

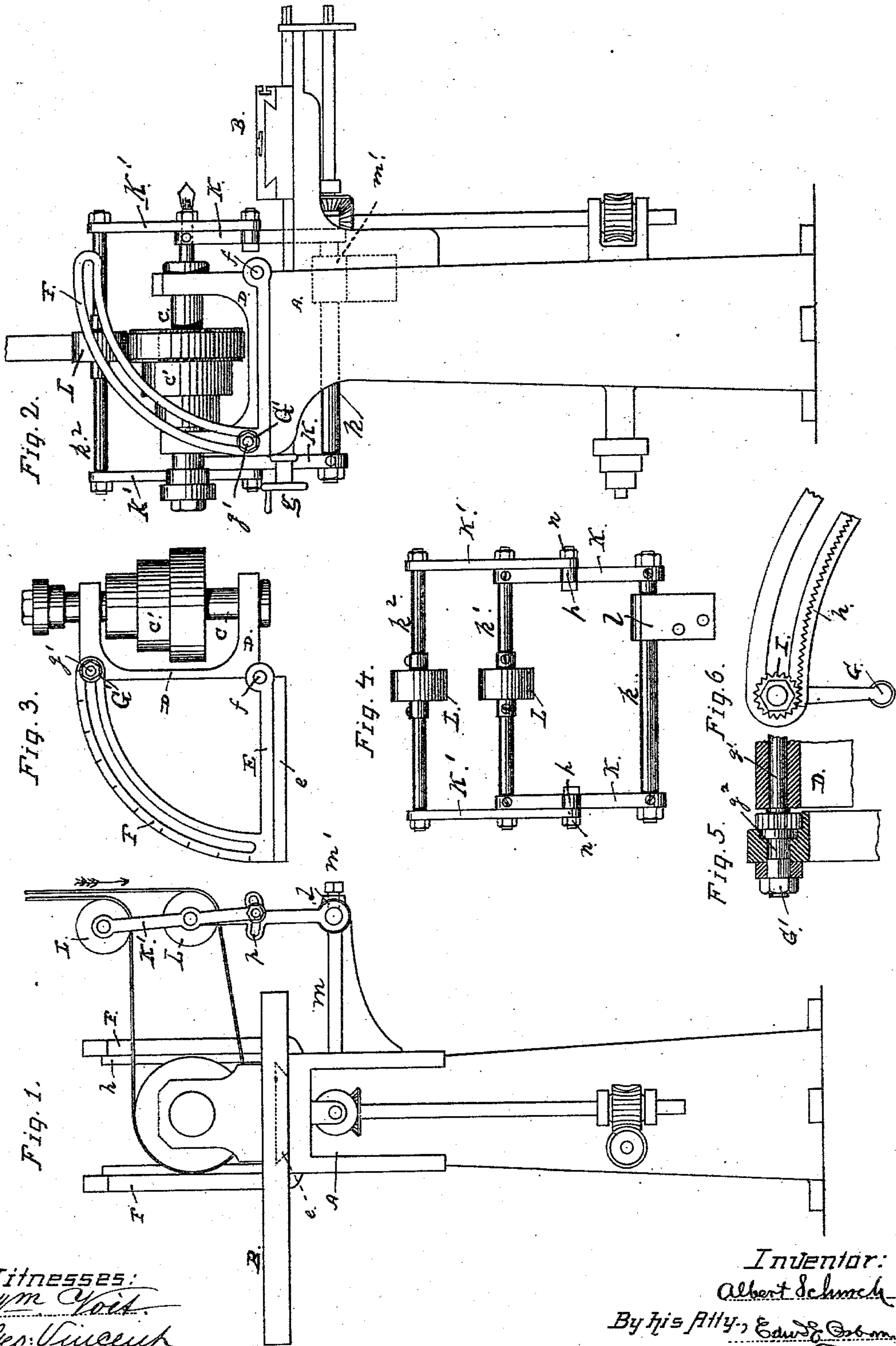
(No Model.)

A. SCHURCH.

ADJUSTABLE HEAD FOR MILLING MACHINES.

No. 283,668.

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WITNESSES:
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UNITED STATES PATENT OFFICE.

ALBERT SCHURCH, OF SAN FRANCISCO, CALIFORNIA.

ADJUSTABLE HEAD FOR MILLING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 233,638, dated August 21, 1883.

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To all whom it may concern:

Be it known that I, ALBERT SCHURCH, a citizen of the Swiss Republic, residing in the city and county of San Francisco, State of California, have made and invented certain new and useful Improvements in Adjustable or Swinging Heads for Milling-Machines; and I do hereby declare that the following is a full, clear, and exact description of my said invention, reference being had to the accompanying drawings.

My invention relates to a novel construction of head for milling-machines.

It consists in mounting the head upon a swinging bearing in such manner that it can be turned up and fixed in any position from horizontal to vertical, so that the spindle can be set to work in either of these two positions, or at any intermediate point between. It also includes a means of keeping the driving-belt upon the spindle-pulley and in proper relation thereto to run true with any one of the pulleys of the cone series in all adjustments of the swinging head.

