(No Model.) 3 Sheets—Sheet 1.

H. M. LELAND & F. E. FERRIS.

TRIMMING MACHINE.

No. 540,837. Patented June 11, 1895.

Fig. 1.

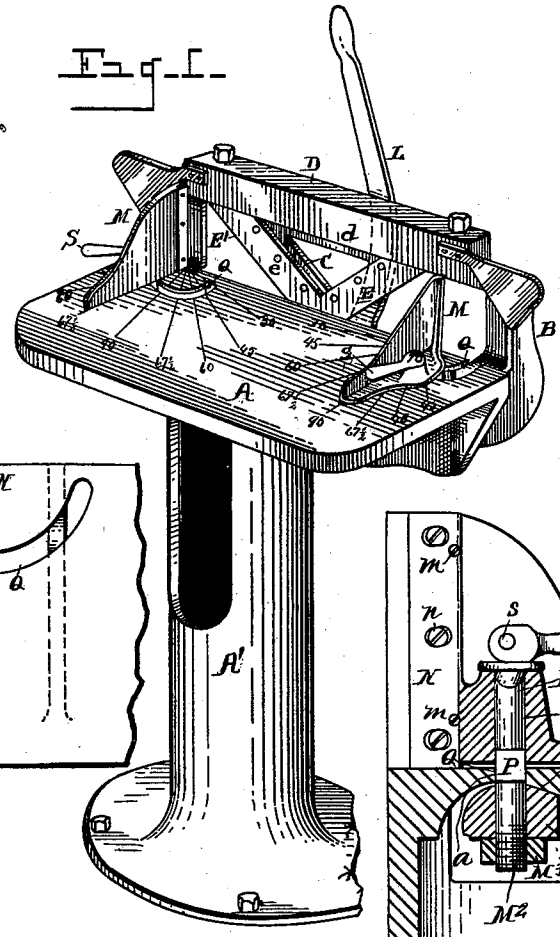


Fig. 2.

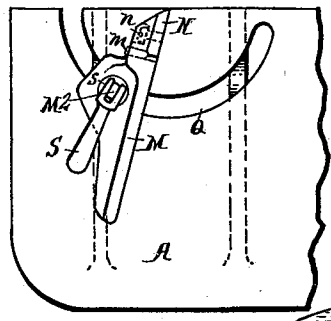


Fig. 3.

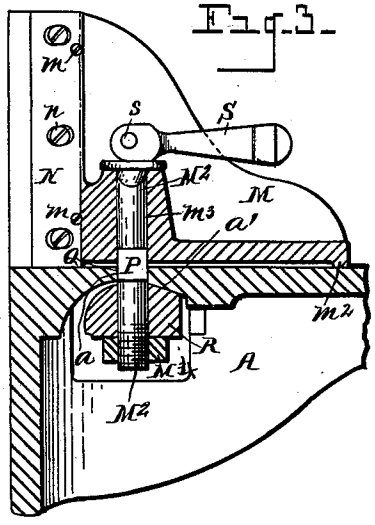
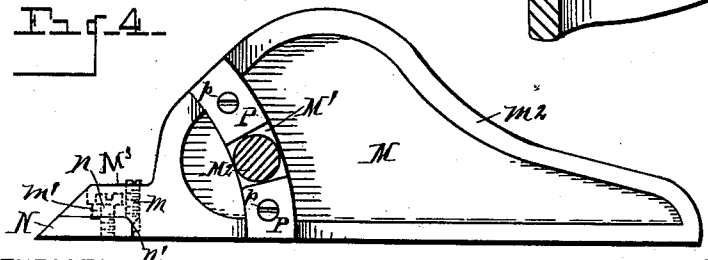


Fig. 4.



WITNESSES

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(No Model.) 3 Sheets—Sheet 2.

H. M. LELAND & F. E. FERRIS.

TRIMMING MACHINE.

