



EUROPEAN PATENT APPLICATION

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Rivet setting tool.

A rivet setting tool (10) is disclosed which has a pressure regulating assembly for preventing tool operation above a selected maximum pressure. Depression of the trigger (12) above that pressure will fail to displace a two position valve (30) to a position where the tool will communicate with the inlet air.

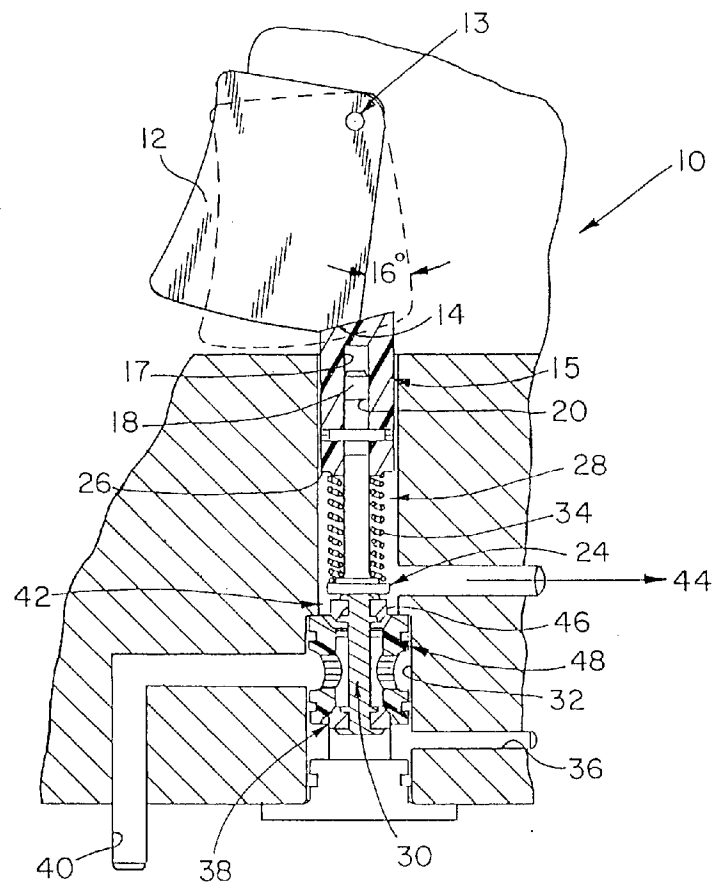


FIG. 1

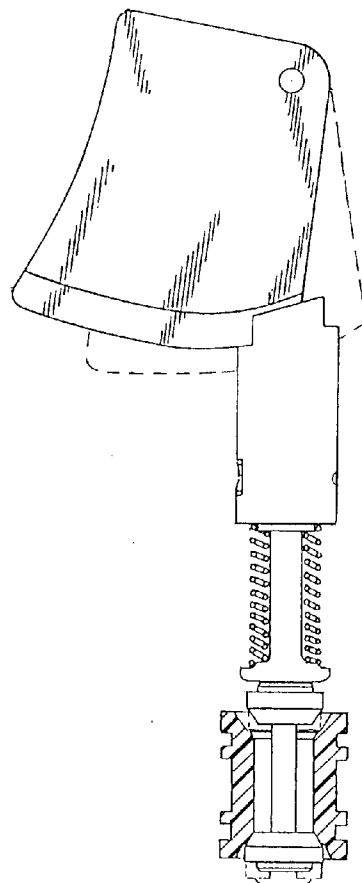


FIG. 2

The present invention relates to rivet setting tools which rely on air pressure as the motive force.

It is generally understood by rivet tool operators that rivet tool speed is a function of the supplied air pressure and accordingly operators tend to increase air pressure to increase their throughput. Such tools however, are designed for operation within a selected pressure range and when operated above this range the mechanisms will wear at a high rate.

It is accordingly an object of the present invention to prevent rivet tool operation above the allowable pressure range.

Other objects and advantages of the present invention will become apparent from the following portion of this specification and from the accompanying drawing which illustrates in accordance with the mandate of the patent statutes a presently preferred embodiment incorporating the principles of the invention.

