

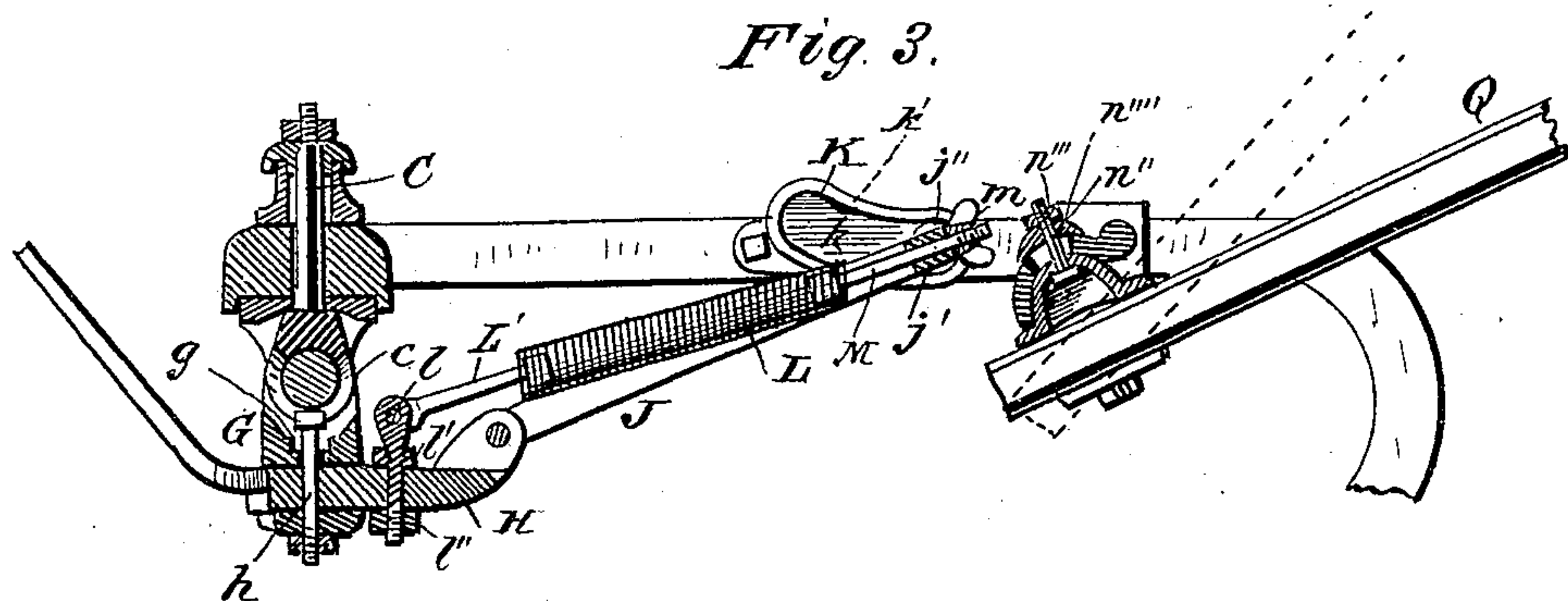
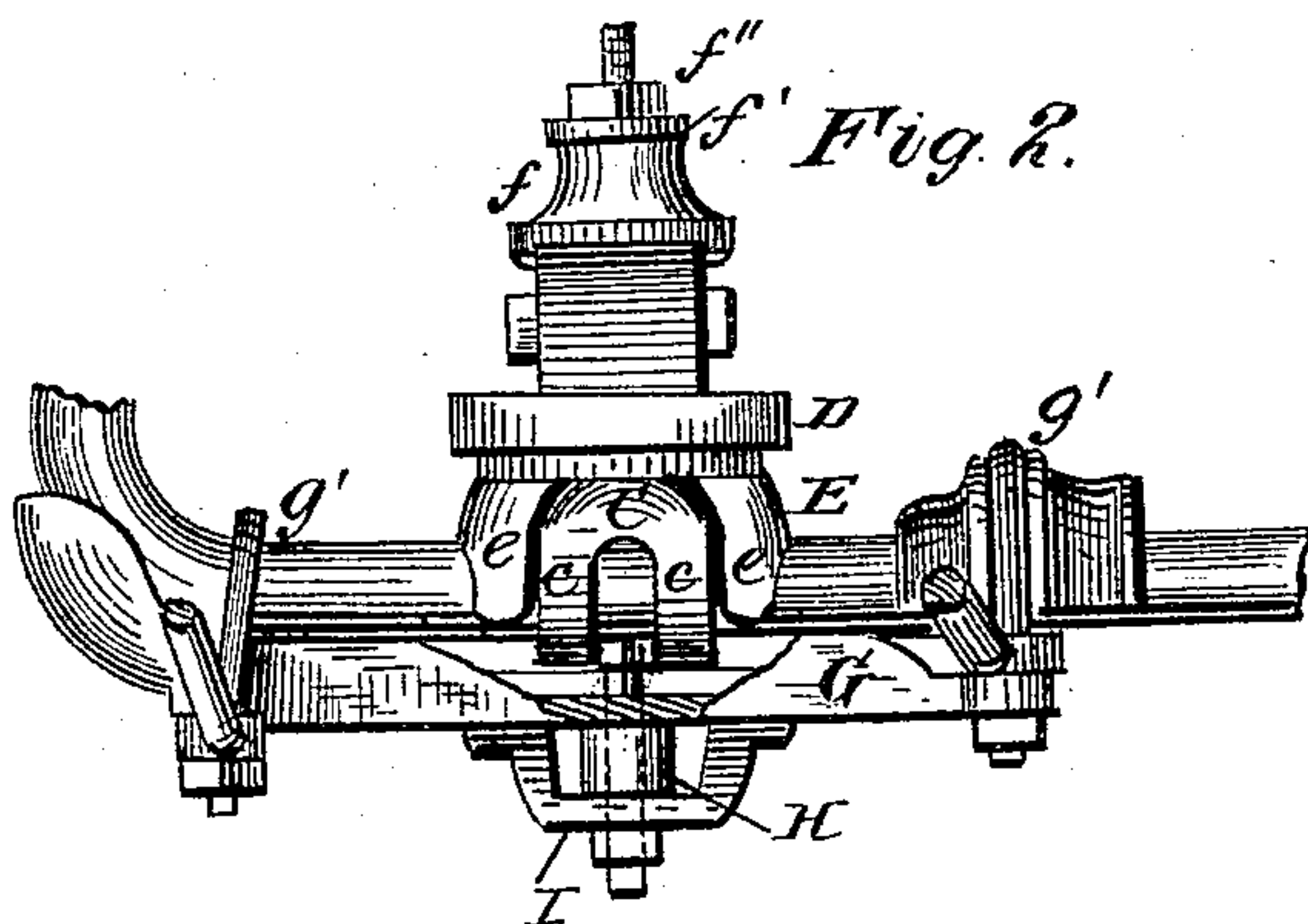
