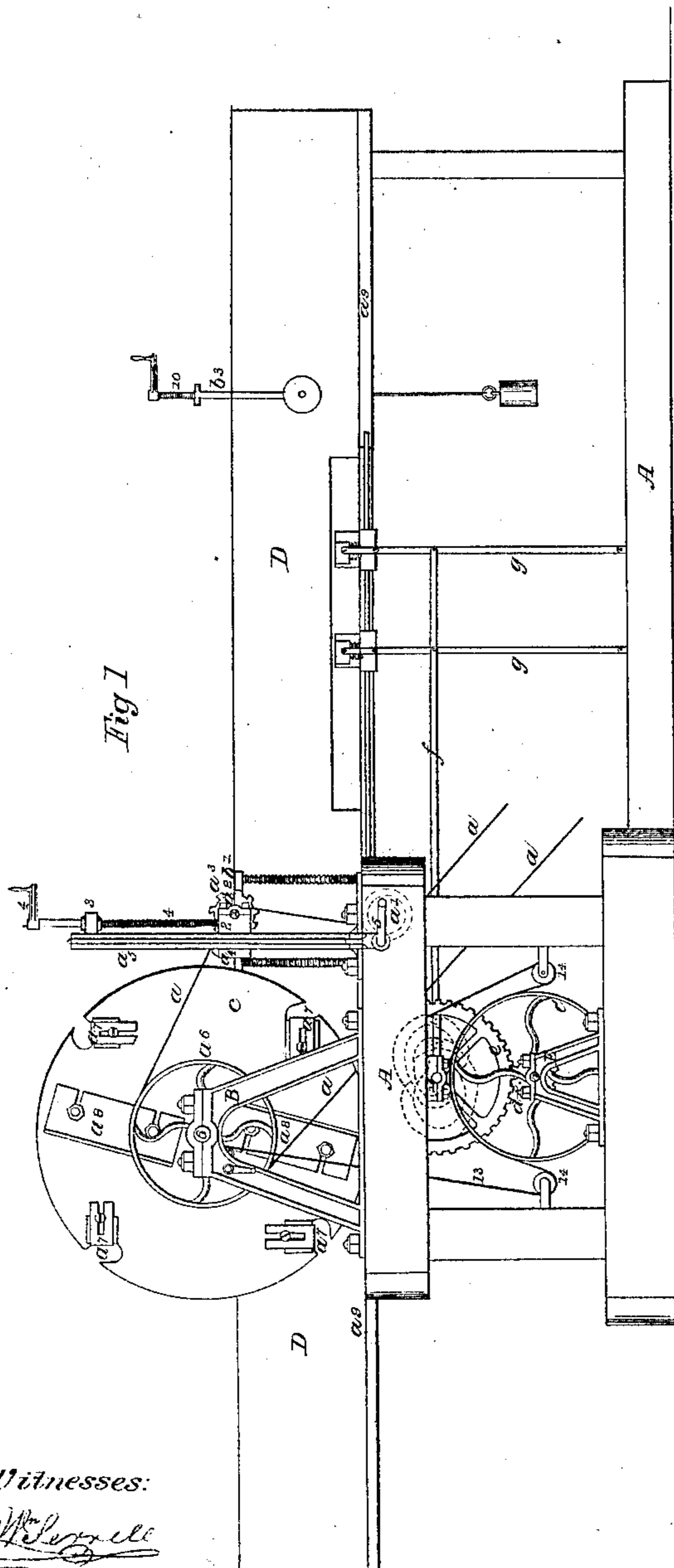


*T. J. Wells,*  
*Wood Planing Machine,*