REFERRING TO THE DRAWINGS:

Figure 1 is an elevational cross sectional view of a portion of a rivet tool made in accordance with the teachings of the present invention:

Figure 2 is a view similar to that of Figure 1 showing the valve in the open position.

The rivet setting tool 10 includes a molded trigger 12 pivotal about a trigger point 13 and having a cam surface 14 along its bottom for engaging a displaceable molded cam follower in the form of a cylindrical rod holder 16. Displaceable up and down within the vertical bore 17 of the rod holder 16 is a push rod 18 which is retained by a retaining pin 19 located within a suitable slot 20 in the push rod holder 16. Compressively located between the head portion 24 of the push rod and the bottom shoulder 26 of the rod holder are outer and inner springs 28. The ends of the slot 20 determine the fully retracted and fully extended positions of the push rod relative to the rod holder 16.

Located below this pressure regulator assembly is a conical face double acting poppet valve 30 which is supported within a suitable bore 32 which communicates with the bore 34 in which the pressure regulator assembly is located. In normal operation, when the trigger 12 is released (the fully illustrated position) pressurized inlet air from an external supply, which enters via an opening 36 into the poppet valve bore 32 below the valve, forces the lower valve seal 38 into a closed position elevating the pressure regulator assembly and returning the trigger to its deactivated position. At this time, air from the tool chamber will pass through a conduit 40, through the poppet valve and through the open exhaust side of the valve to an exhaust port 44. During normal operation, pulling the trigger will lower the pressure regulator assembly sealing the upper valve seal 46 against the valve body 48 and opening the inlet side connecting supply air

through conduit 40 to the tool chamber.

The strength of the springs 28 is selected so that should inlet air pressure exceed a specified pressure the springs will compress allowing downward displacement of the rod holder 16 relative to the stationary push rod 18 when the trigger is depressed to activate the system. The inlet side of the valve accordingly will remain sealed and the outlet side will continue to connect the tool chamber to exhaust therefore preventing tool operation at an excessive pressure which could damage the tool.

Claims

1. A rivet setting tool comprising

a two way poppet valve for alternately connecting an air line from the tool chamber to inlet and exhaust lines, said valve including a body and a spool assembly having upper and lower valve seals,

a trigger displaceable between release and depressed position and having a cam surface, and

a retractable rod assembly located between said trigger and said spool assembly and displaceable between upper and lower positions including

a push rod having a head portion,

rod holder means for supporting said push rod for selected movement between advanced and retracted positions relative to said rod, and

spring means compressively located between said push rod head portion and said rod holder means for maintaining said push rod at said advanced position and for resisting displacement of said push rod to said retracted position,

the strength of said spring means being selected so that so long as the operating air pressure is less than a maximum pressure, depression of said trigger will displace said rod assembly with said push rod at said advanced position from said upper position to said lower position thereby opening the inlet side of said poppet valve but that when the operating pressure exceeds the maximum pressure the pressure will overcome said spring displacing said push rod from said advanced position to said retracted position whereby the inlet side of said poppet valve will be closed.

