

(No Model.)

2 Sheets—Sheet 1.

F. & C. A. JOHNSON.
GAINING MACHINE.

No. 501,683.

Patented July 18, 1893.

Fig. 1.

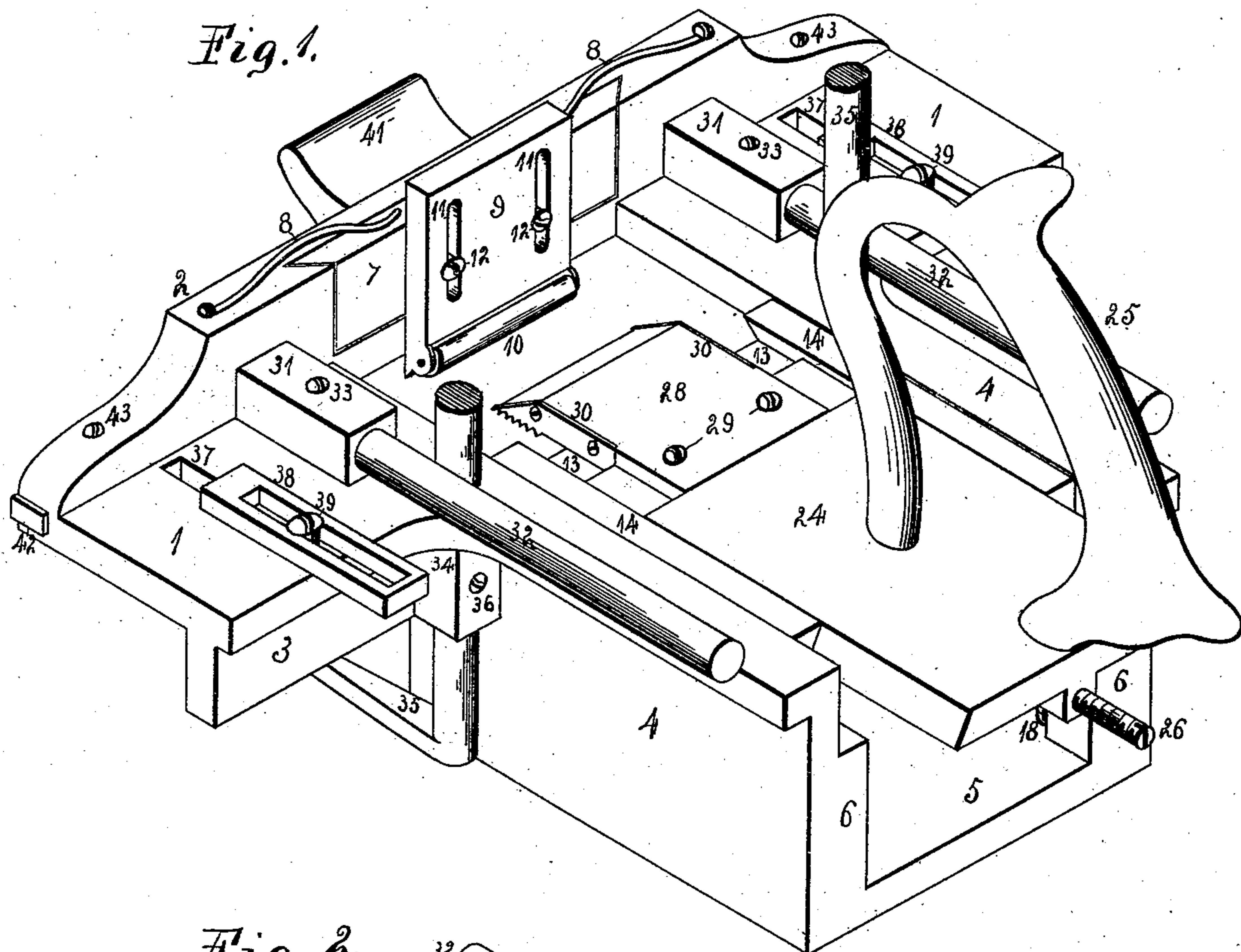
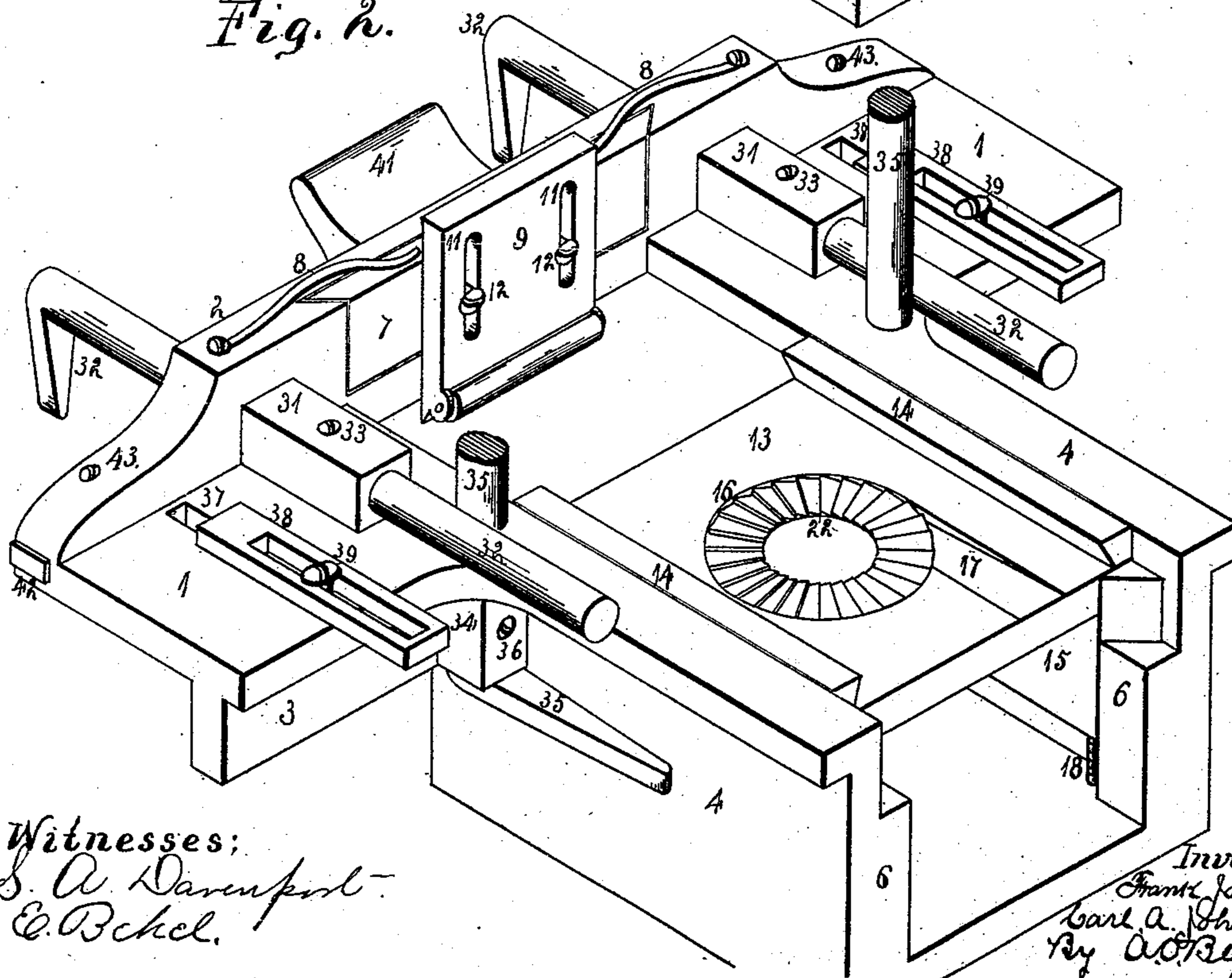