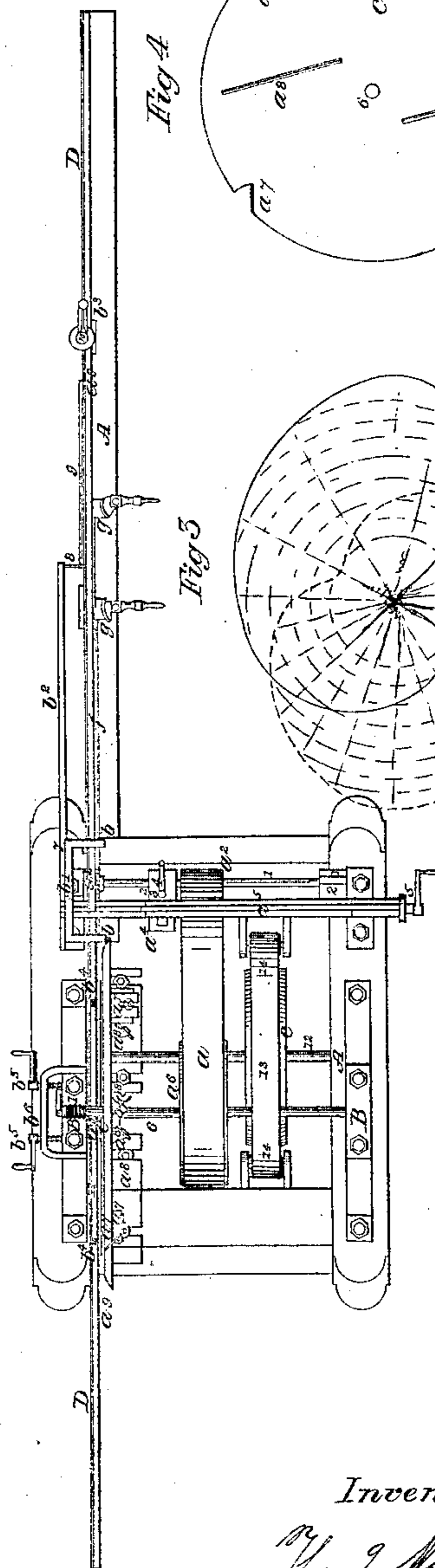
*Nº 6,195,*

*Patented Mar. 20, 1849.*



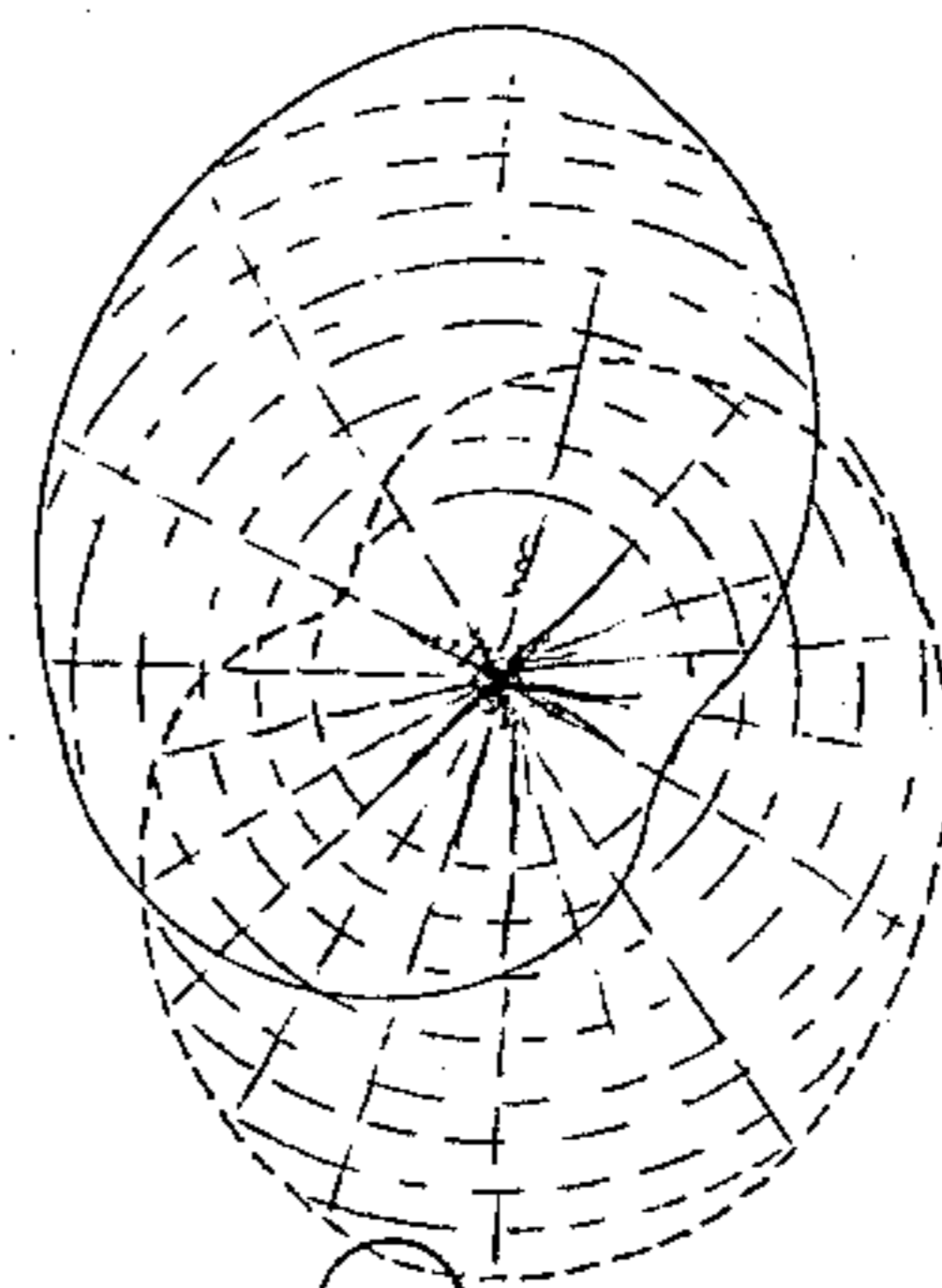
