

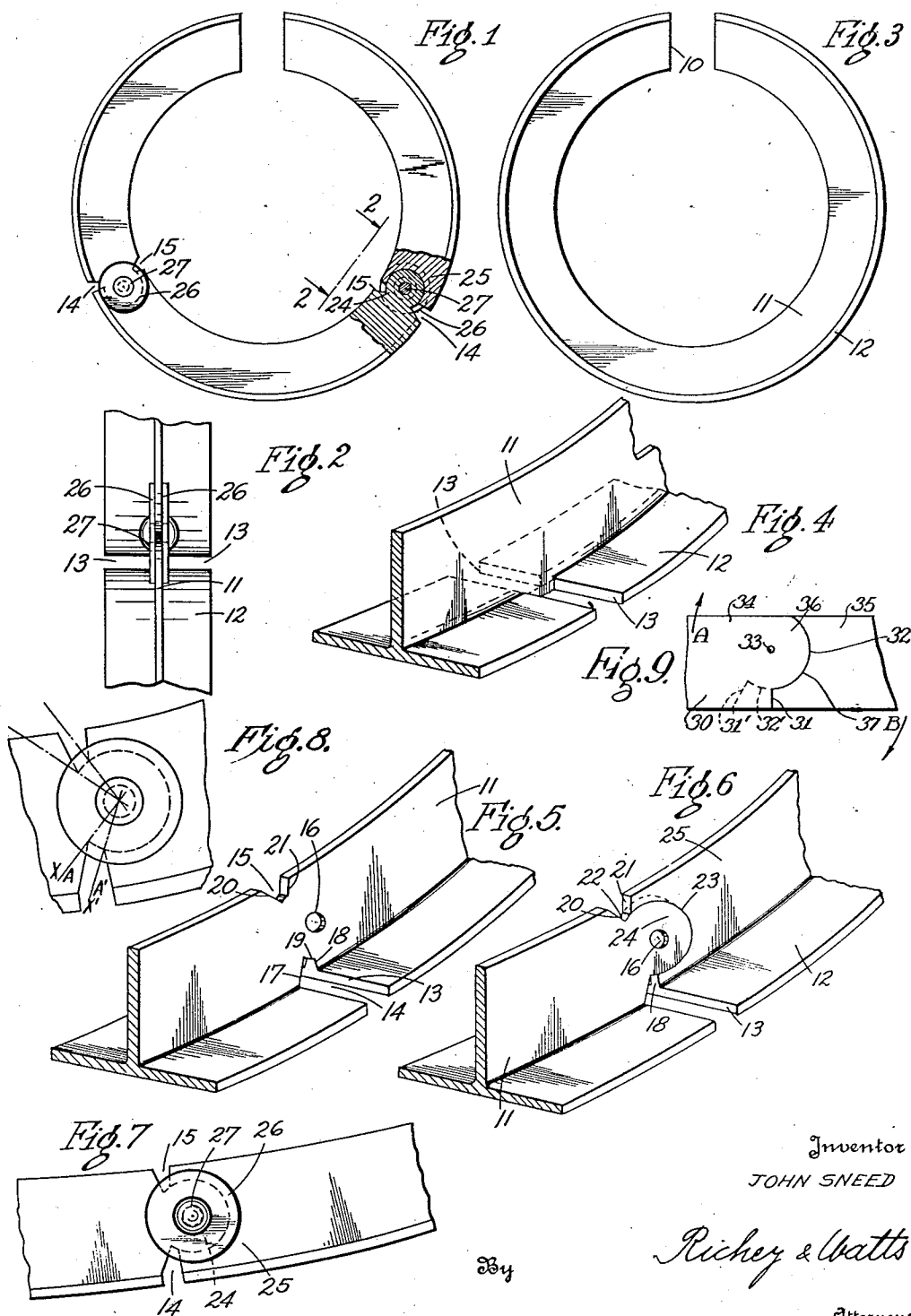
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METHOD OF MAKING A BRAKE SHOE

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1,982,403

METHOD OF MAKING A BRAKE SHOE

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14 Claims. (Cl. 29—152.1)

This invention relates to the method of making vehicle brakes, and more particularly to an articulated brake shoe.

This application is a division of my co-pending application, Serial No. 417,302, filed December 30, 1929, for a Brake shoe and method of making same.

One object of the invention is to form an articulated brake shoe from a single strip of stock.

Another object is to form a pivotal joint between two sections of a brake shoe by shearing a piece of stock and reassembling the sections with the line of shear serving as a pivotal bearing therebetween.

Another object is to provide an improved pivotal joint for brake shoes capable of withstanding any compressive load to which the brake shoes may be subjected in service.

Another object is to provide a simple and effective pivotal connection for brake shoes constructed in such a manner as to insure a perfect fit between the parts thereof, and between the assembled brake shoes and the co-operating elements of a vehicle brake.

Other objects relating to details of construction and economics of manufacture will appear hereinafter.

In the accompanying drawing, which illustrates the preferred embodiment of the invention:

Figure 1 is a side elevation of an articulated brake shoe constructed in accordance with this invention, parts being broken away to more clearly show the structure.

