

(No Model.)

2 Sheets—Sheet 1.

C. HEFFT.  
GRINDSTONE FRAME.

No. 310,054.

Patented Dec. 30, 1884.

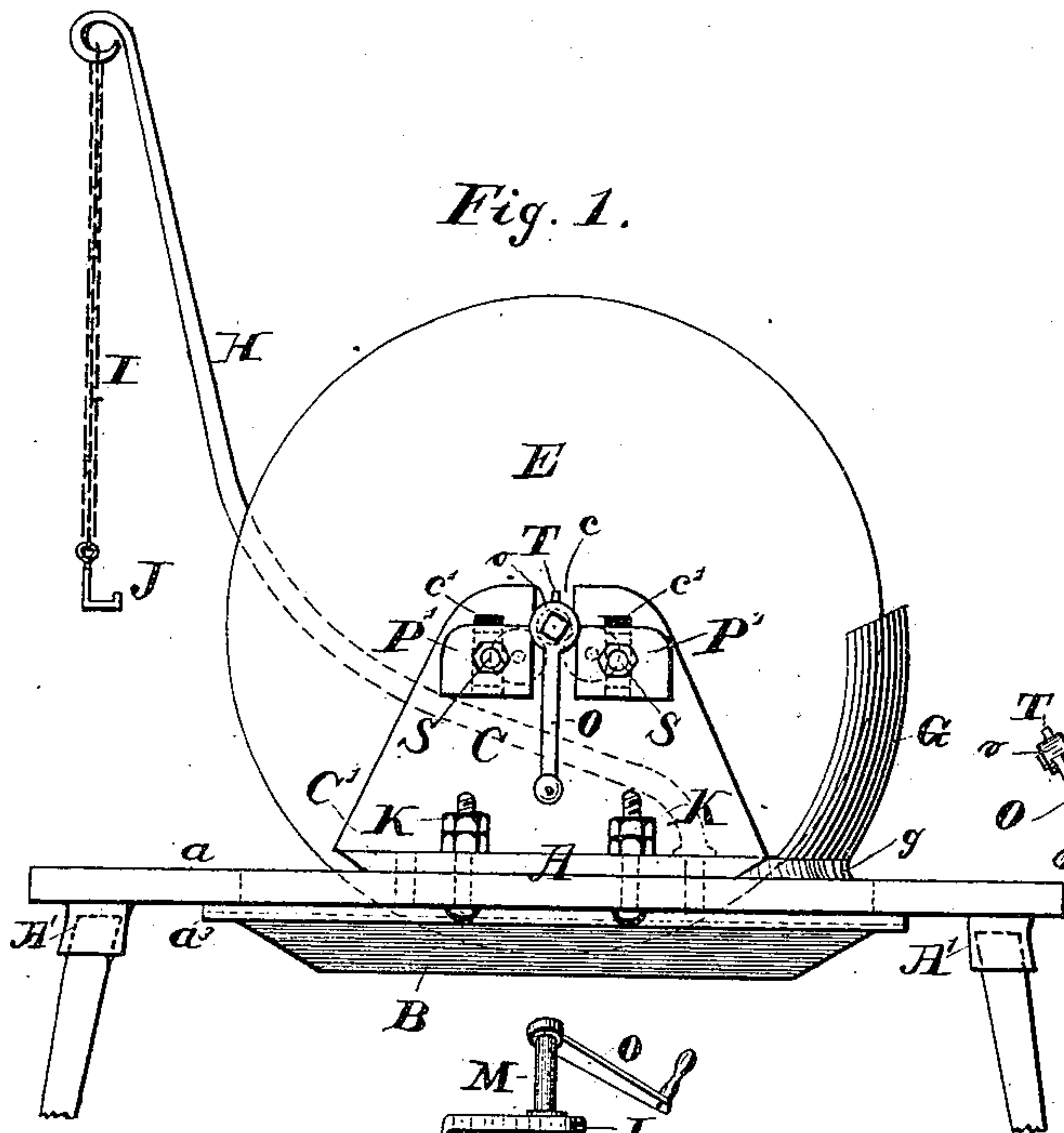


Fig. 1.

