907,435.

F. L. ALFERY.

CARVING MACHINE.

APPLICATION FILED APR. 18, 1908.

Patented Dec. 22, 1908.

5 SHEETS—SHEET 1.

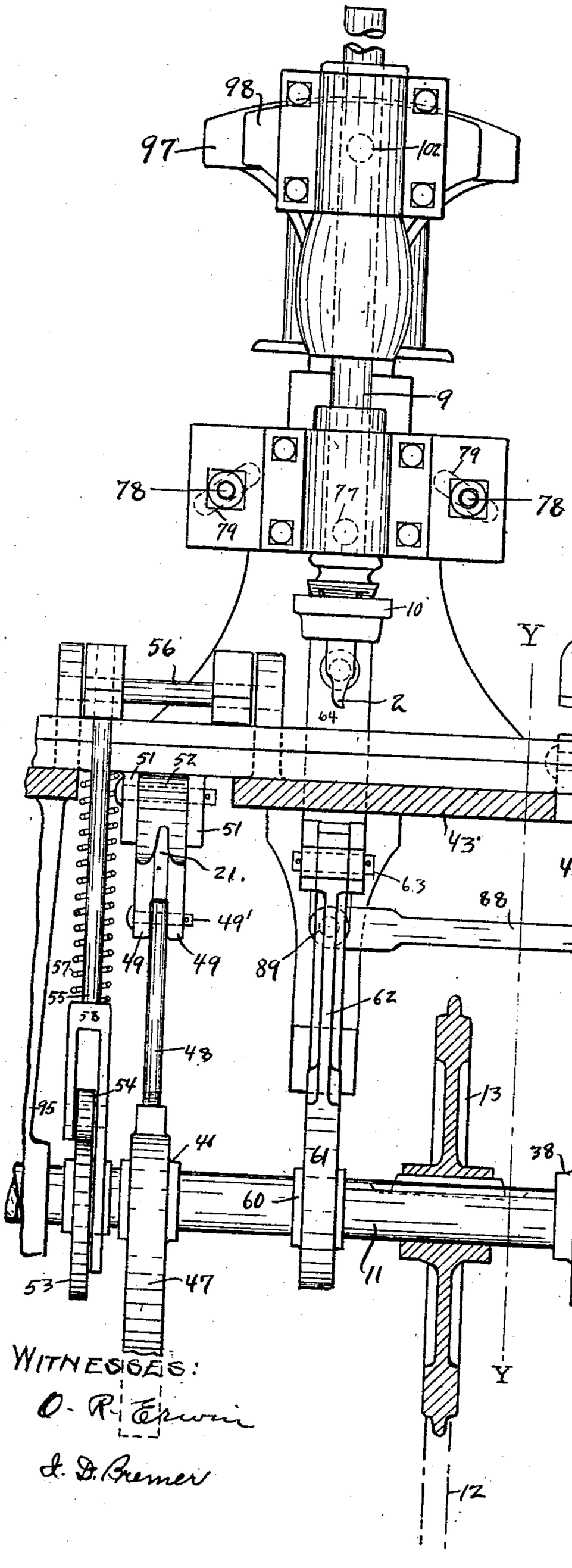

Fig. 1.

