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J. S. DETRICK & L. H. BACHTELL.

FEEDING DEVICE FOR METAL PLANING MACHINES.

No. 518,183. Patented Apr. 10, 1894.

Fig 1.

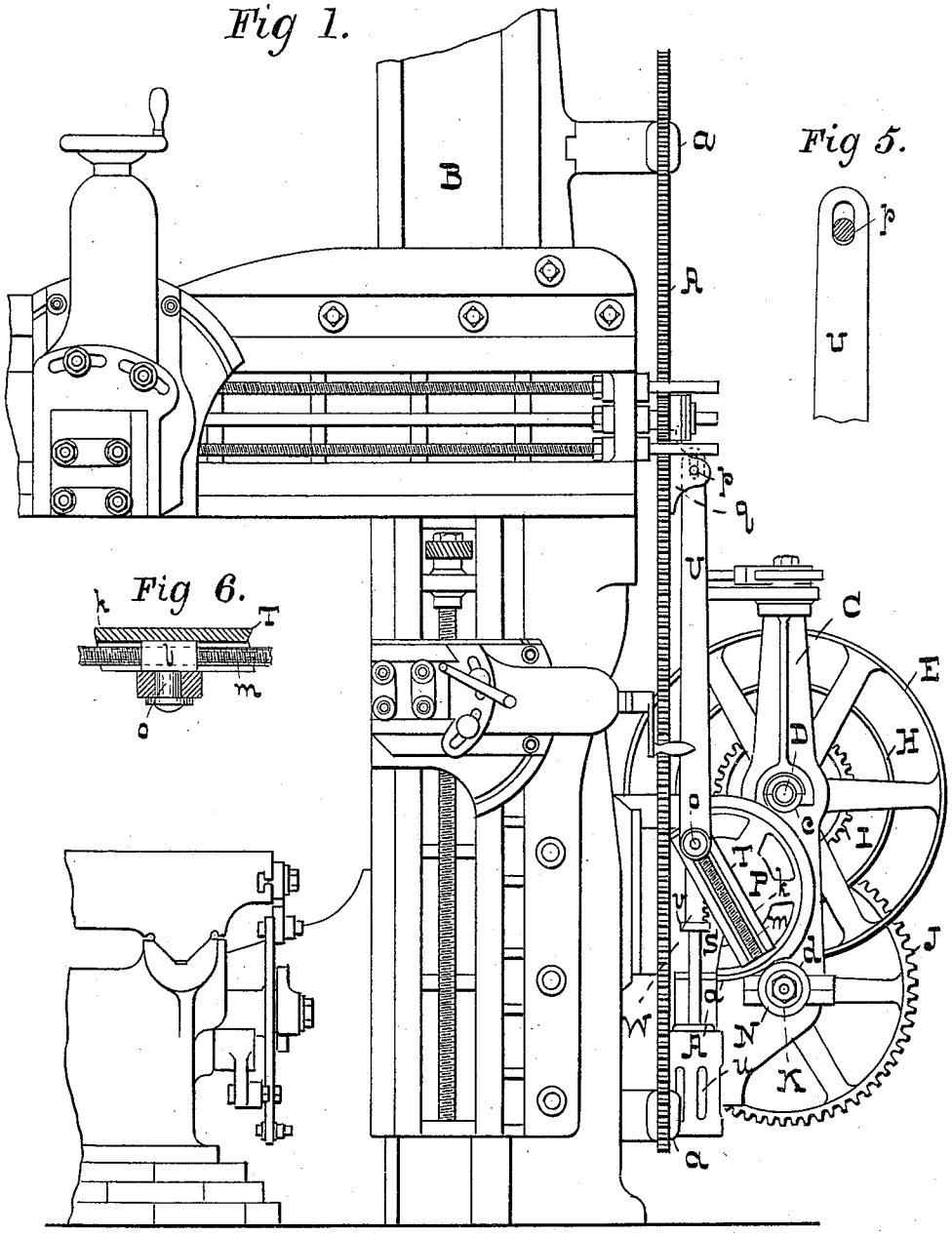

Fig 5.

