

March 13, 1934.

J. LISTON ET AL

1,951,096

DOUBLE ACTING JACK

Filed July 12, 1933

3 Sheets-Sheet 1

Fig. 1.

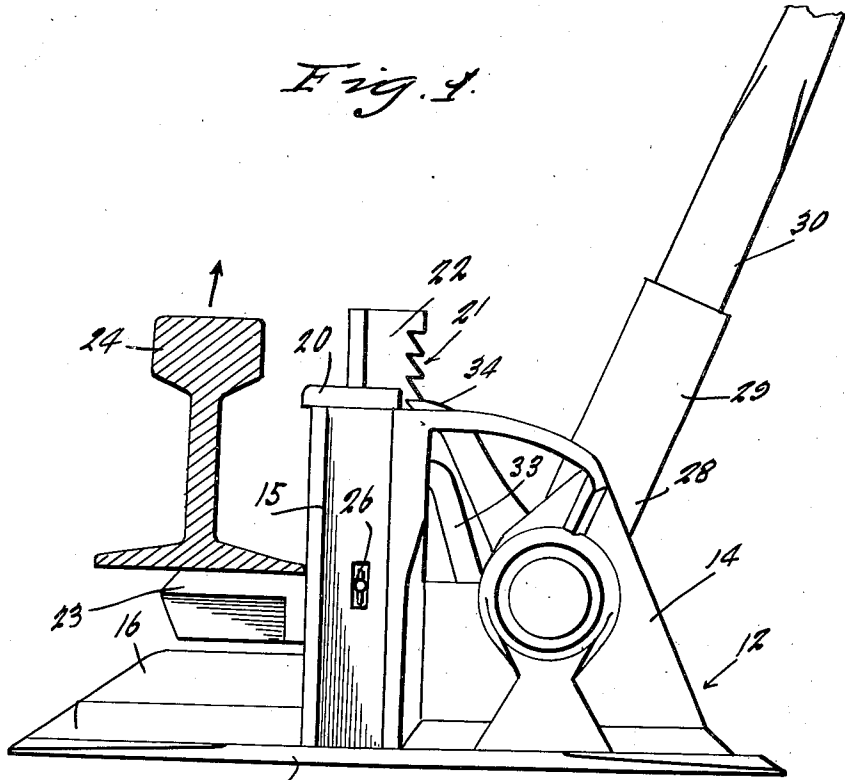


Fig. 6.

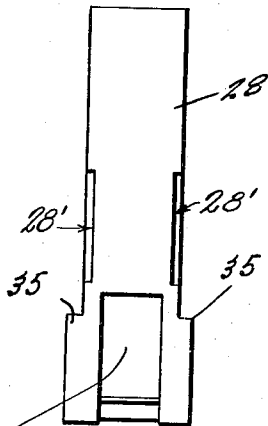
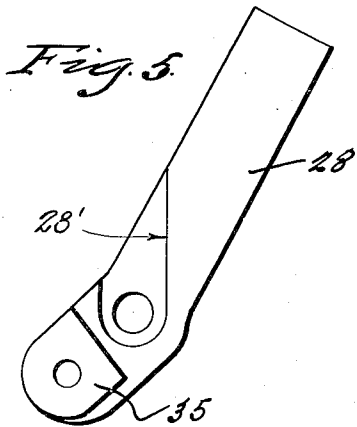
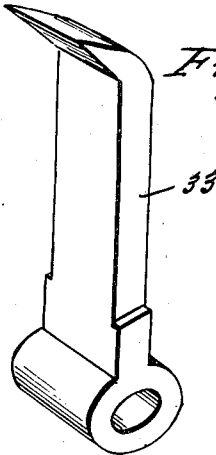


Fig. 7.



