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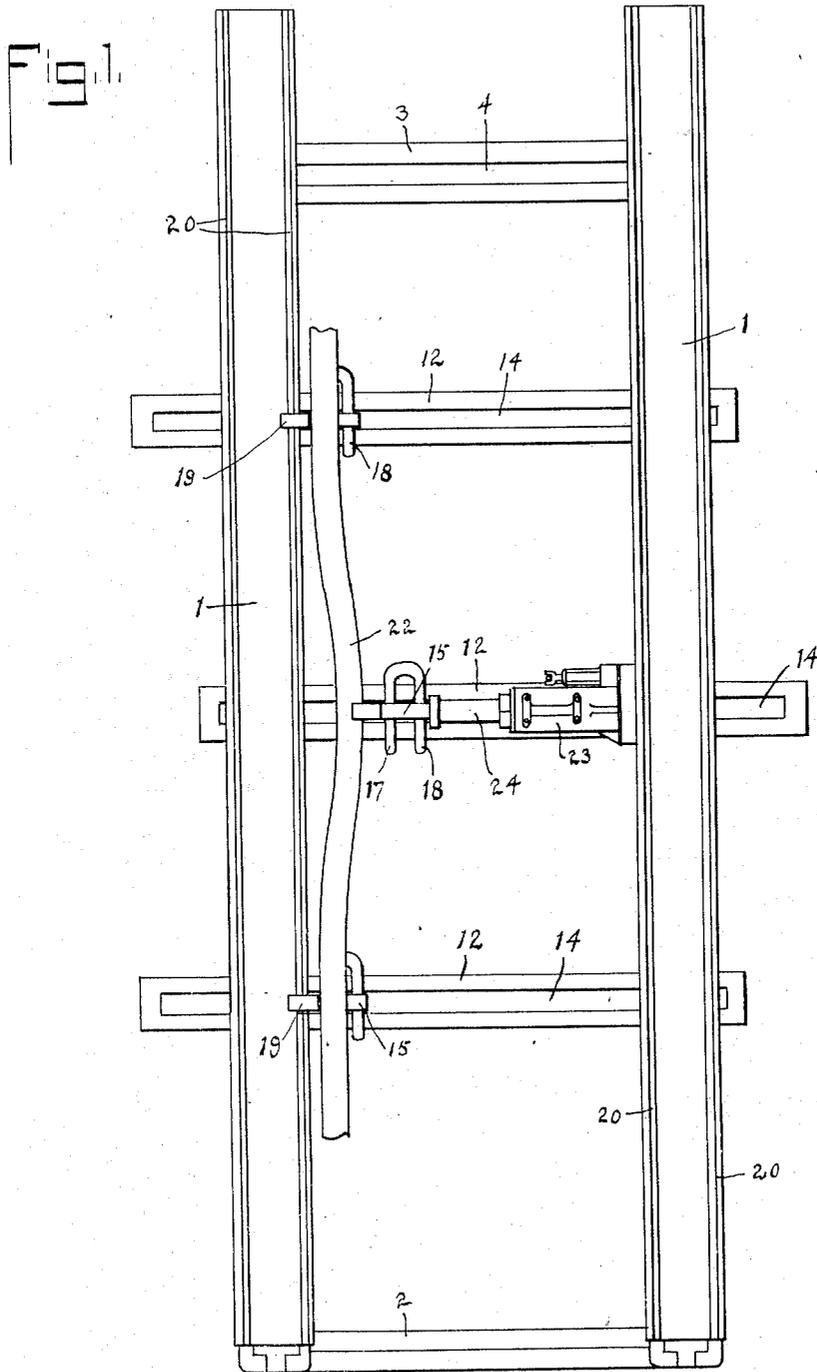
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1,907,925

