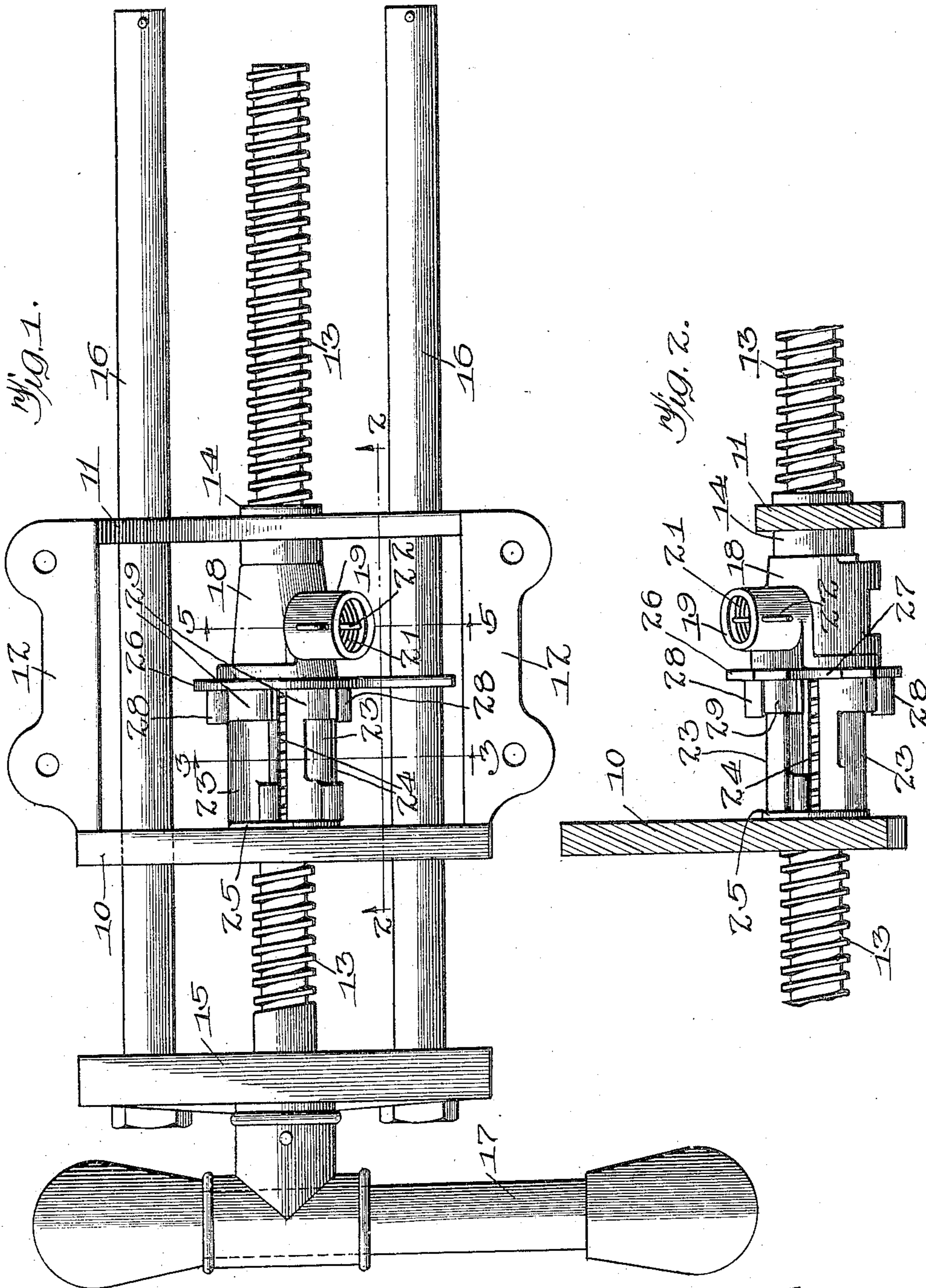


No. 874,992.

PATENTED DEC. 31, 1907.

