

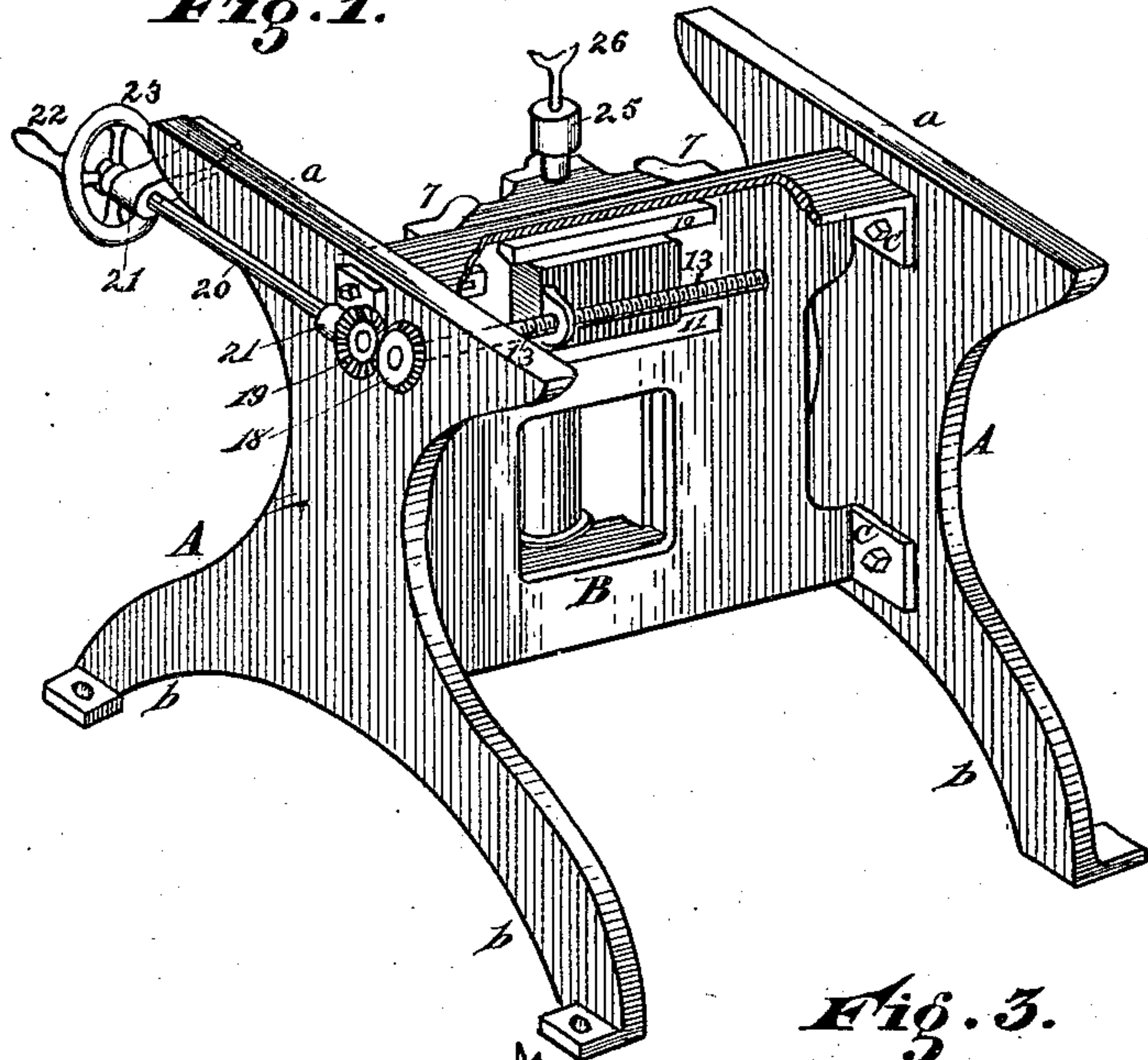
(No Model.)

