

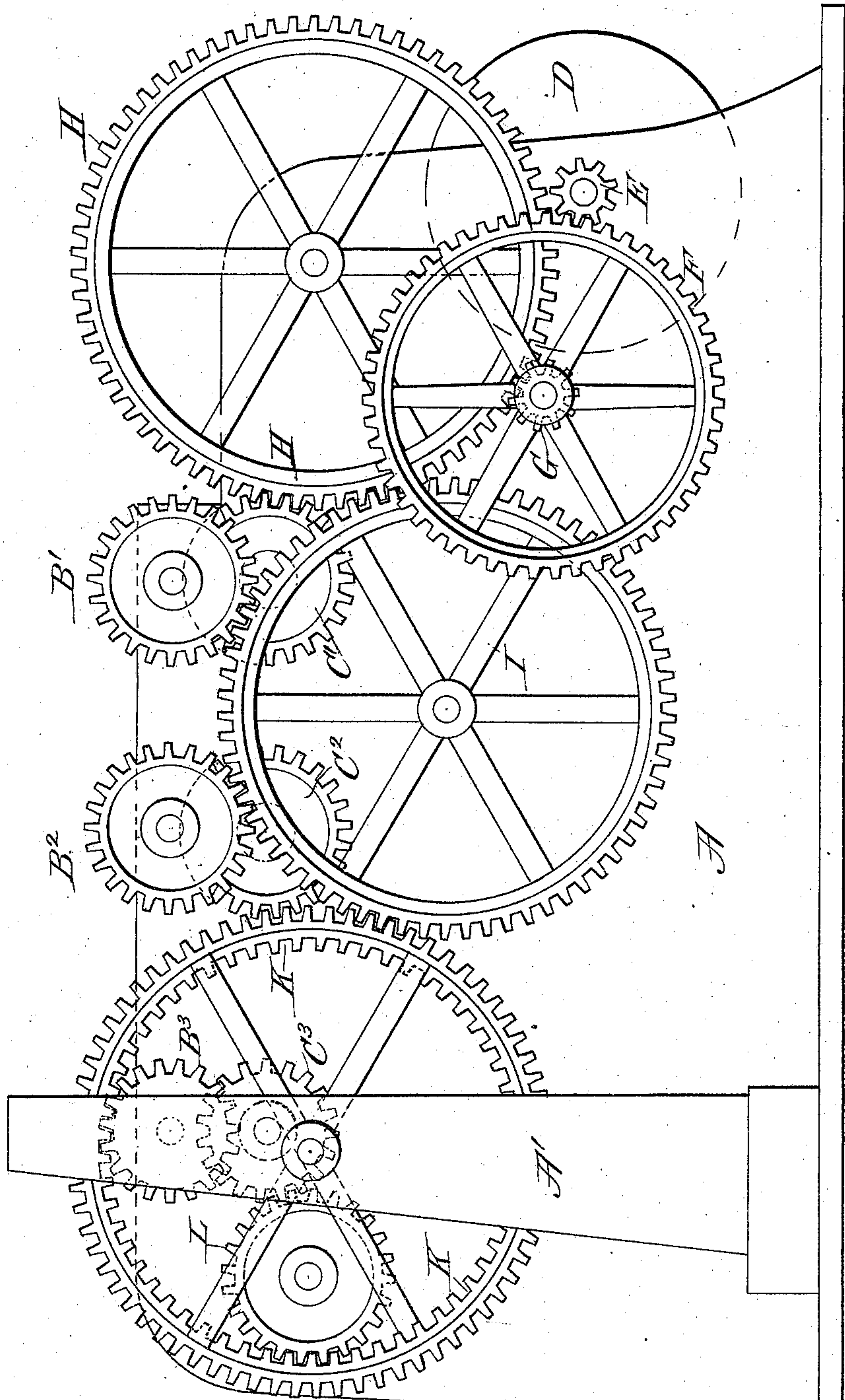
(No Model.)

B. D. WHITNEY.

GEARING.

No. 305,648.

Patented Sept. 23, 1884.



Attest:

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# UNITED STATES PATENT OFFICE.

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## GEARING.

SPECIFICATION forming part of Letters Patent No. 305,648, dated September 23, 1884,

Application filed July 29, 1884. (No model.)

*To all whom it may concern:*

Be it known that I, BAXTER D. WHITNEY, a citizen of the United States, residing at Winchendon, in the county of Worcester and State of Massachusetts, have invented certain new and useful Improvements in Gearing; and I do 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 drawing, and to the letters and figures of reference marked thereon, which form a part of this specification.