The following description fully explains the nature of my said invention and the manner in which I proceed to construct, use, apply, and carry out the same, the said drawings being referred to by figures, and letters as follows:

Figure 1 represents a front view of a milling-machine, of any common construction, having my improvements applied to it. Fig. 2 is a side elevation taken from the left-hand side of Fig. 1. Fig. 3 is a view of the swinging head detached from the bed, and showing, also, the spindle turned into vertical position. Fig. 4 is a detail view of the adjustable belt-controlling frame. Figs. 5 and 6 are detail views, on a larger scale, of the device for moving and setting the head.

A represents the bed of a milling-machine; B the table, and CD the stock constituting the head. The cutter, being placed in the end of the part C which is nearest the table B, will be brought to act horizontally against any article thereon when in position shown in Figs. 1 and 2, and vertical when in position shown in Fig. 3. Instead of fixing the head directly to the bed, I now make it to swing and turn upon a hinge at the front, so that it can be set to pre-

sent and operate the tool in any position from horizontal to vertical, and intermediate inclined or angular positions, as required. To accomplish this I attach the head to a slide, E, by a hinge-joint, *f*, at the front, so that on this point as a center the head can swing. The slide is connected by a dovetail groove, *e*, to the bed, and a feed-screw, *g*, at the back, is employed to move the slide to set the tool to and from the work on the table.

To the slide E, at the rear end, I fix two stationary slotted arcs, F, one on each side of the stock D, and by means of a shaft, *g'*, carried through the rear part of the stock at the bottom, and having studs at each end to fit the slots, I connect the head to these arcs, that thus form guides and supports for the rear end of the stock. The ends or stud portions that play in the slots have rollers or loose collars *g''*. A binding-nut, *G'*, on the end of one of the studs serves as a means for holding the rear end of the stock wherever it may be set, and a handle, *G*, on the opposite end of the shaft *g'*, is provided as a means of rotating the shaft. A pinion, *I*, is fixed on this shaft at each side of the stock and on the inner side of the curved guides F to engage with the curved racks *h* on the side of the arc just below the slots, so that rotation of the pinion will carry the stock around between the curved guides F upon the hinge *f* as a center. Figs. 3, 5, and 6 show this construction. Now, by this feature or part of my improvement the head is adjusted with ease and any desired degree of exactness, so that the tool is under complete control of the workman, and can be set to any position between horizontal and vertical without changing the work on the table.

The other part or feature of my improvement is a means for controlling the belt that drives spindle *c*. Such means or device is required to keep the belt on the pulley *c'* in all positions of the head. For this purpose I fix to one side of the bed A a bracket, *m*, having on the end a swinging box, *l*, in which is set the lowermost rod or bar, *k*, of a rectangular frame, K K'. This lowermost rod is free to slide through the box, but is held at any required point by a set-screw, *m'*. The sides K K' of this frame are two sets of arms or flat bars,

the upper two of which are swiveled at their middle to the top ends of the lower two, at the point where the second or intermediate shaft, k' , connects the tops of the lower arms.

5 A shaft, k^2 , connects the upper ends of the swivel's sides K' together, and by means of a clamp-nut and bolt, n , working through a curved slot, p , in the side of the arm or bar K , the lower end of each bar K' is secured to the

10 lower bar. The top and intermediate shafts carry pulleys L L , the upper one of which, being in the jointed half of the frame, can be thrown in or out to act as a tightener-pulley. This belt-controlling frame then swings on the

15 point K as a center, and is also capable of being shifted laterally to bring the pulleys L L into line with any particular one of the cone-pulleys C' . The pulleys L are therefore always set to be in the same plane with the

20 working-pulley on the spindle c , so that the belt is held in line with it and kept in place and at proper tension.

By the arrangement of belt-tightening mechanism shown I can tighten the belt going to

25 or coming from the head separately or together. Suppose, for example, that the belt is coming in direction shown by arrow, Fig. 1, and that the upper and lower pulleys are rigidly connected by nut and bolt n , by in-

30 clining the frame in one direction or the other, and fixing it there, the belt both coming and going will be loosened or tightened, according to direction of inclination. Then by loosening the nut n the relative position of the two

35 pulleys can be changed. By inclining the lower pulley toward the strap the strap coming will be pressed outward. By inclining the upper pulley in the same direction the belt, as it leaves the head, is pressed outward

and tightened. As the belt is put upon one 40 or the other step on the head the frame bearing the pulleys can be moved back and forth through bearing l to bring the pulleys in line with the step being used.

Figs. 1, 2, and 4 of the drawings illustrate the 45 construction and application of this belt-controlling frame.

Having thus fully described my invention, what I claim, and desire to secure by Letters 50 Patent, is—

1. The combination, with the slide, of the stock pivoted or hinged at the front to the slide, the slotted arcs F F , and the studs g^2 , and means, substantially as described, arranged 55 relatively to the spindle-pulleys, for holding the driving-belt in working position on any particular pulley of the cone.

2. The combination, with the horizontally-adjustable slide E , of the stock D , pivoted or hinged thereto at the front, the slotted arcs F 60 F , springing from the back of the slide, the stud connected with the stock and working through the curved slots, and a means, as the curved racks h and the pinions on the shaft g' , for moving and setting the stock D , substan- 65 tially as described.

3. The combination, with the swinging stock, of the swinging belt-controlling frame K 70 k L , having a lateral adjustment to bring the pulleys in line with any particular one of the cone-pulleys of the stock-spindle, and having a swinging movement corresponding to the movement of the stock, substantially as de-

scribed.

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Witnesses:

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