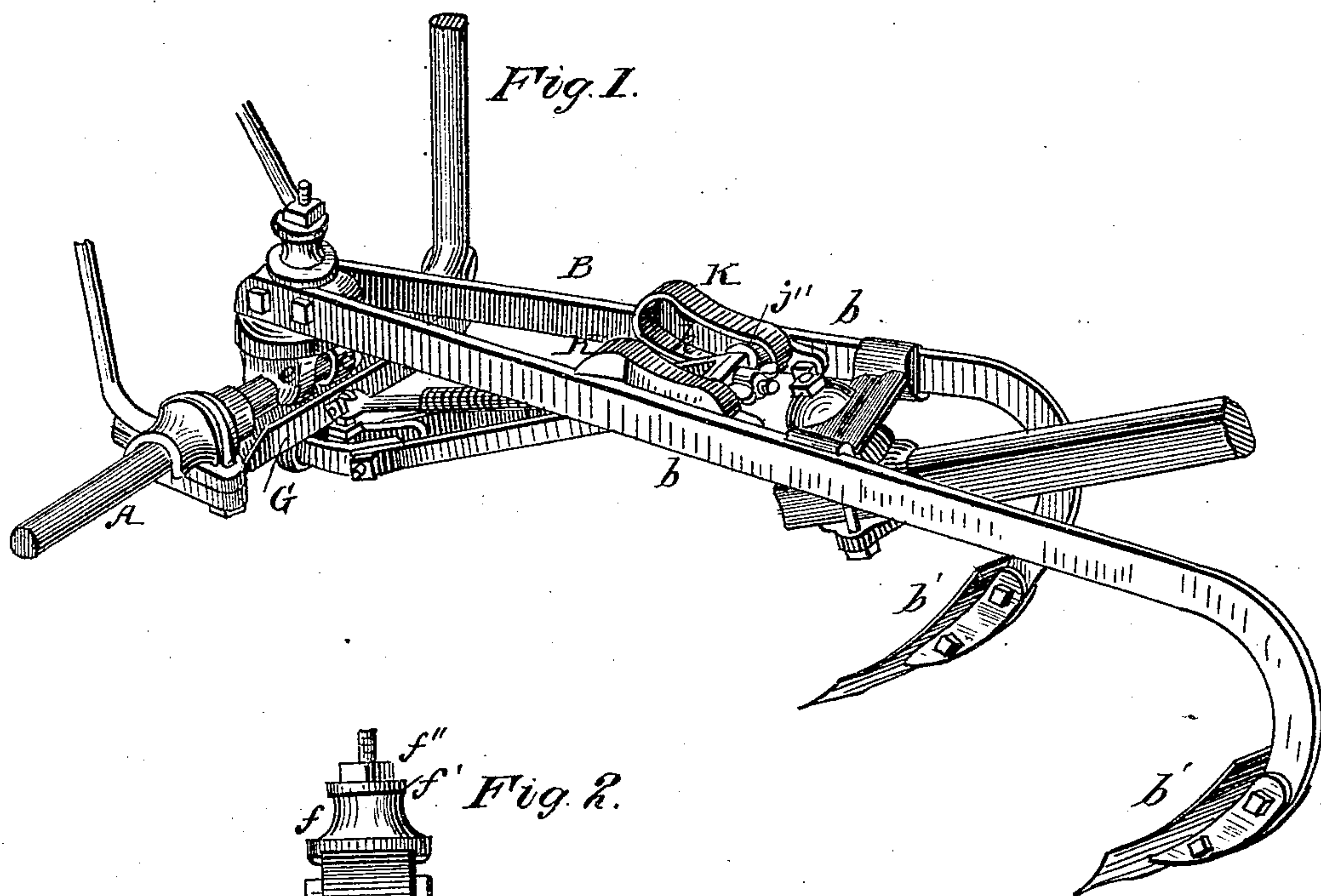
(Model.)

