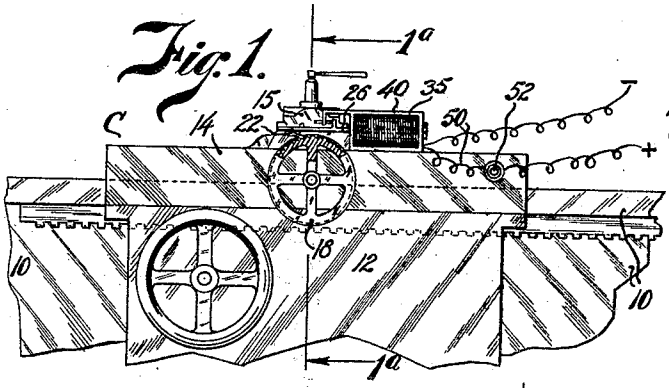
May 18, 1926. 1,584,976

L. J. BRUNTON

MICROMETER FEEDING DEVICE FOR METAL WORKING MACHINES AND THE LIKE

Filed Jan. 30, 1923

Fig. 1.



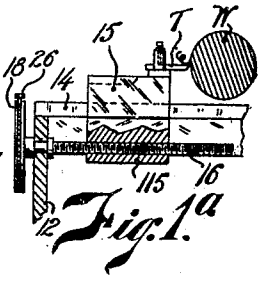
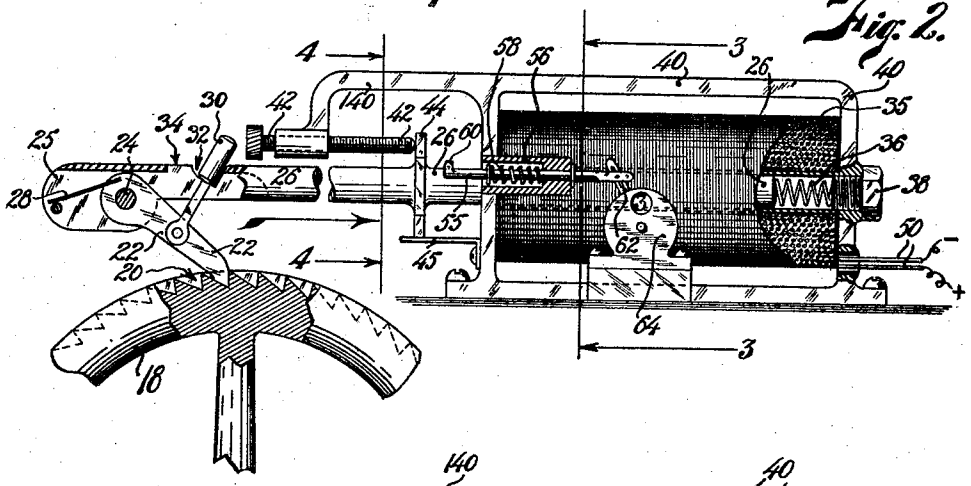


Fig. 1a.

Fig. 2.



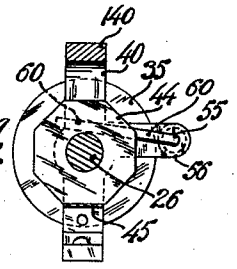


Fig. 4.

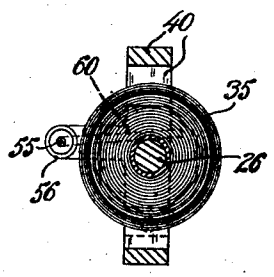


Fig. 3.

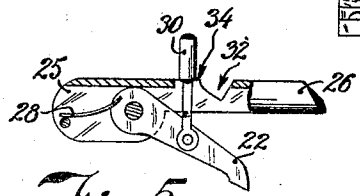


Fig. 5.

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UNITED STATES PATENT OFFICE.

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MICROMETER FEEDING DEVICE FOR METAL-WORKING MACHINES AND THE LIKE.

Application filed January 30, 1923. Serial No. 615,970.

The object of this invention is to provide a comparatively simple and highly accurate and efficient device in the form of a micrometer feed to be used on lathes and the like for feeding the tool with respect to the work.

Briefly the invention comprises a coil or solenoid winding in which a core is movable through a regulated distance, the core being provided with a dog or the like engageable with a ratchet wheel or other suitable member. Thus the wheel or member may be advanced a predetermined amount by passing a current through the coil. Means such as a spring is provided for returning the core and dog when the current is stopped, so that the wheel may be advanced through as many stages as desired, thereby imparting a proportionate amount of movement to the tool carried on the machine equipped with the device. The amount of feed of the tool is determined by the number of successive actuations of the core through successive energizations of the coil.