T. C. PROUTY.
QUICK ACTING VISE.
APPLICATION FILED OCT. 24, 1907.

2 SHEETS—SHEET 1.



Witnesses:
J. P. Perry
L. V. Donahue

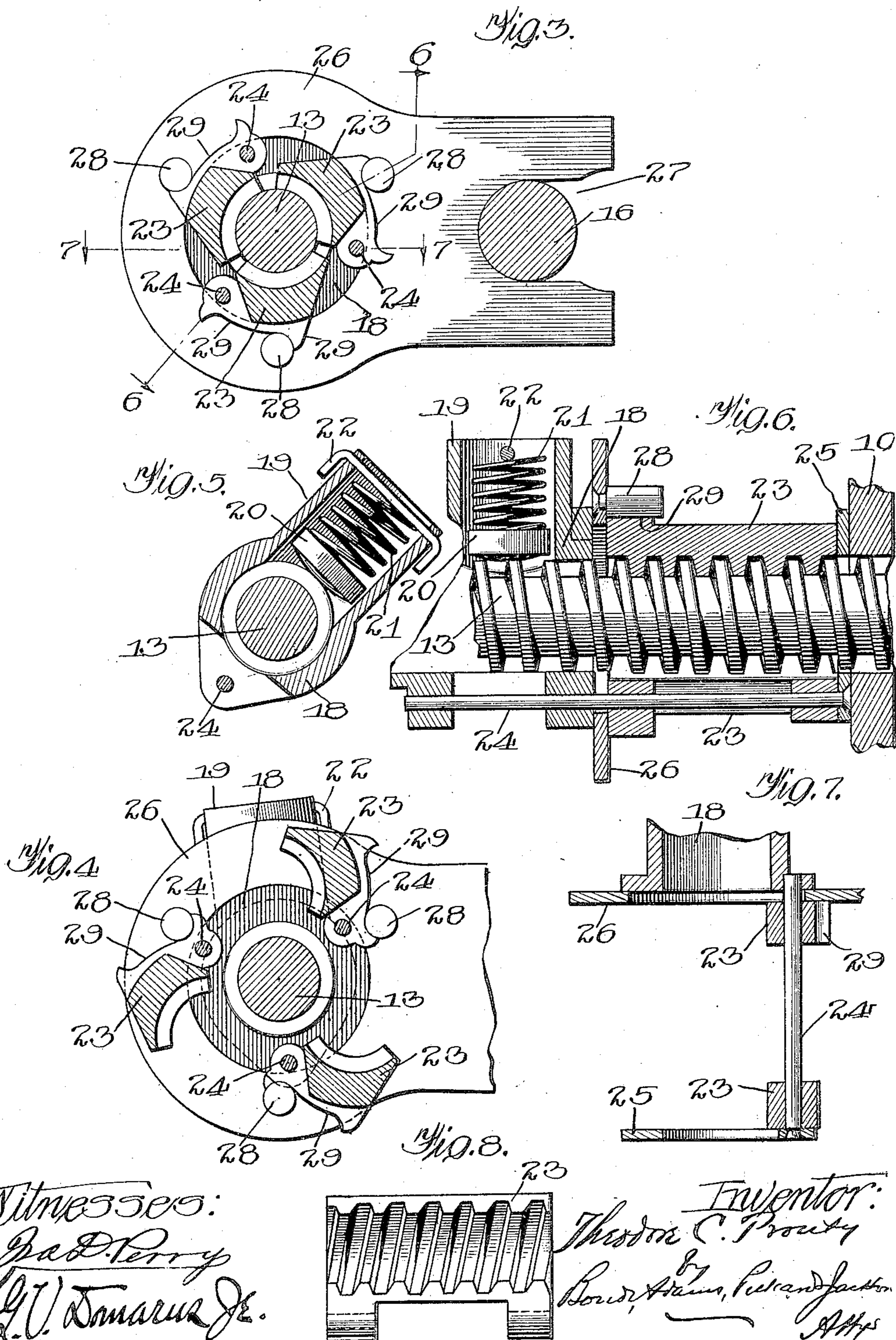
Inventor:
Theodore C. Prouty.
By Bond, Adams, Picard & Jackson

