March 28, 1944. F. D. GRIM 2,345,534

LUTING MACHINE

Filed April 8, 1942

Fig. 1

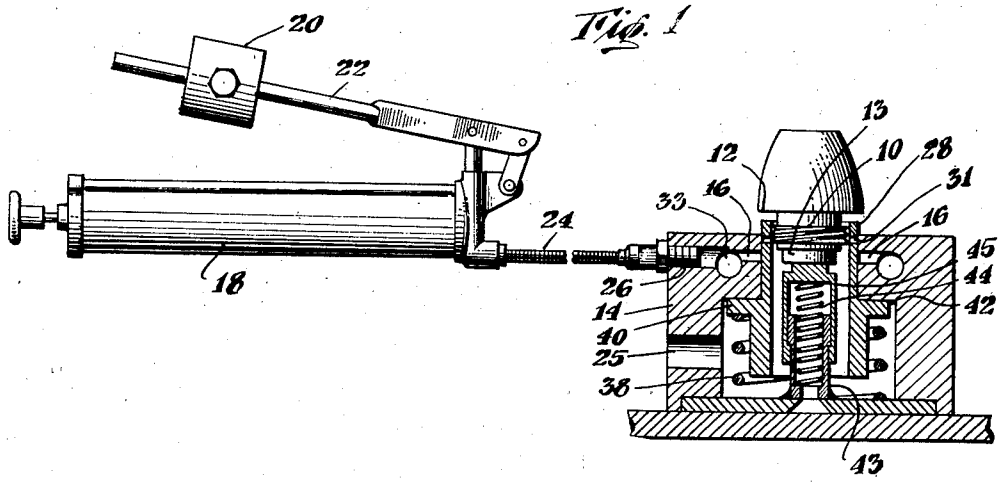


Fig. 2

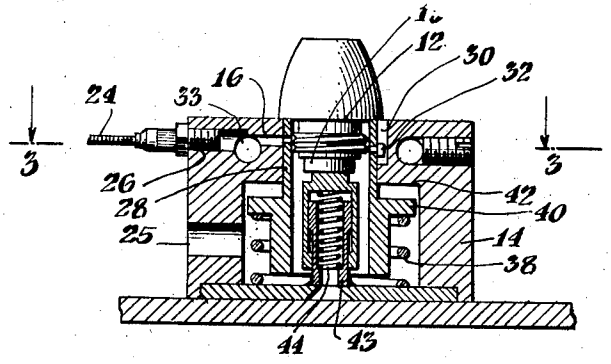
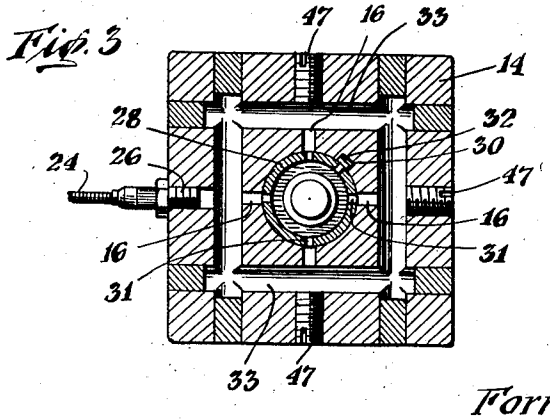


Fig. 3



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Patented Mar. 28, 1944

2,345,534

UNITED STATES PATENT OFFICE

2,345,534

LUTING MACHINE

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Application April 8, 1942, Serial No. 438,212

5 Claims. (Cl. 91—18)

This invention relates to a luting apparatus adapted to be operated so as to apply a luting composition quickly and uniformly to members to be luted.

In connection with the luting of selected portions of various objects, such as threaded portions, for example, it is important to apply the luting in amount that is neither too large nor too small and that is spaced at desired position or positions upon the said portion. The present invention provides an apparatus that makes possible the quick and economical application of the luting as required.