2 Sheets—Sheet 1.

G. W. BROWN.  
CULTIVATOR.

No. 248,991.

Patented Nov. 1, 1881.



Witnesses  
*Fred G. Dieterich*  
*A. H. Krause*

Inventor  
*George W. Brown*  
By *W. D. Richards*  
*Atty.*

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Fig. 4.

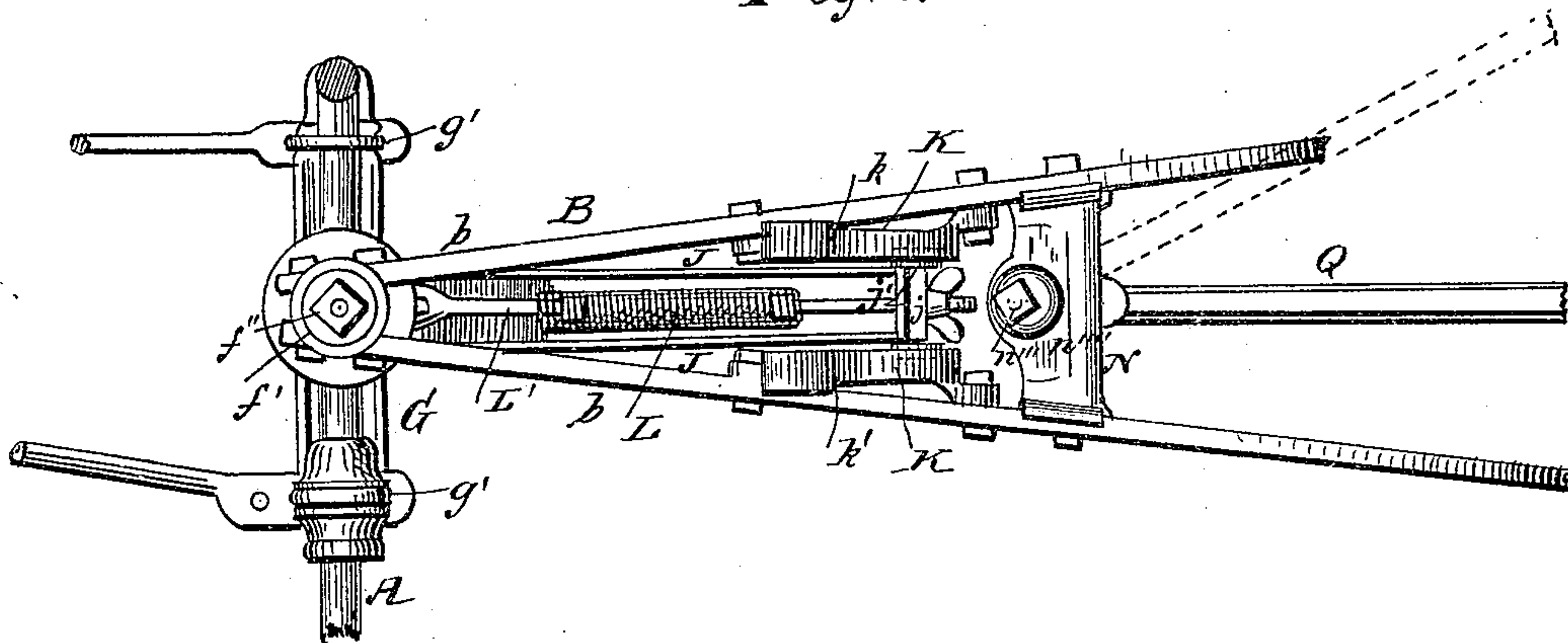


Fig. 5.