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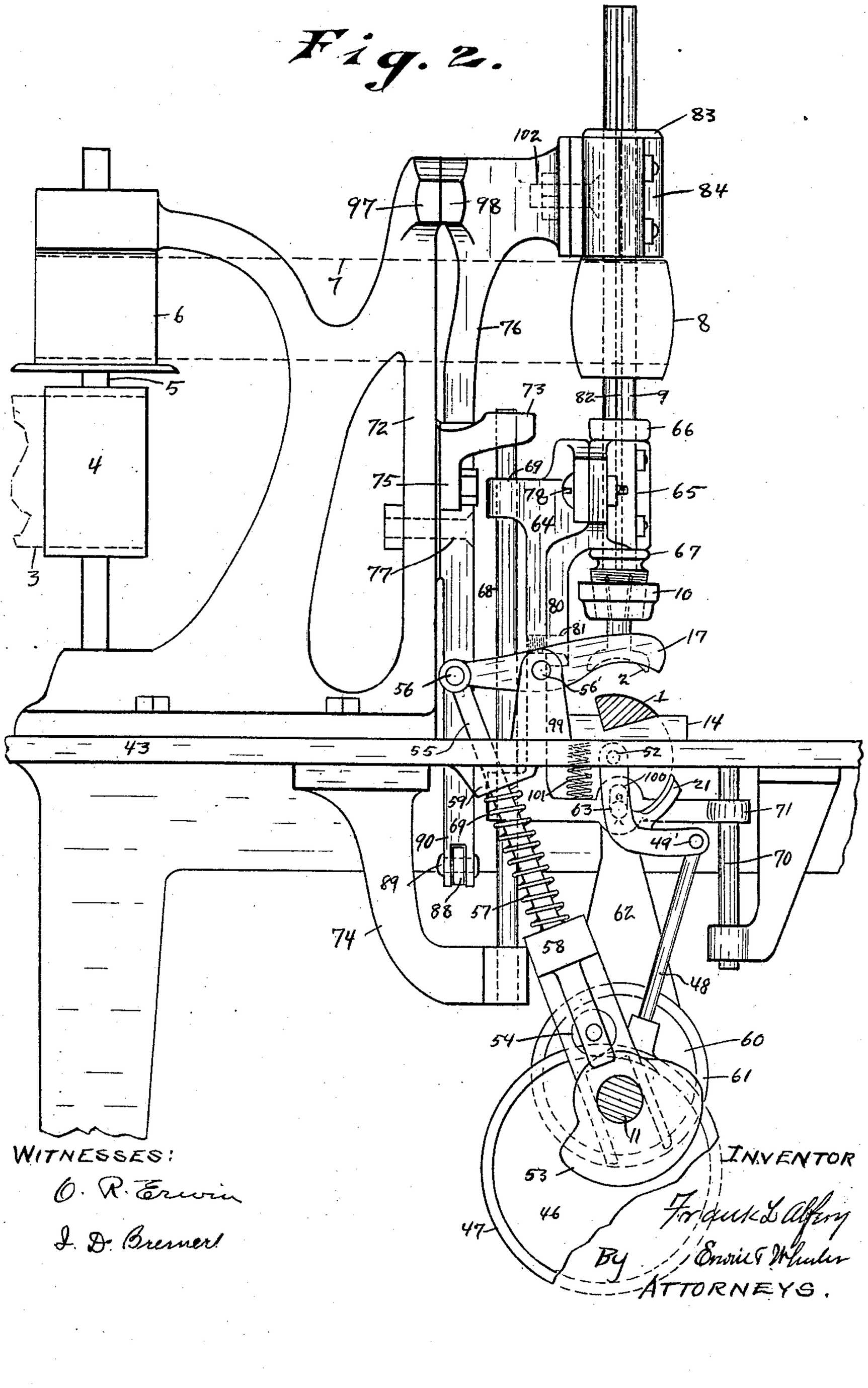
5 SHEETS—SHEET 2.