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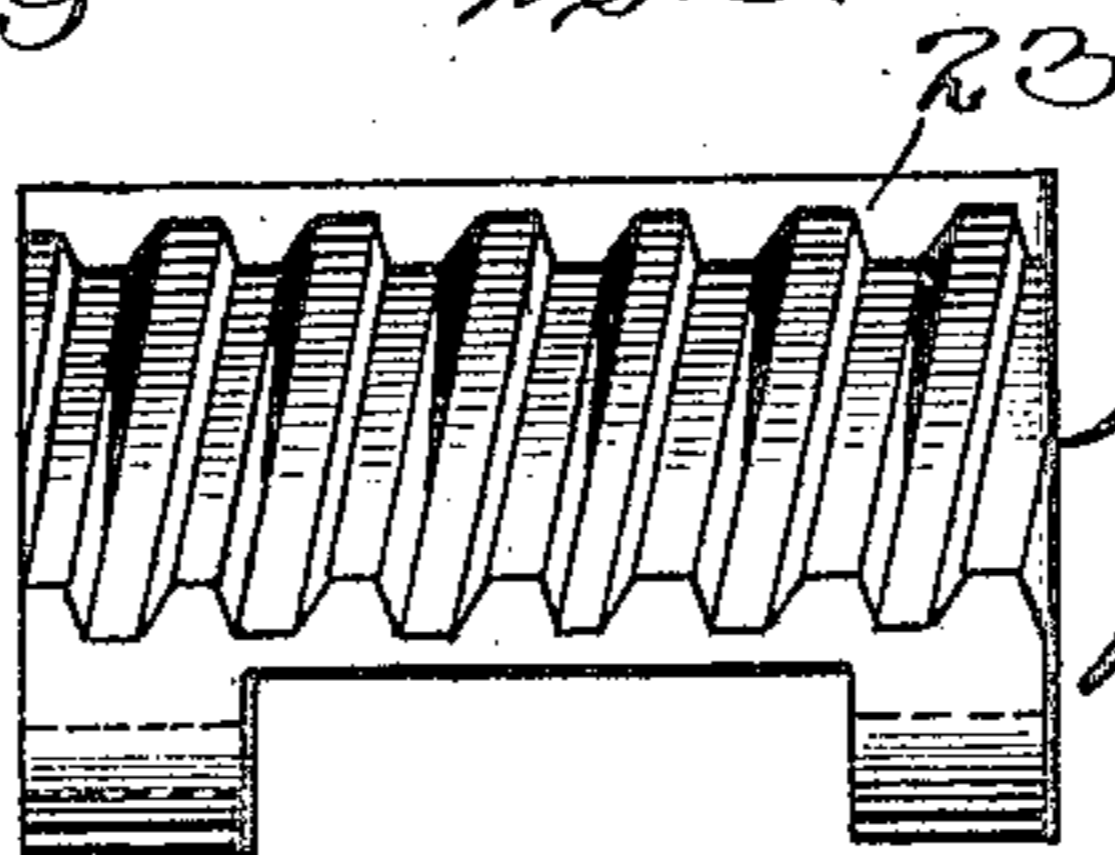
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2 SHEETS—SHEET 2.



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UNITED STATES PATENT OFFICE.

THEODORE C. PROUTY, OF AURORA, ILLINOIS, ASSIGNOR TO WILCOX MANUFACTURING COMPANY, OF AURORA, ILLINOIS, A CORPORATION OF ILLINOIS.

QUICK-ACTING VISE.

No. 874,992.

Specification of Letters Patent.

Patented Dec. 31, 1907.

Application filed October 24, 1907. Serial No. 399,039.

To all whom it may concern:

Be it known that I, THEODORE C. PROUTY, a citizen of the United States, residing at Aurora, in the county of Kane, State of Illinois, have invented a certain new and useful Improvement in Quick-Acting Vises, of which the following is a specification, reference being had to the accompanying drawings.

10 This invention relates to improvements in quick-acting vises, and has for its objects to provide a construction wherein all of the devices that are inclosed within the usual supporting frame are entirely separate from
15 such frame so that they may be wholly removed from position when the screw-threaded rod of the vise is withdrawn from the frame; to provide improved means for moving the nut into and out of engagement
20 with said screw-threaded rod, and to improve generally the construction and operation of vises of this character. I accomplish these objects by the devices and combinations of devices shown in the drawings and
25 hereinafter described.

