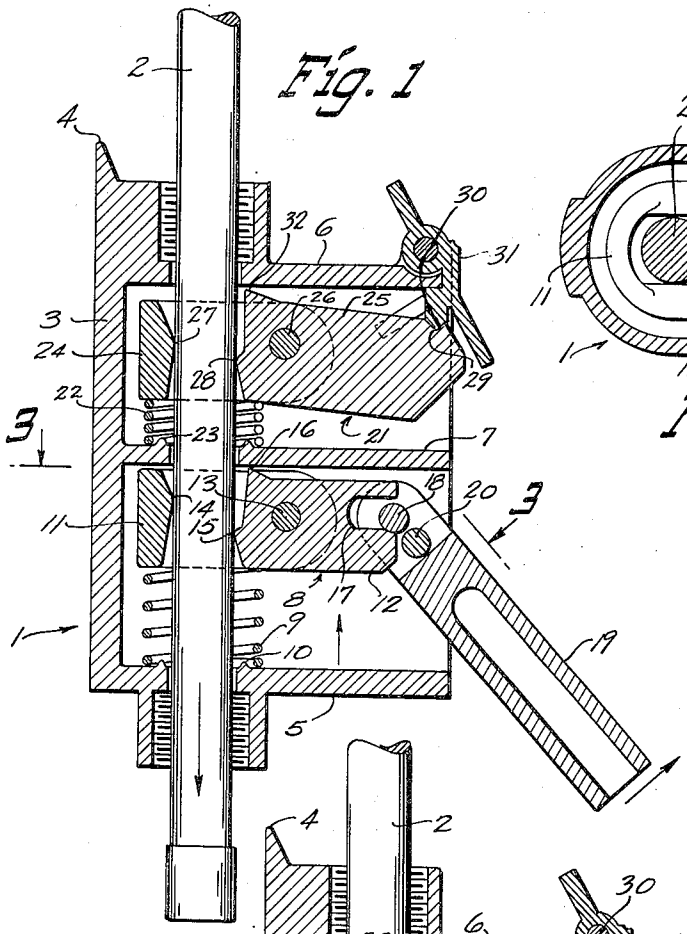
Jan. 9, 1951 E. J. LORD 2,537,839

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Filed Sept. 6, 1947 3 Sheets-Sheet 1