Fig. 2.



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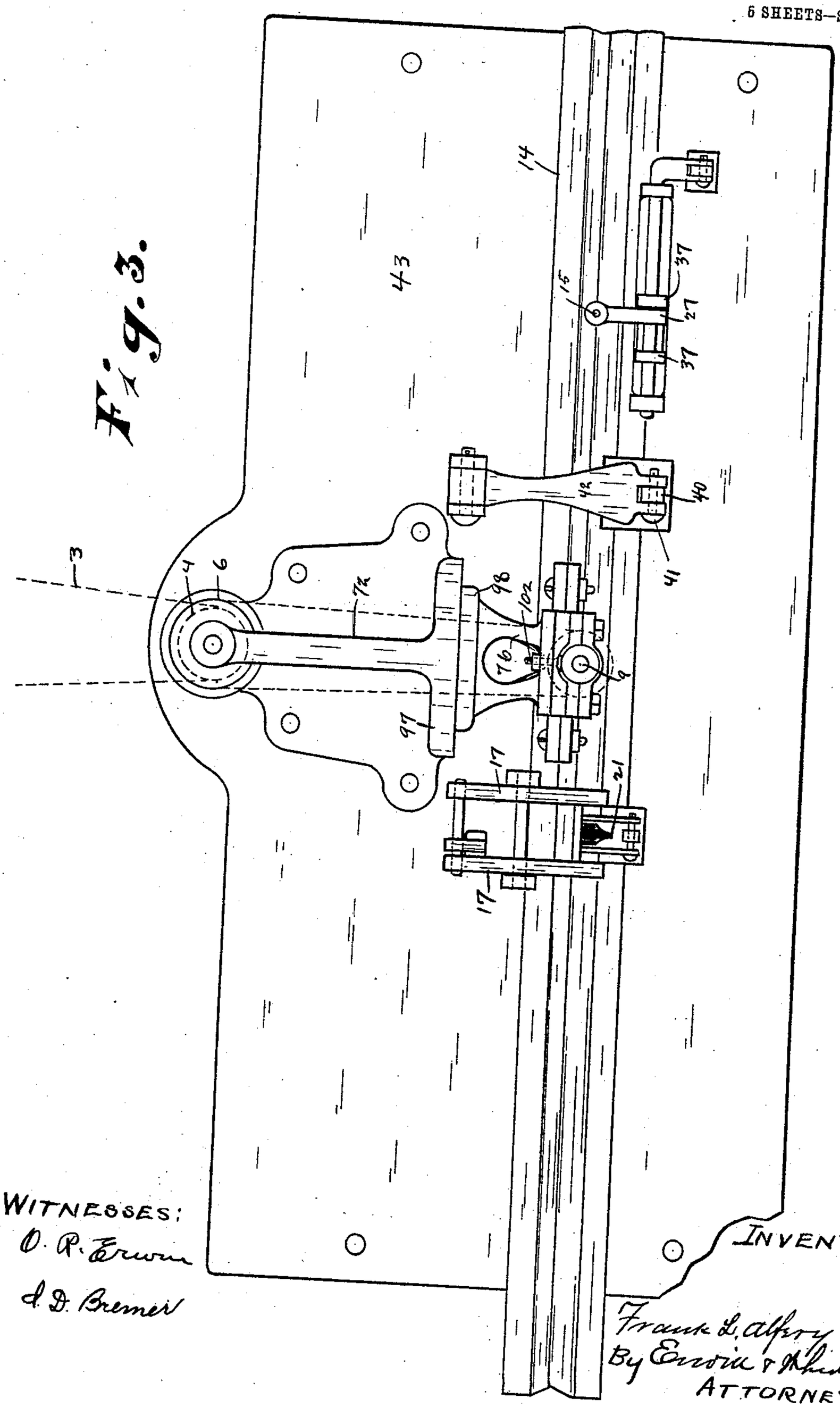
6 SHEETS—SHEET 3.