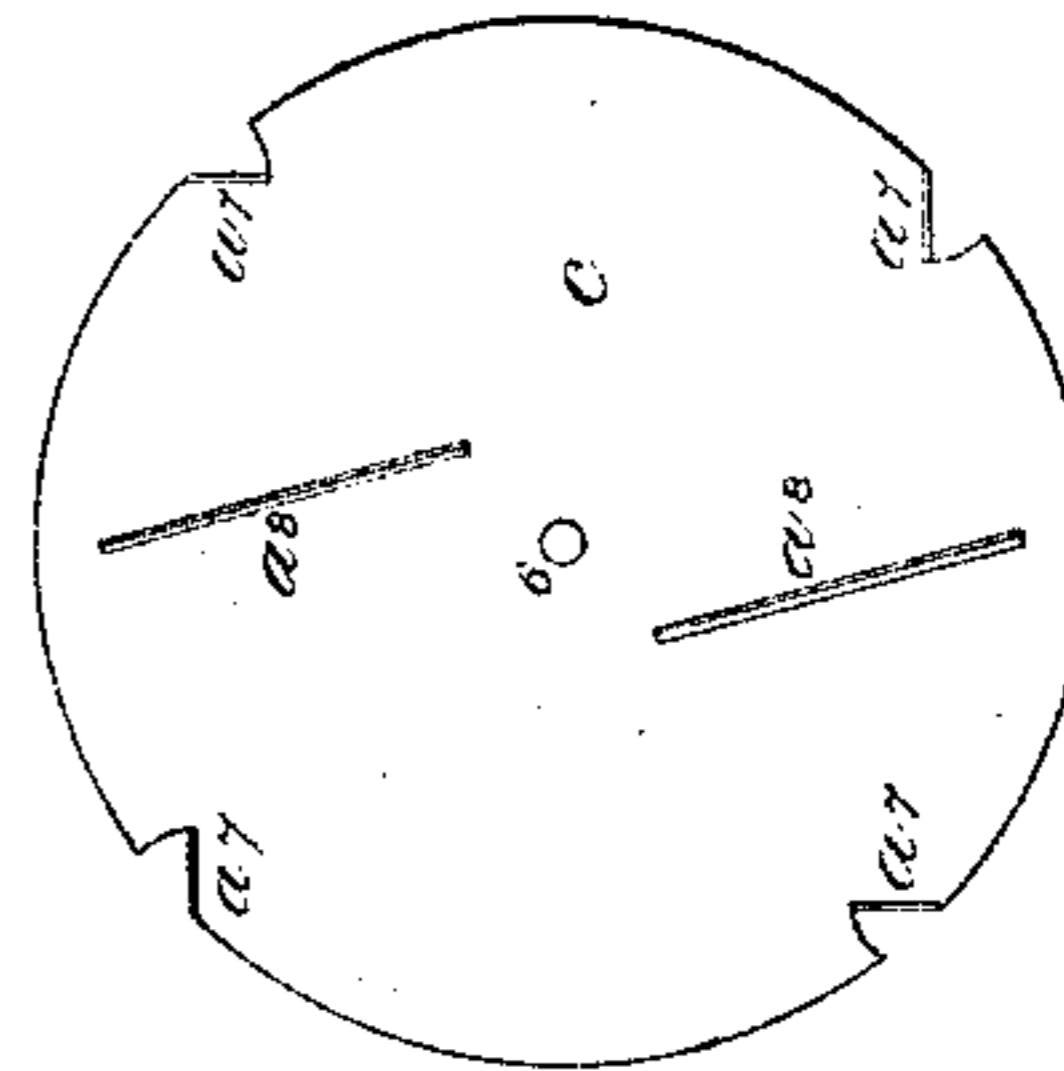
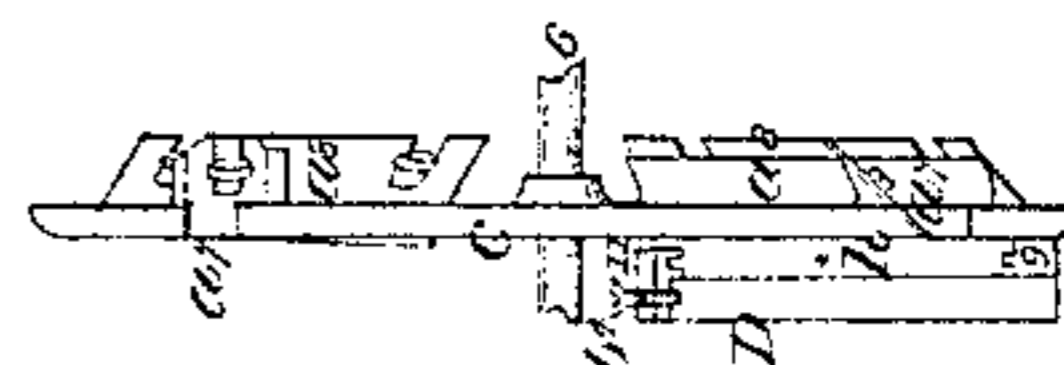
*Fig 1*