AUTOMOBILE FRAME STRAIGHTENING MACHINE

Filed May 4, 1931

3 Sheets-Sheet 1



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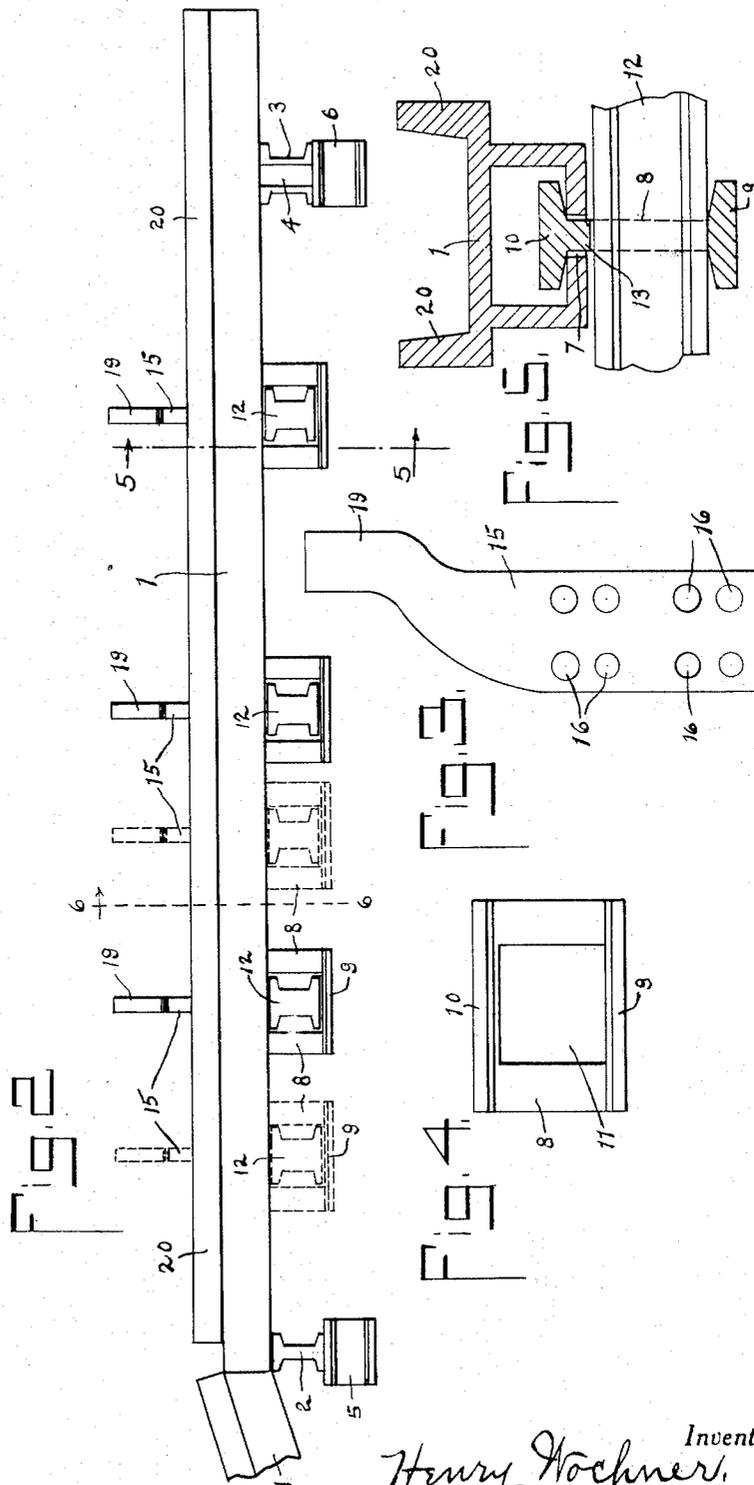
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AUTOMOBILE FRAME STRAIGHTENING MACHINE