Fig. 3.



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5 SHEETS—SHEET 4.

Fig. 3.

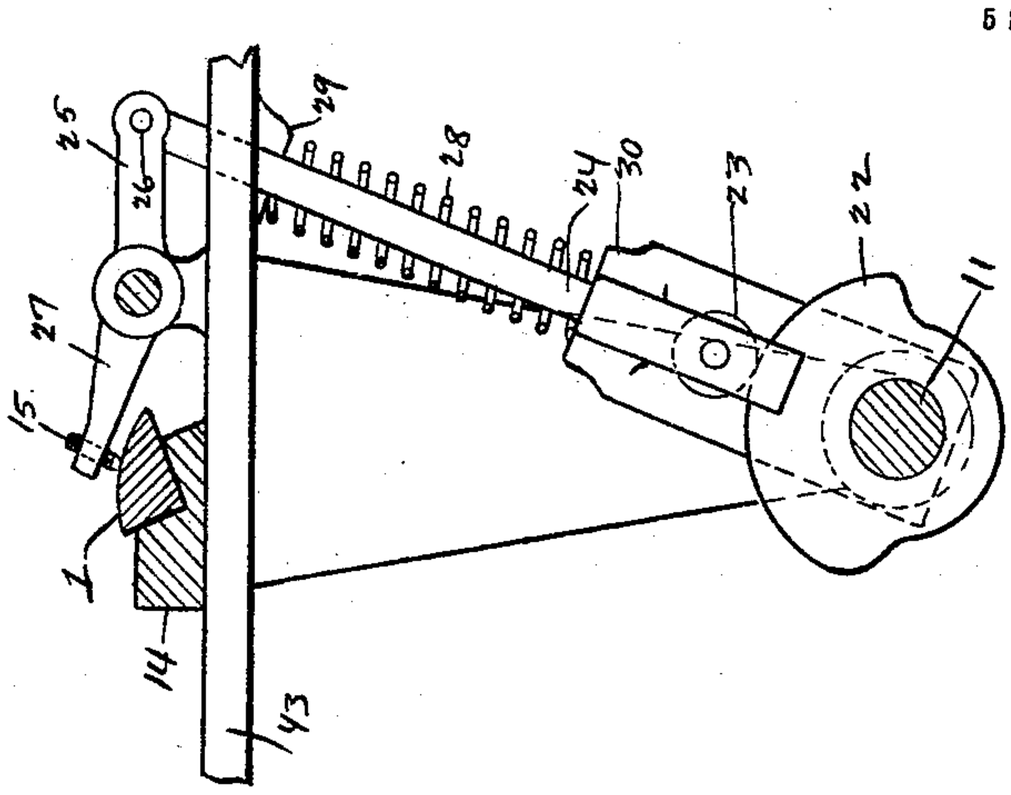
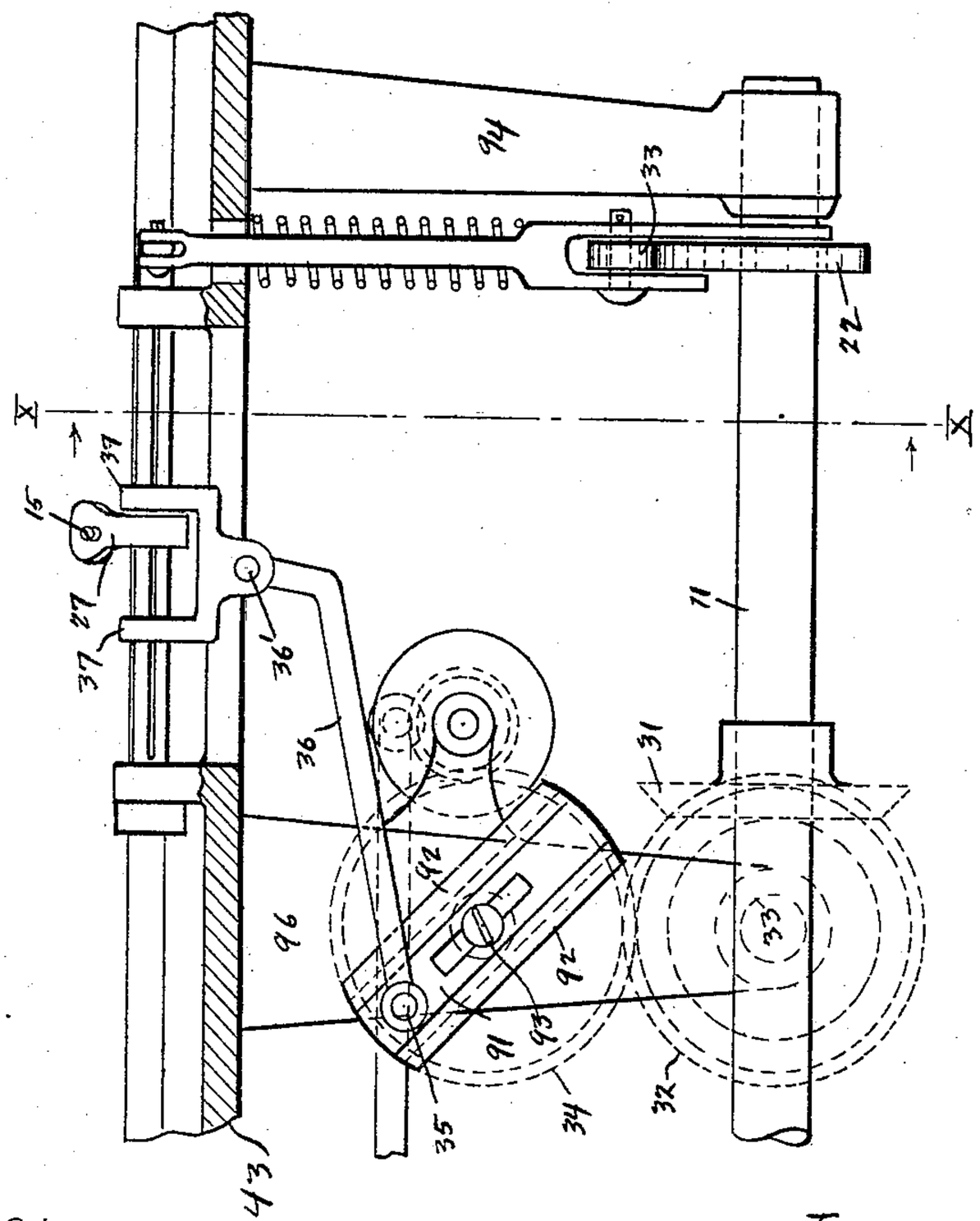