Fig 6.

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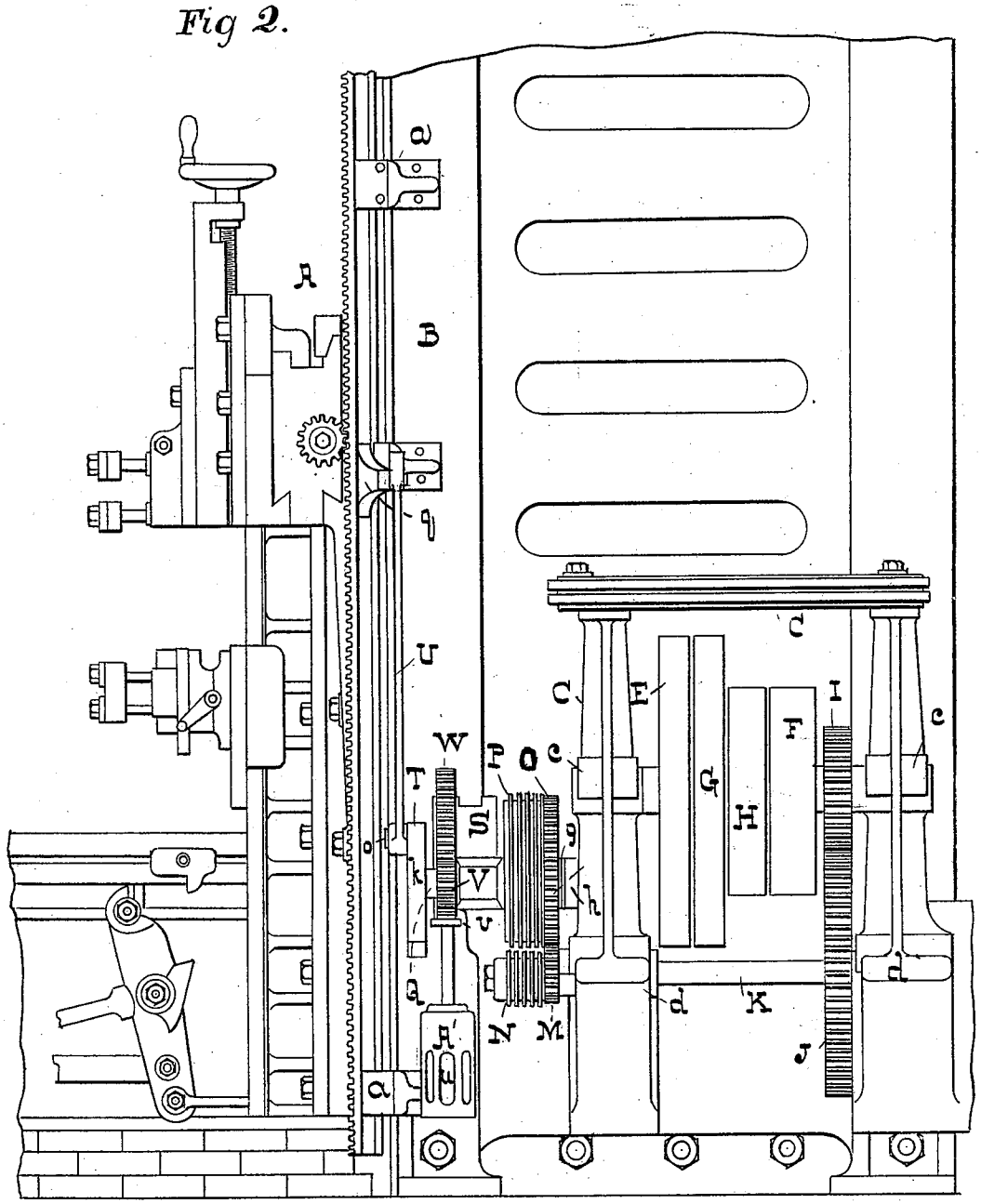
Fig 2.



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(No Model.) 4 Sheets—Sheet 3.

