

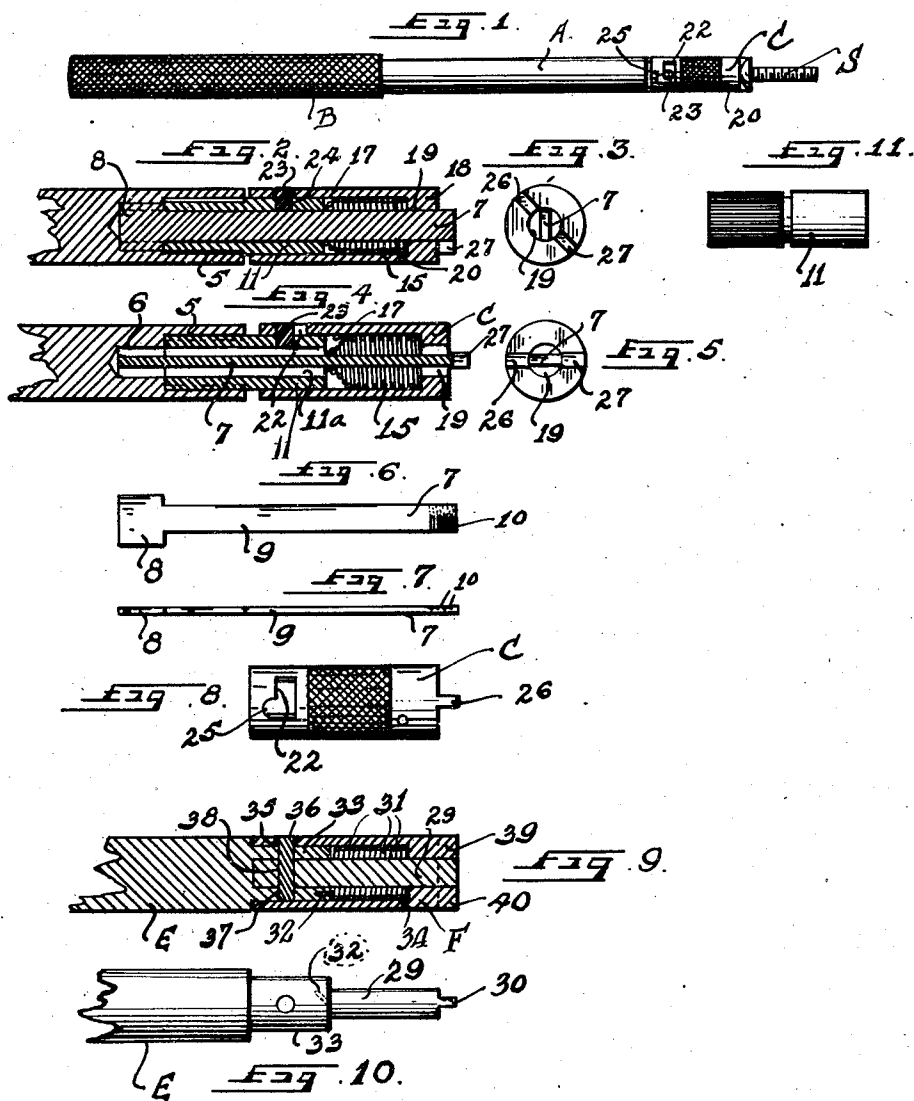
March 14, 1939.

G. F. PEARSON

2,150,184

SCREW STARTER

Filed April 7, 1936



Inventor

George F. Pearson

By

R. M. Thomas

Attorney

UNITED STATES PATENT OFFICE

2,150,184

SCREW STARTER

George F. Pearson, Salt Lake City, Utah

Application April 7, 1936, Serial No. 73,122

2 Claims. (Cl. 145—50)

My invention relates to screw starters or holders and has for its object to provide a new and efficient screw starter or holder which will hold a screw firmly while it is being started and which may be used to drive the screw until sufficient pressure has been applied to release the starter.

A further object is to provide a screw holder which will be easy to use, quick in its operation, and economical to build.

A still further object is to provide a screw starter or holder which is easily attached to the slot of the screw head and which firmly grips the slot but, when sufficient pressure has been applied to the screw, instantly releases itself and is free to be removed.

A still further object is to provide a screw starter which has no projections to make the starter larger than the one size and which may be used to start small or large screws without variation.