Fig. 4.



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907,435.

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5 SHEETS—SHEET 5.

Fig. 6.

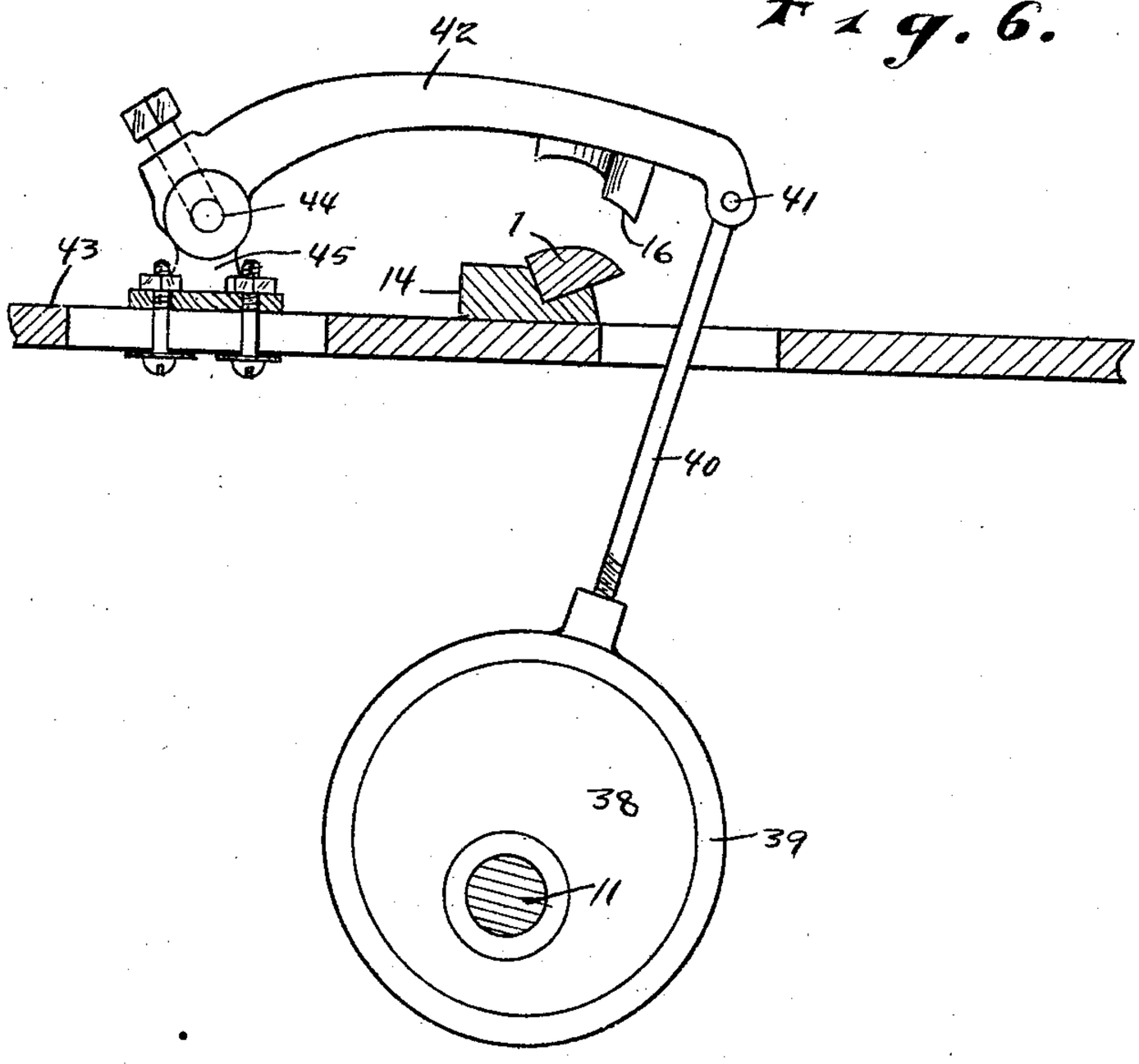
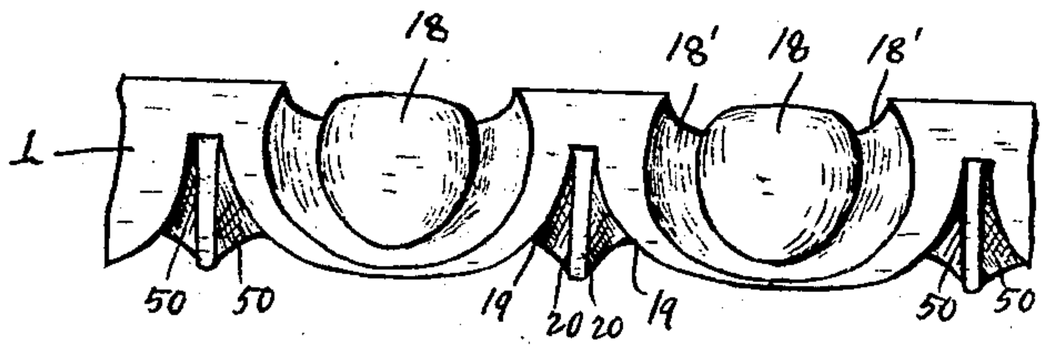


Fig. 7.



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CARVING-MACHINE.

No. 907,435. Specification of Letters Patent. Patented Dec. 22, 1908.

Application filed April 18, 1908. Serial No. 427,937.

To all whom it may concern:

Be it known that I, FRANK L. ALFERY, a citizen of the United States, residing at the city of Milwaukee, county of Milwaukee, and State of Wisconsin, have invented new and useful Improvements in Carving-Machines, of which the following is a specification.

My invention relates to improvements in that class of carving machines which are adapted to be used in the manufacture of ornamental molding strips and it pertains more especially among other things,—first, to the device for intermittingly feeding the strip forwardly step by step a few inches at a time preparatory to being carved by the machine. Second,—to the device for automatically clamping and holding the molding strip in place as it is being carved. Third,—to the devices for simultaneously carving the several ornamental figures as the strip is thus held.

The construction of my machine is explained by reference to the accompanying drawings in which,—

Figure 1 is a front view. Fig. 2 is a side view. Fig. 3 is a plan view. Fig. 4 is a detail view of the strip feeding mechanism. Fig. 5 is a sectional view, drawn on line X—X of Fig. 4 looking toward the right. Fig. 6 is a vertical section, drawn on line Y—Y of Fig. 1 looking toward the right with parts beyond the eccentric cam and cutting blade removed, and Fig. 7 represents a top view of a portion of the ornamental strip which has been carved by the machine.

Like parts are identified by the same reference figures throughout the several views.

1, in Figs. 2, 5 and 6, represents a transverse section of the molding strip as it is formed preparatory to being operated upon by my machine, a top view of the same strip being shown in Fig. 7 after it has been carved.

In operating the machine the movement is simultaneously communicated to it at two different points. For example,—motion is communicated from the motor, not shown, to the rotary cutting blade 2 through the driving belt 3, pulley 4, shaft 5, pulley 6, belt 7, pulley 8 and shaft 9, to the lower end of which shaft 9, the cutting blade 2 is secured by a clamping collar 10 in the ordinary manner. While the cutting blade 2 is being driven by the belt 3 as described, motion is communicated from a motor, not shown, to the main driving shaft 11 of the other coöperating parts of the machine through the sprocket chain 12, and sprocket wheel 13 while motion is simultaneously communicated from said driving shaft 11 to said other coöperating parts of the machine as hereinafter more specifically described.

