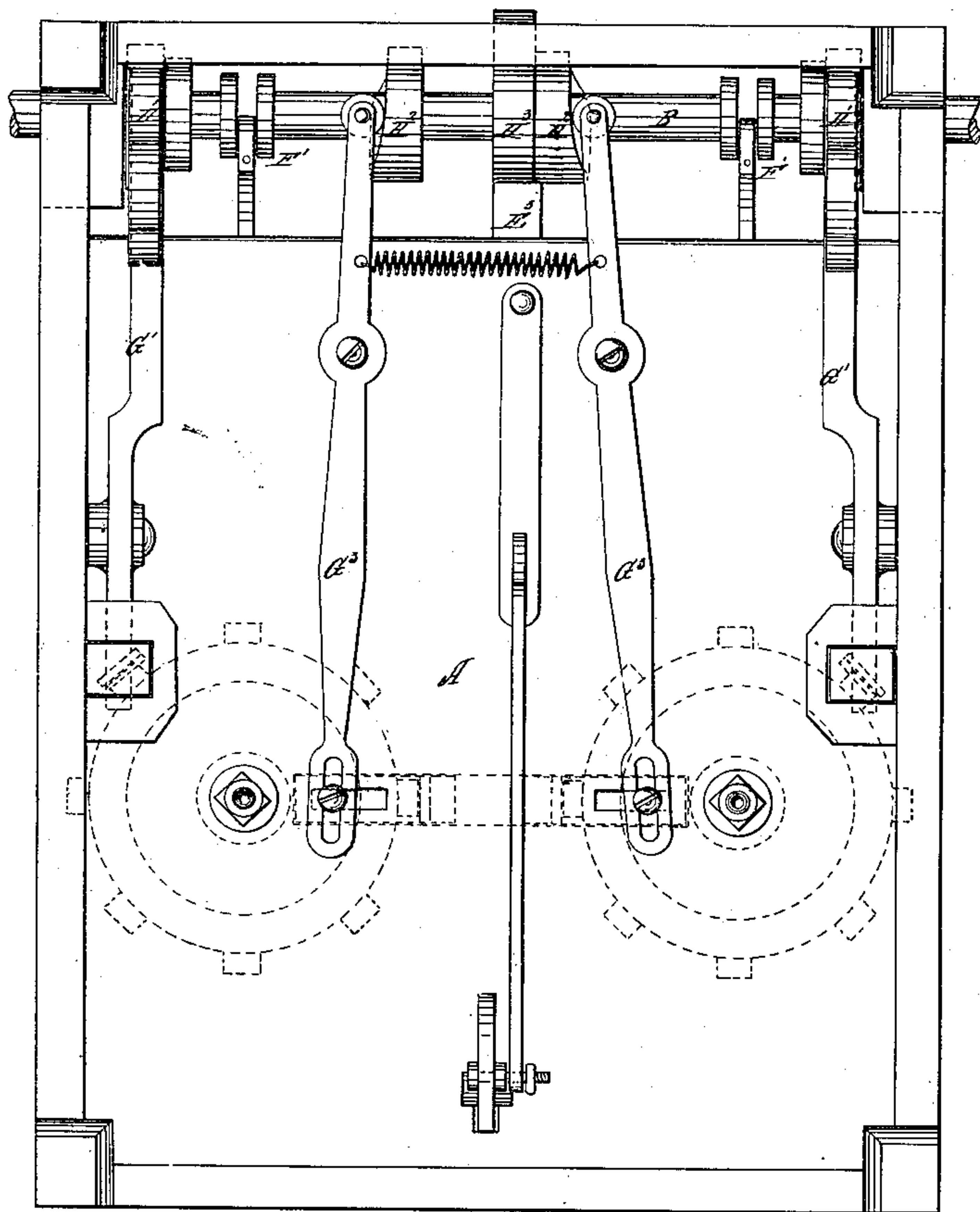


*A. Rais,*  
*Making Hinges,*

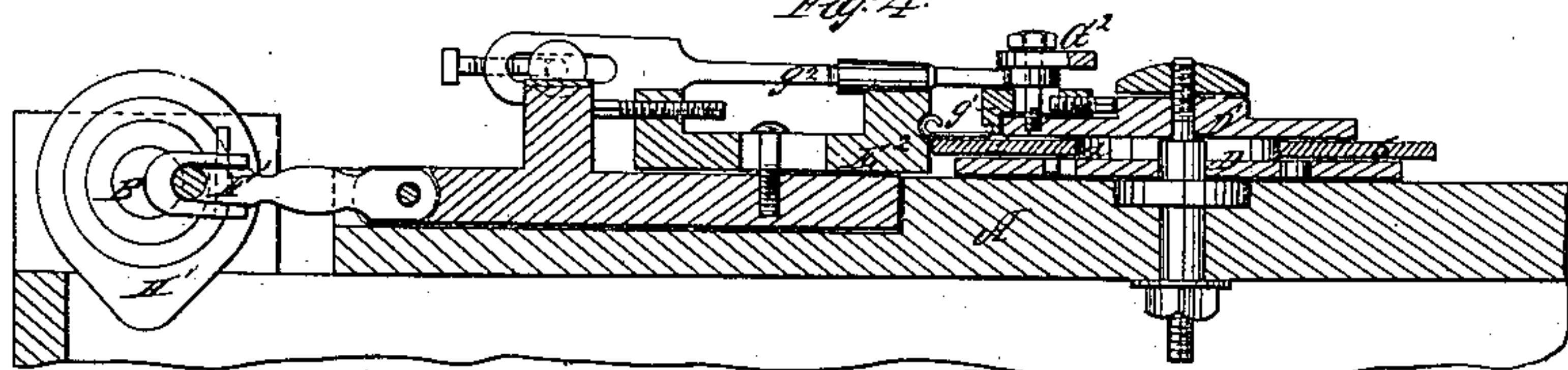
*N<sup>o</sup> 68,529*

*Patented Sep. 3, 1867.*

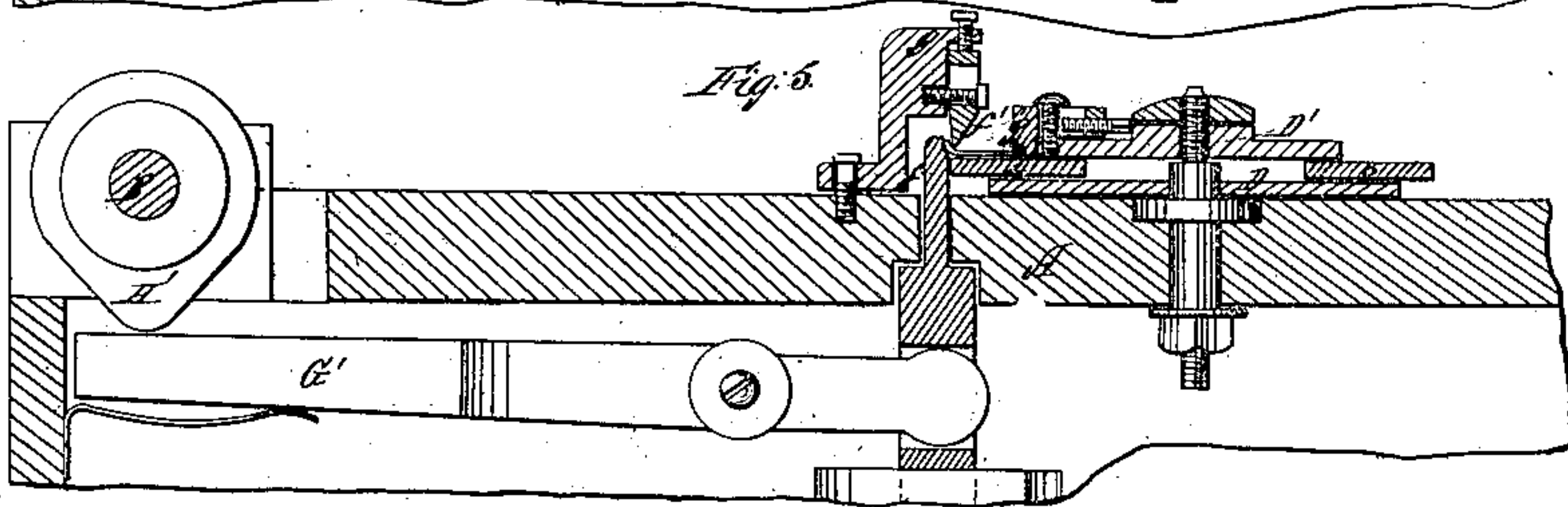
*Fig. 3.*



*Fig. 4.*