Fig. 1



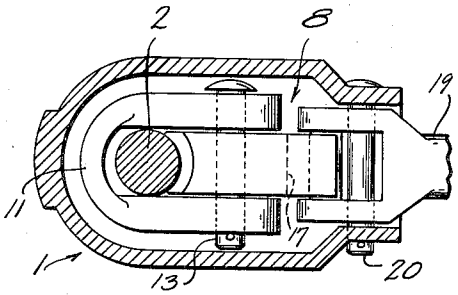




Fig. 3

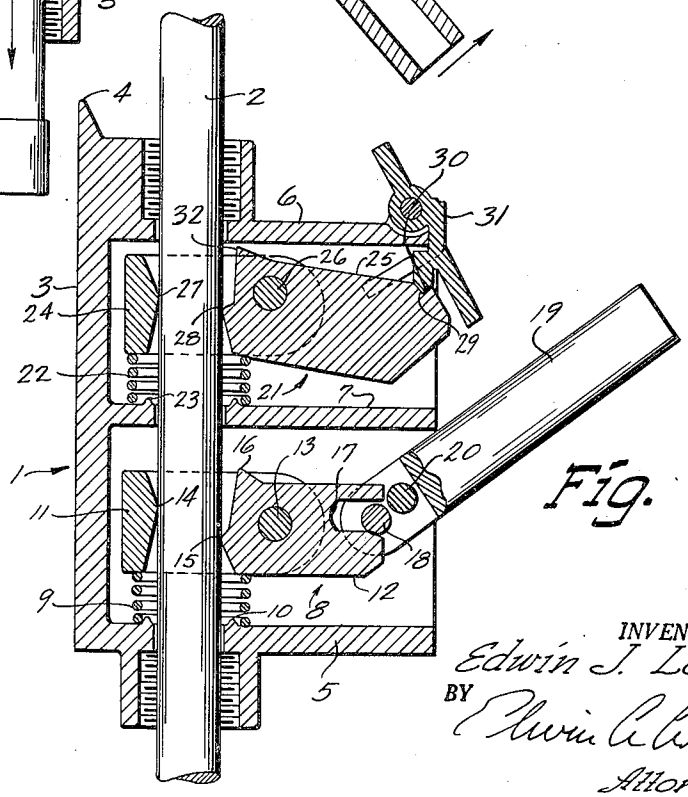



Fig. 2

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Jan. 9, 1951 E. J. LORD 2,537,839

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Fig. 4

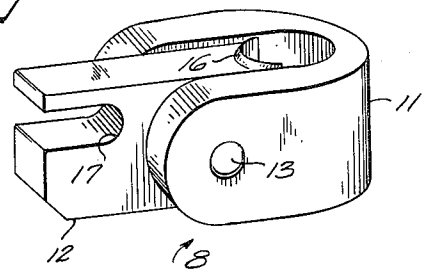
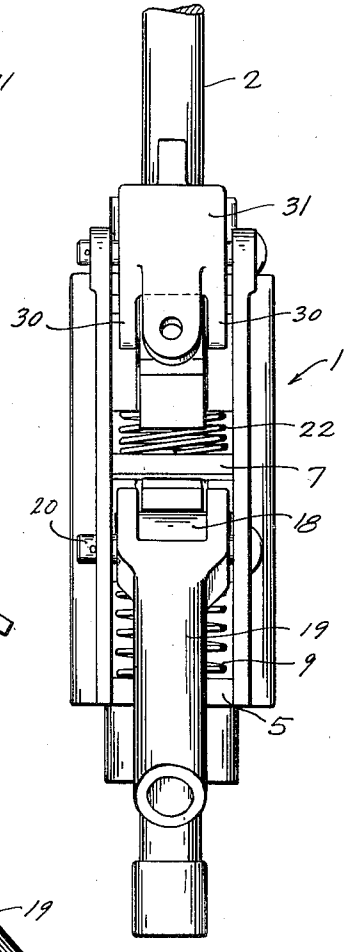