J. S. DETRICK & L. H. BACHTELL.

FEEDING DEVICE FOR METAL PLANING MACHINES.

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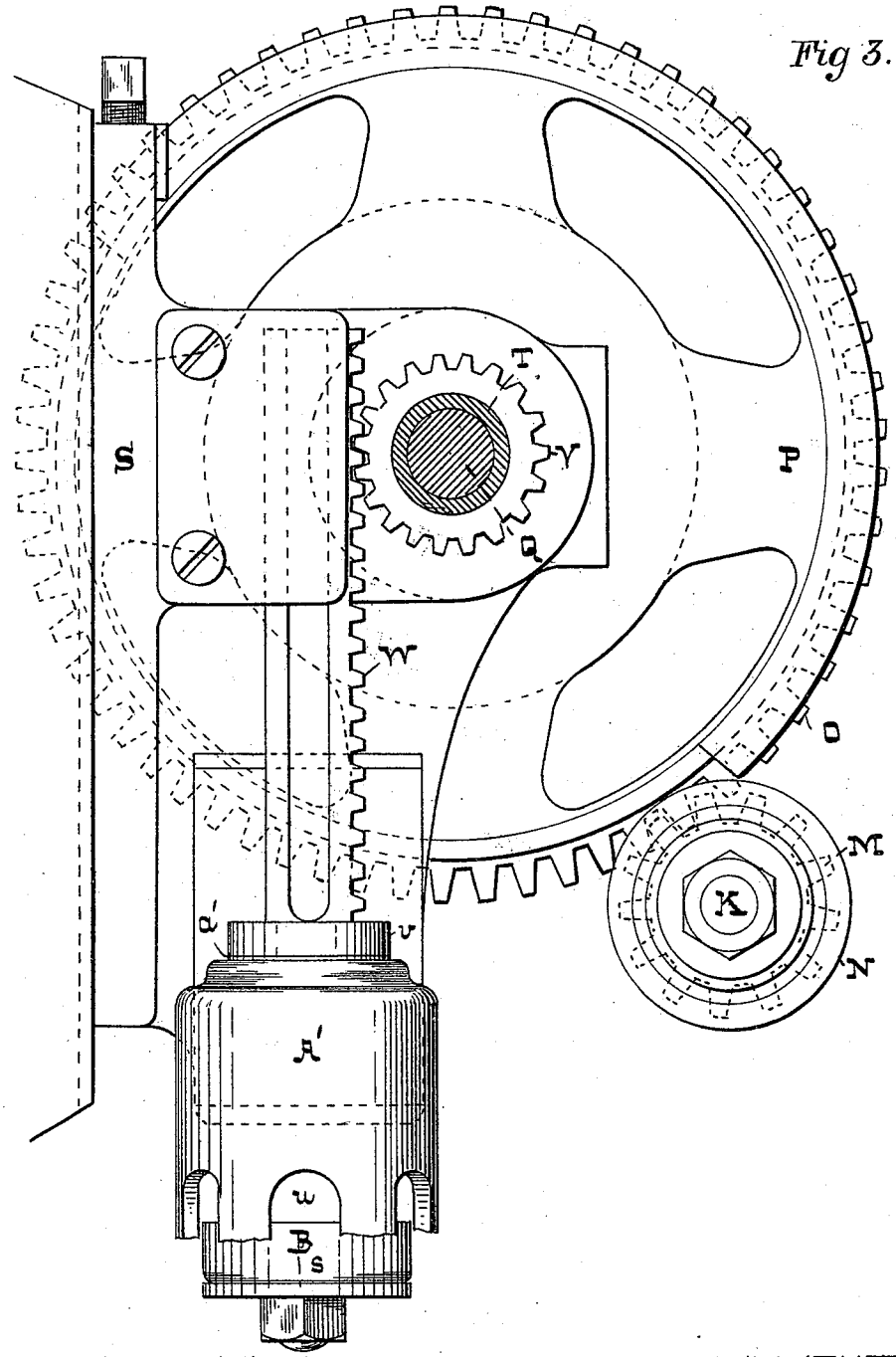
Fig 3.



