

(No Model.)

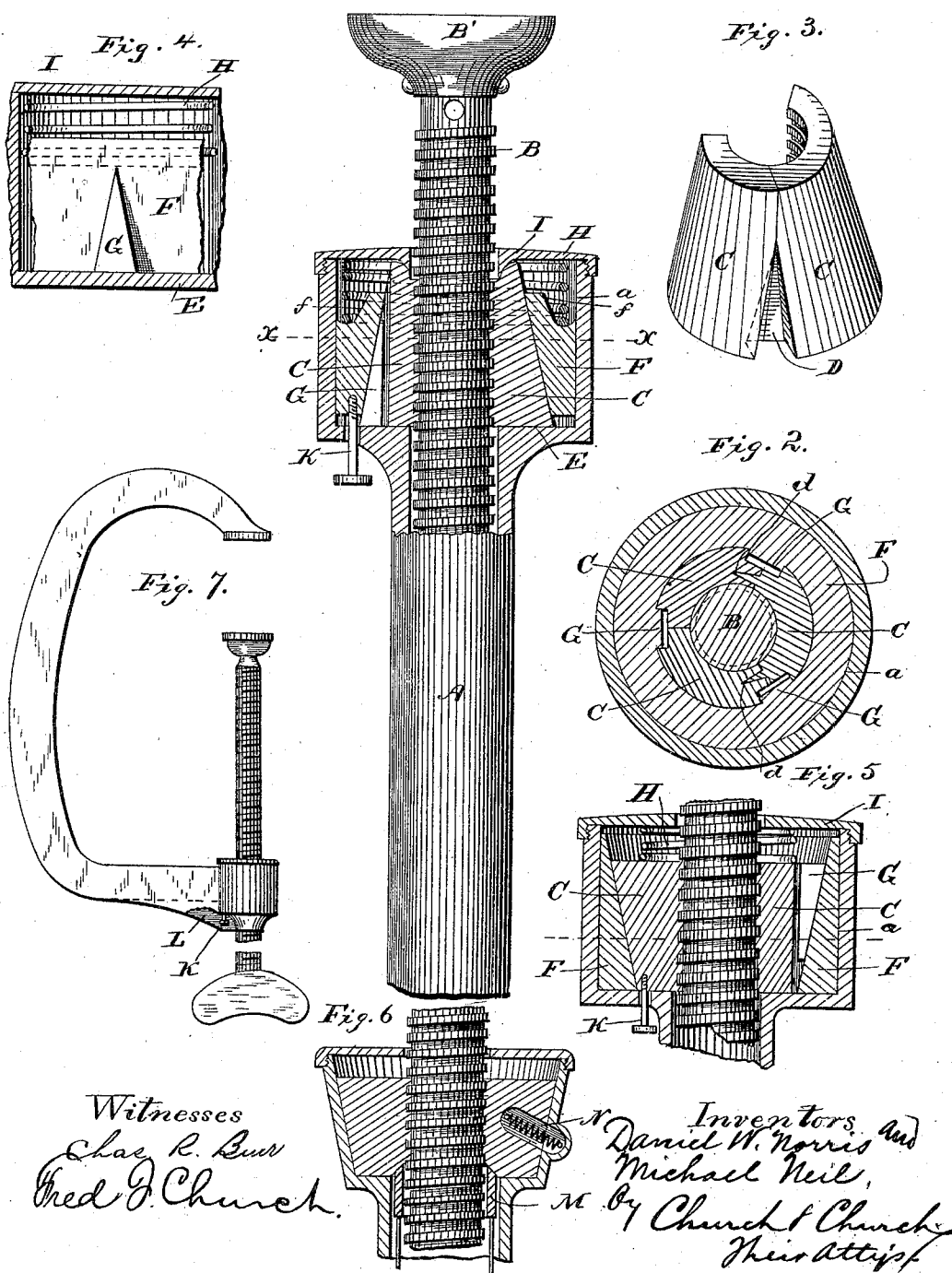
D. W. NORRIS & M. NEIL.

SCREW JACK.

No. 298,704.

Patented May 13, 1884.

Fig. 1.



