

934,919.

2 SHEETS—SHEET 1.



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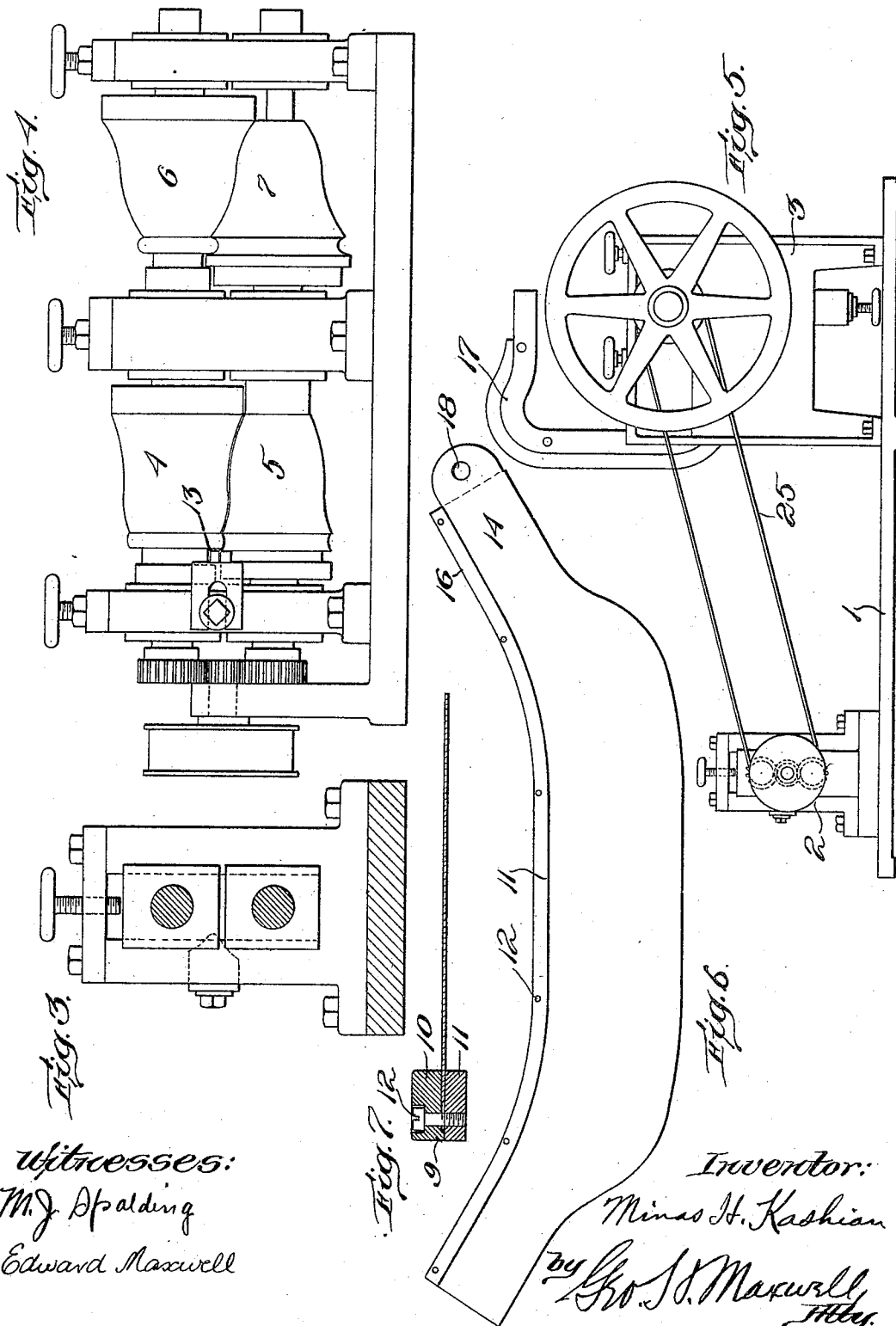
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M. H. KASHIAN.
 APPARATUS FOR MAKING SEAT BODIES FOR AUTOMOBILES.
 APPLICATION FILED JAN. 21, 1908.

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UNITED STATES PATENT OFFICE.

MINAS H. KASHIAN, OF AMESBURY, MASSACHUSETTS.

APPARATUS FOR MAKING SEAT-BODIES FOR AUTOMOBILES.

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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 Apparatus for Making Seat-Bodies for Automobiles, of which the following description, in connection with the accompanying drawings, is a specification, like numericals on the drawings representing like parts.