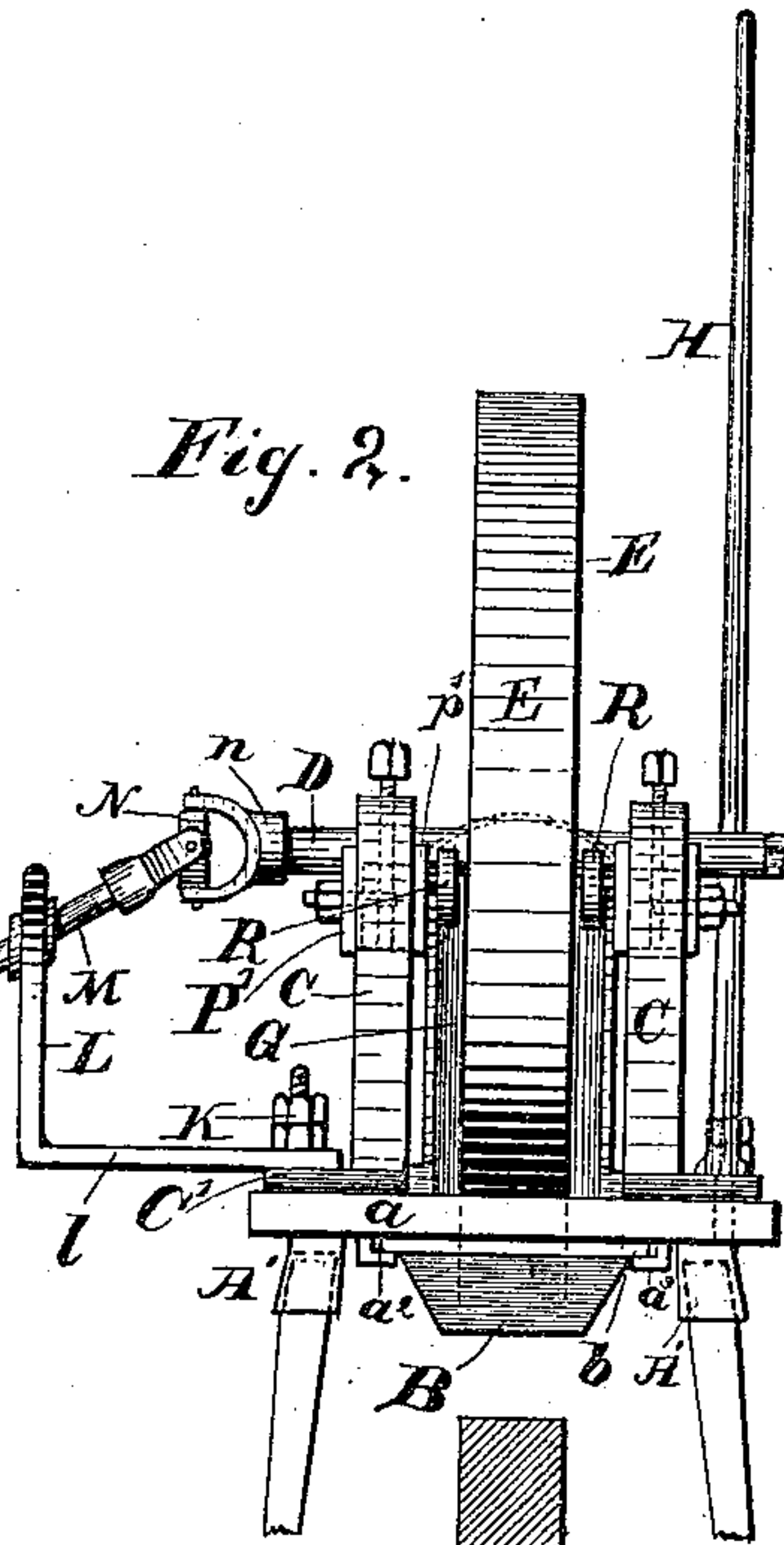


Fig. 2.

