Aug. 15, 1933. E. H. FAHRNEY 1,922,426

GLASS TUBE CUTTER

Filed March 4, 1932 2 Sheets-Sheet 1

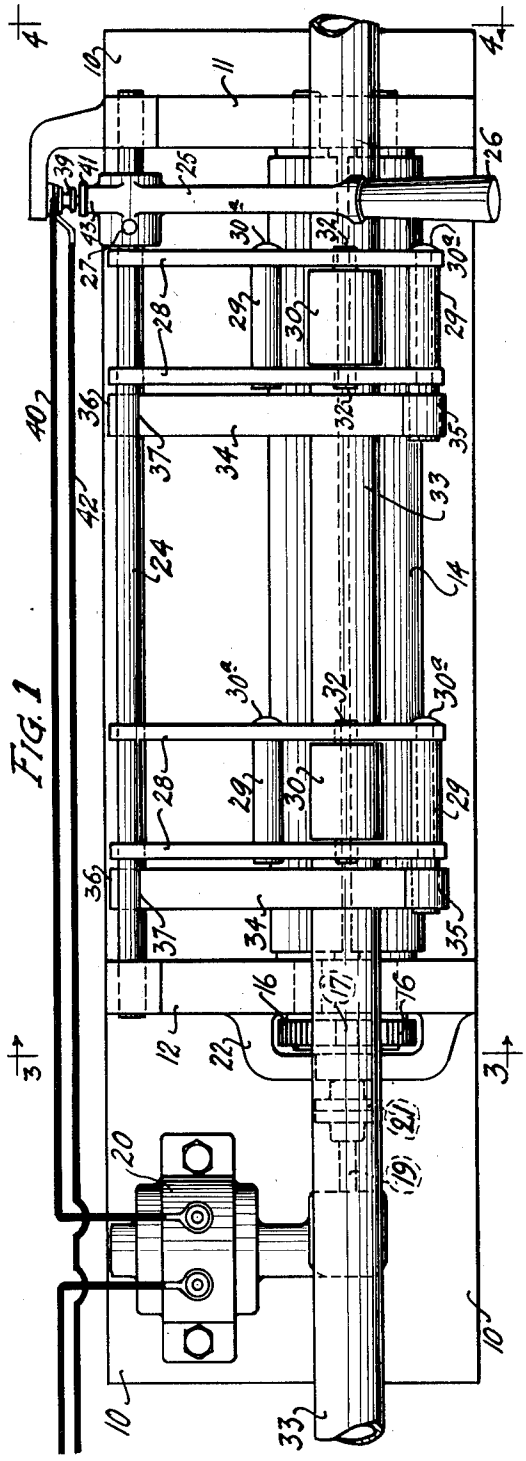


FIG. 1

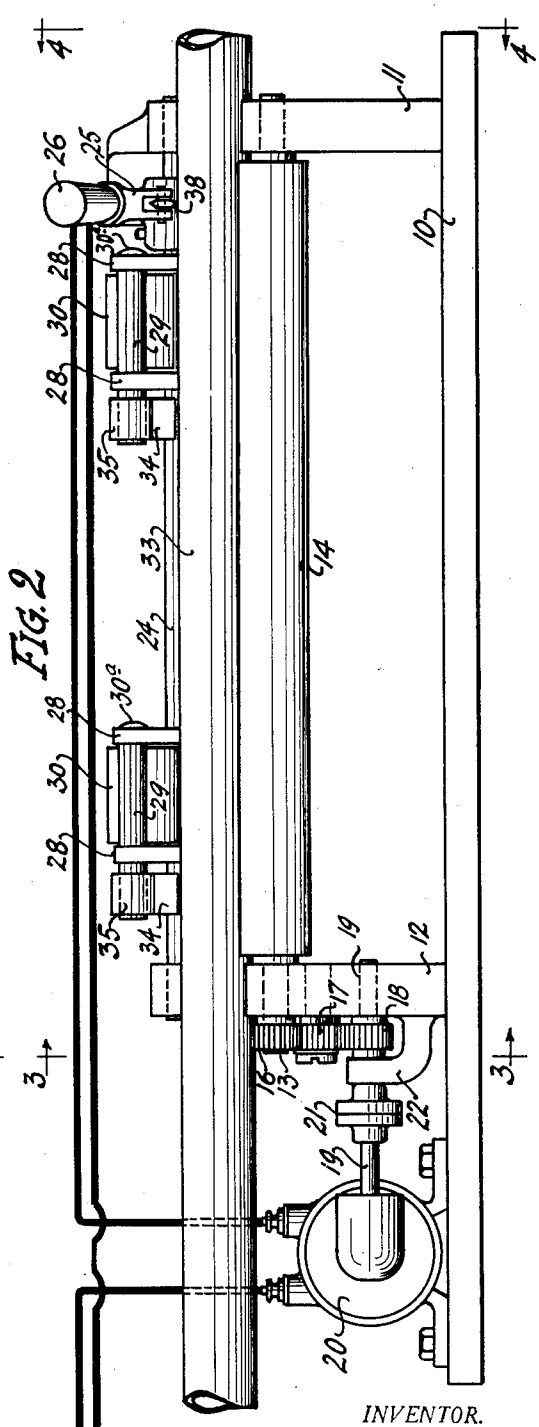


FIG. 2

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GLASS TUBE CUTTER

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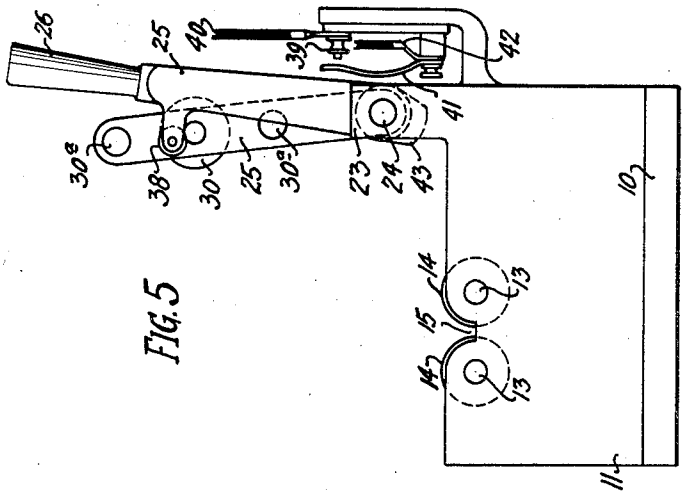


