July 1, 1924. 1,499,560

P. O. STANGELAND

JACK

Filed Sept. 29, 1922

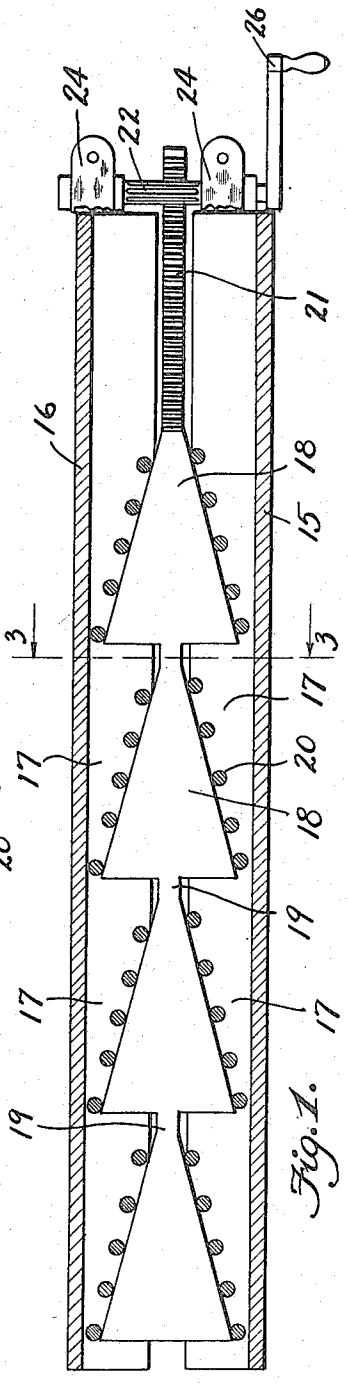


Fig. 1.

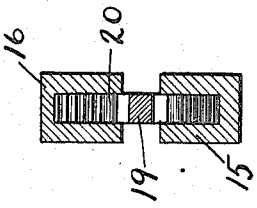


Fig. 3.

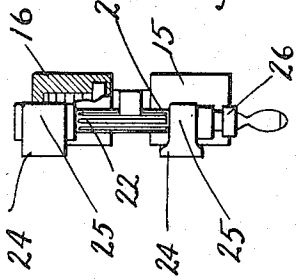


Fig. 2.

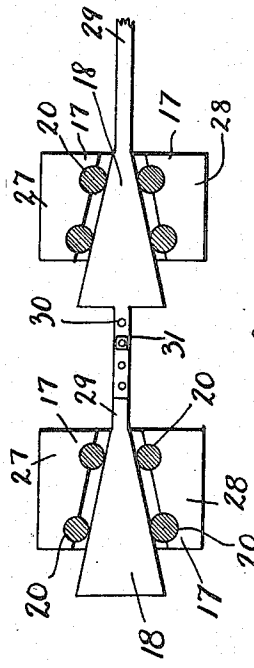


Fig. 4.

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UNITED STATES PATENT OFFICE.

PEDER O. STANGELAND, OF LOS ANGELES, CALIFORNIA.

JACK.

Application filed September 29, 1922. Serial No. 591,284.

To all whom it may concern:

Be it known that I, PEDER O. STANGELAND, a citizen of the United States, residing at Los Angeles, in the county of Los Angeles and State of California, have invented new and useful Improvements in Jacks, of which the following is a specification.

My invention relates generally to jacks, clamps or similar devices which are adapted to mechanically effect the lifting, depression, contraction or expansion of one element with respect to another.

It is a purpose of my invention to provide a jack or clamp of the above described character which in addition to being of extremely simple, durable and efficient construction is capable of effecting, with the least possible friction and the minimum consumption of power, the lifting of relatively heavy objects, such as automobiles, houses and the like, and the secure clamping of objects such as doors, window frames and the like.

Although I have herein shown and described only one form of jack embodying my invention, and will point out the novel features thereof in claims, it is to be understood that various modifications and changes may be made without departing from the spirit of the invention and the spirit and scope of the appended claims.

In the accompanying drawings,

Figure 1 is a view showing in longitudinal section one form of jack embodying my invention;

Figure 2 is a view showing in end elevation the jack shown in Figure 1;

Figure 3 is a transverse sectional view taken on the line 3—3 of Figure 1;

Figure 4 is a longitudinal vertical sectional view of a modified form of jack embodying my invention.

Referring specifically to the drawings, my invention, in its present embodiment, comprises a pair of jaws or sections 15 and 16, which are shown as substantially U-shaped in cross section, with the open sides thereof disposed in confronting relation to each other. These jaws 15 and 16 may be formed of any suitable material, such as wood, metal or the like, and of any desired length to accommodate as many expanding members as is deemed necessary for any particular use to which the jack is adapted to be put. As shown in Figure 1, the jaws 15 and 16 are provided interiorly thereof with tapered or wedge shaped cams 17 arranged at intervals along the length of the jaws and at corresponding points so as to dispose the cams of one jaw in confronting relation to the cams of the other jaw. Between each pair of cams of the jaws 15 and 16 is arranged a wedge shaped expanding cam 18, and the several cams comprised in the jack are connected to each other by means of extensions 19, as is clearly shown in Figure 1.