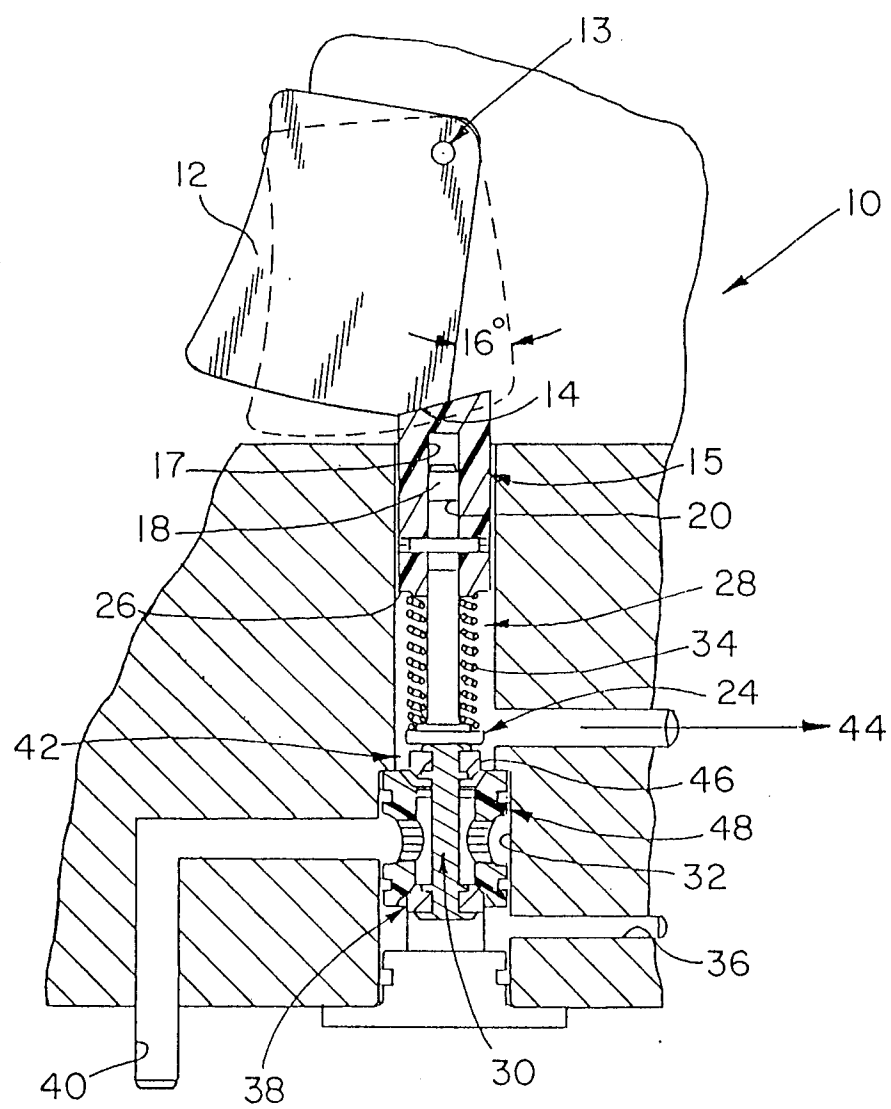


FIG. 1

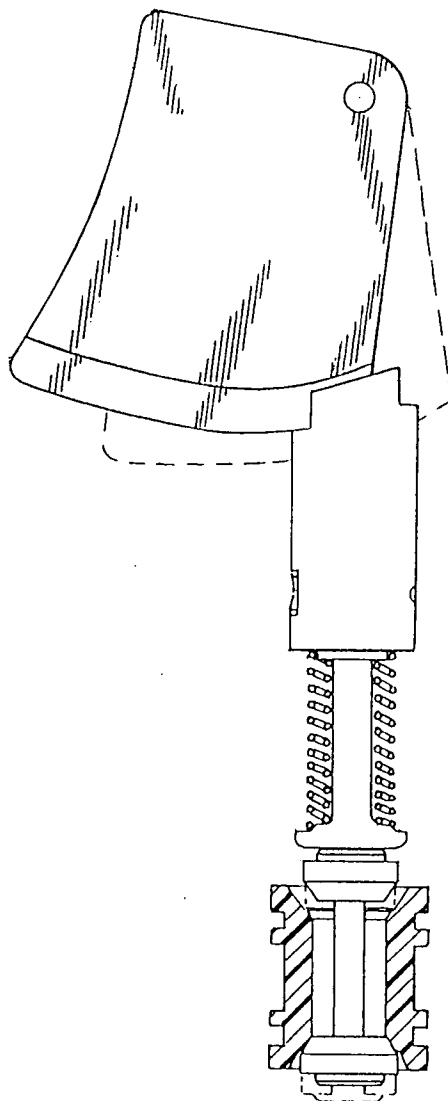


FIG. 2



European Patent
Office

EUROPEAN SEARCH REPORT

Application Number

EP 91 30 8125

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl.5)
A	US-A-4 598 571 (R.W.OEFINGER) * column 3, line 10 - line 38; figure 1 * ---	1	B21J15/06
A	US-A-3 898 833 (R.F.RICHARDSON) * figures 4,5 * ---	1	
A	US-A-3 082 898 (K.BOSCH) * figures 1,4 * -----	1	
			TECHNICAL FIELDS SEARCHED (Int. Cl.5)
			821J
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 18 DECEMBER 1991	Examiner THE K.H.
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			

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