Witnesses
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UNITED STATES PATENT OFFICE.

DANIEL W. NORRIS, OF ELGIN, ILLINOIS, AND MICHAEL NEIL, OF DAYTON, OHIO; SAID NORRIS ASSIGNOR TO SAID NEIL.

SCREW-JACK.

SPECIFICATION forming part of Letters Patent No. 298,704, dated May 13, 1884.

Application filed April 4, 1884. (No model.)

To all whom it may concern:

Be it known that we, DANIEL W. NORRIS, of Elgin, in the county of Kane and State of Illinois, and MICHAEL NEIL, of Dayton, in the county of Montgomery and State of Ohio, have invented certain new and useful Improvements in Screw-Jacks; and we do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming a part of this specification, and to the figures and letters of reference marked thereon.

Our invention relates to that class of screw jacks and clamps in which a divided nut is employed in connection with a screw-shaft; and it consists, particularly, in certain improved means for effecting the engagement and disengagement of the parts of the divided nut to and from the screw-shaft, as will be hereinafter fully described and claimed.

Referring to the accompanying drawings, Figure 1 represents a sectional elevation of a screw-jack embodying our invention; Fig. 2, a cross-sectional view of the same, taken on the line *x x*, Fig. 1; Fig. 3, a detail view of a portion of the sectional nut; Fig. 4, a detail view of the sleeve which co-operates with the nut to open and close the same. Figs. 5 and 6 are modifications of our invention; Fig. 7, a view showing the application of our improvement to a screw-clamp.

Similar letters of reference in the several figures indicate the same parts.

The letter A designates the standard of a screw-jack; B, the shaft thereof, carrying at its upper end the head B'.

C C C represent the parts of which the divided nut is composed. Though three parts are shown, two or more than three may be employed, if desired. The interior of each of the sections C is screw-threaded to correspond to the thread of the screw-shaft, while the exterior of each of said sections is made sloping, as shown. When all the sections are united, their proximate edges abut against each other, and as a whole they present the appearance of a frustum of a cone, as shown in Figs. 1 and 3. At their joints or abutting edges the sections are provided with wedge-shaped slots or recesses D, extending longitudinally of the sec-

tions to a greater or less extent, but preferably to about the extent shown in Fig. 3, and by preference they are doweled together, as seen at *d*, so as to insure their simultaneous motion longitudinally. When in working position, the parts of the sectional nut rest with their bases against the inner wall, E, of the standard or casing A, and are surrounded by a ring or sleeve, F, also arranged within the casing, as shown in Fig. 1. This ring or sleeve is of conical or tapering form on the inside, and is adapted to normally fit against and support laterally the sectional nut. On its outside the ring or sleeve is preferably cylindrical in form, and fits against the correspondingly-formed inner wall, *a*, of the standard or casing, and is adapted to slide in contact with said wall when moved longitudinally, as hereinafter more fully explained.

Formed upon or attached to the inner side of the ring or sleeve F are a series of wedge-shaped projections, G, corresponding in number and position to the wedge-shaped slots or recesses D in the nut-sections, and fitting therein, as shown in Fig. 2.

A suitable spring, H, preferably of helical or spiral form, is arranged within the casing, and bears at one end upon the cap I, and at the other end upon the ring or sleeve F, a suitable shoulder, *f*, being provided on the latter to receive it. When in normal position, the parts of the sectional nut rest upon the wall E of the casing, the parts of the nut being held together and in engagement with the screw-shaft by the ring or sleeve, and the latter being held by the force of the spring H. Thus arranged, the screw may be adjusted up or down within the nut by the application of any suitable device which will serve to rotate it. When, however, it is desired to more rapidly adjust the screw-shaft longitudinally in either direction, it is only necessary to move longitudinally the ring or sleeve F against the tension of the spring H, whereupon the wedge-shaped projections G on said ring or sleeve will travel along the wedge-shaped recess D in the nut-sections, and force said sections apart sufficiently to disengage them from the screw-shaft and enable the latter to be moved to the point desired. Upon the release

of the sliding ring or sleeve the spring will assert itself, and by forcing the ring or sleeve against the inclined exterior of the nut-sections cause the latter to be again forced inward into engagement with the shaft.

