F. L. GORMLEY.

LIFTING JACK.

APPLICATION FILED FEB. 16, 1909.

929,585. Patented July 27, 1909.

Fig. 1.

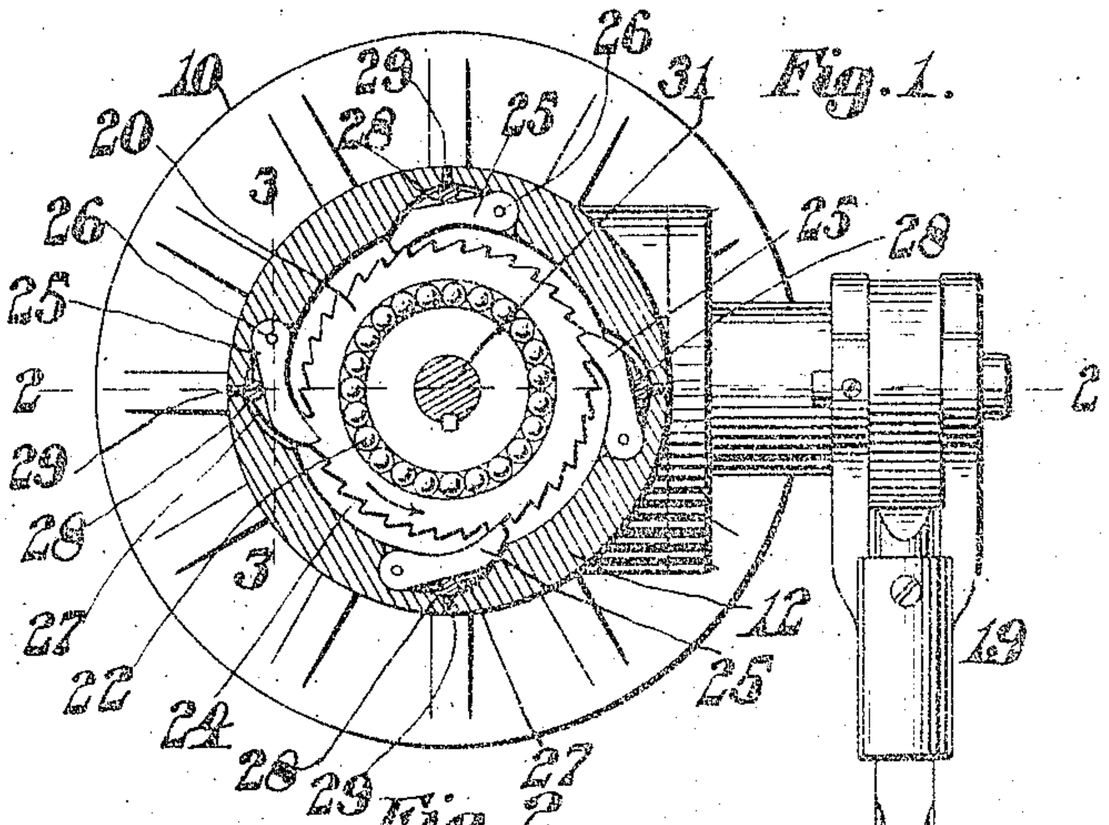


Fig. 2.