Figure 2 is a detail view of one of the pivotal joints taken from a plane indicated by the line 2—2 in Figure 1 and looking in the direction of the arrows.

Figure 3 is a side elevation of the stock rolled into form preparatory to dividing the same into sections.

Figure 4 is a detail perspective view of the stock after the first step of the method of forming the pivotal joint has been taken.

Figure 5 is a similar view after the next operation has been performed.

Figure 6 is a similar view after the stock has been sheared.

Figure 7 is an elevation of the completed joint.

Fig. 8 is a view showing the angle which the straight edges of the notches in the radial web make with radii drawn from the center of a circle forming the arcuate line of shear.

Fig. 9 is a side elevation of a variation of the invention.

The brake shoe forming the subject-matter of

this invention is of the general type shown in my co-pending application, Serial No. 347,515, filed March 16, 1929, and is primarily designed for use with the type of brake illustrated therein. The brake shoe disclosed in the said application consists of a split ring rolled from T-stock and having portions of the vertical web cut away to render the shoe sufficiently flexible. In the present invention a similar T-section split ring is utilized and flexibility is imparted thereto by articulating the same, a minimum amount of stock being cut away. Substantially the entire width of the vertical web is retained intact, thereby increasing the strength, rigidity, and durability of the shoe, while permitting free expanding and contracting movement.

In forming the improved brake shoe, a section of T-section stock is rolled to form a split ring 10 having a radial web 11 and a peripheral web 12. Preferably this operation is performed by the machine and method disclosed in my co-pending application, Serial No. 399,653, filed October 14, 1929. The ring 10, having the form shown in Figure 3, is then placed in a suitable machine and notches 13 are cut in the peripheral web 12 on opposite sides of the radial web 11 and at the points at which the pivotal joints are to be formed.

Notches 14 and 15, and apertures 16 are then punched in the radial web 11. Each notch 14 has two straight edges 17 and 18 and an arcuate edge 19. The straight edges 17 and 18 intersect the peripheral web 12 at the opposite edges of one pair of notches 13, so that each pair of notches 13 and the corresponding notch 14 form a continuous recess opening from the exterior surface of the ring 10 inwardly to the arcuate edge 19. The center of the circle determined by the arcuate edge 19 lies in the web 11 and is offset along the web from the notches 13. The straight edges 17 and 18 make substantially the same angle A and A' with radii X and X' drawn from such center to their respective intersections with the arcuate edge 19 in order to provide maximum clearance with a minimum weakening of the web 11. The aperture 16 is preferably concentric with this circle defined by the edge 19.

The notches 15 are formed on the inner side of the radial web 11 directly opposite the notches 14. Each notch 15 has straight edges 20 and 21 and an arcuate edge 22, similar in every respect to the edges 17, 18 and 19, respectively, of the notches 14. The edge 22 constitutes a portion of the circle defined by the edge 19.

After the formation of the notches described

above, the radial web 11 is sheared between each pair of notches 14 and 15. The line of shear is indicated at 23, and constitutes the portion of the circumference of the circle defined by the edges 19 and 22 between the intersections therewith of the edges 18 and 21. The adjacent separated sections of the web 11 are thereby formed respectively with a head 24 and a socket 25.

By reason of the location of the center of the circle which includes the edges 19 and 22 and the line 23 at a point offset along the web 11 from the notches 14 and 15, the recess of the socket 25 is outlined by an arc greater than a semi-circle. Accordingly, the sections may be reassembled by slipping the heads 24 into the sockets 25 from the sides thereof in a reversal of the relative movement between the sections caused by the shearing operation, and will be held in this relation against movement in either direction parallel to the web 11.

Washers 26 having a diameter greater than the heads 24 are secured to the opposite sides of the web 11 by rivets 27 passing through the apertures 16. These washers prevent lateral separation of the heads 24 and sockets 25, while permitting free pivotal movement of one member relative to the other.

It will be evident that the parts of each pivotal joint must necessarily fit perfectly, since the bearing surfaces are the lines along which the web 11 was sheared to separate the sections. Furthermore, the dimensions of the completed brake shoe are readily held within small tolerances, if desired, since the sections of each shoe are originally cut from the same split ring. In Fig. 9, a slight variation of the invention has been illustrated showing the manner of forming an articulated joint in a flat strip of material 30. To form the joint in this instance, the strip 30 is slit or sheared inwardly from one longitudinal edge transversely of the strip along a straight line 31 from which point the strip is sheared transversely of the strip along an arcuate line 32 to the opposite longitudinal edge of the strip. The numeral 33 designates the axis of the arcuate shear line 32. The transverse shearing of the strip along the lines 31 and 32 divides the strip into a pair of sections 34 and 35, the former possessing a projection 36 while the latter is provided with an arcuate seat 37 on which the projection 36 may turn about the axis 33. In the event the arcuate line 32 extends through more than 180° as indicated by the dotted line 32', to prevent longitudinal separation of the sections 34 and 35, the slit 31 can extend as indicated at 31' so that the section 34 can swing in the direction of arrow A. In the event of it being desired to swing the section 35 in the direction of the arrow B, the strip can be notched out at one longitudinal edge along the lines 31, 31' and 32'.

