

W. C. MARGEDANT.
SURFACE PLANING MACHINE.

No. 171,397.

Patented Dec. 21, 1875.

Fig. 1.

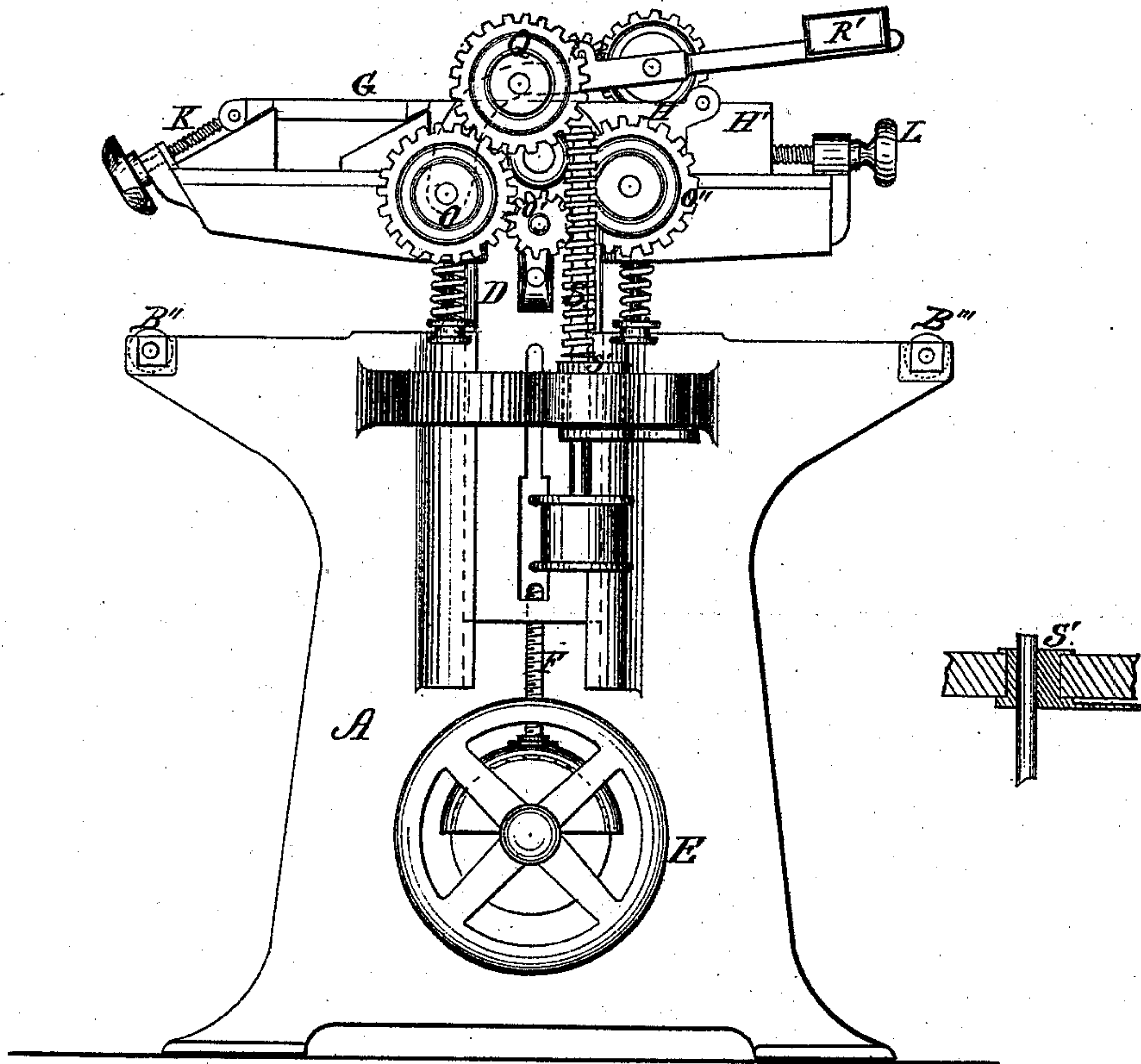
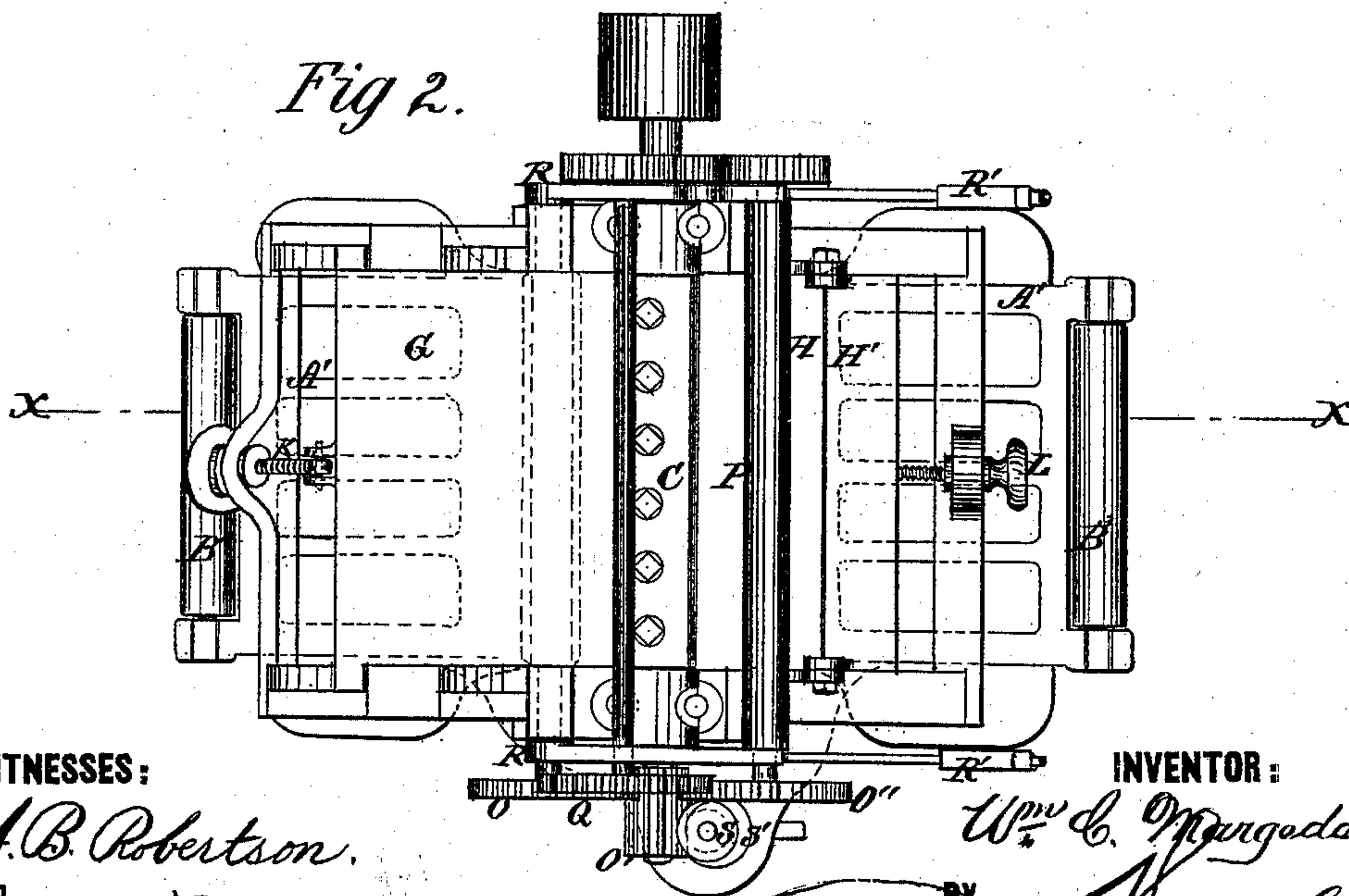


