

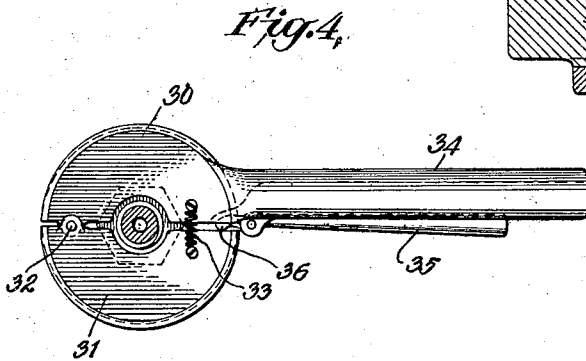
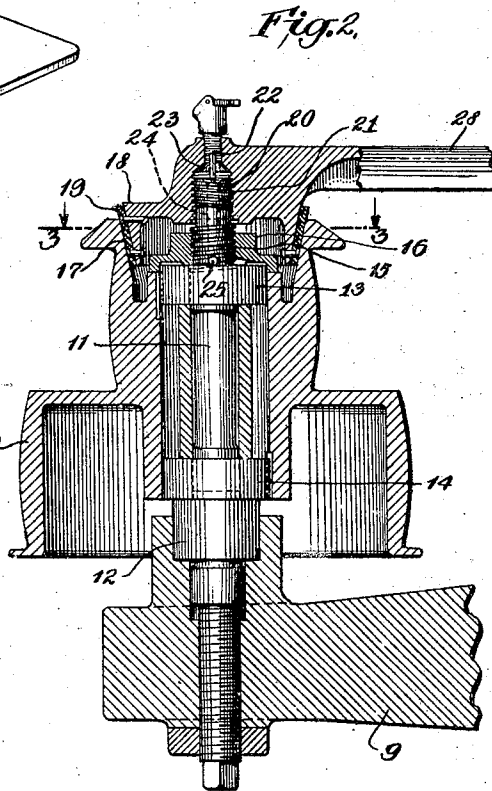
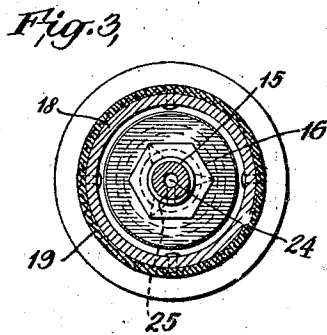
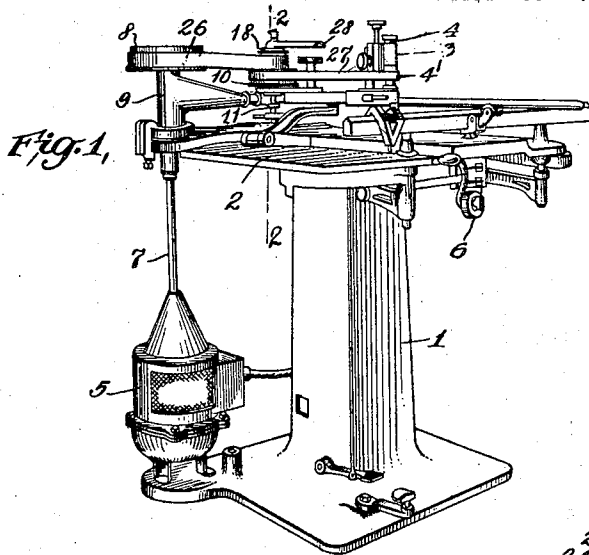
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F. W. WESTON

ROUTING MACHINE

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UNITED STATES PATENT OFFICE.

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ROUTING MACHINE.

Application filed December 4, 1920. Serial No. 428,285.

To all whom it may concern:

Be it known that I, FOLKE W. WESTON, a citizen of the United States, and a resident of the borough of Brooklyn, in the city of New York, county of Kings, and State of New York, have invented certain new and useful Improvements in Routing Machines, of which the following is a specification.