My present invention is for making metal seat bodies, and is particularly adapted to make heavier seat bodies than the apparatus shown in my Patent No. 878,636. To this end I have provided a special arrangement and construction of rolls, in connection with a work guiding device, which will compel the work or heavy metal plate (which subsequently constitutes the seat body) to slue around or shift laterally in its own plane the required extent to produce the desired shape of seat body. Also I provide in connection with the seat body form, a yielding molding block or roll and auxiliary deflecting devices for cooperating with the body form in compelling the heavy metal plate to bend and take shape smoothly, uniformly and accurately, according to the pattern.

Further features of my invention, together with the constructional details of the preferred embodiment of the invention, will be pointed out in the course of the following description taken with reference to the accompanying drawings, in which I have shown one form of the machine.

In the drawings, Figure 1 is an end elevation of the machine partly broken away; Fig. 2 is a longitudinal sectional view of the outgoing end of the machine; Figs. 3 and 4 are views in side and front elevation respectively of the ingoing end of the machine; Fig. 5 is a side elevation of the machine on a reduced scale, showing the operative relation of the two ends thereof; Figs. 6 and 7 are views respectively in plan and cross-section of a blank or piece of work, and the work guiding device.

On a suitable frame 1 I provide at the ingoing end, mechanism 2 for longitudinally shaping a metal sheet and at the outgoing end, mechanism 3 for transversely shaping the metal sheet into a seat body, the details of the ingoing mechanism being shown in Figs. 3 and 4 and the details of the outgoing mechanism being shown in Figs. 1 and 2.

The longitudinal shaping mechanism, as

herein shown, consists of a series of shaping rolls set end to end, as it is impracticable in handling heavy sheets of metal which are to have considerable lateral bend or angular formation view in plan as shown in Fig. 6, to attempt to pass the sheet through a continuous longitudinal series, as will presently be more apparent. I have herein shown two pairs of the rolls, although it will be understood that the series is not limited in this respect. The first pair, or preliminary shaping rolls, is indicated at 4, 5, and the next pair of rolls which complete the longitudinal shaping of the metal is indicated at 6, 7. The lateral position of the sheet is positively controlled by a directing device 9 clamped as shown in Figs. 6 and 7, to one edge of the sheet. The directing, clamping device 9 may be of any kind desired, but preferably consists of interlocking upper and lower longitudinal members 10, 11, secured together in clamping relation by bolts 12. The rolls are cut away to form a recess 13 for receiving this directing device 9 so that when the front end 14 of the metal plate is entered between the pairs of rolls 4, 5, it goes straight ahead until the bend in the front end 16 of the directing device 9 arrives at the aperture 13, whereupon the changing direction of the directing device 9, cooperating with the walls of the recess 13, compels the plate or blank to shift its direction with relation to the rolls, thereby maintaining the bead and pattern parallel to the length of the plate. The result is that the desired curves of the plate or blank (see Fig. 7) are formed longitudinally as desired in the blank, parallel to the edges thereof, notwithstanding the fact that said blank is of extra heavy or rigid material. The form of blank shown is that required for the ordinary low or shallow seat body of an automobile. The sheet or blank is first passed through between the pair of rolls 4, 5, and then between the next pair in the series, the directing device 9 not being necessary after the first pair of rolls, and when it has properly received its longitudinal grooves or formation the plate is passed to the mechanism 3, where it is caught or held by the body form 17 of the latter by any suitable means, as for instance either the mechanism shown for said purpose in my before mentioned patent or by catching the eye or hole 18 provided for this purpose in the front end of the plate, over a stud or projection 19 on the

forward lower end of said body form 17, which thereupon pulls the sheet forward to receive its transverse curvatures. The body form is approximately rectangular in shape the same as a seat body, as best shown in Fig. 2, flaring or concavo-convex in cross-section with the rim-edge longer than the edge which shapes the seat-bottom and is provided with opposite end racks 20, 21, arranged parallel to the external periphery or shaping edge of the form in position to mesh with pinions 22 fast on a shaft 23 journaled in the main frame of the machine and driven by a pulley 24 and sprocket chain 25 or by any other suitable means. Because of the heavy and comparatively unyielding nature of the material which it is the special purpose of my present invention to handle, I have found it necessary to provide a moving conoidal, convexo-concave shaping roll 26 to cooperate with the curved molding surface of the body form 17, said roll 26 being fast on a shaft 27 positively driven by gears 28, 29, 30, from the shaft 23, thereby moving the molding surface of the roll 26 in opposition to the direction of movement of the molding surface of the form 17. I have found that by moving these surfaces in opposite directions I can produce the smooth, uniform molding of quite intractable sheets. To permit the entrance of the sheet and the necessary yielding which at times will inevitably be required in handling such material, I have journaled the shaft 27 at the opposite ends of the roll 26 in universal yoke bearings 31, 32, supported on posts 33, whose headed ends 34, see Fig. 2, are retained in hollow sleeves 35 strongly pressed upward by springs 36, whose tension is adjustable by heavy screws 37.

