

No. 619,501.

Patented Feb. 14, 1899.

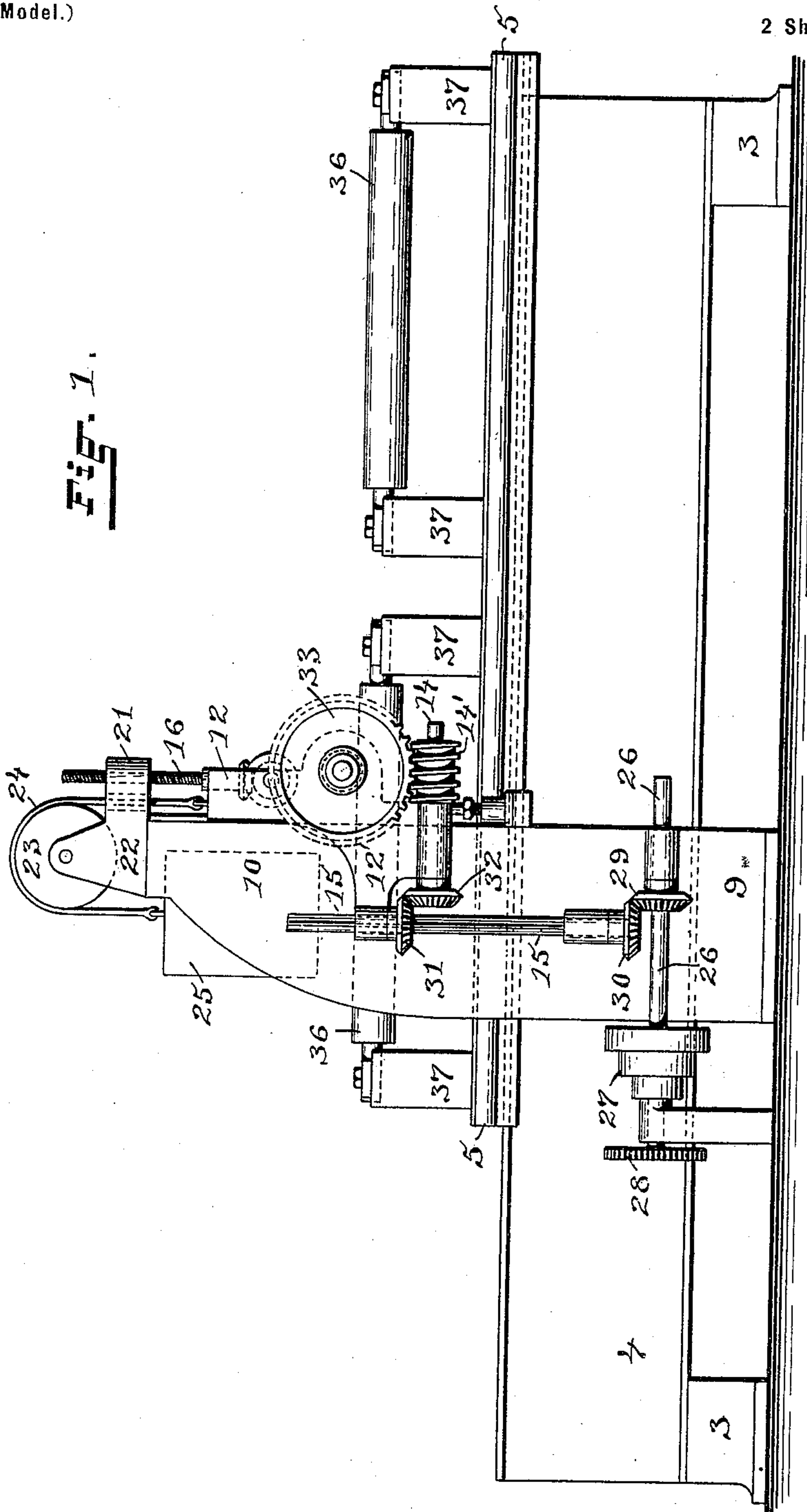
J. C. POTTER.
MILLING MACHINE.