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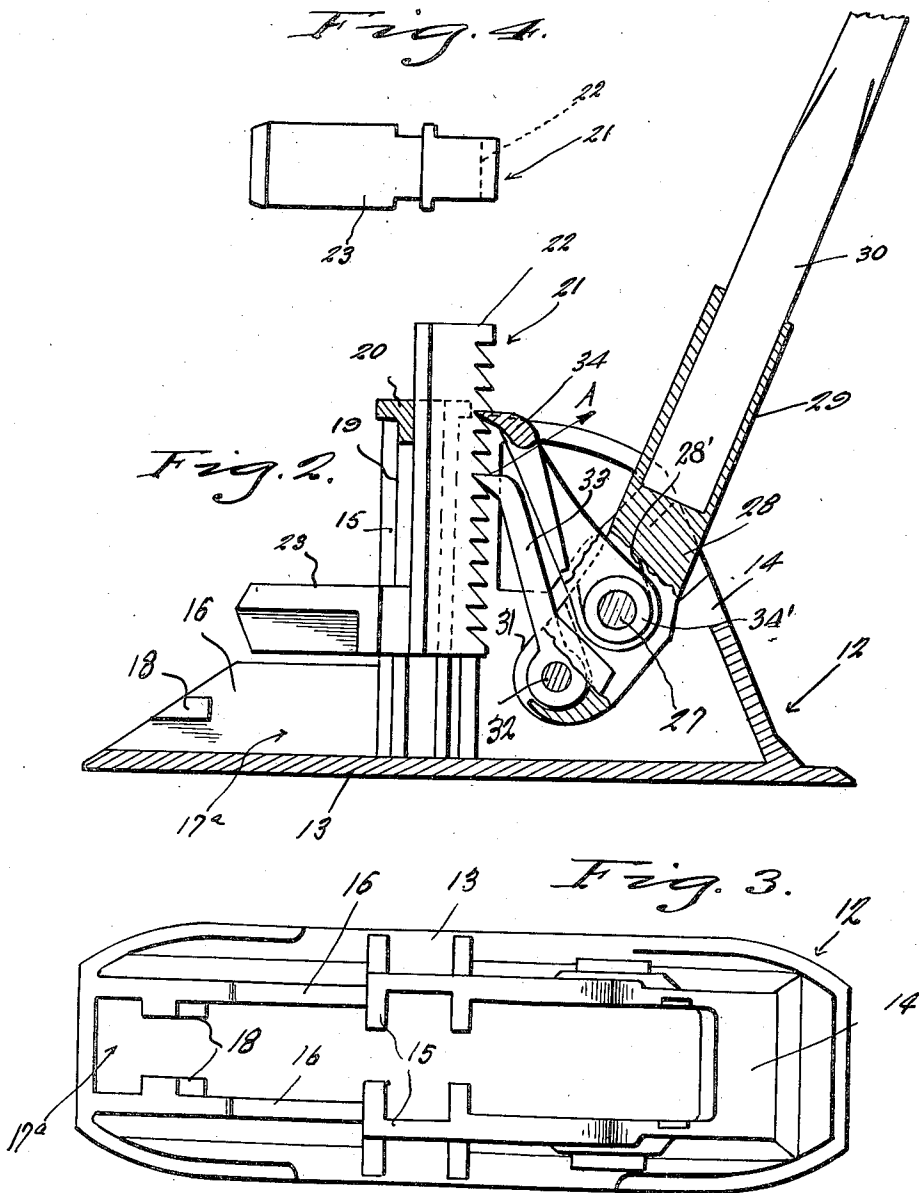
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3 Sheets-Sheet 2