Fig 2.



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Fig. 3.

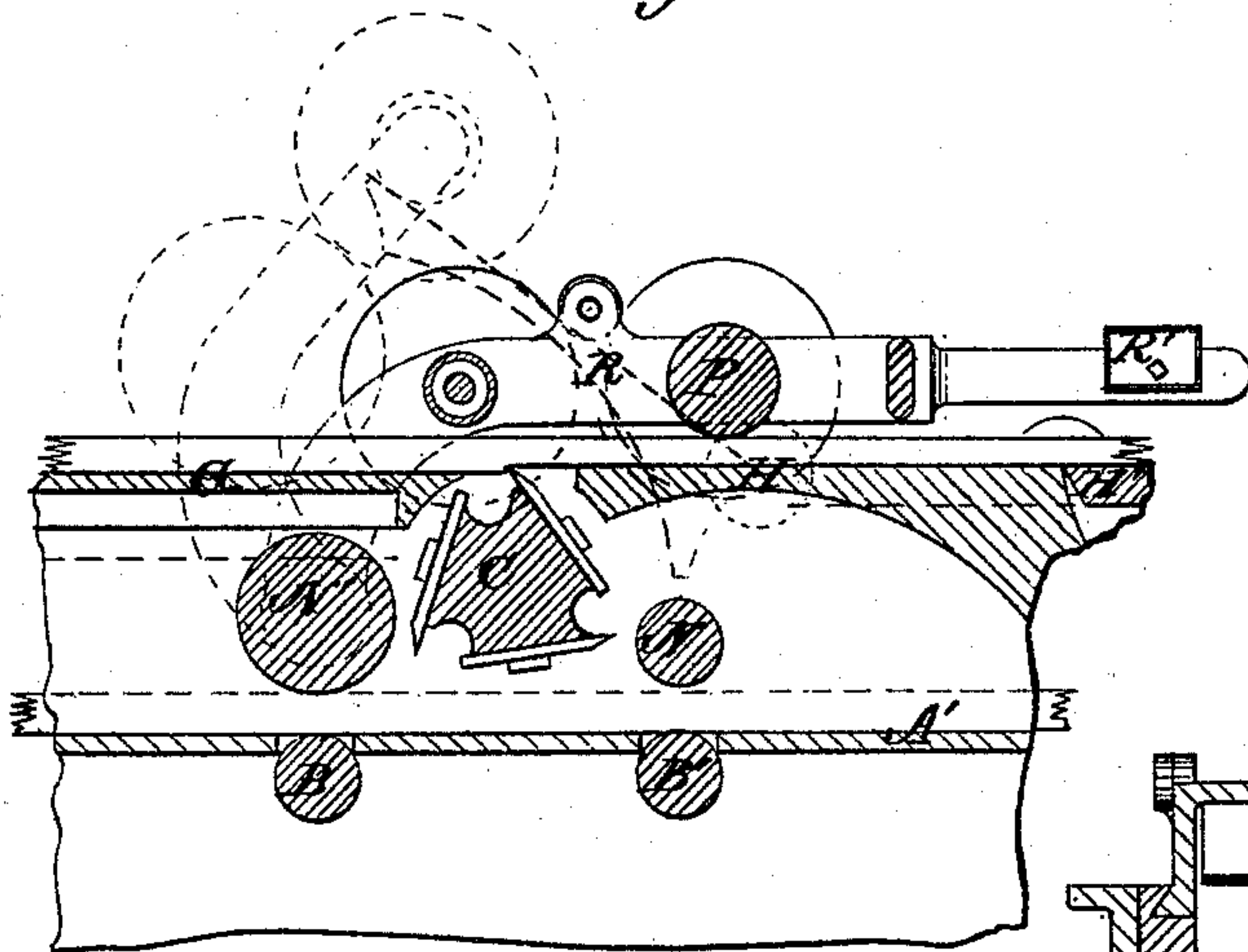


Fig. 5.