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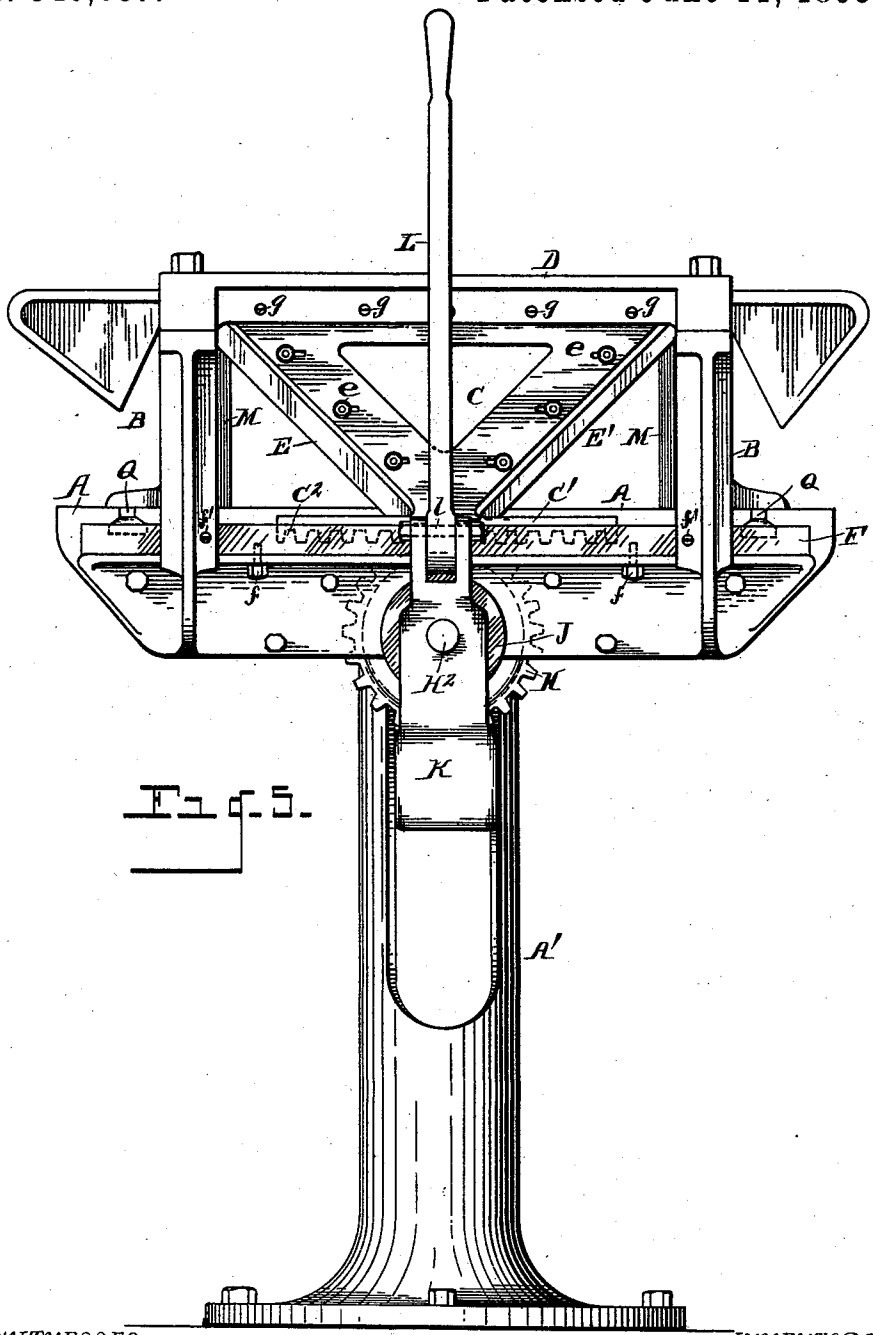

Fig. 5.

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(No Model.) 3 Sheets—Sheet 3.

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TRIMMING MACHINE.

