

UNITED STATES PATENT OFFICE.

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HINGE.

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This invention relates to hinges and particularly to hinges of the covered joint type such as commonly employed in the hanging of motor vehicle doors; and the object of the invention is to provide an improved construction in the male butt of a hinge whereby the same will have greater strength and durability than other butt parts of this class as previously constructed, and further where by a neat and finished stop shoulder is provided on said butt part cooperating with the stop shoulder of the other or female butt part, presenting smooth and finished outer surfaces for the major portion of the transverse plane of the respective butts when the door or swinging member is moved into an open position; a further object being to offset or compact the body portion of the male butt adjacent the pintle bearings thereof to form the stop shoulder previously referred to and to extend the metal of the butt laterally onto the pintle bearings thereof to give greater strength and rigidity thereto and further to offsetting the butt body adjacent the pintle bearing or bearings; and with these and other objects in view, the invention consists in a hinge butt of the class and for the purpose specified, which is simple in construction, efficient in use, and which is constructed as hereinafter described and claimed.

The invention is fully disclosed in the following specification, of which the accompanying drawing forms a part, in which the separate parts of my improvement are designated by suitable reference characters in each of the views, and in which:—

Fig. 1 is a side view of a hinge made according to my invention showing the butt parts in closed position.

Fig. 2 is a longitudinal sectional view of the hinge shown in Fig. 2 with the butt parts in an open position.

Fig. 3 is a face view of the hinge as seen in Fig. 1.

Fig. 4 is a detail view of one end of the blank from which the male butt part of the hinge is formed.

Fig. 5 is a sectional view showing the end

of the blank seen in Fig. 4, curled prior to the upsetting or compacting operation.

Fig. 6 is a view similar to Fig. 5 showing the next step in making the butt part, in the compacting of the metal of said part adjacent the pintle bearing;

Fig. 7 is a view similar to Fig. 3 but showing only one of the butt parts, and illustrating a modification;

Fig. 8 is a view similar to Fig. 4 but showing a modification;

Fig. 9 is a side edge view of a butt made from the blank seen in Fig. 8; and,

Fig. 10 is a partial section on the line 10—10 of Fig. 9.

In Figs. 1 to 3 inclusive, I have shown at 10, the female butt part of a hinge, said part having at one end a curved hood portion 11 and a pintle bearing 12 arranged centrally of and within the hood portion, the bearing 12 having an aperture 13 to receive the pintle pin 14 of the hinge. The butt part 10 is shown merely to illustrate the hinge assembly and forms no specific part of the invention except as in combination with my improved hinge butt part 15, said butt part being formed from an elongated strip of sheet metal 15^a part of which is shown in Fig. 4 of the drawing. One end of said strip is cut away to form at the sides thereof, projecting tongue members 15^b, which in the construction of the butt part 15 are curled to form cylindrical pintle bearings 16 at one end of the butt part 15, the adjacent part of the blank from which the butt part 15 is formed being curved or offset as seen at 17, to bring the attaching plate portion 15^c of the butt part 15 in closer proximity to the attaching plate portion 10^a of the butt part 10 when said butt parts are in closed position as seen in Fig. 1 of the drawing.

It will be noted on a consideration of Fig. 5 of the drawing that the end wall of the recess formed by the projecting fingers 15^b terminates within the transverse plane of the pintle bearings 16 as seen at 18 in said figure. In the next step of producing my improved hinge butt, an end wall 19 is upset,

swaged or compacted by suitable dies or in any other desired manner to form a projecting stop shoulder 19 extending upwardly beyond the normal outer wall or face of the butt part 15 as seen in Fig. 6 of the drawing, and forming a reinforcing heavy rib portion 20 which extends onto the face of the pintle bearing 16 as seen at 21 in Fig. 3 of the drawing, and serves to reinforce and strengthen said pintle bearings at their weakest points, it being understood that in the compacting operation above referred to, the metal of the butt part has been extended laterally onto and enlarged the metal of, the pintle bearings 16.