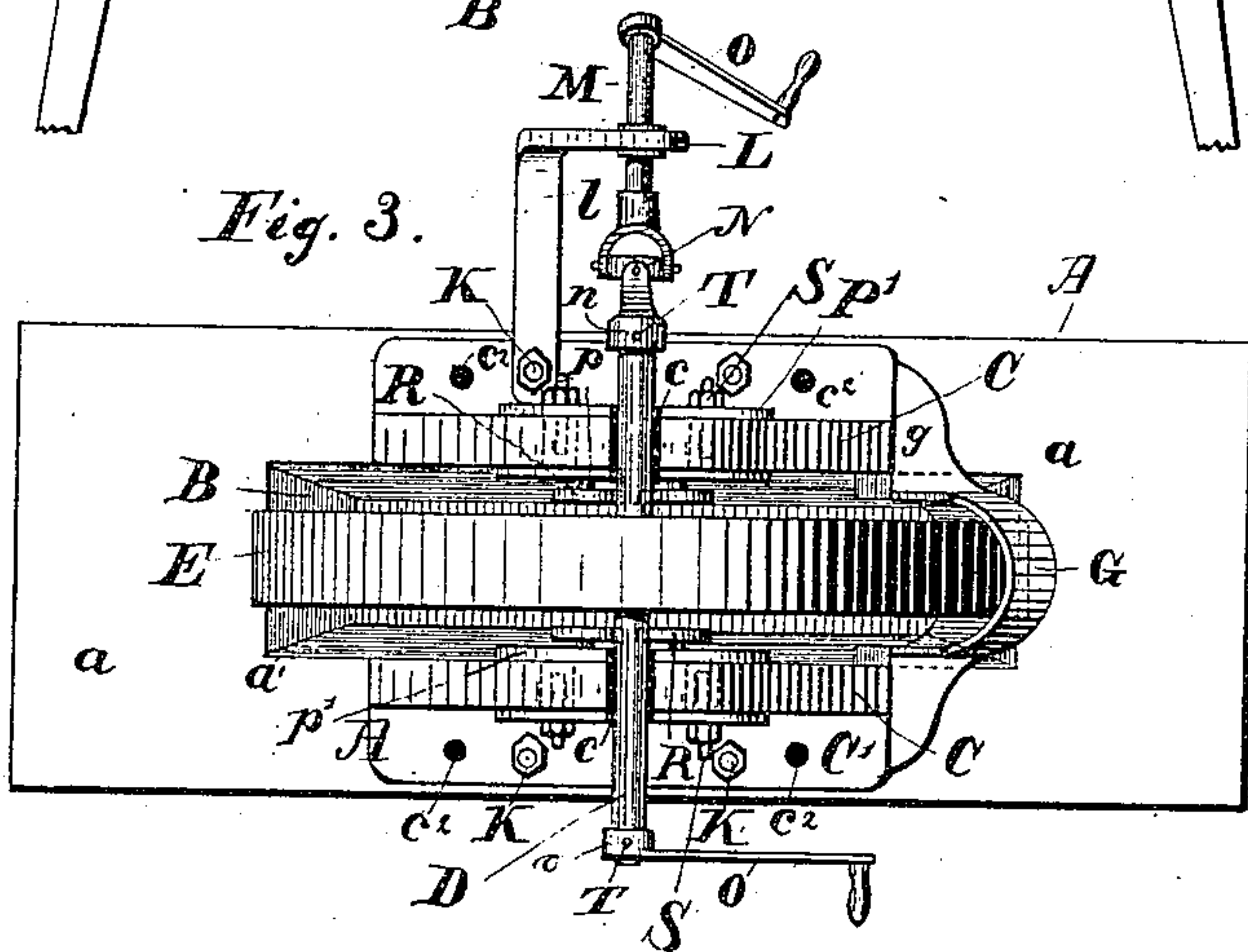


Fig. 3.

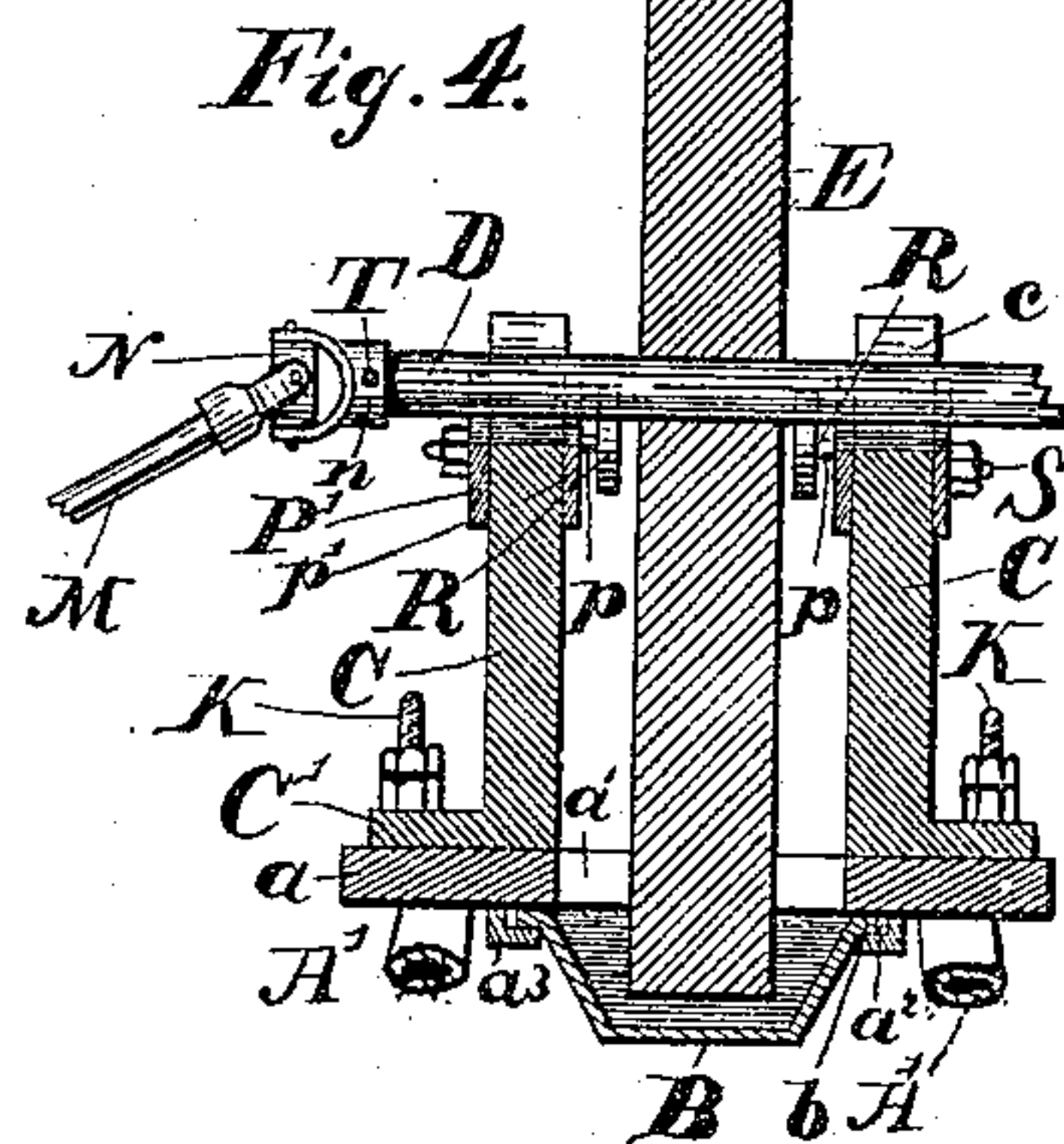


Fig. 4.