*Fig. 5.*

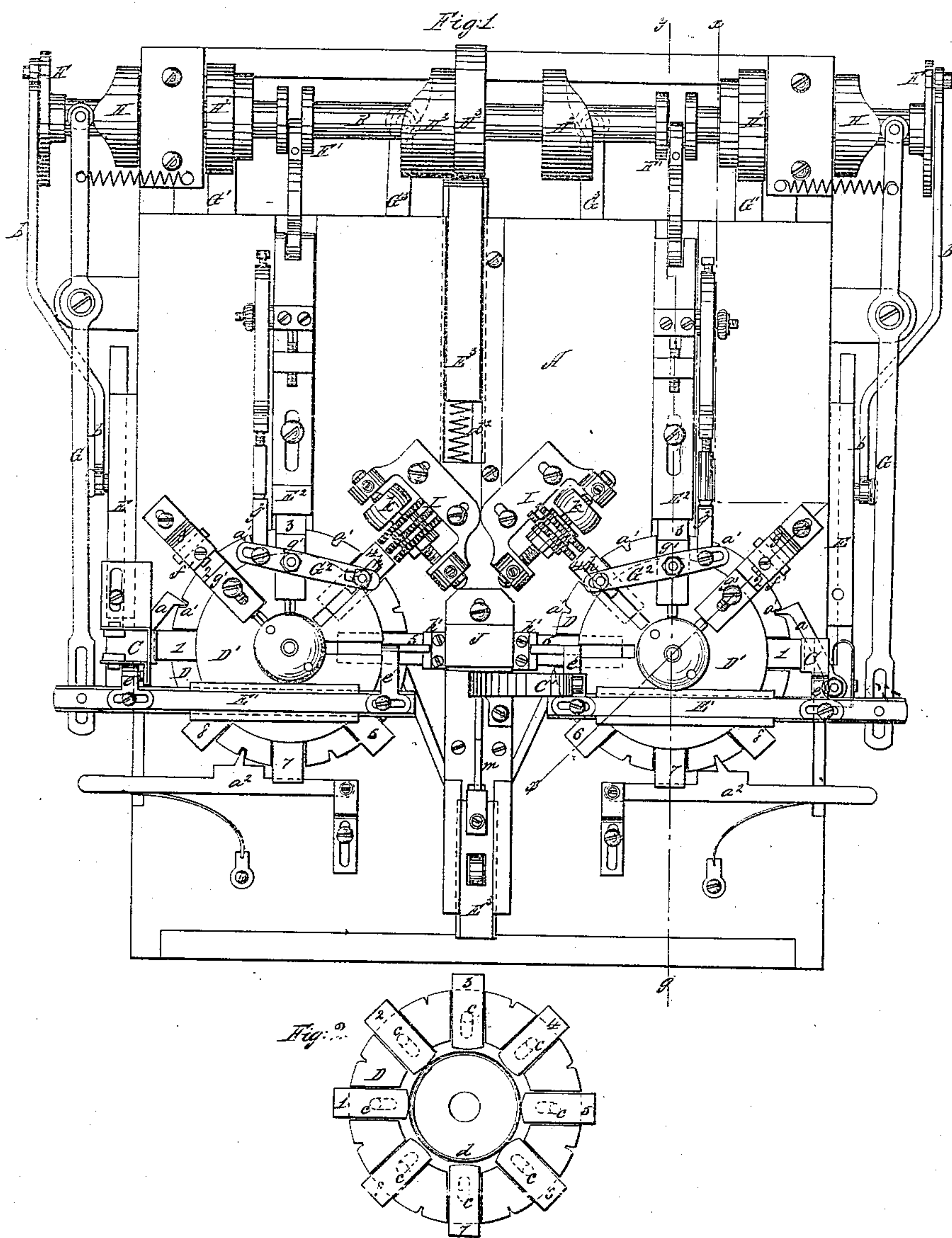


*Witnesses.*

*Chas. Cusack*  
*J. A. Service*

*Inventor.*  
*A. Rais*  
*Per Munnell*  
*Attorney*

*A. Pais,*  
*Making Hinges,*  
*N<sup>o</sup> 68,529.* *Patented Sep. 3, 1867.*



*Witnesses:*  
*Thos. Giesecke*  
*J. A. Serow.*

*Inventor:*  
*A. Pais*  
*Per Munnell*  
*Atton Jr*



# United States Patent Office.

ADRIAN RAIS, OF WATERBURY, CONNECTICUT, ASSIGNOR TO THE SCOVILLE MANUFACTURING COMPANY.