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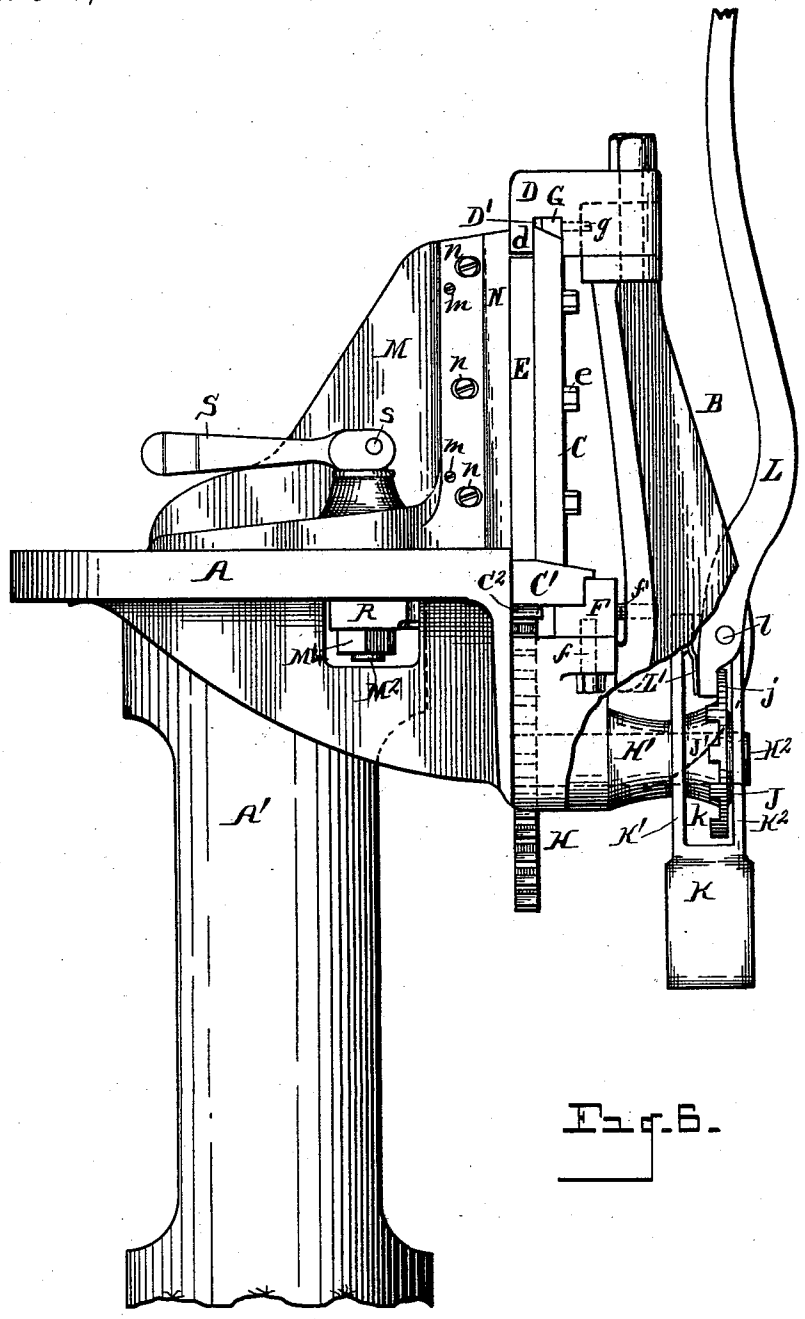

Fig. 6.

WITNESSES

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UNITED STATES PATENT OFFICE.

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TRIMMING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 540,837, dated June 11, 1895.

Application filed February 13, 1895. Serial No. 538,206. (No model.)

To all whom it may concern:

Be it known that we, HENRY M. LELAND and FRANK E. FERRIS, citizens of the United States, residing at Detroit, county of Wayne, State of Michigan, have invented a certain new and useful Improvement in Trimming-Machines; and we 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, which form a part of this specification.

Our invention has reference to certain new and useful improvements in trimming machines whereby their efficiency may be greatly increased, the adjustment of various parts thereof be rendered more convenient and accurate, the strain on certain parts relieved, and whereby other advantages in construction, operation, and results may be secured.

Our invention contemplates and consists in the general construction, combination and arrangement of devices and appliances hereinafter described and claimed and illustrated in the accompanying drawings, in which—

Figure 1 is a view in perspective embodying features of our invention. Fig. 2 is a partial plan of the bed or table with the gage located thereupon. Fig. 3 is a vertical section through a portion of the gage and table. Fig. 4 is an inverted plan view of the gage, showing the clamping-bolt in cross-section. Fig. 5 is a rear elevation of the trimming-machine. Fig. 6 is an end view thereof.

We carry out our invention as follows:

In the drawings A denotes a bed or table supported in any suitable manner, as upon a standard A′.