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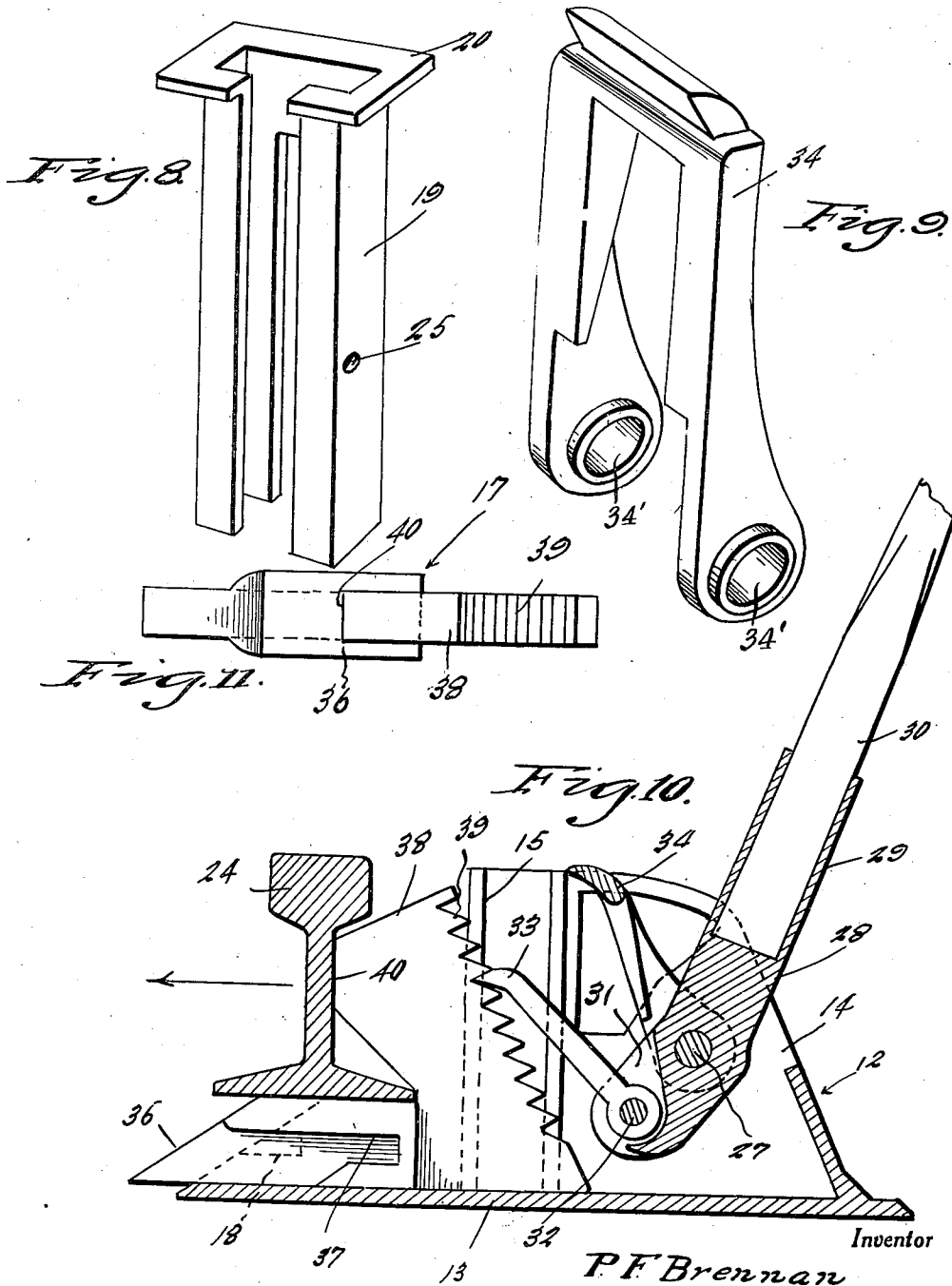
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DOUBLE ACTING JACK

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3 Sheets-Sheet 3



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UNITED STATES PATENT OFFICE

1,951,096

DOUBLE ACTING JACK

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Application July 12, 1933, Serial No. 680,132

3 Claims. (Cl. 254—108)

This invention relates to an improved jack which is especially, but not necessarily, adapted for use in handling railway track rails, the same being useful in one capacity as a lifting jack and 5 having the additional purpose and function of a rail adjusting and alining device.

The principal feature of construction is predicated upon the adoption and special adaptation of the jack to serve in this dual capacity, and the principal point of novelty is found in the special 10 construction of the base and a pair of interchangeable rail handling units for selective use in conjunction with the base, one of the units operating as an ordinary lifting or hoisting member and the other one as a slidable thrust device 15 for moving and alining a rail section with a companion section.

A second feature is predicated upon the special duplex alternating pawl arrangement and the operating lever for said pawl wherein said 20 lever is mounted to function properly by short stroke movement.

A still further feature of construction is predicated upon the special pawl and lever construction 25 wherein one pawl is swingable through the other one for releasing, and the latter pawl released by special trip shoulders formed as an integral part of the adjacent portion of the lever.