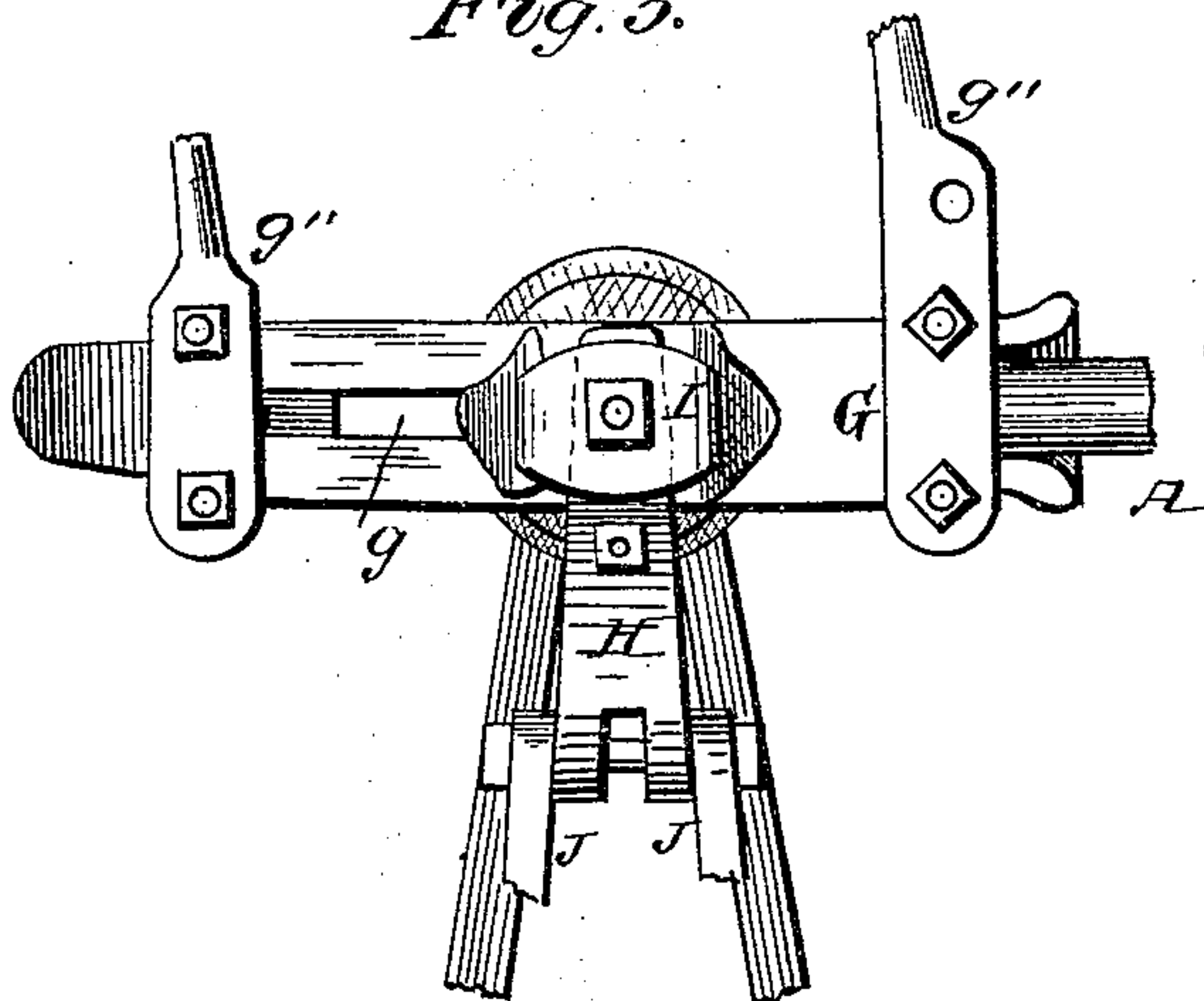


Fig. 6.