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(No Model.) 4 Sheets—Sheet 4.

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FEEDING DEVICE FOR METAL PLANING MACHINES.

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Fig 4.

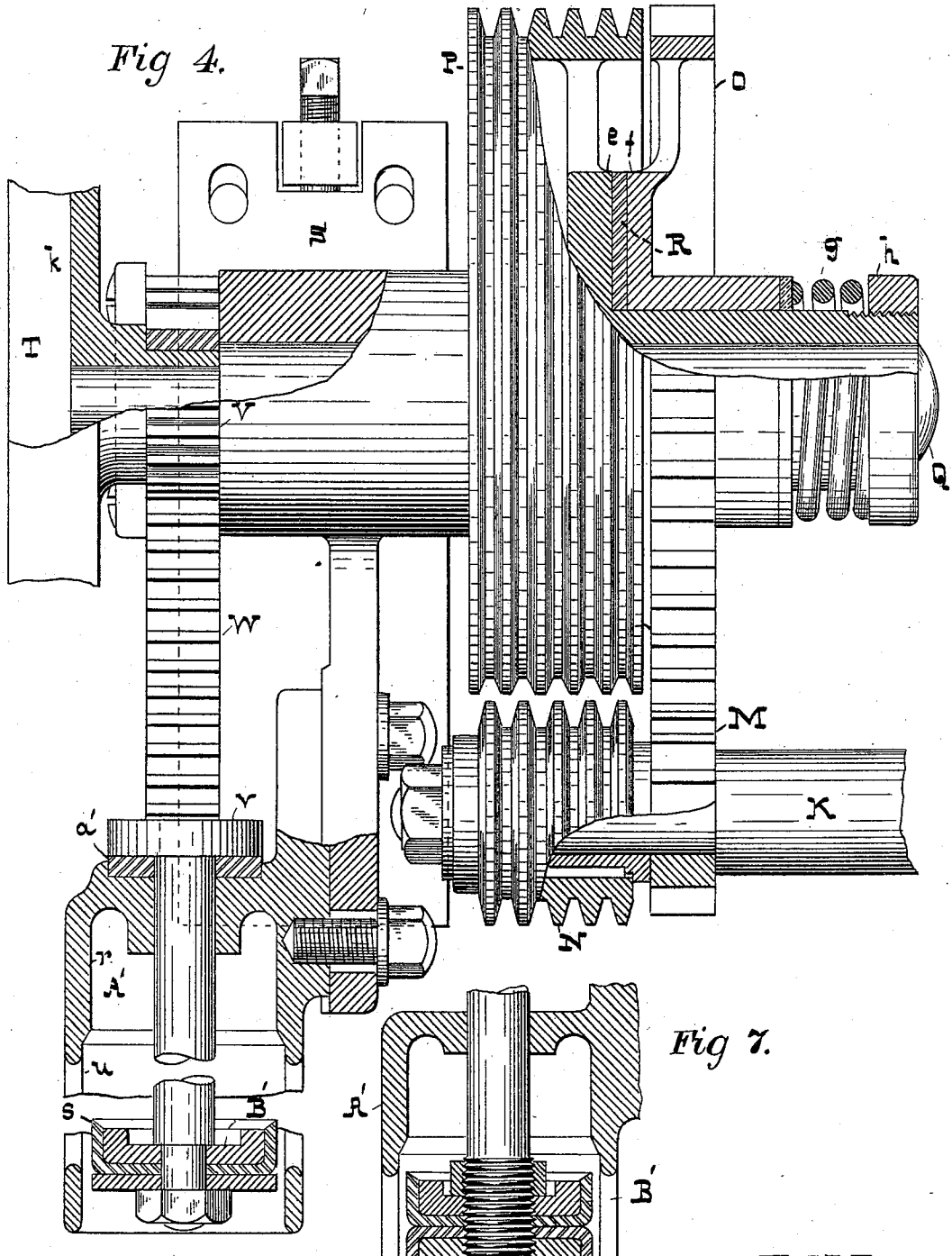

Fig 7.