The sleeves 35 are preferably formed integrally with a bed plate 38 suspended from the upper portion of the frame by long bolts 39 operated by hand wheels 40, so that when desired the bolts may be quickly turned upward out of engagement with the bed plate 38, thereby permitting the bed plate and roll to be slid out of the machine, ways 41 being provided in the main frame to permit of said instant removal. By this means the parts may be readily repaired and the roll 26 may be changed quickly whenever any change is to be made in the seat body pattern.

To aid in the proper molding and to guide accurately the metal at the sharp edge 42 or top of the seat body, and at the opposite edge containing the seat frame, I provide spindles 43 adjustably supported at 44 and 44* in the frame, containing a roll 45 having a vertical axis and rolls 46 having horizontal axes, and held tight against the adjacent edge on its various curves by comparatively heavy springs 47 and 47*, so that as the sheet or plate to be bent is molded by the

body form 17 the rolls 45 and 46 will hold it hard pressed in accurate alinement with the edges of the body form.

In use, the blanks, cut for instance to the form shown in Fig. 6, first have the directing device 9 clamped immovably along one edge as shown in Fig. 7, and then are fed through between the rolls 4, 5, for the preliminary longitudinal shaping, and then through between the rolls 6, 7, for the further longitudinal shaping, said directing device compelling said plates to follow the required direction to a degree of accuracy which the rolls themselves are incapable of securing, and then the longitudinally shaped or grooved plates are hooked, or otherwise clamped, at their forward ends 14 to the forward bottom end of the body form, which thereupon carries said plates forward and, together with the cooperating forming roll 26 and auxiliary guiding rolls 45, 46, gives the desired transverse shape to the plates so that when the body form 17 has completed its travel and the outgoing end 48 escapes from the pinions 22, it contains the fully and accurately molded seat body of heavy metal, the same as explained in my before mentioned patent. If a different pattern of seat body is desired, the particular body form corresponding to that pattern, is inserted in the machine and the corresponding roll 26 is put in place, the latter being accomplished by removing the bed plate 38 and the parts carried thereby and either putting in another bed plate or putting another roll in on the same bed plate and then replacing the bed plate and contained parts in their original operative position as shown.

The roll 26 provides means for obtaining high pressure or low pressure as required, according to the kind or thickness of metal and according to the peculiar requirements of any given pattern, and yet because of its yielding arrangement said mechanism, even when at high pressure, does not endanger the machine. If a specially hard spot is met in the metal it will yield and can yield at either or both ends according to any particular exigency. As stated, I prefer to have this roll rotate in opposition to the travel of the metal, whereby a better molding action is secured, but I do not intend to restrict myself thereto in all cases.

It will be understood that my invention may be embodied in a wide variety of mechanisms differing in constructional details, and that herein I have shown merely the preferred embodiment.

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

1. In an apparatus for making metal seat bodies, means for longitudinally shaping a metal sheet, including means for drawing out one edge of the sheet longer than the

other and curving the metal longitudinally between said longer edge and the shorter edge of the sheet, and means for automatically shifting the sheet laterally in its own plane at a desired point in its length for angularly changing the direction of the longitudinal curves.

2. In an apparatus for making metal seat bodies, upper and lower shaping devices for engaging a metal sheet on its opposite sides, provided with cooperating means for drawing out one edge of the sheet longer than the other and curving the metal longitudinally between said longer edge and the shorter edge of the sheet, a directing device movable with the sheet, said shaping devices having cooperating means for controlling the position of said directing device and positively guiding its movement, said directing device, thus guided, shifting automatically said sheet in the direction of its plane to change angularly the direction of said longitudinal curves intermediate their length.

3. In an apparatus for making metal seat bodies, cooperating shaping rolls formed to draw out one edge of a metal sheet longer than the other and to curve the metal longitudinally between said longer edge and the shorter edge of the sheet, said rolls having at one end a recess between their meeting edges, and cooperating directing means guided by said recess for controlling the position of the sheet and positively shifting said sheet angularly in its own plane in the course of its travel between said rolls.

