Nov. 7, 1933. P. L. STENMAN 1,934,568

SCREW HOLDING DEVICE

Filed July 28, 1931

FIG. 1.

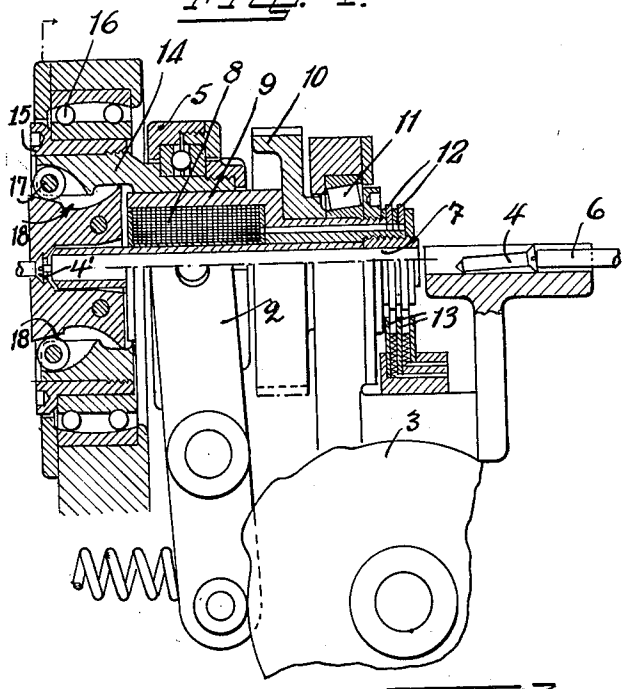


FIG. 2.

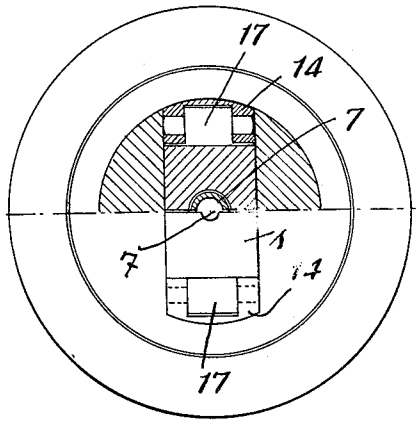


FIG. 3.

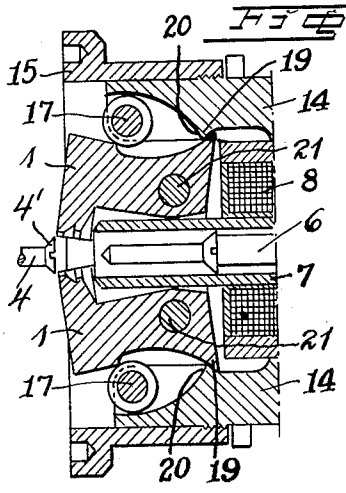
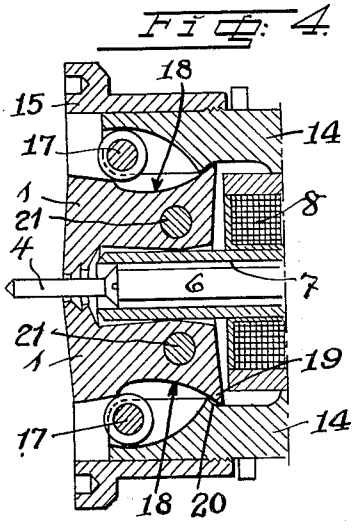


FIG. 4.



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UNITED STATES PATENT OFFICE

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SCREW HOLDING DEVICE

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Application July 28, 1931, Serial No. 553,611, and in Sweden August 15, 1930

3 Claims. (Cl. 10—107)

This invention refers to a device with a mechanical arrangement for holding screw blanks, whereby two or more jaws are arranged at the one end of the device and which in addition has a pipe or groove, through which a magnetic rod (or a rod magnetized through electrical current or a rod magnetized through one or several permanent magnets or also any other pushing device) inserts the blanks between the jaws. Through manetic force the blanks are held in the correct position relative to the jaws. The movement of these jaws is arranged in such a way, that they can partly hold the prepared blank during the continued operation and thereafter open to remove the worked blank and partly when a new blank is moved into working position with the aid of a pushing device half close or contract so that the head of the following blank is prevented from passing through, then to close again for holding the blank during the operation.

The drawing shows one form of device for carrying out the invention.

Fig. 1 shows a lengthwise section through the holding device with its pushing devices ready for the moving of the blank through the same.