Assuming that the operator has started the machine, a strip of molding 1 is manually placed upon the bed plate 14 when by the action of the machine, the feed dog 15 is brought down in contact with the upper side of said strip and caused to penetrate and engage the same when said feed dog is moved laterally toward the left a distance corresponding with the distance between the ornamental figures to be carved, whereby such strip is brought into position to receive the first action of the V-shaped blade 16 of the machine, when said strip is rigidly retained in place until the necessary cuts have been made by such V-shaped blades. When the strip has been thus acted upon by the blades 16, said blades are automatically raised when the strip is again engaged in like manner by the dog 15 and carried toward the left beneath the revolving cutting blade 2, when it is clamped and retained in place by the clamping arms 17, 17 when it is held by said arms while being acted upon by said revolving cutting blade 2, when by the next succeeding action of the machine after the strip has been moved forwardly one step past the revolving blade, the wood which has been severed by the V-shaped blade 16 is simultaneously removed by the circular stroke of the cutting blade 21 while said strip is being held as stated between said clamping arms 17, 17.

It will be understood that the several coöperating parts of the machine are so adjusted that the strip is simultaneously acted upon by three different blades. For example,—while the egg shaped figure 18 is being formed by the revolving cutting blades 2, the vertical angular cuts 19, 19 and transverse cuts 20 are simultaneously formed by the V-shaped blade 16, while the fiber severed by the V-shaped cuts 19 and 20 is simultaneously removed as stated by the circular movement of the cutting blade 21, that as soon as the three operations have been thus simultaneously performed (thus completing one set of the ornamental figures) such strip is again and repeatedly fed forward by the feed dog 15 and the strip acted upon in the manner described until completed. The vertical movement is communicated from the driving shaft 11 to the

feed dog 15 by which the same is engaged with and disengaged from the molding strip through the cam 22, roller bearing 23, link 24, lever 25, pivotal bolt 26, and dog supporting arm 27, whereby as said cam 22 is brought in contact with the roller bearing 23 said dog 15 is caused to penetrate the molding strip. When, however, said molding strip, has been moved forward said dog is disengaged therefrom by the action of the spiral spring 28, which spring 28 is interposed between the stationary bearing 29 of the machine and the shoulder 30 connected with said link. Thus it will be obvious that as the cam 22 is brought out of engagement with said roller bearing 23, the link 24 will be thrown downwardly by the recoil of said spring 28 and the feed dog 15 disengaged from the molding strip. The required lateral movement is communicated from the driving shaft 11 to the molding strip by which said strip is fed forwardly beneath the cutting tools through the miter gear 31, miter gear 32, shaft 33, gear 34, pitman 35, link 36, pivotal bolt 36′, bifurcated arms 37, 37, arm 27, and feed dog 15 and the movement of such coöperating parts is so timed that when the cutting blades have acted upon the strip said feed dog 15 will be fed forwardly toward the left the required distance to bring the molding strip in its proper position beneath said cutting blades to receive the next action of the machine, and that when the strip has been thus fed forward said clamping dog will be again thrown out of engagement with the strip by the recoil of said spring 28 when said dog will be moved in the opposite direction preparatory to being again brought into engagement with said strip by the action of said cam 22 as previously described, that while the dog 15 is being thus disengaged and moved toward the right preparatory for again engaging said strip the cutting blades are timed to perform their functions upon said strip while the same is at rest.

It will be understood that the arms 37, 37, through which motion is communicated to the dog 15 are formed at such distances apart as to produce the required lost motion of said arms, before acting upon the dog supporting arms 37, with which they are adapted to be brought in contact with each forward and backward movement of the connecting link 36. Motion is communicated from said shaft 11 to the cutting blades 16 for the purpose described through the eccentric cam 38, collar 39, link 40 and connecting pin 41, whereby said cutting blades 16 are caused to produce the vertical cuts 19 and 20 of the molding, preparatory to the fiber between such cuts being removed by the next succeeding action of the cutting blades 21 as hereinbefore described. The cutting blades 16 are supported from the swinging arm 42 and said arm is pivotally connected with the bed plate of the machine 43 by the pivotal bolt or rod 44 and supporting bracket 45. Motion is communicated from the shaft 11 to the V-shaped blade 21 with each revolution of said shaft 11 through the eccentric cam 46, collar 47, link 48, bifurcated arms 49 and connecting pin 49′, said arms being rigidly connected with the respective sides of said cutting blade 21, whereby with each revolution of said shaft 11, the fiber between the cuts 19 and 20 which has been previously severed by the blades 16 is removed from the spaces 50, 50 of the molding strip. The cutting blade 21 is pivotally connected with the bed plate 43 through said arms 49 between the lugs 51, 51 by the bolts 52, 52, in such a manner that the same when acted upon by the eccentric cam 46 is caused to move in a circular direction conforming to the shape of the grooves 50, 50 of the molding strip. When the fiber has been thus removed by the forward stroke of the blade 21, said blade is drawn backwardly by the further movement of the eccentric cam preparatory to the molding strip being fed forwardly another step as heretofore described. Motion is communicated from said shaft 11 to the clamping arms 17 whereby said clamping arms are caused to alternately grasp and release the molding strip with each revolution of said shaft 11 while the same is being acted upon by the cutting blade through the eccentric cam 53, roller bearing 54, link 55, pivotal bolt 56, and spiral spring 57. Thus as the cam 53 moves forwardly beneath the roller bearing 54 the arms 17 are forced down against the molding strip and said coöperating parts are so timed that the molding strip will be acted upon and carved as it is being thus held. When by the further movement of the cam 53 it passes from beneath the roller bearing 54 said link 55 is thrown down by the recoil of said spring which is interposed between the shoulder 58 of said link and the stationary bearing 59 of the bed plate and said arms 17 are thereby disengaged from the molding. It will be understood that as each figure of the molding is thus completed the revolving cutting blade 2 is raised therefrom preparatory to said molding being moved forwardly. Motion is communicated from said shaft 11 to the revolving blade 2 for the purpose of thus alternately raising and lowering said blade through the eccentric cam 60, collar 61, link 62, pivotal bolt 63, vertical moving bracket 64, journal bearings 65, and vertical moving shaft 9, said shaft 9 being provided with collars 66 and 67 which contact with said journal bearing 65, whereby as said bracket 64 and journal bearing 65 are raised and lowered, said shaft 9 together with said cutting blade 2 is also raised and lowered as described. The bracket 64 is slidably supported from the vertical standard 68 by the