My invention relates to an improvement in routing machines and an object thereof is to provide a braking mechanism whereby the moving parts of the machine may be quickly checked when the motor or other source of power by which the machine is driven is shut off.

Another object of my invention is to provide a construction of the character designated which will be simple, compact, efficient and well adapted to perform the service required of it.

In routing machines as now constructed it is the usual practice to drive the same by an electric motor belted through a series of belts and pulleys to the tool spindle of the machine. The tool or cutter spindle is driven at a high rate of speed and inasmuch as the routing tool must be changed frequently, it becomes necessary to provide some type of apparatus whereby the tool spindle may be quickly brought to rest in order that no time may be wasted unnecessarily in changing tools. Under present practice it is customary for the workman to place his hand upon the tool spindle but inasmuch as the moving parts of the machine are usually mounted in ball bearings it requires quite some effort on the part of the operator to bring the parts to rest and the friction required is sufficiently high to frequently cause the workman to burn his hands.

In order that I may realize the results sought I have provided in the present device a braking mechanism which is preferably applied to the step cone pulley employed in driving routing machines. This braking mechanism is very simple in construction and is so located as to be convenient for manual operation by the work-

man when it is desired to bring the machine to rest.

An advantageous feature of my invention is the easy manner in which the brake may be adjusted to take up wear.

A further advantage resides in the automatic release of the brake, that is to say, movement of the brake to inoperative position, when the routing mechanism is started up.

A further advantage of my improved structure is a means which I have provided whereby the bearings on which the cone pulley to which my device is applied, is mounted, may be lubricated.

In the accompanying drawings wherein an embodiment of my invention has been shown,—

Fig. 1. shows a routing machine in perspective, with my device applied thereto;

Fig. 2 is a section taken substantially on the line 2—2 of Fig. 1;

Fig. 3 is a section taken on the line 3—3 of Fig. 2; and

Fig. 4 illustrates in plan a modified form of my improved apparatus.

Inasmuch as routing machines in general are well known in the art, it will be unnecessary to go into much detail in describing the same.

In the accompanying drawings, 1 illustrates a base for a routing machine, 2 a table mounted upon the base and 3 a tool head carrying a tool spindle 4 and pulley 4'.

The motive power for the machine is supplied by an electric motor 5 which may be of any desired type and the circuit of which may be controlled by a switch, such as 6, mounted on the table of the machine. The armature shaft 7 of the motor extends vertically above the top of the table 2 and carries at its upper end a pulley 8. Mounted upon a frame 9 which may be integral with or secured to the table 2 in any suitable manner, is a step cone pulley 10 intermediate the pulley 8 and the spindle 4. This pulley is mounted upon a spindle 11 passing through the frame 9 and in which it has a bearing as indicated at 12. The pulley 10 is carried upon the spindle 11 on ball bear-

ings 13 and 14 so that the pulley may rotate freely upon the spindle. Adjacent the upper end of the spindle, I provide screw-threads 15 adapted to receive a binding member or cap 16 by which removal of the pulley from the spindle is prevented except when desired. The upper end of the pulley 10 as viewed in Fig. 2 for example, is provided with a tapered recess or depression 17 provided for the purpose of receiving a tapered brake member 18. This member 18 is preferably provided with a layer of leather 19 or similar material on its periphery which material will engage the wall of the depression or recess in the top of the pulley 10 already referred to when the brake is in operation. The upper end of the spindle 11 is provided with left-hand threads 20 when the travel of the pulley 10 is right-hand, and the brake member 18 is provided with a screw-threaded orifice 21 whereby the brake member may be screwed upon the top of the spindle.

In order that the bearings 13 and 14 may be lubricated without the necessity of removing the brake member 18 I have provided the latter with an opening 22 in the top thereof communicating with a small tube 23 which tube when the parts are assembled, is in alinement with an opening or orifice 24 in the top of the spindle 11. The opening 24 is in communication with a hole 25 drilled partially through the spindle 11 and which hole is, when the parts are assembled, adjacent the upper set of ball bearings upon which the pulley rides. By feeding a lubricant through the opening 22 in the top of the brake member 18 the lubricant will flow downwardly through the tube 23, orifice 24, spindle 11 and out through the hole 25 to the bearings.