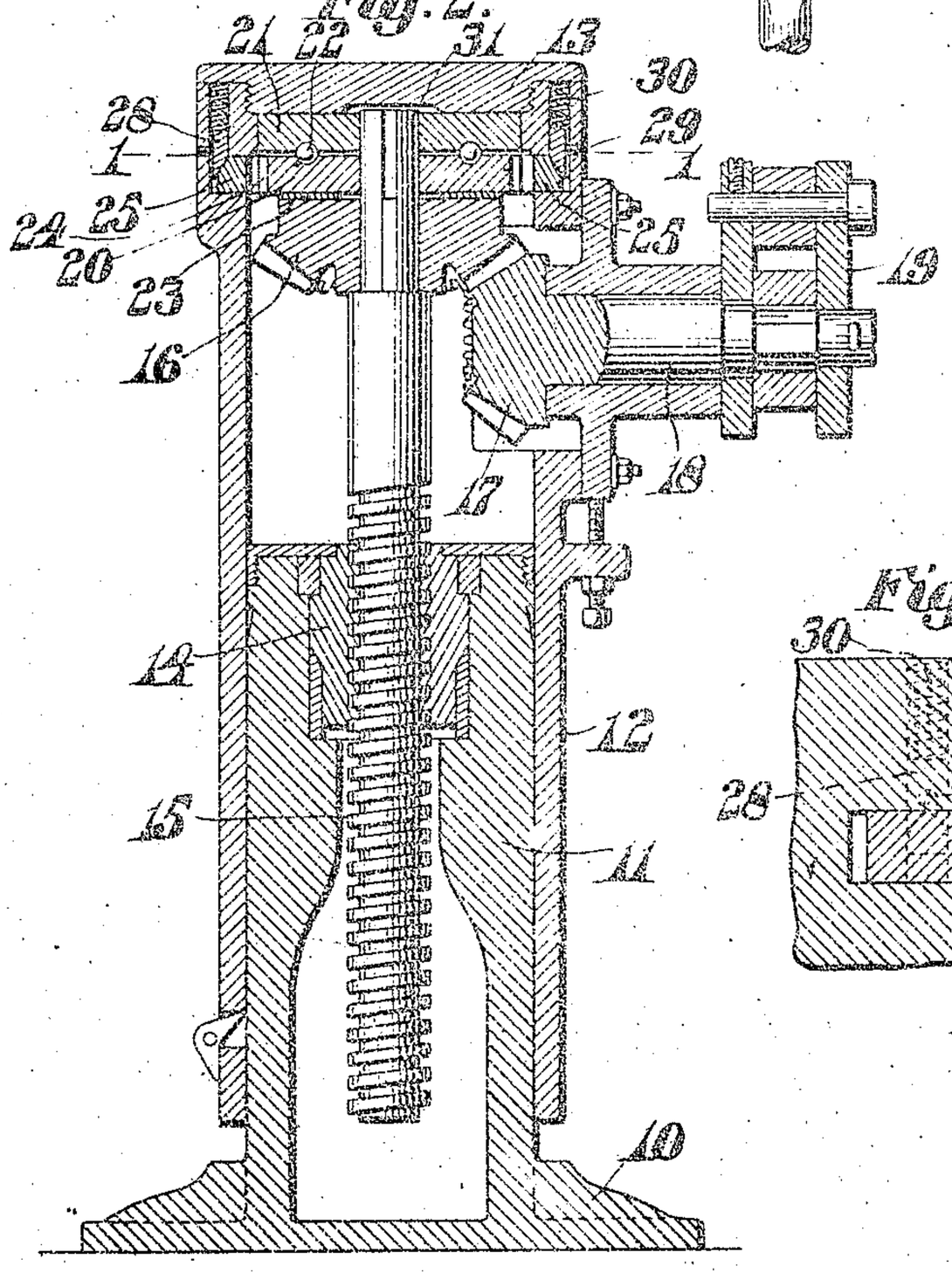
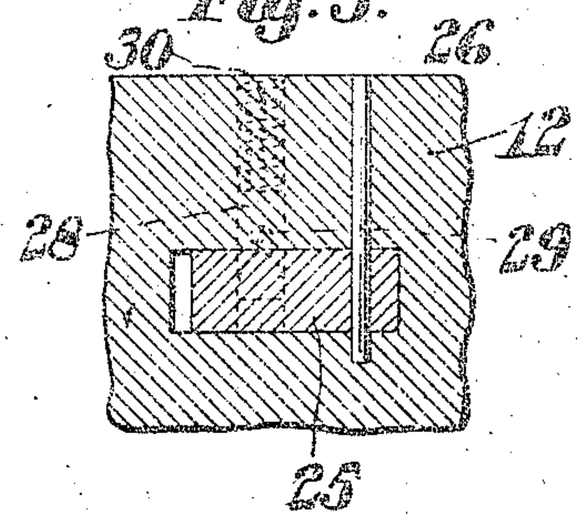


Fig. 3.