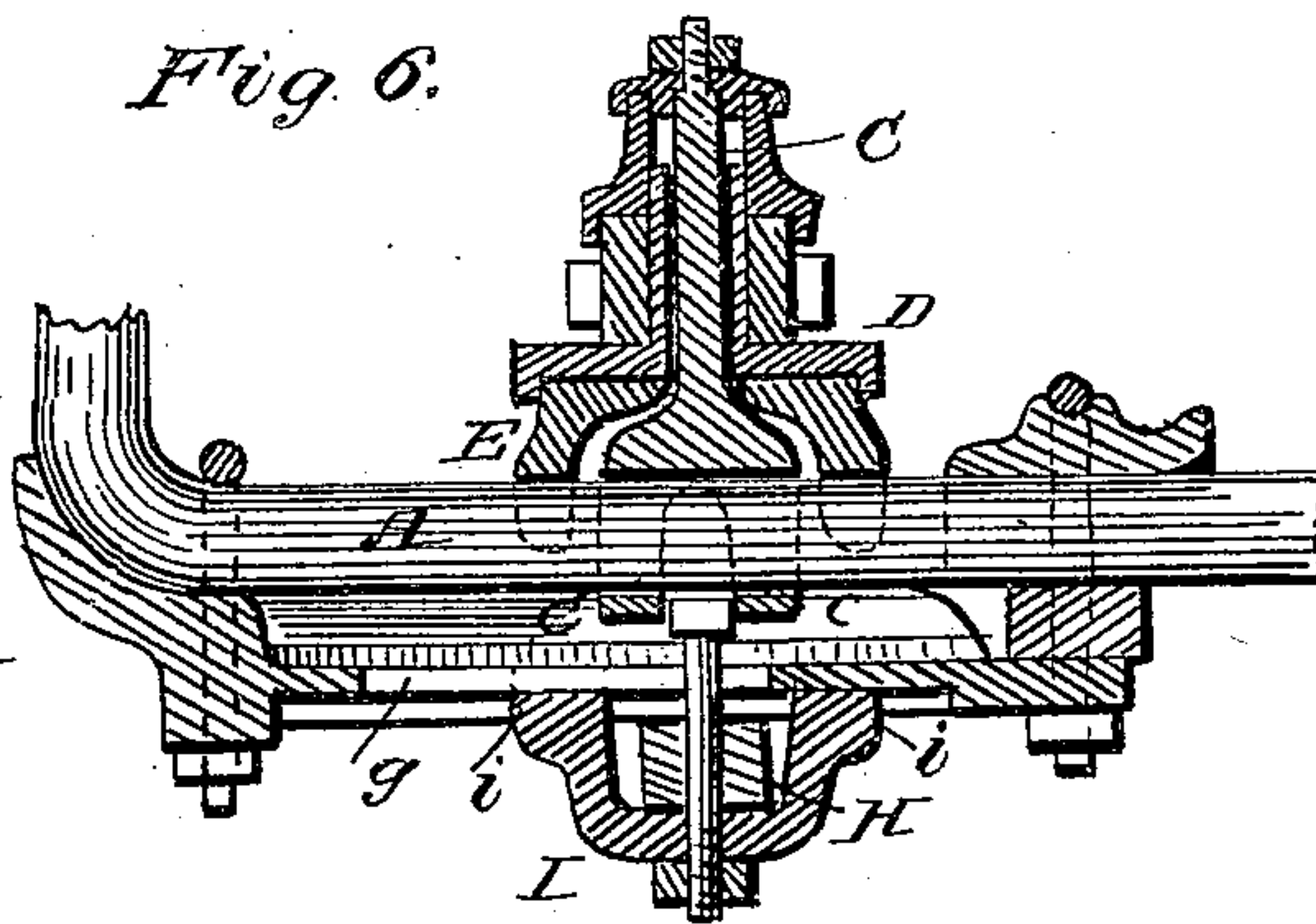


Fig. 7.

