(No Model.) 2 Sheets—Sheet 1.

H. B. TIBBITTS.

ORGAN REED MILLING MACHINE.

No. 545,831. Patented Sept. 3, 1895.

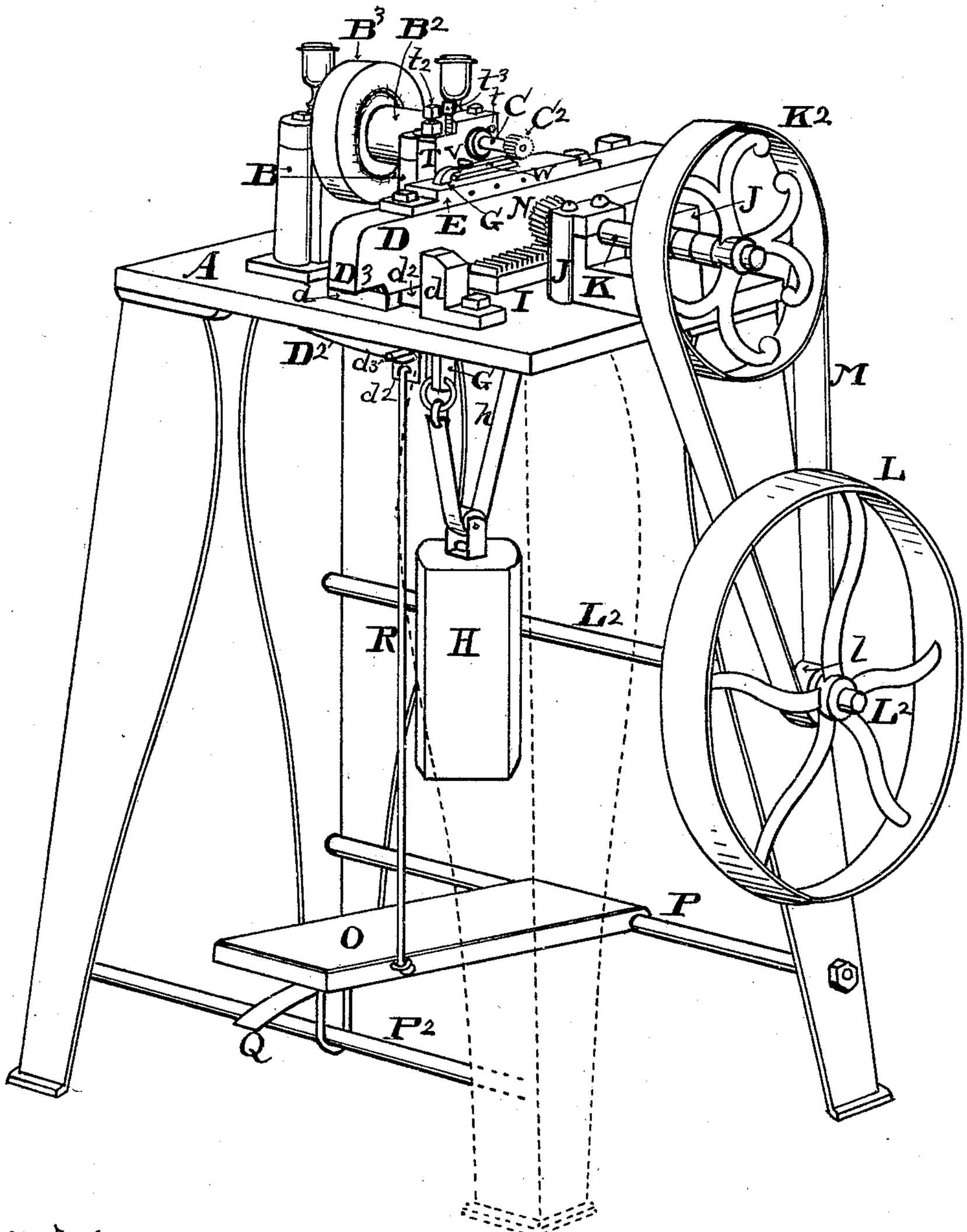

Fig. 1.

Witnesses,
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Henry B. Tibbitts.
per Geo. W. Tibbitts, Attorney.

(No Model.) 2 Sheets—Sheet 2.

