

No. 631,991.

Patented Aug. 29, 1899.

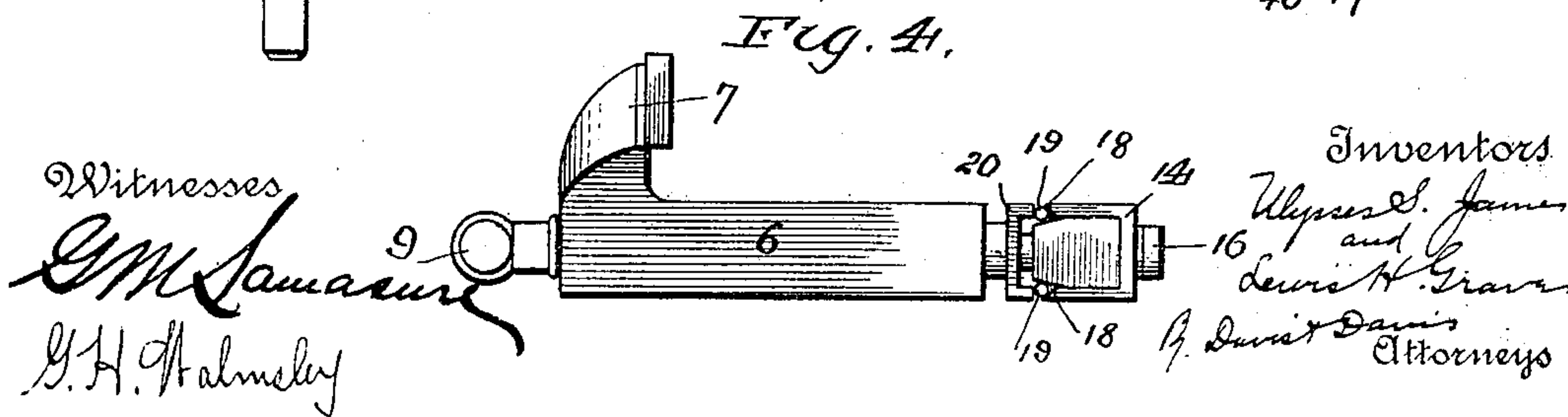
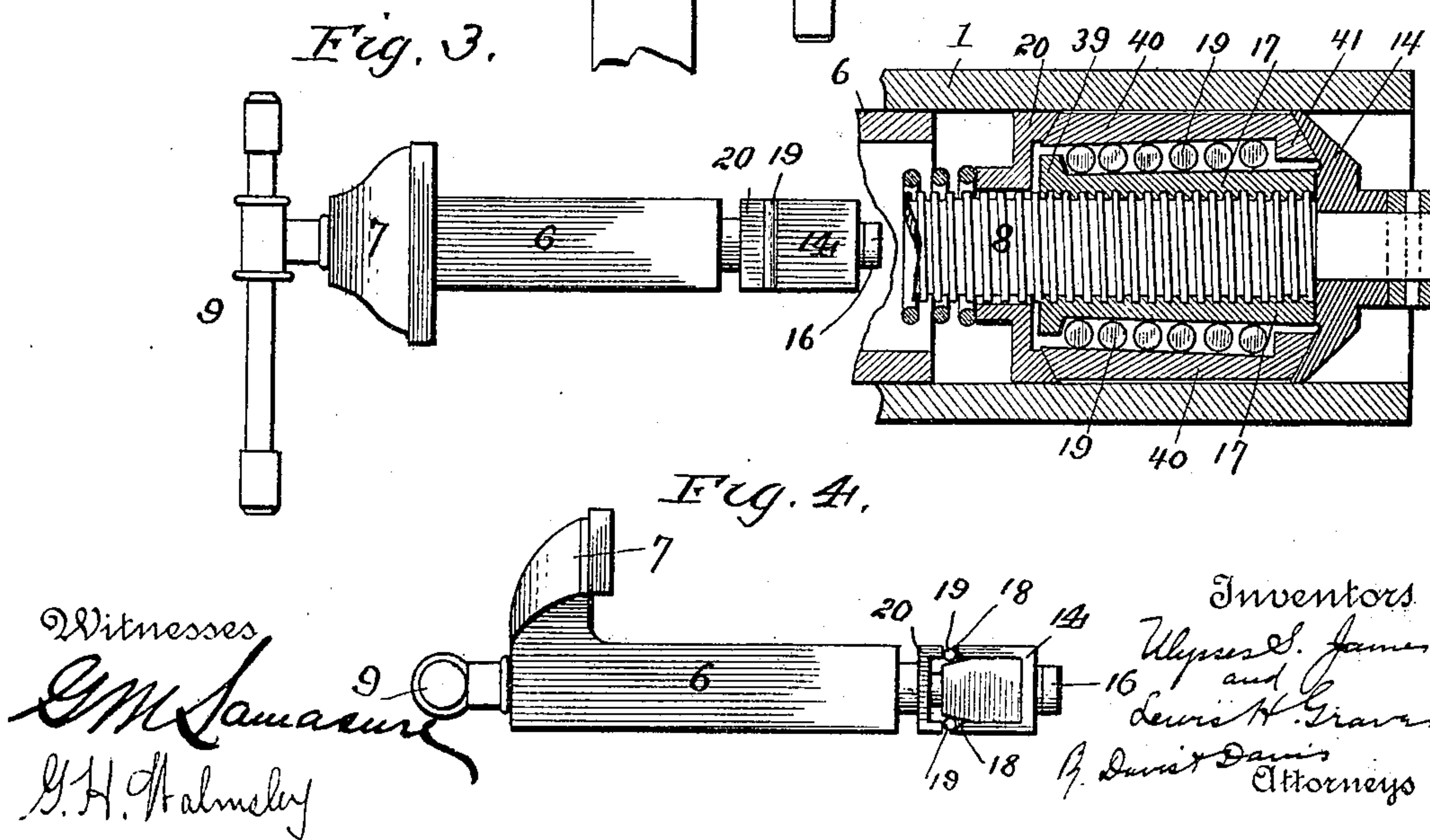
