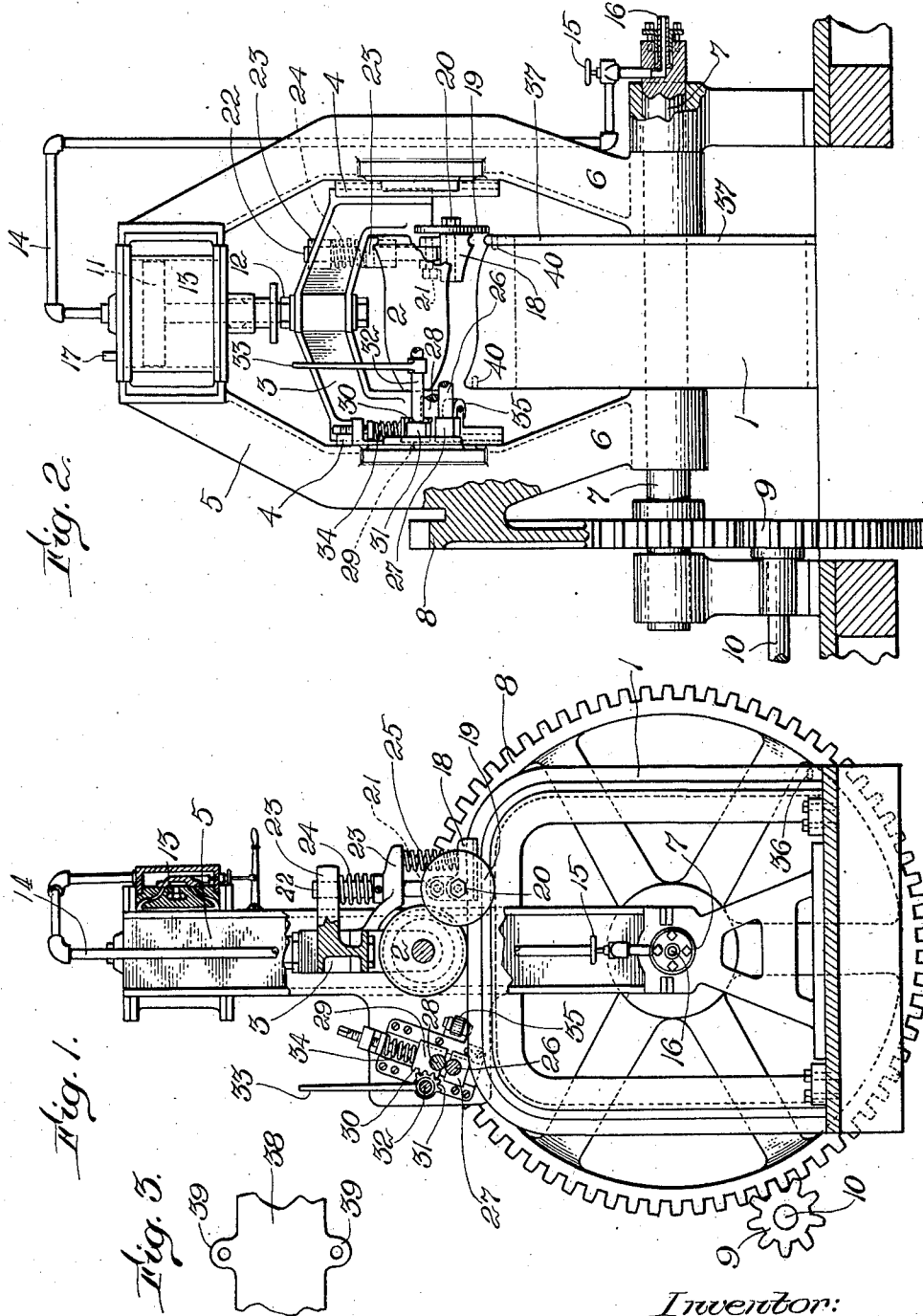


M. H. KASHIAN.
MACHINE FOR FORMING SEAT BODIES.
APPLICATION FILED JAN. 14, 1909.

1,016,416.