While the foregoing description is necessarily of a detailed character in order that the invention may be fully set forth, it is to be understood that the invention is not limited to the specific embodiment disclosed, and that modifications and re-arrangements of parts and steps may be resorted to within the scope of the following claims.

I claim:

1. The process of forming an articulated brake shoe consisting of rolling a strip of stock into the form of a ring, severing said ring into sections along lines to provide integral bearing members,

and re-assembling said sections with the bearing members forming an articulated joint.

2. The method of making an articulated brake shoe from a split ring having radial and peripheral webs which includes severing said peripheral web, notching the inner edge of said radial web, shearing said radial web along an arcuate line extending from said notch across said radial web to divide said ring and assembling the parts so formed said sheared edges providing a pivotal bearing between the parts of the ring.

3. The method of making a brake shoe from a split ring having radial and peripheral webs which comprises notching said peripheral web, notching the inner and outer edges of said radial web, the notch in the outer edge forming a continuation of the notch in said peripheral web, and shearing said radial web along an arcuate line extending between the notches in the inner and outer edges thereof.

4. The method of forming a brake shoe from a split ring having radial and peripheral webs, which includes severing said peripheral web, notching the inner edge of said radial web, and severing said radial web along an arcuate line extending from said notch across said radial web and through more than 180 degrees of arc.

5. The method of forming a brake shoe from a split ring having radial and peripheral webs, which comprises notching said peripheral web, notching the inner and outer edges of said radial web with the notch in the outer edge forming a continuation of the notch in said peripheral web, and shearing said radial web along an arcuate line extending between the notches in the inner and outer edges thereof and through more than 180 degrees of arc to form an interlocking joint.

6. The method of forming a pivotal joint in a strip of material which includes slitting at least one edge of said strip, and shearing the strip along an arcuate line extending from said slit across the strip to divide the same into sections, one of which is thereby formed with a recess and the other with a projection adapted to bear in said recess.

7. The method of forming a pivotal joint in a strip of material which includes notching the opposite edges of said strip, and shearing the same along an arcuate line extending between said notches to divide the same into sections, the sheared edge on one section constituting a recess and the sheared edge on the other section constituting a projection complementary to said recess.

8. The method of forming a pivotal joint in a strip of material which includes notching an edge of said strip and shearing the same along an arcuate line extending from said notch across the strip and through more than 180 degrees of arc to divide the strip into sections, the sheared edges on the sections constituting respectively a recess and a complementary interlocking projection.

9. The method of forming a pivotal joint in a strip of material which comprises notching the opposite edges of the strip, and shearing the same along an arcuate line extending between said notches and through more than 180 degrees of arc to divide the strip into sections, the sheared edges on the sections constituting respectively a recess and a complementary interlocking projection.

10. The process of forming an articulated brake shoe, which comprises rolling a strip of stock having angularly disposed parts, shearing one of said parts on an arcuate line and the other

of said parts on a straight line to sever said ring into a plurality of separate segments, and thereafter re-assembling said segments.

11. The process of forming an articulated
5 brake shoe from a single strip of stock having a radial and a peripheral web wherein the sections in the shoe bear a pivotal relation one with respect to the other, which consists in rolling said strip of stock into arcuate form, dividing the peripheral web into sectors joined by the radial web, shearing the radial web on an arcuate line to form a pivotal bearing between the sheared edges.

12. The method of forming a brake shoe having
15 a plurality of sections each of which bears a pivotal relation to the next adjoining section from a single strip of stock having a radial and a peripheral web, which consists in rolling said single strip of stock into the form of a ring, notching the peripheral web transversely on each side of the radial web, notching the radial web in the zone between the two first mentioned notches, notching the radial web at a point opposite the first notch therein, shearing said radial
25 web on an arcuate line between said notches therein to form a pivotal bearing between the sheared edges.

13. The method of forming a pivotal joint in a
30 strip of material which includes slitting an edge

of the strip along two straight lines joined by an arcuate line, the locus of the arcuate line being offset from a line drawn at right angles to the edge of the strip through the slit, and shearing the strip along an arc coincident with the arcuate line across the strip and through more than 180 degrees to divide the strip into sections, the sheared edges on the sections constituting respectively a recess and a complementary interlocking projection, and the end of one of said sections
85 being notched.

14. The method of forming a pivotal joint in a strip of material having a flange at an angle to the strip, consisting of notching the strip, slitting an edge of the flange along two straight lines
90 extending from the notch and joined by an arcuate line, the locus of the arcuate line being offset from a line drawn at right angles to the edge of the flange through the slit, and shearing the flange along an arc coincident with the arcuate line across the flange and through more than 180 degrees to divide the strip and flange into sections, the sheared edges on the sections constituting respectively a recess and a complementary interlocking projection, and the material of the strip adjacent one of said straight
100 lines being removed.

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