Fig. 2.



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(No Model.)

2 Sheets—Sheet 2.

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GAINING MACHINE.

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Fig. 3.

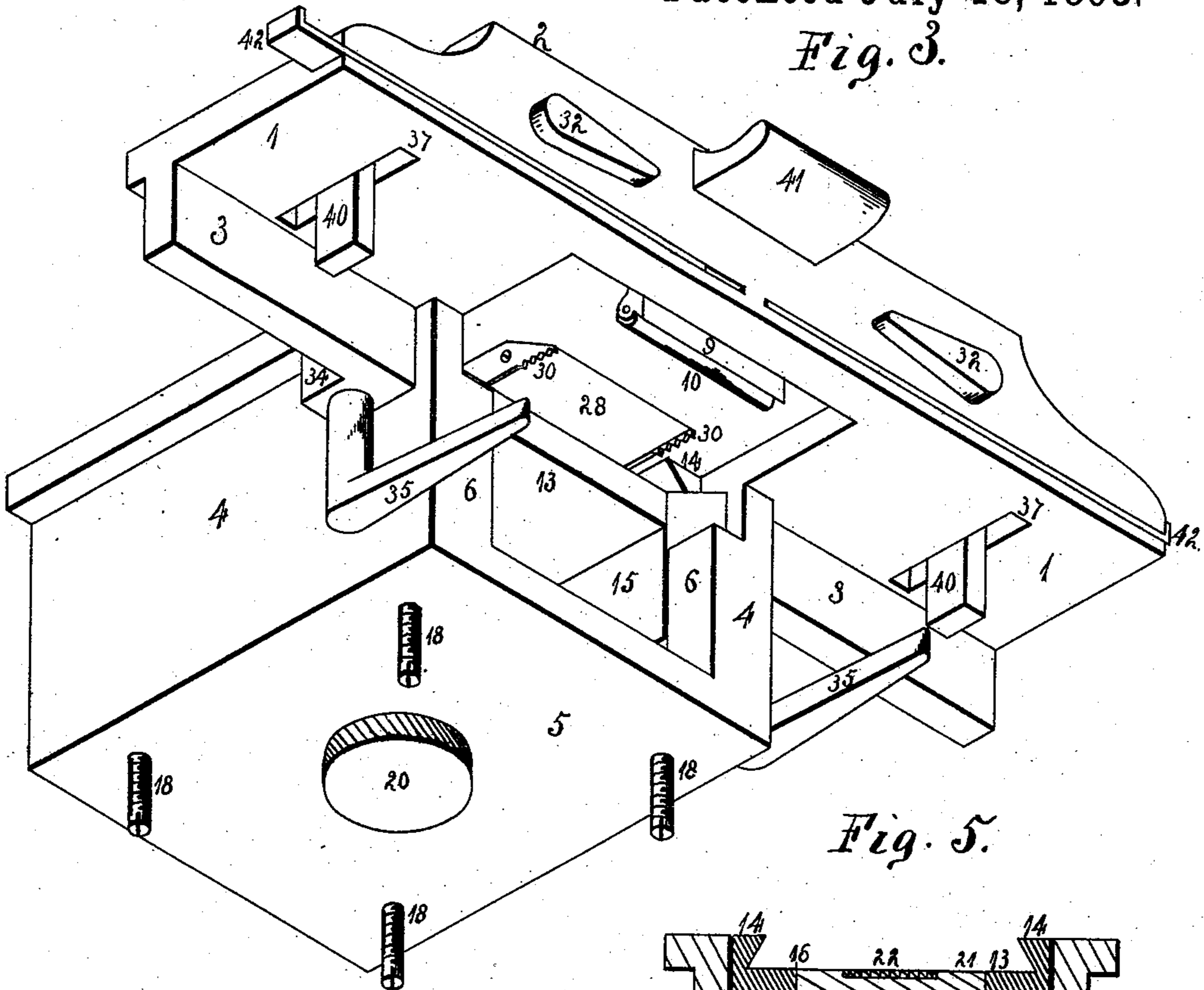


Fig. 5.