B represents a slide frame connected with said table.

C is a reciprocatory knife slide, C′ representing the base thereof.

D indicates a bridge secured upon the slide frame and forming a way at the top of the knife slide, as shown at D′, in which the top of the knife slide reciprocates.

E and E′ are the knives secured to the knife slide, as by bolts *e*. The base C′ of the knife slide is made reciprocatory upon an L-shaped gib F supported upon the slide frame B, said gib being vertically adjustable as by a set screw *f*, and also laterally adjustable as by means of a set-screw *f*′, said set screws being engaged in the slide frame. By means of this L-shaped gib made adjustable laterally and vertically, it is evident that the base of the knife slide may readily be adjusted in either direction as may be required.

It is obvious that in a machine of this character it is essential that the knife slide should carry the knives snugly against or with great accuracy adjacent to the corresponding edge of the table A to insure perfect work. To effect the adjustment of the base of the knife slide, we provide the L-shaped gib made adjustable as hereinbefore stated.

To adjust the upper portion of the knife slide, the bridge D is preferably recessed, as shown, to form the way D′ above referred to, the bridge being thus formed with a front flange *d* extending downward over the adjacent face of the upper portion of the knife slide. The upper edge of the knife slide is formed on a bevel as indicated in the drawings, and we provide, extending into the way D′, an adjustable wedge G beveled on its lower surface to form a wedge faced contact with the upper edge of the knife slide. The wedge G is provided with an adjustable screw stem *g* engaged in the bridge whereby the wedge may be readily adjusted as required.

The base of the knife slide C′ is formed on its under face with a rack bar as indicated at C^2, with which meshes a driving gear H. Our invention contemplates forming the rack bar and locating the gear directly beneath the knives E E′. By forming the rack bar and locating the driving gear immediately below the knives, it will be apparent that there is no lateral strain exerted upon the knife slide, in consequence of which the knife slide may be more easily reciprocated than where the driving gear and rack bar are located at one side of the knives. This will be of obvious advantage as when a heavy cut is being made especially. By our construction, however, we entirely avoid a lateral strain at this point. The rack C^2 is shown formed integral with the base of the knife slide. It may however either be made integral therewith or secured thereto in any desired manner.

H′ denotes the bearing for the shaft H² of the gear H, said bearing being extended laterally to the rear of the gear from the base of the slide frame. The gib F extends laterally from the rack and downward, concealing the upper portion of the gear.

J denotes a ratchet wheel provided with a hub J′ upon the rear end of the shaft H².

K denotes a weighted arm recessed as at *k* to receive the ratchet wheel J and its hub J′. The upper end of the weighted arm is thus formed with the two lateral arms K′ K².

L is an operating lever fulcrumed on the arm K as shown at *l*. The inner end of the operating lever L is constructed to engage the ratchet wheel J, as indicated at *j*, a spring L′ being employed to hold the lever in normal engagement with the ratchet wheel J.

By this construction and arrangement it will be understood that a fresh hold may be readily taken whenever desired by the operating lever upon the ratchet wheel J.

The arms K′ and K², as shown, are mounted upon the shaft H², the ratchet wheel J being located therebetween.

In operation it will be perceived that there is exerted an upward strain upon the knife slide by means of the gear H in contact with the rack bar C². By engaging the wedge G firmly upon the upper edge of the knife slide it will be obvious that any upward strain upon the knife slide will have a tendency to crowd the knife slide more firmly against the flange *d* so as to carry the knives E E′ at all times closely in against the corresponding edge of the table A, while by means of the L-shaped gib F and its adjusting screws the base of the knife slide may also be readily forced in against the adjacent edge of the table A. Thus by means of the adjustable gib F and the adjustable wedge G we effectually provide a simple, ready, and accurate adjustment of the knife slide both vertically and laterally as may be required to insure perfect work. Such means of adjustment of the knife slide is obviously of much importance to compensate for any wear and also for any sharpening of the knives. By these improved means of adjustment we are enabled to secure greater accuracy of adjustment than in machines of this class heretofore made.

