Jan. 24, 1939. W. T. PRITCHARD 2,144,851

SLITTING TOOL

Filed Jan. 26, 1938

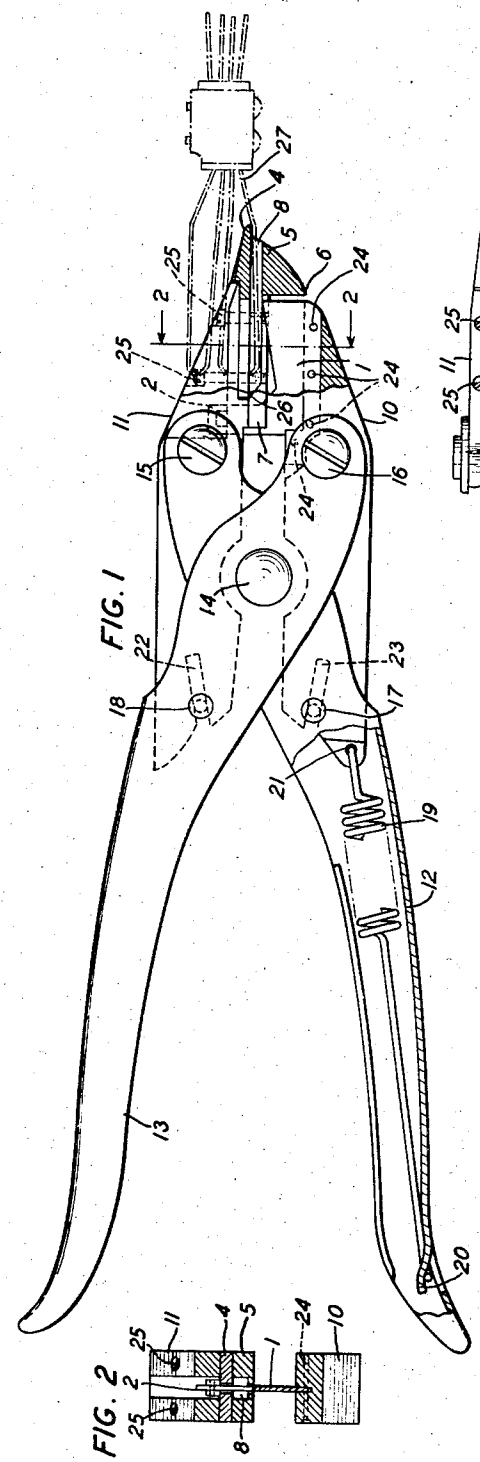

FIG. 1

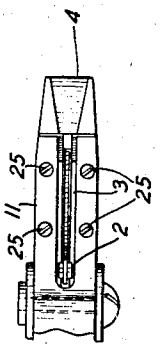

FIG. 4

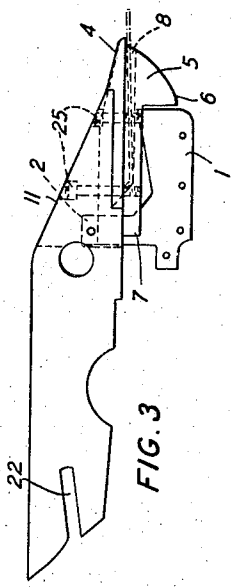

FIG. 3

FIG. 2

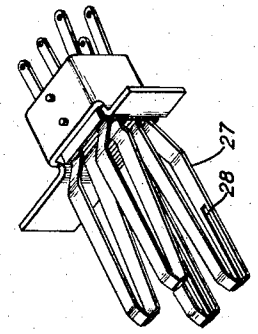

FIG. 5

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SLITTING TOOL

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Application January 26, 1938, Serial No. 186,965

5 Claims. (Cl. 164—121)

This invention relates to cutting tools and has for its object to provide in such a tool, guiding and protecting means for the tool and the material acted upon.

More specifically, the invention relates to a tool of the plier type for slitting sequence spring assemblies and to that end has a knife blade on one jaw, a die on the other jaw, a guide for the spring to be cut, a recess for receiving adjacent springs and beveled nose-pieces to facilitate the separation of the springs. As protection for the knife a guide is mounted outside the die, within which the tip of the knife remains and a lateral extension on the knife extends through the guide and past the die, with a lug on the end thereof to prevent withdrawal of the knife from the guide. In order to make a smooth cut and prevent spreading of the slitted portions of the spring, the knife is set at an angle to the die and slants away from the die toward the handles.

These and other features of the invention will appear from a consideration of the following description in connection with the drawing, in which:

Fig. 1 shows the complete tool with a portion of one handle and the jaws broken away and a set of springs partially inserted for slitting;

Fig. 2 shows a cross-section of the jaws along the line 2—2 of Fig. 1;

Fig. 3 shows the die-bearing jaw, with the knife in normal position;

Fig. 4 is a top view of the die-bearing jaw; and

Fig. 5 shows a group of sequence switch springs, part of which have been slit.