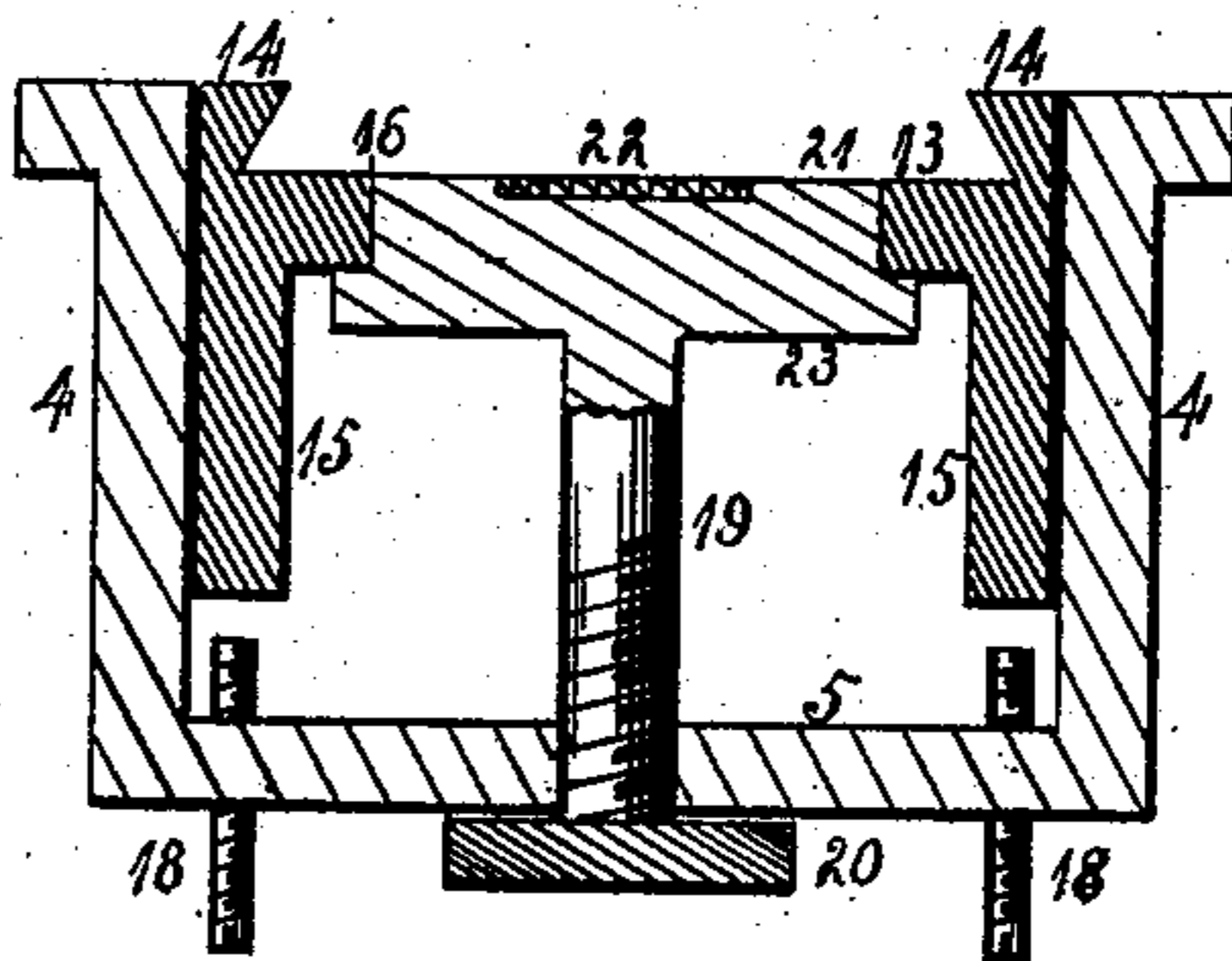


Fig. 4.