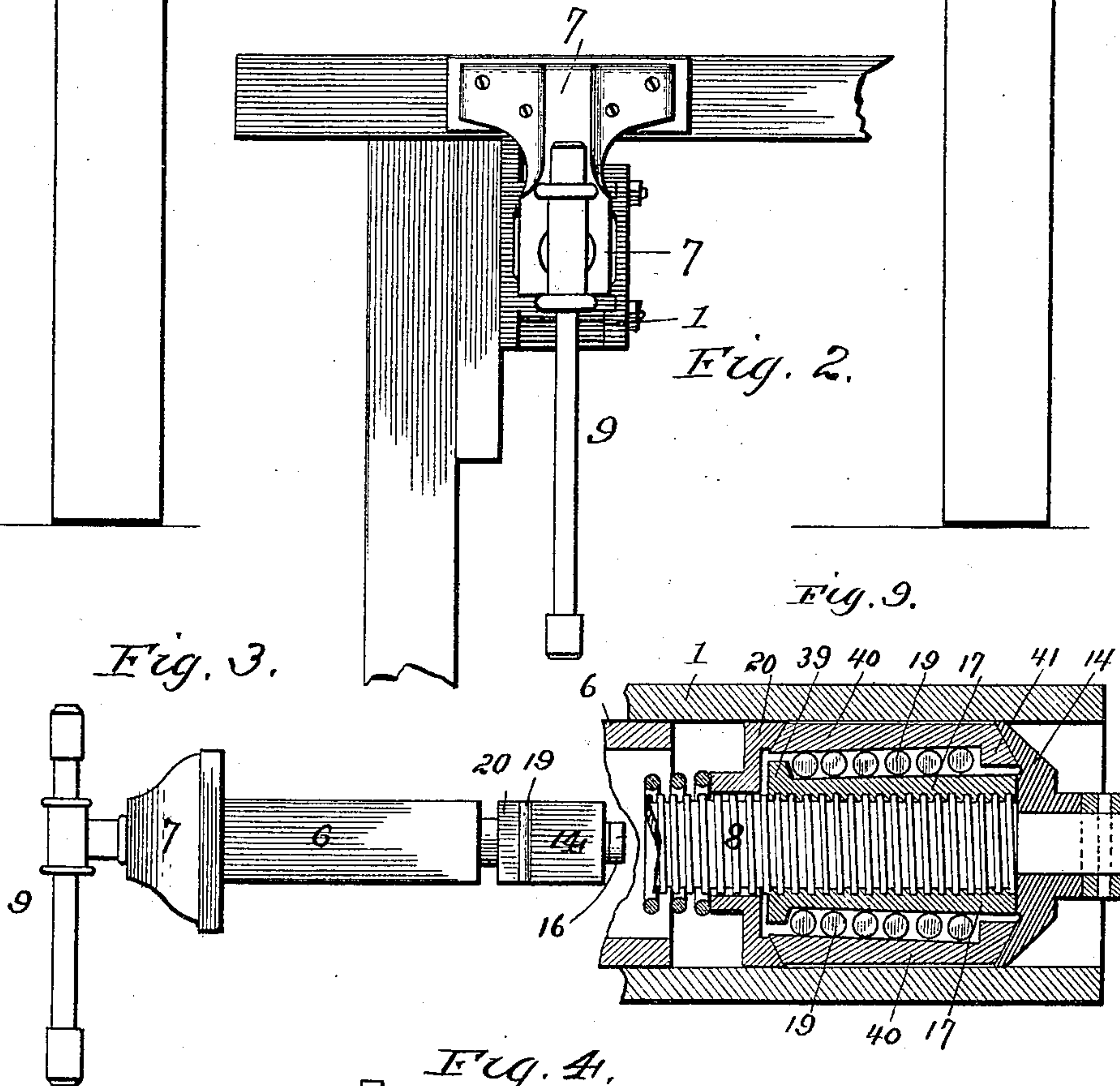