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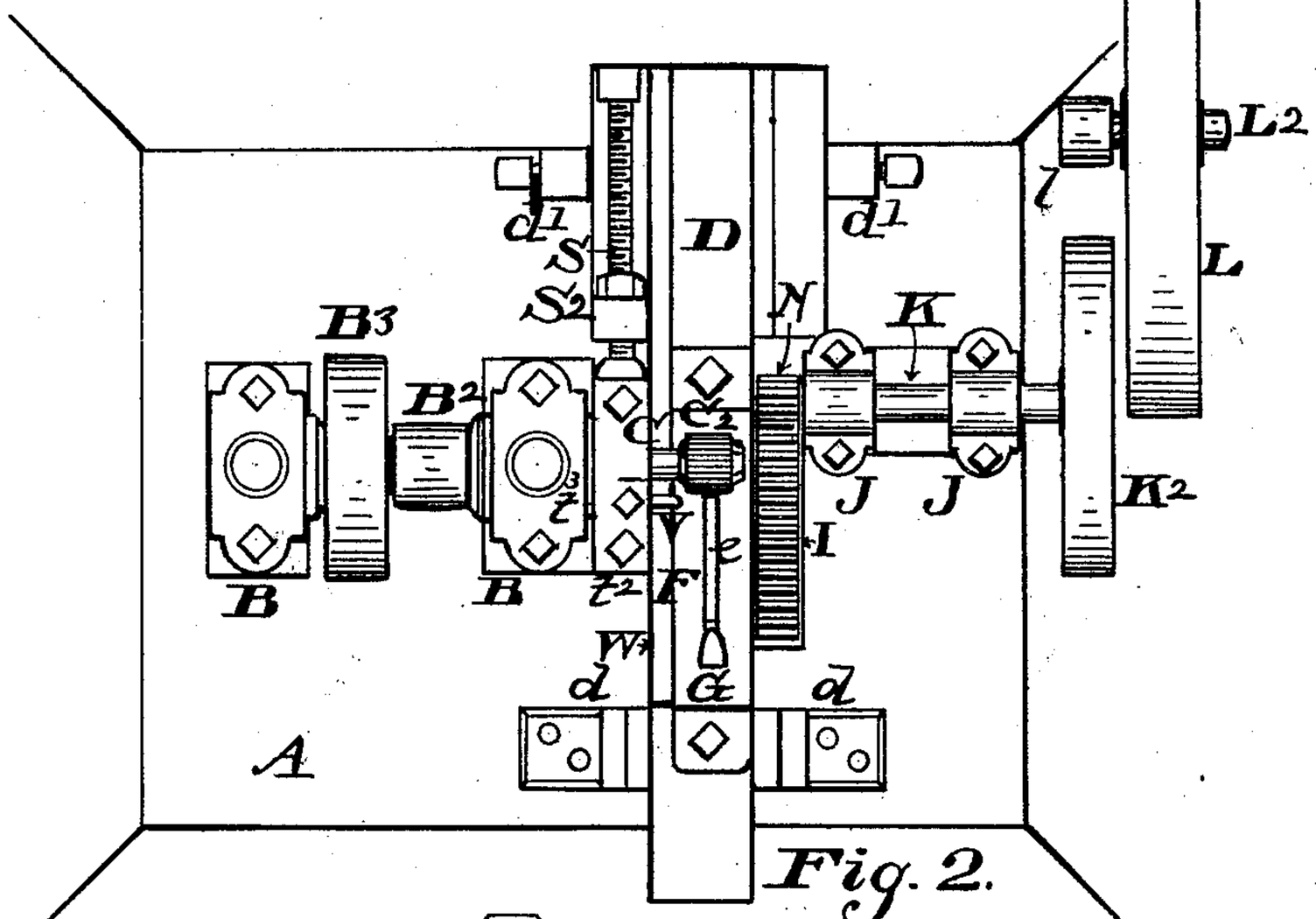

Fig. 2.

Fig. 6.

Fig. 5.

Fig. 3.

Fig. 4.

Fig 7.

UNITED STATES PATENT OFFICE.

HENRY B. TIBBITTS, OF GENEVA, OHIO, ASSIGNOR, BY DIRECT AND MESNE ASSIGNMENTS, TO CHARLES N. RAND, OF SAME PLACE, AND EMERY GALEN WETHERBEE, OF PAINESVILLE, OHIO.

ORGAN-REED-MILLING MACHINE.

SPECIFICATION forming part of Letters Patent No. 545,831, dated September 3, 1895.

Application filed December 19, 1894. Serial No. 532,379. (No model.)

To all whom it may concern:

Be it known that I, HENRY B. TIBBITTS, of Geneva, in the county of Ashtabula and State of Ohio, have invented certain new and useful Improvements in Machines for Milling Organ-Reeds, of which the following is a specification.