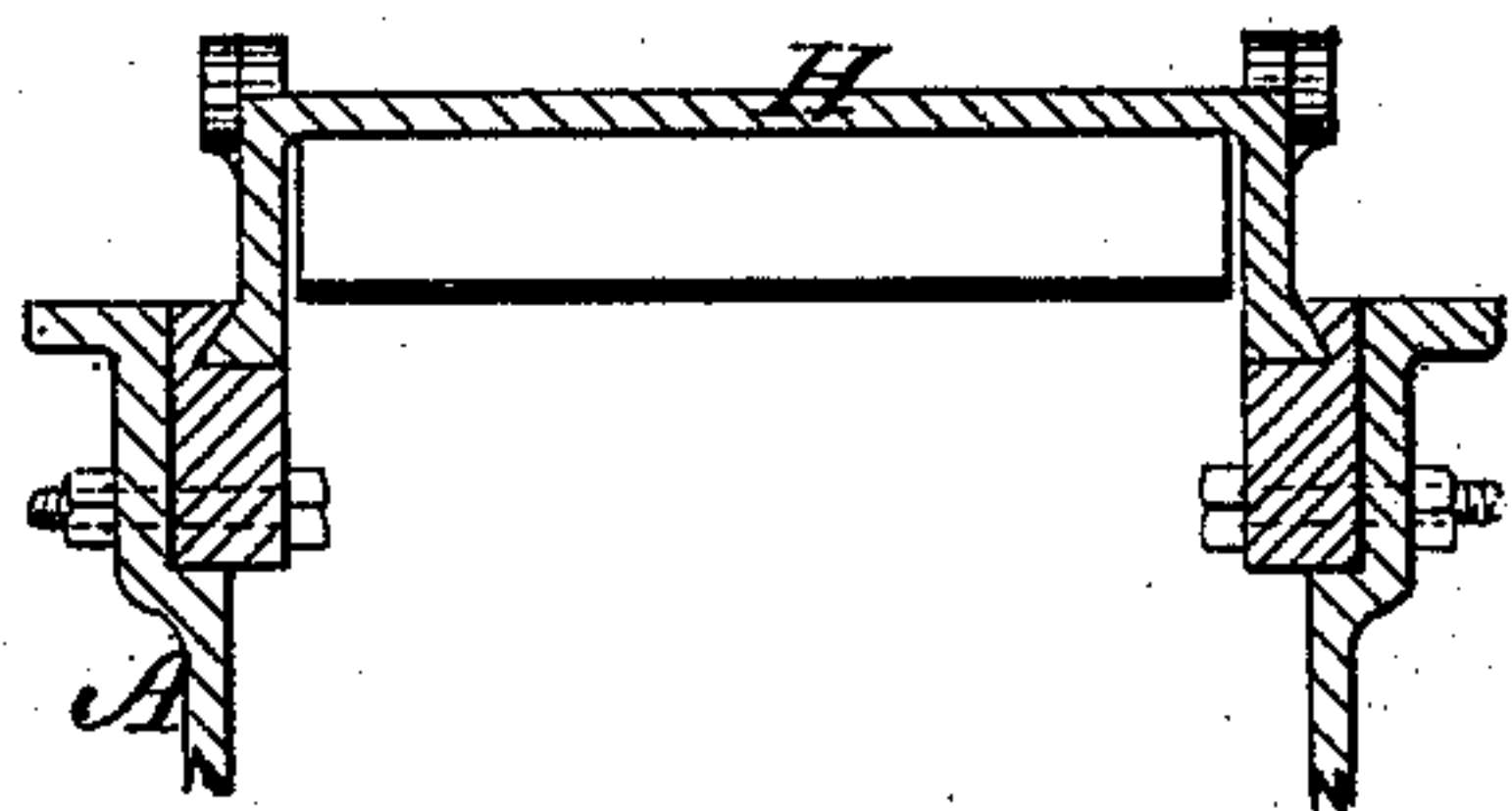


Fig. 4.