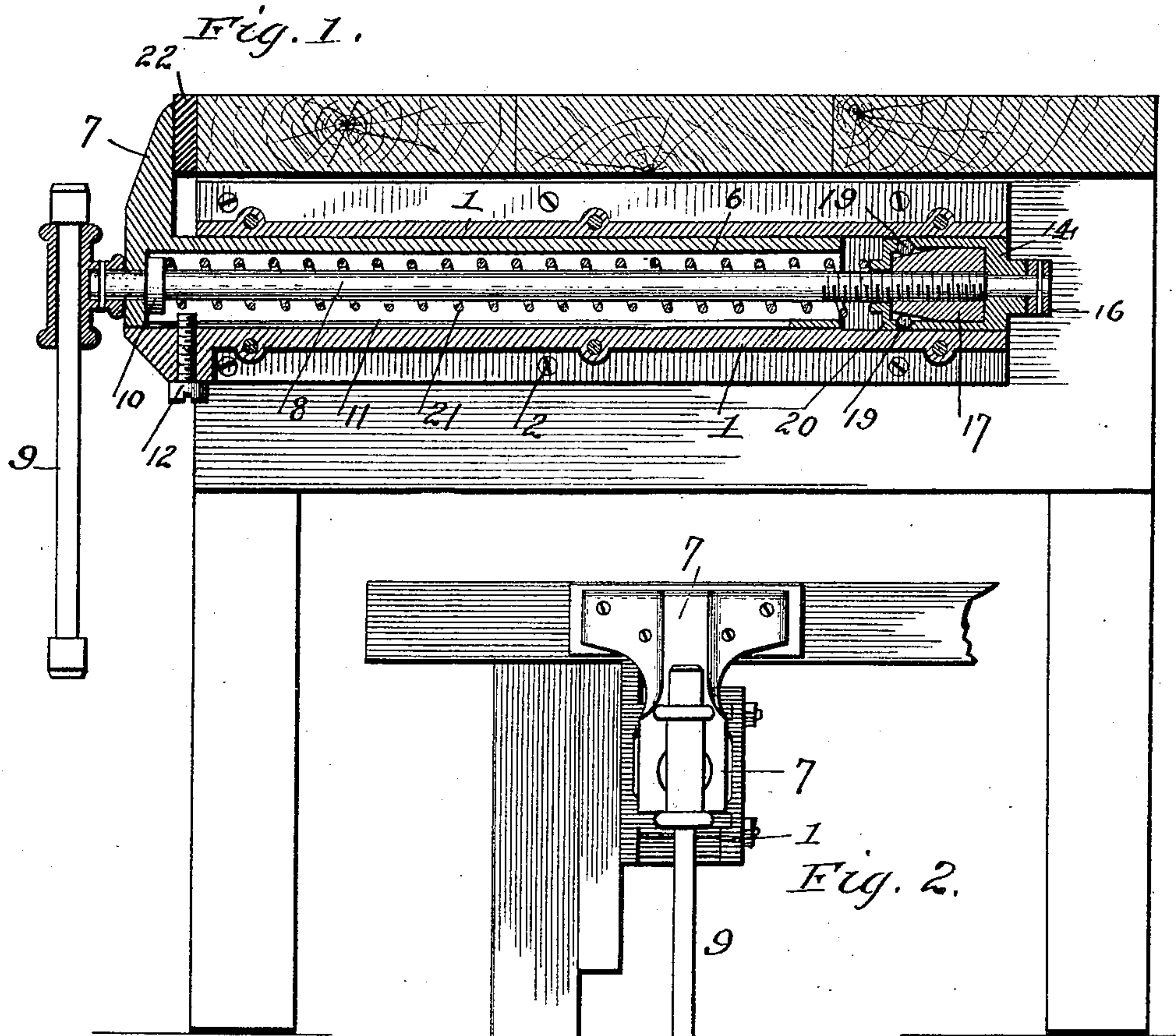
U. S. JAMES & L. H. GRAVES.