FIG. 5

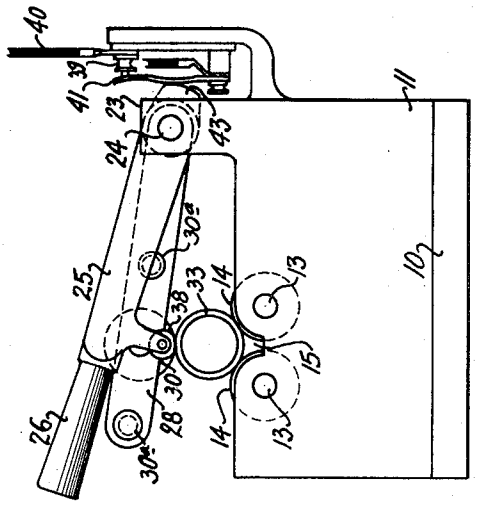


FIG. 4

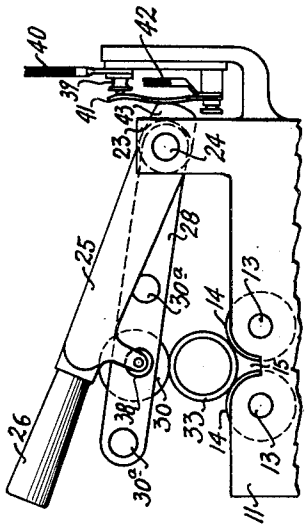


FIG. 6

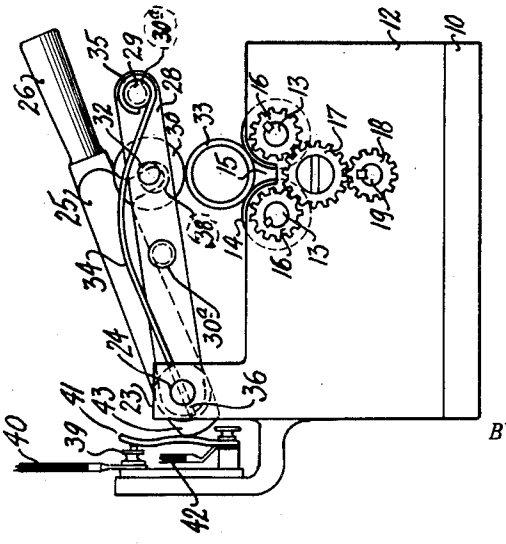


FIG. 3

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Patented Aug. 15, 1933 1,922,426

UNITED STATES PATENT OFFICE

1,922,426

GLASS TUBE CUTTER

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Application March 4, 1932. Serial No. 596,783

11 Claims. (Cl. 49—48)

This invention relates to improvements in tube cutting machines, particularly adapted, though not necessarily limited in its use, for cutting glass tubes, and one of the objects of the invention is to provide a machine of this character which will be of a simple and compact arrangement, and by means of the use of which tubes varying in diameters may be expeditiously cut.

To the attainment of these ends and the accomplishment of other new and useful objects as will appear, the invention consists in the features of novelty in substantially the construction, combination and arrangement of the several parts hereinafter more fully described and claimed and shown in the accompanying drawings illustrating this invention, and in which

Figure 1 is a top plan view of a machine of this character constructed in accordance with the principles of this invention.

Figure 2 is a front elevation of Figure 1.

Figure 3 is a sectional view as taken on lines 3—3, Figures 1 and 2.

Figure 4 is a view taken on lines 4—4, Figures 1 and 2.

Figure 5 is a view similar to Figure 4, showing the parts in a different position.

Figure 6 is a view similar to Figure 4, showing the parts in the position which they will assume just before the commencement of the cutting operation.

Referring more particularly to the drawings, the numeral 10 designates generally a supporting base provided with uprights or standards 11—12, which are spaced from each other and are preferably of a shape to constitute walls. Arranged between the uprights 11 and 12 and journaled in the uprights are spaced parallel rollers 13, and these rollers are preferably provided with peripheries 14 formed of any suitable resilient material, preferably rubber or the like, and the uprights 11 and 12 are provided with recesses 15 in alinement with the space between the rollers.

Secured to the ends of the rollers 13 are gears 16 which mesh with an idle gear 17, all arranged at one end of the rollers, and the gear 17 meshes with a gear 18 that is secured to a shaft 19 driven by a motor 20, and which motor is supported by the base 10 beyond the upright 12. A coupling 21 may be provided in the shaft 19 and the shaft is journaled preferably in the upright 12, and in a journal bracket 22. Journaled in portions 23 of the uprights 11—12 which extend above the rollers 13 and spaced from and parallel with the rollers, is a rock shaft 24, and connected with the rock shaft is a lever 25 having a handle 26, the lever being secured as at 27 to the shaft so that by operating the lever through the medium of the handle 26 the shaft 24 may be freely rocked in its bearings.

Loosely mounted upon the shaft 24 is a pressure roller support, and this support may be constructed in any desired or suitable manner preferably by means of spaced members 28, through which the shaft 24 loosely passes. These members 28 are held spaced by means of spacing elements 29 in the form of tubes and fastening bolts 30^a pass through the members 28 and the respective tubular members 29. A pressure roller 30, preferably provided with a periphery formed of any suitable resilient material as rubber or the like, is arranged between the members 28 and the journals 32 of the roller rotate freely in the members 28.

A suitable resilient connection is provided between the shaft 24 and the pressure roller supporting member whereby the latter will be moved into and out of operative position with respect to the tube 33 by the rocking of the shaft 24 through the medium of the handle 26. This flexible connection may be formed in any desired or suitable manner such as by means of a leaf spring 34, one end of which is secured to the pressure roller support, preferably at the free end of the latter by encompassing a projecting extremity of one of the fastening bolts 30^a, which hold the members 28 of the support in spaced relation, as at 35, shown more clearly in Figure 3. The other end 36 of the spring 34 passes through a slot 37 in the shaft 24, and the slot is preferably so arranged that the spring 34 will be disposed in close proximity to the side of one of the members 28.