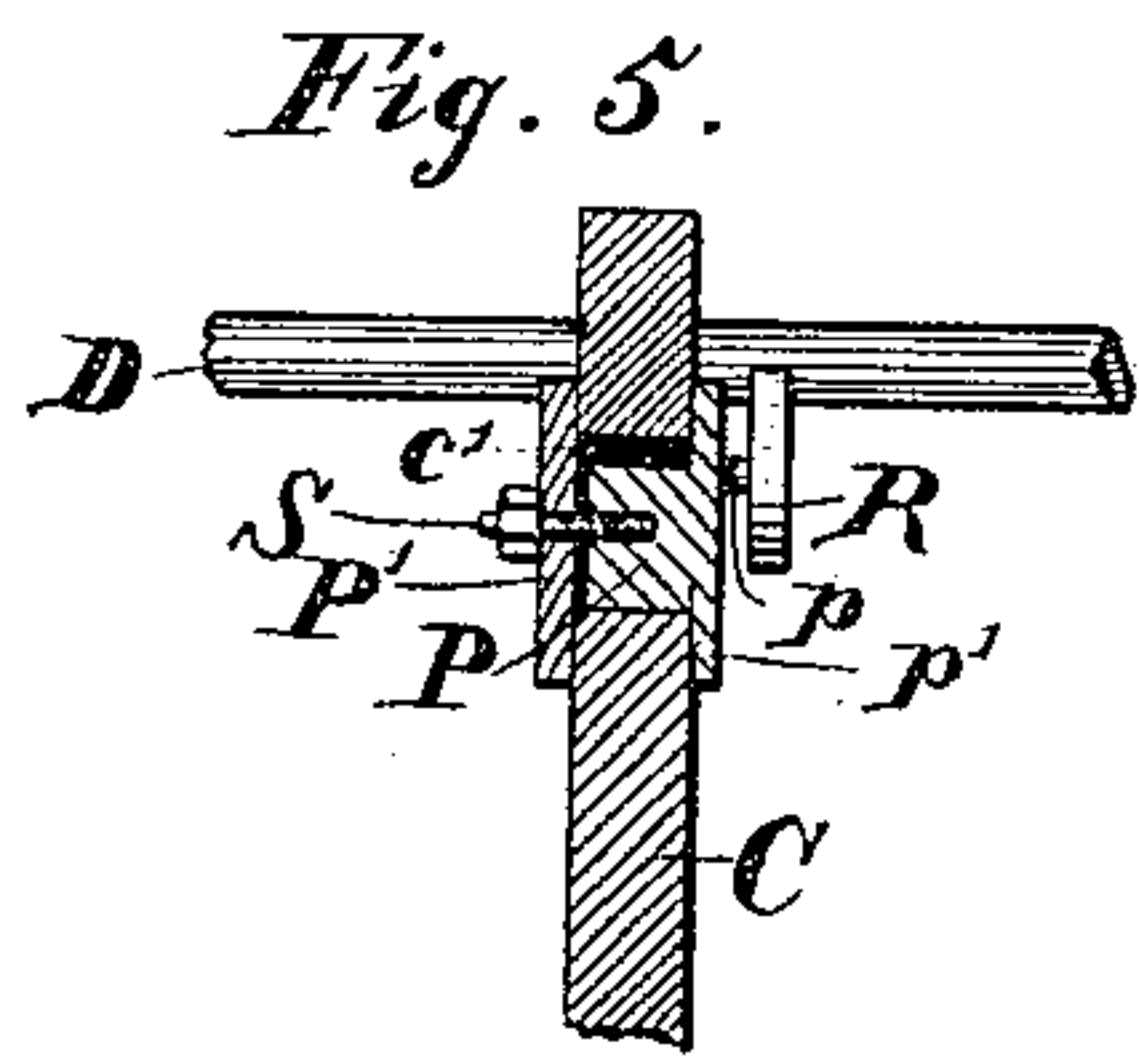


Fig. 5.