Patented Feb. 6, 1912.



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UNITED STATES PATENT OFFICE.

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MACHINE FOR FORMING SEAT-BODIES.

1,016,416.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, MINAS H. KASHIAN, a citizen of the United States, residing at Amesbury, in the county of Essex and State of Massachusetts, have invented an Improvement in Machines for Forming Seat-Bodies, of which the following description, in connection with the accompanying drawings, is a specification, like letters on the drawings representing like parts.

My present apparatus is for shaping the sheet metal portions of all kinds of vehicles and is particularly adapted for forming seat bodies of the general character described in my Patent No. 878,636, and has for its object the more rapid and uniform manufacture of said seat bodies besides producing a better article. To this end I provide a stationary body-form having the shape to which the sheet metal is to be conformed to constitute the seat body, and coöperating therewith is a shaping roll movable about the body-form under a yielding pressure sufficient to shape the original flat metal plate quickly, accurately and smoothly.

In one form of my invention sheet-placing and directing means moves with the shaping roll so as to insure the correct positioning of the metal sheet as it is being first shaped by the roll. Preferably also a brake or drag on the metal is provided adjacent the roll which tends to produce a truer and smoother shape.

In the accompanying drawings, in which I have shown a preferred embodiment of my invention, Figure 1 is a view thereof in side elevation, partly in section and partly broken away; Fig. 2 is a view thereof in side elevation looking at the left hand side of Fig. 1, partly in section and broken away for clearness of illustration; and Fig. 3 is a fragmentary view of a portion of the metal plate.

In arriving at the practical commercial manufacture of metal seat bodies for automobiles, carriages, and other vehicles or similar shaped objects, it has been my object to eliminate as much mechanism as possible, and accordingly my present machine is characterized by extreme simplicity and great power.

A heavy stationary body-form 1 is mounted centrally of the machine and coöperating therewith is a shaping roll 2 journaled in a yoke 3 mounted to slide in guideways 4

longitudinally of a swinging frame 5 mounted at its lower ends 6 on a shaft 7, said yoke being rigidly secured, preferably integrally, to a large cog-wheel 8 meshing with a small pinion 9 on a drive shaft 10, whereby the frame, yoke and roll are revolved about the body-form. The roll 2 is given a powerful yielding pressure by any suitable means, the mechanism herein shown consisting of a piston 11 connected by a piston rod 12 to the upper end of the yoke 3, operating in a cylinder 13, steam or compressed air being admitted through a pipe 14 controlled by a valve 15 and receiving its supply at a connection 16 concentrically of the shaft 7, said cylinder being provided with suitable valve mechanism. This mechanism may comprise an ordinary slide valve 13^a controlling inlet ports 13^b and 13^c leading to opposite ends of the cylinder and an outlet port 13^d. The valve 13^a is movable to open the proper inlet port by means of a lever 13^e here shown as pivoted to the frame 5 and connected to the valve rod 13^f.

A safety valve is indicated at 17. By this means the pressure of the roll 2 is under the control of the operator simply by actuating the lever 13^e by means also the roll can be left raised when desired. It is shown in the drawings as raised for clearness of illustration and also to indicate its position when the originally flat sheet or plate is being inserted in the machine.

At one side, herein shown as the right-hand side, Fig. 1, I provide a drag or brake 18 for resting on the sheet metal with a pressing and rubbing action following or preceding the roll, preferably following said roll. This pressing device or rubbing device 18 is somewhat elongated, as clearly shown in Fig. 1, and preferably located to engage the sheet adjacent its shorter edge or convex surface next to the bottom of the body, see Fig. 2. Adjacent thereto I mount a narrow thin rotary plate or wheel 19 which coöperates with the projecting edge of the sheet metal to bend the latter down flat against the bottom or right-hand edge or side of the body-form 1, Fig. 2, to shape the securing flange of the seat body by which the latter is secured to the wooden bottom or frame of the seat as explained in my aforesaid patent. This wheel 19 is pivoted to the brake device or shoe 18 at 20 and said brake device or shoe is pivoted at 21 to