J. KUEHNLE.  
FRIZZING MACHINE.

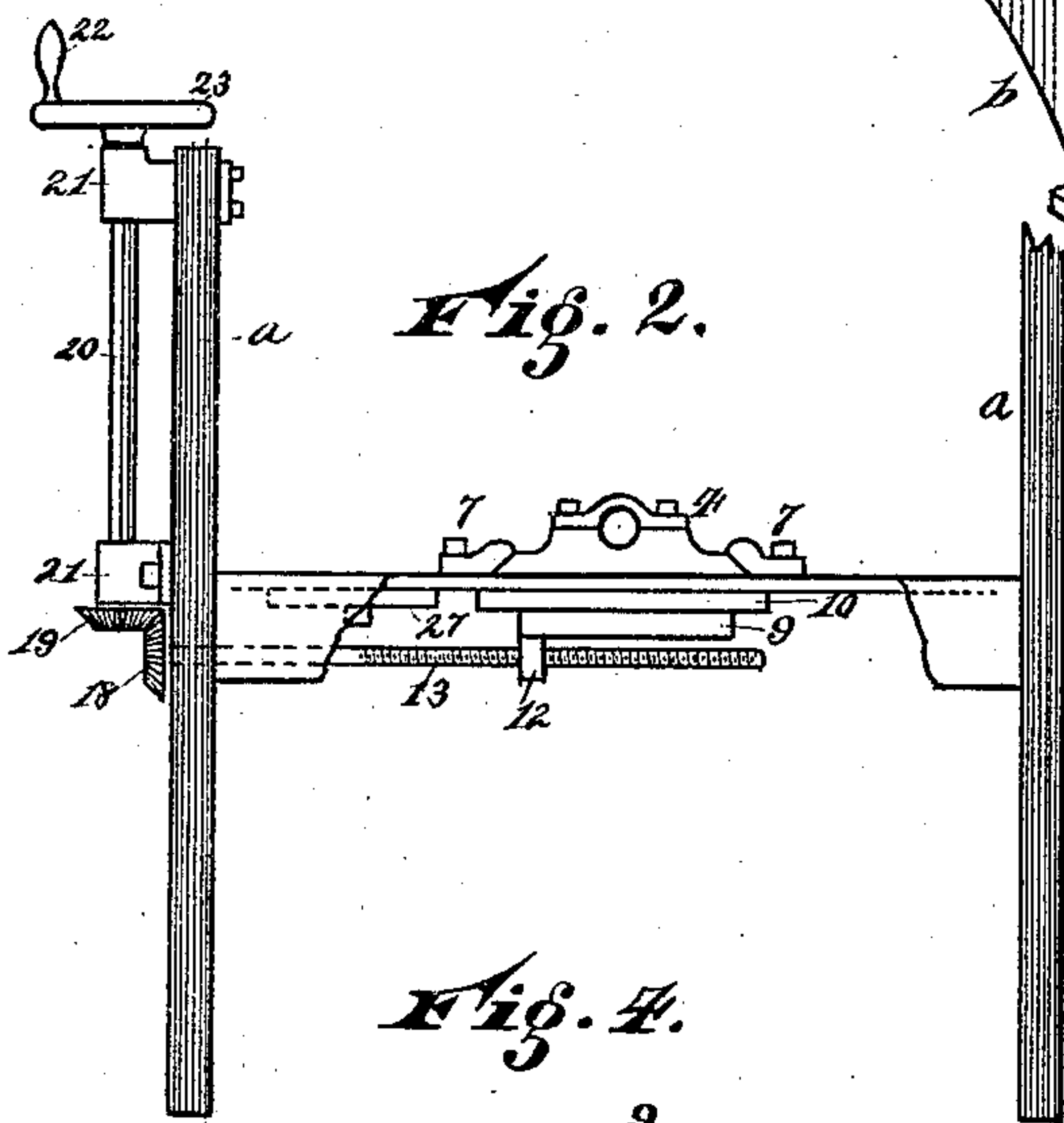
No. 345,514.

