

H. EICHHORN.
SEWING MACHINE LUBRICATING DEVICE.
APPLICATION FILED SEPT. 11, 1913.

1,097,403.

Patented May 19, 1914.

Fig. 1.

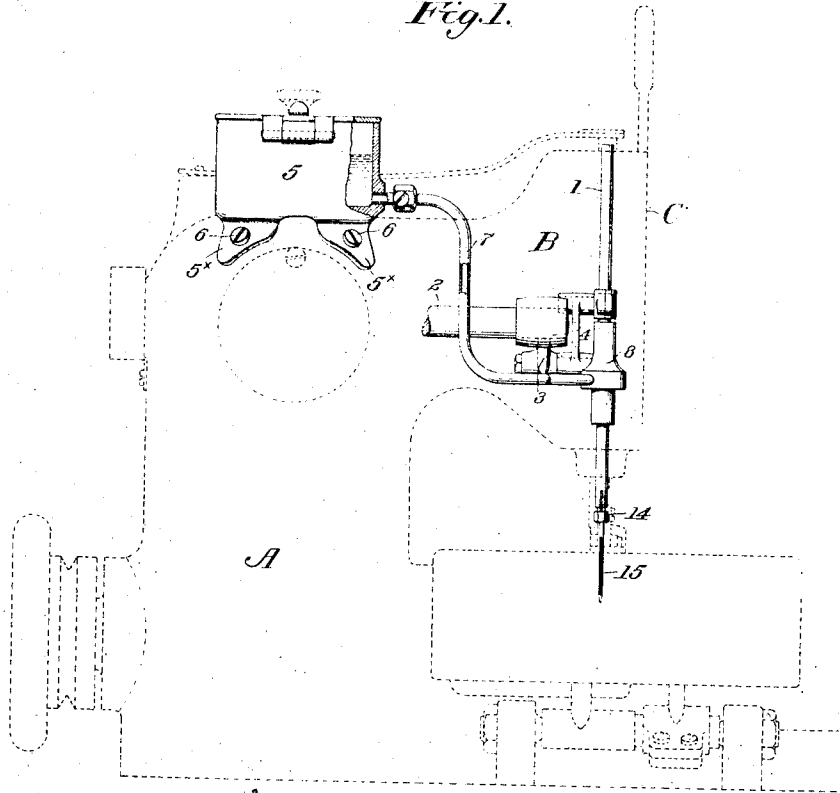


Fig. 2.

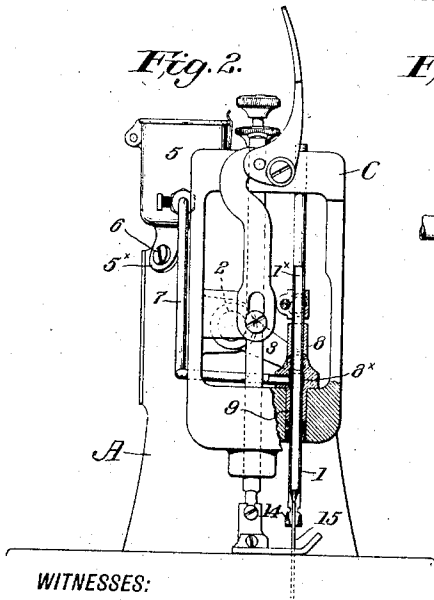


Fig. 3.

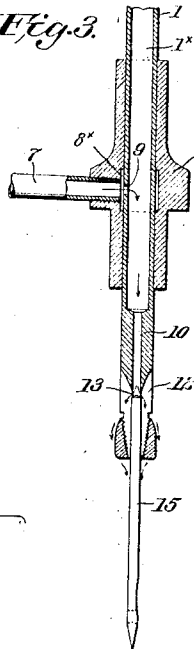


Fig. 4.