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3 Sheets-Sheet 2



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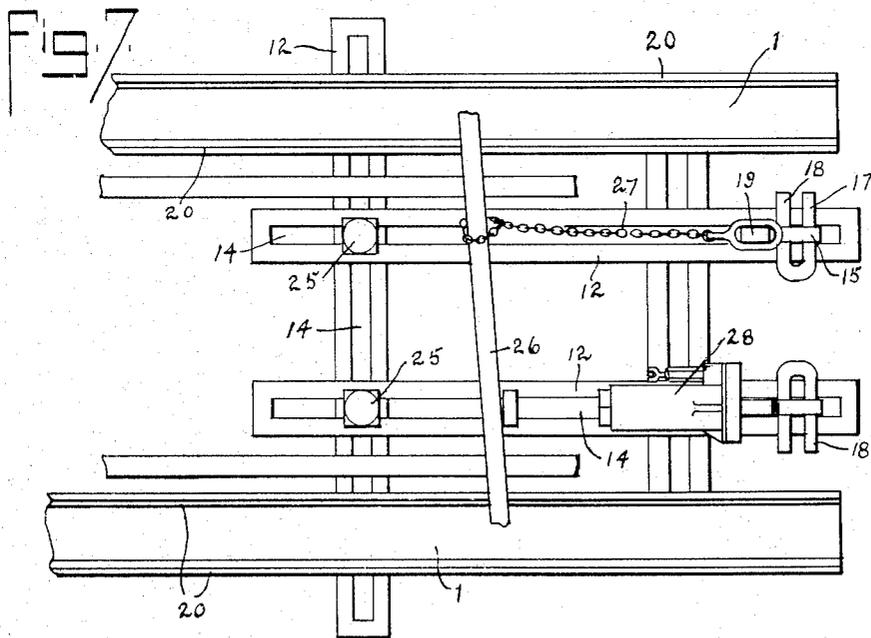
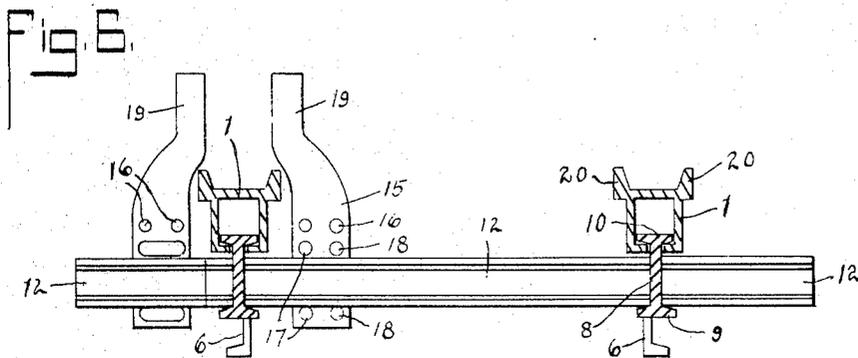
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AUTOMOBILE FRAME STRAIGHTENING MACHINE

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3 Sheets-Sheet 3



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UNITED STATES PATENT OFFICE

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AUTOMOBILE FRAME STRAIGHTENING MACHINE

Application filed May 4, 1931. Serial No. 534,889.

My invention has reference to an automobile frame straightening machine, and has for its purpose to increase the efficiency and facility of operation of such machines. By its use any part of the frame of a motor vehicle can be restored to a perfect condition, after having been bent or twisted out of place.

The invention embraces a main frame, upon which the vehicle to be operated on may be positioned, and a system of clamps capable of adjustment laterally and longitudinally of said frame, to cause an engagement of the clamps with the parts to be corrected, said clamps being usable with a jack or other power exerting device for straightening the frame parts. Said clamps are also capable of a varied positioning, so that they can be applied to the side pieces of a frame, or to the end pieces thereof, in correcting what is known as a diamond distortion of the frame. Means are also provided for vertical adjustment of the clamping elements, to conform them to the height of the faulty part. The invention is designed chiefly for the straightening of parts by movements in a horizontal plane, but adaptations can be made which will permit of the straightening of parts vertically.

Another feature of the invention consists of a means for locking the clamp-bearing members from movement, after an adjustment in the position thereof, accompanied by a separate means for engagement of the clamping elements with their supports automatically, so that they are locked in position thereon.