Fundamentally the tool is a pair of parallel motion jaw pliers, having handles 12 and 13, pivoted on the rivet 14. The jaw 11 is rotatably mounted on handle 12 by bolt 15 and is guided in its parallel movement by slot 22, sliding over rivet 18 on handle 13. Similarly, jaw 10 is mounted on handle 13 by bolt 16 and is guided by slot 23, engaging rivet 17 on handle 12. The jaws are normally held apart by spring 19 which is fastened at one end to a lug 20 struck up out of handle 12 and is engaged at its other end in a hole 21 in the jaw 10.

The faces of the two jaws are cut back as shown, the cut-away portion of jaw 10 being somewhat deeper and longer than that in jaw 11. Jaw 10 has a slot cut in its face in which is mounted the knife blade 1 held in place by rivets 24. This blade tapers from its tip towards the back being deepest at its tip end and is provided on its rear end with a lateral extension on which is mounted a retaining lug 2.

Jaw 11 has a narrow slot cut completely therethrough and a wider slot or recess 3 slightly wider than the spring to be cut, sunk in the outer side of the jaw. On the face of this jaw is mounted a die 4 and a guide 5, held in place by screws 25. The end of the die 4 extends beyond the jaw 11 and is beveled backward to form a guideway as shown in Fig. 4. The guide 5 has a slot registering with the slot in the die 4 and a channel in the side fastened against the die which terminates in a beveled surface 26. A nose 6 is formed integrally with the guide 5 extending in front of the knife blade 1 when the tool is open.

With the jaws in their normal position, the tip of the knife 1 enters the slot in guide 5, the lateral projection guides the rear end of the knife 1 and the lug 2 held in recess 3 prevents the opening of the jaws sufficiently for the knife 1 to disengage the guide 5. This is more clearly shown in Figs. 2 and 3. When it is desired to slit a spring such as spring 27, this spring is inserted in the aperture 8 in the guide 5 until it engages the beveled surface 26, thereby indexing the position of the cut 28 to be made. The remaining springs are guided into the recess 3 by the nose on the die 4. The walls of recess 3 act as braces to strengthen the die bearing jaw 11. The nose 6 on guide 5 protects the end of knife 1 and guides the outer spring when cutting the inner spring.

The cooperation of the guide to index the position of the spring and the slanting knife result in a clean, non-spreading cut, as shown at 28 in Fig. 5. The guide 5 in cooperation with the extension bearing lug 2 protects the knife from injury when not in use.

What is claimed is:

1. In a tool for cutting closely aligned parallel springs, a pair of pivoted handles, a pair of jaws therefor, a die fastened to one of said jaws having a slot therein, a knife mounted on the other jaw in registration with the slot in said die, a guide mounted outside said die, said guide engaging a portion of said knife and having an aperture for receiving the spring to be cut, and strengthening members for said one jaw forming a recess for receiving the spring adjacent the spring to be cut.

2. In a tool for cutting closely aligned parallel springs, a pair of pivoted handles, a pair of jaws therefor, one jaw having an aperture to receive the spring to be cut and a recess for receiving the adjacent spring, a die fastened to said jaw having a slot therein, and a knife blade mounted on the other jaw with the cutting edge thereof slant-

ing with respect to the face of said die and in registration with the slot in said die, said knife blade having its deepest portion positioned toward the free end of said jaw.

3. In a tool for cutting closely aligned parallel springs, a pair of pivoted handles, a pair of jaws therefor, one of said jaws having a recess for receiving the spring adjacent the spring to be cut, a die fastened to said jaw having a slot therein, a knife mounted on the other jaw and slanting with respect to the face of said die and in registration with the slot in said die, said knife having its deepest or tip portion positioned toward the tip of said jaw, a guide mounted outside said die, said guide engaging the tip of said knife, and a lateral extension on the rear end of said knife passing through said guide and carrying a lug moving in the recess of said first jaw to prevent the disengagement of said knife from said guide.

4. In a tool for cutting closely aligned parallel springs, a pair of pivoted handles, a pair of jaws therefor, one of said jaws having a recess for receiving the spring adjacent the spring to be cut, a die fastened to said jaw having a slot therein, a wedge-shaped knife mounted on the other jaw in registration with the slot in said die, the deeper end of said knife being at the tip end of the jaw, a guide for said knife mounted outside said die having an aperture for receiving the spring to be cut, and a lateral extension on the rear end of said knife carrying a lug moving in the recess of said first jaw to prevent the disengagement of said knife from said guide.

5. In a tool for cutting closely aligned parallel springs, a pair of pivoted handles, a pair of jaws therefor, one of said jaws having a recess for receiving the spring adjacent the spring to be cut, a die fastened to said jaw having a slot therein, a knife mounted on the other jaw and slanting at an angle to the face of said die in registration with the slot in said die, said knife having its deepest or tip portion positioned toward the tip of said jaw, a guide mounted outside said die, said guide engaging the tip of said knife, and nose-pieces on said die and said guide to separate said springs.

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