Sept. 21, 1943. C. W. CLARK 2,329,826

ELEVATING SCREW ARRANGEMENT FOR TESTING MACHINES

Filed Sept. 5, 1941

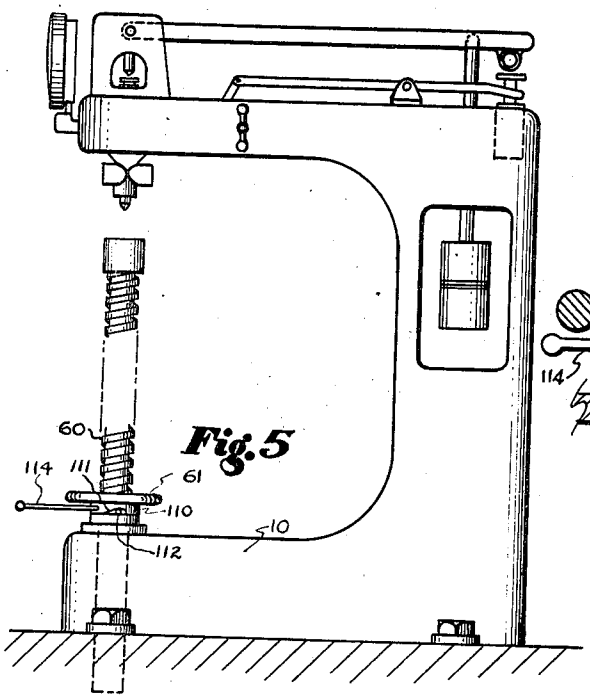


Fig. 5

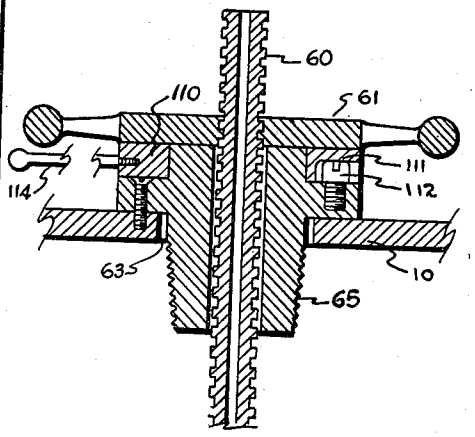


Fig. 1

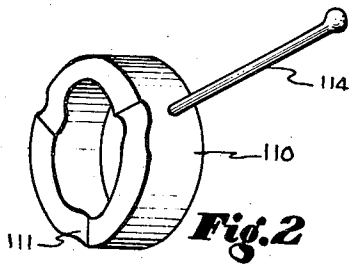


Fig. 2

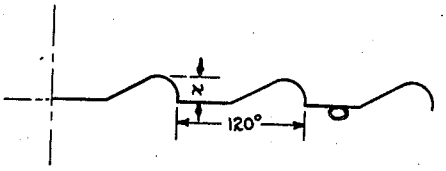


Fig. 3

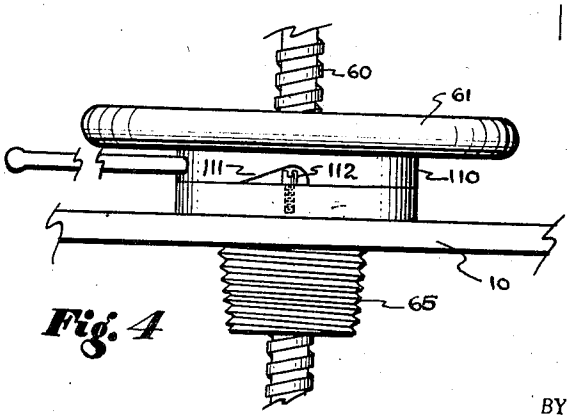


Fig. 4

INVENTOR.

BY Clyde W. Clark

Daniel G. Cullen ATTY.

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ELEVATING SCREW ARRANGEMENT FOR TESTING MACHINES

Clyde W. Clark, Dearborn, Mich.

Application September 5, 1941, Serial No. 409,619

1 Claim. (Cl. 265—12)

This application relates to testing machines and particularly to testing machines of the type disclosed in my prior application Serial No. 384,083, filed March 19, 1941.

A testing machine of the type described in that application includes an elevating screw adapted to be raised or lowered by a hand wheel. In conventional testing machines, as in the one disclosed in my application, the hand wheel comprises the sole means for raising and lowering the screw.