In the accompanying drawings wherein one embodiment of the invention is disclosed by way of illustration.

Fig. 1 is a side elevation showing the mounting of the present invention on a lathe;

Fig. 1ª is a cross sectional detail taken on the line 1ª—1ª of Fig. 1;

Fig. 2 is an enlarged elevational detail of the feeding device per se with portions broken away;

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

Fig. 4 is a cross section taken on line 4—4 of Fig. 2;

Fig. 5 is an elevational detail showing a different position of the dog, the dog being withdrawn to inoperative position.

In Figs. 1 and 1ª there is shown a conventional lathe having a bed 10 on which there moves a carriage C, having the usual apron 12 and bridge 14, the bridge supporting the usual tool holder 15 which is to be moved transversely of the carriage by the micrometer feeding device of the present invention for bringing the tool T into proper relation with the work W. A depending portion 115 of the block or holder 15 is engaged by a feed screw 16 journaled in the carriage and actuable through the medium of ratchet wheel or the like 18.

The wheel 18 is provided with notches 20 in which there engages the lower end of a dog or pawl 22 which is pivoted at 24 to the outer end 25 of a movable solenoid core 26 projecting from the solenoid coil 35. The dog 22 is urged into engaging position with the teeth of the wheel 18 by means of a spring 28. Normally the head 30 of a pawl-retracting device is received in a notch 32 in the end 25 of the core 26, but said head is adapted to be pulled up to rest on a shoulder 34 so that the pawl 22 is held in inoperative position and out of engagement with notches 20 of wheel 18.

The core 26 is slidably guided in a central channel in the coil or winding 35, and at the end of said channel is engaged by a spring 36 for expelling the core to initial position after breaking the circuit. A closure in the form of an adjusting screw 38 may be employed at the end of said channel for maintaining the position of the parts. The coil 35 and core 26 are carried in a frame 40 which has an overhanging end 140 in which there is mounted an adjustable screw 42 serving as a stop to engage and limit movement of a web or projecting lug 44 carried on core 26 when the core is expelled by the spring 36. An extension of web or lug 44 carried on the under side of core 26 may bear upon a rest 45 carried by the end of the frame 40 thereby further guiding and positioning the core.

Suitable conductors of electricity lead from the coil 35 to any source of current and flow of current through these conductors 50 is controlled by means of a button or switch 52 conveniently mounted on the carriage C adjacent the point of operations.

For recording the amount of movement produced by any number of actuations of the core 26, a spindle 55 is reciprocably mounted in a bracket 56 on the frame 40, said bracket containing a returning spring 58 engaging said spindle. Spindle 55 is connected with the actuating lever 62 of a counting or recording device 64. Thus when a current is passed through the coil 35, the core 26 is pulled into the coil and the web 44 engages the offset end 60 of the spindle 55 and thereby actuates the recording device 64. When the current is cut off and spring 36 returns the core 26, the spring 58 returns the spindle 55.

In operating the device, the set screw or stop screw 42 is adjusted to allow the core 26 that amount of movement required to advance the wheel 18 as many notches as desired. Thus, assuming that movement of the

wheel one notch will feed the tool T 1/1000 inch, if the screw 42 is set so that core 26 and dog 22 will be carried back over two notches of wheel 18 by spring 36, one actuation of the core 26 by passing a current through the coil will feed the tool 2/1000 inch, and if the circuit is successively made and broken three times the total amount of feed will be 6/1000 inch, and the recorder 64 will show that the device has been actuated three times.

In this manner, the tool may be fed very accurately and rapidly any desired amount and a check on the amount of feed may be found in the reading of the recorder 64.

I claim:

1. In combination, a machine, a tool carrier movably mounted thereon, a ratchet on the machine having connection with the carrier for advancing the tool, a solenoid winding mounted on the machine, means for completing an electric circuit through the winding, a core movable in said winding, adjustable means for predetermining the amount of movement of the core, and means on the core engageable with the ratchet for advancing the same.

2. In combination, a machine, a tool carrier movably mounted thereon, a ratchet for advancing the tool carrier, a solenoid winding on the machine, means for passing a current through the winding as desired, a core slidably guided in said winding, means to return the core, means to permit a predetermined amount only of movement of the core, a pawl on the core engageable with said ratchet, and means for withdrawing the pawl from the ratchet and retaining the same in withdrawn position.

In testimony whereof I affix my signature.

LIONEL JOHN BRUNTON.