This invention relates to certain improvements in machines for milling the tongues of organ-reeds, having for its object to greatly facilitate and perfect the work; and it consists in, first, providing a means for overcoming the effects of expansion and contraction of the parts of the machine affected by rapid movement; second, in providing a means whereby, when the machine is set for milling any given size of reed the work shall proceed to the end without any variation in the work performed; third, in providing for the dropping and quick return of the reed-carriage, avoiding a second cut and a liability of breaking the tongue of a reed; fourth, in providing a reed-tongue bed-plate, which extends beyond the end of the tongue and prevents the end of the tongue being bent at the point while being milled.

In the accompanying drawings, Sheet 1, Figure 1 is a perspective view of my new reed-milling machine. Sheet 2, Fig. 2 is a top or plan view of same. Fig. 3 is a perspective view of the upper portion of the machine with the pulley and reed-carriage removed to show the reed-clamp and the adjusting-plate on the spindle-bearing support. Fig. 4 is a longitudinal section of the reed-carriage, showing the reed-holder and reed-bed piece. Fig. 5 is a detached perspective view of the reed-carriage. Fig. 6 is a vertical section of one of the posts or pillow-blocks and bearing, showing the spindle and milling-tool, also showing in section the adjustable plate having a guide-pin for guiding the movements of the reed-carriage relative to the milling-tool. Fig. 7 is a detached view of a reed-bed piece.

A is the table or bed of the machine, supported on suitable legs.

B B are posts or pillow-blocks mounted at one side of the table, having the boxes or bearings for a spindle-shaft upon which is placed a small pulley B^2 and balance-wheel B^3, the projecting spindle C carrying the milling-tool C^2, rapid motion being imparted to the same by a belt from a suitable power source connected with said pulley B^2.

D is the reed-carriage fixed to ride back and forth beneath the milling-tool in the guide-posts *d d* at the front side of the table and the guide-posts *d′ d′* at the opposite or rear side of the table.

d^2 is a sliding plate movably set in grooves in the inside faces of said guide-posts *d* and projecting down through a hole in the bed or table A.

d^3 is a pin fixed in the plate d^2 beneath the table or bed, and said pin rests on a spring D^2, (seen in Figs. 1 and 4,) which normally holds the plate d^2 up, with said pin bearing against the under side of the table. The front part of the carriage D rests upon the top end of said plate d^2 between the said guide-posts *d d*. The rear end of the carriage is broader than the front end and rests on the shoulders of the guide-posts *d′ d′*. Set-screws are provided in these guide-posts for the nice adjustment of the ways in which the carriage rides. To the top of the carriage is fixed the bed for holding the reed, and consists of a movable plate E, having a slot *e*, Fig. 5, in which a tongue-bed F (seen detached in Fig. 6) is placed and held by set-screws.

G is a clamp-hook for holding the heel of a reed, and consists of a bar placed in a perpendicular hole through the carriage and through a slot in the table-top, having a cross-pin *g*, (seen in Figs. 3 and 4,) which whenever the carriage is depressed allows said bar G to be supported by the pin *g*, lying on the table, there being a little space between the under side of the carriage and the table or bed A, as seen at *g*, Fig. 4. To the lower end of said bar is connected a strap *h*, carrying a weight H, and having its other end attached to the rear part of the under side of the carriage and passing through a slot H^2 in the table. The purpose of the weight is to bring the carriage quickly forward whenever the forward end is depressed by the pulling down of the aforesaid sliding plate d^2, which frees the

rack-bar I from the pinion N, as will be explained farther on in the workings of this machine.

Movements are imparted to the carriage for carrying the reed under the milling-tool by means as follows: Upon the side of the carriage is attached a rack-bar I. J J are posts or pillow-blocks secured to the table, having bearings which support a driving-shaft K, upon the end of which is attached a pulley-wheel, K^2. L is a driving-wheel mounted on the end of a shaft L^2, fixed to the two rear legs of the machine, midway down from the table, and joined to the hub of said wheel L is a small pulley *l*, from which a belt M connects with the pulley-wheel K^2, by means of which a slow motion is imparted to the shaft K for propelling the carriage. On the inner end of said shaft K is provided a pinion N, meshing with the rack-bar I on the carriage. The teeth on the pinion N and rack-bar I are made on a diagonal line relative to the axis of the pinion, the object of which is to make a continuous bearing of the teeth between the pinion and the rack-bar to insure a steady movement of the carriage. The return movement of the carriage is performed through the medium of the weight H and strap *h*, as hereinafter shown.

O is a foot-treadle fulcrumed at the rear end to a cross-rod P near the foot of the rear legs of the table, the forward end supported by a spring Q, attached to its under side and resting on a front cross-rod P^2, said spring being stiff enough to bear the weight of the operator's foot.

R is a rod connecting the treadle with the sliding plate d^2, by means of which said plate may be pulled down when required by a pressure of the operator's foot.

