(No Model.) 3 Sheets—Sheet 1.

B. D. WHITNEY.

GEARING.

No. 342,664. Patented May 25, 1886.

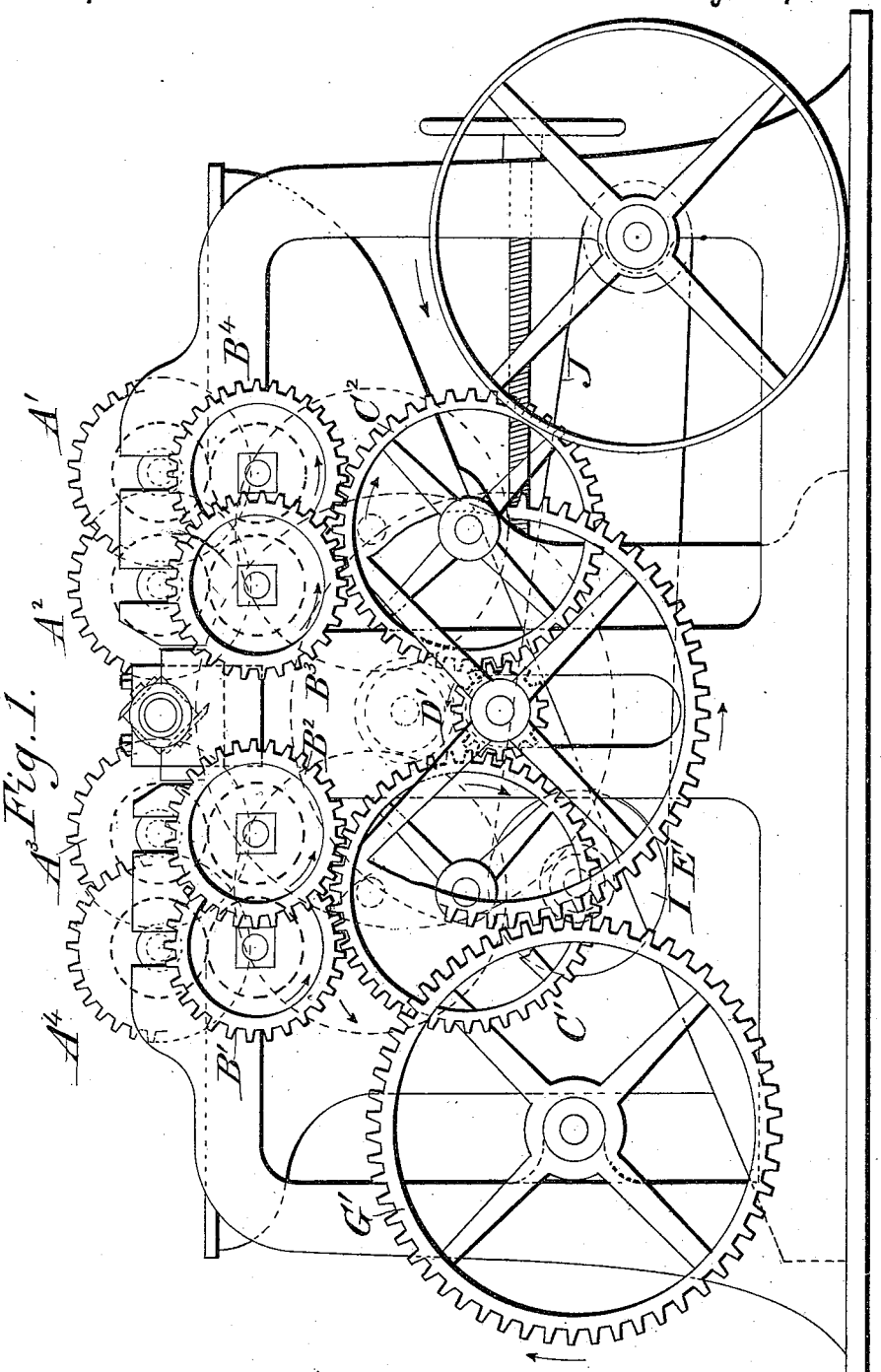

Fig. 1.

