March 16, 1926. 1,577,055

G. Z. BERTSCHY

COMBINATION PUSHING AND PULLING JACK

Original Filed Dec. 6. 1920

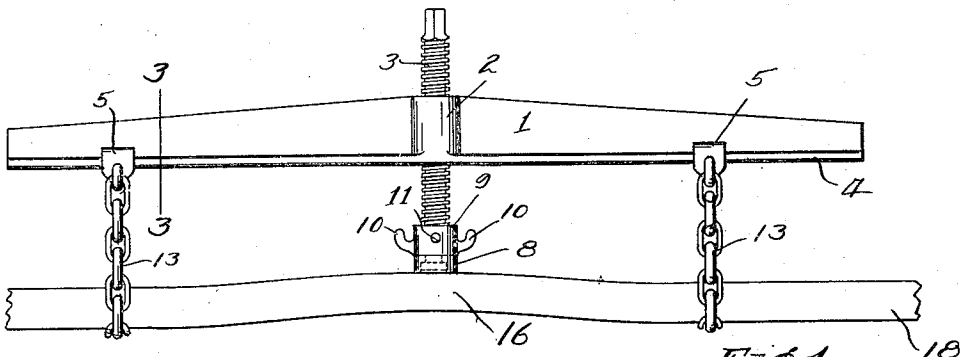


Fig. 1

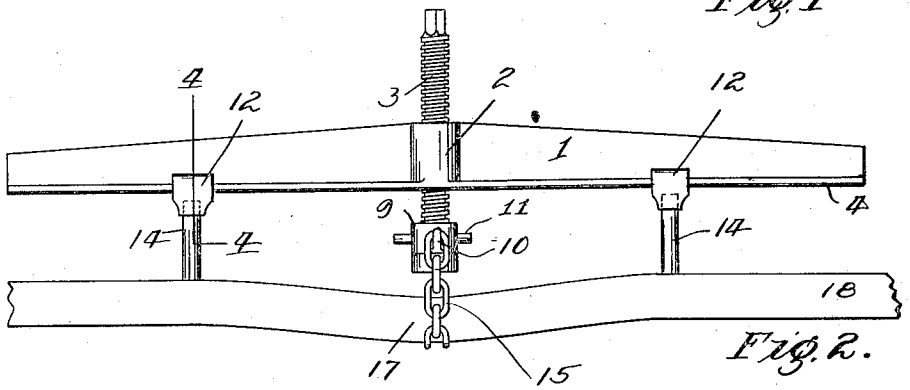


Fig. 2.

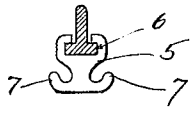


Fig. 3

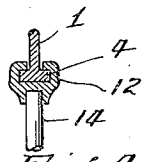


Fig. 4.

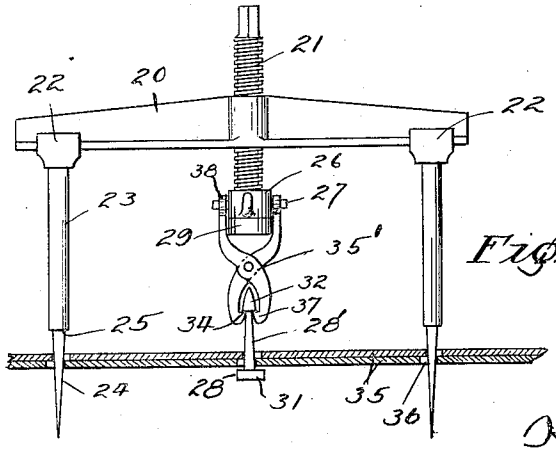


Fig. 5

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UNITED STATES PATENT OFFICE.

GEORGE Z. BERTSCHY, OF OAKLAND, CALIFORNIA, ASSIGNOR TO JESSE WELDON O'NEILL, OF OAKLAND, CALIFORNIA.

COMBINATION PUSHING AND PULLING JACK.

Refiled for abandoned application Serial No. 428,468, filed December 6, 1920. This application filed March 30, 1925. Serial No. 19,534.

To all whom it may concern:

Be it known that GEORGE Z. BERTSCHY, a citizen of the United States, residing at Oakland, in the county of Alameda and State of California, has invented certain new and useful Improvements in Combination Pushing and Pulling Jacks, of which the following is a specification.

The present application is refiled for my abandoned application, Serial No. 428,468, filed December 6, 1920, and relates to improvements in pushing and pulling devices and has particular reference to a form of device in which a force is applied at a central point of a structure and the reaction taken care of at two points spaced on each side of the point of application. The force is applied by means of a screw either as a push or pull and my device is constructed so that the reactions may be correspondingly taken care of by tension or compression members.

My device is particularly adapted for straightening or bending beams, rails, axles and the like. A slight modification of the device is used so as to bring the holes of several overlapping plates into alignment. For this purpose the reaction members are made in the form of long, tapered points in the manner of the hammer driven, drift pins, while a special form of pin is provided for the central force applying member. My invention aims to provide a form of tool which may be applied either for compression or tension and is thus adapted to a wide variety of uses.

With these and other objects in view, my invention consists in certain novel features of construction, combinations and arrangements of parts herein illustrated and more particularly pointed out in the appended claims.