*Fig 2*



*Fig 4*

*Fig 5*



*Witnesses:*

*W. L. Wells*  
*Edw. A. Serrell*

*Inventor:*

*T. J. Wells*

# UNITED STATES PATENT OFFICE.

THOMAS J. WELLS, OF NEW YORK, N. Y., ASSIGNOR TO D. BARNUM.

## PLANING-MACHINE.

Specification of Letters Patent No. 6,195, dated March 20, 1849.

*To all whom it may concern:*

Be it known that I, THOMAS J. WELLS, of the State, county, and city of New York, machinist, have invented, made, and applied  
5 to use certain new and useful Improvements in the Application of Knives or Finishers to the Face Disk in Combination with Jacking-Tools, by which means I produce a machine to plane boards and leave a face equal in  
10 smoothness and polish of surface to that given by the common smoothing-plane when applied by the hands of a skillful workman, such results being attained by the use of a face disk with jacking tools or gages upon  
15 the periphery, as described by Bramah, combined with knives or plane irons extending near to the center or shaft, embracing the whole width of the board, with the inner ends slightly elevated from the face of the  
20 disk and forming in their rotations a slight cone, it being an improvement upon the Bramah wheel, the original invention being disclaimed, and the improvements are fully and correctly described and represented in  
25 this specification and the drawings which accompany and form a part of it, wherein—

Figure 1, is a front elevation of a machine fitted with these improvements. Fig. 2, is a plan of the same, and Fig. 3, represents, in  
30 larger size, two cams, as a means of feeding the board to the cutters—and Fig. 4, is a face view of the planing wheel—and Fig. 5, shows an end view of the fence D, slide *a*, *g*, and keeper piece 11, with a board *h* in  
35 place—and also showing the elevation of the finishers *a*<sup>8</sup>—from the face of the disk—C, the shaft being inclined, in proportion, to the elevation of the finishers.

For which improvements I seek Letters  
40 Patent of the United States.

As marks of reference, the same letters and figures in the different figures refer to the same parts of the machine.