the lower end of a plunger 22 mounted vertically in guides 23 on the yoke 3 and held with a downward pressure by a spring 24. A spring 25 engages the projecting edge of the shoe 18 to aid the latter in properly rounding the corners of the body-form. At the opposite side of the roll 2 and also mounted in the yoke 3 I preferably provide sheet guiding and positioning means, consisting of a roller 26 mounted in stationary bearings 27, and a roller 28 mounted in movable bearings 29 which are provided on their front sides with racks 30 engaged by toothed pinions 31 fast on a shaft 32 which may be rocked by a handle 33 for opening the said rollers 26, 28, the latter being preferably automatically held closed by a spring 34. Back of the rollers 26, 28, is a small guide roll 35 for receiving the edge of the metal sheet to bear against as the shaping mechanism moves forward.

My invention is capable of being used in two ways to form a seat-body. The first is to turn the frame 5 and all its connected mechanism, over to the extreme right, Fig. 1. A metal blank is then inserted between the rollers 26, 28, which are separated by rocking the handle 33 over to the left, and then the extreme forward end of the metal sheet or blank is secured to the body-form by a screw or wedge driven into the body-form at 36. Having thus secured one end of the blank, the pinion 9 and drive gear 8 are started so as to carry the shaping mechanism upwardly. As the roll 2 presses hard against the sheet metal the latter is shaped, being positioned and directed accurately by the guiding means 26, 28 and 35, which hold it accurately in place just ahead of the shaping roll 2. Following just behind the shaping roll the edge shapers 18, 19 smooth and crease down the metal neatly and accurately about the bead 37, see Fig. 2, and to form the securing flange of the seat body, the latter being accurately formed by the rolling shaping disk or wheel 19. In this manner the frame 5 is swung entirely around the body-form 1 from the extreme right-hand horizontal position to the extreme left-hand horizontal position, thereby finishing the seat-body accurately, neatly and quickly.

In the second manner of using my mechanism, which is to be preferred especially when forming small or light seat bodies, the positioning rolls 26, 28, 35, are not used. The blank, indicated at 38, Fig. 3, is provided with opposite perforated ears 39 at its mid-length, and is slipped by hand beneath the raised roll 2 until these ears 39 are directly over fastening openings 40 in the body-form. Thereupon the roll is lowered from the position shown in Fig. 1 so as to bend the sheet metal to the concavo-convex cross section of the form and roll. One ear 39 is then bent over the left-hand

opening 40 and secured by a bolt or other means passing through a hole in the ear and into the opening, whereupon the shaping mechanism is shifted slightly and the opposite ear is then similarly secured at the opposite opening 40. The shaping mechanism is then given a quarter turn of the gear 8 to the left so as to shape half of the seat body and then given a half turn to the right so as to shape the remainder of the seat body. This manner of using my apparatus is preferable when thin blanks are being manipulated as it tends to stretch and compress the metal uniformly toward each end from the mid-length of the blank.

The sliding device 18 not only operates as a former to crease and crowd the metal into place, but it smooths out wrinkles and lines up the edge with a uniformity which I have not found it feasible to accomplish with the shaping roll or rolls, and the rotary plate-like wheel 19 deflects and forms the desired flat flange of the seat body neatly and accurately without wrinkling, distorting or disturbing the beaded edge which has been formed by the adjacent end of the roll 2. The rotation of the plate-like wheel 19 as it is carried along by the swinging movement of the frame 5 shears the projecting metal of the plate sharply down and crimps it flat and smooth. The frictional drag of the smoothing device 18 and the downward rotary movement of this wheel 19 pull against each other so that the metal is neatly formed at this particularly difficult region of the seat body. The shaping of the seat body adjacent its bottom edge has been the most difficult portion of the problem to solve, and accordingly I consider this as an important feature of my invention.