The invention comprises the herein described assembly of coacting parts and, more specifically means for holding the portion of the member to be luted within a sleeve and adjacent to a port in the sleeve, means causing the movement of the sleeve and said member therein as pressure is applied to the said member, so that the port within the sleeve comes to register with channels in a holding member, and means for maintaining luting composition under pressure in the said channels, so that at the moment of registration of the said port with the channel, the luting composition flows through the port and against the member to be luted. In the preferred embodiment the invention the holding member is provided with a plurality of channels, the sleeve is provided with a plurality of ports, and the apparatus includes a spring support for the said sleeve, so that the spring raises the sleeve normally to such position that the ports therein are not in registration with the said channels, the apparatus including also a spring operated discharge element disposed within the sleeve for elevating the member to be luted and assisting in removing the said member from the apparatus, after the member has been luted and is to be withdrawn from the apparatus.

The invention will first be illustrated by description in detail in connection with the luting of the threads of the nose of the Oerlikon anti-aircraft shell and in connection with the attached drawing to which reference is made.

Fig. 1 is a side view partly in section showing the over-all assembly with the nose piece of an Oerlikon shell resting by its own weight upon the apparatus.

Fig. 2 is a like sectional view of a portion of the assembly, with the shell nose pressed home into the apparatus.

Fig. 3 is a horizontal sectional view on line 3—3 of Fig. 2.

The nose of the Oerlikon shell includes the threaded portion 10 that is to be luted, a shoulder 12, and a portion 13 projecting to the rear from the said shoulder, as shown.

The luting apparatus includes a rigid member 14, sometimes referred to herein as a block, that may be square, cylindrical, or of other convenient form provided with one or more channels 16 for luting composition which is supplied to advantage from a pressure lubricating device such as a pump 18 of the grease gun type, the pressure on the gun being set and maintained by the positioning of weight 20 on the handle 22 and the lubricant being delivered from the gun by flexible connection 24 to the said rigid member at position 26 and thus into the luting composition supply channels 33 and 16.

The block 14 is drilled or otherwise provided with a space that communicates with the exterior, that may be centrally located, and that is adapted to receive a sleeve 28. Block 14 is also provided with an air release vent 25.

The sleeve member 28 is fitted slidably within the wall of the said space, is provided with one or more ports 30, and is held in alinement with respect to the rigid member 14, as by means of slot 30 extending in the direction of movement of the sleeve and keying element 32 engaged slidably within the said slot, the said slot and key being each in either the sleeve 30 or member 14 and in fixed relation thereto. Thus, the key may be a guide screw or lug held on one of the parts 14 or 28 and the slot may be formed in the other of the said parts, so that angular movement of the sleeve member 28 is prevented. The key and slot cannot be in the same one of the said parts.

The sleeve at its top is suitably of such size of opening as to abut against the shoulder 12 of the shell nose and allow the extension downward into the sleeve of the projecting part 13 of the shell.

The sleeve is supported resiliently, as by a spring such as the coil 38 that normally maintains the sleeve in the position shown in Fig. 1, so that the ports 31 are out of register with openings from the channels 16 and the flow of luting composition is prevented, the outward movement of the sleeve under the spring pressure being limited by the abutment of shoulder 40 of the sleeve against a shoulder 42 of the rigid member 14.

The apparatus includes also a discharge element or kicker including a rigid guide 43 enclosing spring 44 supporting a movable sleeve element 45 at such an elevation that the projecting part 13 of the shell contacts the top of the sleeve

45 before the shoulder 12 of the shell abuts against the top of the sleeve 28. The guide member 43 is secured by welding or otherwise to the member 14. Clean out plugs 47 are provided in line with the said ports.

As the shell nose is pressed downwardly, the sleeve is correspondingly depressed against the spring action, until the ports in the sleeve register with the luting channels the composition being thus caused to flow under the prevailing pressure through the ports, and the threads of the shell being luted in spots or strips that are spaced from each other by approximately the angular spacing of the said ports and registering channels.

Also, the projection 13 of the shell depresses the part 45 of the discharge element. After the downward movement is completed and the threaded portion of the shell is properly luted, the pressure upon the shell is released, whereupon the kicker raises the shell from abutment of its shoulder with the sleeve and promotes the quick lifting of the shell from the apparatus.

The pressure used to force the shell and sleeve downward is ordinarily manual, this being a convenient method of operation and other means of applying pressure not being necessary although they may be used if desired.