That which I believe to be new will be pointed out in the claims.

In the drawings:—Figure 1 is a top or plan view of my improved device; Fig. 2 is
30 a vertical section taken at line 2—2 of Fig. 1 through the fixed frame, showing a portion of the screw-threaded operating rod, and in side elevation the expansible nut and devices connected therewith which are mounted
35 upon the screw-threaded operating rod within said fixed frame; Fig. 3 is an enlarged cross-section taken at line 3—3 of Fig. 1, and showing the several sections of the expansible nut held in engagement with
40 the screw-threaded operating rod; Fig. 4 is a view similar to Fig. 3 but showing the several sections of the expansible nut turned out of engagement with the screw-threaded operating-rod; Fig. 5 is an enlarged cross-
45 section taken at line 5—5 of Fig. 1 through the friction means; Fig. 6 is a section taken at line 6—6 of Fig. 3; Fig. 7 is a sectional view, some parts being omitted, taken at line 7—7 of Fig. 3; and Fig. 8 is a detail,
50 being an inner face view of one of the nut sections.

Referring to the several figures of the drawings, in which corresponding parts are indicated by like reference numerals, 10 and
55 11 indicate the front and rear walls of a

frame, and 12—12 the side walls of said frame, said parts of the frame being preferably made integral with each other and the frame as a whole being adapted to be firmly secured in place to a work-bench or other
60 suitable support. The front wall 10 of the frame constitutes the fixed jaw of the vise.

13 indicates a screw-threaded rod which passes through openings in the walls 10—11 of the frame, it being understood that such
65 openings are large enough to permit the screw-threaded rod to be moved freely longitudinally therein. The screw-rod opening through the wall 11, in the construction shown, has inserted in it a collar 14 so as to
70 form a comparatively wide bearing for the screw rod.

15 indicates the movable vise jaw suitably secured upon the unthreaded portion of the rod 13 near its outer end in such manner as
75 to permit the rod to be freely rotated.

16—16 indicate cylindrical guide-bars secured at their outer ends to the movable vise jaw 15, as usual, and extending through
80 aligned openings in the walls 10—11 of the supporting frame.

17 indicates an ordinary operating handle secured in the usual manner to the outer end of the screw rod 13.

18 indicates a casing on the screw rod 13
85 and through which the screw-rod is adapted to be freely moved longitudinally. The casing 18 is provided with a hollow boss 19 in which is located a suitable shoe 20 that is held in frictional engagement with the screw-
90 rod 13 by means of a coiled spring 21, the spring itself being retained in position, in the construction shown, by a cross-wire or key 22 passing through suitable openings in the walls of the hollow boss 19 near the upper
95 end thereof.

23—23 indicates segments which taken together constitute an expansible nut. As shown, three segments are provided, and they are of such width that when the nut is
100 in its closed position,—that is, in position to engage the screw-threads of the rod,—the nut will practically wholly surround the rod. It is understood, of course, however, that the number of the nut sections may be varied,
105 although I have found in practice that three, as shown, constitute a very effective working device. Each nut section is pivotally attached to a separate pin, each of said pins being suitably secured at one end to the casing
110

18, said casing 18 being slightly enlarged or thickened at that end nearest to the expansible nut for the purpose of receiving these pins. There being three nut sections shown, there are also of course shown three of these pins, and they are indicated by 24. One of these pins, as shown in Fig. 6, is longer than the others and extends across the casing 18, but it is not necessary to have one pin longer than the others. The other ends of the pins 24 are suitably secured in a plate 25 provided with a central opening through which the screw-threaded rod 13 can be freely moved longitudinally.

26 indicates a plate located between the casing 18 and the expansible nut formed of the sections 23. This plate is provided with a large central opening (see Fig. 6) through which the screw rod 13 is adapted to be freely moved longitudinally, and through which also project the pins 24 that connect the casing 18 and the several sections of the expansible nut. This plate 26 is to be held at all times against turning, and to so hold it it is provided with a lateral extension in which is formed a wide notch 27 that receives one of the cylindrical guide rods 16. This construction interferes in no manner with the free longitudinal movement of said guide rod, and, at the same time, by reason of the close fit of the guide rod in the notch, the plate 26 is absolutely prevented from any tendency to axial movement.