Patented July 13, 1886.

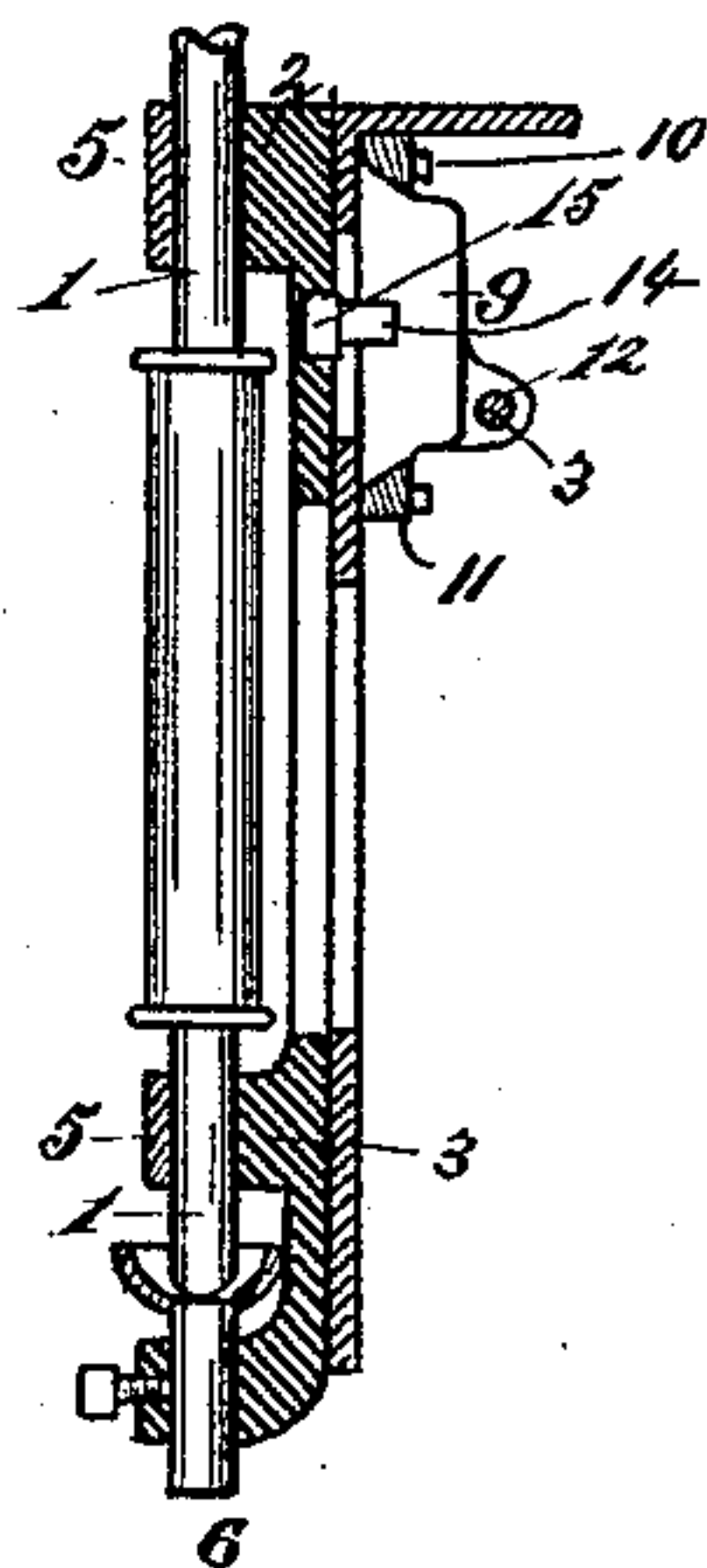
*Fig. 1.*



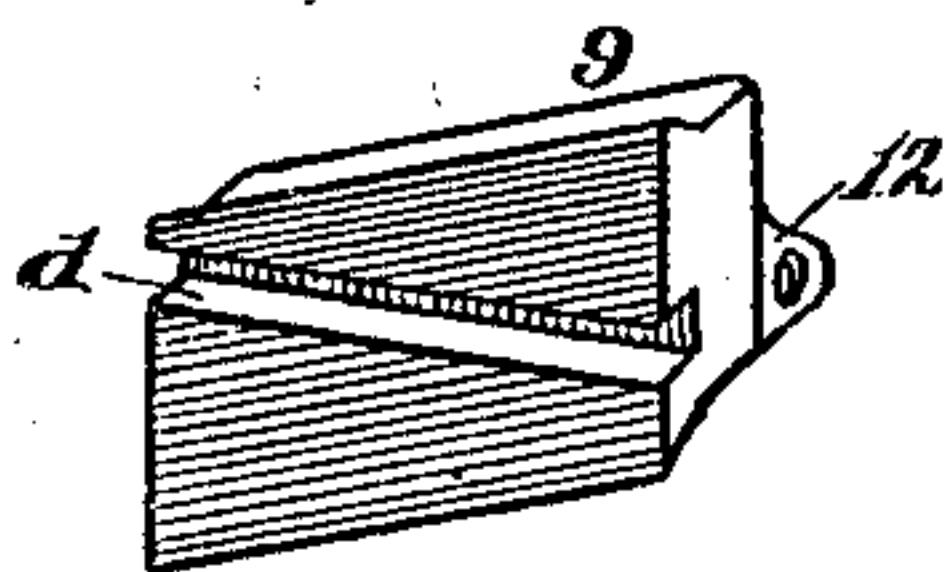
*Fig. 2.*



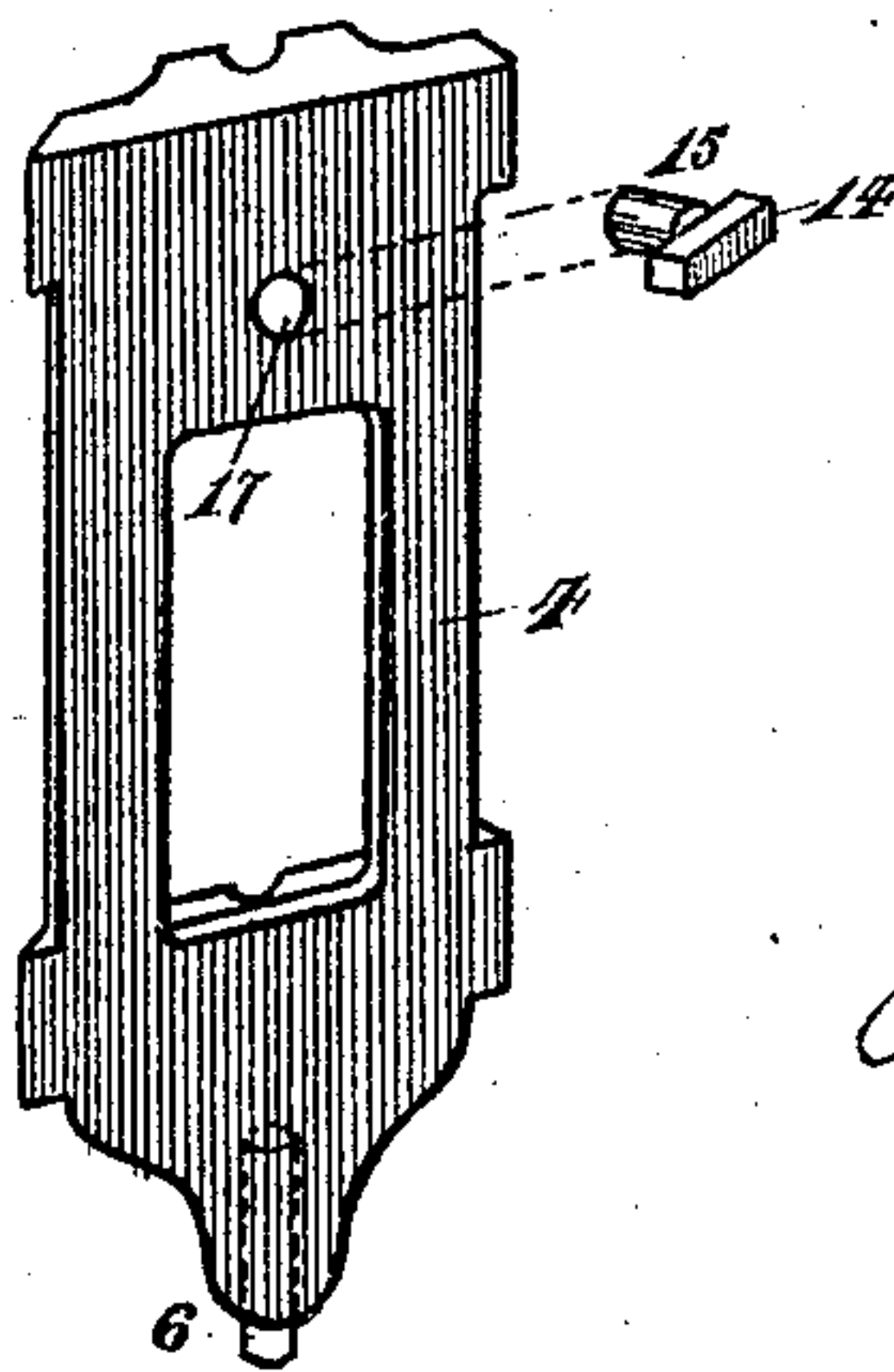
*Fig. 3.*



*Fig. 4.*



*Fig. 5.*



Attest

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# UNITED STATES PATENT OFFICE.

JOHN KUEHNLE, OF CINCINNATI, OHIO.

## FRIZZING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 345,514, dated July 13, 1886.

Application filed February 1, 1886. Serial No. 190,558. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN KUEHNLE, a resident of Cincinnati, in the county of Hamilton and State of Ohio, have invented certain new and useful Improvements in Frizzing-Machines, of which the following is a specification.