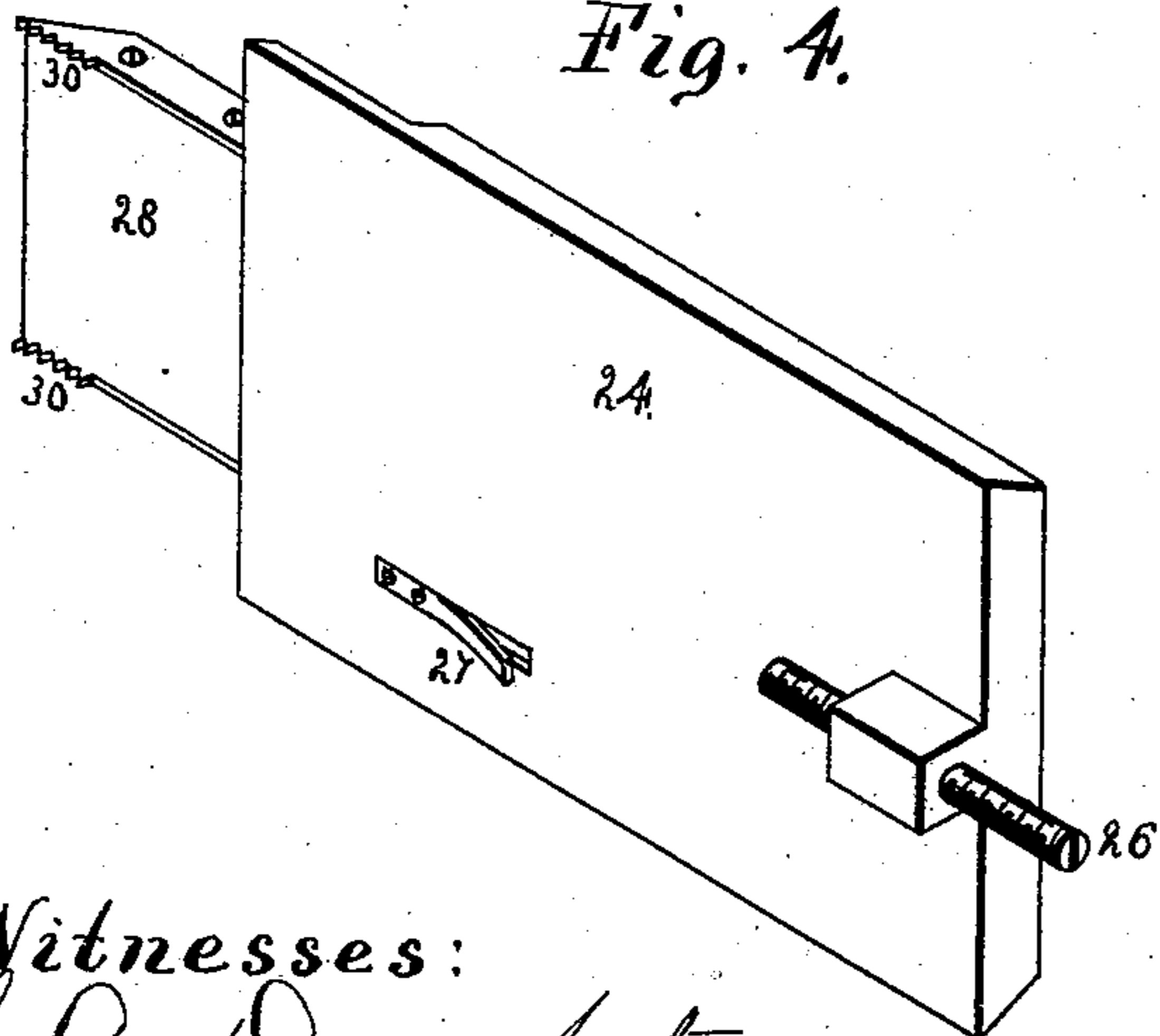
