(No Model.)

2 Sheets—Sheet 1.

W. H. GRAY.

FEED MECHANISM FOR WOOD PLANING MACHINES.

No. 314,666. Patented Mar. 31, 1885.

Fig 1.

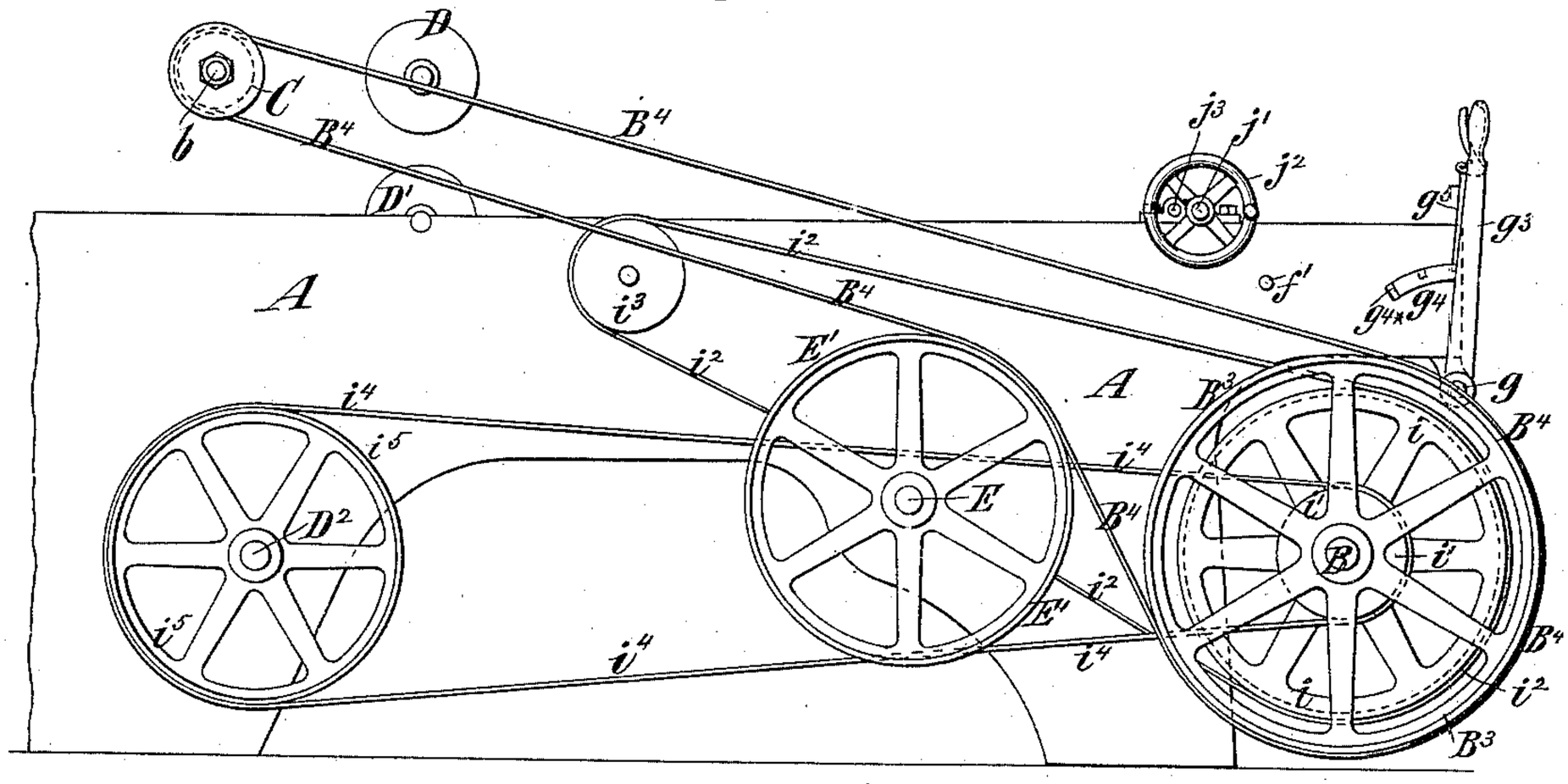
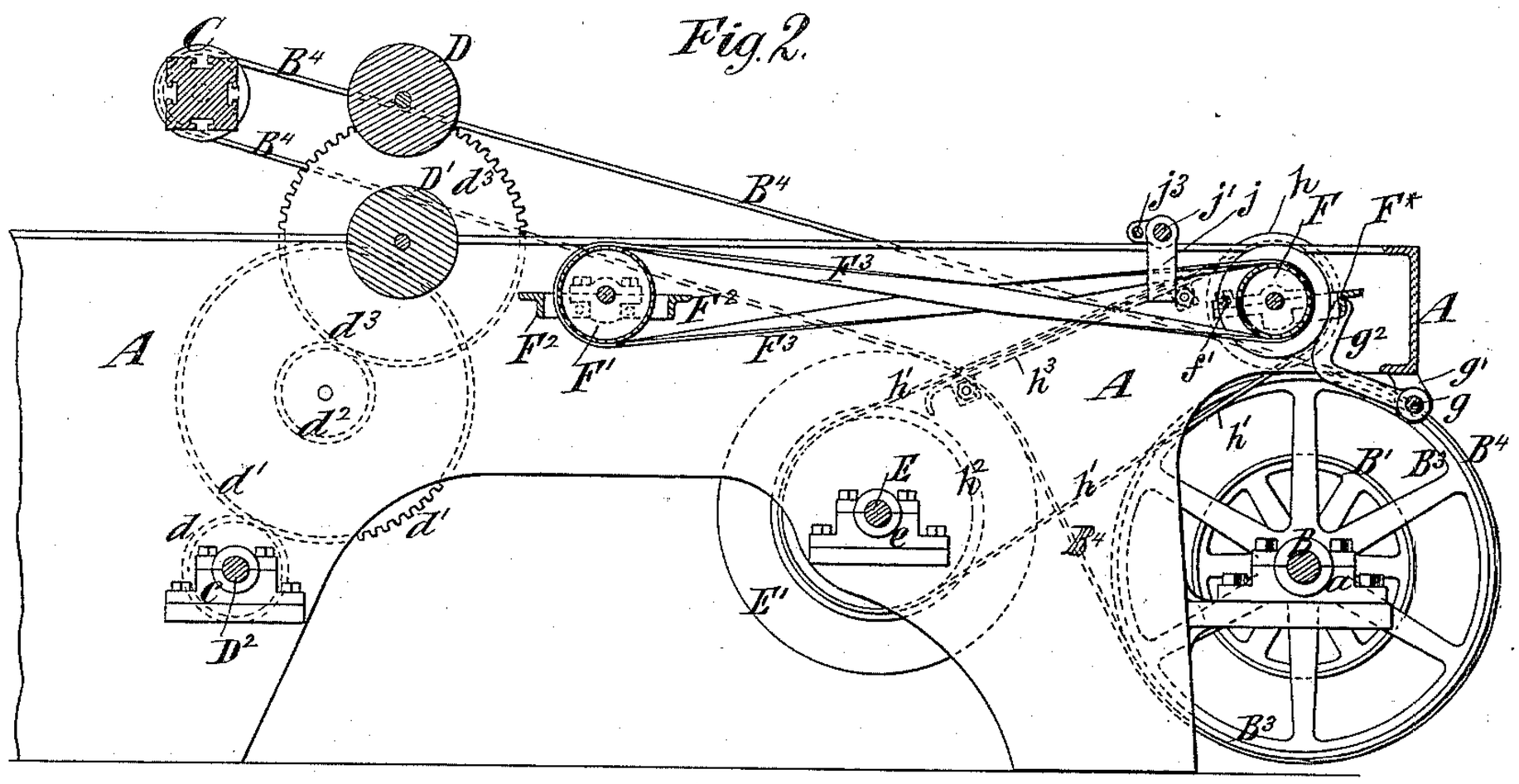