A is the main frame of the machine on  
45 which the working parts are mounted—*a* is the main belt—*a*<sup>1</sup>—*a*<sup>2</sup>—*a*<sup>3</sup>—*a*<sup>4</sup> and *a*<sup>5</sup>— and also—1—2—3—4—and 5,—exhibited in the drawings. Figs. 1 and 2,—show a method of tonguing and grooving which  
50 may, or may not be used—but as they form no part of these improvements a further description is deemed unnecessary—and they are also dispensed with in the model—so also

of *b*<sup>3</sup> and adjusting screw 10 shown in the drawings they are not necessary—and are 55 therefore dispensed with.

On the main frame, two standards B, B<sup>1</sup>, carry a main driving shaft 6, which is driven by the belt *a* passing over a drum *a*<sup>6</sup>, and returning, to the power and this gives 60 motion to a face disk C, which is fitted to receive, near the periphery—two, or more jacking tools *a*<sup>7</sup>, set at the outer rim of the disk, with their cutting edges at an angle of about 45° with the radial line at the given 65 points of the circle, so that they will act to under cut the shaving from the board, with a motion that may be best described, as a circular drawing cut, that does not spall the board, even when cross grained. 70

Within the jacking tools, the smoothing tools *a*<sup>8</sup>, are placed with, or without double irons, at an angle of about 15° with the radial line; The inner end or edge of each cutter is very slightly elevated from the face 75 of the disk as seen in Figs. 2 and 5,—the shaft 6 is inclined in proportion to the elevation of the finishers *a*<sup>8</sup> so that the edges of the finishers when at right angles to the length of the board shall form a vertical line 80 parallel to the face of the board as seen Fig. 5 the edges of the finishers therefore, in their rotations form a slight cone, while the jacking tools revolve in a perfect plane. The finishers making a slight conical cut—the 85 jacking tools—the legitimate action of the disk.

The positions, and angles, of the cutters *a*<sup>8</sup>, and shaft 6, relatively, with the center of the disk C, are such that the smooth finish, 90 of each cut is given at or nearly in a vertical line, from the center of the disk, and at right angles, with the grain of the wood and the whole width of the board, the cutter in the further progress, removing, the next portion 95 by an upward shearing cut, which prepares, that portion of the board for the smoothing operation, of the next tool. The slight elevation of the inner edge or end of the tool, operates, as the board progresses, to leave 100 the finished part of the board, clear of the next smoothing cutter, or the same effect, may be produced, by using a roller, or any convenient means to spring the finished portion of the board back on a slightly retreat- 105 ing curve, on the main fence D, as the board

progresses on the slide  $a$ ,  $g$ , between the fence and cutters, by the action of the feeding apparatus, described hereafter.

The rollers  $b$ ,  $b$ , are shown in connection with the tonguing and grooving, as two—  
 5 one of each, being placed in front, and rear, of the cutters  $a^1$  and  $a^2$ —the tonguing and grooving being dispensed with—only one of the pressing rollers  $b$ , are necessary in either  
 10 case, they are mounted on a sliding frame  $b^1$  and are made to press upon the face of the board—by means of the lever  $b^2$ , which may be operated by springs 8 and 9, or by weights—this will be easily understood—the  
 15 rollers  $b$  act, to hold the board, and direct it, into the machine, until it comes in contact, with the rib, on  $a$ ,  $g$ , and the keeper piece 11 between the cutters  $a^8$  and fence D.

The rollers may be notched or grooved  
 20 around the circumference and set a little out of upright with the top inclining toward the disk, which serves to keep the edge of the board down upon  $a^9$ — $b^3$  with the adjusting screw 10, is a means of operating upon  
 25 the edge of the board, which in practice, is not necessary, and is therefore dispensed with in the model. Between the cutter disk and fence, the slide  $a^9$  is fitted with a rib to take the groove, and a keeper piece 11,  
 30 to take the tongue, as seen in the end view Fig. 5, the keeper piece 11, being adjustable by screws  $b^4$ , to act upon the different widths of boards—as they pass the planing wheel.