Reference being had to the accompanying drawings forming a part of this specification:

Figure 1 is a view in elevation of my improved device showing the power applying member acting in compression and the reaction members acting in tension;

Fig. 2 is a similar view showing the power applying member acting in tension and the reaction members acting in compression;

Fig. 3 is a view in section on the line 3—3 of Figure 1.

Fig. 4 is a view in section on the line 4—4 Fig. 2;

Fig. 5 is a view in elevation of a modified form of the device used for bringing the holes of overlapping plates into alignment.

Referring to corresponding parts in the several views by the same numerals of reference: 1 denotes a beam having the enlarged central portion 2 through which extends a screw thread hole for engagement with the threaded screw 3. One edge of the beam is provided with laterally extending ribs 4 which form guides for the reception of the holding devices. When the screw is used in compression the slidable members 5 are engaged on the guides 4. These members comprise a block having the slots 6 for engagement with the ribs 4 and outwardly extending hooks 7 for engagement by a cable, chain 13 or similar holding means.

The outer end of the screw is provided with a swiveled head 8 and above the latter is a collar 9 which fits freely over the outer diameter of the screw. The collar 9 being freely mounted on the screw 3 permits the collar to wabble or tilt to one side or the other when the force exerted on one of the lugs 10 or pins 11 is greater than on the other of the pins or lugs so that the screw would not be bent under such a condition. This collar is provided with laterally projecting lugs 10 and also with pins 11. The former are used for engagement with a cable or chain and the latter is used for engagement with the holding device illustrated in Figure 5. In addition to the members 5 there are provided sliding blocks 12 which are provided with the recesses for holding the struts 14. In the modified form shown in Figure 5 the beam 20 and screw 21 are constructed the same as the main form illustrated in Figure 1, the screw having a swiveled head 29 and collar 26 with pins 27. Sliding blocks 22 used on this form are provided with extensions 23 which terminate in long conical points 24. Shoulders 25 are provided between this point and the shank 23 and serve to limit the depth to which these members may be driven into the holes. The overlapping plates are denoted by 35 and the holes therein by 36. Engagement with the screw is made by passing a bolt 28 through holes in the plate, this bolt be-

ing provided with a head 31, a tapered body 28′ having a small pointed head 32 which forms a shoulder 34 in connection with the body. This shoulder is engaged by a sort of tongs arrangement consisting of the pivotally mounted crossed levers 35′ having the hook ends 37 for engagement with the shoulder. The upper ends of the arms are provided with eyes 38 which fit over the pins 27.

When my device is used as shown in Figure 1, a strap, chain or other holding means is attached to each of the adjustable blocks 5 and engaged back of the structure 18. The latter is here shown as being buckled at 16, the curve of which it is desired to straighten. For this purpose the tension devices are located, one on each side of the curved portion and the end of the screw applied at approximately the center thereof. Then, by turning the screw so as to force it toward the structure 18 the latter will be pressed outwardly so as to straighten the buckled portion.

It is at times inconvenient to locate a device of this character on the convex side of the bent structure or the structure may be required to be bent convexly. In these cases, the device is used as shown in Figure 2. The blocks 12 are then used with the struts 14, the latter being placed at the end of the buckled portion and a chain or other pulling device 15 engaged over the hooks 10 or pins 11. The screw is then turned in the opposite direction from that just described which causes the collar to be moved towards the beam 1. The collar seats on the back of the swiveled head and does not rotate with the screw. In this manner the buckled portion of the beam may be brought into alignment with the straight portions thereof or if straight bent convexly.

As used with plates for bringing the holes into alignment the pin 28 is inserted through holes in the overlapping plates and engaged by the tongs, then the blocks 22 are adjusted to bring the tapered points 24 adjacent another set of holes which are spaced approximately equal distances on each side of the holes through which the pin 28 passes. Then, by turning the screw 21 so as to withdraw it into the beam, the pins 24 will be forced into the holes in one direction and the pin 28 in the opposite direction. This action continues until the head 31 seats against the inside of the plates and the shoulders 25 against the outside of the plates at which time the holes will be practically in alignment. Other attachments may be used with this device which will adapt it to a wide variety of uses.

I claim:

1. A pulling and pushing jack comprising a beam, holding blocks mounted on said beam, a screw extending therethrough, a swiveled head on the screw, a loose tiltable collar seated on the back of the head and laterally extending means on said collar for the attachment of pulling devices.

2. A device of the character described comprising a beam, holding blocks for the attachment of reaction means adjustably mounted on said beam, a screw in threaded engagement with the beam at the center thereof, a swiveled head on said screw for exerting a compressive action, a collar tiltable on the back of said head, and means on said collar for attaching tensioning devices.

3. A device of the character described comprising a beam, guides formed along one edge of the beam, blocks slidably held by said guides, reaction devices held by said blocks, a screw in threaded engagement with the beam, a swiveled head on said screw, a collar on the back of the head and holding means extending laterally from said collar.

4. A device of the character described comprising a beam, laterally extending flanges formed on one edge of said beam, blocks having slots for engagement with said flanges, reaction devices held by said blocks, a screw in threaded engagement with the beam, a swiveled head on said screw, a collar on the back of the head and holding means extending laterally from said collar.

In testimony whereof I affix my signature.

GEORGE Z. BERTSCHY.