

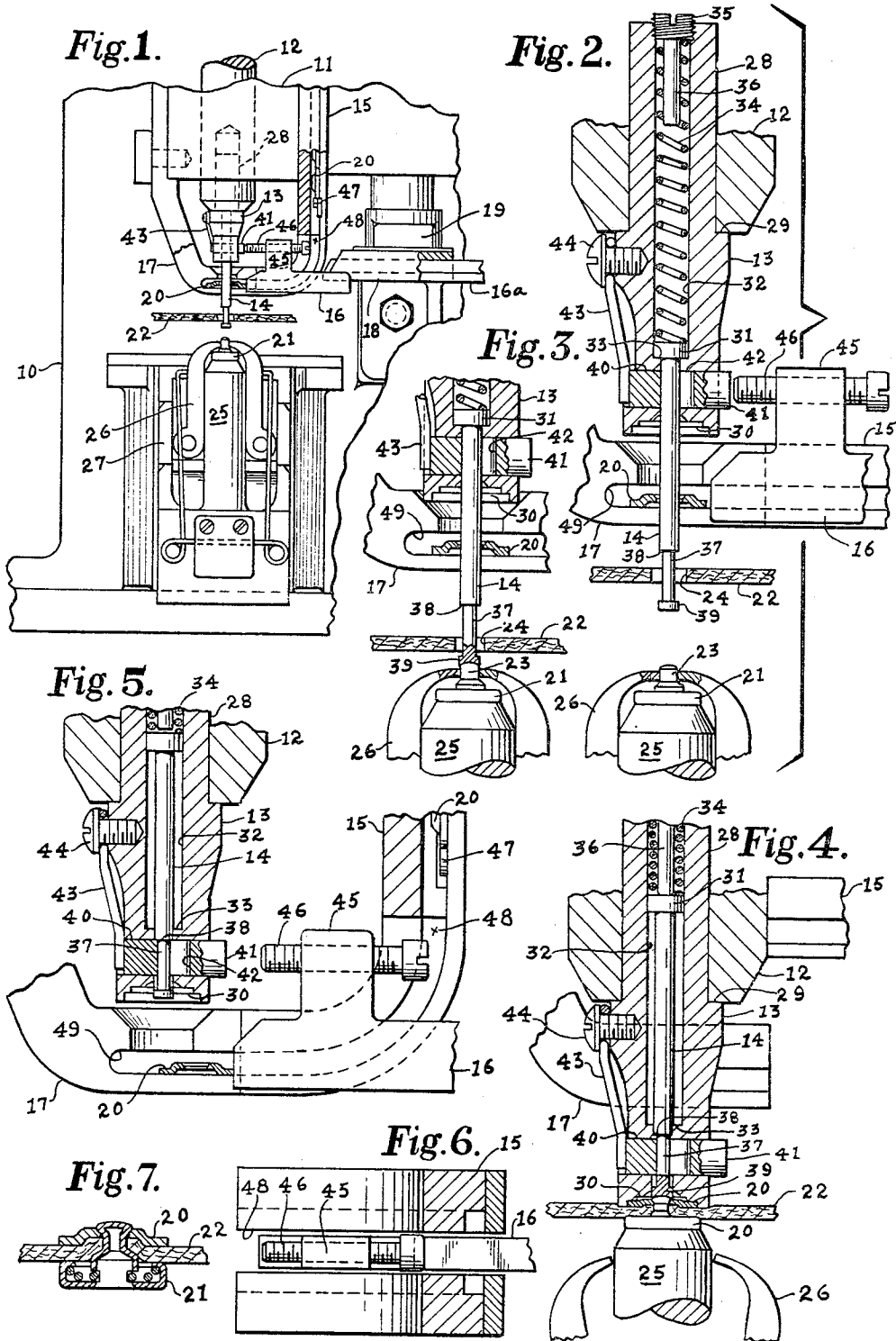
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P. B. JENSEN

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MACHINE FOR REGISTERING WORK

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MACHINE FOR REGISTERING WORK

Philip B. Jensen, Naugatuck, Conn., assignor to Scovill Manufacturing Company, Waterbury, Conn., a corporation of Connecticut

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3 Claims. (Cl. 1—318)

This invention relates to a setting die for use in fastener-setting machines and particularly, to a die having means for properly locating, prior to the fastener-setting operation, a work piece on which the fastener is to be set.

In the setting of snap fasteners to pocketbooks or like articles made of leather or similar material, it is necessary to pre-pierce a hole in the material at the point that the fastener has to be set. Heretofore, the operator had to locate the article with the pre-pierced hole by sight and hand in line with the setting station of the machine. Often the holes in the article would be misaligned with the center of the setting station so that the fastener would be set in an off position, consequently, out of line with its component member.