Fig. 5



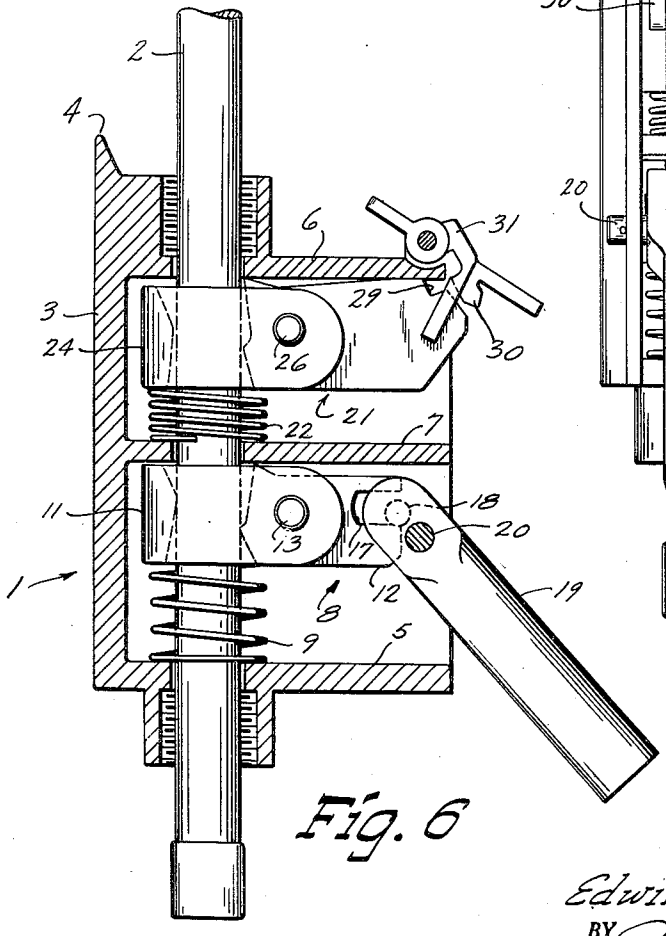




Fig. 6

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Fig. 7

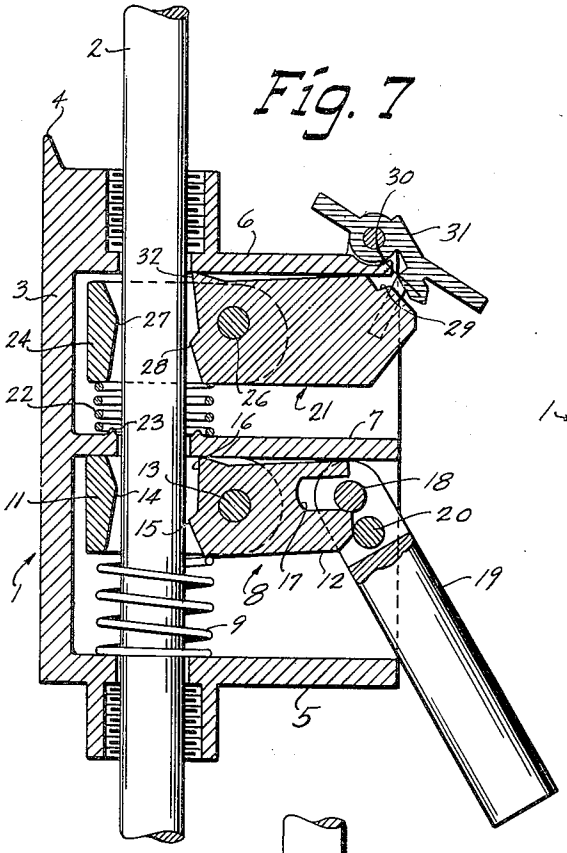



Fig. 8

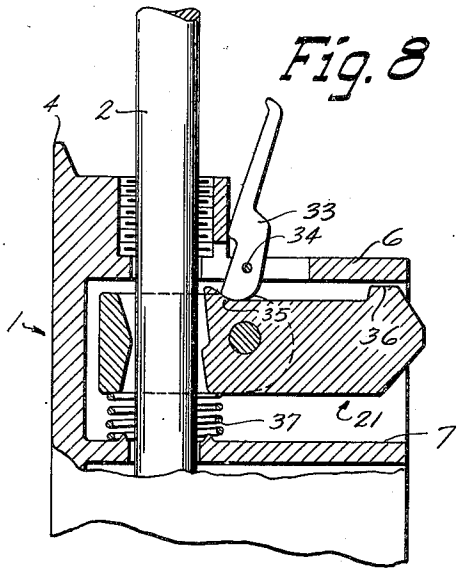
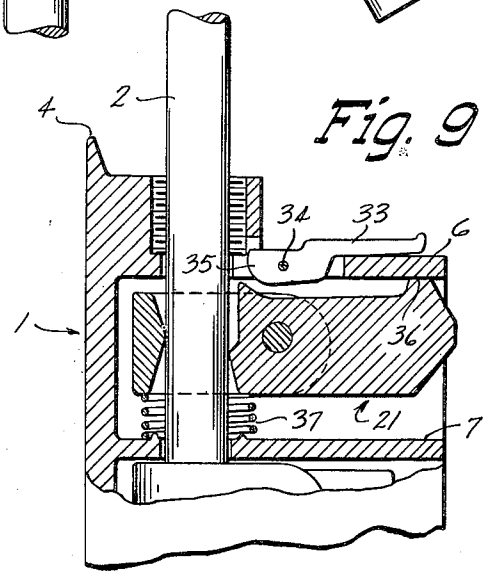



Fig. 9




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# UNITED STATES PATENT OFFICE

2,537,839

## JACK

Edwin J. Lord, Milwaukee, Wis.