*Letters Patent No. 68,529, dated September 3, 1867.*

## IMPROVED MACHINE FOR MAKING BUTT-HINGES.

*The Schedule referred to in these Letters Patent and making part of the same.*

### TO ALL WHOM IT MAY CONCERN:

Be it known that I, ADRIAN RAIS, of Waterbury, in the county of New Haven, and State of Connecticut, have invented a new and improved Rotary Dial-Plate Butt-Hinge Machine; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable those skilled in the art to make and use the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1, sheet 1, represents a plan of my improved rotary dial-plate butt-hinge machine.

Figure 2, sheet 1, is a detached view of the rotary dial-plate having the top plate removed.

Figure 3, sheet 2, is an inverted plan or bottom view of my invention.

Figure 4, sheet 2, is a vertical section taken in the irregular line *x x*, fig. 1.

Figure 5, sheet 2, is a vertical section taken in the line *y y*, fig. 1.

Similar letters of reference indicate corresponding parts.

This invention relates to improvements in machinery for making butt-hinges; and consists in a mechanism so constructed that the two right and left match-blanks, which form a butt or hinge, shall be conveyed from feed-boxes respectively, by automatic devices, to and upon the periphery of dial-plates or disks, which rotate and first present the blanks to dies for bending the knuckles, after which operation they are presented to the mills, and after they have been milled, are carried opposite and introduced into a nailing device, where the match-blanks are united and fastened together by the nail or rivet, and when thus finished are discharged from the machine. The whole operation is therefore automatic and continuous from beginning to end.

In the construction of my improved rotary butt-hinge machine, I have employed mechanical devices for accomplishing the several details of the operation in the manufacture of a hinge similar to those which have been described in previous applications made by me for Letters Patent; and the distinguishing and essential feature of this invention consists in employing circular dial-plates or rotary disks divided into equal segments, each of which carries a radial slide that receives the hinge-blanks from feed-boxes successively, and conveys the blanks in front of devices for bending the knuckles, milling them, joining the rights and lefts, and nailing them, all of which operations are performed in regular order and simultaneously, as hereinafter more particularly described.

The machinery is supported on a suitable frame or bed, *A*, across one side of which is placed a main driving-shaft, *B*, on which are duplicate cams and cranks for actuating the several devices arranged in pairs for performing the several operations on the blanks. First in order in the arrangement of devices are the two vertical feed-boxes *C C* for holding the blanks, one on one side of the frame for the right-hand and the other on the opposite side for the left-hand blank. In front of the feed-boxes *C C* are placed the rotary dial-plates or disks *D D*, which are actuated by spring-pawls *a a* pivoted upon slides *E E* that are connected by rods *b b* with plate-cranks *F F* set on opposite ends of the driving-shaft *B*. The pawls *a a* catch in notches *a' a'* made in the periphery of the disks *D D* at equidistant points between radial slides numbered 1, 2, 3, 4, 5, 6, 7, 8. When the cranks turn and draw the slides *E E* the pawls *a a* push the disks *D D* one segment or one radial slide at a time, and the motion of the disks is simultaneous. Spring-dogs *a<sup>2</sup> a<sup>2</sup>* are placed on one side of the disks *D D*, so that when the pawls *a a* have performed their work the dogs shall also catch in the notches *a' a'* and hold the disks fixedly while the blanks are operated on by the bending-dies and mills, as hereinafter described. The spring-dogs *a<sup>2</sup> a<sup>2</sup>* are released from the notches *a' a'* by the slides *E E* on their return movement with the pawls *a a*, by striking against the ends of the dogs which are pivoted at the opposite ends, and are provided with springs to force the dogs into the notches *a' a'*. The radial slides 1, 2, 3, etc., are fitted in recesses in the disks *D D*, and are held in them by a stationary top plate, *D'*. The radial slides have pins *c c* which work in slots in the disks. The inner ends of the slides bear upon a ring or coil-spring, *d*, in the middle of the disks, which spring yields and allows the slides to be pushed back, but forces them outward and keeps them in position equidistant from the centre, and projecting equally beyond the circumference of the disks when they are not pushed inward, as shown in fig. 2. The disks *D D* are so arranged that when they rotate, corresponding radial slides in the disks take their position opposite the feed-boxes *C C* to receive the hinge-blanks, which are pushed upon them by arms *e e* that are attached to slides *E' E'* connected with side levers *G G*, which are actuated by side