It is one of the objects of this invention to provide one of the fastener-setting dies with a central locating pin that is projected a substantial distance beyond the working face of the die when the setting dies are apart so that the work piece can be properly located by inserting the projected pin through the pre-pierced hole in such work piece prior to the setting operation.

Another feature of the invention is to retract the locating pin into the die when the dies are closed to set a fastener and to provide means for holding it in such retracted position so as not to interfere with the feeding of the fastener element or attaching element into the holding jaws associated with said die, such holding means being automatically released on completion of the element feeding, so that the locating pin is projected to be in position for insertion into a pre-pierced hole in a work piece.

Other objects and advantages of the invention will be apparent from the following description when considered in conjunction with the accompanying drawing in which:

FIG. 1 is a front view of a portion of a fastener-setting machine having a setting die embodying my invention and showing the setting machine in its normal inactive position;

FIG. 2 is an enlarged sectional view of the upper die with associated machine parts in the same position as FIG. 1;

FIG. 3 is a view similar to FIG. 2 but showing the locating pin of the upper die making contact with the fastener element;

FIG. 4 is a similar view showing the setting dies in fastener-setting position;

FIG. 5 is a similar view showing the upper die approaching the end of its up-stroke;

FIG. 6 is a top plan view of the discharge end of the magazine feed track; and

FIG. 7 is a cross-sectional view of the fastener elements as they appear set upon a support piece.

Referring to the drawing wherein FIG. 1 shows a portion of a fastener-setting machine, numeral 10 designates the frame having a vertical head 11 in which is reciprocally mounted a plunger 12. A combination setting die 13 and locating pin 14, which are parts of what may be called an upper die set, are fitted into the lower end of the plunger 12. The usual magazine track 15 and feed finger 16 are employed for stacking, guiding and forcing a single attaching element into a pair of separable jaws 17 where the element is held in line with the setting die. The feed finger 16 is carried by a slide 16a slidable in a guide bracket 18 attached to the frame 10. The slide 16a is

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operated in the usual manner by a lever 19 forming a part of the machine.

The attaching element is here shown as an off-set washer 20 having a central hole 20a. The washer is used for securing a socket element 21 to a support piece 22. The socket element 21 is of the spring wire type (see FIG. 5) having a hollow projecting shank 23 which is first inserted through a pre-pierced opening 24 in the support piece and then riveted over the upper face of the washer for holding the parts together. The socket element 21 is fed through a feed track in the usual manner and positioned upon a lower die 25 which is part of the lower die set, and it is held there by a pair of spring-tensioned jaws 26 carried by a slidable block 27.

Considering now the details of the upper die 13, it will be observed that it is formed with a reduced shank 28 fitted into the plunger 12 up to a shoulder 29. The lower end of the die 13 is formed with a suitable recess 30 for receiving the washer 20. The locating pin 14 has an enlarged cylindrical head 31 on its upper end which is slidably mounted in a chamber 32 in said die and normally positioned against a shoulder 33 at the base of said chamber by a coil spring 34. The coil spring 34 is under compression between the pin head 31 and an adjustable screw 35 threaded into the upper end of the chamber 32. The screw 35 is provided with an integral stop pin 36, the purpose of which will be later explained.

In order to feed the washer 20 into the jaws 17 without interference, it is necessary to retract the locating pin 14 into the die 13 and hold it there for a period of time. For this purpose, the lower end of the pin 14 is formed with a reduced stem 37 providing a shoulder 25, 38. The lower end of the stem 37 supports the upsetting head 39 of the die, as will appear later. The lower end of the die 13 is provided with a transverse hole 40 in which is slidably fitted a locking pin 41 having a vertical slot 42 through which the locating pin 14 passes. The locking pin 41 is normally urged to the right to a position where one end of said slot bears against the locating pin 14, by a spring finger 43 attached to the side of the die 13 as by a screw 44.

When the locating pin 14 is in its retracted locked position, as shown in FIG. 4, the shoulder 38 on said pin will abut against the upper surface of the locking pin 41 for a portion of the machine cycle of operation. In order to release the locating pin 14 from its retracted locked position, the feed finger 16 is formed with an upstanding lug 45 in which is threaded a trip member 46, here shown as an adjustable screw normally positioned in axial alignment with said locking pin 41.

Operation

When the fastener-setting machine is in its normal inoperative position, the upper and lower die sets 13 and 25 will be spaced apart with the locating pin 14 projecting downwardly from the upper die, as shown in FIGS. 1 and 2. It will be understood that the off-set washer 20 and socket element 21 will have been fed into their respective jaws from the previous cycle of operation.