sleeves 69, 69 and from the vertical standard 70 by the sleeve 71, whereby with each revolution of the cam 60 said cutting blade 2 is raised and lowered, and thereby brought into and out of contact with the molding strip. The standard 68 is rigidly supported in a vertical position at its upper end from the frame bracket 72 by the bracket frame 73 and at its lower end from the bed plate 43 by the bracket arm 74.

The bracket arm 73 is bifurcated whereby a sufficient space is left between its respective ends 75 to permit the bracket 76 to be oscillated forwardly and backwardly upon the pivotal supporting bolt 77. The journal bearing 65 is slidably connected with the upper end of the bracket 64 so as to be oscillated laterally on the bolts 78, 78 the bracket 64 being provided with elongated slots 79 for the reception of said bolts 78 to permit of said slidable lateral movement of the journal bearings 65 against the bracket 64. The journal bearing 65 is also provided with downwardly projecting arm 80 which arm 80 is pivotally connected with the bracket 64 by the bolt 81. Thus it will be understood that when the shaft 9 with its supporting bracket frame 76 are oscillated forwardly and backwardly upon the pivotal bolt 77, the arm 80 which supports the journal bearings 65 will oscillate upon the pivotal bolt 81. The shaft 9 is provided with a longitudinal groove 82 for the reception of a corresponding radial flange formed in the pulley 8 and sleeve 83, whereby said shaft, pulley and sleeve are slidably keyed together and whereby said shaft 9 is free to move upwardly and downwardly through said pulley 8 and sleeve 83 while said pulley and sleeve are adapted to revolve together with said shaft 9. Thus it will be obvious that the slidable movement of the shaft 9 in said sleeve and pulley will permit of the required forward and backward oscillating movement of the shaft supporting bracket 76 and arm 80 upon its pivotal centers around their respective pivotal supporting bolts 77 and 81. The sleeve 83 is revolubly supported in the journal bearing 84.

The object of the forward and backward oscillating movement of the shaft 9 and its supporting brackets and bearings described is provided for the sole purpose of giving the cutting blade the required inclination alternately toward the right and left by which the elliptical or egg shaped figure 18 of the molding strip is produced.

It is a well known fact that a true circular or hemispherical figure might be readily and easily produced by the revolving movement of an ordinary hollow auger, while it is a comparatively difficult task to provide mechanism for forming an elliptical or egg shaped figure like that shown in Fig. 1 of the drawings. Applicant has been able to accomplish this desired object and thus produce the elliptical or egg shaped figure 18 with corresponding elliptical shaped grooves 18′ on its respective sides by simultaneously oscillating the cutting blade 2 and its supporting shaft as the same are being revolved.

The required oscillating movement is communicated from the shaft 11 to the blade supporting shaft 9 through the miter gear 31, miter gear 32, gear 34, pin 85, disk 86, pitman 87, link 88, pivotal bolt 89 and vertical arm 90 which vertical arm 90 is formed integrally with the frame 76 whereby with each revolution of the disk 86 said frame 76 shaft 9 and the other coöperating parts supported from and connected with said frame 76 are oscillated forwardly and backwardly as described and whereby the desired inclination is given to the blades 2 as they are being revolved against the surface of the molding strip by which the figure 18 of the molding is given the desired elliptical or egg shaped appearance.

It will of course be understood that the several cutting blades shown and described may be substituted by others of different dimensions and shapes whereby the dimensions and ornamental effect of the figures produced by the carving may be changed and modified to suit the taste or as circumstances may require.