As already stated, my invention is not limited to making seat bodies, but has a general application to sheet material which is to be shaped, and I wish it also understood that I am not limited to the precise constructional details herein shown, as I consider my invention broadly new in the particulars pointed out hereinafter in the claims.

Having described my invention, what I claim as new and desire to secure by Letters Patent, is,

1. In a machine for shaping sheet metal, a form, a cooperating shaping member, means for supporting the latter yieldingly with relation to the form, means for relatively moving said shaping member and form in metal-shaping relation to each other, and means including a cylinder and piston operated by fluid pressure for bringing said shaping member and form forcibly but yieldingly together when shaping the sheet metal.

2. In a machine for shaping sheet metal,

a form, a cooperating shaping member, means for supporting the latter yieldingly with relation to the form, means for relatively moving said shaping member and form in metal-shaping relation to each other, an auxiliary frictional shaper adjacent said shaping device and mounted on said yielding means for supporting the shaper in dragging engagement with the metal being shaped by the shaping device, and independent yielding means operatively engaged with said frictional shaper.

3. In a machine for shaping sheet metal, a fixed irregular form, a cooperating shaping member, means for supporting the latter yieldingly with relation to the form, means for moving said shaping member about said form in metal-shaping relation to each other, and a sheet metal positioning device adjacent said shaping device containing means for guiding the sides and edge of the sheet metal into place between said form and shaping device as the sheet metal is being shaped.

4. In a machine of the kind described, a form for cooperating in the bending of sheet metal and determining its shape, a shaping device for pressing the sheet metal to the shape of said form, an auxiliary frictional shaper adjacent said shaping device held in dragging engagement with a portion only of the surface of the metal being shaped for defining and rendering the given shape of said portion more clear and accurate, and controllable mechanism for moving said shaping mechanism with varying pressure toward the form and away from it.

5. In a machine of the kind described, a form for cooperating in the bending of sheet metal and determining its shape, a shaping device for pressing the sheet metal to the shape of said form, an auxiliary frictional shaper adjacent said shaping device held in dragging engagement with the metal being shaped for defining and rendering the given shape more clear and accurate at a bend in the form, and a rotary plate located to cooperate with an edge of said form in simultaneously producing, in conjunction with the aforesaid shaping mechanism, a sharp bend lengthwise of the metal being shaped, and mechanism for relatively moving said shaping mechanism with relation to the metal and form.

6. In a machine of the kind described, a form for cooperating in the bending of sheet metal and determining its shape, a cooperating shaping member, a yielding support for said shaping member, an auxiliary frictional shaper adjacent said shaping member carried by its yielding support, central yielding means for holding the frictional shaper in dragging engagement with the metal being shaped for defining and rendering the given shape more clear and accurate

at a transverse bend in the form, and mechanism for moving said shaping mechanism with relation to the metal and form.

7. In a machine of the kind described, a form for cooperating in the bending of sheet metal and determining its shape, a rotary shaping device for pressing the sheet metal to the shape of said form, an auxiliary sliding shoe yieldingly supported close to said rotary device in position to maintain yielding sliding engagement with the metal being shaped by said rotary device for smoothing out wrinkles and sharpening the shaped contour, and adjacent independent rotary means for bending the sheet metal at an abrupt angle at the point where the sheet metal is being held by said shoe.

8. In a machine of the kind described, a form for cooperating in the bending of sheet metal and determining its shape, a yielding rotary shaping device for pressing the sheet metal to the shape of said form, an auxiliary sliding shoe yieldingly supported close to said rotary device in position to maintain yielding sliding engagement with the metal being shaped by said rotary device for smoothing out wrinkles and sharpening the shaped contour, and adjacent independent rotary means for bending the sheet metal at an abrupt angle at the point where the sheet metal is being held by said shoe.

