

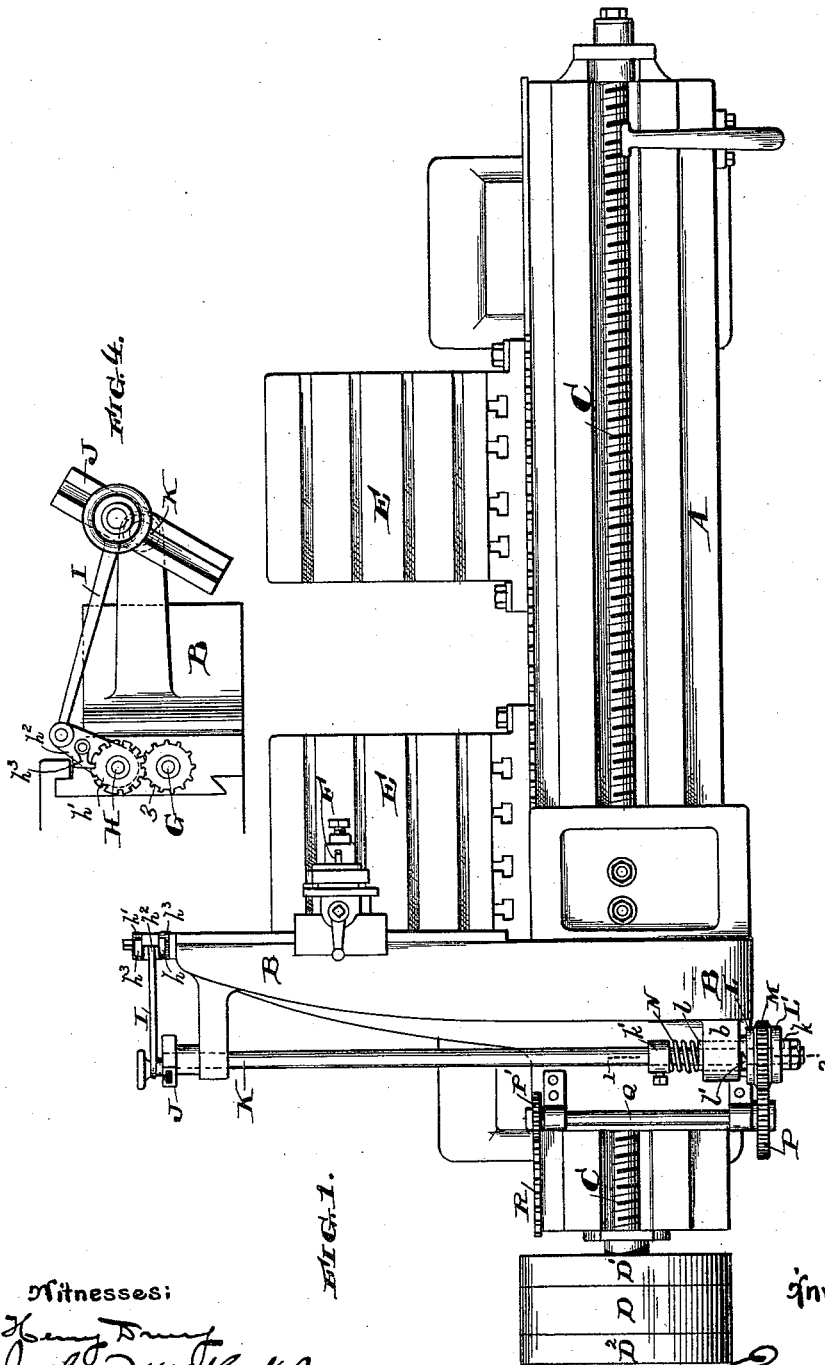
(No Model.)

2 Sheets—Sheet 1.

E. A. WALKER.
FRICTIONAL FEED CLUTCH.

No. 454,960.

Patented June 30, 1891.