Fig 2.



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Brown & Hall

(No Model.) 2 Sheets—Sheet 2.

W. H. GRAY.

FEED MECHANISM FOR WOOD PLANING MACHINES.

No. 314,666. Patented Mar. 31, 1885.

Fig. 3.

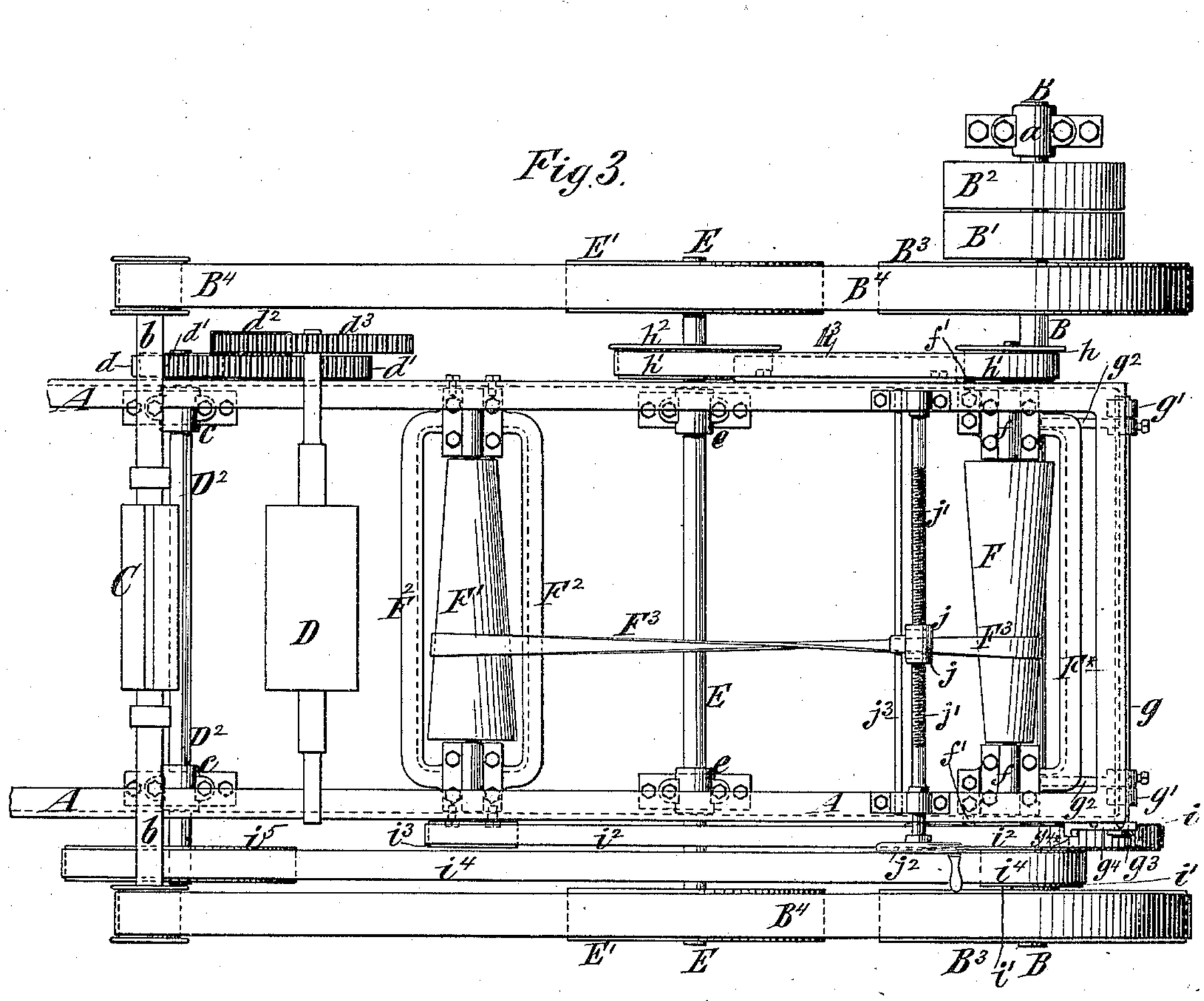
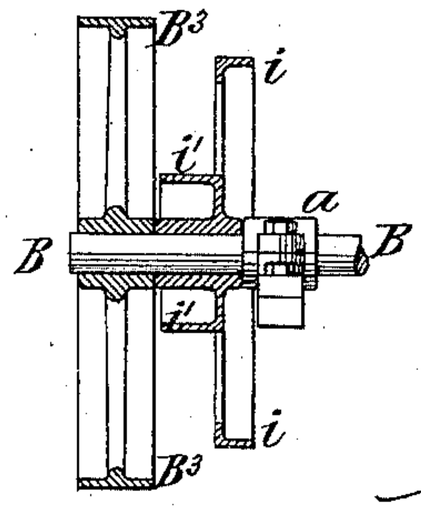


Fig. 4.