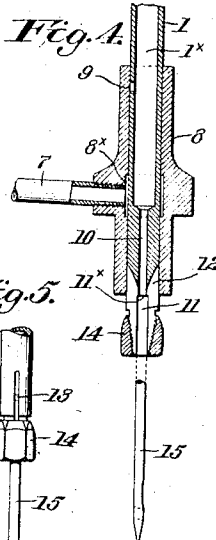
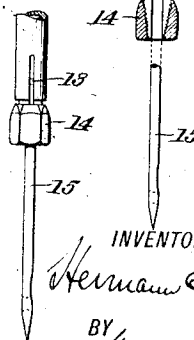


Fig. 5.



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HERMANN EICHHORN, OF ELIZABETH, NEW JERSEY, ASSIGNOR TO THE SINGER MANUFACTURING COMPANY, A CORPORATION OF NEW JERSEY.

SEWING-MACHINE-LUBRICATING DEVICE.

1,097,403.

Specification of Letters Patent.

Patented May 12, 1914.

Application filed September 11, 1913. Serial No. 739,266.

To all whom it may concern.

Be it known that I, HERMANN EICHHORN, a citizen of the United States, residing at Elizabeth, in the county of Union and State

of New Jersey, have invented certain new and useful Improvements in Sewing-Machine-Lubricating Devices, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates to an improvement in that class of sewing machine lubricating devices in which means are provided for conducting lubricant to the reciprocating needle; and it is designed more particularly for employment in machines adapted to sew heavy or coarse material of such nature that considerable friction is created by the passage of the needle therethrough. In such machines it is desirable to maintain a film

of lubricant between the surface of the needle-blade and the material during the sewing operation; and the present invention is designed to conduct a measured quantity of lubricant to the needle and to distribute such lubricant over the surface thereof without attention on the part of the sewing machine operator, other than the maintenance of a supply of lubricant in a suitable reservoir mounted upon the frame of the machine.

The device comprises a reservoir provided with a tubular conduit which conducts the lubricant to an annular chamber formed in a bushing mounted within the head of the sewing machine frame. The bushing serves as a lower bearing for the reciprocating needle-bar, and the latter forms the inner wall of the annular chamber. The needle-bar is bored out axially to form a conduit for the lubricant, and is provided with an aperture or port, which, during the reciprocation of said needle-bar, comes into and out of register with the tubular conduit leading from the reservoir. Thus the lubricant is permitted to flow from the reservoir into the needle-bar at intermittent periods during the reciprocation of the latter. The lower end of the needle-bar is provided with a needle shank cavity, is threaded, and is formed with a slit, to provide a clamping member for the needle-shank, its coating member being a clamping nut. The lubricant passes through the axial cavity or conduit in the needle-bar to the lower end of said bar, thence through the slit in the latter which extends above the shank of the

needle, and thence over the beveled clamping nut to the needle-bar

In the accompanying drawings, Figure 1 is a side elevation of the device as applied to a Singer machine for sewing bags, the frame of such machine being shown in dotted lines. Fig. 2 is an end elevation partially in section showing the needle-bar in its extreme lower position, the needle-bar port being closed. Fig. 3 is a detail view in section showing the needle-bar in an intermediate position, the needle-bar port being open. Fig. 4 is a detail view in section showing the needle-bar in its extreme upper position, the needle-bar port being closed. Fig. 5 is a detail view of the lower portion of the needle-bar showing one of the lubricant ducts from which the lubricant passes to the needle.

As herein represented, the device is applied to a sewing machine in which reciprocating movements are imparted to the needle-bar 1 by driving-shaft 2 through the crank-arm 3 and link 4, said driving-shaft being mounted within the overhanging arm B of a frame A. Upon the overhanging arm B is mounted a lubricant reservoir 5, which may be of any suitable form. In this instance the reservoir is provided with downwardly extending lugs or feet 5* having openings for the passage of screws 6 by which the reservoir is secured to the overhanging arm B. The lower wall of the reservoir is provided with an opening to receive tubular conduit 7 by which the lubricant is conducted to an annular chamber 8* formed in a bushing 8 mounted within the head C of overhanging arm B of the frame. The bushing 8 serves as the lower bearing member for the reciprocating needle-bar 1, and the needle-bar forms the inner wall of said lubricant chamber 8*. It will be seen that annular chamber 8* serves to distribute lubricant around the outer face of the needle-bar, and thus to lubricate said bar in its movements within bushing 8.