Application September 6, 1947, Serial No. 772,515

5 Claims. (Cl. 254—106)

1

This invention relates to a jack and has particular reference to a friction type jack.

The principal object of the invention is to provide a jack for pushing, pulling or clamping or as a bumper or automobile body jack or for substantially any jacking purposes.

Another object of the invention is to provide a jack which can be constructed to provide substantially any desired jacking pressure or leverage.

Another object of the invention is to provide a jack which readily brakes a load being lowered for removal of the jack to prevent a sudden drop of the load and possible injury thereto.

A further object of the invention is to provide a jack which operates without slipping whether or not the rod of the jack may be rusty or greasy.

These and other objects of the invention will appear hereinafter in connection with the following description of the drawing illustrating the invention.

In the drawings:

Figure 1 is a vertical section through the body of the jack with the rod in elevation and showing the position of the parts at the beginning of the lifting stroke;

Fig. 2 is a section similar to Fig. 1 showing the parts at the end of the lifting stroke;

Fig. 3 is a section taken on line 3—3 of Fig. 1;

Fig. 4 is a perspective view of the lifting clamp;

Fig. 5 is a front elevational view of the jack body with the latch in place;

Fig. 6 is a view similar to Fig. 1 showing the jack body being lowered on the rod;

Fig. 7 is a view similar to Fig. 6 showing the rod sliding free of the lifting and holding clamps;

Fig. 8 is a detail view showing another structure for holding the holding clamp in inoperative position; and

Fig. 9 is a view similar to Fig. 8 with the holding clamp in operative position.

The drawing illustrates a jack comprising in general the hollow body member 1 mounted for up and down reciprocation on the rod 2 which passes through the body member. The jack is adapted to apply pressure either by body member 1 or rod 2 as will be described.

Body member 1 comprises the longitudinal vertical wall 3 which has the projection 4 at the upper end thereof for engaging a load. Member 1 is closed at the bottom by the horizontal wall 5 and at the top by the horizontal wall 6. The horizontal wall 7 extends parallel to walls 5 and 6 internally of body member 1 and is spaced from walls 5 and 6 to provide two separate compartments within the body member which are open opposite longitudinal wall 3 to receive the operating parts of the jack. The walls 5, 6 and 7 are joined at one end by wall 3 and are additionally secured in place by suitable side walls.

2

The actuating member 8 is disposed within the lowermost compartment of member 1 around rod 2 and seats on the coil spring 9 which in turn seats on lower wall 5 and is held in place by the projection 10 formed as a part of wall 5.

Actuating member 8 is of articulated construction and comprises the generally semi-circular gripping clamp 11 which is assembled around rod 2. Clamp 11 is open at one side to receive the operating arm 12 which is formed complementary to the gripping portion of clamp 11. Arm 12 extends outwardly from clamp 11 within the lowermost compartment of body member 1 and is pivoted to clamp 11 by pin 13 to close actuating member 8 around rod 2.

Clamp 11 is tapered on the inside to provide the same with the gripping jaw or projection 14 for engagement with rod 2 when the actuating member is operated to jacking position. Projection 14 is shown as being slightly above the center line through the pin 13.

The projection or jaw 15, which corresponds to projection 14 of member 11, is provided centrally of the inner end of arm 12 and is offset to a line lower than the projection 14 and pin 13 to operate as an eccentric and more effectively grip rod 2 between the gripping jaws 14 and 15 when arm 12 is actuated to operating position.

The projection 16 is provided on the upper inner end of operating arm 12 for engagement with the bottom of wall 7 to open clamp 8, as will be described.