Firmly secured to that face of the plate next to the expansible nut are provided studs 28, the same number of studs being provided as there are nut sections. Each nut section has formed on its outer face and at that end adjacent to the fixed plate 26 a cam 29 with which one of the studs 28 engages. Each cam 29, as best shown in Figs. 3 and 4, is raised or thickened at its end portions, one of such raised portions extending slightly beyond the pivot pin 24 that secures the nut section in place. From this construction it is evident that when the nut is in its closed position and is partially rotated, as herein-after explained, so as to bring the raised end of the cam that is near the pivotal point of each nut section in contact with its stud, the effect of the pressure on such raised portion of each cam will be to cause the swinging or turning of the nut sections on their pivot pins so as to raise them out of engagement with the screw-threaded rod. It is likewise evident that when the nut is caused to partially rotate in the reverse direction, the studs will come in contact with the raised portions at the other ends of the cams and will force the nut sections to swing inward against and in engagement with the screw-threaded rod and to be held in such engagement.

The operation of the device is as follows:—
With the parts assembled as in Fig. 1, if it is

desired to quickly move the jaw 15 farther from or nearer to the fixed jaw 10, the screw-threaded rod 13 is to be given a slight turn to the left (the screw being a right-handed one, as shown), and the effect of this movement will be to cause the casing 18 that constitutes the friction-member of the device to turn with the said rod 13, such movement of the casing being compelled by the frictional engagement of its spring-pressed shoe 20 with the thread of said rod. Inasmuch as the pins 24, on which the nut sections 23 are pivotally mounted, are rigidly secured to this casing 18, they of course move with it, carrying the nut sections, and such partial rotation of the nut sections causes the studs 28 to come in contact with and bear against the raised or enlarged ends of the cams 29 that are brought opposite the pivotal points of attachment of the cams, and results in the nut sections being quickly turned and held out of engagement with the screw-threaded rod, as hereinbefore described. With the nut sections so held, it is evident that inasmuch as the thread on the rod 13 is not engaged by any other threaded part, it can be quickly moved longitudinally to the point desired. It is understood, of course, that while the shoe 20 presses sufficiently hard against the screw-threaded rod to compel the slight backward turning of the casing 18, and the expansible nut carried thereby, it does not press hard enough against the rod to prevent the easy longitudinal movement of the rod in the manner described.

The plate 25 connects the rods 24 together, as stated, and acts to support them so as to prevent the possibility of their being bent or gotten out of proper alinement at any time. It will be noted that no part of the operating mechanism is attached to the fixed jaw, or indeed to any portion of the supporting frame-work of which the fixed jaw forms one wall. This is of considerable advantage, because in case it becomes necessary to replace or repair any of the parts that are contained within the walls of the supporting frame the screw-threaded rod and the guide-bars can be instantly pulled out and away from the supporting frame, which act alone disconnects from the operating screw rod 13 all of the mechanism that is located between the walls of the supporting frame. When the parts are in place as in Fig. 1, it will be noted that the casing 18, the expansible nut, and the interposed plate 26 fit snugly between the front and rear portions of the supporting frame, the plate 25 that connects the forward ends of the pivot pins together bearing against the inner face of the fixed vise jaw, and the rear end of the casing 18 bearing against the rear wall of the supporting frame, or, in the construction shown, against the end of the bearing 14 in that rear wall.

What I claim as my invention and desire to secure by Letters Patent is:—

1. The combination with a frame and a screw-threaded rod adapted to be moved longitudinally therethrough without turning, of a device frictionally held in engagement with said rod, a nut-member pivotally connected with said friction device and adapted to partially rotate around said rod with said friction device, and means for causing said nut-member to turn on its pivot.

2. The combination with a frame and a screw-threaded rod adapted to be moved longitudinally therethrough without turning, of a device frictionally held in engagement with said rod, a nut-member pivotally connected with said friction device and adapted to partially rotate around said rod with said friction device, and stationary means for causing said nut-member to turn on its pivot.