(Application filed Oct. 25, 1897.)

(No Model.)

2 Sheets—Sheet 1.

Fig. 1.



WITNESSES:

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INVENTOR:

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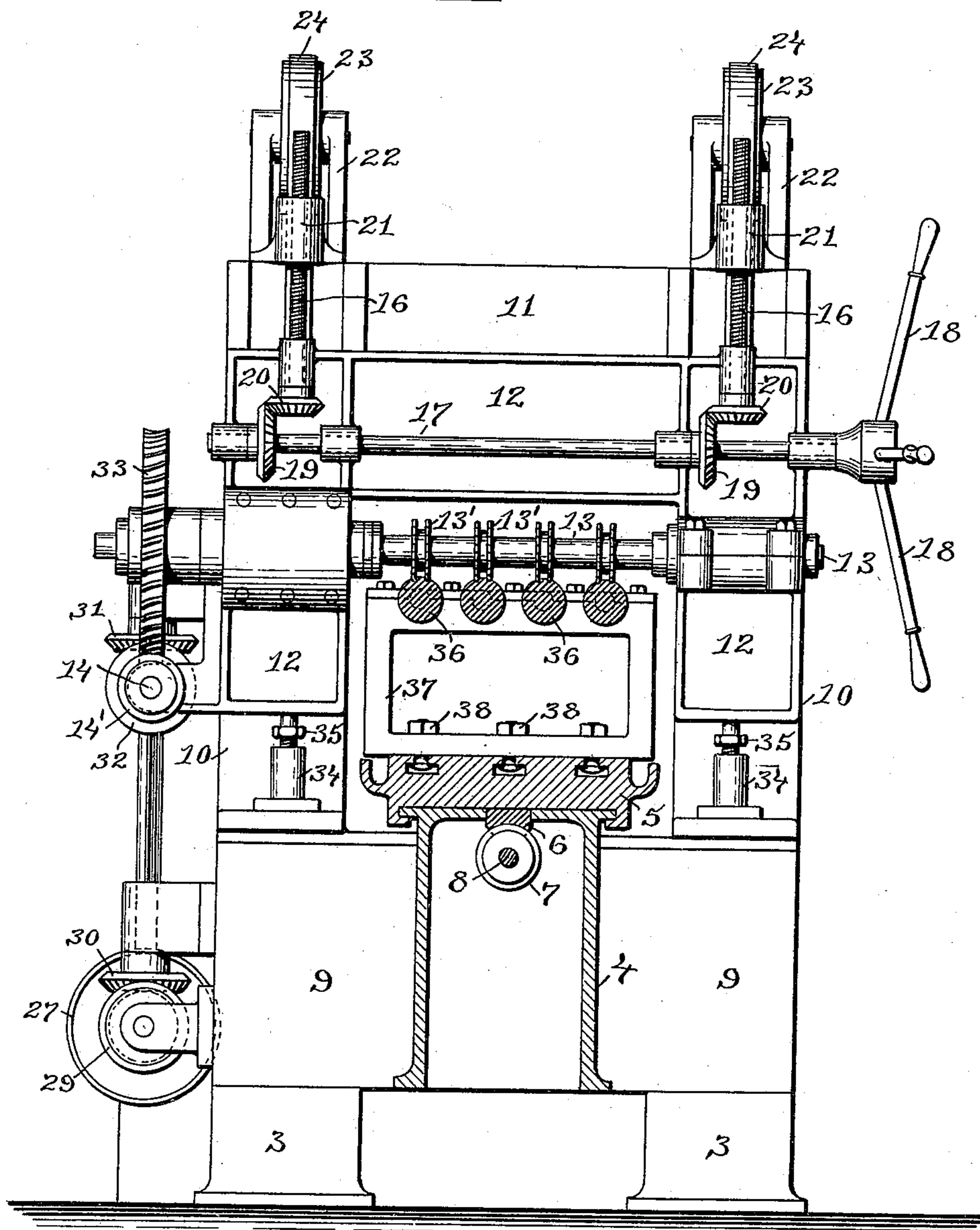
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2 Sheets—Sheet 2.