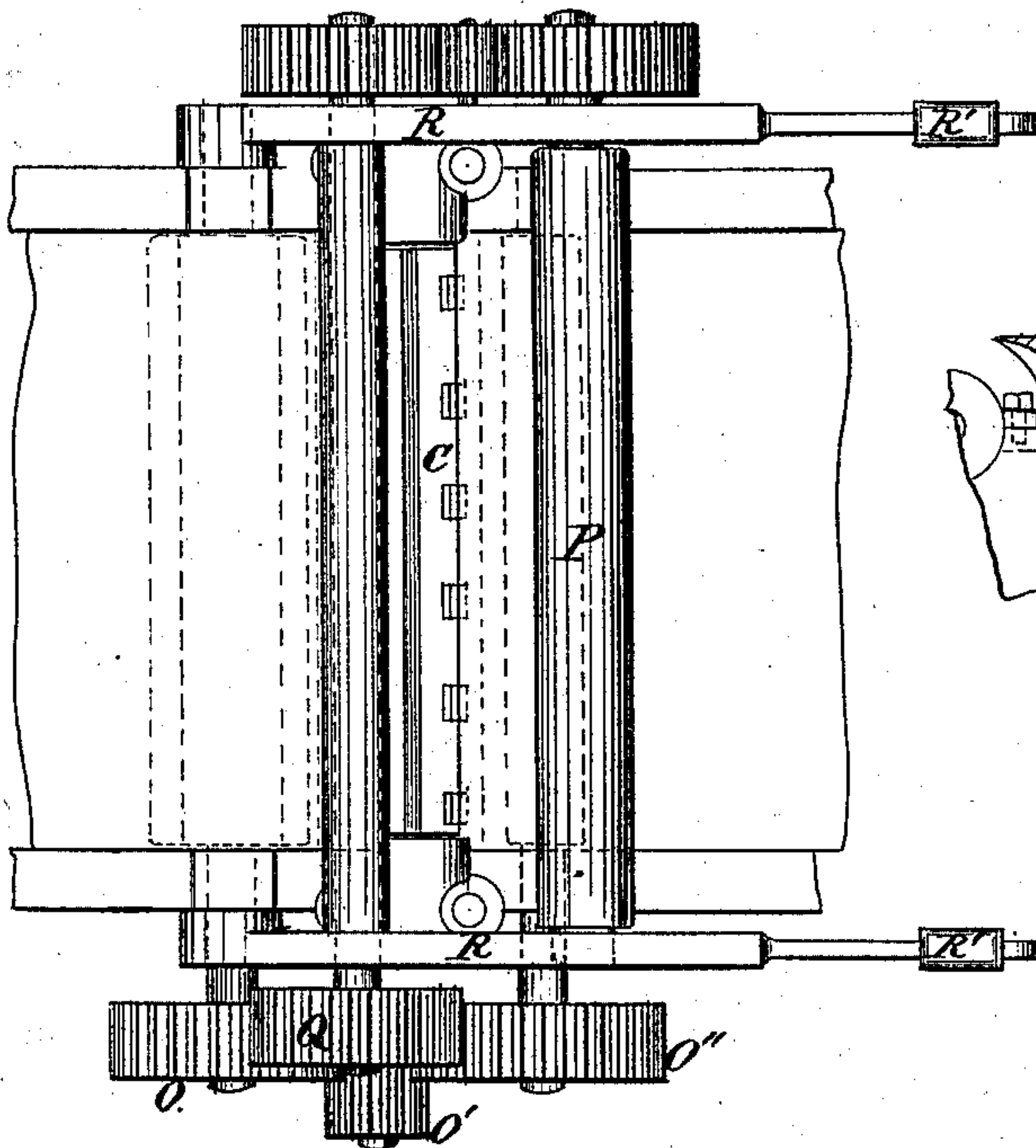


Fig. 6.

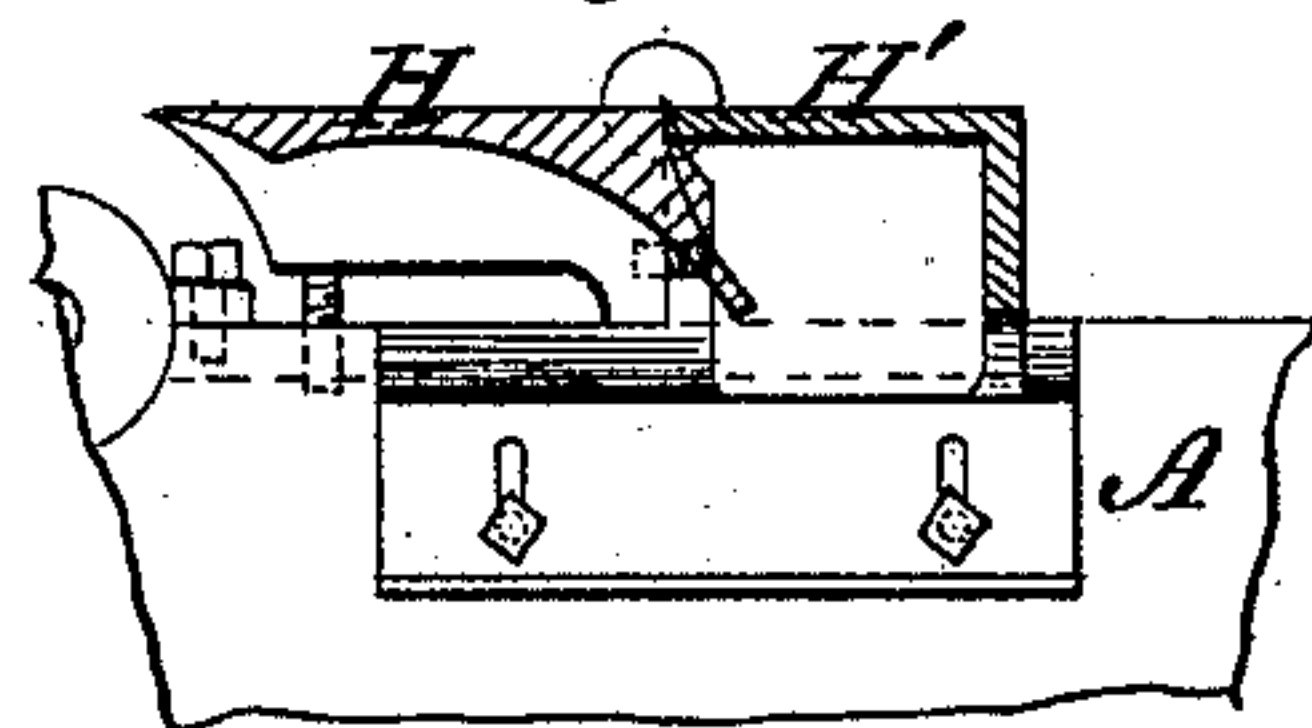


Fig. 9.