3. The combination with a frame and a screw-threaded rod adapted to be moved longitudinally therethrough without turning, of a device frictionally held in engagement with said rod, a nut-member pivotally connected with said friction device and adapted to partially rotate around said rod with said friction device, and means for engaging said nut-member to cause it to turn on its pivot and be held either away from or in engagement with said rod.

4. The combination with a frame and a screw-threaded rod adapted to be moved longitudinally therethrough without turning, of a device frictionally held in engagement with said rod, a pin secured to and projecting from said friction device, a threaded nut-member mounted on said pin, and stationary means for causing said nut-member to turn on its said pin.

5. The combination with a frame and a screw-threaded rod adapted to be moved longitudinally therethrough without turning, of a device frictionally held in engagement with said rod, a pin secured to and projecting from said friction device, a threaded nut-member mounted on said pin, a cam formed on said nut-member and a stationary device adapted to bear on said cam as said friction device and nut-member are turned to cause said nut-member to turn on its said pin.

6. The combination with a frame and a screw-threaded rod adapted to be moved longitudinally therethrough without turning, of a device frictionally held in engagement with said rod, an expansible nut composed of a plurality of sections, pins secured to and projecting from said friction device, said nut sections being separately mounted on said pins, a plate having an opening through which said screw-rod passes without engaging said plate, means for holding said

plate stationary, and means carried by said plate for engaging and turning said nut sections.

7. The combination with a frame and a screw-threaded rod adapted to be moved longitudinally therethrough without turning, of a device frictionally held in engagement with said rod, an expansible nut composed of a plurality of sections, pins secured to and projecting from said friction device, said nut sections being separately mounted on said pins, a plate interposed between said friction device and the expansible nut and having an opening through which said screw-rod and pins pass, means for holding said plate stationary, and means carried by said plate for engaging and turning said nut sections.

8. The combination with a frame and a screw-threaded rod adapted to be moved longitudinally therethrough without turning, of a device frictionally held in engagement with said rod, an expansible nut composed of a plurality of sections and each provided with a cam, means for pivotally connecting each of said nut sections to said friction device, a plate having an opening through which said screw-rod passes without engaging said plate, means for holding said plate stationary, and means carried by said plate for bearing on said cams to cause said nut sections to turn into and out of engagement with said screw-threaded rod.

9. The combination with a frame and a screw-threaded rod adapted to be moved longitudinally therethrough without turning, of a device frictionally held in engagement with said rod, an expansible nut composed of a plurality of sections, pins each secured at one end to and projecting from said friction device, said nut sections being separately mounted on said pins, means for connecting together said pins at their other ends, a plate having an opening through which said screw-rod passes without engaging said plate, means for holding said plate stationary, and means carried by said plate for engaging and turning said nut sections.

10. The combination with a frame, a screw-threaded rod and a guide bar parallel with said rod, both said rod and guide bar being adapted to be moved longitudinally through the frame, of a device frictionally held in engagement with said rod, an expansible nut composed of a plurality of sections, pins secured to and projecting from said friction device, said nut sections being separately mounted on said pins, a plate having an opening through which said screw-rod passes without engaging said plate, said plate being notched to engage said guide-rod, and means carried by said plate for engaging and turning said nut sections.

11. The combination with a frame comprising front and rear walls, and a screw-

threaded rod extending therethrough, of a friction device on said rod, an expansible nut pivotally connected with and rotatable with said friction device, and stationary nut-operating means through which said screw-threaded rod passes, said friction device, expansible nut and nut-operating means being located between said front and rear walls and unconnected with either of said walls.

10 12. The combination with a frame comprising front and rear walls, and a screw-threaded rod extending therethrough, of a friction device on said rod, an expansible nut pivotally connected with and rotatable with said friction device, and stationary nut-operating means through which said screw-threaded rod passes, said stationary nut-operating means being interposed between said friction device and nut, and said friction device, nut and nut-operating means being located between said front and rear walls and unconnected with either of said walls.

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Witnesses:
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M. L. PADDOCK.