The formation of the stop shoulder 19 and the rib 20 is such that when the butt parts 10 and 15 are in extended or open position, the stop shoulder 19 engages a similar stop shoulder 11^a at the end of the hood portion 11 and which extends across the pintle bearing 12, thus bringing the outer surfaces of the hood portion 11 and of the rib portion 20 in common alinement forming a flush intersection except for a slight falling off of the metal at the opposite sides of the butt 15. This construction forms not only a neat and finished appearance, but a strong and durable stop which will withstand stress and strains to which the doors are subjected, especially in swinging the same vigorously into an open position, and will operate to prevent the breaking or destruction of the butt part 15 adjacent the pintle bearings or knuckles 16 by virtue of the reinforcing rib 20 formed in the manner above described.

It will also be noted on a consideration of Fig. 6 of the drawing that the ends of the tongue members 15 in the compacting operation of the butt are pressed into the adjacent part of the butt body to a slight degree as seen at 16^a in said figure, to more securely retain the cylindrical formation of the pintle bearings 16, it being understood that the pintle apertures 16^b while being partially and more or less accurately formed in the several operations, must be rimmed out to provide true and accurate bearings for the pintle pin 14.

In Fig. 7 of the drawing, I have shown a slight modification which consists in forming on a metal butt part 22 similar to the butt part 15, one pintle bearing 23 arranged centrally thereof, instead of two pintle bearings as for example the bearings 16. In this form of construction, two stop shoulders 24 are disposed at the opposite sides of the bearing 23 and extend onto said bearing as seen at 25 to reinforce and strengthen the same. With this type of male butt part, the female butt part will have, as will be apparent, two pintle bearings instead of one.

In Figs. 8, 9 and 10 of the drawing, I have shown another modification in which a blank 26 is employed, the blank having at one end

a large rectangular aperture 27, the side walls 28 of which are adapted to form, when the apertured end of the blank is curled, cylindrical pintle bearings 29, and the end wall 30, which joins the ends of the side walls 28 and which normally lies in the plane of the end of the knuckle portions 29 is pressed downwardly or outwardly to form a reinforcing strip member 31, which extends onto the pintle bearing 29 as seen at 32 in Fig. 10 of the drawing. In this form of construction, the attaching plate portion 33 of the butt is not offset in the manner of the butt shown in the other figures, and the pintle bearings 29 are disposed on one side face only of said attaching plate. With this form of construction, it will be apparent that when the stop member 31 engages the stop shoulder on the ends of the hinge butt 10, the thrust or stress tends to close the curled knuckles 29 rather than to apply stress to open same, which might be the case in the structure shown in Figs. 1 to 7 inclusive, and in this respect a stronger hinge butt is produced.

It will also be understood that my invention may be applied to other types of female hinge butts than that herein shown and described and above referred to, the distinctive feature of my invention residing in the formation of the reinforcing rib members and ultimately the substantial stop shoulder adjacent the pintle bearing or bearings of the male butt part. It will be understood that various changes in and modifications of the construction herein shown and described may be made within the scope of the appended claims without departing from the spirit of my invention or sacrificing its advantages.

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

1. In a hinge, the combination with a butt part having a hood at one end and a pintle bearing within said hood and a stop shoulder at the end of the hood portion, of another sheet metal butt part provided at one end with pintle bearings formed of the material thereof, and said second named butt part having a stop shoulder extending transversely of that part of the butt body adjacent said pintle bearings and adapted to engage the shoulder of the other butt of the hinge, said stop shoulder forming a reinforcing member which extends onto a portion of said pintle bearings.

2. A hinge butt fashioned from an elongated body of sheet metal, one end of the body being curled to form spaced pintle bearings, a stop shoulder fashioned from the material of said body and arranged adjacent said pintle bearings, and said stop shoulder projecting beyond one face of the butt and onto said pintle bearings.

3. A hinge butt fashioned from an elongated

gated body of sheet metal, provided at one end portion with an aperture and narrow side walls joined at their outer end by a cross bar, said end of the body being curled to form on said side walls, spaced pintle bearings, joined by said cross bar, said cross bar being arranged adjacent the body of the butt, and said bar and bearings being fashioned to form a stop shoulder extending between and onto said bearings. 10

In testimony that I claim the foregoing as my invention I have signed my name this 28th day of July, 1926.

JOSEPH SOSS.