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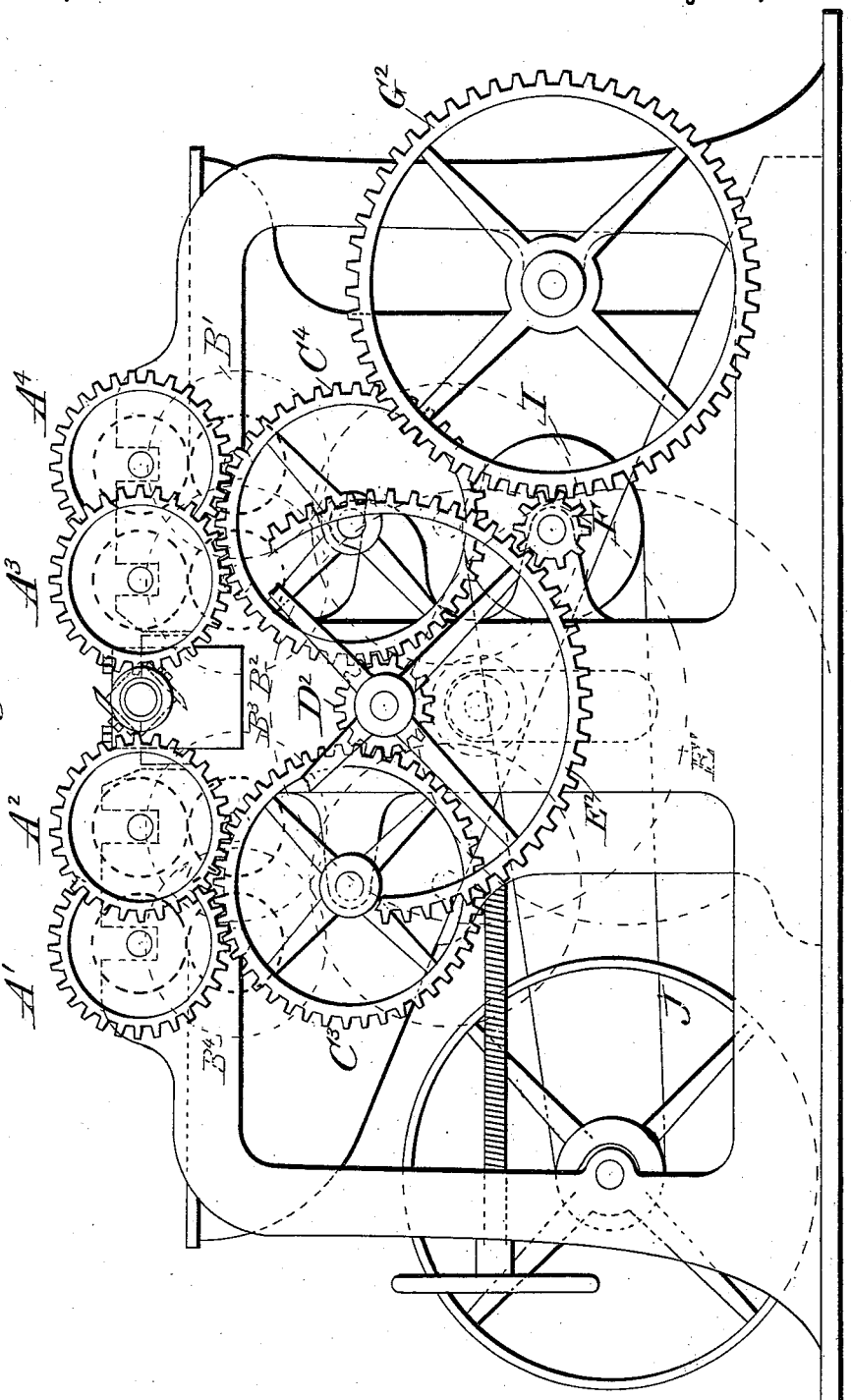
Fig. 2.