Witnesses:
Henry D. ...
Joshua Mahack, Jr.

Inventor:

Edward A. Walker
by his atty.
Francis T. Chambers

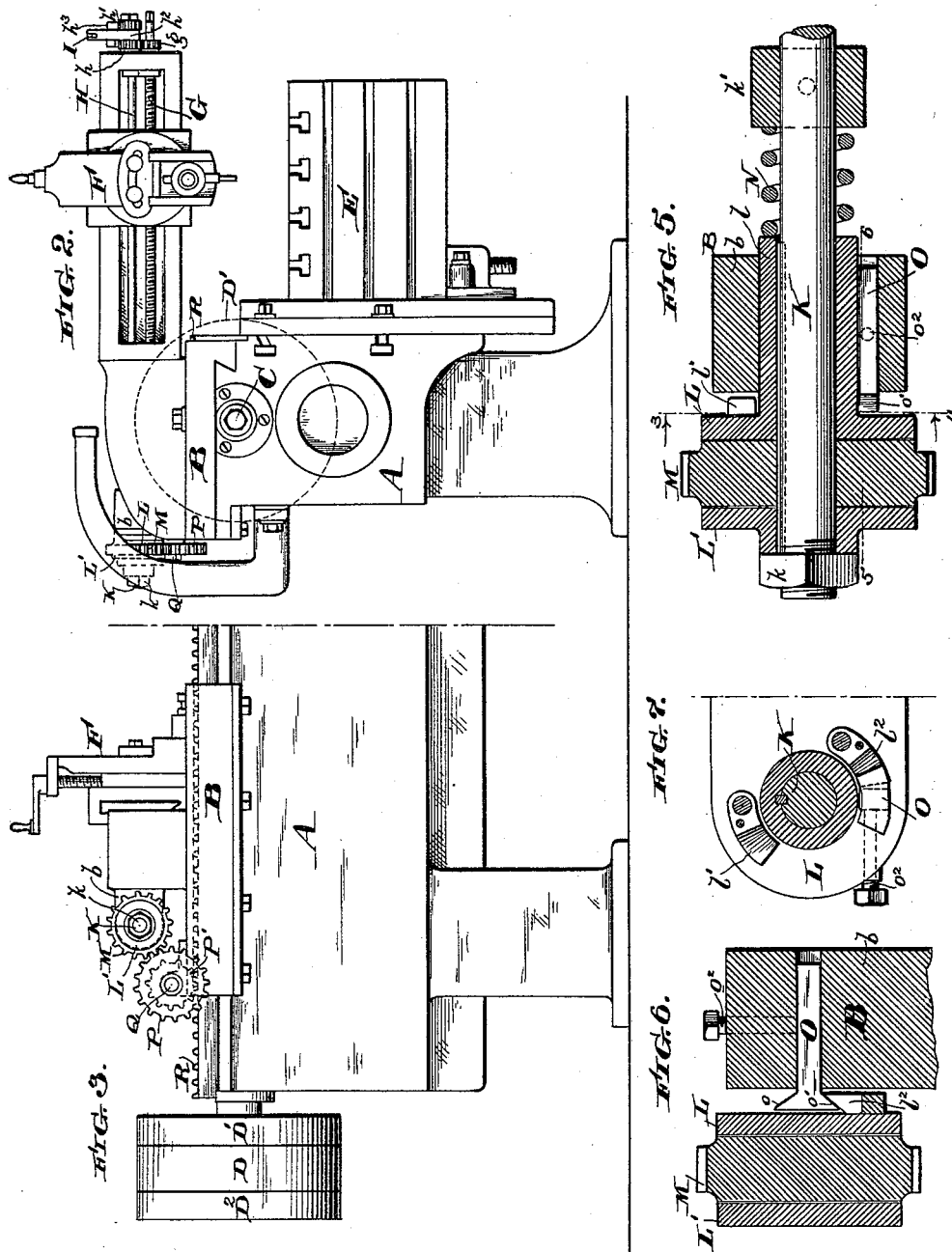
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UNITED STATES PATENT OFFICE.

