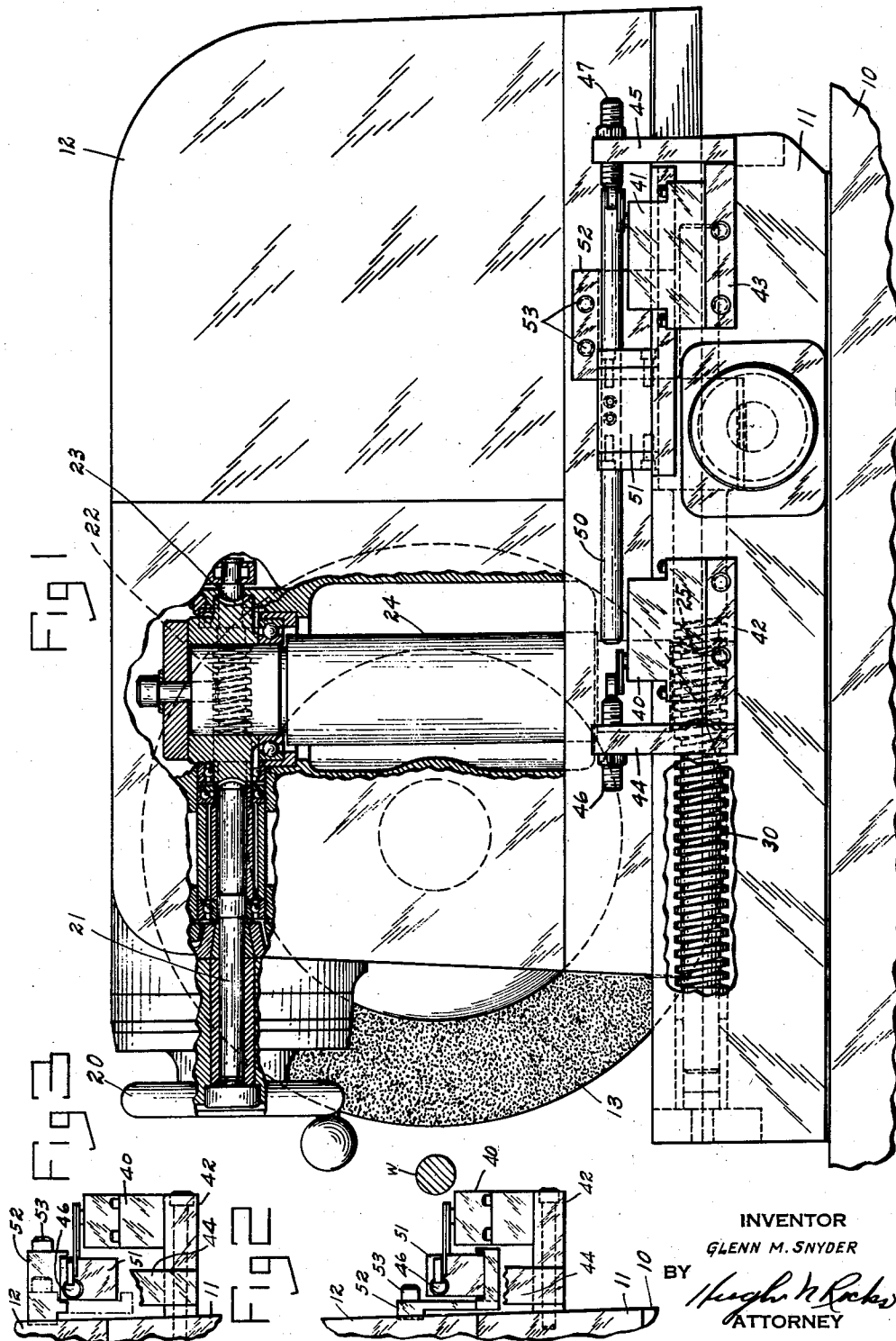


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 CONTROL ACTUATING MEANS FOR MACHINE ELEMENT
 HAVING A VARIABLE ZONE OF MOVEMENT
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CONTROL ACTUATING MEANS FOR MACHINE ELEMENT HAVING A VARIABLE ZONE OF MOVEMENT

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4 Claims. (Cl. 51—165)

This invention relates to machine tools, particularly to machines in which the cutting element has to be adjusted from time to time to compensate for wear.

In machine tools such as grinding machines, it is often desirable to actuate a limit switch or a similar signalling device when the grinding wheel is in advanced position and also when it is in retracted position.

These switches are usually mounted in a fixed position on the machine and are actuated by means attached to the movable wheel support. However, since the position of the switches is fixed, the actuating means must be mounted in a fixed relation to said switches. For example, when the grinding wheel support is in advanced position and it is necessary to advance it a little farther to compensate for wheel wear, it is essential that the actuating means does not advance with the wheel support at this time.

Positive stopping devices are usually provided at the forward and rear positions to define the limit of movement of the actuating means.