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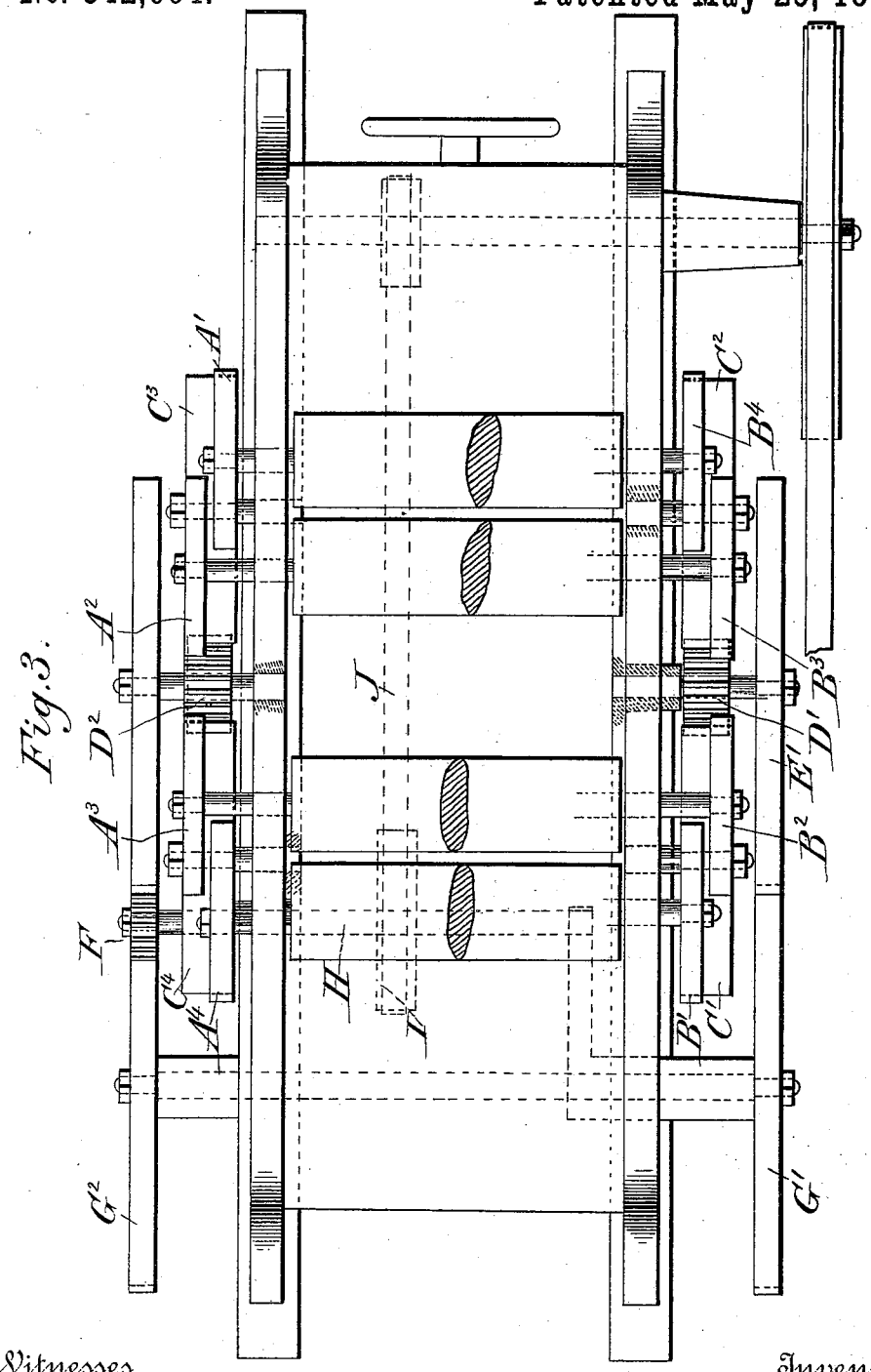

Fig. 3.

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UNITED STATES PATENT OFFICE.

BAXTER D. WHITNEY, OF WINCHENDON, MASSACHUSETTS.

GEARING.

SPECIFICATION forming part of Letters Patent No. 342,664, dated May 25, 1886.

Application filed January 30, 1886. Serial No. 190,296. (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 drawings, and to the letters and figures of reference marked thereon, which form a part of this specification.

This invention relates to mechanism for transmitting motion and power from a single revolving shaft or wheel to a series of shafts or rollers, as used for feeding lumber or other material in machines for planing, jointing, matching, sawing, and other purposes.

It consists of a system or combination and arrangement of gearing designed to operate a series of eight rollers, set in four pairs, with one roll of each pair over the other, so that a line or course of four rolls will contact with and act upon the upper side of a board or other article, and another line or course of four rollers will have similar contact and action with its lower side, to give the same a rectilinear movement, and to be susceptible of adjustment to suit different thicknesses of articles they may act upon.

In the accompanying drawings, making a part of this specification, the system of gearing is shown as applied to a cylinder planing-machine, in which the lower course of rollers are mounted in a table or bed-piece which is vertically adjustable to suit the thickness of lumber to be planed, for which use it is especially designed and adapted; but it is applicable and useful for other purposes.

Figure 1 is an elevation of one side of the machine, showing a train of gear-wheels connecting with the lower course of rollers. Fig. 2 is a similar view of the other side of the machine with gearing connecting with upper rollers. Fig. 3 is a top view of the machine to show position and alignment of gears on each side of same.