WISE.

(Application filed Jan. 4, 1899.)

(No Model.)

2 Sheets—Sheet 1.



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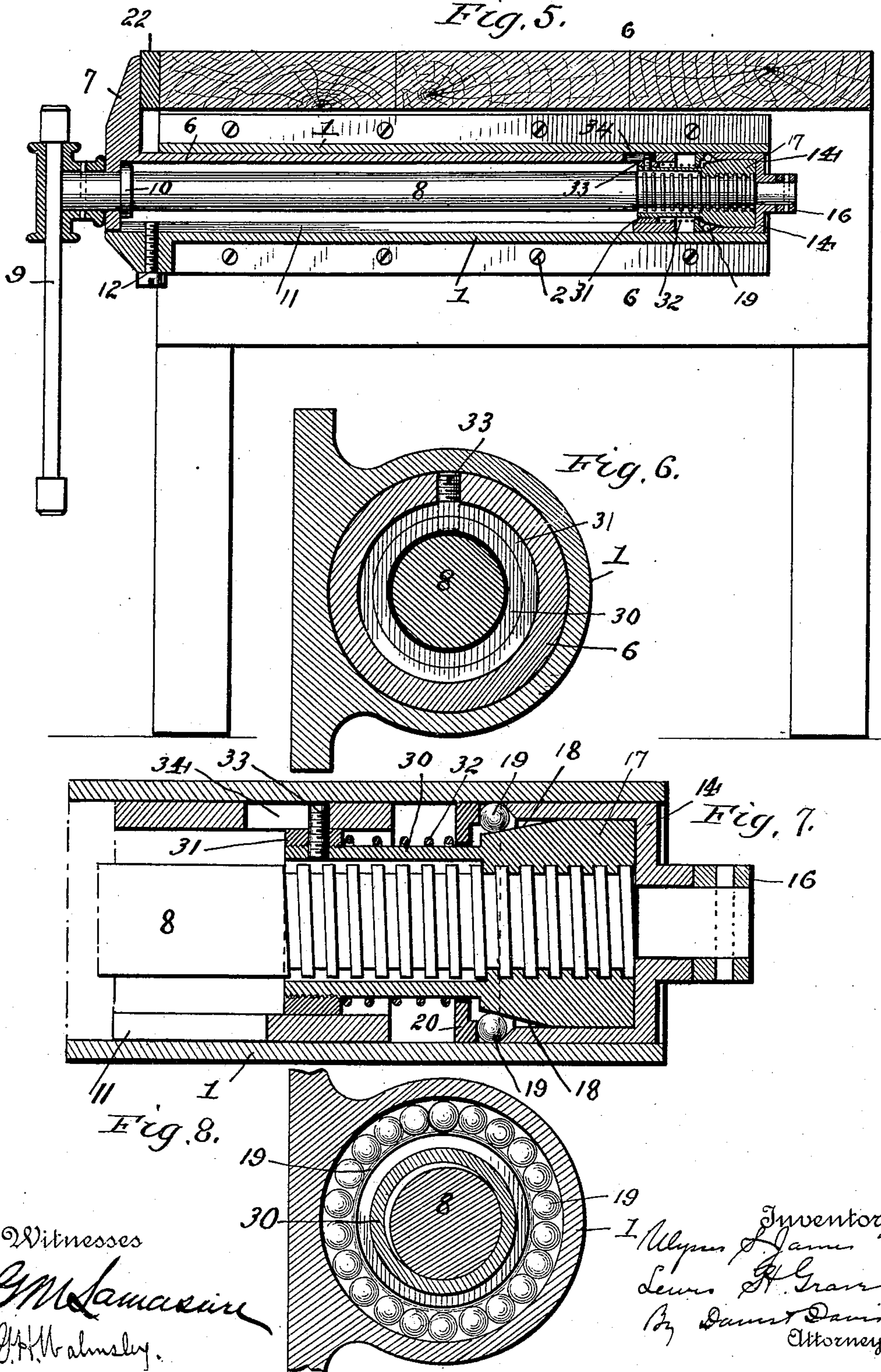
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2 Sheets—Sheet 2.





# UNITED STATES PATENT OFFICE.

ULYSSES S. JAMES AND LEWIS H. GRAVES, OF HELENA, MONTANA; SAID  
JAMES ASSIGNOR TO SAID GRAVES.

## WISE.

SPECIFICATION forming part of Letters Patent No. 631,991, dated August 29, 1899.

Application filed January 4, 1899. Serial No. 701,138. (No model.)

*To all whom it may concern:*

Be it known that we, ULYSSES S. JAMES and LEWIS H. GRAVES, citizens of the United States, residing at Helena, in the county of Lewis and Clark and State of Montana, have invented certain new and useful Improvements in Vises, of which the following is a specification, reference being had therein to the accompanying drawings, in which—

10 Figure 1 is longitudinal sectional view of the vise in position on a bench. Fig. 2 is a front view. Fig. 3 is a view of the sliding jaw removed, showing the gripping mechanism. Fig. 4 is a side elevation of the gripping-jaw removed. Fig. 5 is a longitudinal sectional view of a slight modification. Fig. 6 is a cross-sectional view on line 6 6 of Fig. 5. Fig. 7 is an enlarged detail sectional view of the modified form of the gripping device. Fig. 8 is a cross-sectional view on line 8 8 of Fig. 7. Fig. 9 is a detail longitudinal section, showing a slight modification of the gripping devices.

25 This invention relates to a new and improved bench-vise; and it has for its object to produce a vise of simple construction, which may be readily operated and wherein the movable jaw may be quickly moved toward and from the rigid jaw without rotating the clamping-screw and when in position may be rigidly clamped on the material to be held by a slight rotation of said screw.

35 The invention consists in the novel combination and arrangement of parts hereinafter described, and particularly pointed out in the claims appended.