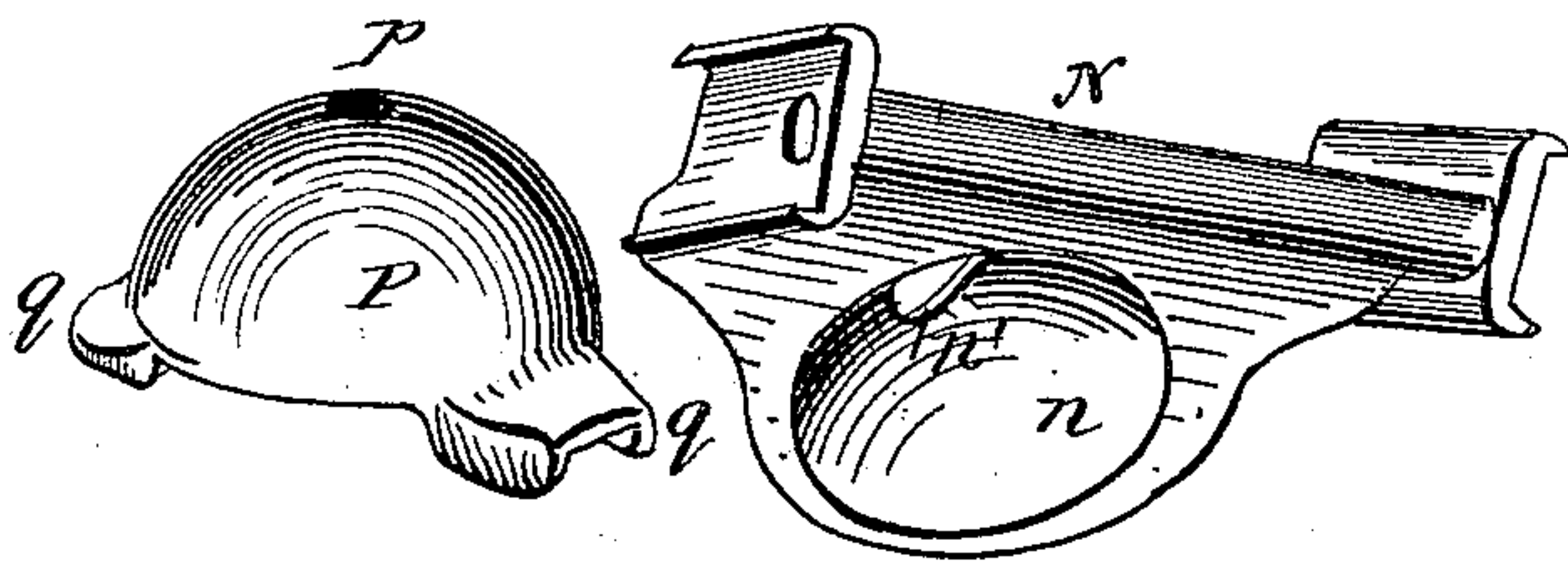
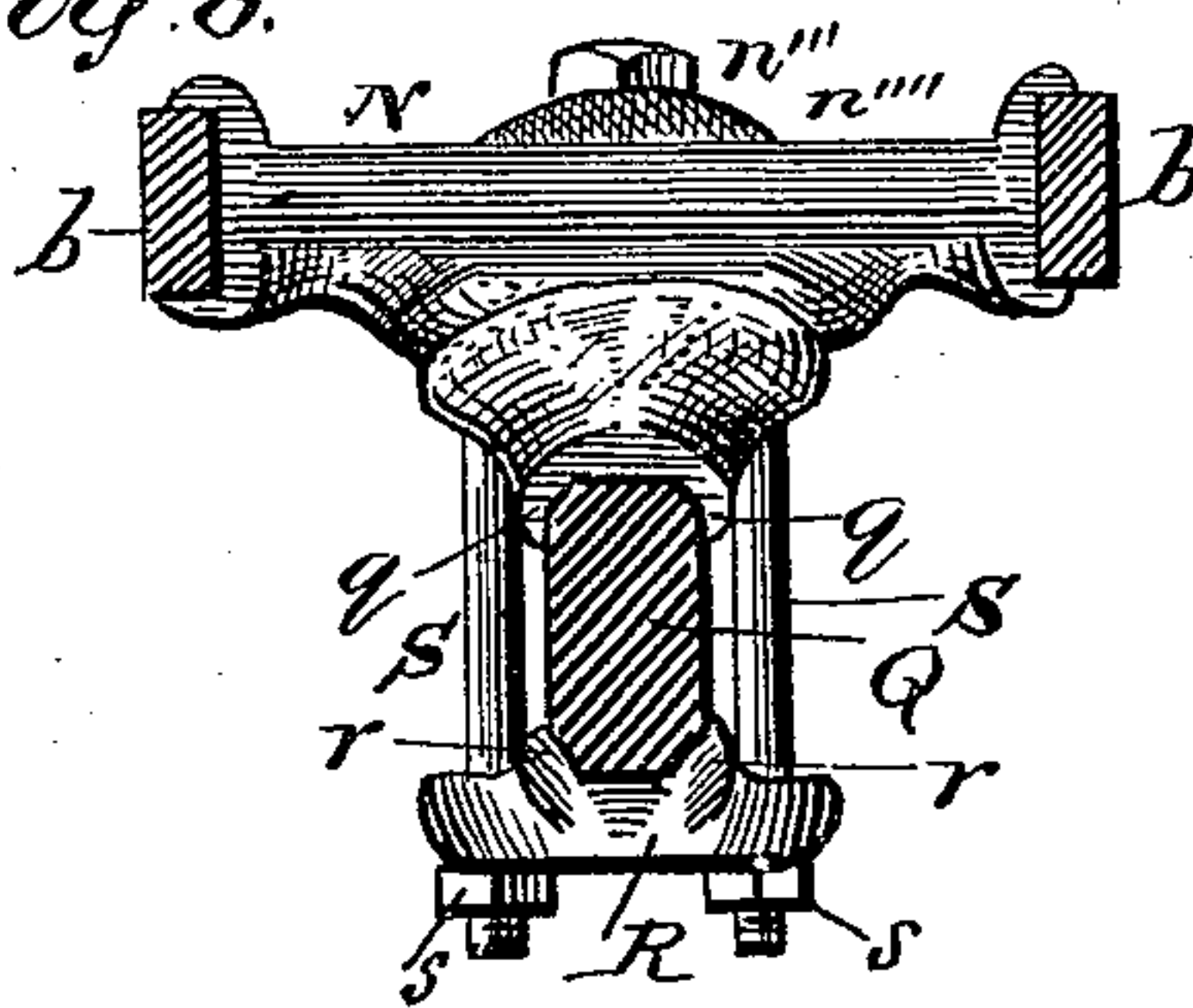


Fig. 8.



Witnesses  
Fred. G. Dietrich  
A. H. Krause.

Inventor:  
George W. Brown  
By W. B. Richards,  
Atty.