4. In an apparatus for making metal seat bodies, cooperating shaping mechanism, comprising a body-form having the approximately rectangular shape and depth of a seat body, being flaring, with its rim-edge longer than the bottom-edge and convexo-concave in cross-section, and a yielding shaping device having a length corresponding substantially to the depth of said body-form and having a supplemental convexo-concave shape to cause the sheet of metal to bend to the same shape as said form, said yielding shaping device being capable of springing independently at its opposite ends toward and from the body transversely of the axis of the latter as the bending of the sheet progresses, and driving means for relatively moving said body-form and shaping device in continuous shaping and bending proximity throughout the shaping-length of the body-form said driving means including means for positively moving said shaping device.

5. In an apparatus for making metal seat bodies, cooperating shaping mechanism comprising a body-form having the approximately rectangular shape and depth of a seat body, being flaring with its rim-edge longer than the bottom-edge and convexo-concave in cross-section, and a yielding ro-

tary conoidal shaping roll with a concavo-convex shaping line and having a length corresponding substantially to the depth of said body-form and said shaping curvature being complementary to that of the body form to cause a sheet of metal to bend to the same shape as said form, said roll being capable of springing independently at its opposite ends toward and from the body as the bending of the sheet metal progresses, and driving means for relatively moving said body form and shaping roll in continuous shaping and bending proximity throughout the shaping-length of the body form said means including means for positively rotating the roll.

6. In an apparatus for making metal seat bodies, cooperating shaping mechanism comprising a body form having the approximately rectangular shape and depth of a seat body, being flaring, with its rim-edge longer than the bottom-edge and convexo-concave in cross-section, and a conoidal shaping roll corresponding in length substantially to the depth of said body form and having a longitudinal convexo-concave curvature complementary to that of the body form to cause a sheet of metal to bend to the same shape as said form, journal bearings at the opposite ends of said roll, independently adjustable springs supporting said opposite end bearings whereby said roll is capable of springing independently at its opposite ends toward and from the body as the bending of the sheet metal progresses, and driving means for relatively moving said body form and shaping roll in continuous shaping and bending proximity throughout the shaping-length of the body form said means including means for positively rotating the roll.

7. In an apparatus for making metal seat bodies, cooperating shaping mechanism comprising a body form having the approximately rectangular shape and depth of a seat body, being flaring, with its rim-edge longer than the bottom-edge and convexo-concave in cross-section, and a yielding rotary conoidal shaping roll with a concavo-convex shaping line and having a length corresponding substantially to the depth of said body form and said shaping curvature being complementary to that of the body form to cause a sheet of metal to bend to the same shape as said form, said roll being capable of springing independently at its opposite ends toward and from the body as the bending of the sheet metal progresses, driving means for relatively moving said body form and shaping roll in continuous shaping and bending proximity throughout the shaping-length of the body form, and means for positively rotating the roll with a surface movement against the body form in the opposite direction to the aforesaid relative movement.

8. In an apparatus for making metal seat

bodies, transverse shaping mechanism, comprising a body form having the approximately rectangular shape of a seat body viewed endwise, driving means for providing said form with a combined forward traveling and rotating movement for maintaining some one portion thereof always close to and in bending relation with an opposite point, a yielding rotary shaping roll located at said lateral point having a peripheral curvature complementary to that of the body form, and means to drive the engaging surface of said roll in an opposite direction to the movement of the adjacent surface of the body form.

9. In an apparatus for making metal seat bodies, transverse shaping mechanism, comprising a body form having the approximately rectangular shape of a seat body viewed endwise, driving means for providing said form with a combined forward traveling and rotating movement for maintaining some one portion thereof always close to and in bending relation with an opposite point, a yielding rotary shaping roll located at said lateral point having a peripheral curvature complementary to that of the body form, and rotary guiding devices having engaging surfaces angularly arranged

with relation to each other for pressing the metal in accurate position at the longitudinal edge of said body form.

10. In an apparatus for making metal seat bodies, transverse shaping mechanism, comprising a body form having the approximately rectangular shape of a seat body viewed endwise, driving means for providing said form with a combined forward traveling and rotating movement for maintaining some one portion thereof always close to and in bending relation with an opposite point, a yielding rotary shaping roll located at said lateral point having a peripheral curvature complementary to that of the body form, and opposite rotary guiding devices having engaging surfaces angularly arranged with relation to each other for pressing the metal in accurate position at the opposite longitudinal edges of said body form.

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

MINAS H. KASHIAN.

Witnesses:

GEO. H. MAXWELL,
M. J. SPALDING.