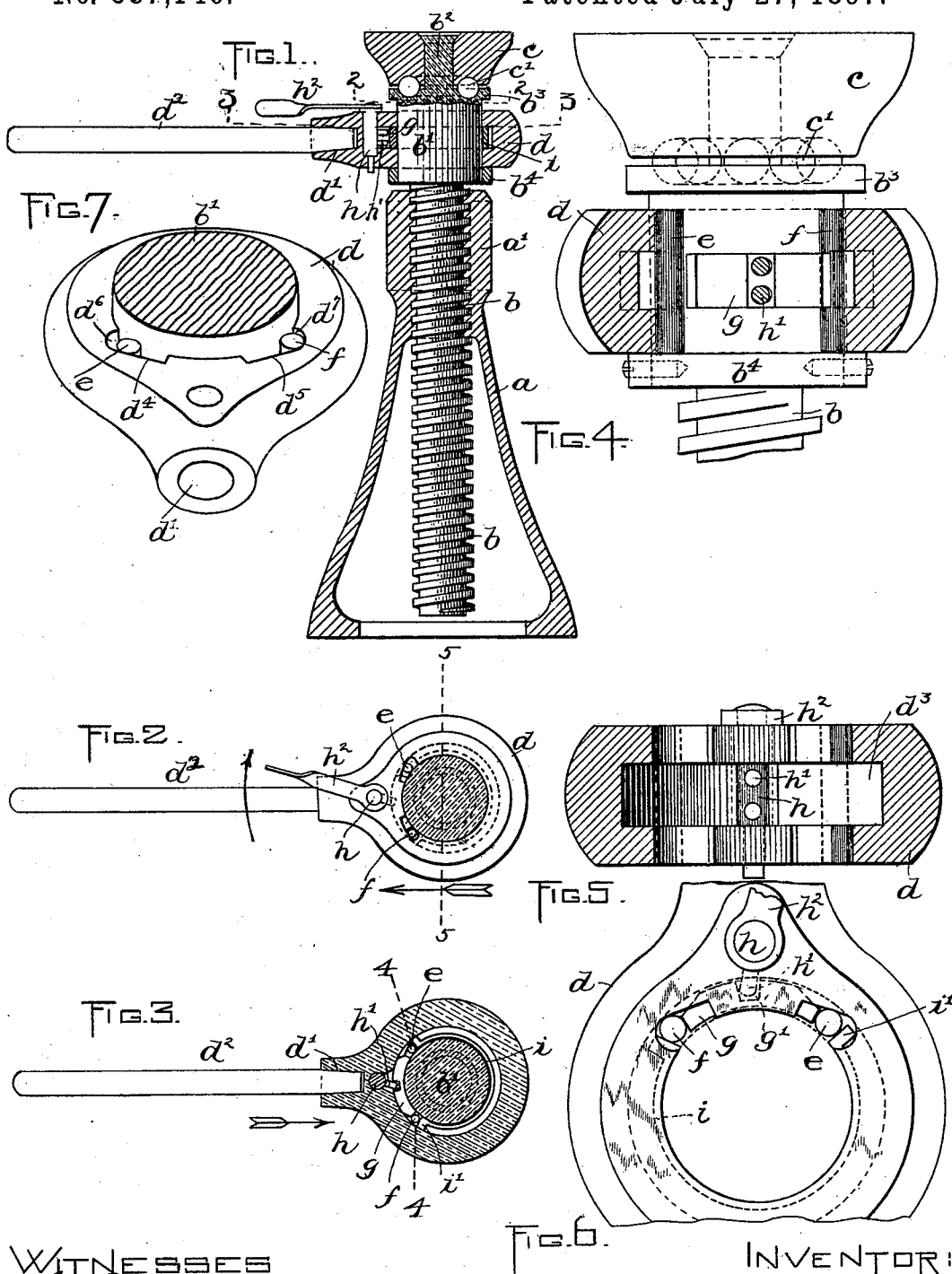


(No Model.)

J. W. EVANS.
JACK SCREW.

No. 587,146.

Patented July 27, 1897.



WITNESSES

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JOHN W. EVANS, OF HAVERHILL, MASSACHUSETTS, ASSIGNOR OF ONE-HALF
TO H. B. NEWTON, OF SAME PLACE.

JACK-SCREW.

SPECIFICATION forming part of Letters Patent No. 587,146, dated July 27, 1897.

Application filed February 26, 1897. Serial No. 625,107. (No model.)

To all whom it may concern:

Be it known that I, JOHN W. EVANS, of Haverhill, in the county of Essex and State of Massachusetts, have invented certain new and useful Improvements in Jack-Screws, of which the following is a specification.

This invention has relation to jacks of the character employed for the purpose of raising and supporting heavy articles and of the type in which the jack is constructed with a stationary nut supported upon a standard or base and a screw-bar passing therethrough and adapted to raise the article by being forced through the nut.

One of the principal objects of my invention is to provide improvements in jacks of the character specified whereby the oscillatory movement of the head employed for rotating the screw may be utilized to the greatest extent through the provision of means which will automatically engage the screw to turn it the moment the handle, which is connected to the head, is moved in the proper direction.

To these ends the invention consists of the constructions and arrangement of parts which are illustrated upon the drawings and which I shall now proceed to describe in detail, and then point out in the claims hereto appended.