Any number of these pressure roller supports and springs 34 may be provided, but in the present form of the invention two are shown.

With this construction it will be manifest that by the operation of the handle 26 the shaft 24 will be rocked and this rocking movement of the shaft will be transmitted through the medium of the springs 34 to the pressure roller supports 28 to raise and lower the latter. Carried by the lever 25 and journaled in suitable bearings so as to project below the lever 25, is a cutter 38 for cutting the tube. When it is desired to place a tube in position to be cut, the handle 26 and lever 25 are raised to the position shown in Figure 5. During such movement the shaft 24 will be rocked and through the medium of the springs 34, the pressure roller supporting members 28 will also be elevated.

After the tube has been placed in position and the handle 26 and lever 25 are lowered to the position shown in Figure 3, the pressure roller 30 will contact with the tube 33 and co-operate with the rollers 14 to hold the tube in position and to insure that the tube will be rotated upon the rotation of the rollers 14. The spring 34, however, so acts upon the pressure roller support that the pressure roller 30 will contact with the tube 33 before the cutter 38 is brought into engagement with the tube 33, with the result that when the handle 26 and lever 25 are forced downwardly to the position shown in Figure 4, to cause the cutter 38 to contact with the tube 33, the spring 34 will be placed under tension, so that the roller 30 will be yieldingly held in contact with the tube 33. The motor 20 is controlled in its operation through the medium of a switch or contact device preferably comprising a contact 39, to which a conductor 40 is connected, and a spring contact 41 to which a conductor 42 is connected. The normal tendency of the spring contact 41 is to move out of engagement with the contact 39.

Carried by the lever 25 is a projection or portion 43 which, when the lever 25 is moved to the position shown in Figures 3 and 4, will engage the spring contact 41 and move the same into engagement with the contact 39, thereby completing the circuit and starting the motor. This portion 43 which controls the switch will preferably render the switch operative just before the cutter 38 moves into engagement with the tube. Upon the operation of the motor 20 the rollers 13 will be operated to rotate the tube and the pressure roller 30 will be rotated by reason of its engagement with the tube.

With this improved construction there will be provided a simple and compact apparatus by means of the use of which a tube may be expeditiously cut.

While the preferred form of the invention has been herein shown and described, it is to be understood that various changes may be made in the details of construction and in the combination and arrangement of the several parts, within the scope of the claims, without departing from the spirit of this invention.

What is claimed as new is:—

1. In a glass tube cutting machine, spaced tube supporting rollers rotatable about parallel axes, a motor for rotating the rollers, a pivotally mounted support, a pressure roller rotatably mounted upon the support and movable into engagement with the tube for holding the tube upon the supporting roller, a pivotally mounted operating handle separate from said support a cutting tool carried with the handle, an operative connection between the handle and said pivotally mounted support remote from the pivot of the support, whereby the operation of the support will be responsive to the operation of said handle, and means responsive to the operation of the handle for controlling the operation of the motor.

2. In a glass tube cutting machine, spaced tube supporting rollers rotatable about parallel axes, a motor for rotating the rollers, a pivotally mounted support, a pressure roller rotatably mounted upon the support and movable into engagement with the tube for holding the tube upon the supporting roller, a pivotally mounted operating handle, a cutting tool carried with the handle, a resiliently yielding connection between the handle and said pivotally mounted support, whereby the operation of the support will be responsive to the operation of said handle, and means responsive to the operation of the handle for controlling the operation of the motor.

3. In a glass tube cutting machine, spaced tube supporting rollers having resilient peripheries and rotatable about parallel axes, a motor for rotating the rollers, a pivotally mounted support, a pressure roller rotatably mounted upon the support and having a resilient periphery and adapted to contact with the tube for holding the same positioned with respect to the supporting rollers, a pivotally mounted operating handle, a cutting roller carried with the handle, a yielding connection between the said handle and the pressure roller support whereby the operation of the latter will be responsive to the operation of the handle, and means whereby the operation of the handle will control the operation of the motor.