In the standard B<sup>1</sup> the shaft 6, is set in what is usually known as the saw tooth journal box, fitting into each other, in parallel  
 35 A grooves and counter grooves as shown in the plan view, Fig. 2—the shaft 6, with the disk C, may be regulated endwise by screws  $b^5$ , which may enter a sliding box having a saw tooth journal through a clamp piece  $b^6$ , the back journal of the shaft 6 slides in  
 40 its own box, and by these means, the nicest possible adjustment is made—other means may also be used for the same purpose—such adjustments being well understood by mechanics.

In the lower part of the frame, the stand-  
 50 ard E, carries a shaft 12, and drum  $c$  worked by a belt 13, that leads, from over a pulley, on the main shaft 6, and below two guide rollers 14, 14, and over the drum  $c$ , to give motion to the shaft 12, and to a pinion  $d$ ,  
 55 which drives a feed wheel  $e$ , on a shaft 15, which shaft, is fitted with two cams, made as shown in the detached Fig. 3, each of these, as a female cam, takes in a groove, a roller on the end of the horizontal bars  $f$ ,  
 60 as seen by the dotted lines—on the shaft 15, or they may be fitted so as to be acted upon by the bars  $f$ , without a groove or roller. See model. The bars  $f$ , are jointed at the other end, to two vertical bars  $g$ ,  $g$ , jointed  
 65 at the bottom, to the frame, A, and on their

tops, they carry, and work, two pair of eccentric feeding clamps—made and acting on slides, the same as described in my patent of April 11th 1846—the bars  $g$ ,  $g$ , having a compensating or slip joint where they  
 70 connect with the eccentric clamps—so that, the circular motion, of the tops, of  $g$ ,  $g$ , shall not prevent, the parallel motion, of the eccentric clamps, on the slides  $a^9$ . The above description of parts for driving the shaft  
 75 15, in the lower part of the frame A, may be varied at pleasure and any other arrangement for driving the feed apparatus may be used.

Fig. 4 shows the face of the disk, with  
 80 edges of the knives, and the relative positions of the finishers and jacking tools, it being a front view, the elevation of the inner ends of  $a^8$  can not be seen.

Fig. 5 is an end view showing the eleva-  
 85 tion of the inner ends, or edges, of the finishers,  $a^8$ , and also the slight inclination of the shaft 6, and also the end of a board  $h$ , against the fence D, with the rib, on  $a$ ,  $g$ , and keeper piece 11, operating upon the  
 90 edges of the board, with an adjusting screw  $b^4$ , which should be made longer than shown in figure to accommodate the different widths of boards to be planed. This figure  
 95 shows the relative positions of the board and finishers; that is, the edges form a parallel line, with the face of the board, at the point of finishing. These improvements are made upon the Bramah machine. I there-  
 100 fore disclaim the invention of a face disk with two sets of knives, nor do I claim any of the parts hereinbefore described as being of my invention, except such as are specifically set forth in the following claim.

Having thus fully described the parts  
 105 used in these combinations and shown the modes contemplated for using them, what I claim as my invention, and which I desire to secure by Letters Patent, is—

The application to the face disk C, of one  
 110 or more long or broad plane irons or finishers, embracing the whole width of the board, the inner ends or edges of which being slightly elevated, and which in their rota-  
 115 tions form or generate a slight cone,  $a^5$  in combination with the jacking tools  $a^7$ , or of gages placed upon the periphery, for the purpose of producing a twofold action; that is the slight conical cut of the finishers  $a^8$ , and the perfect disk operation of the jack-  
 120 ing tools  $a^7$ , thus uniting and claiming the action of the cone, and the disk, in one and the same planing wheel. I thus produce the effect of the Bramah gages, in chipping, or hewing away the roughest part, the  
 125 jacking tools revolving in the perfect plane of the disk, and also the effect of the cone by the slight elevation of the finishers  $a^8$ , on the end, near the shaft 6, which effect is to finish the surface while the finishers  $a^8$   
 130

are cutting with the grain of the wood, the shaft 6, being slightly inclined to correspond with the elevation of the knives or finishers  $a^8$ . The finishing is thus done with the  
5 grain and leaving no circular mark across the board, and in contradistinction to the finishing operation as was performed by Bramah, his finishers cutting in circular scores across from one edge to the other of

the board, leaving the surface indented with 10 them, and unfit for use, while I produce a perfectly level and smooth surface, substantially as described and shown.

THOS. J. WELLS.

Witnesses:

THEODORE MARTINE,  
CHAS. W. SMYTH.