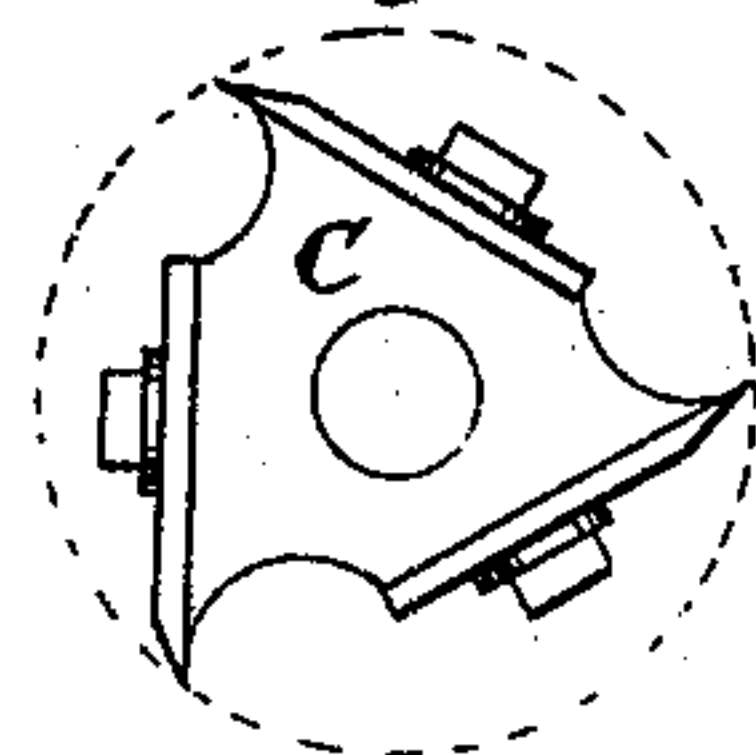


Fig. 7.

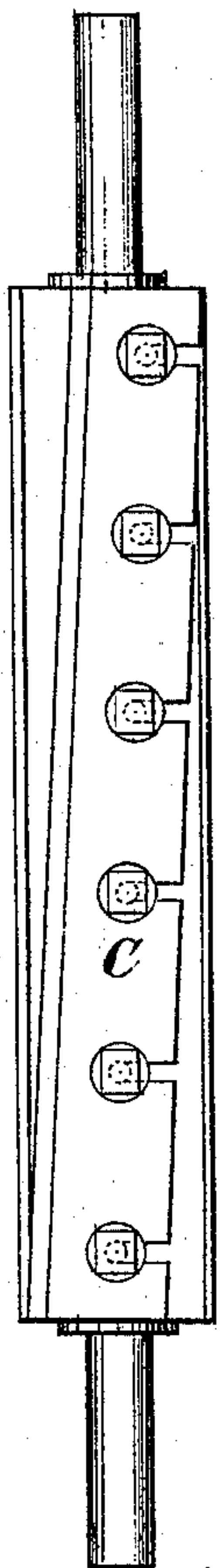
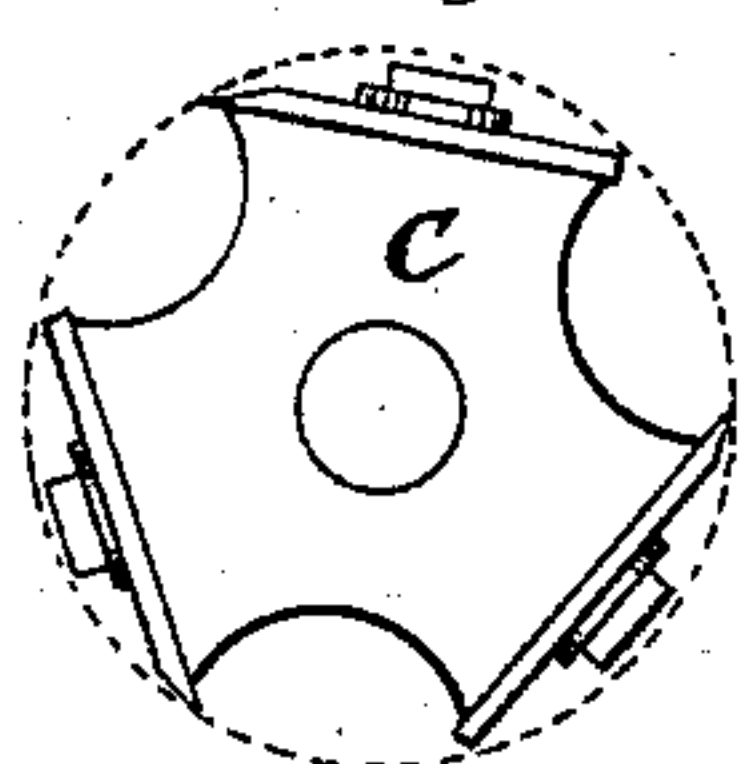


Fig. 8.