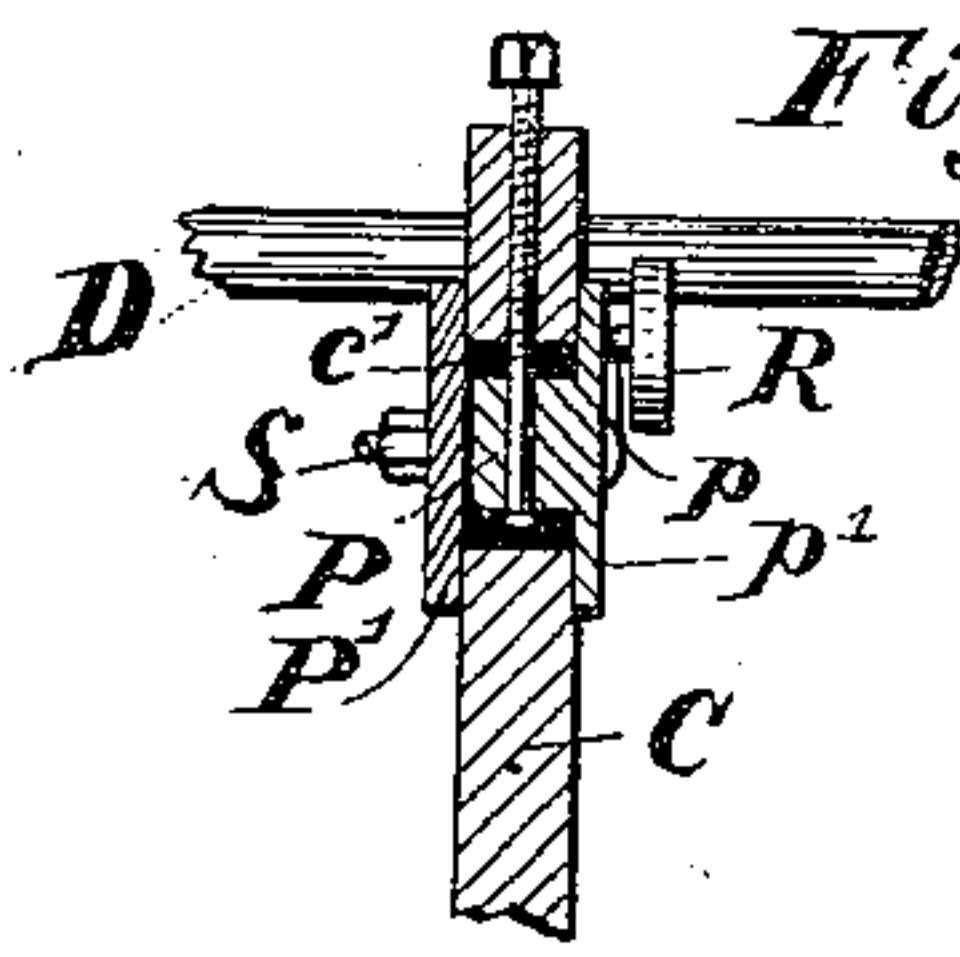


Fig. 6.

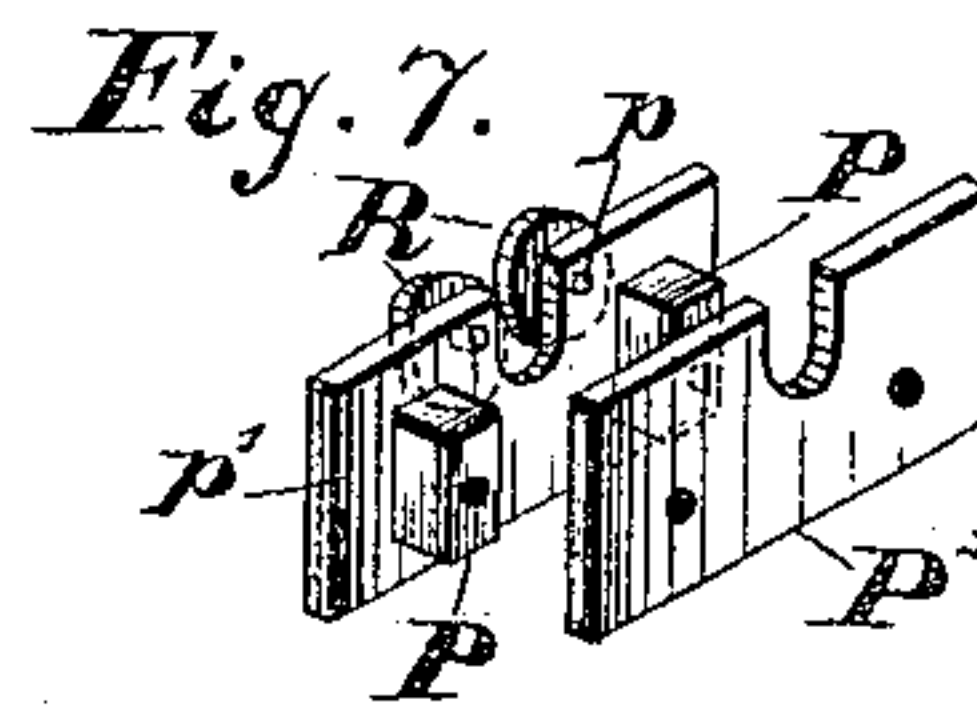


Fig. 7.

Witnesses:  
O. E. Boulter,  
Andrew Blum.

Inventor:  
Christopher Hefft  
per Henry Over  
his atty.

(No Model.)

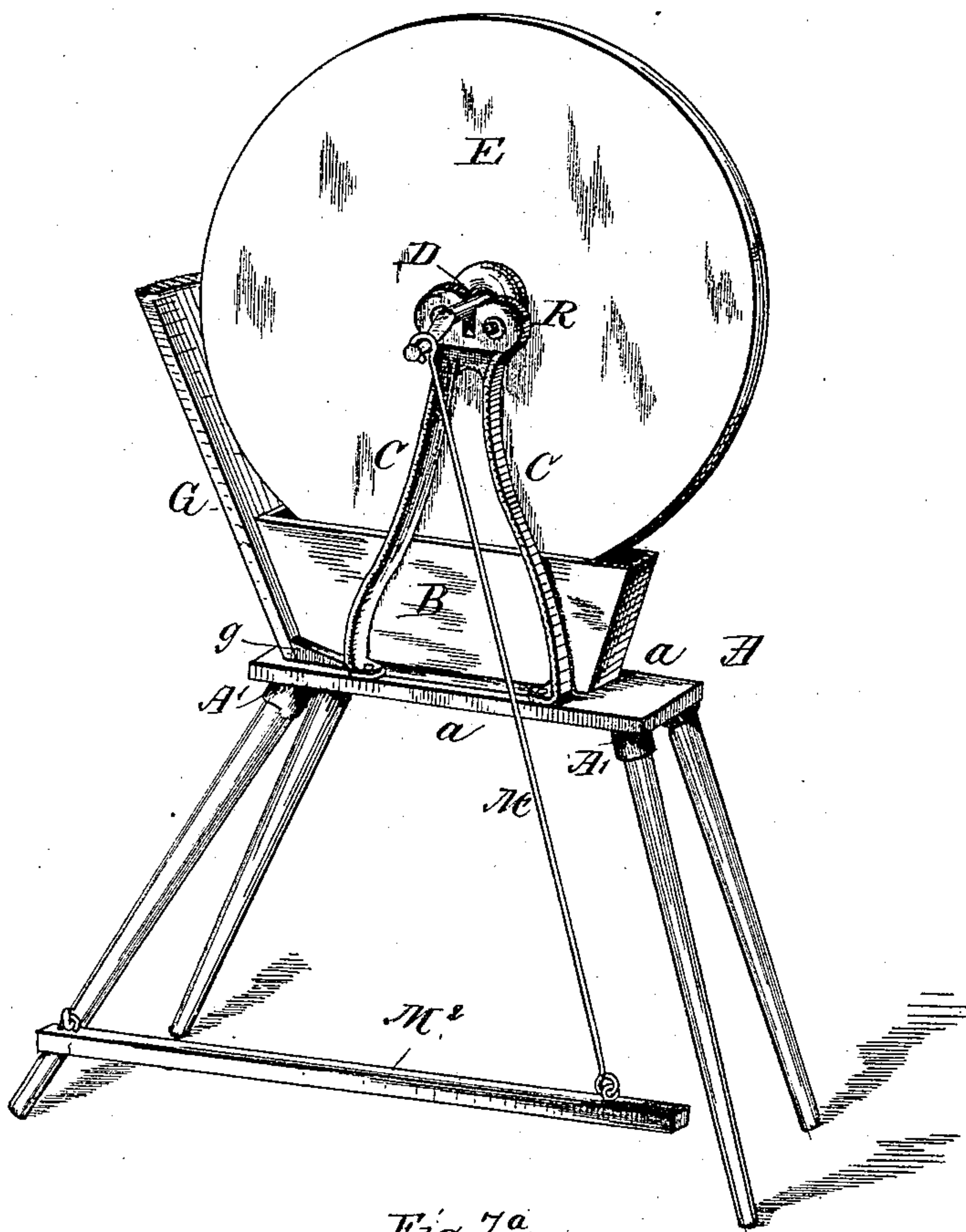
2 Sheets—Sheet 2.