9. In a machine of the kind described, a stationary body-form having the longitudinal and cross-sectional shape substantially of the shaped article, a shaping roll complementary in shape to said body-form, a carrying frame mounted to move about said stationary body-form, means mounted in said carrier frame for yieldingly supporting said shaping roll in position to engage a sheet of metal on said form and shape the same thereto as said frame moves, and driving mechanism for moving said frame and yielding roll about said form.

10. A stationary body-form, a shaping roll cooperating therewith for shaping a sheet of metal to said form, a swinging frame journaled to swing in the plane of said body-form, driving mechanism for swinging said frame, and a supporting yoke yieldable under pressure slidably mounted to move lengthwise of said frame, carrying said roll in position to press a sheet of metal into finished shape against the shaping surface of said form.

11. A stationary body-form, a shaping roll cooperating therewith for shaping a sheet of metal to said form, a swinging frame journaled to swing in the plane of said body-form, driving mechanism for swinging said frame, a yieldable supporting yoke slidably mounted to move lengthwise of said frame, carrying said roll in position to press a sheet of metal into finished shape against the shaping surface of said form,

a cylinder connected with a source of elastic fluid, mounted on said frame, and a piston in said cylinder connected to said yoke for affording the yielding and pressing capacity of said roll required for its said shaping operation.

12. In a machine of the kind described, an irregular stationary body-form, a swinging frame centrally pivoted transversely of said body-form to swing in the plane thereof, said frame having opposite members embracing the body-form provided on their inner sides with ways, a yoke mounted to slide in said ways, a shaping roll journaled in said yoke to roll over the periphery of said form for shaping the metal thereto, yielding pressure-applying means between said yoke and frame for normally holding said roll in pressing engagement as it travels over the form, and driving means for swinging said frame, yoke and roll about said form.

13. In a machine of the kind described, a stationary body-form, a swinging frame centrally pivoted transversely of said body-form to swing in the plane thereof, said frame having opposite members embracing the body-form provided on their inner sides with ways, a yoke mounted to slide in said ways, a shaping roll journaled in said yoke to roll over the periphery of said form for shaping the metal thereto, yielding pressure-applying means between said yoke and frame for normally holding said roll in pressing engagement as it travels over the form, an auxiliary shaping shoe mounted on said yoke close to said roll for dragging on the surface of the metal being shaped, yielding means between said yoke and the auxiliary shaping shoe, and driving means for swinging said frame, yoke and roll about said form.

14. In a machine of the kind described, a stationary body-form, a swinging frame centrally pivoted transversely of said body-form to swing in the plane thereof, said

frame having opposite members embracing the body-form provided on their inner sides with ways, a yoke mounted to slide in said ways, a shaping roll journaled in said yoke to roll over the periphery of said form for shaping the metal thereto, yielding pressure-applying means between said yoke and frame for normally holding said roll in pressing engagement as it travels over the form, an auxiliary shaping device for engaging the sheet metal adjacent said roll, a yielding support mounted in said yoke pivotally carrying said shaping device, resilient means therefor to act on said shaping device, and driving means for swinging said frame, yoke and roll about said form.

15. In a machine of the kind described, a stationary body-form, a swinging frame centrally pivoted transversely of said body-form to swing in the plane thereof, said frame having opposite members embracing the body-form provided on their inner sides with ways, a yoke mounted to slide in said ways, a shaping roll journaled in said yoke to roll over the periphery of said form for shaping the metal thereto, yielding pressure-applying means between said yoke and frame for normally holding said roll in pressing engagement as it travels over the form, an auxiliary shaping device mounted in said yoke close to said roll and including a frictional dragging member to slide in contact with the metal being shaped by said roll and an independently rotary plate-like member having an edge depending below said dragging member for cooperating therewith in forming the sharp edge-bend in the metal, and driving means for swinging said frame, yoke and roll about said form.

In testimony whereof, I have signed my name to this specification, in the presence of two subscribing witnesses.

MINAS H. KASHIAN.

Witnesses:

JAMES DRUMMOND,

GEO. H. MAXWELL.