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UNITED STATES PATENT OFFICE.

WILLIAM C. MARGEDANT, OF HAMILTON, OHIO, ASSIGNOR TO BENTEL,
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IMPROVEMENT IN SURFACE-PLANING MACHINES.

Specification forming part of Letters Patent No. **171,397**, dated December 21, 1875; application filed
November 25, 1874.

To all whom it may concern:

Be it known that I, WILLIAM C. MARGEDANT, of Hamilton, in the county of Butler and State of Ohio, have invented a new and Improved Surface-Planing Machine; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawing, forming a part of this specification, in which—

Figure 1 is a side elevation of a surface-planing machine. Fig. 2 is a plan view. Fig. 3 is a sectional view through the line *xx*, showing the lower and upper tables, lower and upper feed arrangement, and difference in rollers. Fig. 4 is a plan of the upper top, feed-rollers, and driving-gearing. Figs. 5 and 6 are sectional views, showing the adjustability of the upper top back of the cutter cylinder. Fig. 7 is a plan view of the cutter-cylinder C. Figs. 8 and 9 are end views of the same, illustrating the different transverse dimensions of the cutter-head shaft and positions of the knives.

My invention relates to that class of wood-working machines known to the public as "surface-planers," among which is one kind where the cutter-cylinder is adjustable in a vertical or inclined plane by means of screws or otherwise, for the purpose of regulating the depth of cut and thickness of material to be planed or surfaced; another kind of surfacer where the cutter-cylinder is stationary, and the table or platen is adjustable, for the same purpose; and still another kind of surfacer, consisting of a stationary cutter-cylinder, as well as two adjustable tables above the cutter-cylinder, which can be adjusted for certain purposes independently of the table below the cutter-cylinder. Now, my improvements belong to the class of surface-planers on which the cutter-cylinder is adjustable, and the lower table stationary, and are applicable and very useful on other kinds of surface-planers.

A is the main stand and frame of the whole machine, provided with a top or stationary bed, A', and the usual idlers or feed-rollers B B' B'' B'''. C is the cutter-cylinder resting on each end in journal-boxes, which form the upper part of slides D, that move in suitable

ways on the frame or main stand A. The slide D, including the journal-boxes and cutter-cylinder, can be raised and lowered by the hand-wheel E, which latter is connected by suitable bevel-gearing with the adjustable screws F and a similar screw not shown in the drawing. The machine (so far as described) does not show any novelty in single parts or in combination of the same, with the exception of the feed-rollers.

I shall now describe the particular features of my invention, and then point them out in the claims.

My improvements will enable the operator to raise and lower the cutter-cylinder above a table, which cannot be raised out of the given horizontal plane, for the purpose of planing material to a required thickness and depth of cut, as heretofore; but the operator can at any height of the cutter-cylinder plane above the same, adjusting for depth of cut, as well as for different operations—such as planing out of wind, squaring, beveling, cornering, tapering, making glue-joints independently of the operation below the cutter-cylinder. I have also arranged the geared power feed-work of the machine so that, although it will feed the material below the cutter-cylinder, as usual, it will operate and drive feed-rollers which feed material above the cutter-cylinder, and the operator may at will feed material by hand-power above the cutter-cylinder, raising the geared feed-rollers out of the way.

In front of the adjustable cutter-cylinder C, and forming a part of the slide D on one side and a similar slide on the side not shown, are brackets, which form a rest for the inclines on the other side of the machine. Upon these inclines the adjustable upper table G rests, held by suitable gibs thereto, and adjusted on the inclines to different horizontal attitudes toward the cutter-cylinder by the hand-screw K. Back of the adjustable cutter-cylinder is the adjustable upper table H and H', which can be swung back to serve as a bonnet for shavings, as shown in Patent No. 154,501, August 25, 1874. L is a hand-screw, by which the table is moved in a horizontal plane. I have made this table so that it can be adjusted vertically to the varying height of the cutter-

knives, as shown in the drawing. N and N' are geared feed-rollers, of which N' is of a larger diameter. O, O', and O'' are the gear-wheels which drive the feed-rollers N and N', as well as the gear-wheel Q, which turns the adjustable feed-roller P to feed the material above the cutter-cylinder. R is the swivel-frame in which the feed-roller P rests, and which is forced upon the material by suitable springs, or by the weight R', if preferred. S is a worm revolved by a suitable pulley, miter, or bevel-gearing, and is held in its place by the adjustable eccentric journal-box S'. The worm turns a suitable worm-wheel attached to the gear O'.