This invention provides a secondary means for raising and lowering the screw which performs the desired functions of increasing the speed with which the screw may be raised from a lowered position to a predetermined elevated position as well as the speed with which the screw may be lowered from its predetermined elevated position; in addition the secondary means provides for raising and lowering the screw without causing relative motion of the hand wheel and the screw on which the wheel is threaded, whereby to save wear on the screw thread.

The desired objects are attained by providing a quick manipulable means, such as a cam, between the base of the machine and the hand wheel, the means when manipulated for raising the screw reacting against the machine base and acting against the hand wheel to raise it, and with it the screw. A preferred form of the quick manipulable means is an annular camming ring surrounding the screw and disposed between the machine base and the hand wheel and rotatable around the screw axis, there being a means for rotating the ring to obtain the desired camming action. The ring rotating means may be nothing more than a radially extending handle for manual operation. However, if desired, the cam ring may be connected mechanically to a constantly revolving motor which will thus cause the cam ring to rotate continuously and thus cause the elevating screw to rise and fall repeatedly so that the operation of elevating the screw and lowering it will be continuous and automatic. This feature may be utilized in conjunction with other features to obtain varying degrees of automatic operation for testing.

A preferred embodiment, arranged for manual operation, is disclosed in the appended drawing.

In this drawing,

Fig. 1 is a fragmentary section elevation view.

Fig. 2 shows the cam ring in detail.

Fig. 3 is a developed view of the cam.

Fig. 4 is an elevation view.

Fig. 5 shows the machine, in general.

The machine described in my above mentioned application and partly shown here includes a frame or base 10 having an aperture 63 in which is disposed a sleeve 65 fastened to the frame and thus forming part of the machine base. Within the sleeve is the elevating screw 60, the latter being restrained against rotation relative to the sleeve by means of a suitable key and keyway arrangement.

Threaded on the screw and disposed above the sleeve so as to journal on it is a conventional heavy hand wheel 61 which when rotated will cause the screw to rise or fall, depending upon the direction of rotation.

The parts thus far described form no part of the present invention which concerns itself with a secondary means for raising or lowering the screw 60 and such supplementary means will now be described specifically. The means consist of a cam ring or annulus 110 whose inner edge surrounds a vertical surface of the sleeve and thus surrounds the screw. The ring 110 is disposed between a horizontal flange of the sleeve and the hub of the hand wheel, engaging both the flange and the hub. Its lower surface is formed with several cam surfaces 111 adapted to be engaged by pins 112 suitably and removably mounted in the sleeve flange. The cams 111 are suitably designed to produce a desired rate of rise or fall of the screw and hand wheel, and a desired maximum rise of the screw and hand wheel, predetermined according to the characteristics of the machine.

While the cams are, in practice, designed for a screw travel of but a few thousandths inch, they are shown, in the drawing, as if capable of a much greater travel, but this is done for purposes of clarity only.

For rotating the cam ring 110 so as to cause it to move bodily up and down with respect to the machine base there is provided some suitable cam rotating means such as the radially extending handle 114, although other means may well be employed for rotating the cam ring.

It will be observed that three cams are provided; thus rotation of the cam ring 120 degrees will quickly cause the screw and hand wheel to move as a unit to a predetermined full elevated or full lowered position, depending upon the initial setting provided by rotation of the hand wheel, which setting may be done with the cam ring elevated. The lowering of the screw and its subsequent elevation through manipulation of

the cam ring is rapid and the screw elevating movement terminates exactly where desired because of the arrangement provided. In addition the cam ring permits the screw to be raised or lowered repeatedly, to the initial setting, without requiring relative rotation of the hand wheel and the screw and thus without causing wear on the screw thread.

Now having described the construction herein disclosed, reference should be had to the claim which follows.

I claim:

In combination with a testing machine elevating screw arrangement comprising a machine base part, an elevating screw slidably mounted therein to rise or fall, but fixed against rotation, and a heavy hand wheel threaded on the screw and disposed above the machine base part for gradually raising or lowering the screw, secondary means for raising and lowering the screw, with the hand wheel, as a unit, the secondary means bearing against and being between the machine base part and the hand wheel and being manipulable for quickly raising and lowering the wheel, and with it the screw, by reacting against the base part and the wheel, the secondary means being in the nature of a camming means, and comprising an annular cam ring surrounding the screw and disposed between the base part and the hand wheel, and rotatable around the screw axis, the hand wheel and secondary means being manipulable for setting the screw in a predetermined elevated position, from which the screw may be lowered and to which the screw may be returned quickly, merely by manipulation of the secondary means, and without requiring relative movement of the screw and hand wheel.

CLYDE W. CLARK.