M M represent gages located upon the table A, the two gages being of similar construction, except that the one is a right hand, and the other a left hand gage. These gages are each provided with an adjustable plate N which may be secured to the corresponding gage by screws *n*. To adjust the plate N we provide adjusting screws *m* projected laterally within the inner rib M³ of the gage, the screw having a conical shaped point, and the plate being beveled adjacent to the point as indicated at *n′*. By thus arranging the adjusting screws *m* with their conical shaped points in contact with the beveled edge of the plate N, it will be seen that by simply loosening up the screws *n* the screws *m* may be set as required to accurately adjust the edge of the plate N.

As shown, the set screws *m* project to the outer edge of the adjacent portion of the gage so that they may at all times be readily reached. The orifices of the gage which receive the screws *n* may be made sufficiently larger than the screw, to permit the necessary adjustment of the plate N, as indicated at *m′*.

We prefer to cut away the under surface of the gages M as indicated in the drawings, so that the base of each gage shall be formed with a flange *m²* at the under edges to insure a firmer seating of the gage upon the table A. It will be apparent that where the under surface of the gage is made flat throughout, any dust or extraneous matter getting under the gage would have a tendency to make it unsteady in its location, which liability however is largely overcome or effectually prevented by forming the gages with a seating flange at the edge of the base thereof.

The base of the gage is also constructed with an arc shaped groove indicated at M′ in which are secured correspondingly shaped ribs P P, said ribs projecting into the slot or recess M′ and downward therebeneath. These ribs are fitted snugly in place by screws *p*. Practically they form a part of the gage and might be formed integrally therewith; but it is more convenient in the construction of the gage to form the ribs separately and secure them to the gage in the manner described, by forming the gage with the slot M′ to receive the upper portion of said ribs. The slot M′ is made, as will be understood, with the outer edge of the plate N as the center on which the arc is formed.

The bed or table A is formed with an arc shaped slot for each of the gages M, said slot in the table being indicated at Q. The center from which each of the slots Q is formed corresponds to the center from which the recesses or slots M′ are formed. It is well understood by those skilled in the art that the slots Q are formed in the table A to provide for the accurate adjustment of the corresponding gage M from the common center which is at the very edge of the table adjacent to the knives. To provide for the adjustment of the gages M in the slots Q we construct said slots Q each with a fixed edge of suitable form at the front of the slot Q as at the edge *a*. The under surface of the table A immediately to the rear of each of the slots Q is formed with a beveled surface, as indicated at *a′*. Into each of the slots Q the ribs P of the corresponding gage project, the front faces of said ribs being trued accurately to correspond to the straight edge at *a* in front thereof when the ribs are in place in the slots Q.

R represents a gib constructed with beveled upper face at the rear edge thereof accurately corresponding and fitted to the beveled face at *a′* of the table.

M² is a clamping bolt passed through a slot at *m³* in the gage and through the correspond-

ing gib R, said bolt being provided with a nut M^4 on its lower end beneath the gib R.

Upon the upper end of the bolt M^2 is fulcrumed an eccentric lever or cam S, the fulcrum being indicated at *s*, by means of which it will be seen the gib R may be forced against the bevel or wedge shaped face *a'* of the table, to clamp the gage M upon the table. It will be recognized readily that when the gib R is thus forced against the wedged face *a'* of the table by the manipulation of the lever S, the ribs P P will be forced firmly against the edge at *a* in front thereof, in consequence of which the edge of the plate N will be set and held with the utmost accuracy, as is requisite at the edge of the table A.

It is well known that if by any means the edge of the plate N were projected even to a very slight degree beyond the edge of the table A, the knives E E' would come in contact therewith in their reciprocation, shearing off the edge of the plate N and thereby also dulling or cutting away the edge of the knives, doing great damage to the machine. It becomes essential, therefore, that the edge of the plate N should be set at the edge of the table A with the utmost accuracy and without any liability whatsoever of its improper adjustment. Should the edge of the plate N, on the other hand, be set unduly inward from the edge so the table, even to a slight degree, the work accomplished would be very imperfect and unsatisfactory, as the unsupported portion is left with a ragged or rough edge, and a smooth cut upon the work could not then be effected. By our construction and arrangement of parts, however, we are enabled readily and conveniently and with the utmost accuracy to set the edge of the plate N in proper position without any liability whatever of its either being projected beyond the edge or short of the edge, and which we accomplish by means of the adjacent, correspondingly constructed faces of the ribs P P and the edge *a* of the slot Q, in connection with the adjacent beveled or wedge shaped faces of the gib R and the face *a'* of the table, as hereinbefore explained. The front portion of the gib R is out of contact with the adjacent portion of the table A, leaving the gib free to move forward to allow the ribs P to contact firmly with the face *a* of the table.