The slot 17 is formed in the outer end portion of arm 12 to receive the pin 18 of the jack handle 19 by which the operator manipulates the jack.

The pivot pin 20 extends transversely through the side walls of jack body member 1 and through jack handle 19 to the outside of pin 18 to supply the pivot by which the operator applies leverage to actuating member 8 through operating arm 12.

The operation of actuating member 8 will be described in greater detail hereinafter.

The articulated holding member 21 is disposed within the uppermost compartment of body member 1 around rod 2 and seats on the coil spring 22 which in turn seats on middle walls 7 and is held in place by the projection 23 formed as a part of wall 7.

Holding member 21 comprises the generally semi-circular clamp 24 which is assembled around rod 2 and which is open at one side to receive the holding arm 25 formed complementary at the inner end to the gripping portion of clamp 24. Arm 25 extends outwardly from clamp 24 within the uppermost compartment of the jack body and is pivoted to clamp 24 by pin 26 to close holding member 21 around rod 2.

Clamp 24 is tapered on the inside to provide the same with the gripping projection or jaw 27 for engagement with rod 2 when holding mem-

ber 21 is actuated to holding position. Projection 27 normally lies on a center line through pin 26, as shown, but may be slightly above such center line as is shown with respect to actuating clamp 11.

The projection or jaw 28, which corresponds to jaw 27 of clamp 24, is provided substantially centrally of the inner end of holding arm 25 and is offset to a line lower than jaw 27 and pin 26 of clamp 24 to operate as an eccentric and more effectively grip rod 2 between jaws 27 and 28 when the holding member 21 is disposed in holding position.

The groove 29 is provided in the upper outer end portion of the holding arm 25 to receive the horizontal bar 30 of latch 31. The latch 31 is pivoted to the outer end portion of top wall 6 of body member 1 and has an operating handle to facilitate operating thereof. The upper outer end portion of holding arm 25 is tapered approaching groove 29 so that latch bar 30 will slide readily over the arm when the operator locates bar 30 in groove 29 to lock holding member 21 into operative position.

The projection 32 is provided on the upper inner end of arm 25 for engagement with wall 6 to open clamp 21, as will be described.

The figures of the drawing illustrate the operation of the jack and the various positions of the parts.

Fig. 1 illustrates the position of the parts when the operator has lifted handle 19 to start the lifting stroke, and Fig. 2 shows the parts at the end of the lifting stroke.

As shown in Fig. 1, rod 2 is moving downwardly, body member 2 is moving upwardly and jack handle 19 is being pulled upwardly. As the stroke begins, actuating member 8 is actuated by coil spring 9 and operating arm 12 so that rod 2 is gripped between jaws 14 and 15 of the member. Pressure is applied to the actuating member by the operator through handle 19 which engages arm 12 by pin 18 in slot 17 and pivots on pivot pin 20 extending transversely through jack body 1. Coil spring 9 tends to urge clamp 11 upwardly against rod 2 while arm 12 is forced downwardly by handle 19 and rocked or pivoted into engagement with rod 2. The grip of clamp 8 on rod 2 is accentuated by the length of operating arm 12 which applies a greater leverage in gripping or clamping the rod than if the actuating member were merely a circular one piece ring disposed around the rod.

The offsetting of jaw 15 from pin 13, on which arm 12 pivots, upon pivoting of the arm on pin 13 pushes jaw 15 outwardly and into wedging engagement with rod 2. In the drawings the distance between pins 13 and 18 is about double the distance between jaw 15 and pin 13. Thus a load applied to arm 12 by handle 19 through pin 18 is at least doubled in forcing jaw 15 into engagement with rod 2. In addition, jaw 15 operates on rod 2 with a certain amount of wedging action which would increase the grip on the rod. The grip on the rod may be varied, for example, by changing the position of pin 13 relative to jaw 15 and pin 18. Grease or dirt on rod 2 therefore does not disturb effective gripping thereof. Fig. 2 shows the coil spring 9 compressed when handle 19 reaches the uppermost jacking position.