If it is necessary to move the wheel support beyond these positions because of change in diameter of the work to be ground or compensation for wear of the grinding wheel, the actuating means is usually frictionally supported on the wheel support. The frictional resistances usually are such that the actuating means can remain stationary while the wheel support advances. On the other hand, it must be sufficient to prevent slipping when the actuating means engages the limit switches. Such requirements make it necessary to make frequent adjustments of the frictional holding means for the actuating members.

It is an object of this invention to provide means for slidably attaching a switch actuating means to a movable machine member which will provide a uniform resistance to movement relative to said movable member.

Another object is to provide magnetic means for supporting switch actuating elements on a movable machine member.

Figure 1 is an end elevation of a grinding wheel support.

Figure 2 is a front elevation of a switch actuating means mounted on said support.

Figure 3 is similar to Figure 2, but shows the switch actuating means mounted in a slightly different position.

Numerals 10 indicates the base of a grinding machine. 11 is a stationary slide member on base 10, and 12 is a wheel support slidably mounted on slide member 11. A grinding wheel 13 is rotatably mounted on wheel support 12.

The means for adjusting wheel support 12 on slide member 11 consists of a hand wheel 20 operable through a hand wheel shaft 21 to rotate a worm gear 22 in operative relation with a worm wheel 23. Worm wheel 23 is attached to the upper end of vertical shaft 24. At the lower end of shaft 24 is another worm wheel 25 in operative relation with feed screw 30. A similar arrangement is shown in U.S. Patent 2,313,479, granted

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March 9, 1943. When actuated by the hand wheel 20, worm wheel 25 serves as a pinion and the feed screw 30 serves as a stationary rack along which the pinion and wheel support 12 move.

The means for effecting rotation and bodily endwise movement of feed screw 30 is also disclosed in said Patent 2,313,479.

Limit switches 40 and 41 are mounted in longitudinally spaced relation on slide member 11 by means of brackets 42 and 43. Vertical member 44 attached to bracket 42 and vertical member 45 attached to bracket 43 carry adjustable stop screws 46 and 47 respectively.

The means for actuating limit switches 40 and 41 consists of a rod 50 mounted in magnetic member 51. A slidable support for member 51 is provided in the form of a bracket 52 attached to wheel support 12 by means of screws 53. As wheel support 12 is moved toward and from operative relation with workpiece W, rod 50 engages switches 40 and 41 respectively to perform other functions connected with the grinding cycle.

When rod 50 engages stop screw 46, grinding wheel 13 has ground a workpiece to the required size. In this position, rod 50 also actuates limit switch 40. Limit switch 40 must always be actuated in predetermined relation to the completion of the grinding operation.

As the diameter of the grinding wheel 13 becomes smaller due to wear, wheel support 12 must be adjusted by the amount of said wear. However, since switches 40 and 41 remain stationary, it is necessary that the switch actuating means remain in the same relation to the switches. Therefore, rod 50 is held against movement by stop screws 46 and 47 while wheel support 12 is adjusted by hand wheel 20 to the desired position. This rod movement is permitted by magnet 51 which remains stationary while bracket 52 moves with wheel support 12.

I claim:

1. In a grinding machine, a base, a grinding wheel support slidably mounted thereon for movement toward and from operative position, a grinding wheel on said grinding wheel support, spaced limit switches for transmitting signals at the advanced and retracted positions of said grinding wheel support, means movable with said grinding wheel support for actuating said switches, a magnet for slidably attaching said means to said grinding wheel support and adjustable stops for limiting the movement of said actuating means in both directions.

2. In a grinding machine, a base, a grinding wheel support slidably mounted thereon for movement toward and from operative position, a grinding wheel on said grinding wheel support, spaced limit switches for transmitting signals at the advanced and retracted positions of said grinding wheel support, means movable with said grinding wheel support for actuating said switches, means to advance said grinding wheel support to compensate for wheel wear and means to prevent a corresponding advance of said switch actuating means comprising a magnet for slidably attaching said switch actuating means to said grinding wheel support and adjustable stops for limiting the movement of said actuating means in both directions.

3. In a grinding machine, a base, a grinding wheel support slidably mounted thereon for movement toward and from operative position, a grinding wheel on said grinding wheel support, spaced control members at the advanced and retracted positions of said grinding wheel support, means movable with said grinding wheel support for actuating said control members, a magnet for slidably attaching said actuating means to said grinding wheel support and adjustable stops for limiting the movement of said actuating means in both directions.

4. In a grinding machine, a base, a grinding wheel

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support slidably mounted thereon for movement toward and from operative position, a grinding wheel on said grinding wheel support, spaced control members positioned to correspond to the advanced and retracted positions of said grinding wheel support, means movable with said grinding wheel support for actuating said control members, means to advance said grinding wheel support to compensate for wheel wear and means to prevent a corresponding advance of said control member actuating means comprising a magnet for slidably attaching said

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actuating means to said grinding wheel support and adjustable stops for limiting the movement of said actuating means in both directions

References Cited in the file of this patent

UNITED STATES PATENTS

456,553	Carr	July 28, 1891
2,075,369	Stetler	Mar. 30, 1937
2,704,890	Welsch	Mar. 29, 1955