The upper face of the table, as is customary in machines of this class, is marked off with radial lines, at any desired angle, to facilitate the setting of the gage as may be required.

What we claim as our invention is—

1. In a trimming machine, the combination of a table, a rigid slide frame, a reciprocatory knife slide having its base located adjacent to the rear edge of the table, knives secured to the knife slide, and an adjusting device to adjust the base of said knife slide toward and from the rear edge of the table, substantially as set forth.

2. In a trimming machine, the combination of a table, a rigid slide frame, a reciprocatory knife slide having its base located adjacent to the rear edge of the table, and knives secured to the knife slide, and means to laterally and vertically adjust said knife slide, substantially as set forth.

3. In a trimming machine, the combination of a table, a slide frame, a horizontally reciprocatory knife slide having its base located adjacent to one edge of the table, and an adjustable L-shaped gib F at the base of the knife slide, whereby said slide may be adjusted, said gib extending horizontally underneath the base of the knife slide and vertically upward at the outer edge of the base of the slide substantially as and in the manner described.

4. In a trimming machine, the combination of a table, a slide frame, and a horizontally reciprocatory knife slide, the upper portion of the knife slide being laterally adjustable independently of the base of the slide, substantially as set forth.

5. In a trimming machine, the combination of a table, a slide frame, a reciprocatory knife slide beveled at the top thereof, and a beveled faced wedge G adjustably engaged in the slide frame bearing against the upper beveled portion of the knife slide, substantially as and for the purpose described.

6. In a trimming machine, the combination of a table, a rigid slide frame located at one side of the table, a reciprocatory knife slide having its base located adjacent to the edge of the table and provided with a rack beneath the knives, and a pinion between the slide frame and table below the rack meshing therewith, said rack and pinion being in the same vertical plane as the knife slide, substantially as set forth.

7. In a trimming machine, the combination of a table, provided with an arc shaped slot Q and having a beveled face *a'* to the rear of the slot and adjacent thereto, a reciprocatory knife slide having its base located adjacent to one edge of the table, an oscillatory gage having an angular edge located adjacent to the edge of the table and provided with ribs shaped to correspond to the arc of said slot and projecting thereinto, a gib R below said slot, and a clamping bolt engaging said gib and gage with said table, said gib having a beveled rear face to contact with the beveled face *a'*, the front faces of said slot and of said ribs being of corresponding form, said gib movable forward along said beveled faces to force the front faces of said ribs firmly against the front face of the said slot when the clamping bolt is tightened, whereby the angular edge of the gage will be held true to the edge of the table, substantially as set forth.

8. In a trimming machine, a gage provided with an inner rib M^3 and an adjustable plate N beveled at its rear edge, screws *n* engaging said plate to said rib, and conical pointed adjusting screws *m* having their conical points

in contact with the beveled rear edge of said plate whereby the plate may be adjusted by turning said adjusting screws, said screws *n* and *m* projecting laterally through said rib to the exterior thereof at right angles to the plate and parallel with one another, whereby the plate N may be adjusted without its removal from the gage substantially as set forth.

9. In a trimming machine, the combination of a table, a rigid slide frame at one side of the table, a reciprocatory knife slide having its base located adjacent to one edge of the table, and means at the top and base of the knife slide to adjust said knife slide independent of the slide frame, substantially as set forth.

10. In a trimming machine, the combination of a table, a slide frame provided at its base with a laterally extended bearing H′, a reciprocatory knife slide provided with a rack therebeneath, a pinion meshing with said rack having its shaft journaled in said bearing, a weighted arm having lateral arms K′ K² mounted upon said shaft, a ratchet wheel mounted upon said shaft between the arms K′ K², and an operating lever to engage said ratchet wheel, said rack and pinion being in the same vertical plane as the knife slide, substantially as set forth.

In testimony whereof we sign this specification in the presence of two witnesses.

HENRY M. LELAND.
FRANK E. FERRIS.

Witnesses:
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MARY A. MARTIN.