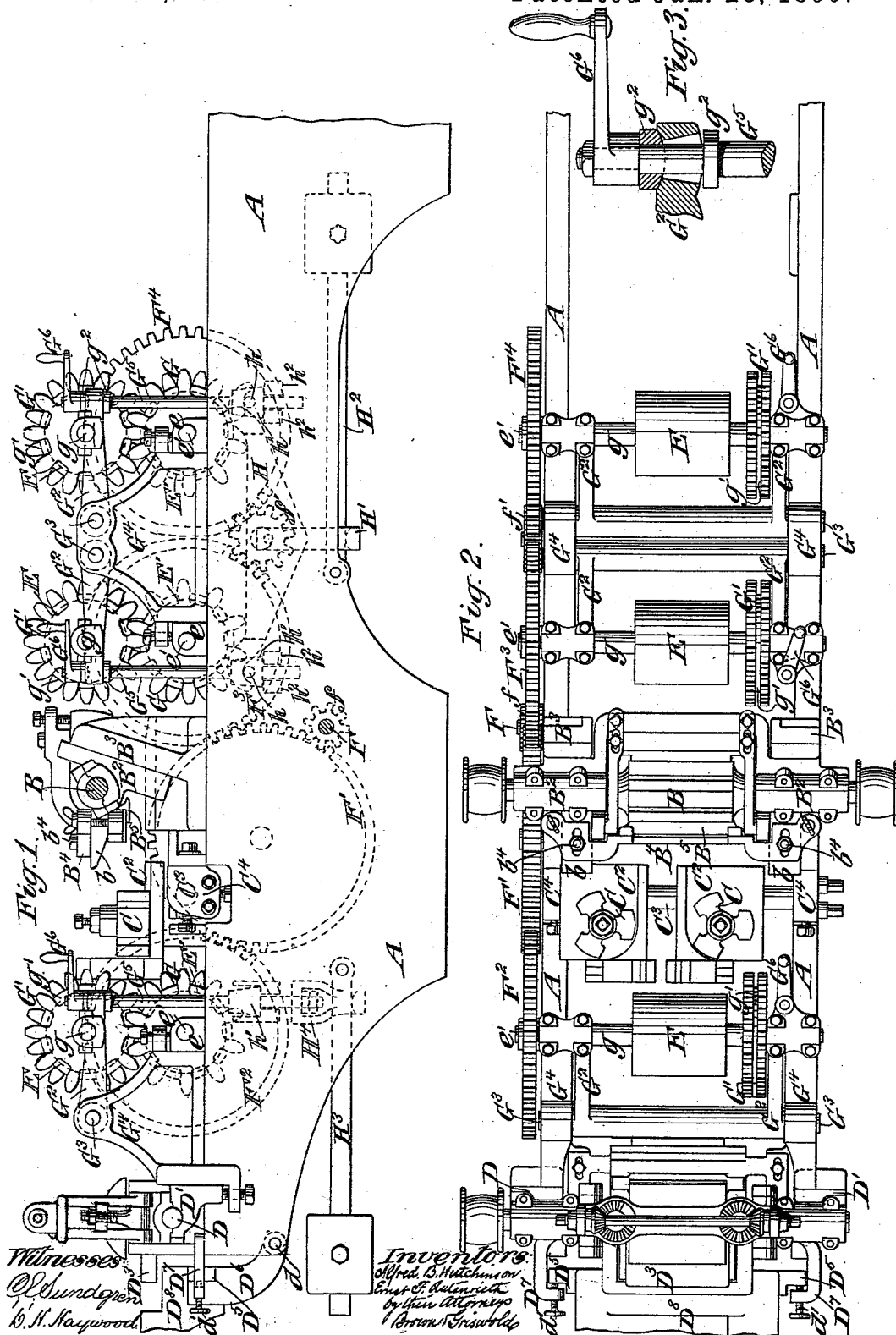


(No Model.)

A. B. HUTCHINSON & E. F. AUTENRIETH.
PLANING MACHINE.

No. 420,202.

Patented Jan. 28, 1890.



UNITED STATES PATENT OFFICE.

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PLANING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 420,202, dated January 28, 1890.

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To all whom it may concern:

Be it known that we, ALFRED B. HUTCHINSON, of Brooklyn, in the county of Kings and State of New York, and ERNST F. AUTENRIETH, of the city, county, and State of New York, have invented a certain new and useful Improvement in Planing-Machines, of which the following is a specification.

Our improvement relates more particularly to the pressure-rollers employed in planing-machines.

We will describe in detail a planing-machine embodying our improvement, and then point out the novel features in the claim.

In the accompanying drawings, Figure 1 is a side elevation of a planing-machine embodying our improvement, and Fig. 2 is a plan or top view of the same. Fig. 3 is a detail view, partly in section, showing a rolling bearing for certain shafts employed in the machine.

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

A designates the side frame of the machine. B designates the upper cutter-head, and C the side cutter-heads.

D designates the lower cutter-head.

E E' designate, respectively, upper and lower feeding-rollers. All the several cutter-heads are provided with journals, or have spindles supported in suitable boxes and are driven by belting in the usual way. The spindles of the side cutter-heads are journaled in frames C², supported for the most part upon a bar C³, extending crosswise of the machine and supported at its ends in boxes C⁴. The frames C² may be adjusted laterally upon the bar C³ in the usual manner. The lower cutter-head is journaled in a cutter-head frame D', as is usual, and in front of the cutter-head is a bar or mouth-piece D².