My invention relates particularly to frizzing or shaping machines which employ a spindle carrying a cutter that is raised or lowered by the operator during the operation of frizzing or shaping. In the employment of such a spindle it has to be suspended upon the devices which raise and lower it. The frizzing-tool employed to do such work runs at a very high speed. It is very important, therefore, to have these devices very substantial, so that there will be no lost motion of the suspending and raising and lowering mechanism. At the same time sufficient speed and power must be provided to raise and lower the tool quickly and smoothly. All these advantages I accomplish by my improvements, herein described, in a better manner than by the use of the devices hitherto employed for that purpose, all of which will be fully set forth in the description of the accompanying drawings, making a part of this specification, in which—

Figure 1 is a perspective view of my improved frizzing-machine with the table removed. Fig. 2 is a top plan view of Fig. 1. Fig. 3 is a central cross-section with the bit or cutter removed. Fig. 4 is a perspective view of the raising and lowering block. Fig. 5 is a perspective view of the journal-frame.

A represents the sides of the frame.

B represents the central frame-piece, which is provided with flanges *c*, through which pass bolts rigidly securing it to the sides A A.

*b* represents the feet of the posts.

1 represents the spindle, which is vertically supported in journal-boxes 2 3, which are cast with or secured to and form a part of the journal-frame 4.

5 represents caps of the journal-boxes.

6 represents a step in which the bottom of the spindle journals, and is provided with the usual facilities for oiling the parts.