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UNITED STATES PATENT OFFICE.

JACOB S. DETRICK AND LEWIS H. BACHTELL, OF BALTIMORE, ASSIGNORS TO THE DETRICK & HARVEY MACHINE COMPANY OF BALTIMORE CITY, MARYLAND.

FEEDING DEVICE FOR METAL-PLANING MACHINES.

SPECIFICATION forming part of Letters Patent No. 518,183, dated April 10, 1894.

Application filed March 2, 1893. Serial No. 464,374. (No model.)

To all whom it may concern:

Be it known that we, JACOB S. DETRICK and LEWIS H. BACHTELL, both of the city of Baltimore and State of Maryland, have invented certain Improvements in Feeding Devices for Metal-Planing Machines, of which the following is a specification.

This invention relates to simple, positive and effective means for transmitting movement from the main driving shaft of the planing machine, or some shaft deriving its motion from the driving shaft, to the first or primary element of the feeding mechanism, which element may consist of a connecting rod or bar, but which in the present case consists of a rack adapted to communicate movement to a system of gearing and screws which as an entirety is well known and therefore forms no part of the present invention.

In the further description of the said invention which follows, reference is made to the accompanying drawings forming a part hereof, and in which—

Figure 1 is a front end view of certain parts of a planing machine embodying the present invention. Fig. 2 is a side view of Fig. 1. Figs. 3 to 6 inclusive are enlarged details of the machine, hereinafter more particularly referred to. Fig. 7 illustrates a modification in the construction of a part of the invention hereinafter described.

Referring to Figs. 1 to 6, inclusive, of the accompanying drawings, A is a vertically reciprocating rack which constitutes the primary element of the feeding mechanism. This rack is confined in suitable bearing boxes *a*, fastened to the post B, and communicates motion to a system of feeding mechanism comprising gearing and screws which is commonly in use, and as it forms no part of the present invention, is not shown fully, or described herein.

C is a frame secured to the post B, having bearing boxes *c* which sustain the main driving shaft D carrying the tight pulleys E and F, and the loose pulleys G and H.

I and J are respectively, a pinion, and a gear wheel to communicate motion from the shaft D to a second shaft K supported in bearing boxes *d* in the frame C. The shaft K is in constant revolution while the machine is in operation, but its direction of motion is changed with that of the bed.

All the mechanism so far described is of well known construction and forms no part of the present invention.

At one end of the shaft K is secured a pinion M, and also a circumferentially grooved friction roll N, preferably formed of what is known as "fiber." The pinion M is in engagement with the gear wheel O which is loose on the hub of a segment P grooved to correspond with the fiber roll N. The ends of the segment extend somewhat beyond a diametrical line and consequently when the segment is in gear with the roll N, the shaft Q to which the segment is fastened is susceptible of a little more than a half revolution in either direction. The said shaft is supported by a bracket S bolted to the post B.

The segment P and the gear wheel O are provided with disks *e* and *f* and between the adjacent faces of these disks is situated a leather friction disk R.

The compression of the leather disk R to produce the requisite friction, is effected by a spiral spring *g* confined endwise on the hub of the segment P, between the hub of the gear wheel O and an adjustable screw collar *h* on the end of the said hub.

At the forward end of the shaft Q is fastened, by means of a key or feather, the feed adjuster T which is of common construction. It consists of a cross arm *k* which is longitudinally grooved for the reception of a nut *l* through which passes a screw *m* capable of being turned so as to set the said nut at any required distance from the center of the shaft Q.

U is a pitman connecting the pin *o* of the nut *l* with the pin *p* forming a part of the bracket *q* which extends from the main feeding rack A before referred to.

V is a gear wheel fastened to the hub of the feed adjuster T, in engagement with a vertical rack W suitably supported by the brackets S. This rack terminates at the lower end in a round stem which passes through or into a dash pot A′ and is provided with a piston B′.