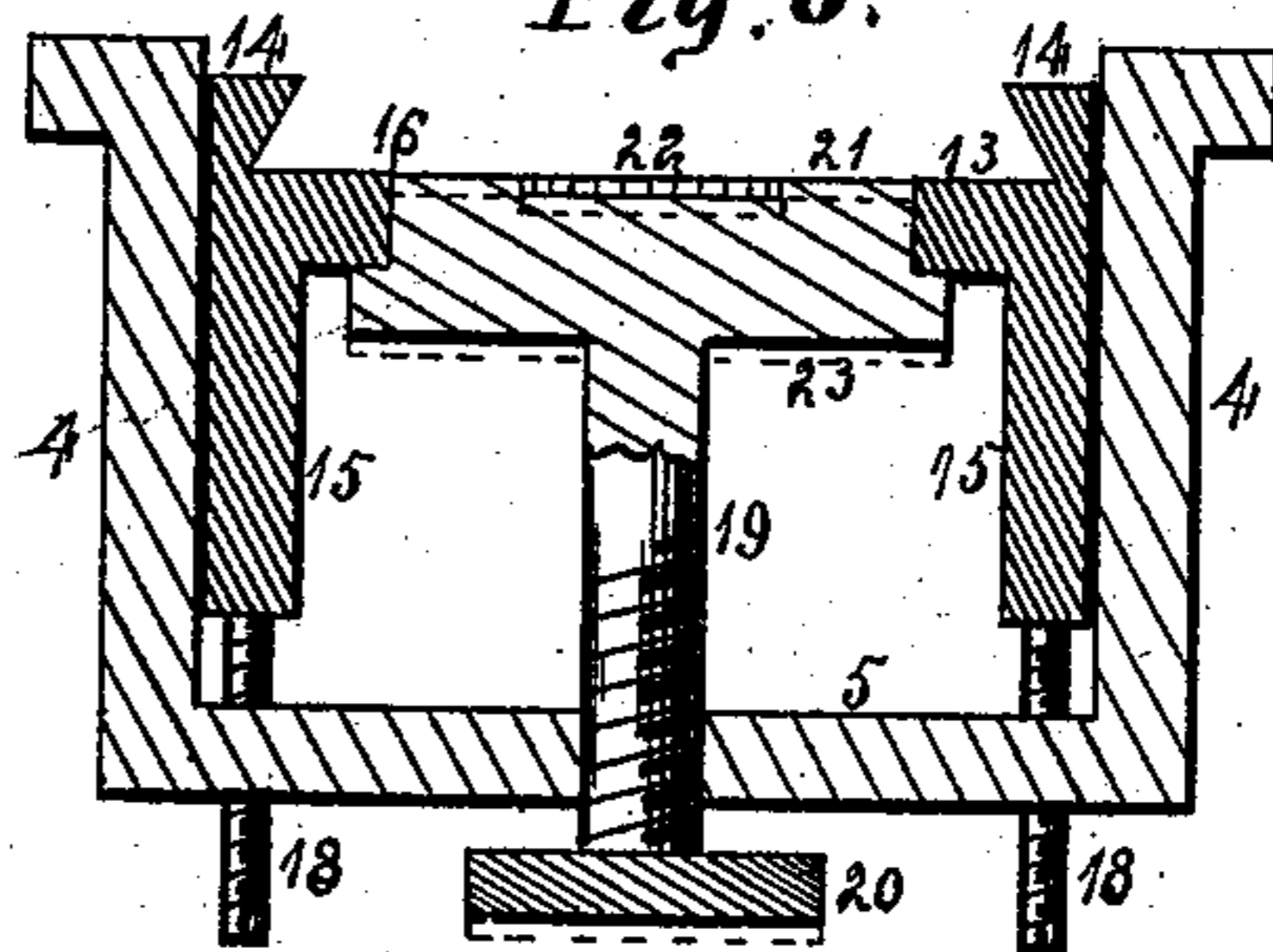