In operation the routing machine is set in motion by closing the circuit of the motor 5 by means of the switch 6, and the tool spindle 4 driven by the pulleys 8 and 10 and belts 26 and 27, the pulley 4' being comprised with the tool spindle as already mentioned. As previously noted, the speed of the tool spindle is very high—often as high as 20,000 R. P. M. The workman can then operate the machine and when it is desired to change the routing tool or to stop the tool spindle for any other reason, the circuit of the motor 5 is opened and the tool spindle brought quickly to rest by merely rotating the brake member 18 by means of the handle 28 by a turn in a counter-clockwise direction which will carry the brake member 18 downwardly with respect to the spindle 11 and bring the leather 19 into contact with the recess 17 in the top of the cone pulley 10, this pressure of the brake member on the pulley bringing the same to rest almost instantly.

When the machine is again set in motion,

the rotation of the pulley 10 will automatically relieve the brake action thereon inasmuch as the hand of the pulley and the screw-threads at the top of the spindle 11 are opposed to each other.

When the brake is worn so as to require more than a desired motion of the handle 28, the same may be easily adjusted by removing it entirely from the spindle 11 and starting it upon another of the multiple threads to reduce the clearance between the brake faces when in operation.

It will be seen from the foregoing that by my improved device the tool spindle 4 of the machine may be quickly stopped and without undue shock or strain to either the spindle 4 or motor 5 by reason of the fact that a belt 26 is employed between the pulleys 8 and 10 which belt may slip so that the pulley 10 may be quickly stopped without necessarily bringing the pulley 8 to rest instantaneously and the brake being extraneous of the tool spindle 4, it is left free to be controlled by the belt 27, the flexibility of which gives a desirable elasticity when checking the high momentum of the spindle.

It will be apparent also that the brake can be readily applied without the employment of acute skill as the operator can apply it and each time the routing machine is set in operation provided it has been stopped by application of the brake, the brake will be automatically freed.

It will be apparent also that means have been provided whereby the bearings upon which the pulley 10 is mounted may be lubricated without necessitating the removal of the brake member 18.

The device of Fig. 4 is a modification and may be applied to the pulley 10. This device comprises two members 30 and 31 pivotally mounted relatively to each other at 32, these members being located within the depression or recess 17 in the top of the pulley 10 already referred to. These two members are maintained out of contact with the sides of the depression just mentioned by a spring 33. One of the members, the member 30 for example, is provided with a laterally extending portion or handle 34 and pivotally attached to this member is an operating lever 35, the inner end of which, designated 36, extends between the members 30 and 31. It will be apparent that by grasping the lever 35 and moving the same toward the laterally extending member 34 the inner end 36 will be actuated to cause the members 30 and 31 to separate, that is to say, swing about the pivot 32 and into engagement with the walls of the depression or recess 17, thereby effecting a braking action on the pulley.

While certain specific embodiments of my invention have been illustrated and de-

scribed, it is to be understood that various changes may be made in the details of construction thereof without departing from the spirit and scope of the invention.

5 What I claim is:

1. In a routing machine, the combination of a tool spindle, a driving means for said spindle, a driving connection comprising a pulley between said driving means and said
10 spindle, and a brake for said pulley.

2. In a routing machine, the combination of a tool spindle, driving means therefor, a driving connection comprising a pulley intermediate said driving means and said
15 spindle, and an adjustable brake for said pulley.

3. In a routing machine, the combination

of a tool spindle, a motor for driving the same, a driving connection comprising a pulley intermediate said motor and spindle, 20 and a brake automatically actuated to inoperative position by rotation of the pulley by said motor.

4. In a routing machine, the combination of a tool spindle, means for driving the
25 same, a pulley intermediate the driving means and said spindle, said pulley being provided with a depression at one end thereof, and a brake member for engaging the wall of said depression to brake the pulley. 30

This specification signed this 2nd day of December, 1920.

FOLKE W. WESTON.