cams H H to move the slides E<sup>1</sup> E<sup>1</sup> in one direction, while they are moved by spiral springs in the other direction. After the radial slides have received the blanks from the feed-boxes the disks are moved by the pawls  $\alpha$   $\alpha$ , as before described, to convey the blanks in front of the dies  $f f^1$ , which turn up their edges preliminarily to bending the knuckles, as shown in fig. 5. The dies  $f f$  rise through the bed A and push the edges of the blanks up against adjustable dies  $f^1 f^1$  secured in posts  $g g$  fixed in the bed. They are worked by levers G<sup>1</sup> G<sup>1</sup> placed under the bed and actuated by cams H<sup>1</sup> H<sup>1</sup>. The next movement of the disks carries the blanks opposite the pushing-slides E<sup>2</sup> E<sup>2</sup>, in the ends of which are set the dies for finishing the operation of bending the knuckles, as shown in fig. 4. This operation is effected by the slides E<sup>2</sup> E<sup>2</sup> which are connected with cranks F F. The slides E<sup>2</sup> E<sup>2</sup> move up and press against the ends of the radial slides, and push them in the disks far enough to permit the knuckles to be turned while the blanks are held rigidly by overhang-blocks  $g^1 g^1$  fastened on the top plate D<sup>1</sup> by set-screws. The radial slides bear upon the coil-spring  $d$ , which yields to the pressure and allows them to be pushed back for this operation; and when the pushing-slides E<sup>2</sup> E<sup>2</sup> are withdrawn the spring  $d$  throws the radial slides forward again into their original position. The rotation of the disks next conveys the blanks opposite the mills I I, into which the knuckles are pushed by sub-slides  $h h$  connected with levers G<sup>2</sup> G<sup>2</sup> that are actuated by the slides E<sup>2</sup> E<sup>2</sup> having connecting-rods  $g^2 g^2$ . The mills I I are operated as usual with independent pulleys  $k k$ . When the blanks have been milled they are next conveyed in front of the central nailing device J, where the rights and lefts are received on opposite sides by slides  $h^1 h^1$ , which move out by means of levers G<sup>3</sup> G<sup>3</sup> placed under the bed A, and actuated by side cams H<sup>2</sup> H<sup>2</sup>. The blanks are pushed from the radial slides on to the slides  $h^1 h^1$  by arms  $e^1 e^1$  attached to the slides E<sup>1</sup> E<sup>1</sup>, that are actuated as before described. The blanks are received from the feed-boxes C C on the radial slides at one side of the disks at the same time that they are delivered to the nailing device on the opposite side. The slides  $h^1 h^1$ , after receiving the blanks from the radial slides, carry them into the nailing device J, where the knuckles of the rights and lefts are joined to form a hinge and receive the nail or rivet which holds them together. The nails or rivets are held in a feed-box, C<sup>1</sup>, and when the blanks have been united a nail is pushed into the knuckles by a nail-rod,  $m$ , connected with a slide, E<sup>3</sup>, that is actuated by the cam H<sup>3</sup> in one direction, and is moved in the other direction, to withdraw the nail-rod  $m$ , by a spiral spring,  $d^2$ . Thus the rotary disks D D successively receive the blanks from the feed-boxes C C and convey them on the radial slides to the devices for bending the knuckles, milling and nailing, all of which operations proceed automatically and simultaneously.

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

1. The rotary carrying disks D D, with radial slides for receiving the right and left hinge-blanks from the feed-boxes C C and conveying them successively to the bending, milling, and nailing devices, constructed and operating substantially as herein shown and described.
2. The pawls  $\alpha$   $\alpha$  connected with the slides E E, in combination with the rotary carrying disks D D, all constructed, arranged, and operating substantially as and for the purpose herein described.
3. The spring-dogs  $\alpha^2$   $\alpha^2$ , in combination with the rotary carrying disks D D, all constructed, arranged, and operating substantially as and for the purpose herein described.
4. The slides E<sup>1</sup> E<sup>1</sup>, provided with the arms  $e e^1$ , in combination with the rotary carrying disks D D, arranged and operating substantially as and for the purpose herein described.
5. The combination of the rotary carrying disks D D with the devices described for bending, milling, and nailing the hinge-blanks, the said combination being organized and operating substantially as herein shown and described.

The above specification of my invention signed by me this 25th day of June, 1867.

ADRIAN RAIS.

Witnesses:

WM. F. McNAMARA,  
ALEX. F. ROBERTS,