Fig. 6.



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UNITED STATES PATENT OFFICE.

FRANK JOHNSON AND CARL A. JOHNSON, OF ROCKFORD, ILLINOIS.

GAINING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 501,683, dated July 18, 1893.

Application filed March 1, 1893. Serial No. 464,276. (No model.)

To all whom it may concern:

Be it known that we, FRANK JOHNSON and CARL A. JOHNSON, citizens of the United States, residing at Rockford, in the county of Winnebago and State of Illinois, have invented certain new and useful Improvements in Gaining-Machines, of which the following is a specification.

The object of this invention is to cut the recess or gain in which the leaf of the hinge is seated, in order that the parts of the wood-work may fit properly.

This invention consists of a knife having a vertical movement and a combined knife and saw having a horizontal movement, means for regulating the vertical movement of the combined knife and saw during the cutting process, a stop limiting the depth of the cut, and a system of clamps for holding the woodwork in proper position to be operated upon.

In the accompanying drawings, Figure 1, is an isometrical representation of our improved gaining machine in which the clamps are in position for cutting a gain in the side of the wood-work. Fig. 2, is a similar view in which the clamps are in position for cutting the gain in the edge of the wood-work, and in which the combined knife and saw has been removed. Fig. 3, is an isometrical representation of the under side of the gaining machine, the parts being in the positions shown at Fig. 1. Fig. 4, is an isometrical representation of the under side of the combined knife and saw. Figs. 5, and 6, are transverse vertical sections through the device for regulating the vertical movement of the combined knife and saw during the cutting process, also for regulating the depth of the cut.

The main portion of our gaining machine consists of the wings 1, vertical end 2, depending rib 3, and the base portion composed of sides 4, and bottom 5. The lower end portion of the sides 4, are provided with a guide way 6, one being located in each corner.

The rear face of the vertical end 2, is provided with a V shaped guide-way, into which is placed a guide 7, and springs 8, secured at one end to the upper face of the vertical end, their free ends resting on the upper face of the guide, holding it in a yielding manner. To the rear face of this guide is secured a knife 9, having its lower face sharpened and

supporting a roller 10. This knife is made vertically adjustable in its connection with the guide by means of the slots 11, through which screws 12, pass into the face of the guide.

A vertically movable platform is placed within the upper open end of the base, and consists of an upper horizontal portion 13, provided with guide-ways 14, and vertical sides 15, having their ends beveled to fit within the guide-ways 6, of the base. A central opening 16, formed in the horizontal portion and from this opening extends a grooved-way 17, increasing in depth toward the opening 16. Adjustable screws 18, have a screw-threaded connection with the bottom 5, of the base portion, and extend under the guide formed sides of the movable platform, one under each corner.

The means for regulating the descent of platform consists of a screw-threaded shaft 19, having a screw-thread connection with the bottom of the base 5, its lower end having a knob 20, by which it is rotated. The upper end of this shaft is of circular form and of two diameters, the smaller portion 21, fitting and extending through the central opening 16, in the platform, its upper face provided with a series of radial saw-teeth 22. The longer portion 23, serves as a support for the platform.

The combined knife and saw consists of a base 24, having its side edges beveled to fit in the guide-way 14, and the movable platform has a handle 25, and an adjustable screw stop 26. A flat spring 27, extends from the under side of the base, and a recess formed therein allows the spring to lie flush with the base. To the front end of this base is secured a knife 28, by screws 29, and to each side of the knife is secured a saw 30. By this construction of a gaining machine, it will be seen that if the combined knife and saw is capable of a reciprocating movement in its guide-ways in the lengthwise direction of the machine, and when the beveled face of the knife comes in contact with the under side of the roller 10, forming a part of the vertically movable knife, said knife will be raised allowing the combined knife and saw to move even with the cutting face of the vertically movable knife, and upon the withdrawal of the

combined knife and saw, the springs 8, will force the knife downward to its fullest extent. This operation is repeated at each reciprocation of the combined knife and saw.

5 The set-screw 26, coming in contact with the rear end of the vertically movable platform, limits the advance movement of the combined knife and saw. The forward movement of the combined knife and saw cuts the wood

10 for the ends and face of the hinge while the vertically movable knife cuts the wood for the edge thereof. In order that the combined knife and saw may cut the wood the required depth and not too great a shaving at a time

15 it is necessary that the platform supporting the combined knife and saw should have a uniform vertical movement, and when the required depth has been reached to arrest the farther descent. This is accomplished by the

20 screw-threaded shank 19, and its upper serrated face. When the combined knife and saw has been moved forward to its fullest extent, the spring 27, will drop into engagement with the teeth 22, and upon withdrawing the com-