C. HEFFT.  
GRINDSTONE FRAME.

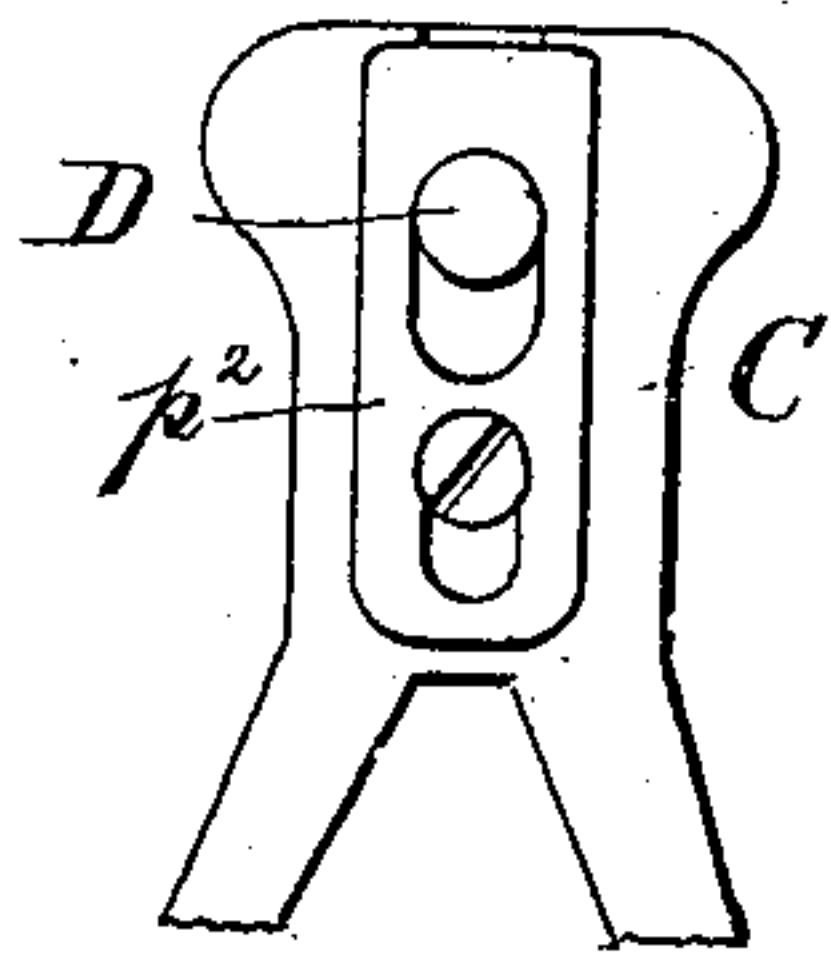
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*Fig. 8.*



*Fig. 7<sup>a</sup>*



WITNESSES

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INVENTOR

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# UNITED STATES PATENT OFFICE.

CHRISTOPHER HEFFT, OF PEKIN, ILLINOIS, ASSIGNOR TO HIMSELF, FRED-  
ERICK CHRISTOPHER, AND HENRY ROOS, ALL OF SAME PLACE.

## GRINDSTONE-FRAME.

SPECIFICATION forming part of Letters Patent No. 310,054, dated December 30, 1884.

Application filed April 9, 1884. (No model.)

*To all whom it may concern:*

Be it known that I, CHRISTOPHER HEFFT, a citizen of the United States, residing at Pekin, in the county of Tazewell and State of Illinois, have invented certain new and useful Improvements in Grindstone-Frames; 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 ap-  
10 pertains 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.