This invention relates to a system of gearing for actuating a set of six feed or pressure rolls in machines for planing or straightening lumber, machines for rolling or straightening metallic plates and bars, or machines for calendering and other similar purposes.

The invention consists in the combination of gears, as hereinafter set forth, for imparting a continuous rotary movement in one direction to a set of six rolls arranged in pairs, as illustrated in the annexed drawing.

A designates the frame of any machine having three pairs of feed or pressure rolls. The upper feed or pressure rolls are provided at one end with gears  $B'$   $B^2$   $B^3$ , and the lower rolls are provided with similar gears,  $C'$   $C^2$   $C^3$ . The gears of the upper rolls are preferably set to the outer side of the lower roll of gears and lap the same, as shown, when the rolls are closed together, so as to provide for the vertical adjustment of the lower rolls and their gears, if necessary, as hereinafter explained.

The power for actuating the roller-gears may be applied to a pulley, D, on one end of a shaft that carries at its other side a pinion, E, which meshes with a large gear, F. The shaft or journal of the gear F is provided with a pinion, G, that meshes with a large broad-faced gear, H, which drives a large intermediate gear, I, and also the small gear  $C'$  on the end of the front lower roll. The large intermediate gear, I, meshes with and drives the small gears  $B'$   $B^2$  on the ends of the front upper feed-roll and central upper feed-roll, respectively. The large intermediate gear, I, also drives a large broad-faced gear, K, at the rear end of the machine. This latter gear is

of a breadth equal to the gear H, and is formed with both internal and external cogs. Its external cogs mesh with the large intermediate gear, I, and also with the small gear  $C^3$  on the lower central roll. The internal cogs of the gear K mesh with the small gear  $B^3$  on the rear upper roll, and also with a small intermediate gear, L, which is also broad faced, to carry it in line of mesh with the small gear  $C^3$  on the lower rear roll, the internal cogs of the large gear K being formed only on that side of said large gear nearest to the frame of the machine. The large broad-faced gear K is preferably journaled to the inner side of a standard,  $A'$ , that projects from the base of the machine-frame. This allows the rear bottom roll and its gear  $C^3$  to be vertically adjusted without interfering with the journal of the large gear.

In order to enable the lower rolls and their gears  $C'$   $C^2$   $C^3$  to be vertically adjusted, when required, so as to vary the distance between the upper and lower rolls, the horizontal plane of the centers of the gears H, K, and L are placed to coincide with those of the lower rolls when about midway of their range, so that the depth of mesh need not be materially affected by change of position, and large diameters are employed, so as to make the variations in mesh as small as possible. It will also be observed that the gears H, K, and L are made broad faced for the purpose of matching the offsetting gears of the lower rolls. It may be remarked that vertical tangents to the pitch-lines of the gears H and  $C'$ , and also of the gears K and  $C^2$ , as well of the gears L and  $C^3$ , are coincident, and that the large intermediate gear, I, is calculated or proportioned so that its pitch-circle will meet those of the gears H and K and connect them with the gears  $B'$   $B^2$  on the front and center upper rolls, while the third pair of roll-gears derive their motion from the internal cogs of the large gear K, in connection with the small intermediate gear, L. It will thus be seen that only four gears are used to connect with and transmit motion to the six roller-gears, and these are so arranged as to readily admit of the vertical adjustment of the lower rolls, if required.

The devices for adjusting the lower rolls are



not shown in the drawings as they form no part of my present invention, and it will be readily understood that any suitable adjusting mechanism may be employed, so as to  
5 vary the distance between the upper and lower rolls when necessary. It may be remarked, however, that the gears upon each of the rolls are made to considerably exceed the diameter of their respective rolls, and they  
10 must be so placed as to lap by each other, as shown, when the rolls are closed together. This affords greater transmissive power with less lateral strain on the roll-bearings than with smaller gears. It also facilitates connection with the train of intermediate gearing by  
15 which they are driven.

Having thus described my invention, what

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

The combination, with the upper-roller gears 20  $B'$   $B^2$   $B^3$  and the lower-roller gears  $C'$   $C^2$   $C^3$ , of the large broad-faced gear  $H$ , the large broad-faced gear  $K$ , having internal and external cogs, the large intermediate gear,  $I$ , the small broad-faced gear  $L$ , and means for actuating 25 said gears, substantially as shown and described.

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

BAXTER D. WHITNEY.

Witnesses:

HENRY W. CLARK,

C. A. WILDMAN.