Referring by numerals to the various parts of Figs. 1 to 4, inclusive, 1 designates a rectangular tubular support which is secured to the bench or table by screws 2. The rectangular tubular extension 6 of the movable jaw 7 slides within the tubular support. Extending longitudinally through this extension is a clamping-screw 8. This screw passes 45 through the movable jaw and is provided with an operating-arm 9 at its outer end. A collar 10 is formed on the screw just inside of the jaw 7 to hold the screw against longitudinal movement with respect to the movable jaw. In the bottom of the extension 6 is 50 formed a slot 11, which is closed at its ends,

a screw 12 being passed through the bottom of the support 1, and having its upper end entering said slot 11 to limit the outward movement of the movable jaw.

55 The inner end of the screw 8 is reduced, and on the reduced end is mounted loosely a yoke or cap 14, whose two arms extend forwardly and fit loosely the flat sides of the tubular support at a point beyond the tubular extension 6, and a collar 16 is rigidly secured to the end of the reduced portion of the screw to secure the yoke or cap in place. Within the yoke or cap and threaded on the screw is a block 17, whose upper and lower faces at 65 their forward ends, adjacent to the ends of the yoke-arms, are beveled off forwardly to form inclines 18. A rotatable grip-roller 19 is confined on each of the beveled faces 18, being held against inwardly-beveled ends of the yoke 14 by a pressure-plate 20, which is loosely mounted on the screw 8. A coil-spring 21 fits within the extension of the movable jaw and forces the pressure-plate yieldingly against the grip-rollers 19, thereby holding 75 said rollers against the beveled ends of the yoke or cap and the beveled faces of the block 17. It will be noticed that the yoke or cap is held against longitudinal movement on the screw, while the block 17 and the pressure-plate 20 are capable of a longitudinal movement thereon. 80

The operation is as follows: When the block 17 is screwed back into the yoke 14, as shown in Fig. 1, the pressure-plate 20 normally 85 presses the rollers back into the crotch formed by the beveled faces of the block and yoke-arms away from the walls of the supporting-tube 1, leaving the movable jaw and its attached parts free to be adjusted. The article to 90 be clamped is now placed against the rigid jaw 22 and the movable jaw slid up against it. The screw is now rotated and the block 17 drawn forward, thereby forcing outward the rollers 19. The pressure-plate holds the rollers 95 against the ends of the yoke-arms, but permits them to roll forward and outward on the beveled edges thereof. The rollers force the plate 20 slightly forward as they roll outward and the plate forces them normally inward 100 on the beveled surfaces of the yoke-arms when the block 17 is drawn back within the



yoke. This construction prevents the rollers from adhering to the side of the tubular support and insures a positive releasing of the gripping devices from said support.

5 In the modification shown in Figs. 5 to 8 the tubular support 1, the extension 6, the yoke 14, the block 17, and the pressure-plate 20 are all formed cylindrical instead of rectangular in cross-section, as in the other form.  
 10 The rolling grip devices are formed spherical in this form, and these balls are arranged entirely around the block 17, the beveled faces 18 being made continuous and carried entirely around the block. In this modification  
 15 the screw 12 not only prevents the extension being drawn out of the support, but it holds said extension against rotation. The block 17 in this modified form is provided with a forwardly-extending tubular extension 30,  
 20 through which the clamping-screw extends loosely, and on the forward end of this extension is secured a stop-collar 31, which fits within the rear end of the cylindrical tubular extension of the movable jaw. Between this  
 25 stop-roller and the pressure-plate 20 and surrounding the extension 30 is a coil-spring 32, whose rear end bears against the pressure-plate 20. To prevent the block 17 rotating with screw 8, a screw 33 is passed through a  
 30 short slot 34 in the inner end of the extension of the movable jaw, its inner end entering the collar on the extension 30. The slot 34 permits the block 17 and connected parts to move longitudinally independently of the  
 35 extension 6 for a limited distance.