There may be substituted for the Oerlikon shell part other members to be lubricated as, for example, bolts provided with shoulders or heads extending beyond the cylindrical part of the bolt. With any member to be luted, the dimensions of the sleeve and engaging parts of the apparatus are so selected that the sleeve will abut against an enlargement on the member to be lubricated (as the shoulder or head of a bolt) and the threaded portion of such member will rest in close proximity to and suitably in contact with the inner side of the sleeve adjacent to the port or ports 31.

As the luting composition, there is used a pasty mass of lubricating properties such as petroleum jelly, a cup grease, or a pipe joint lubricating composition. Other luting composition may be used, the term "luting" as used herein including "lubricating."

The particular luting composition will vary with the nature of the article to be luted and with the purpose of the luting. When lubrication and protection of threads is desired, as in the case of bolt threads that are to be engaged by nuts, the luting composition is suitably a lubricating material such as vaseline or a very heavy difficultly flowable lubricating oil or paste. When the luting is intended to bind together two parts into a more or less permanent assembly, then the luting composition may be shellac or other resin cut by a small proportion of solvent to a semi-plastic condition and adapted to harden by evaporation of the solvent or on standing.

The apparatus may be constructed of usual materials, as, for example, steel, stainless steel, brass, or plastic material that is rigid at ordinary temperatures. The spring parts, however, must be constructed of spring steel or like resiliently yieldable material.

It will be understood also that it is intended to cover all changes and modifications of the example of the invention herein chosen for the purpose of illustration which do not constitute departures from the spirit and scope of the invention.

What I claim is:

1. A luting apparatus for applying a composition of flowable consistency to the part of a member to be luted, the apparatus comprising a rigid block provided with a space that communicates an exterior surface of the block and serves to receive a sleeve and provided with a channel communicating with the said space, a rigid sleeve slidably fitted within the said space and provided with a port extending through the wall of the sleeve and serving as the sleeve is moved within the said space to register with the said channel, a spring support for the said sleeve normally holding the sleeve at such a position that the port is out of register with the channel, means for supporting within the said sleeve the part of the member to be luted, and a pump for supplying the luting composition under pressure to the said channel and maintaining the pressure upon the composition in the channel, so that, when the said port and channel are placed in registration, the luting composition passes through the channel and port and against the said member and, when pressure on the sleeve is released, the said spring returns the sleeve to the position in which the port and channel are out of register and the flow of the luting composition is discontinued.

2. An apparatus as described in claim 1 serving to lute a member provided with a shoulder, the sleeve being of size to abut against the said shoulder.

3. An apparatus as described in claim 1 serving to lute a member provided with a shoulder, the sleeve being of size to abut against the said shoulder and the apparatus including within the said space a discharge mechanism, the discharge mechanism comprising a movable element contacting the projection beyond the said shoulder of the member to be luted, as the member is introduced and the shoulder pushed home against the sleeve, a guide for the said element, and a spring support for the said element, the spring serving to restore the element to its original position when pressure upon the said member is released and to discharge the said member from abutment of its shoulder against the said sleeve.

4. An apparatus as described in claim 1 including means for preventing angular rotation of the sleeve within the said space, said means comprising a key element and a slot, the said slot extending in the direction of movement of the sleeve and slidably engaging the key element, the slot and key element being in fixed relation one each to the sleeve and said rigid member and not both to the same part, and the said slot being out of register with the said channel at all positions of the sleeve.

5. A luting apparatus for applying a composition of flowable consistency to the part of a member to be luted, the apparatus comprising a rigid block provided with a space communicating with a surface of the said member, adapted to receive a sleeve, and provided with a channel communicating with the said space, a rigid sleeve slidably fitted to the said block and provided with a port extending through the wall of the sleeve, the port being adapted as the sleeve is moved with respect to the said block to register with the said channel, a spring support for the said sleeve normally holding the sleeve at such a position that the port is out of register with the channel, and a pump for supplying the luting composition under pressure to the said channel and maintaining the pressure upon the composition in the channel, so that, when the said port and channel are placed in registration, the luting composition passes through the channel and port and against the

said member and, when pressure on the sleeve is released, the said spring returns the sleeve to the position in which the port and channel are out of register and the flow of the luting composition is discontinued, the apparatus including spring means supporting the part of the member to be luted adjacent to the said port so that, when pressure is applied to force the member against the supporting spring means, the said part comes into registration with the port and, when the pressure is released, the member is returned to its normal position by the spring means.

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