Similar letters refer to all like parts.

Beginning with the rollers to be driven, each of which has one gear keyed to its shaft, those attached to the upper course are designated A' A^2 A^3 A^4, and those of the lower course are indicated by B' B^2 B^3 B^4. All of these are similar in form and size, of such thickness or breadth of face as may be deemed suitable or of good proportions for their use, and preferably of as great diameter as may be admissible without interference with the next adjacent roll-shaft, which may be arranged by a shunt or offset alignment having two of each course project beyond and lap by the other two of the course, as represented in the drawings. Then immediately underneath each two adjacent and offset roll-gears is placed an intermediate or connecting gear having sufficient breadth of face to match the two alignments of the offset-gears. These are marked C' C^2 C^3 C^4. Two of them, engaging with the gears of the upper rollers, are mounted upon studs or posts permanently set in the frame of the machine, and two of them, engaging with those of the lower rollers, have similar studs or posts secured to the adjustable bed-piece and movable therewith, according to the adjustment of the rollers. These intermediates C engage with and receive motion from two pinions, D' D^2, one of which, in the train to the upper rolls, is mounted upon a stud or post set in the frame, and the other in the lower-roll train is mounted to move with the adjustable bed. To each of the pinions D' and D^2 there is affixed a large spur-wheel. That of the upper-roll train, E^2, engages with a driving-pinion, F, the prime mover of the system, from which it receives motion and transmits the same through its pinion D^2 and intermediate wheels, C^3 and C^4, to the several gears A and their rolls. That of the lower-roll train, E', engages with another large spur-wheel, G', connected to another similar wheel, G^2, which engages with the driving-pinion F and transmits motion to the train of wheels connecting with the lower rolls.

The pinion F is appropriately mounted and fitted with appliances for its motive power, which may consist of a shaft or spindle, H, with a pulley, I, and belt J, from main shaft of machine, as indicated in the drawings. The large spur-wheels G are likewise provided with proper hangings in the frame of the machine. They serve to connect the two trains

of gearing in their different alignments; also to reverse motion between them to make the rolls turn in different ways, so that their acting surfaces will travel in the same direction; likewise to make a connection with the adjustable gear E′, which will allow a comparatively long range of vertical movement of F′ without destroying the connection between them. For this last-mentioned purpose G should be so located that its axis will be in a horizontal plane with that of E′ when the latter is in a central position of vertical adjustment, that the maximum range of movement may be obtained within the limits of their engagement on the lines of vertical tangents to their pitch-circles, for which purpose wheels of large diameter and moderate curvature of rim are manifestly superior to those of less diameter and more rapid departure of their pitch-circles from a right line; and it is for this reason that I have planned to have the wheels G′ and E′ of comparatively large diameters, to make the machines to which they are applied of greater range and more varied capacity than by other systems of gearing which I have heretofore designed and employed, and which for certain purposes may be useful and have certain advantages of form and arrangement, this system having the especial feature of increased range of adjustment, while it has other desirable qualities in the general arrangement of the trains for direct transmission to the several roll-wheels and of the application of the moving force to them in a horizontal direction, which avoids the variableness of roll-pressure incident to connection with the side thrust in a vertical direction which, as well known, induces abnormal action of the feed mechanism.

The operation of the system as described is easily traced by taking the prime mover F as a starting-point, from which motion is transmitted in the one direction through wheel E^2 and its attached pinion D^2 to the intermediates C^3 and C^4, and from them to the four gears A' A^2 A^3 A^4 of the upper course of rollers, while, on the other hand, starting again at F, it is carried through the transferring and reversing wheels G′ G^2 to the other train of wheels, E′, and attached pinion D′, intermediates C′ and C^2 to the lower-roll gears B′ B^2 B^3 B^4, so that each course of rollers as they contact with the board move in the same direction and act correctly for the purpose designed, while they may be adjusted to various thickness of work, as already explained.

Having thus described the plan of arrangement and operation of this improved system of gearing, I claim and desire to secure by Letters Patent—

The combination of eight gears, A' A^2 A^3 A^4 B′ B^2 B^3 B^4, on the upper and lower rollers of a series, and the four intermediates C′ C^2 C^3 C^4, pinions D′ and D^2, and their attached wheels E′ and E^2, with driving-pinion F, and the transferring and reversing wheels G′ G^2, constructed, arranged, and operating substantially as herein shown and described, and for the purpose specified.

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

BAXTER D. WHITNEY.

Witnesses:
FRED E. TASKER,
E. L. WHITE.