In the modification shown in Fig. 9 bearing-shoes 40 are interposed between the grip-rolls 19 and the wall of the tubular support, whereby the grip-rolls will not come in contact with the tubular support, but will exert their pressure through the medium of said shoes. The nut 17 has a more extended beveled surface, so that a series of the grip-rolls may be employed side by side, and to hold  
 40 the rolls in place said nut 17 is flanged at its forward end, as at 39, and the shoes are provided at their rear ends with an inward-extending flange 41. The rear ends of the shoes are beveled to correspond with the bevel  
 50 on the cap 14, and their forward ends are beveled to correspond with a similar bevel on the rear face of the pressure-plate 20, so that when the nut 17 is forced backward the pressure-plate will normally hold the shoes away  
 55 from the support. The support and other parts are made rectangular, as in Figs. 1 to 4, inclusive.

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

1. In a vise, the combination of a rigid jaw, a tubular support, a movable jaw formed with an extension working within the tubular support, a clamping-screw carried by the movable  
 65 jaw, a gripping means carried by the screw at its inner end and adapted to engage the tubular support, said means consisting of a

beveled block threaded on said screw, a movable gripping device working on the bevel of said block, a yielding device bearing on said  
 70 gripping device and pressing it rearward, and a beveled part on the screw to receive the rearward thrust of the gripping device, substantially as and for the purpose described.

2. In a vise, the combination of a rigid jaw, 75 a tubular support, a movable jaw, an extension on said movable jaw working within the tubular support, a clamping-screw carried by the movable jaw, a cap or yoke carried by said screw at its inner end, said cap being  
 80 held against longitudinal movement on the screw, a block threaded on the screw and adapted to fit within the cap, said block being beveled at its forward end, a movable gripping device working on said beveled portion, 85 a spring-pressure plate yieldingly engaging said movable gripping device and holding it against the adjacent front edge of the cap, substantially as and for the purpose set forth.

3. In a vise, the combination of a rigid jaw, 90 a support, a movable jaw, an extension thereon working in the support, a clamping-screw carried by the movable jaw, a beveled block carried by the screw, a rolling grip device working on said beveled block, and means for 95 normally engaging said grip device and normally pressing it rearward and away from the support, substantially as described.

4. In a vise, the combination of a rigid jaw, a tubular support, a movable jaw formed with 100 an extension working in said support, a clamping-screw carried by said movable jaw, a yoke or cap carried by the screw, said yoke being held against longitudinal movement on said screw, the front edges of said yoke-arms being beveled as shown, a beveled block carried by said screw and lying within the yoke, a grip device working on the beveled block and against the adjacent edge of the yoke, and a pressure-plate yieldingly engaging the grip 110 device and holding it against the beveled edge of the yoke and the beveled block, substantially as described.

5. In a vise, the combination of a support, a movable jaw, a clamping-screw carried by 115 said movable jaw, a clamping mechanism carried by said screw, said mechanism comprising a beveled block movable on the screw, a beveled part on the screw held against movement with respect to the screw, the block being beveled in one direction and the stationary part being beveled in the opposite direction, a gripping device working on said beveled faces, and a yielding device adapted to force the gripping device against the beveled 125 surface of the stationary part when releasing the gripping mechanism, substantially as described.

6. In a vise, the combination of a rigid jaw, a support, a movable jaw formed with an extension, a clamping-screw, a beveled block threaded thereon, an extension carried by said block, a stop or abutment on said extension, rolling gripping devices working on the 130



beveled face of said block, a pressure-plate engaging said rolling devices, and a spring between the stop or abutment on the extension of the beveled block and said pressure-plate, as and for the purpose set forth.

7. In a vise, the combination of a rigid jaw, a support, a movable jaw formed with an extension, a clamping-screw, a beveled block threaded thereon, an extension formed on said block, a pressure-plate engaging said rolls, a spring between the stop on the extension of the beveled block and said plate, and means

to hold said beveled block against rotation while permitting it to have a longitudinal movement on the screw, substantially as described. 15

In testimony whereof we hereunto affix our signatures, in the presence of two witnesses, this 23d day of December, 1898.

ULYSSES S. JAMES.  
LEWIS H. GRAVES.

Witnesses:

P. G. SCHROEDER,  
C. G. MOORE.