Fig. 2.



WITNESSES:

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UNITED STATES PATENT OFFICE.

JAMES CHARLES POTTER, OF PAWTUCKET, RHODE ISLAND, ASSIGNOR TO
THE HOWARD & BULLOUGH AMERICAN MACHINE COMPANY, LIMITED,
OF SAME PLACE.

MILLING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 619,501, dated February 14, 1899.

Application filed October 25, 1897. Serial No. 656,281. (No model.)

To all whom it may concern:

Be it known that I, JAMES CHARLES POTTER, of Pawtucket, in the county of Providence and State of Rhode Island, have invented new and
5 useful Improvements in Milling-Machines; and I hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming part of this specification.

10 This invention has reference to an improved machine for fluting or longitudinally grooving the drawing-rolls for spinning-machines and similar articles.

15 Drawing-rolls for spinning-machines have to be longitudinally grooved around their periphery with a series of V-shaped grooves. These grooves have heretofore been made one at a time by a reciprocating planing-cutter. This operation is slow and costly. The ob-
20 ject of this invention is to reduce the cost of the longitudinal grooving of these drawing-rolls and similar articles; and to this end the invention consists in the peculiar and novel construction and the combination of parts
25 whereby an organized machine is produced by which two or more, and preferably eight or more, drawing-rolls can be operated upon to cut the longitudinal grooves, as will be more fully set forth hereinafter.

30 Figure 1 is a side view of the machine, showing the mechanism for turning the cutter-shaft and simultaneously operating the cutters. Fig. 2 is a transverse sectional view of the machine, showing the mechanism for
35 adjusting the cutters.

In the drawings, 3 3 indicate the supports of the machine; 4, the longitudinal bed; 5, the carriage sliding on the longitudinal bed; 6, a worm-rack secured to and extending cen-
40 trally along the under side of the carriage 5; 7, a worm secured to the shaft 8 and connecting with the worm-rack 6 for reciprocating the carriage and the work supported on the same. Instead of the worm and worm-rack
45 shown in Fig. 2 to operate the carriage 5 the well-known rack-and-pinion mechanism used in planing-machines to operate the carriage may be used. 9 9 indicate the transverse
50 beds on which the vertical slide-posts 10 10 are supported; 11, a stile-plate connecting the upper ends of the vertical slide-posts 10.

The carriage 12 is provided with the usual dovetail ways, which engage with correspond-
10 10. The carriage 12 supports the cutter- 55 shaft 13 in suitable bearings. The arm 12' of the carriage 12 extends at a right angle with the front of the carriage on the side of one of the vertical slide-posts 10 and has the jour-
60 nal-supports for the worm-shaft 14 and the spline-shaft 15. The carriage 12 also sup- ports the journal-bearings of the screw-shafts 16 16 and the bearings for the shaft 17, at one end of which are carried the hand-levers 18 18,
65 which may be replaced by an ordinary hand-wheel, if desired.

On the shaft 17 are secured the bevel-gears 19 19, and these engage with the bevel-gears 20 20, secured to the lower ends of the screw-
70 shafts 16 16, which extend through and engage with internally-screw-threaded nuts in the arms 21 of the brackets 22 22, firmly se-
75 cured to the upper end of the vertical slide-posts 10 10, and form the journal-bearings for the pulleys 23 23. The straps 24 have one
80 end secured to the carriage 12 and the other end to the counterweights 25, which counter- balance, or nearly counterbalance, the weight of the carriage 12 and the parts supported by the same.