Previous to my invention the class of surface-planers, with only one cutter-cylinder and a non-adjustable bed or table, could only be used for planing below the cutter-head. The cutter-cylinder on this class of surfacer is made to rise and lower by means of screws, or otherwise, for the various thicknesses of material.

My invention consists not only in providing the adjustable cutter-head with all the necessary implements, such as shaving-guard, roller-apron to plane below the cutter-cylinder, as heretofore, but also to form these parts and provide the same with the necessary contrivance to adjust the same to plane above the cutter-cylinder, and at the same time planing is performed below the cutter-cylinder, or independent of the same. The advantage of this class of machine is mainly that the cutter-cylinder may free itself more quickly of shavings, because there are no parts obstructing the free passage of the shavings which are created by the cutting action of the upper part of the cutter-cylinder.

The operation of planing above one cutter-cylinder has been so far entirely performed by feeding the material toward the cutter-cylinder by hand-feed. The machine is arranged so that the material can be fed by hand toward the cylinder, or by power-feed, if desired. I have connected the gear-wheels for the upper feed with those of the lower feed, by preference, but it may be driven by belt or otherwise, if so desired. I have only one feed-roller attached to the swinging frame R, which rests or presses only on the table H, back of the cutter-cylinder, but two or more rollers may be engaged to perform the same office.

To reduce the amount of cutting power required, as well as to make a drawing cut, which produces a better result in planing against the grain of the wood, and better marketable shavings, I have made the cutting-cylinder C to consist of three knives of a new form and design. The knives are of the usual straight shape, and of uniform transverse dimensions, with straight cutting-edges, which rest on inclined planes, which are formed by the tapering of the cutter-head shaft, which is made of larger diameter at one end than at the other. The ends of the knives on the smallest part of the cutting-cylinder advance to the cutting-

line established by the largest part of the cutter-cylinder, so that the knives form two angles with the axis of rotation, one of which is formed by the inclination of the plane of the knife, and the other by the inclination of the edge of the knife, which, combined with my peculiar form of cutter-head shaft, gives a shear cut with straight knives, whose edges throughout their entire length revolve in the plane of a cylinder. It is an easy task to re-grind or resharpen the knives, as they present the usual straight form generally given to planer-knives on straight cutting-cylinders.

I am aware of the patent granted to Albert H. Shipman, August 7, 1873, for a cutter-head with flexible knives, which produce, perhaps, the same result. I am aware also of the patent granted to H. D. Stover, September 4, 1860, for a planing-machine, but I claim nothing contained therein.

Surfacing-machines with only upper driven feed-rollers, which have to be raised and lowered with the cutter-cylinder, for varying distances from the stationary planer-bed, are generally provided with an apparatus to relieve the feed-driving belt, or take up the slack of the same. By the use of a worm, S, I can hold the driving-pulley of the worm-shaft at the same relative height of the counter-shaft. By making the worm S adjustable through the medium of the eccentric journal-box S', I am enabled to engage or disengage the worm S from the worm-wheel, and not only engage or disengage the feed thereby, but can make the feed-wheel run at a less speed by reducing the distance between the center of the worm-shaft and counter-shaft, which will cause the driving-belt of the worm-shaft to slip partly around the pulley.

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

1. In a surfacing-machine, the combination, with a lower stationary bed or table, A', remaining at a given horizontal plane, of the cutter-head C, adjustable vertically above the table A' and the tables G H, rising and lowering with the cutter-head, and also independently adjustable thereto, as and for the purpose described.

2. A cutter-head, consisting of a triangular tapering shaft, in combination with three straight knives of uniform transverse dimensions, arranged with their ends advanced at the smaller end of the tapering shaft to the same circumferential arc described by the higher ends, substantially as and for the purpose described.

3. A worm-screw, corresponding in length to the full vertical adjustment of the cutter-head, and carried by a shaft in eccentric bearings, as shown and described, to allow worm-screws to be employed or disengaged, as set forth.

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