The object of my invention is to simplify  
15 the construction and increase the durability of grindstone-frames and adapt the same to be more compactly packed for storage and transportation.

The further object of the invention is to provide means whereby the grinding of tools or implements of greater than ordinary length—such, for instance, as the grinding of harvester sickle-bars and other analogous implements—is facilitated and effected with less fatigue.

25 The further object of the invention is to provide means whereby obstructions to the grinding of implements of the class above referred to are removed, to permit the free and unobstructed manipulation of the said implements; and, lastly, the invention has for its object to provide means whereby the stone may be operated at will by hand or foot power, and whereby the operating devices for rotating the stone are applied to its arbor so as to lie at  
35 an angle thereto, thereby lowering the crank to a plane below that of the arbor of the stone, for the purpose of leaving a sufficient unobstructed space around the stone to permit the free manipulation of the object to be ground.

40 In the construction of grindstone-frames wood has heretofore been employed almost exclusively, and the stone rotated through a crank on its arbor, either by hand or foot power, such crank rotating in proximity to  
45 the stone, and obstructing to a great extent the manipulation of the object to be ground, more especially so in the grinding of sickle-bars for harvesters, where the cutting-edges of the teeth are generally at a greater or less angle to the plane of the bar, and where it is  
50 required to shift the latter from side to side

to grind the edges of the teeth. Another inconvenience in such frames is found in that they are bulky and heavy, and cannot be compactly packed for storage or transportation. 55

My invention is designed to overcome these inconveniences, and also to render the grinding of articles more easy and with less fatigue.

In the accompanying drawings, Figure 1 is a side elevation; Fig. 2, an end elevation; Fig. 60 3, a top plan view; Fig. 4, a vertical central transverse section illustrating my improved grindstone-frame and parts supported therefrom, and Figs. 5, 6, and 7 are detail views showing the means of adjusting the roller-  
65 bearings for the stone; and Fig. 7<sup>a</sup> shows the retaining-plate for the stone arbor. Fig. 8 is a perspective view of a slightly-modified construction of grindstone-frame.

Like letters of reference indicate like parts  
70 wherever such may occur in the above figures of drawings.

The grindstone-frame A is composed of a platform, *a*, having a central polygonal aperture, *a'*, and a groove, *a''*, formed by an angular  
75 projection, *a'''*, extending along the opposite longitudinal edges of the central opening, *a'*, the open sides of the groove facing each other, and are designed to receive flanges *b*, projecting outwardly from the upper edges of a wa-  
80 ter-receptacle, B, forming a tongue-and-groove joint. The receptacle B has the form of a truncated inverted pyramid, its upper open end being of the same diameter longitudinally and transversely as the corresponding diameters of  
85 the opening *a'* in the platform, and made tapering to its bottom, and is designed for the reception of water. The receptacle is of such a depth as not to interfere with the rotation of the stone and keep the latter constantly im-  
90 mersed in the water contained in said receptacle. By means of this construction the vessel B may be readily removed and replaced when this becomes necessary. Upon its under side the platform A has four sockets, *A'*, of such  
95 depth and interior diameter as to securely hold the upper end of the legs of the frame. The platform *a*, with its aperture, grooved flanges, and sockets, is preferably cast in one piece, with a view to reducing the cost there-  
100 of. It is obvious, however, that the platform may be made of wood, for instance, and the



sockets and grooved flanges of cast metal bolted thereto without departing from the nature and object of the invention; or the several parts constituting the frame may be made entirely of wood or of wrought or cast iron.

C Carestandards, in which are formed bearing-slots  $c$ , for the reception of the arbor D of the stone E. On opposite sides of each slot is pivoted a bearing-roller, R, so arranged relatively to the arbor D and the bearing-surfaces of the slots  $c$  to support the ends of the arbor out of frictional contact with said bearing-surfaces of the slots. The object of this arrangement is to provide rolling bearings for the arbor, to facilitate the rotation of the stone and avoid the wear of the bearing-surfaces of the slots, which latter serve here as guides only to hold the arbor D in proper position.

To compensate for the wear of the rollers R, these may be made adjustable vertically upon the standards C, either singly or in pairs, as shown in Figs. 5, 6, 7. When made adjustable singly, each roller R is pivoted upon a pin,  $p$ , attached to or formed on a bearing-plate,  $p'$ , of a bearing-block, P, which latter is fitted in a vertical slot,  $c'$ , formed in the standards C, and secured in position by means of a clamping-plate,  $P'$ , and a bolt or bolts, S.

To insure the correct relative adjustment of each pair of rollers, I prefer to connect the bearing-blocks P of each pair of rolls rigidly together, and secure them in position by means of a clamping-plate, as above set forth, and as shown in Figs. 6 and 7. In this case the two bearing-blocks P are formed upon the same supporting-plate,  $p'$ , said blocks being arranged relatively to the standards so as to fit snugly in the vertical slots  $c'$  on opposite sides of the bearing-slots  $c$ , and said blocks are secured in position by means of a clamping-plate,  $P'$ , extending likewise over both blocks and vertical slots  $c'$ , said parts being secured in position by bolts S, as shown; or the blocks may be adjusted by means of set-screws, as usual, operating directly on the blocks, (or on their supporting-plate  $p'$ ,) as shown in Figs. 2 and 6. The edges at each end of the base C' of the standards C are beveled off, so as to form a triangular groove for the reception of the base-plate  $g$  of a dash-board, G, the base-plate being correspondingly beveled, and in this manner becoming wedged in the recess formed by the beveled base-plate C'.