The operator can now bring a piece of work 22 to the machine and with its pre-pierced holes 24, slip the piece of work upwardly around the locating pin 14 and then set the machine into operation by tripping a clutch. As the upper die 13 descends, the jaws 17 will be carried downwardly with the die for a portion of its stroke and then stopped at about the position shown in FIG. 3, whereupon the upper die will continue downwardly through the split jaws 17 picking up the washer element 20 and carrying it down to the position of FIG. 4 where it is shown setting over the socket element 21 and bearing against the interposed work piece 22.

The upsetting head 39 of the locating pin 14 will first

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contact the upper end of the fastener rivet shank 23 and as the plunger 12 continues to descend, the pin head 31 will move upwardly in the chamber 32 to a position where it abuts the stop pin 36 and at the same time, compress the spring 34 into the chamber area surrounding said stop pin, as shown in FIGS. 4 and 5. When this abutted connection between locating pin 14 and stop pin 36 takes place, the upsetting head 39 of said locating pin then functions to upset and spread out the fastener rivet shank 23 to complete the fastener-setting operation. In this position, it is to be noted that the stop shoulder 38 on the locating pin 14 is located slightly above the locking pin 41, whereupon the spring finger 43 urges said locating pin to the right so as to permit said locking pin to catch underneath said stop shoulder. The locating pin 14 will thus remain in locked position during the entire up-stroke of the setting die 13.

It will be understood that at the beginning of the machine cycle, the slide 16a with its associated feed finger 16 will move to the right, and at the same time, a single attaching element or washer 20 will be released from the stack of washers in the magazine track 15 by means of a cut-off 47, and dropped to the discharge end of said track.

During the up-stroke of the die, the feed finger 16 will move inwardly, passing through a suitable slot 48 in the discharge end of the magazine track and pick up the previously dropped washer, and feed it into a holding recess 49 in the split jaw 17.

At the end of the inner stroke of the feed finger 16, the trip member 46 carried thereby, will abut one end of the locking pin 41 to release the locating pin 14, and cause it to drop to its extended position. Upon the completion of the machine cycle, the support piece 22 with the fastener parts attached thereto, as shown in FIG. 5, may be removed from the machine and another support piece inserted and properly oriented around the locating pin, ready for another cycle of operation.

One form of the invention is presented herein, but it will be appreciated that the invention is susceptible to other modified forms coming equally within the scope of the appended claims.

What I claim is:

1. In a machine for setting fasteners to a flexible work piece having pre-pierced holes therein, with a fastener element on one side of the work piece and having a projection extending through one of such pre-pierced holes and secured by an apertured attaching element on the opposite side of said work piece, the combination comprising

- (a) one die set for holding the fastener member;
- (b) a second die set for holding the attaching element;

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(c) means including a reciprocating feeding finger for moving the attaching element into position in said second die set;

(d) a locating pin arranged axially of said second die set and adapted to be resiliently projected a substantial distance beyond said second die set into position for receiving a pre-pierced hole in the work piece for locating said work piece, said locating pin being adapted to engage the fastener element when said die sets are moved toward each other and to retract away from such projected position;

(e) a catch for automatically engaging said locating pin to retain it in such retracted position; and

(f) means carried by said feed finger to release said catch upon completion of the feeding movement of such finger.

2. In a machine for setting fasteners to a flexible work piece having pre-pierced holes therein, with a fastener element on one side of the work piece and having a projection extending through one of such pre-pierced holes and secured by an apertured attaching element on the opposite side of said work piece, the combination comprising

(a) one die set for holding the fastener member;

(b) a second die set for holding the attaching element;

(c) means including a reciprocating feeding finger for moving the attaching element into position in said second die set;

(d) an elongated locating pin slidable in an axial guide-way in said second die set;

(e) a coil spring in said second die set bearing on one end of said pin and adapted to project the other end of the pin a substantial distance beyond said second die set so that one of the pre-pierced holes in a work piece can be placed over the pin for locating the work piece, said pin being automatically retractable when the dies are closed by engagement of its projected end with a fastener element in the first die set;

(f) a spring catch for automatically holding said pin in retracted position on opening of the dies and means carried by said feed finger to release said catch at the completion of the feeding movement of such finger to allow said spring to project the locating pin through the apertured attaching element in said second die set so as to be in position for again receiving a pre-pierced hole in a work piece.

3. The combination defined in claim 2 together with a positive stop in said second die set engageable by said locating pin to limit its travel.

No references cited.