# UNITED STATES PATENT OFFICE.

GEORGE W. BROWN, OF GALESBURG, ILLINOIS.

## CULTIVATOR.

SPECIFICATION forming part of Letters Patent No. 248,991, dated November 1, 1881.

Application filed July 15, 1880. (Model.)

*To all whom it may concern:*

Be it known that I, GEORGE W. BROWN, a citizen of the United States, residing at Galesburg, in the county of Knox and State of Illinois, have invented certain new and useful Improvements in Cultivators; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters or figures of reference marked thereon, which form a part of this specification, in which—

Figure 1 is a perspective of a construction embodying my invention. Fig. 2 is a front elevation of the coupling, the front side of the bar G shown broken away. Fig. 3 is a vertical sectional elevation in the line *xx* in Fig. 4. Fig. 4 is a top plan. Fig. 5 is a bottom plan, seen from below, of the coupling. Fig. 6 is a vertical sectional elevation of the parts crossed by the line *yy* in Fig. 4. Fig. 7 is a perspective of the adjacent faces of the socket-joint connecting the handles to the plow-beams. Fig. 8 is a section of the plow-handles and rear elevation of the socket-joint connecting it with the beams.

The invention relates to cultivators; and it consists in combinations and constructions hereinafter described, and set forth in the claims hereto annexed.

Referring to the drawings by letters, A represents one end or horizontal part of an ordinary cultivator axle or frame.

B is an ordinary plow-gang, consisting of two plow-beams, *b b*, united at their front ends and provided at their rear diverged and downwardly-turned ends with ordinary shovels, *b'*. The gang B is hinged to the axle by means of a vertical bolt, C, the lower end of which has eyes *c c*, that encircle the axle and turn thereon, to permit of raising and lowering the rear ends of the gang.

Plates D and E are placed between the gang B and axle, the plate D being attached to the gang and resting with its under surface on the upper surface of the plate E, on which it rotates, to permit of lateral movement or oscillation of the gang B. The plate E has downwardly-projecting arms *e*, which are fitted to and rest on the axle, and turn thereon when

the gang is raised and lowered. Washers *ff'* and nut *f''* on the upper end of the bolt C serve to hold the parts of the joint in place. This joint for connecting the plow-beam to the axle is substantially the same as the joint shown in the pending joint application of this applicant with Samuel G. Holyoke, and no claim is made to it herein.

G is a plate or bar located parallel with and below the axle-arm A, and has a vertical slot, *g*, lengthwise of itself, and is held in place by stirrups *g'*, which also secure the ends of the ordinary tongue-braces, *g''*, to the axle. The plate G may be secured to the axle in other and evident ways.

H is a short bar, hinged to the plate G by means of a bolt, *h*, which passes through the slot *g*, and the head of which rests between the eyes *c c* of the bolt C. The bolt *h* also passes through a stirrup, I, and secures it in place below the plate G. The stirrup I has lugs *i* on its ends, resting in the slot *g*, to hold it from rotation on the bolt *h*. The sides of the stirrup I serve to act as stops to limit the lateral oscillations of the plate G, and thereby limit, also, the lateral oscillations of the gang of plows.

The eyes *c* and plate E may be adjusted laterally on the axle to adjust the distance between the gangs of plows, and the plate G, stirrup I, and bolt *h* may be correspondingly adjusted, and all of the parts secured after adjustment by the bolt *h*, the head of which, resting between the eyes *c*, acts as a keeper to secure the bolt C, and thereby the gang of plows, against sliding laterally on the axle.

J J are links, hinged on a horizontal pivot-bolt, at their forward ends, to the rear end of the bar H, which projects in rear of the plate G and axle, and connected at their rear ends by a head, *j*, the stud ends, *j'*, of which project laterally beyond the links J and have anti-friction rollers *j''* journaled on them.

K K are guide-blocks secured one to each beam *b*, and have each a groove, *k*, in its face confronting the other block. The grooves *k* are preferably curved upward at their ends nearest the axle, for purposes hereinafter described; but they may be made straight, and may extend through the blocks K in the form of slots. The studs *j'* and rollers *j''* extend into the grooves *k*.



L is a spiral spring.

L' is a rod connected at its rear end to the forward end of the spring L, and hinged at its forward end to the upper end of a standard, *l*, so as to permit of oscillating the rod L' in a vertical plane. The standard *l* passes through the bar H forward of the hinge to the links J, and in rear of plate G, and is threaded and provided with a nut, *l'*, above the plate G, and a nut, *l''*, below it, by means of which it may be held after it is adjusted vertically to raise or lower the end of the rod L'. M is a rod connected at one end to the rear end of the spring L, and its other end passed through a hole in the head *j*, and threaded to receive a thumb-nut, *m*, by means of which the tension of the spring L may be regulated. As the rear end of the plow-gang is raised the rollers *j''* will roll forward in the grooved guide-blocks K, and thus permit the links J to be raised by the spring L, and the tension of the spring L may be adjusted so that it will exert an upwardly-acting force on the links J, and thus aid in raising and lowering the rear ends of the plow-gangs.