The dash pot is closed at the top and the upper portion r of the said dash pot is bored to fit the packing cup s of the piston B′, while the lower part is somewhat larger in diameter than the said packing cup and has lateral holes u for the entrance of air. At a suitable distance above the piston and exteriorly of the dash pot, the stem of the rack has a collar v and the top of the dash pot has a leather washer a' to receive the said collar as the rack is brought to its lowest position. As the rack is brought toward its highest position, the piston B′ enters the reduced portion of the dash pot, and the contained air is compressed and forms a cushion which prevents shock and overcomes momentum of the parts moved by the rack A and the rack itself, as will hereinafter fully appear.

In some cases it may be advisable to use a dash pot in which the air is compressed at both ends instead of at only one end thereof, and dispense with the leather washer a', and the collar v on the stem of the rack, as shown in Fig. 7.

To understand the operation of the invention it must be borne in mind that the shaft K is constantly in revolution but alternately in opposite directions when the planer is in use, and that in view of the larger driving pulley E being employed as the bed moves backward after the cut has been taken, and the smaller one F used as the cut is made, the shaft K which derives its motion from the main driving shaft D has two speeds, a fast and a slow one, as is common in planing machines.

Supposing that the several parts of the feeding mechanism are in the relative positions shown particularly in Fig. 1, that is to say, in such positions as exist when the bed of the planer is moving back after a cut has been taken, the segment P is out of gear with the fiber friction roll N, and the friction between the revolving gear wheel O and the segment P is sufficient to keep it in that position. At the completion of the backward stroke of the bed, the shaft K is reversed in direction of rotation by the change in belts, and the gear wheel O is revolved in a contrary direction to that in which it moved before the change in belts took place. The moment the change in direction takes place, the friction between the gear wheel O and the segment P causes the latter to move around until its ends engage with the fiber friction roll N, when that device causes the segment to complete its slightly more than a half revolution, and the rack is drawn down. At the termination of this operation of the parts, the segment P is out of gear with the fiber friction roll N, hence when the belts are again changed the roll N cannot at first communicate its motion to the segment. But owing to the friction between the gear wheel O and the segment P, the engagement is established and when this takes place the gear wheel O becomes inoperative until the next change.

From the foregoing it will be seen that the constantly moving gear wheel O is used only to bring the fiber friction roll N and the segment P into engagement after they have separated at the termination of each operation of the feeding mechanism, and that after such a result is accomplished the driving of the segment P is effected through the agency of the friction roll N independently of the disks on the segment and gear, and the leather disk R as before stated.

By giving the segment somewhat more than a semi-circumference, the rack A is lifted to its full height and then the pitman brought back a sufficient distance to take off the strain, or more properly speaking, the weight of the parts lifted, which owing to the elasticity of the materials and certain loose motion, would interfere to some extent with the limited rotation of the segment P by means of the gear wheel O, and the interposed leather disk R. To admit of this slight return of the pitman, the hole in the same for the pin p is somewhat elongated as seen in Fig. 5 which shows the pin, and the pitman after its elevation and slight return.

It will be understood that the dash pot is operative to overcome inertia of the moving parts only as the rack A ascends, as in its descent the movement is considerably slower and the simple collar v and the washer a' described, are all that are required to prevent shock.

We claim as our invention—

1. In combination with a shaft constantly in revolution but alternately in reversed directions, a pinion and a friction roll secured to the said shaft, a second shaft carrying a segment adapted to engage with the said friction roll, and a loose gear in engagement with the said pinion, and a frictional device whereby the movement of the said gear wheel is communicated to the said segment, to bring its ends into contact with the said friction roll after they have been removed from contact in the operation of the feed, substantially as specified.

2. As elements of a feed for a planer, a friction roll and a segment whose ends extend beyond the diametrical line, whereby in the operation of the feed the mechanism driven by the said segment is moved to its extreme limit and then slightly drawn back, substantially as, and for the purpose specified.

3. In a metal planing machine, friction producing devices to effect the feed of the machine, said feeding devices being susceptible of engagement and disengagement, combined with supplemental friction producing devices for effecting the said engagement and disengagement of the others, substantially as, and for the purpose specified.

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