The mechanism for operating the cutter-
shaft 13, on which the milling-cutters 13' are secured, preferably in pairs, consists in the shaft 26, on which the pulleys 27 are secured. These pulleys are driven from a pulley on a
85 shaft, usually a counter-shaft, provided with a loose and a tight pulley and a belt-shipper. The gear 28, secured to the shaft 26, connects by suitable gears with the shaft 8 or any
90 other mechanism used to reciprocate the carriage 5. The bevel-gear 29 is secured to the shaft 26 and connects with the bevel-gear 30 on the spline-shaft 15. The bevel-gear 31 is supported by the arm 12' of the carriage 12 and moves with the same. The bevel-gear 31
95 engages with the bevel-gear 32 on the worm-shaft 14, carrying the worm 14', which engages with the worm-gear 33, secured to the cutter-shaft 13.

The carriage 12, supporting the cutter-shaft 100 13 and the milling-cutters 13', requires careful and accurate adjustment. To secure this,

the internally-screw-threaded posts 34, provided with the screw-threaded stops 35, are placed under the carriage and secured to a rigid part of the frame of the machine to form
5 adjustable stops and supports for the unbalanced weight of the carriage 12.

The drawing-rolls 36 36 to be longitudinally grooved are secured to the bolster-frames 37, which are securely fastened to the carriage 5.

10 In operating the machine a series of sets of drawing-rolls are secured to the bolster-frames 37. In Fig. 2 two sets are shown to illustrate the machine; but in practice the machine may be constructed to support three,
15 four, or more sets. When the rolls are secured, the carriage 5 and the work carried by it are on the right-hand or the left-hand end of the longitudinal bed and beyond the milling-cutters 13' 13'. The carriage 12 is now
20 lowered so as rest on the stops 35 35, which are adjusted to bring the milling-cutters into the position to cut the required depth of the grooves. The machine is now started, the milling-cutters revolve, and the carriage 5
25 carries the work under the cutters along the whole series of rollers, cutting two grooves longitudinally into each of them.

As the grooves in the drawing-rolls of spinning-machines are of little width and depth,
30 they may be cut when feeding in both directions. When, therefore, the cutters have passed the ends of the last set of rolls, they may be partially turned and the carriage reversed, so as to cut the grooves into the rolls
35 in the opposite direction, thereby greatly economizing in time and producing a large quantity of work with one machine and one attendant.

40 Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. In a machine for grooving the drawing-rolls for spinning-machines, the combination with the stationary frame of the machine, the reciprocating carriage 5, the bolster-frames 45 37 37, the vertical slide-posts 10 10, the brackets 22 22, and the internally-screw-threaded arms 21 21, of the carriage 12 partly counter-weighted by the weights 25 25, the screw-shafts 16, the shaft 17, and means for turning 50 the same by hand, the screw-shafts 16 16 connected with the shaft 17 by bevel-gears and engaging with the screw-threaded arms 21 21, the cutter-shaft 13, and the milling-cutters 13' 13' on the same, whereby the cutters 55 may be raised and lowered, as described.

2. In a milling-machine, the combination with the carriage supporting the work and the vertically-sliding carriage supporting the cutter-shaft and the milling-cutters of the 60 posts 34 34, and the adjustable stops 35 35, whereby the vertically-sliding carriage is supported on opposite sides, and the milling-cutters may be accurately adjusted to the work, as described. 65

3. In a milling-machine, the combination with the horizontal carriage 5 and the work-supports, the vertical carriage 12, the cutter-shaft 13, and the milling-cutters 13' 13', of the worm-gear 33 secured to the cutter-shaft, 70 the arm 12', the worm-shaft 14, the spline-shaft 15, the shaft 26, and the mechanism intermediate the shaft 26, and the worm-gear 33, whereby the power is transmitted to the milling-cutters, as described. 75

In witness whereof I have hereunto set my hand.

JAMES CHARLES POTTER.

Witnesses:

R. J. DAVIS,

E. R. RICHARDSON.