The needle-bar is bored out axially to provide a cavity or conduit 1* into which the lubricant is permitted to flow when the needle-bar port 9 comes into register with annular chamber 8* and tubular conduit 7. In the present instance the port 9 is so located as to come into register with the tubular conduit 7 for a brief period both during the rise and the descent of the needle-bar,

said port being closed when the needle is withdrawn from the work.

The cavity or conduit 1* of the needle-bar registers with a reduced lubricant passage 10 formed in said bar, which passage communicates with a needle-cavity 11 and with a lateral opening or slit 12 which extends through the needle-bar. The needle-cavity is slightly greater in diameter than lubricant passage 10 so that an annular shoulder or stop 11* is provided against which the shank end of the needle abuts when it is clamped in the needle-bar. Inasmuch as lateral opening 12 passes through the lubricant passage 10 at a point slightly above shoulder 11*, two lubricant ducts 13 are provided at opposite sides of the needle-bar through which the lubricant passes to beveled clamping-nut 14 which serves to secure the shank of the needle 15 within needle-cavity 11.

In the present instance the lubricant ducts 13 and needle-bar port 9 are so proportioned in size that cavity 1* of the needle-bar acts merely as a conduit for the lubricant. However, said ducts and port may be so relatively proportioned that needle-bar cavity 1* may serve as an auxiliary reservoir. In such case the lubricant as it gradually passes from the needle-bar through ducts 13 is replaced by the flow of lubricant from reservoir 5 through port 9, as will be understood without further explanation. It will also be understood that the ducts 13 and port 9 may be so proportioned that sufficient lubricant will flow from the ducts to lubricate the thread in addition to the needle.

The lubricant reservoir may be of any desired form and located at any suitable point, it being necessary only to provide means for storing a supply of lubricant preliminary to its passage into the needle-bar.

Having thus set forth the nature of the invention, what I claim herein is:—

1. In a lubricating device for sewing machines, a lubricant receptacle, a lubricant

conduit leading from said receptacle and including a chambered needle-bar, a valve operated by said needle-bar in its reciprocatory movements whereby lubricant is permitted to flow from the reservoir and into said needle-bar at intermittent periods, and means for conducting the lubricant from said needle-bar to a needle carried thereby.

2. In a lubricating device for sewing machines, a lubricant receptacle, a lubricant conduit leading from said receptacle and including a chambered needle-bar, a needle carried by said needle-bar, a lubricant duct leading from the needle-bar to said needle, and means including said needle-bar for controlling the flow of lubricant through said conduit.

3. In a lubricating device for sewing machines, a lubricant receptacle, a needle-bar, a conduit adapted to conduct lubricant from said receptacle to the needle-bar, a chamber formed in said needle-bar, a port entering said chamber and intermittently registering with said conduit during the reciprocation of the needle-bar, and a lubricant duct leading from said chamber to a needle supported by said needle-bar.

4. In a lubricating device for sewing machines, a frame and a lubricant receptacle supported thereby, a needle-bar and a bearing member therefor, a chamber formed in said needle-bar, a port entering said chamber, a lubricant conduit leading from the receptacle, an annular chamber formed in said bearing member and communicating with said conduit, and a lubricant duct leading from the chamber formed in said needle-bar to a needle supported by said bar.

In testimony whereof, I have signed my name to this specification, in the presence of two subscribing witnesses.

HERMANN EICHHORN.

Witnesses:

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