Other features and advantages will become 30 more readily apparent from the following description and drawings.

In the drawings:

Figure 1 is a side elevational view of a jack constructed in accordance with the present invention 35 showing the manner in which it is set up to serve as a rail lifting or hoisting jack.

Figure 2 is a sectional view through the assembly illustrated in Figure 1.

Figure 3 is a top plan view of the one-piece or 40 specially cast mechanism base.

Figure 4 is a top plan view of the L-shaped lifting unit, per se.

Figures 5 and 6 are detail views of the special lever these figures being drawn on a small scale.

Figure 7 is a perspective view of the secondary 45 or small pawl.

Figure 8 is a perspective view of a removable bushing serving as a space filler and adapter for the L-shaped lifting unit.

Figure 9 is a perspective view of the U-shaped 50 primary or larger pawl.

Figure 10 is a view similar to Figure 2 showing the L-shaped member removed and the interchangeable slidable thrust unit substituted 55 therefor.

Figure 11 is a top plan view of the so-called slidable thrust unit.

Referring now to the drawings, wherein the preferred embodiment of the invention is pictorially illustrated, it will be observed that the 60

numeral 12 designates the base. As before implied, this is a one-piece construction, and as shown in Figures 2 and 10 it embodies a horizontal base plate 13 of appropriate shape and proportion, on one end of which is a hollow 65 mechanism enclosure or mounting 14 in which the lever and pawl mechanism is mounted and shielded.

Rising from the central portion of the base 70 and arranged in opposed parallelism are channel-shaped uprights 15 (see Figure 3) which constitute guide and retention members. Extending longitudinally and in spaced parallelism are up- 75 standing flanges 16 which co-operate with the base plate in defining a slide-way for the special thrust unit 17 (see Figures 10 and 11). This slideway is conveniently designated by the reference character 17a and for a purpose hereinafter described, it will be noticed that the flanges 80 16 carry opposed stabilizing and maintenance lugs 18.

We next call attention to the numeral 19 in Figure 8 which designates a vertically elongated box-like adapter which is insertible into the guide 85 channels 15 and which has a stop flange 20 at its top resting down on the guide as represented in Figure 1. This unit is in the nature of a bushing and space filler so as to conveniently accommodate the correspondingly sized L-shaped 90 hoisting or lifting unit 21 (see Figure 4).

The latter unit embodies a toothed rack 22 and a horizontal integral foot 23 to accommodate the rail 24 in the manner shown in Figure 1. Needless to say, the side portions of the 95 bushing are provided with screw-threaded holes 24 to accommodate appropriate fastening means (26) as shown in Figure 1. This provides the detachable maintenance means for holding the bushing or adapter in the guides 15.

We next call attention to Figures 2 and 10 in 100 which it will be observed that the numeral 27 designates a fulcrum or pivot pin supported in the enclosure or mounting 14 to accommodate the short stroke lever 28. It is to be observed that the lever is pivoted at a point intermediate 105 its ends and the upper end portion is formed into a socket 29 to accommodate an appropriate handle 30. The lower end portion is provided with a recess or pocket 31 containing a pivot 110 pin 32 on which the relatively small secondary pawl 33 is mounted.

The U-shaped primary pawl, which is considerably larger in proportion, is differentiated by the numeral 34 and this is confined in the enclosure 14 and has its arm portion rockably 115 mounted on the fulcrum pin 27. The free swingable end portions of the pawls are appropriately constructed to successively or alternately engage the teeth of the rack bar 22. Thus by rocking 120

the handle 30 back and forth the pawls automatically function to raise the unit 21.

As shown in Figure 9, the ends of the limbs of the pawl 34 have the tubular side parts 34' thereon through which the pivot pin 27 passes and the inner projecting ends of these parts 34' engage in the grooves 28' formed in the sides of the lever 28, it being seen that the lever shown in Figures 5 and 6 is drawn to a smaller scale than the pawls 33 and 34, as shown in Figures 7 and 9.

In connection with this pawl and lever construction, we want to call attention to Figure 5, wherein it will be observed that the recessed end portion is formed with a pair of releasing shoulders 35 which when swung into engagement with the arms of the U-shaped pawl 34 rock this pawl bodily from engagement with the rack teeth so as to allow the unit 21 to drop down to its initial lowered position rapidly.