Reference is to be had to the annexed drawings, and to the letters marked thereon, forming a part of this specification, the same letters designating the same parts or features, as the case may be, wherever they occur.

Figure 1 represents in vertical longitudinal section a screw-jack equipped with my improvement. Fig. 2 represents a plan view of the same, partially in section, on the line 2 2 of Fig. 1. Fig. 3 represents a horizontal section on line 3 3 of Fig. 1. Fig. 4 is an enlarged view, partially in section, on the line 4 4 of Fig. 3, looking in the direction of the arrow. Fig. 5 represents a section through the head with the screw removed, the section being taken on line 5 5 of Fig. 2, looking in the direction of the arrow. Fig. 6 is a top plan view of the head with the screw-bar removed and parts broken away. Fig. 7 is a perspective view of the head and a portion of the screw-bar.

Referring to the drawings, *a* indicates the

standard, which may be of any desired shape and which is formed in its upper end with a nut *a'*, through which the screw-bar *b* passes. The upper projecting end of the screw-bar is formed with an enlarged cylindrical portion *b'*, upwardly from which projects a reduced spindle *b²*, which extends into a central aperture in a revoluble supporting-collar *c*. The spindle *b²* is headed over or upset to retain the said collar in place, and between the face of the collar and the face of the end of the cylindrical portion *b'* of the screw are placed antifriction-balls *c'*, operating in grooves in the said parts. Around the said cylindrical portion *b'* and between the flange *b³*, formed thereon, and a collar *b⁴*, secured thereto, is an oscillatory head *d*, formed with a socket *d'* to receive a suitable handle *d²*, by which it is operated. The said head is in the form of a ring or collar and is constructed with an internal groove *d³* and with two recesses, the walls *d⁴* *d⁵* of which are inclined oppositely each other, so as to form a triangular space between them and the cylindrical portion *b'* of the screw-bar. In these recesses, which I designate as *d⁶* *d⁷*, are respectively placed rolls *e* and *f*, each of which is adapted to be wedged between the inclined wall *d⁴* or *d⁵* and the cylindrical portion of the screw-bar. I provide means, however, for rendering one of the rolls inoperative while the other is operative, such means comprising a sliding arc-shaped lock *g*, placed in the groove *d³* between the rolls and adapted to engage either one of said rolls and hold it in the wider portion of the recess *d⁶* or *d⁷*. The said lock-bar is provided with a socket *g'* to receive pins *h'*, projecting outward from a rock-shaft *h*, mounted in the said head *d*, as clearly shown in Fig. 1. To the upper end of the said rock-shaft is secured a lever *h²*, by which it may be rocked to throw the lock into engagement with either of said rolls *e f*.

For the purpose of insuring the engagement of each roll when the other is inoperative I provide a curved spring *i*, having its outwardly-bent ends *i'* in constant engagement with said rolls.

The operation of the device is as follows: Suppose it is desired to turn the screw in the direction of the arrow in Fig. 2, then the le-

ver h^2 is thrown into the position illustrated in the last-mentioned figure, which causes the lock g to force the roll f into its inoperative position. Then upon the handle d^2 being
 5 thrown in the direction of the said arrow the roll e , being between the wall d^4 and the screw-bar, locks the head and the screw together, so that the head will carry the screw-
 10 bar around with it so long as it moves in that direction, but when the handle d^2 is moved back to its original position the roll moves from its wedged position and allows the head to rotate freely upon the screw until the direction of movement of the handle is changed,
 15 whereupon it immediately locks the two parts together again.

In case it is desired to rotate the screw in the opposite direction the lever h^2 is turned to the other side of the handle d^2 , so as to
 20 force the roll e into its inoperative position and free the roll f to allow it to operate.

By constructing a screw-jack in accordance with the above I obviate the lost motion and backlash that is incident to the employment
 25 of a pawl and ratchet, as I have previously set forth.

Having thus explained the nature of the invention and described a way of constructing and using the same, though without attempting to set forth all of the forms in which
 30 it may be made or all the modes of its use, I declare that what I claim is—

1. In a lifting-jack, the combination of a suitable base or standard having a fixed nut;
 35 a rotary screw-bar in engagement therewith; an oscillatory head loosely embracing the said

bar and having an encircling groove in its internal wall and also recessed to form oppositely-inclined walls confronting the bar; wedging-rolls in the recesses; a spring lying
 40 in the internal groove and pressing at its ends against the rolls to impel them toward the narrow ends of the recesses; and a shifting block or bar confined in the groove between the rolls for engagement with the latter on
 45 their sides opposite those engaged by the spring.

2. In a lifting-jack, the combination of a suitable base or standard having a fixed nut; a rotary screw-bar in engagement therewith;
 50 an oscillatory head loosely embracing the said bar and having an encircling groove in its internal wall and also recessed to form oppositely-inclined walls confronting the bar; wedging-rolls in the recesses; a spring lying
 55 in the internal groove and pressing at its ends against the rolls to impel them toward the narrow ends of the recesses; a shifting block or bar in the groove between the rolls and having a notch or socket; and a rock-shaft
 60 having a projection engaging the socket and a handle, substantially as and for the purpose described.

In testimony whereof I have signed my name to this specification, in the presence of
 65 two subscribing witnesses, this 10th day of February, A. D. 1897.

JOHN W. EVANS.

Witnesses:

SAMUEL D. ASHLEY, Jr.,
 ROBERT D. TRASK.