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UNITED STATES PATENT OFFICE.

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LIFTING-JACK.

No. 929,585. Specification of Letters Patent. Patented July 27, 1909.

Application filed February 16, 1909. Serial No. 478,307.

To all whom it may concern:

Be it known that I, FRANK L. GORMLEY, a citizen of the United States of America, and a resident of Boston, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Lifting-Jacks, of which the following is a specification.

This invention relates to lifting jacks and particularly to that class of jacks which are known as ratchet screw jacks, and has for its object the provision of a means whereby the movable member is prevented from being accidentally lowered under a heavy load.

The invention consists in interposing between the gear keyed to the lifting screw and the inner face of the movable member two plates separated by means of a plurality of anti-friction members, the lower plate being separated from the gear by means of a friction disk and having peripheral teeth with which a plurality of spring-pressed pawls mounted in the movable member engage, to permit the free movement of the plate in one direction while it is prevented from rotating in the opposite direction.

The invention further consists in certain novel features of construction and arrangement of parts which will be readily understood by reference to the description of the drawings and to the claims hereinafter given.

Of the drawings: Figure 1 represents a horizontal section of a lifting jack embodying the features of this invention, the cutting plane being on line 1—1 on Fig. 2. Fig. 2 represents a vertical section of the same, the cutting plane being on line 2—2 on Fig. 1, and Fig. 3 represents an enlarged section of one of the operating pawls and the devices coöperating therewith, the cutting plane being on line 3—3 on Fig. 1.

Similar characters designate like parts throughout the several figures of the drawings.

In the drawings, 10 represents a suitable base supporting a stationary standard 11 over the outer periphery of which is fitted a movable sleeve 12, to the upper end of which is threaded a cap 13. In the upper end of the standard 11 is mounted a nut 14 to which is threaded a lifting screw 15 having splined to its upper reduced end a gear 16 with which meshes a gear 17 formed upon or secured to a revoluble shaft 18, the outer end of which is provided with a suitable operating mechanism 19 of any well-known construction.

Interposed between the upper face of the gear 16 and the inner face of the cap 13 are two annular plates 20 and 21 between which are interposed a plurality of anti-friction members 22. Between the plate 20 and the upper face of the gear 16 is a friction disk 23. The periphery of the plate 20 has formed therein a plurality of ratchet teeth 24 with which engage a plurality of pawls 25 mounted in suitable depressions in the inner wall of the movable member 12 and each movable about a pivot pin 26. Each pawl is provided on its outer side with a beveled face 27 with which engages the beveled end of a pin 28 which is prevented from turning by means of a threaded member 29 mounted in the movable member 12 and bearing against a flat side of said pin 28. This beveled pin 28 is movable longitudinally in the hole in which it is mounted and is pressed downwardly into contact with the beveled face of the pawl 25 by means of a spring 30. Each spring acts upon its pin 28 to force one of the pawls 25 into engagement with the ratchet teeth 24 formed upon the periphery of the plate 20.

The weight upon the cap 13 is sufficient to cause considerable friction between the plate 20, disk 23, and gear 16, so that when the gear 16 is rotated in the direction of the arrow on Fig. 1 the plate 20 will be carried thereby and the various pawls 25 will ride over the ratchet teeth 24.

