Jan. 14, 1930. G. A. BELLS 1,743,091

METHOD OF AND MEANS FOR ADJUSTING AUTOMOBILE WHEELS AND AXLES

Filed June 20, 1927

Fig. 1.

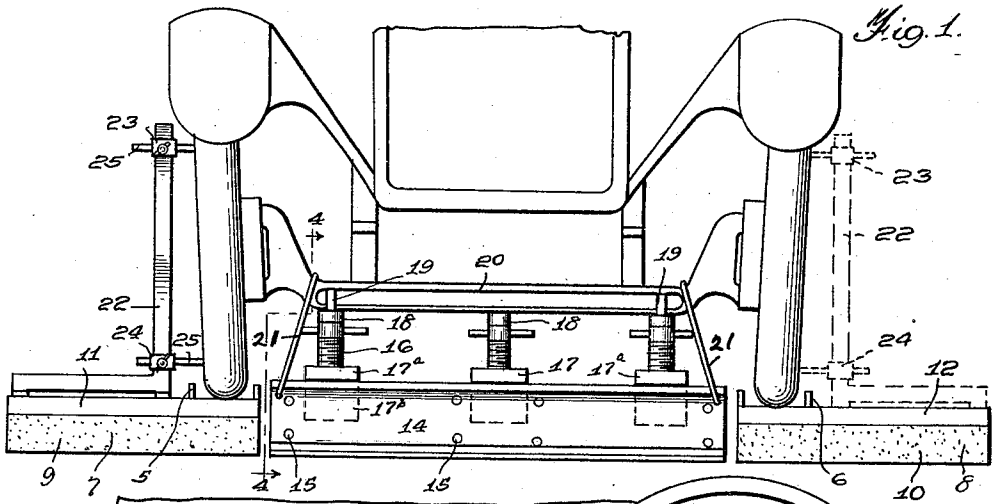
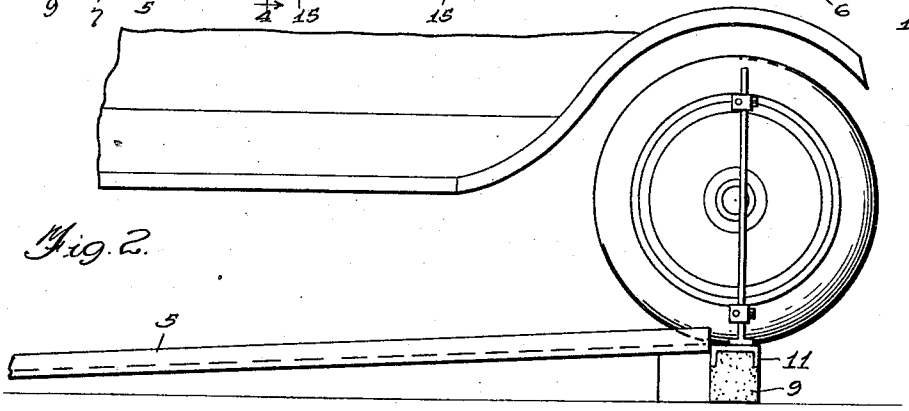


Fig. 2.



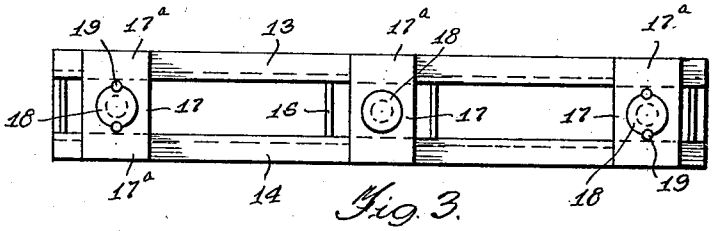


Fig. 3.

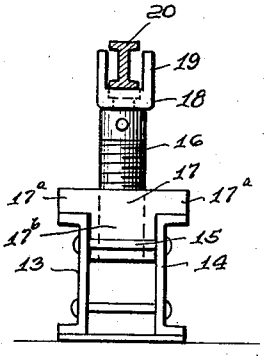


Fig. 4.

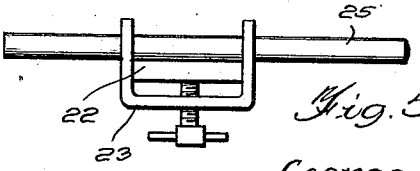


Fig. 5.

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UNITED STATES PATENT OFFICE

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METHOD OF AND MEANS FOR ADJUSTING AUTOMOBILE WHEELS AND AXLES

Application filed June 20, 1927. Serial No. 199,945.

This invention relates to a straightening and aligning device and it has for its object to provide a simple and efficient mechanism by means of which the running gear and particularly the wheels and axles of automobiles may be straightened, aligned or adjusted to bring about accurate positioning of the parts, with a minimum of time and labor.

Further objects and advantages of the invention will be set forth in the detailed description which follows.

In the accompanying drawings:

Fig. 1 is a front elevation of an automobile showing the apparatus positioned with respect thereto.

Fig. 2 is a side elevation thereof.

Fig. 3 is a plan view of a press mechanism, hereinafter described.

Fig. 4 is a vertical sectional view upon line 4—4 of Fig. 1, and

Fig. 5 is a detail view of one of the clamps for holding the gauge pins upon the squares, hereinafter described.

Like numerals designate corresponding parts in all of the figures of the drawing.