Fig. 2 shows an end view partly in transverse section and Figs. 3 and 4 show respectively similar lengthwise sections as Fig. 1 through the holding device with different positions of the jaws and the pushing rod.

Fig. 1 shows the holding device with closed jaws 1, whereby for instance a fork 2 or some other controlling device, moved by a cam 3, or other mechanical arrangement in which the movement regulates the jaws. This controlling device is so arranged, that the same at different positions relative to the fork 2 partly effectuates the opening of the jaws in order to let the screw head 4' pass, partly hereafter close to such an extent that the head of the following blank is prevented from passing and at last press the jaws together for holding the blank 4 during the machining operation. The jaws 1 are pivotally mounted through the medium of pivots 21 supported in ring 15 hereinafter described.

The movement of the closing of the jaws is effected through the above mentioned fork 2, which works a ring 5 according to the drawing or also directly or in some other way engages the device, regulating the jaws. The back and forth movable pushing device 6 feeds the screw blanks through a tube 7 or a groove in the holding device to the jaws.

This pushing device can for instance consist of a rod, which is magnetic or magnetized through electric current for holding the blanks in the proper position.

It is advantageous that the jaws close half way or partly so that the head of the blank gets a rest against or is supported by the half closed jaws, until these finally close around the blank for holding the same during the machining operation.

The feeding of the screw blanks can also be so arranged, that the magnetic power holds the blank so strongly against the pushing device, that the blank receives a fixed correct position relative to the jaws, which from fully opened position can close in one operation for holding the blank.

The feeding of the blank can also be so arranged, that the pushing device 6 without being magnetic, feeds the blanks to the jaws, which have half closed from full opening in order to prevent the head of the screw blank from passing between the jaws 1 and thereafter close for holding the blank.

The magnetizing device, which may be an electric coil 8, can either be placed in, around or outside of the holding device. The invention can either be construction in such a way that the holding device rotates with the blank held therein and the thread cutting tools are at a rest or the holding device can be at a rest and the cutting tools rotate, as is well known, whereby the relative motion between the parts of the holding device remains the same as above described; and it will be obvious that the details of the invention can be otherwise varied without departing from the scope of the claims.

The electromagnetic coil 8 surrounds the tube 7 and is enclosed in a casing 9 which has affixed to it a gear 10 for rotating the casing around the tube 7. This rotating structure is mounted on roller bearings 11, and the current is supplied to the coil through the medium of contact rings 12 and brushes 13. According to another embodiment the coil does not perform any movement. This construction is more favorable and more reliable, as rotating contact rings and other similar devices are unnecessary.

Mounted and rotating with the coil, or according to the other embodiment suggested, around the coil casing 9 is a pair of arms 14 which enter a ring 15 (rotatable on a ball bearing 16) and carry on their outer ends antifriction rollers 17. The outer surfaces of the jaws 1 are cam-faced in such manner that when the arms 14 move by means of the aforesaid fork 2 to their extreme forward position the jaws

will be closed tightly upon the blank to hold it while it is being threaded. When the arms 14 are by means of the fork 2 moved in the opposite direction into their extreme back position, the jaws 1 will open wide as shown in Fig. 3 to thus free the blank; the jaws will open automatically by centrifugal force but to insure their proper opening in all emergencies, the tail end 19 of the cam engages inwardly-extending lugs 20 on the parts 14. And when the arms 14 are moved forwardly to near their extreme forward position, the cam faces 18 are so shaped that the jaws will be partly closed, as shown in Fig. 4, ready to receive the blank as it is pushed forwardly by the pusher rod 6; then the arms 14 continue to move forwardly so as to clamp the blank, as heretofore stated.

I claim:

1. In an apparatus for making screws, a chuck structure embodying a pair of jaws, means for pushing the blanks endwisely into said jaws, and cam devices for first partly closing the jaws to permit the shank of the blank to pass therethrough and to receive and stop the head of the shank to prevent the blank being pushed out of the jaws, then clamping the blank to hold it rigidly while it is being threaded, and then opening the jaws to their full extent to thus release the blank after it is threaded.

2. The structure recited in claim 1, said means for pushing blanks into the chuck consisting of a rod made magnetic at the point where it contacts with the blank head to thus magnetically attract the blank head and hold the blank centrally with respect to the gripping parts of the jaw while the blank is being inserted therein.

3. The structure recited in claim 1, said cam devices consisting of cam faces formed on the outer faces of the jaws and cooperating with devices located outside of the jaws and moved back and forth with respect thereto.

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