The above named, and other features and advantages of the invention will more fully appear from the following specification, taken in connection with the accompanying drawings, in which:—

Fig. 1 shows the invention in plan view.

Fig. 2 is a side elevation thereof.

Fig. 3 is a detail of one of the clamping elements.

Fig. 4 is a detailed side view of one of the hangers 9.

Fig. 5 is an enlarged cross-section thereof on the broken line 5—5 of Fig. 2,

Fig. 6 is a cross-section on the line 6—6 of Fig. 2.

Fig. 7 is a fragmentary plan view showing a different arrangement of the parts.

The frame of the machine is formed of a pair of hollow rails 1, spaced apart and united at one of their ends by a cross-beam 2, and at their opposite ends by a cross-beam 3, having a longitudinal channel 4. The beam 2 is supported by a pair of channel-plate feet 5 and the beam 3 is mounted on similar feet 6, whereby the rails are positioned at a height above the floor affording clearance for parts of the machine which operate below said rails.

The lower plates of said rails are provided with longitudinal channels 7, in which are movable the vertical web portions 8 of pairs of hangers 9, the upper bars 10 of which are slidable in said rails. The hangers are provided with openings 11 in which are supported cross-beams 12. The lower faces of the bars 10 are beveled slightly and depending centrally therefrom is a horizontal rib 13 of the web 8. When the hangers are in a normal position the beams 12 are slidable freely therein, for purposes of adjustment, but by rocking the hanger to one side or the other the beam is gripped tightly between the lower bar of the hanger and the rib 13, locking the beam from movement longitudinally. This can be accomplished by pushing the lower part of the hanger 9 inwardly, and if the hangers at both ends of a beam are rocked in the same direction they will counteract each other, and prevent any movement of the beam to release itself. The purpose of this will be more fully pointed out hereinafter.

The cross-beams 12 are provided with longitudinal channels 14, in which are supported clamp-posts 15, by means of pairs of perforations 16 in the lower parts of said posts, containing pins 17 and 18, preferably in U-bolt formation, as shown, so that a pair of the pins can be inserted or withdrawn as a unit. One pair of said pins is positioned above the cross-beam 12 and another pair beneath the same, with sufficient space between said pairs to permit of the post being moved slidably along the beam. In the event of the exertion of force against the upper part of the post,

however, there is a tendency to tip such post, causing the beam 12 to be gripped between one of the pins 17 above the beam and one of the pins 18 below the same, or the reverse, depending upon which way the post is tipped. This operates to lock the post from further movement along the beam. The posts 15 are provided with additional pairs of openings 16 to allow for a vertical adjustment of said post with relation to the beam. Said posts are also provided with reduced upper end portions 13, offset from the body of the post, so that the same may be positioned partly above the rail if desired, as shown in Fig. 6, to accommodate frames of extra width. It is obvious that a greater spacing can be secured between the upper parts 19 of a pair of the posts 15 supported between the rails 1 than between the broader portions of said posts. The curved portion of the post also provides an anchorage for a chain or cable for connection with a frame, in holding the same against the force of a jack supported on the beam 12.

The upper plates of the rails 1 form tracks for the wheels of a motor vehicle, flanges 20 being provided along the sides of said rails to form guides for the wheels. Inclined portions 21 forming extensions of the rails are also supplied for the convenient ascent or descent of the vehicle.

In Fig. 1 is indicated a portion of the side-piece 22 of a vehicle frame, engaged at one side by a pair of the posts 15, and at the other side by one of said posts, at a point midway the other two. Supported on the middle beam 12 is a power jack 23, the base of which is against the rail 1 and the piston 24 of which is engaged with the central post 15. The force of the jack is thereby applied to said post to cause it to slide along the beam 12, which beam, as well as the other beams 12 are locked from movement for the bending operation. The pressure of the post 15 against the frame 22 will cause the same to bear against the upper ends of the end posts 15, tending to tip said posts, and locking them from movement on the beams 12, in the manner hereinbefore set forth. The movement of the central post 15 continues until the frame is straightened. A different arrangement of the clamp posts can be had, either with the jack exerting its force against one of the end posts, or by the use of two jacks operating against two of the posts. Changes of the kind mentioned might be required where the bend in the frame was outwardly instead of inwardly.