The device of the present invention comprises a pair of longitudinally extending track members 5 and 6, which treminate at their forward ends in laterally extending heads 7 and 8. These heads are preferably made of blocks of concrete 9 and 10, which are capped by channel irons 11 and 12. The upper sides of these channel irons are so positioned that they are exactly level and aligned with each other. Disposed between the heads 7 and 8 is a press mechanism comprising a base which consists of a pair of channel irons 13 and 14. These channel irons are held in spaced relation to each other by tie bolts 15. A plurality of jacks consisting of the screws 16, and blocks 17, into which said screws are threaded, are supported upon the base formed by the channel irons. The blocks 17 have heads 17^a which overlie the upper edges of the channel irons and reduced portions 17^b which are adapted to fit down between the channel irons 13 and 14. The upper ends of the screws 16 (see Fig. 4), are provided with rotative heads 18 in a manner common in screw jack construction. The outermost screws 16 have their heads provided with upstanding pins 19 which are adapted to embrace the front axle 20 of an automobile.

The operation of the device is as follows:

The automobile whose wheels, axles or other parts are to be trued, aligned or straightened is run up on the tracks 5 and 6 which are made long enough to take cars of the longest wheel base. The car is run into a position where its front wheels rest upon the upper surfaces of the channel irons 11 and 12 and to a position where its front axle overlies the press comprised by the screw jacks 16. One of the most important uses of the present invention is for adjusting the front wheels for camber. If the front axle 20 is low in the center, lashes 21 are placed in position connecting the front axle with the outer end portions of the press base. By then thrusting upwardly with the central screw jack (and these jacks can exert a pressure of about 20 tons), the axle can be straightened or bent while cold and without removing it from the machine. Since the blocks 17 of the several jacks can be adjusted longitudinally between the channel irons of the base, it follows that they can be brought to a position where they can bend the axle to best advantage and to the exact position desired. If the central portion of the axle is too high, then the lash is placed at the center of the axle and the thrust is exerted by the end jacks or by only one end jack, as the case may be.

In determining the extent to which the tops of the front wheels have been tilted outwardly, I employ a square 22. Clamps 23 and 24 carried by the vertical member of this square hold adjustable gauge pins 25 in place. After the wheel upon one side has been properly gauged with the square and gauge pins, said square and gauge pins are carried around to the opposite side of the vehicle and placed upon the other channel iron and if the same square with the same setting of the gauge pins properly fits against the other wheel, it indicates that both of the wheels have been tipped outwardly the same degree or have the same degree of camber.

Heretofore it has been the custom to use trams between the inner sides of the wheels. While these trams indicate the distance between the bottom portions of the wheels and the top portions of the wheels and indicate the difference between said two distances, they do not indicate whether the camber is the same for each wheel. I have found by experience that if one wheel leans out as much as a quarter of an inch more than the other it tends to pull the car off to that side. Since it is a fact that a wheel that leans has a tendency to turn in the direction in which it leans, it follows that wheels leaning too much in opposite directions cause "fighting" of the tires. That is, it tends to cause these tires to act in opposite directions and brings about much undue and unnecessary wear. This condition also tends to cause "shimmying" of the car. The foregoing conditions are not only corrected by this apparatus in a facile and efficient manner, but when the wheels are properly adjusted by its use the steering of the car is rendered much easier.

While screw jacks have been illustrated in the drawing I have used and contemplate using hydraulic jacks which manifestly are the mechanical equivalents of the screw jacks and as such are to be construed as following within the scope of the claims.

Having described my invention what I claim is:

1. The herein described method of adjusting the front wheels of automobiles for camber, which consists of providing surfaces truly aligned with each other at the outer sides of each of said front wheels and utilizing said surfaces as a support for a measuring instrument, said measuring instrument being applied first to the outside of one of the front wheels, and then bodily reversed and applied to the outside of the other of said front wheels, and bending the axle during such application of the measuring instrument to the extent to provide the desired camber.

2. The herein described method of adjusting the front wheels of automobiles for camber, which consists of providing two accurately aligned surfaces outwardly of said front wheels, at the opposite sides of the automobile, and utilizing said surfaces as points of support for a measuring square common to both of said wheels, said square being applied first to one wheel and then bodily reversed and applied to the other wheel, and bending the axle to the degree indicated by said square.

3. A device of the character described comprising a pair of supporting elements accurately aligned with each other, as to the direction of their upper surfaces, and properly spaced to receive and support the front wheels of an automobile, a square adapted to rest upon the upper surfaces of said elements and gauge pins carried by said square, said square being bodily reversible to bring the same gauge pins successively into engagement with the two front wheels and means for bending the front axle to the degree indicated by said gauge pins.

4. A structure as recited in claim 3 in combination with means for adjusting said gauge pins with respect to the square.

5. A structure as recited in claim 3 in combination with a press element consisting of a plurality of thrust elements, said press element being located in a position to lie beneath the front axle of an automobile, when the front wheels of the automobile rest upon the surfaces aforesaid, so that the bending may be continued until the gauge indicates the sufficiency of such bending.

6. A mechanism of the character described comprising a press carrying a plurality of jacks disposed longitudinally therealong and adapted to underlie the front axle of an automobile, a pair of accurately aligned surfaces outwardly of the front wheels of the automobile, a square adapted to coact with said surfaces, in succession, and means for securing the front axle of the automobile to the base of the press mechanism.

7. A device of the character described comprising a pair of runways terminating in laterally extending accurately aligned members, a reversible square adapted to have its support upon said members, gauge pins carried by said square and a press member comprising a plurality of jacks adapted to lie beneath the front axle of an automobile.

8. A structure as recited in claim 6 wherein said jacks are longitudinally adjustable, with respect to the axle.

9. A structure as recited in claim 6 in combination with means for mounting the jacks for longitudinal adjustment, with respect to the axle, and means for lashing said axle to the said base.

In testimony whereof he affixes his signature.

GEORGE A. BELLS.