In Figs. 1 and 2 bar 30 of latch 31 is disposed within groove 29 of holding member 21. In this operative position of the holding member rod 2 can slide downwardly through holding member



21 but cannot move upwardly through the member when handle 19 is moved down to begin another stroke, since jaws 27 and 28 of clamp 21 grip rod 2 under pressure applied by coil spring 22 and latch 31. Spring 22 urges the clamp 24 upwardly into engagement with rod 2 while latch 31 maintains holding arm 25 in engagement with rod 2. The gripping pressure is accentuated due to the leverage applied through the holding arm 25. The offsetting of jaw 28 from pin 26 pushes jaw 28 outwardly into wedging engagement with rod 2 when arm 25 pivots. The load applied to the outer portion of clamp 21 by latch 31 is more than doubled in forcing jaw 28 against rod 2 due to the relationship between the jaw 28, pin 26 and latch 31. In addition there is a certain wedging action by jaw 28 which increases the effectiveness of its engagement with rod 2.

Fig. 6 shows the jack with latch 31 released and holding member 21 in inoperative position since projection 32 on the holding arm 25 is urged into engagement with top wall 6 by coil spring 22 to open the clamp. The lifting or actuating member 8 is shown in Fig. 6 as being held in the position taken when the lifting stroke begins. In this position of the parts the load on the jack is being lowered by body member 1 moving downwardly with respect to rod 2 and actuating member 8 is employed as a brake on rod 2 so that the load is slowly lowered by the operator.

Fig. 7 illustrates latch 31 released and holding member 21 in inoperative position, as in Fig. 6, and the jack handle 19 at its lowermost position so that actuating member 8 is opened upon engagement of the projection 16 thereof with middle wall 7 as it is urged upwardly by coil spring 9. In this position of the parts rod 2 slides free of members 8 and 21 and may be removed from jack body 1. When jack handle 19 is in an intermediate position to that shown in Figs. 6 and 7, the pin 18 thereof is disposed in engagement with the upper surface of groove 17 in arm 12 to tilt clamp 3 upwardly toward rod 2 and open the same. The clamp therefore cannot jam in service.

Figs. 8 and 9 illustrate an example of another structure for operating holding member 21. As shown, the latch 31 is eliminated and instead the member 33 is pivoted by pin 34 within an opening in upper wall 6 of the jack body. Member 33 has a cam 35 on the inner end and holding member 21 is provided with a projection 36 on the upper surface of the outer end portion thereof for engagement with upper wall 6.

As shown in Fig. 8, when member 33 is operated to dispose cam 35 into engagement with holding member 21, member 21 is opened and rod 2 slides free thereof. When member 33 is operated to disengage cam 35 from holding member 21, coil spring 37 and the projection 36 on the outer end portion of the clamp force the clamp into gripping engagement with rod 2 to prevent upward movement of the rod. The length of the arm of the holding member accentuates the leverage applied to accentuate the grip on rod 2.

The jack of the invention may employ the rod as the lifting or pressure applying member of the jack as is done in automobile body work, or the jack body may supply the pressure as is done when jacking an automobile. The rod also may be employed as the lifting member.

The invention provides a jack which applies an improved lifting and holding grip on the jacking rod to more readily apply jacking pres-

sure and which is operable irrespective that the rod may be dirty, greasy or rusty.

The jack also provides means for braking a load so that it can be lowered gradually rather than by a sudden drop.

Various embodiments of the invention may be employed within the scope of the accompanying claims.

I claim:

1. In a jack of the class described, a jack body and a jacking rod disposed therein for relative longitudinal movement therebetween, actuating means for moving said rod relative to said body to move a load supported on the body or rod, a holding member disposed around said rod to prevent longitudinal movement of the rod in a direction reverse to that effected by said actuating member, said holding member comprising a clamp assembled with said rod and a lever arm pivoted within said clamp and extending outwardly therefrom, a coil spring dispcsed around the rod and supported on the jack body to urge said holding member upwardly, and means pivoted to the jack body to engage said arm to pivot the same downwardly relative to said clamp to clamp the holding member into engagement with said rod and to be disposed out of engagement with said arm to effect opening of the holding member and release of the rod as the holding member is urged upwardly against the jack body by said coil spring.