D⁵ designates a cross-bar extending crosswise of the machine, which cross-bar is provided with downwardly-extending arms D⁶, which are pivoted at *d* to the frame A. Secured to the cross-bar D⁵ and its arms D⁶ is an extension-table D⁸. Clamps D⁷, provided with set-screws *d'* and bearing against the cross-bar D⁵, may be operated to draw the

cross-bar and the extension-table toward the cutter-head. The upper cutter-head B is supported in boxes B², mounted upon slides B³ in the usual manner. The boxes B² are provided with brackets *b*, to which are secured a holder B⁴ for a pressure-bar and chip-breaker B⁵. The chip-breaker may be adjusted toward and from the cutter-head by means of adjusting-screws *b*⁴.

The lower feed-rollers E' are fitted in stationary bearings *e*. Motion is transmitted to them by means of a pinion *f*, mounted upon a pinion-shaft F. The pinion *f* is geared into a gear-wheel F'. The gear-wheel F' gears into gear-wheels F² F³, which are mounted on the shafts *e'* of two of the lower feed-rollers. An intermediate gear-wheel *f'* transmits motion from the gear-wheel F³ to the gear-wheel F⁴, mounted upon the shaft *e'* of the other of the lower feed-rollers E'.

In our machine the upper feed-rollers are driven directly from the lower feed-rollers, and the use of expansion-gear as ordinarily employed is wholly dispensed with. In order to accomplish this, we provide each of the shafts *e'* of the lower feed-rollers with so-called "star-gears G," which star-gears take into another star-gear G', mounted on shafts *g* for the upper feed-rollers E. It is to be borne in mind that the upper feed-rollers yield as the lumber is passed between them, or, in other words, they are brought nearer to or farther from the lower feed-rollers as the lumber varies in thickness. In order to keep the upper rollers in operation, it has been customary to employ a so-called "expansion-gear," which will compensate for the variations of position of the upper rollers. This expansion-gear is expensive and cumbersome, and applicants have discovered that by the use of star-gears the expansion-gears may be done away with. The star-gears here shown are formed with two sets of teeth, the teeth of one set coming opposite the spaces between the teeth of the other set. Between the two sets of teeth are plates *g'*. The whole, however, including the two sets of teeth and the plates *g'*, may be cast in one piece. This construction of the wheel avoids noise and lost motion. The shafts *g* are journaled in yokes G², which

yokes are hung at their rear ends upon rock-shafts G^3 , which rock-shafts are independent of each other and are journaled in upwardly-extending brackets G^4 , secured upon the frame A. The yokes may therefore swing freely to allow the upper rollers to rise and fall. The outer end portions of the yokes G^2 are provided with vertically-extending apertures, through which extend crank-shafts G^5 , upon the upper ends of which are cranks G^6 .

Collars g^2 , secured upon the crank-shafts G^5 on the opposite sides of the yokes G^2 , prevent independent longitudinal movement of the crank-shafts. The upper of the collars g^2 constitute rolling bearings for the rock-shaft G^3 , as shown more clearly in Fig. 3. The under side of said collar is arc-shaped, and rests when in position in correspondingly-arc-shaped recesses formed on the upper sides of the yokes G^2 . The apertures in the yokes through which the shafts G^5 pass are somewhat elongated, and when the yokes G^2 are swung up and down they will not tend to bind or deflect the shafts G^5 . The under sides of the yokes are also shown as arc-shaped.

Near the forward end of the machine, or that end at which the lumber enters, we have shown two of the upper feed-rollers as being controlled by a single equalizer. This equalizer comprises a cross bar or yoke H, connected by a link or rod H' with a weighted lever H^2 . The ends of the cross bar or yoke H are bifurcated, and extend over lugs or projections h , extending from nuts h' , which nuts have a screw-threaded engagement with the screw-threaded ends of the shafts G^5 . The tendency of the weighted lever H^2 is to hold

the nuts h' against lugs or projections h^2 , extending from the frame of the machine. When the feed-rollers E are elevated by the lumber passing between them, they are so elevated against the resistance of the weighted lever H^2 . By rotating the crank-shaft G^5 the feed-rollers may be raised into any desired position. At the rear or delivery end of the machine a weighted lever H^3 operates only upon a single shaft G^5 . The shaft G^5 is in this instance provided at its lower end with a turn-buckle H^4 , in which the weighted lever hangs. The nuts h' may be prevented from turning by providing them with square or angular exteriors, or in any other suitable manner.

What we claim as our invention, and desire to secure by Letters Patent, is—

In a planing-machine, the combination, with lower feed-rollers, of upper feed-rollers, swinging yokes in which said upper feed-rollers are journaled, star gear-wheels upon the journals of the lower feed-rollers, star gear-wheels upon the journals of the upper feed-rollers, said star gear-wheels intermeshing in order to transmit motion from said lower feed-rollers to the upper feed-rollers, crank-shafts having roller-bearings in said swinging yokes, nuts with which said crank-shafts engage, and weighted levers acting on said nuts to draw the crank-shafts downwardly, substantially as specified.

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Witnesses:

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JNO. P. LAIR.