The cross-beams 12 are of sufficient length to be caused to extend beyond the frame of the machine on one side or the other, and provide a support for one of the clamp posts on the outside of the rail, as shown in Fig. 3. The position of any one or more of said posts can be reversed, for convenience in ap-

plying the same to the part to be corrected.

When a frame is to be straightened the clamp posts are first removed and the vehicle run up on the rails. The posts are then replaced and engaged with the faulty part of the frame in the manner described, and the force of the jack applied thereto. It will be evident that the work can be accomplished without removing the wheels of the vehicle or disconnecting any of the parts thereof.

In Fig. 7 is shown a different use of the machine, wherein two of the beams 12 are removed and supported on the remaining beam 12 and on the beam 3, the beams that are turned in position being secured to the other beam 12 by means of bolts 25 passing downwardly through the channels 14. In this arrangement the device can be employed for straightening a frame that is out of true, as indicated at 26, one end of the part 26 being connected with one of the posts 15 by a chain 27, and a jack 28 being positioned between the other post 15 and the frame piece 26. Upon force being exerted on the frame by the jack the frame is restored to its proper position.

The stationary cross-beam 3 is adapted for the support of tools for use in straightening the axle of an automobile which is supported on the rails 1, and can be made convenient use of, either independently of the clamping devices set forth herein, or in conjunction therewith.

What I claim, and desire to secure, is:

1. In a frame straightening machine, a pair of spaced-apart rails and supports therefor, said rails providing tracks for the wheels of a motor vehicle, a plurality of cross-beams supported by said rails capable of adjustment in position longitudinally of said rails and relatively to each other and shiftable in position laterally thereof, and frame-engaging elements on said cross-beams and capable of adjustment longitudinally thereof.

2. In a frame straightening machine, a pair of hollow rails and supports therefor, flanges on said rails forming tracks on the upper faces thereof, hangers slidable in said rails, cross-beams supported in said hangers, and provided with longitudinal channels, and frame-engaging devices mounted in said cross-beams and capable of movement longitudinally thereof.

3. In a device of the class described, a pair of rails and supports therefor, tracks on said rails, hangers slidably connected with said rails, cross-beams supported by said hangers, frame-engaging devices slidably mounted on said cross-beams, and a force-imparting device positioned between one of said rails and one of said frame-engaging devices.

4. In a device of the class described, a pair of spaced rails and supports therefor, tracks on said rails, a stationary cross-beam beneath said rails near one end thereof, pro-

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vided with a longitudinal channel, auxiliary
channeled cross-beams intermediate the ends
of said rails, means for the support of said
last-named cross-beams capable of adjust-
5 ment longitudinally of said rails, and frame-
engaging devices supported slidably in said
auxiliary cross-beams.

5. In a device of the class described, a pair
of rails and tracks thereon, pairs of hang-
10 ers supported by said rails, and capable of
a swinging movement laterally of said rails,
cross-beams supported by said pairs of hang-
ers and engageable by parts of said hangers
to hold the same from movement, and posts
15 slidably mounted on said cross-beams.

6. In a device of the class described, a pair
of rails and supports therefor, tracks on said
rails, pairs of hangers supported on said rails
and having a slidable relation therewith,
20 cross-beams supported by said hangers, and
posts slidably mounted on said cross-beams,
and engageable therewith upon the appli-
cation of force to the upper ends of said posts.

7. In a device of the class described, a
25 frame provided with a pair of side rails, chan-
neled beams supported transversely of said
rails, posts mounted slidably on said beams,
and locking elements carried by said posts,
above, and below the beams, and adapted to
30 automatically engage said beams upon force
being applied to said posts at a distance from
the beams.

In testimony whereof I affix my signature.
HENRY WOCHNER.

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