25 bined knife and saw the spring engagement will cause the shaft 19, to revolve a partial revolution, and this will be repeated with each reciprocation of the combined knife and saw. By lowering the shaft 19, the platform will

30 descend with it carrying the combined knife and saw until it comes in contact with the screws 18, when its movement will be arrested, when the parts will be in the position shown at Fig. 6. The further reciprocation

35 of the combined knife and saw will cause the shaft 19, to descend until the spring 27, fails to engage the teeth, when the parts will assume the position shown in dotted lines at Fig. 6. The incline 17, allows the withdrawal

40 of combined knife and saw by compressing the spring 27, in its recess in the under face of the base. In order to set the movable platform to allow the combined knife and saw to cut the proper depth, the leaf of the hinge is

45 placed upon the upper face of the platform and by means of the screws the platform is raised until the hinge comes flush with the upper surface of the main frame. The screw-threaded shank 19, is then turned to bring

50 the platform flush with the upper surface of the main frame, and the cutting process commenced, when the parts will be in the position shown at Fig. 5. In order to properly hold the wood-work in position to be operated

55 upon we have arranged a series of adjustable clamps. In bearings 31, located on the upper surface of the wings 1, are located clamps 32, and set-screws 33, will hold them where adjusted. In vertical bearings 34, formed under the wings are located clamps 35, held in

60 place by set-screws 36. The wings 1, are provided with transverse slots 37, and slotted gages 38, are located over the slots and held in place by screws 39. From the forward end

65 of these gages depend arms 40, extending through the slots 37. If it is desired to cut a recess in the edge of the woodwork, the clamps 38, are set back the required distance from the knife 9, being the width of the hinge, the machine is placed against the wood-work and

70 the clamps 32, adjusted to hold the wood-work firmly. If it is desired to cut the recess in the side of the wood-work the clamp 35, will engage the under side.

The ends of the wings 1, and the front face

75 of the vertical end 2, are provided with a horizontal groove in which are located gages 42, which are held when adjusted by set-screws 43. These gages are employed to place the machine the required distance from the end

80 of the material operated upon.

A series of spring actuated knives, and combined knife and saw are provided for the different length of hinges, and can be placed in position by the employment of the screws

85 which now hold the parts in place.

In this specification and claims we have employed the terms "vertical" and "horizontal" meaning that the parts referred to are at right angles to each other, as it is evident

90 that the machine constructed as shown in the drawings and herein described can be used in any position the work may require.

We claim as our invention—

1. In a gaining machine, the combination

95 of a suitable support, a reciprocating knife, a spring moving the knife in one direction and a combined knife and saw capable of a movement at right angles to the reciprocating knife, the movement of the combined

100 knife and saw imparting a reciprocating movement to the knife in one direction.

2. In a gaining machine, the combination of a suitable support, a combined knife and saw, a movable support therefor and a con-

105 nection between the combined knife and saw and its support whereby the reciprocation of the combined knife and saw will lower the support, and stops limiting the descent of the support.

110 3. In a gaining machine, the combination of a suitable support, a combined knife and saw, a movable platform, a screw threaded shank having a connection with a stationary part and provided with an enlarged end hav-

115 ing an annular surface provided with saw teeth, and a spring dog secured to the underside of the combined knife and saw engaging the saw teeth at each reciprocation thereof, the upper enlarged end supporting the mov-

120 able platform.

4. In a gaining machine, the combination of a suitable support, a combined knife and saw, a platform having guide-ways and supporting the combined knife and saw, and ad-

125 justable stops limiting the movement of the platform.

5. In a gaining machine, the combination of a suitable support, a reciprocating knife supporting a roller near its cutting edge, a

130 spring moving the knife in one direction, a combined knife and saw capable of a move-

ment at right angles to the reciprocating knife and engaging therewith at the end of its movement in one direction.

5 6. In a gaining machine, the combination of a suitable support, a reciprocating knife, a spring moving the knife in one direction and a combined knife and saw capable of a movement at right angles to the reciprocating knife, the movement of the combined

knife and saw imparting a reciprocating movement to the knife in one direction, and a system of clamps and gages for properly adjusting the woodwork and holding the same.

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