Witnesses:
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Inventor:
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Brown & Hall

UNITED STATES PATENT OFFICE.

WILLIAM H. GRAY, OF BROOKLYN, NEW YORK, ASSIGNOR TO THE GLEN COVE MACHINE COMPANY, LIMITED, OF SAME PLACE.

FEED MECHANISM FOR WOOD-PLANING MACHINES.

SPECIFICATION forming part of Letters Patent No. 314,666, dated March 31, 1885.

Application filed January 26, 1885. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM H. GRAY, of Brooklyn, (Green Point,) in the county of Kings and State of New York, have invented a new and useful Improvement in Feed Mechanism for Wood-Planing Machines, of which the following is a specification.

In the application for Letters Patent, Serial No. 153,957, filed January 26, 1885, by William H. Gray and Alfred Hutchinson, there is shown and described a feed mechanism for wood-planing machines which comprises a shaft having a uniform rotary motion, and on which are secured a number of conical friction-wheels of different sizes, and a second shaft parallel with the first and having upon it reversely-set conical friction-wheels, which may be slid on the shaft to bring them into and out of frictional engagement with the first-mentioned wheels. By this arrangement of parts the second or driven shaft may be rotated at any one of a number of definitely-fixed speeds equal to the number of friction-wheels on the first-mentioned or uniformly-rotating shaft.

The object of my present invention is to provide a feed mechanism which is capable of adjustment to produce any variation of speed in the second or driven shaft within certain limits, and which is not confined to a number of definitely-fixed speeds, as is the mechanism described in the above-referred to application, and also to provide for readily stopping the action of the feeding mechanism at any time without changing the rate of speed, and then adjusting or returning it into condition for operation at the same speed.

The invention consists in novel combinations of parts and features of construction, hereinafter described, and pointed out in the claims.

In the accompanying drawings, Figure 1 is a side elevation of such parts of a planing-machine as are necessary to illustrate my invention. Fig. 2 is a longitudinal vertical section of the same. Fig. 3 is a plan thereof, and Fig. 4 is a detail sectional view hereinafter described.

Similar letters of reference designate corresponding parts in all the figures.

A designates portions of the side frames of the machine, and B the driving-shaft arranged in bearings *a* at the front or feeding end thereof.

Upon the shaft B are fast and loose pulleys B′ B² for a driving-belt, and two other pulleys, B³ B³, one at each side of the machine, and around which pass belts B⁴, for operating the upper cutter-head, C. The journals *b* of this cutter-head will be supported in boxes like those ordinarily used, and which are not shown, as they constitute no part of my invention.

D D′ designate the upper and lower feed-rolls, which are operated by a suitable train of gear-wheels from the feed-pinion shaft D², which is mounted in boxes *c*. I have here shown in dotted outline in Fig. 2 a pinion, *d*, a wheel, *d′*, a pinion, *d²*, and a wheel, *d³*, on the shaft of the lower feed-roller, D′; but this train of wheels may be varied, as desired. The appurtenances for holding the feed-rolls in proper relation to each other and for driving the upper roll from the lower one may be similar to those shown in the aforesaid application, and are not here shown, as they are not comprised in this invention.

In their travel between the pulleys B³ and the pulleys on the cutter-head C, the belts B⁴ partly encircle pulleys E′ on a transverse shaft, E, which is mounted in boxes *e*, and thereby impart a positive and uniform speed of rotation to said shaft. When the machine has a lower cutter-head, it may be driven by belts passing around the pulleys E′ under the belts B⁴.

F F′ designate two long cones or conical drums, which may be termed, respectively, the "driving-cone" and the "driven cone." The driving-cone F is at the front or feeding end of the machine, and has bearings *f* in a frame, F*, which is provided at the ends with pivots or trunnions *f′* entering holes or bearings in the side frames, A. Consequently the frame F* and the cone F can be swung on these pivots as on a center.

In order to hold the frame up and support its free side, I have shown a rock-shaft, *g*, in bearings *g′*, said shaft having arms *g²*, which project under and support the free edge of the frame F*, and also having an upwardly-

extending arm or handle, g^3, whereby it may be turned to raise and lower the frame.