7 represents gibs, which are secured or bolted to the central frame-piece, B, in the ordinary manner. These gibs are shown beveled, so as to serve as ways or guides for the beveled

edges of the frame 4, which slides therein. The step 6 at the bottom of the spindle is either cast with or rigidly secured to the journal-frame, so that the spindle and step are raised and lowered by raising and lowering the journal-frame. This is accomplished by the following means:

9 represents a sliding block or carriage, which moves in ways 10 11, that are rigidly secured upon the back side of the frame-piece B.

12 represents an ear or lug projecting from the rear edge of said block 9. It is tapped with screw-threads to receive the screw-rod 13, which is provided with screw-threads and taps through the ear 12.

*d* represents a gain cut diagonally across the front face of the block 9, which serves as a way in which travels a feather, 14. This feather is supported by a stud which swivels in aperture 17 of the journal-frame.

18 represents a bevel-gear keyed upon shaft 13.

19 represents a similar bevel-gear keyed upon shaft 20.

21 represents journal-boxes secured to one of the sides A, in which the shaft 20 journals.

22 represents a crank secured to the hand-wheel 23, by means of which shaft 20 is revolved, driving the bevel-gears 18 and 19 and shaft 13 to reciprocate the block 12 in the ways 10 and 11. As the block 12 is reciprocated to and fro, it raises and lowers feather 14, which slides in the gain *d*, thereby raising and lowering journal-frame 4 and the spindle 1.

26 represents a bit or cutter-head, which is secured to collar 25, by means of which the cutter is rigidly attached to the spindle 1.

The operation of the machine is as follows: A table, with the proper aperture to receive the spindle and cutter, rests upon the top of the stiles *a*, upon which the stuff is placed, and suspended above the cutter 26. The cutter 26 is lowered, so that it does not come in contact with the stuff until it is placed in position to be operated, when the crank 22 is turned in the proper direction to raise the cutter to the desired position to shape or cut the stuff. This means of raising and lowering the bit I have found to be very superior, as the journal and spindle are rigidly supported by the block 9 and feather 14, so as to prevent



any material lost motion and jar or vibration of the spindle. The lost motion in the gears 18 and 19 and in the screw-threads upon the shaft 13 is taken up before the block is started in its  
5 motion for raising and lowering, and the strain of the spindle is not imparted to these parts; hence lost motion does not affect the correct operation of the spindle 1.

27 represents an adjustable gage, which is  
10 slotted and held in position by a screw, and is attached to the frame at one side of the block 12, against which strikes the sliding block 9 to limit its upward movement. This stop enables the work to be gaged, so as to prevent  
15 the spindle from rising too high. No such gage is needed upon the opposite side, as the spindle is lowered a sufficient distance below the work to allow the material to be adjusted over the cutter.

20 It is obvious that this invention can be usefully employed in boring, shaping, and other similar machines.

Having described my invention, what I claim as new is—

25 1. In a shaping or frizzing machine, the spindle 1, adjustably supported in boxes formed on the journal-frame, in combination with the vertically-adjustable step 6, the reciprocating incline, gained block 9, and sliding

feather 14, whereby the journal-boxes and  
30 spindle are raised and lowered with the reciprocation of said block, substantially as specified.

2. In combination with the journal-frame 4, supporting the spindle 1, having an inde-  
35 pendent vertical adjustment, the feather 14, sliding in the inclined gain  $d$  of reciprocating block 9, the crank 22, and its transmitting shafts and gears, connecting with said block to reciprocate the same, substantially as speci-  
40 fied.

3. In combination with the frame of a boring-machine, the journal-frame 4, supporting the vertical spindle 1, having an independent  
45 vertical adjustment by means of the movable step 6, the feather 14, swiveling in said journal-frame and traveling in the inclined gain  $d$ , and the reciprocating block 9, whereby the spindle is raised and lowered by the recipro-  
50 cation of the gained block, substantially as specified.

In testimony whereof I have hereunto set my hand.

JOHN KUEHNLE.

Witnesses:

JNO. S. ROEBUCK, Jr.,  
M. E. MILLIKAN.