Any convenient means may be employed for moving the ring or sleeve against the tension of the spring. For instance, a thumb-piece or push-pin, K, may be extended through the casing and connected to the said ring or sleeve, as shown in Fig. 1.

In Fig. 5 we have shown a modification of our invention in which the divided nut and its inclosing sleeve or ring are turned end for end; the divided nut instead of the sleeve being allowed a longitudinal movement, and the spring being arranged to bear upon the divided nut instead of upon the sleeve. In this modification, also, the parts of the nut are doweled together after the manner shown in Fig. 2.

In Fig. 6 we have shown another modification, in which the parts of the divided nut are adapted to be forced apart, either by the operation of a longitudinally-moving wedge-shaped ring, M, or by a spring, N, or by both of these instrumentalities operating together.

It is obvious that while our invention is especially applicable to screw-jacks it is also applicable to other machines or implements in which a screw-shaft is required to be adjusted back and forth. In Fig. 7 we have shown the application of our invention to a screw-clamp. In this embodiment we prefer to locate the push-pin K, by which the ring or sleeve is moved, in a recess, L, or between flanges, so as to prevent the accidental or casual movement of said push-pin by the striking of the clamp against an object.

Having thus described our invention, what we claim as new, and desire to secure by Letters Patent, is—

1. The combination, with a screw-shaft, of a divided conical nut and a sliding ring or sleeve for holding the parts of the nut together and in engagement with the screw-shaft, substantially as described.

2. The combination, with a screw-shaft, of a divided conical nut and an inclosing ring or sleeve provided with inclines for opening the parts of the nut, so as to release the shaft.

3. The combination of a screw-shaft, a divided conical nut having wedge-shaped recesses, substantially such as described, and an inclosing ring or sleeve operating normally to keep the nut-sections in engagement with the shaft, and provided with projections, substantially such as described, for opening the parts of the nut when the ring or sleeve is moved longitudinally, substantially as described.

4. The combination of the screw-shaft, a

divided conical nut, an inclosing ring or sleeve for keeping the parts of the nut together and in engagement with the shaft, and a spring for holding the sleeve in position.

5. The combination of a screw-shaft, a divided conical nut having the wedge-shaped recesses, the inclosing-sleeve having the wedge-shaped projections, and the spring.

6. The combination of the screw-shaft, a divided conical nut, the inclosing-ring, and means, substantially as described, for sliding the said inclosing ring or sleeve.

7. The combination of the screw-shaft, a divided conical nut, the inclosing-sleeve and the push-pin for sliding said sleeve, and the spring, substantially as described.

8. The combination, with the casing or frame of a screw jack or clamp, of a screw-shaft, a divided conical nut, and an inclosing ring or sleeve, all arranged within the casing substantially as described.

9. The combination, with the casing or frame of a screw jack or clamp, of a screw-shaft, a divided conical nut, an inclosing ring or sleeve for forcing the parts of the nut together, a spring for holding the sleeve in position, and means, substantially as described, for moving the sleeve against the tension of the spring.

10. The combination, in a screw jack or clamp, of a screw-shaft, a frame or casing having its inner lateral walls parallel, a screw-shaft, a divided conical nut, and a ring or sleeve having its interior made conical to correspond to the divided nut, and its exterior formed to correspond to the parallel walls of the casing, substantially as described.

11. The combination, in a screw jack or clamp, of a screw-shaft, a frame or casing having its inner lateral walls parallel, a divided conical nut, and a ring or sleeve having its interior made conical to correspond to the divided nut, and its exterior formed to correspond to the parallel walls of the casing, a spring operating upon the inclosing-ring, and the push-pin for moving said ring against the tension of the spring.

12. The combination of a screw-shaft, a divided nut, a casing or holder within which the divided nut is arranged, and a spring operating to force the parts of the nut together and into engagement with the screw-shaft.

13. The combination, with a screw-shaft, of a divided nut and a ring provided with one or more wedges for separating the parts of the nut, so as to disengage them from the shaft, substantially as described.

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