For the purpose of eliminating friction between the cams 17 and 18, rollers 20 are journaled in the sections and disposed within recesses formed in the cams 17 so as to have rolling contact with the edges of the cams 18. These rollers 20, as well as the cams 17 and 18, may be formed of any suitable material, such as wood, metal or the like, depending upon the particular purpose for which the jack is designed.

The foremost expanding cam 18 is provided with an extension formed with teeth on one face thereof to constitute a rack bar 21. The free end of this rack bar 21 projects to the adjacent end of the sections 15 and 16, where it is adapted to be engaged by the longitudinally extending teeth 22 of a shaft 23. This shaft may be supported for rotary movement in any suitable manner, either independently of the sections 15 and 16 or dependently thereof. In the present instance, I have shown bearing supports 24 secured to a suitable support, not shown, and provided with bearings 25 in which the shaft 23 is journaled. As shown, the teeth 22 of the shaft 23 extend from one bearing 25 to the other so as to allow of the necessary lateral shifting of the rack bar 21 during the expansion or contraction of the jaws 15 and 16. One end of the shaft 25 is provided with a crank 26 by means of which the shaft may be rotated in one direction or the other to effect actuation of the rack bar 21.

In practice, the jaws 15 and 16 of the jack may be associated with a stationary object or element and a movable object or element, or the two jaws may be interposed between two movable objects. In the first adaptation of my invention, that section engaging the stationary object or element obviously does not move so that the corresponding cams 17 form cam abutments for the expanding cams 18. With the other section

engaging the movable object, it will be clear that upon longitudinal movement of the expanding cams 18 in the direction of the shaft 23, these cams will operate with the cams 17 of both sections in effecting movement of the movable section to engage and move the object to the desired position. In this particular use of the jack, it is especially adapted for lifting heavy objects, such as vehicles, houses and the like, or the clamping of wood-working elements to each other, such as the sections of a door or window frame.

In the second adaptation of my invention, the two sections may be inserted between the sections of an object or between two objects for effecting separation thereof, and in this application of my invention it will be understood that the two sections 15 and 16 move outwardly from each other under the action of the cams 17 and 18.

Referring now to Figure 4, I have here shown another form of jack embodying my invention which consists of two or more elevating units, with each unit comprising an upper jaw 27 and lower jaw 28 in which are secured stationary cams 17, and rollers 20 arranged along the confronting edges of the cams in the same manner as the rollers 20 in Figure 1. Expanding and movable cams 18 are arranged for engagement with the rollers 20, and with each cam provided at its small end with an extension 29. The extension of one cam 18 is connected to the other cam by means of bars 30 provided at intervals with openings through any one of which extends a bolt 31.

By this arrangement it will be seen that one cam 18 is adjustably associated with the other cam to allow of the positioning of the elevating units at various distances apart. This form of jack is more particularly designed for use in the elevation of vehicles, and by virtue of the adjustability of one elevating unit with respect to the other, it will be clear that the two units may be arranged beneath the wheels or axles of vehicles of various wheel bases. By moving the cams 18 forwardly, the upper jaws 27 which contact with the vehicle are elevated to effect a lifting of the vehicle.

I claim as my invention:

1. A jack comprising a pair of U-shaped jaws arranged with the channels facing each other, a plurality of wedge shaped cams fixed in the channels and all pointing in the same direction, the cams of one jaw being directly opposite the cams of the other jaw, rollers journaled in the jaws along the faces of the cams, a plurality of movable wedge shaped cams connected together and engaging the rollers so that when the movable cams are forced one way the jaws will spread and when the movable cams are forced the other way the jaws will move towards each other and rack and pinion means for holding the jaws and moving the cams.

2. A jack of the character described comprising a pair of U-shaped jaws, stationary cams arranged in the channels of the jaws and at intervals along the length of the jaws, movable cams connected to each other and cooperating with the stationary cams to effect separation of the jaws, a rack bar connected to one of the movable cams, and a toothed shaft engaging the rack bar for moving the latter to effect movement of the cams.

3. A jack comprising elevating units, each of the units including stationary cams and movable cams, and means for extensibly connecting the movable cam of one unit with respect to that of the other unit whereby the two units may be positioned various distances apart.

4. A jack comprising a pair of U-shaped jaws, rollers journaled in the jaws, said rollers being arranged in groups with the rollers of each group defining a wedge in outline, and connected wedge cams between the jaws so as to engage the rollers, and rack and pinion means for moving the cams whereby they are caused to co-operate with the rollers in forcing the jaws apart.

In testimony whereof I have signed my name to this specification.

PEDER O. STANGELAND.