To provide for increasing or diminishing the lateral movement of the feed dog 15 as a change of work may require the pivotal bolt 35 is adjustably connected with the wheel 34 by the supporting plate 91 which is slidably connected with said wheel between the retaining flanges 92, 92 by a central clamping bolt 93 or in any other convenient manner, whereby when desirous to increase the stroke said bolt 35 is moved near the periphery of the wheel 34, and when desirous to diminish said stroke said pivotal bolt is moved inwardly toward the wheel supporting shaft. The shaft 11 is supported from the bed plate 43 at one end by the hangers 94 and at its opposite end by the hanger 95 while the gears 32 and 34 are supported from said bed plate by the hanger 96.

97 is a stationary contact bearing for the slidable contact bearing 98 which latter bearing is formed integrally with the frame bracket 76. The clamping arms 17 are pivotally supported from the bed plate 43 upon the vertical standards 99. An elongated aperture or slot 100 is formed in the upper end of the link 62 for the reception of the pivotal bolt 63 whereby the frame is permitted to stand at rest a brief interval while the molding strip is being acted upon by the blade 2, while the pin 63 traverses from the lower to the upper end of said slot 100 preparatory to raising the blade out of contact with the strip.

101 is a spiral spring which is interposed

between the bed plate 43 and the vertical moving frame 64, whereby said cutting blades 2 which are supported from said frame are retained in yielding contact with the molding strip and are drawn down against said strip as the fiber of the wood is cut away by said blades independently of the movement communicating to the vertical moving frame by the eccentric cams as the pivotal bolt 36 moves from one end of said slot 100 to the other.

To provide for the slight variation of the inclination of the shaft 9 and its supporting journal bearings 84 to that of the upper end of the frame 76 as said shaft and frame are inclined toward the right and left upon their respective pivotal supports 81 and 77, the journal bearings 84 are pivotally connected with the upper end of said frame 76 by the pivotal bolt 102, indicated by dotted lines in Figs. 1 and 2 and shown in part in Fig. 3.

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

1. In a carving machine of the class described, adapted to automatically carve an elliptical or so called egg shaped figure, the combination of means for holding and alternately moving and stopping the material to be carved beneath the cutting blades, revoluble blades and a blade supporting shaft, means for simultaneously revolving and oscillating said cutting blades and their supporting shaft, while in contact with the surface to be carved.

2. In a carving machine of the class described, adapted to automatically carve elliptical or so called egg shaped figures, the combination of means for holding and alternately moving and stopping a molding strip beneath the cutting blades, revoluble blades and a blade supporting shaft, nonrevoluble blades for producing ornamental incisions in said strip upon the respective sides of said elliptical or so called egg shaped figures, means for simultaneously revolving and oscillating said first named blades and their supporting shaft while in contact with said molding strip and blades for simultaneously cutting and removing the fiber within said ornamental incisions as said egg shaped figure is being carved.

3. In a carving machine of the class described, means for holding and alternately moving and stopping a molding strip beneath the cutting blades, revoluble blades and a blade supporting shaft, means for simultaneously revolving and oscillating said first named blades and their supporting shaft while in contact with said strip, whereby an ornamental elliptical or egg shaped figure is formed by thus inclining the blades in opposite directions while revolving, means for producing ornamental incisions in said strip upon one side of said elliptical or egg shaped figure, and means for removing the fiber between such incisions upon the opposite side of said figure.

4. In a carving machine of the class described, adapted to automatically carve elliptical or so called egg shaped figures, the combination of means for holding and alternately moving and stopping the molding strip beneath the cutting blades while being carved, revoluble blades and a blade supporting shaft, means for automatically raising said cutting blades while revolving out of contact with said strip, means for automatically bringing said cutting blades in contact with said strip after the same has been moved forwardly and adjusted and means for oscillating said blades toward the right and left as the same are being revolved in contact with said strip substantially as specified.

5. In a carving machine of the class described adapted to automatically carve elliptical or so called egg shaped figures, the combination of means for holding and alternately moving and stopping the molding strip beneath the cutting blades while being carved, revoluble blades and a blade supporting shaft, means for automatically raising said cutting blades while revolving out of contact with said strip, means for automatically holding said revolving cutting blades in yielding contact with said strip and means for inclining the same in opposite directions, as they are being revolved.

6. In a carving machine of the class described, the combination of means for holding and alternately moving and stopping a molding strip beneath the cutting blades, revoluble blades and a blade supporting shaft, means for manually changing the adjustment of the moving mechanism whereby the distance which said molding strip is moved may be increased or diminished as required, means for simultaneously revolving and oscillating said blades and their supporting shaft while in contact with the material to be operated upon, means for raising said revolving cutting blades out of contact with said strip as each successive figure of the strip is finished, means for automatically feeding the strip forwardly intermittingly beneath said blades, means for lowering said revolving cutting blades when said strip has been thus moved forwardly, and means for automatically repeating the process thus described until the strip is finished, all substantially as and for the purpose specified.

In testimony whereof I affix my signature in the presence of two witnesses.

FRANK L. ALFERY.

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