EDWARD A. WALKER, OF PHILADELPHIA, PENNSYLVANIA.

FRICITIONAL FEED-CLUTCH.

SPECIFICATION forming part of Letters Patent No. 454,960, dated June 30, 1891.

Application filed October 1, 1890. Serial No. 366,778. (No model.)

To all whom it may concern:

Be it known that I, EDWARD A. WALKER, of the city and county of Philadelphia, State of Pennsylvania, have invented a certain new and useful Frictional Feed-Clutch, of which the following is a true and exact description, reference being had to the accompanying drawings, which form a part of this specification.

My invention relates to feed-clutches used for feeding the tools in machines such as planers, and it is especially, although not exclusively, adapted for use with planing-machines in which the tool is carried on a carriage which moves to and fro upon the bed of the machine while the work is held stationary beneath it.

The object of my invention is to provide an improved frictional feed-clutch which will rotate the main driving-shaft of the feed mechanism alternately in opposite directions, releasing it promptly at the proper times and relieving the driving pressure of the clutch. My device will best be understood as described in connection with the drawings, in which it is illustrated, and in which—

Figure 1 is a plan view of a planing-machine provided with my improved device; Fig. 2, an end view of the same; Fig. 3, a side elevation of a portion of the machine; Fig. 4, a side elevation of another portion of the machine; Fig. 5, a cross-sectional view on the line 1 2 of Fig. 1; Fig. 6, a sectional view on the line 5 6 of Fig. 5, and Fig. 7 a cross-sectional view on the line 3 4 of Fig. 5.

A is the bed of the planer; B, a carriage supported and movable upon the top of the bed; C, the feed-screw, which engages with the carriage by means of nuts, (not shown in the drawings,) and to the end of which is secured a fast pulley D and the loose pulleys D' and D".

E is the work-holding bed of the table, secured to the side of the main bed, as shown in Figs. 1 and 2.

F is the tool-holder; G and H, shafts connecting with the holder and by which a proper transverse and vertical feed is effected. The particular mechanism for moving the tool-holder forming no part of my invention, I have not thought it necessary to illustrate it in the drawings. The shaft G is driven

from the shaft H by means of the pinions *g* and *h*, secured, respectively, to the said shafts. The shaft H is actuated by the lever *h*², which is journaled on the said shaft and to which are pivoted pawls *h*³ *h*³, which engage in ratchets *h*⁴, which said ratchets are secured to shaft H. By this construction the shaft H is turned when the lever *h*² moves in one direction, while the pawls move freely over the face of the ratchets without turning the shaft when the lever moves in the opposite direction. A reciprocating movement is given to the lever *h*² by means of the connecting-rod I, the other end of which is adjustably fastened in a slotted arm J, which is secured on the end of a rock-shaft K, which said shaft extends transversely across the carriage, as shown in the drawings, and is journaled thereto. On the other end of the rock-shaft K, I journal a spur-pinion M, on each side of which I place friction-plates L and L', said plates being keyed to the shaft K, so as to turn with it, and one of them (that marked L, as shown in the drawings) is made longitudinally movable along the shaft. The other one is held in place, as shown by means of a nut *k* on the end of shaft K. On the outer face of the movable friction-plate L, I form or secure dogs *l*¹ *l*², having wedge-shaped overhanging faces pointing toward each other. The distance between these dogs regulates the distance to which the shaft is permitted to rock in either direction. A spring is arranged to press against the plate L and hold it normally in contact with the wheel M, so as to clamp said wheel between it and the opposite plate L'. As shown, this spring is secured between a collar *k*¹ and a sleeve-extension *l* of the plate L, said sleeve extending through the bracket *b*.