In order to hold the frame F* against falling, I have shown in Fig. 1 a notched quadrant-bar, g^4, and on the handle or lever g^3 is a locking bar or rod, g^5, like an ordinary reversing-lever. At the end of the notched bar g^4 is a shoulder, g^{4*}, forming a stop beyond which the lever g^3 cannot go. On the end of the shaft of the cone F is a pulley, h, which receives motion by a belt, h', from a pulley, h^2, on the shaft E. Below the upper portion or travel of this belt h', I have shown a fixed support or rest, h^3, as shown by dotted lines in Fig. 2.

From the above description it will be seen that, if the cone F and cone-frame F* be swung down, as in Fig. 2, the belt h' will be slackened and will no longer drive the cone. In this way I stop or suspend entirely the feeding operation without changing the speed; or, in other words, I may drop the frame F* and entirely stop feeding, and then when the frame is again raised the feeding will be continued at the same speed as before.

The cone or conical drum F′ is in fixed bearings in a frame, F^2, and the two cones are connected by a belt, F^3, through which the cone F drives the cone F′.

Loose upon the driving-shaft B are two pulleys, $i\ i'$, which are cast together, as shown in Fig. 4, or connected so as to revolve loose on the shaft as one piece. These pulleys are driven by a belt, i^2, running from a pulley, i^3, on the shaft of the cone F′ to the pulley i; and by a belt, i^4, running from the pulley i' to a pulley, i^5, motion is transmitted to the pinion-shaft D^2 of the feeding mechanism.

It will be understood that, by shifting the belt F^3, the speed of rotation transmitted from the cone F may be varied to any degree desired within limits fixed by the relative sizes of the two ends of the cones, and this belt may be shifted by a belt-shipper, j, having a nut fitted to a screw-threaded shaft, j', extending transversely across the machine and adapted to be turned by a handle or hand-wheel, j^2, at one side thereof. When it is desired to vary the speed of feeding, the shaft j' is turned to shift the belt F^3, and, when it is desired to temporarily suspend feeding, the cone F and swinging frame F* are lowered to slacken the belt h'.

The cones or conical drums F F′ may be of wood or of metal, or they may be composed of heads having a conical covering of sheet-metal.

The belt-shipper may be guided upon a rod, j^3, extending parallel with the screw-shaft j', and said shipper will thereby be prevented from turning when the shaft is turned.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. The combination, with the feed-pinion shaft and driving-shaft of a wood-planing machine, of a shaft, E, and pulley E′, a belt, B^4, for driving the upper cutter-head, passing over and driving the pulley E′, two reversely-set cones or conical drums, and a belt and belt-shipper for transmitting a variable speed from one to the other of them, and belt-gearing for driving one cone from the shaft E and for driving the feed-pinion shaft from the other cone, substantially as herein described.

2. The combination, with the shaft E, the feed-pinion shaft D^2, and the two cones F F′ with their connecting-belt and shipper, of the driving-shaft B and the pulleys $i\ i'$ loose thereon, belts connecting the pulleys $i\ i'$ with the driven cone F′ and the shaft D^2, and belt-gearing for operating the driving-cone F, all substantially as herein described.

3. The combination, with the driving-shaft and feed-pinion shaft of a wood-planing machine, of a pair of reversely-set cones or conical drums with their connecting-belt and shipper, belt-gearing for operating the driving-cones, belt-gearing for transmitting motion from the driven cone to the said feed-pinion shaft, and movable boxes for one of said cones, whereby the belt-gearing may be slackened to suspend feeding, substantially as herein described.

4. The combination, with the pairs of cones F F′, with their connecting-belt and shipper, of a swinging frame for the cone F, a belt for driving said cone, and which is slackened by the swinging movement of the said frame, and belt-gearing for transmitting motion from the cone F′ to the feed-pinion shaft of the machine, substantially as herein described.

5. The combination, with the cones F F′, bearings for the cone F′, and belt-gearing for transmitting motion from the cone F′, of the swinging frame F* for the cone F, and levers and connections for swinging said frame, a belt, h', for operating the cone F, and a belt support or rest, h^3, for the belt h', substantially as herein described.

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