4. In a tube cutting machine, spaced supporting rollers rotatable about parallel axes, a motor for rotating the rollers, an oscillatable shaft, a support loosely pivoted with respect to said shaft, a pressure roller journaled upon the last said support and adapted to contact the tube upon the tube supporting rollers, a resiliently yielding element forming a connection between the pressure roller support and said shaft, an operating handle connected with the shaft for rocking the latter, a cutter roller connected with the handle, and means whereby the operation of said motor will be controlled by the said handle.

5. In a tube cutting machine, spaced supporting rollers rotatable about parallel axes, a motor for rotating the rollers, an oscillatable shaft, a support loosely pivoted with respect to said shaft, a pressure roller journaled upon the last said support and adapted to contact the tube upon the tube supporting rollers, a resiliently yielding element forming a connection between the pressure roller support and said shaft, an operating handle connected with the shaft for rocking the latter, a cutter roller connected with the handle, and means for automatically controlling the operation of said motor.

6. In a tube cutting machine, spaced supporting rollers rotatable about parallel axes, a motor for rotating the rollers, an oscillatable shaft, a support loosely pivoted with respect to said shaft, a pressure roller journaled upon the last said support and adapted to contact the tube upon the tube supporting rollers, a resiliently yielding element forming a connection between the pressure roller support and said shaft, an operating handle connected with the shaft for rocking the latter, a cutter roller connected with the handle, and means for controlling the operation of said motor.

7. In a tube cutting machine, spaced tube supporting rollers, a motor for rotating said rollers, an oscillatable shaft substantially parallel with the axes of the rollers, a pressure roller support loosely pivoted upon the shaft, a pressure roller rotatably mounted upon the said support, a leaf spring connected by one portion to the shaft and by another portion to the said pressure roller support, a handle connected with the shaft for oscillating the shaft, a cutter adapted to be moved into engagement with the tube for cutting the latter as the tube rotates, and means for controlling said motor.

8. In a tube cutting machine, spaced tube supporting rollers, a motor for rotating said rollers, an oscillatable shaft substantially parallel with the axes of the rollers, a pressure roller support loosely pivoted upon the shaft, a pressure roller rotatably mounted upon the said support, a leaf

spring connected by one portion of the shaft and by another portion to the said pressure roller support, a handle connected with the shaft for oscillating the shaft, a rotatable cutter mounted for movement into engagement with the periphery of the tube for cutting the tube as the latter is rotated, and means for automatically controlling the said motor.

9. In a tube cutting machine, spaced tube supporting rollers, a motor for rotating said rollers, an oscillatable shaft substantially parallel with the axis of the rollers, a pressure roller support loosely pivoted upon the shaft, a pressure roller rotatably mounted upon the said support, a leaf spring connected by one portion to the shaft and by another portion to the said pressure roller support, a handle connected with the shaft for oscillating the shaft, a cutter adapted to be moved into contact with the periphery of the tube for cutting the tube as the latter is rotated, a switch for controlling the operation of the motor, and means connected with the handle for controlling the operation of the switch.

10. In a tube cutting machine, spaced tube supporting rollers, a motor for operating the rollers, an oscillatable shaft parallel with the axes of said rollers, a support loosely pivoted upon said shaft, a pressure roller journaled upon the support and adapted to engage the tube upon the supporting rollers for maintaining the tube upon said supporting rollers, a leaf spring, one end of the spring being connected with the pressure roller support, the other end of the spring being inserted into an opening in the shaft, whereby the oscillation of the shaft will rock said pressure roller support, a handle for rocking the shaft, a cutter for cutting the tube, and means for controlling the operation of the motor.

11. In a tube cutting machine, spaced tube supporting rollers, a motor for operating the rollers, an oscillatable shaft parallel with the axes of said rollers, a support loosely pivoted upon said shaft, a pressure roller journaled upon the support and adapted to engage the tube upon the supporting rollers for maintaining the tube upon said supporting rollers, a leaf spring, one end of the spring being connected with the pressure roller support, the other end of the spring being inserted into an opening in the shaft, whereby the oscillation of the shaft will rock said pressure roller support, a handle for rocking the shaft, a rotatable cutter carried with the handle and movable into engagement with the periphery of the tube, and means responsive to the operation of the handle for controlling the motor.

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