Should any extreme weight supported by the jack tend to cause the screw 15 to move downwardly in its nut 14 owing to the coarse pitch thereof, the gear 16 would be caused to rotate in the opposite direction to that indicated by the arrow on Fig. 1 and the teeth 24 of the plate 20 carried thereby would immediately come into engagement with the pawls 25 and be prevented from further rotation in that direction around the reduced shank 31 of the screw 15. When the rotation of the plate 20 is thus prevented in order for the screw 15 to move downwardly in the nut 14, it is necessary that the gear 16 should continue to rotate in a direction reverse to that indicated by the arrow on Fig. 1, and this tendency to rotate in this direction would be prevented by the extra friction existing between the plate 20, friction disk 23, and gear 16, although it is obvious that when power is applied to the operating

mechanism to lower the movable member by turning the gear 16 in said reverse direction that this friction will be overcome and permit the necessary lowering of the weight.

It is obvious that by such a construction as is herein set forth and described, any accidental lowering of the movable member of the jack is wholly obviated, it being self evident that such accidental lowering is dangerous and objectionable.

It is believed that from the foregoing the operation and many advantages of the invention will be thoroughly understood.

Having thus described my invention, I claim:

1. In a lifting jack, the combination of a stationary member; a movable member thereon; a revoluble member for raising and lowering said movable member; means for rotating said revoluble member; an annular plate interposed between said movable member and said revoluble member and in frictional contact with said revoluble member; and means between said movable member and plate to insure the simultaneous rotation of said plate and revoluble member in one direction while permitting movement of said revoluble member in the opposite direction.

2. In a lifting jack, the combination of a stationary member; a movable member thereon; a screw for said movable member; means for rotating said screw; an annular plate interposed between said movable member and screw and having peripheral teeth; and means secured to said movable member and co-acting with said teeth to insure the simultaneous rotation of said plate and screw in one direction while permitting independent movement of said screw in the opposite direction.

3. In a lifting jack, the combination of a stationary member; a movable member thereon; a screw for said movable member; means for rotating said screw; an annular plate interposed between said movable member and screw and having peripheral teeth; a friction disk interposed between said plate and screw; and means secured to said movable member and coacting with said teeth to insure the simultaneous rotation of said plate and screw in one direction while permitting independent movement of said screw in the opposite direction.

4. In a lifting jack, the combination of a stationary member; a movable member thereon; a screw for said movable member; means for rotating said screw; an annular plate interposed between said movable member and screw and having peripheral teeth; a friction disk interposed between said plate and screw; and a pawl secured to said movable member and co-acting with said teeth to insure the simultaneous rotation of said plate and screw in one direction while permitting independent movement of said screw in the opposite direction.

5. In a lifting jack, the combination of a stationary member; a movable member thereon; a screw for said movable member; means for rotating said screw; an annular plate interposed between said movable member and screw and having peripheral teeth; a friction disk interposed between said plate and screw; and a spring-operated pawl secured to said movable member and co-acting with said teeth to insure the simultaneous rotation of said plate and screw in one direction while permitting independent movement of said screw in the opposite direction.

6. In a lifting jack, the combination of a stationary member; a movable member thereon; a screw for said movable member; means for rotating said screw; an annular plate interposed between said movable member and screw and having peripheral teeth; a friction disk interposed between said plate and screw; a spring-operated pawl, having an inclined face secured to said movable member and co-acting with said teeth to insure the simultaneous rotation of said plate and screw in one direction while permitting independent movement of said screw in the opposite direction; and a spring-operated beveled member co-acting with said inclined face to normally retain said pawl in engagement with said teeth.

7. In a lifting jack, the combination of a stationary member; a movable member thereon; a screw and nut for raising and lowering said movable member, one of which is revoluble; a plate disconnected from but frictionally contacting with said revoluble member and provided with peripheral teeth; and means secured to said movable member co-acting with said teeth to permit the rotation of said plate in one direction only.

8. In a lifting jack, the combination of a stationary member; a movable member thereon; a screw and nut for raising and lowering said movable member, one of which is revoluble; a plate disconnected from but frictionally contacting with said revoluble member and provided with peripheral teeth; and a pawl secured to said movable member co-acting with said teeth to permit the rotation of said plate in one direction only.

Signed by me at 4 Post Office Sq., Boston, Mass., this 8th day of February, 1909.

FRANK L. GORMLEY.

Witnesses:
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