S is a screw set in a side lug S^2 at the side of the broad part of the carriage, and is designed for a stop to the forward movements of the carriage, the end of the screw striking against the post B. Said screw is adjustable for regulating the distance the carriage should go in accordance with the length of reed being milled.

T, Figs. 1, 2, and 3, is an adjusting-plate attached to the side of post B by means of a screw *t* at one side of the spindle C, the other side of said plate having a top flange lying on the top of the post and bearing B and a side flange resting against the front side of the post. Through the top flange a screw t^2 holds the plate onto the post, and a set-screw t^3, also fixed in said flange, serves for accurately adjusting the plate. On the plate very near to the spindle is provided a pin V. On the side of the carriage next to the plate T is attached a guide-strip W, which rides up against the said pin V. The purpose of the adjustable plate T with its pin V is as follows: The spindle-shaft has very rapid revolutions which are liable to generate heat in the bearings and thereby cause expansion in the metal. This would have a tendency to raise the milling-tool slightly from the carriage and result in a non-uniformity of cutting on the reed-tongues, so that there would be a variation of the thickness of tongues. To guard against this and provide for strict uniformity of work under all conditions of temperature, the adjustable plate T is fixed on the side of the bearing-post B, so that the pin V, which accompanies any such derangement of position of the spindle and milling-tool, serves as a certain guide for the plate W on the carriage to bear against as the carriage moves forward under said tool.

The working of the machine is as follows: The carriage being at the front and the foot-treadle depressed, a reed is placed on the bed-piece F, the forward hook-point of which extends sufficiently through the forward end of the reed-aperture to support the point of the reed-tongue. Now by releasing the pressure of the foot on the treadle the carriage is raised by the spring D^2. This brings the heel of the reed under the clamp-hook G and firmly holds the reed down upon the bed, as well as brings the former plate W up against the guide-pin V, at the same time, too, the rack-bar I is thrown into mesh with the pinion N, and the carriage is then carried along under the cutting-tool until the carriage arrives at the offset D^3, when the end of the carriage will drop. This will lower the reed from the cutting-tool, and also lower the rack-bar away from the pinion N. Now by depressing the treadle the sliding plate d^2 is pulled down, releasing the carriage at the offset, and the downward pull of the weight H upon the strap *h* draws the carriage back again toward the operator, the strap sliding on the edge of the slot H^2 in the table. The carriage also carries the clamp-hook G with it, said hook-bar riding on its pin *g* on the top of the table. The reed may now be removed from the carriage and another one applied and the same operation repeated.

It will be seen that a full set of reed-bed pieces F corresponding with the sizes of reeds are to be employed in the performance of milling a full set of reeds.

Having described my invention, I claim—

1. In a reed milling machine the combination with the spindle, spindle bearing and cutter head C^2 of the adjustable plate T, provided with pin V, mounted on the side of the bearing post on a screw *t*, and the screws t^2 and t^3 in the top flange of said plate, adapted for adjustment as a guide for the reed carriage relative to the cutting tool, as described.

2. In a reed milling machine the combination with spindle C cutter C^2 and the adjusting plate T having guide pin V and mounted on the post and bearing B, of the reed carriage, having the off-set D^3 and the guide strip W, bearing against said guide pin V, the reed holder E mounted on said carriage, and slotted at *e*, the reed bed F held in said slot *e*, the rack bar I on side of the carriage and

means for moving the carriage forward under said cutting tool, substantially as described and for the purpose set forth.

3. In a reed milling machine the combination with the carriage D mounted to ride on the lugs *d*. *d*, *d'*. *d'*, and having the off-set D^3 of the clamp hook G fixed in the vertical hole in the carriage D and holder E, the strap *h* having one end attached to said hook bar G, and the other end attached to the under side of the carriage, said strap depending through slot H^2 in the table, and carrying the weight H, adapted for clamping the hook upon the reed, and for drawing the carriage back for quick return, substantially as described.

4. In a reed milling machine, the combination with the table of the treadle O, fulcrumed to rear cross-rod P, the spring Q attached to under side of treadle and resting on front cross-rod P^2, the rod R connecting the treadle with the sliding plate d^2, the spring D^2 supporting said sliding plate, the reed carriage D, hook bar G held in a hole in said carriage, strap *h* having one end attached to the carriage, and the other end attached to the lower end of hook bar G, the weight H supported on said strap, the arrangement of the parts being such that when the treadle O is depressed, the carriage is released by the pulling down of the plate d^2, and the weight quickly draws the carriage backward for return of same substantially as described.

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Witnesses:
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E. E. MARTIN.