A still further object is to provide a screw holder which may be set and then inserted into any remote position to engage within the slot of the screw.

A still further object is to provide a screw holder in which the screw engaging blade is made of spring metal and has sufficient give or torque allowable therein to allow pressure to be applied until the stopper pin or plug limits the rotative give without injury to the blade.

These objects I accomplish with the device illustrated in the accompanying drawing in which similar numerals and letters of reference indicate like parts throughout the several views and as described in the specification forming a part of this application and pointed out in the appended claims.

In the drawing:

Figure 1 is a side elevation of the device with a screw held ready for starting.

Figure 2 is an enlarged diametrical section of the head of the device.

Figure 3 is an end view of Figure 2.

Figure 4 is a like section with the device set for engaging a screw slot.

Figure 5 is an end view of Figure 4.

Figure 6 is a plan view of the torque blade of the device which engages the slot of the screw to hold the screw onto the blades of the head.

Figure 7 is an edge view of Figure 6.

Figure 8 is a side elevation of the head removed from the handle shaft.

Figure 9 is a vertical section of a slightly modified form of the device which has no resiliency in its slot engaging blade.

Figure 10 is a view of the handle with the head removed to show the handle and screw engaging blade shown in Figure 9.

Figure 11 is a side elevation of the plug which is inserted into the end of the handle shaft.

In the drawing I have shown the handle shaft as A, the knurled handle as B, and the end of the handle shaft A is bored out with a larger diametered bore 5 in the end thereof and a smaller diametered bore 6 continued into the shaft. Into this double diametered bore of the shaft I then secure my torque screw slot engaging blade 7. This blade 7 is made with a larger flat end 8 and narrower blade 9. The extreme end of the blade 9 is provided with notches 10 on opposite sides thereof extending inwardly from the edge to near the middle of the end of the blade.

The notches are made with the edge of the notch nearest the end of the blade vertical and the other side of the notches slanting on an angle thereto to properly engage the slot of the screw and provide better engaging qualities and allow for movement of the starter in the slot of the screw head without entirely withdrawing it from the slot or allowing it to fall therefrom. The blade is inserted into the smaller bore of the handle by first placing a driving end plug 11 therearound and then inserting the plug and blade into the handle simultaneously by pressure. The plug 11 is provided with the inner end formed smaller and with serrated or splined surface to allow it to be pressed into the bore 5 and held in fixed relation thereto permanently. The flat head end 8 of the blade 7 is wider than the diameter of the bore 6 and for all practical purposes is substantially the same width as the end of the plug 11. Thus, when the plug and blade are inserted into the shaft A, the pressure makes or forces the flat end 8 of the blade 7 into the sides of the metal of the bore 6, making its own mill cuts or grooves and the serrated end of the plug 11 being also forced into the bore 5 the plug and blade are held in fixed relation to the shaft A. The bore 11a of the plug 11 is slightly larger in diameter than the width of the blade 7. Thus, the torque blade 7 may turn or twist within the plug. Surrounding the outer end of the blade 7 I then provide a spring 15 which spring has one end drawn down to smaller diameter to fit the two sides of the blade 7 and lock the inner end of the spring to the blade 7.

The head C of the device is made with a longitudinal bore 17 thereinto to near the screw blade end 18 and a smaller bore 19 is passed there-through through which the torque blade 7 is

passed and operated. The head C is placed on the end of the shaft A surrounding the torque blade 7 and the spring 15 and a hole is bored through one side of the head through which the out-turned end 20 of the spring is passed and secured. This secures the head to the spring and the spring to the blade so that the head may be moved slightly in and out on the torque blade against spring pressure and also partially rotated around the torque blade or the reverse may be that the torque blade may be rotated slightly within the head. The head has a limiting and locking groove or slot 22 cut through one side thereof and a limiting and locking plug or pin 23 is inserted through said slot into a hole 24 in said plug 11. One edge of the slot which is toward the shaft A is formed with a curved notch 25 on one end thereof to allow the device to be locked in set position ready to receive a screw. When the head is turned and slightly withdrawn from the shaft A and the plug locked into the notch 25, the torque blade 7 is withdrawn slightly.