o and *o*¹ are wedge-shaped stops, secured to the frame of the carriage in such a position that they will lie between the dogs *l*¹ and *l*² and engage them as the plate L revolves in one direction or the other. Owing to the shape of the engaging faces the contact of either one of the dogs with either of the inclined stops results in drawing the plate L back away from its contact with the wheel M and against the pressure of the spring. In this way the shaft is not only arrested by the stops, but simultaneously with the stoppage

of the machine the grip of the clutch is greatly diminished, so that all injurious shock to the mechanism is avoided and injurious friction greatly lessened between the oscillating movements of the shaft. Preferably I form stops 5 *o* and *o'* on the end of an adjustable rod *O*, as shown in the drawings, so that they can both be simultaneously adjusted with nicety for the proper performance of their function. 10 As shown, the rod *O* is held in any desired position in the bracket *b* by means of a binding-screw *o*².

The gear-wheel *M* is driven in the following manner: I secure to the frame of the machine in any convenient manner or place a 15 longitudinal rack *R*, and provide a system of gearing engaging the said rack and the wheel *M*, so that as the table *B* moves forward and backward on the bed-plate the said wheel *M* 20 will be longitudinally revolved in opposite directions. As shown, the rack *R* is secured along one edge of the bed-plate and a transverse shaft *Q* secured across one end of the carriage. Upon this shaft a gear-wheel *P'* en- 25 gages with the rack *R*, and another gear-wheel *P* engages with the gear-wheel *M* on the shaft *K*. The exact construction of this gearing, however, is not important, and it may be modified in any convenient way.

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

1. The combination of a shaft, a spur-wheel, as *M*, loosely journaled thereon, gearing ar- 35 ranged to rotate said wheel alternately in opposite directions, friction-plates *L* and *L'*, keyed to the shaft and placed on opposite sides of the wheel *M*, one of said plates, as *L*, being longitudinally movable on the shaft, dogs, as 40 *l' l*², secured to the outer face of plate *L* and having wedge-shaped overhanging faces arranged opposite to each other, a spring arranged to hold the plate *L* against wheel *M*, and wedge-shaped stops, as *o o'*, arranged be- 45 tween the dogs and so as to engage them and

lift the plate away from the wheel *M*, all substantially as and for the purpose specified.

2. The combination of a shaft, a spur-wheel, as *M*, loosely journaled thereon, gearing ar- 50 ranged to rotate said wheel alternately in opposite directions, friction-plates *L* and *L'*, keyed to the shaft and placed on opposite sides of the wheel *M*, one of said plates, as *L*, being longitudinally movable on the shaft, dogs, as 55 *l' l*², secured to the outer face of plate *L* and having wedge-shaped overhanging faces arranged opposite to each other, a spring arranged to hold the plate *L* against wheel *M*, an adjustable rod *O*, having wedge-shaped 60 stops *o o'* at its end adapted to come between the dogs *l' l*² and to raise the plate *L* away from the wheel *M*, all substantially as and for the purpose specified.

3. In a planing-machine, the combination of the bed *A*, a rack *R*, extending along said 65 bed, a carriage *B*, traveling on the bed and supporting the tool-holder *F*, tool-feeding mechanism, including a transverse shaft *K*, extending across the carriage, a gear-wheel *M*, journaled on shaft *K*, gearing, as described, 70 connecting said gear-wheel with rack *R*, so as to rotate the wheel in opposite directions as the carriage moves backward and forward, friction-plates *L* and *L'*, keyed to shaft *K* on 75 each side of wheel *M*, one of said plates being longitudinally movable on the shaft, dogs, as *l' l*², secured to the outer face of the movable plate and having wedge-shaped over- 80 hanging faces placed opposite to each other, a spring arranged to hold the movable plate against the gear-wheel, and wedge-shaped stops *o o'*, arranged between the dogs and so as to engage them and lift the plate as it revolves in either direction, all substantially as and for the purpose specified.

EDWARD A. WALKER.

Witnesses:

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JOSHUA MATLACK, Jr.