We want to call attention to Figure 2, wherein it will be observed that the pawl 33 is proportioned to swing through and beyond the pawl 34 in the direction of the arrow A. Thus, the small pawl 33 can be swung by hand or instrument from its engaged position so that it will be out of the way and by engaging the shoulders 35 with the pawl 34, the latter pawl can be disengaged permitting the unit 21 to drop down by gravity rapidly and without interference from the pawl. This is a novel pawl releasing arrangement.

By removing the unit 21 and its adaptation bushing 19, the substitute thrust or slide unit 17 may be placed in position as shown in Figure 10. Thus the same base serves to accommodate both units. The unit 17 comprises a suitably proportioned rail seating foot 36 which foot is formed on opposite sides with keeper grooves 37 to accommodate the maintenance or keeper lugs 18. The unit 17 also includes an especially shaped inclined rack bar 38 with an inclined row of teeth 39 to accommodate the aforesaid pawls. This bar is also formed with an abutment 40 which is cut off at the proper angle to assume appropriate perpendicular disposition when placed against the web of the rail. This abutment obviously overlies the foot 36. Thus the features 36 and 38 are appropriately shaped and arranged to permit the unit to serve as a thrust member. By simply actuating the lever in the usual way, the pawls engage the teeth 39 forcing the entire unit bodily outwardly through the slideway 17 whereby to permit the rail to be carried thereon and adjusted into an alined position with respect to a companion rail section.

Summarizing the structural features which serve to distinguish and individualize the jack, it will be observed that the base 12 is of peculiar and original construction. In other words, it is characterized by the base plate 13, the especially designed mounting and enclosure 14 to accommodate the lever and pawl. Then it has a slideway 17a at one end with proper confining flanges 16 and keeper lugs 18 for effective co-operation with

the especially designed thrust unit 17. Then too, the channel-shaped uprights or guides 15 serve to accommodate the unit 17 as well as the adapter 19 and the L-shaped unit 21 which is usable in connection with said adapter.

All of these parts have been carefully selected, balanced, and otherwise disposed to promote efficiency, dependability, and to otherwise fulfill the requirements of a structure of this class.

A careful consideration of the foregoing description in conjunction with the illustrative drawings will enable the reader to obtain a clear understanding of the purpose, features and advantages, the explicit construction, and the invention as hereinafter claimed.

It is to be understood that minor changes in shape, size, relative proportions, and materials may be resorted to in practice without departing from the spirit of the invention or the scope of the invention as now claimed.

We claim:

1. A double-acting jack of the class described comprising a base including a base plate, a mechanism enclosure and mounting at one end of the base, spaced parallel flanges at the opposite end portion of the base co-operating therewith and forming a trough-like guideway, a lever pivotally mounted in said enclosure, and main and supplemental pawls co-operable with the lever, and a slidable thrust unit having a part engaging the guideway, said unit embodying a rail accommodation foot and an integral diagonally inclined thrust bar engageable with the web of the rail and formed along one edge with rack teeth with which the aforesaid pawls are alternately co-operable.

2. In a jack construction of the class described, a base embodying opposed vertical guides, a lifting member co-operable with said guides and including a perpendicular toothed rack bar, a horizontal fulcrum pin mounted on the base, a lever fulcrumed between its ends on said pin, the lower end portion of said lever being provided with a secondary pivotally mounted pawl, a primary U-shaped pawl having its arms rockably mounted on said fulcrum pin, that portion of the lever adjacent the pivoted ends of said arms being provided with outstanding release shoulders engageable with said arms for disengaging said primary pawl from the teeth of the rack bar.

3. In a structure of the class described, a base comprising a plate provided at one end with spaced parallel upstanding flanges defining a guideway, lugs on the inner faces of the flanges constituting keepers, a special slidable thrust unit comprising a rail seating foot, said foot being formed on opposite sides with guide grooves to accommodate said keepers, said unit also including an inclined web abutment bar having inclined rack teeth disposed at an obtuse angle with respect to the base plate, a lever pivotally mounted on said base and a pawl associated with said lever and co-operable with said rack teeth.

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