As a screw engaging and turning blade, the head C is provided with two radially aligned spaced apart blades 26 and 27 on the outer end thereof so formed that when the torque blade is slightly withdrawn and in the set position, the blades 26 and 27 and the blade 7 are in alignment, with the blade 7 filling the space therebetween, but not being extended the full length of the other blades, but being slightly withdrawn as set out above. The two blades 26 and 27 are inserted into a screw slot and pressure applied to the handle E which releases the locking plug 23 from the notch 25 and the torque blade is extended into the slot of the head of the screw with the blades 26 and 27, and the force of the spring rotates the torque blade, forcing the notches on the opposed sides thereof to engage the two inner faces of the slot of the screw head, thus, locking the screw and screw starter together ready for inserting the screw.

In the modified form of drives shown in Figures 9 and 10 the shaft is shown as E with a socket in the end thereof in which a round screw engaging blade 29 is secured. This blade has the end formed into a screw driver blade by cutting off the two sides to leave the central diametrical blade 30. Surrounding this blade I provide a spring 31 with the end of the spring set into a slanting hole 32 in the end of the screw driver handle. This hole is set on a slant so that the tension of the spring will not tend to withdraw the end from the hole. Surrounding the screw and blade I provide a head F similar to the head C with a central hole therein to fit the step cut or bearing portion 33 of the handle shaft E and with the bore in the end of the head to allow the end of the blade 30 to project therethrough. The end of the spring 31 is turned out and engaged in a hole 34 in the head F thus, locking the head to the spring and the spring to the shaft. A slot 35 is cut through the head with a notch in one end on the side toward the shaft and a limiting pin 36 is passed through said slot into the holes 37 in the end of the shaft and the hole 38 in the blade 29, thus, locking the blade into the shaft and limiting the turn and end movement of the head.

Across and on the end of the head E, I provide the screw engaging blades 39 and 40 spaced apart

by the bore in the head in which the blade 30 is carried. The operation of this device is identical to that of the preferred forms other than the allowance of torque in the preferred form is permitted to eliminate any possible chance of breaking the screw slot engaging blade.

The operation of my screw starter is as follows:

When it is desired to start a screw the starter is first "set" by the operator. This is done by partially rotating the head C and drawing it outwardly which engages the plug or pin 23 in the notch 25 thus locking the head in its tension position. The two blades 26 and 27 are then inserted into the cross slot in the head of the screw S and a slight pressure is exerted on the shaft or handle, forcing the head toward the screw. This releases the pin from the notch and the blade 7 is thrust forwardly into the slot at the same time it is turned and the tooth-like notches 10 engage the sides of the screw slot or groove. The screw is then on the end of the starter ready for insertion. When inserted, it is driven by the starter until sufficient pressure is exerted on the screw by the socket into which it is being driven to cause the head C to rotate against the spring pressure and the torque of the blade and the blade is released and the pin 23 again engaged in the notch 25 ready for another use.

Having thus described my invention I desire to secure by Letters Patent and claim:

1. In a screw starter, the combination of a shaft equipped with a handle; a spring metal flat screw engaging blade secured therein; a cylindrical head surrounding said blade and the end of said shaft; spaced apart screw slot engaging blades on the end of the head with the flat spring blade carried operatively therebetween; a slot through one side of said head having a notch in one end on the handle side; a pin in said slot with the end in said shaft to allow the head to be partially rotated, slightly drawn out, and locked into set position in said notch ready to engage the slot engaging blades into the slot of a screw head; and a spring in said head secured thereto at one end and to the shaft at the other end, with the tension of the spring acting to rotate the head against the torsional urge of the spring blade when both the blades and blade are engaged in a screw slot.

2. In a screw starter of the class described the combination of a handle and shaft made of one piece; a plug carrying a flat spring blade, twistable under torsion driven into an open bore in the end of said shaft to secure the blade in said handle with the end of the blade extending beyond said plug; a sleeve head carried surrounding said plug and the extended end of the blade with the blade normally extended beyond the sleeve head, with the end of the sleeve head formed into spaced apart screw slot engaging blades; means in said head and on said shaft to lock the head in extended position; and a helical spring surrounding said blade within said head with one end attached to said head and the other end secured in the end of said plug, said spring exerting a torsional urge to said head, cooperating with but acting in the opposite direction to the torsional urging action of the flat spring blade to hold the screw on the blades.

GEORGE F. PEARSON.