2. In a jack of the class described, a jack body and a jacking rod disposed therein for relative longitudinal movement therebetween, actuating means for moving said rod relative to said body to move a load supported on the body or rod, a holding member disposed around said rod to prevent longitudinal movement of the rod in a direction reverse to that effected by said actuating member, said holding member including a clamp assembled with said rod and a lever arm pivoted within said clamp and extending outwardly therefrom, complementary gripping jaws provided internally of said clamp and arm with the jaw on said arm offset to a line lower than the jaw on said clamp, a coil spring disposed around the rod and supported cn the jack body to urge the holding member upwardly, and means pivoted to the jack body to engage said arm to pivot the same downwardly relative to said clamp to clamp the holding member into engagement with said rod and to be disposed out of engagement with said arm to effect opening of the holding member and release of the rod as the holding member is urged upwardly against the jack body by said coil spring.

3. In a jack of the class described, a jack body and a jacking rod disposed therein for relative longitudinal movement therebetween, actuating means for moving said rod relative to said body to move a load supported on the body or rod, a holding member disposed around said rod to prevent longitudinal movement of the rod in a direction reverse to that effected by said actuating member, said holding member including a clamo assembled with said rcd and a lever arm pivoted within said clamp and extending outwardly therefrom, complementary gripping jaws provided internally of said clamp and arm with the jaw on said arm offset to a line lower than the jaw on said clamp and the pivot about which said holding arm pivots within said clamp, a coil spring disposed around the rod and supported on the jack body to urge the holding member upwardly, and means pivoted to the jack body to engage said arm to pivot the same downwardly relative to said clamp to clamp the holding member into engagement with said rod and to be disposed out of engagement with said arm to effect opening of the holding member and release of the rod as the holding member is urged upwardly against the jack body by said coil spring.

4. In a jack of the class described, a jack body and a jacking rod disposed therein for relative longitudinal movement therebetween, actuating means for moving said rod relative to said body to move a load supported on the body or rod, a holding member disposed around said rod to prevent longitudinal movement of the rod in a direction reverse to that effected by said actuating member, said holding member including a clamp assembled with said rod and a lever arm pivoted within said clamp and extending outwardly therefrom, complementary gripping jaws provided internally of said clamp and arm with the jaw on said arm offset to a line lower than the jaw on said clamp, a coil spring disposed around the rod and supported on the jack body to urge the holding member upwardly, and a latch pivoted to the body member and movable to engage the outer end of said arm to pivot the same downwardly relative to said clamp to clamp the holding member into engagement with the rod and to disengage said arm to effect opening of the holding member and release of the rod as the holding member is urged upwardly against the jack body by said coil spring.

5. In a jack of the class described, a jack body and a jacking rod disposed therein for relative longitudinal movement therebetween, actuating means for moving said rod relative to said body to move a load supported on the body or rod, a holding member disposed around said rod to prevent longitudinal movement of the rod in a direction reverse to that effected by said actuating member, said holding member including a clamp assembled with said rod and a lever arm pivoted within said clamp and extending outwardly therefrom, complementary gripping jaws provided internally of said clamp and arm with the jaw on said arm offset to a line lower than the jaw on said clamp, a coil spring disposed around the rod and supported on the jack body to urge the holding member upwardly, and a cam member pivoted to the body member and movable to engage the cam thereof with said arm to pivot the same downwardly relative to said clamp to clamp the holding member into engagement with the rod and to disengage the cam from the arm to effect opening of the holding member and release the rod as the holding member is urged upwardly against the jack body by said coil spring.

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