The dash-board is preferably made of sheet metal, and is U-shaped in section and segmental longitudinally, to adapt itself to the periphery of the stone, as shown, and is secured to a metal or wood base,  $g$ . The dash-board may, however, be made of wood or entirely of metal and cast in one piece with the base-plate, if desired.

By means of the described construction the dash-board is adapted to be applied at either end of the frame to deflect the water thrown off the stone by centrifugal action, and conduct the same back to the pan B.

The base-plate C' of the standards is bolted

to the platform  $a$ , and has a hole,  $c^2$ , at each end corresponding with like holes in the platform  $a$ , for the reception of a bent standard, H, to the upper hooked end of which is attached one end of a cord or chain, I, to the opposite end of which is attached a supporting plate or clamp, or other convenient supporting device, J, to support the object to be ground. The standard is detachably connected, so as to adapt the same to be shifted from one side of the stone to the other and from one end of the frame to the other. It is also pivotally connected with said frame, to permit its following freely the endwise or lateral movements of the object supported therefrom. The use of this supporting device is obvious. It provides a convenient means for holding a sickle-bar, for instance, while being ground, thus relieving the operator of its weight, and enabling him at the same time to shift the bar at will and give it the proper inclination.

The bolts K, by means of which the standards C are bolted to the platform A, are made of such length as to project sufficiently above the base-plate of said standards to pass through holes formed in the base-plate  $l$  of a standard, L, having a bearing for supporting a crank-arbor or short crank-shaft, M, adapted to be coupled to the arbor D of the stone by means of a universal coupling, N, the arbor D being squared to fit a corresponding socket in the sleeve  $n$  of the coupling. The auxiliary crank-shaft M may be provided with a crank, and the latter connected by a rod to a suitable treadle, to rotate the stone by foot-power. Any other suitable coupling than that shown may be employed—as, for instance, any one of the many well-known couplings employed on harvester-pitmen. The object of this arrangement is to leave the stone as free as possible from obstructions such as would result from the rotation of a crank in proximity thereto. As shown, the auxiliary crank-shaft M is at an angle to the arbor D, with its crank on a plane considerably lower than the plane of said arbor, so that in its rotation the crank will rise but slightly above the plane of the arbor, leaving the upper half of the stone practically unobstructed. By squaring the crank-shaft at both ends the crank O on the auxiliary crank-shaft M may be changed from one side of the stone to the other, as desired.

To prevent accidental displacement of the crank or auxiliary crank-shaft, the socket  $o$  of the crank and the sleeve  $n$  of the coupling may be provided with a hole or slot adapted to register with a like hole formed in the squared ends of the arbor D for the insertion of a pin or key, T.

In Fig. 8 I have shown a slight modification of the grindstone-frame. In this case the water receptacle or pan B is supported on top of the platform  $a$  of the frame, and the dash-board G is made of wood—namely, a simple piece of board having a wedge-shaped foot-piece,  $g$ , adapted to be wedged in either end of the base of the standards C, the crank of



the grindstone-arbor D being connected by a rod, M', to a treadle, M<sup>2</sup>.

In order to remove the pan B it is necessary to remove the grindstone first, as will be readily understood.

In order to prevent any upward movement of the arbor D due to the application of power to one end thereof through the treadle and connecting-rod and its crank, a plate, p<sup>2</sup>, is provided, secured to the upper end of a standard, C, on the outside thereof, and through a slot in said plate passes one end of the arbor, the plate being secured to the standard by means of a slot and bolt, to render the same adjustable.

I am aware that it has been proposed to construct grindstone-frames by means of tubing for the purpose of obtaining a knock-down frame, and I am also aware that it is not new to combine a tool holder or rest and a water-pan with a grindstone-frame and grindstone, and I do not desire to claim these features, broadly; but

What I do claim, and desire to secure by Letters Patent, is—

1. The herein-described grindstone-frame, composed of the platform a, having leg-sockets attached to or formed thereon, and a central aperture having grooved flanges along its opposite edges for the reception of a water-receptacle, in combination with suitable legs and the standards C, provided with bearings for the grindstone, said parts being detachably connected with said platform, whereby a knockdown frame is obtained, for the purpose set forth.

2. The combination, with a grindstone-arbor and the supporting-frame, of rolling bear-

ings and means for compensating the wear of said bearings, as described, for the purpose specified.

3. The combination, with a grindstone-frame and the arbor of the grindstone, of a crank-shaft connected with said arbor by a universal joint and a bearing secured to said frame to hold the crank-shaft at an angle to the grindstone-arbor, substantially as described, for the purpose specified.

4. The combination, with the arbor of a grindstone and the supporting-frame and bearings, of an auxiliary driving-crank and a bearing therefor adapted to be applied at either end of the arbor and at either side of the frame, the arrangement of the auxiliary bearing relatively to the auxiliary crank being such as to support the latter at an angle to the arbor, for the purpose specified.

5. The combination, with the frame A and bearing-standards C C, provided with apertures c<sup>2</sup>, arranged as described, of the tool-support H, substantially as and for the purpose specified.

6. The combination, with the platform a and the standards C, having their bases beveled to form wedge-shaped grooves, of the dash-board G, having the outer edge of its foot beveled to fit into the grooves formed by the base of the standards, substantially as described, for the purpose specified.

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

CHRISTOPHER HEFFT.

Witnesses:

HENRY ROOS,  
JAMES R. COOPER.