By raising the standard *l* the angle between the spring and links J may be increased when the plow-gangs are in positions about horizontal, and thus increase the upwardly-acting force of the springs on the plow-gangs when in said horizontal or working position, and by lowering the standard *l* a reverse effect to that last described may be produced. The extent to which the gangs may be raised and lowered is limited by the rollers *j''* striking the front and rear ends, respectively, of the grooves in the blocks K. The forward ends of the grooves *k* being curved upward forms a shoulder, *k'*, in the upper wall of the groove, which to some extent resists lowering the plow-gang when elevated to its highest position, and thus holds the gang in an elevated position for turning at the ends of rows, and for other purposes, without other aid or support. The bar H oscillates laterally, and allows the links J and spring L to oscillate with the lateral oscillation of the gang of plows.

It will be evident that the sliding connection between the links J and the plow-beams may be constructed otherwise than herein shown and described, and I do not limit my claim to the special devices herein shown and described for the purpose.

It will be evident that the spring L will exert an upwardly-acting force, which increases as the gang of plows is raised; but I do not claim such feature as my invention herein, as it is shown and described in the Brown and Hol-yoke pending application hereinbefore referred to.

N is a plate secured to and between the beams *b* of a gang of plows, and has a hemispherical socket or cup-shaped cavity, *n*, in its under side, and a slot, *n'*, in the wall of the upper side of said socket.

P is a hemispherical shell, which fits into the

socket *n* and has a hole, *p*. A bolt, *n''*, passes through the hole *p* and the slot *n'*. The plow-handle Q is received and held between flanges *q* on the under side of the shell P and flanges *r* on a bridle-bar, R, which is held by nuts *s* on bolts S, that project from the under side of the shell P. The shell P may be turned on the bolt *n''* to rotate within the socket *n* for the purpose of adjusting the plow-handle in different lateral positions, as shown at Fig. 4 by dotted lines; and the slot *n'* will permit of turning the shell P in the socket *n* for the purpose of adjusting the plow-handle at different heights at its rear end, as shown by dotted lines at Fig. 3. When adjusted the parts are held by a nut, *n'''*, and washer *n''''* on the bolt *n''*.

I claim as new and desire to secure by Letters Patent—

1. In combination with the vertically-swinging plow beams or gangs, and with the vertically-swinging spring L, the vertically-swinging links connected at their distal ends with the spring, so as to exert an upwardly-acting force thereon, and connected to the plow-beams by a sliding connection, so as to permit of oscillating them in a vertical plane.

2. In combination with the vertically-swinging plow-beams, vertically-swinging links J, and spring L, adapted to exert an upward force on the links J and plow-beams, a standard to which the front end of the spring is connected, and which is adjustable vertically, substantially as and for the purpose specified.

3. In combination with the vertically and laterally swinging plow-beams and vertically-swinging links J and spring L, the bar H, hinged so as to swing laterally and permit the spring and links J to swing laterally also, substantially as and for the purpose specified.

4. In combination with the hinge or coupling plates D E, bolt C, plow-beams, and slotted plate G, the bolt *h*, the head of which is adapted to act as a keeper, substantially as and for the purpose specified.

5. In combination with the laterally-adjustable plow-beams, the slotted plate G, bolt *h*, and laterally-adjustable bar H, substantially as and for the purpose specified.

6. In combination with the vertically-swinging plow-beams and vertically-swinging links J and spring L, the grooved plates K, adapted to receive the studs or projections *j'* of the links J, substantially as and for the purpose specified.

7. In combination with the vertically-swinging plow-beams, vertically-swinging links J, and springs L, the plates K, having grooves *k*, curved upwardly at their forward ends, whereby they will resist to a limited extent the descent of the plow-beams and sustain them in an elevated position, substantially as and for the purpose specified.

8. In combination with the vertically-swinging plow-beams, vertically-swinging links J, and spring L, the plates K, having grooves *k*, in which the studs *j'* slide, and against the

ends of which grooves said studs strike to limit the extent to which the plows may be raised and lowered, substantially as and for the purpose specified.

- 5 9. In combination with a socket-plate, N, attached to the plow-beams, a hemispherical plate, P, attached to the plow-handle, and adapted to be adjusted in the socket *n*, for the purpose of adjusting the plow-handle laterally  
10 and vertically, substantially as and for the purpose specified.

10. In combination with the plate N, secured

to the plow-beams, and having a socket, *n*, and slot *n'*, and hemispherical shell P, secured to the plow-handle, and having a hole, *p*, the bolt 15 *n''*, adapted to pass through the hole *p* and slot *n'*, and secure the parts after adjustment, substantially as and for the purpose specified.

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

GEORGE W. BROWN.

Witnesses:

I. S. PERKINS,  
W. S. COWAN.