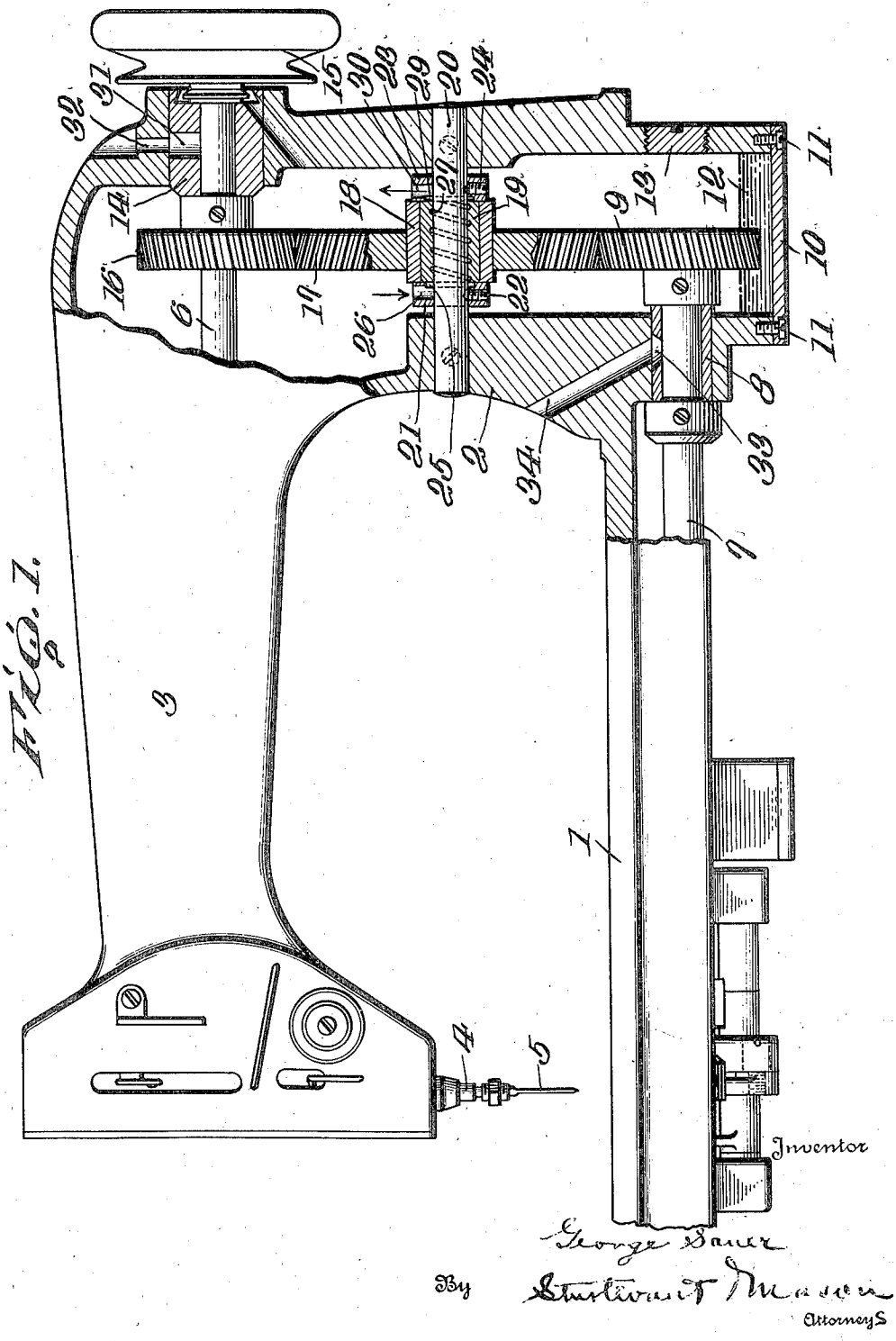
March 22, 1938. G. SAUER 2,111,873

TRANSMISSION MECHANISM FOR SEWING MACHINES

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TRANSMISSION MECHANISM FOR SEWING MACHINES

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Fig. 2.

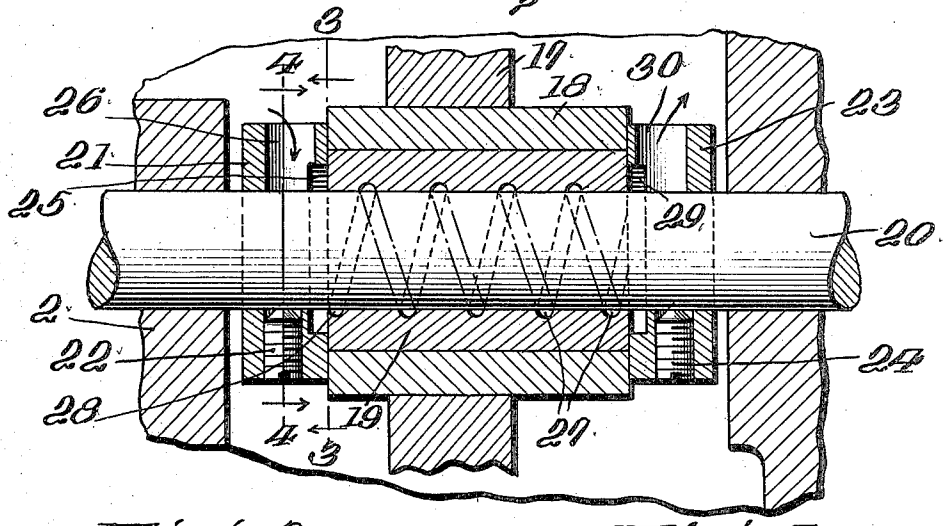


Fig. 3.

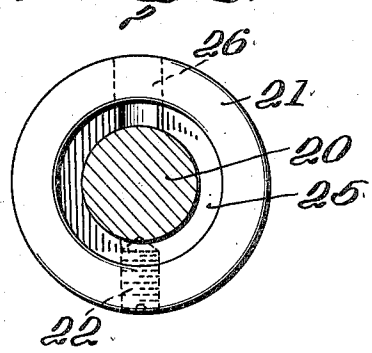


Fig. 4.

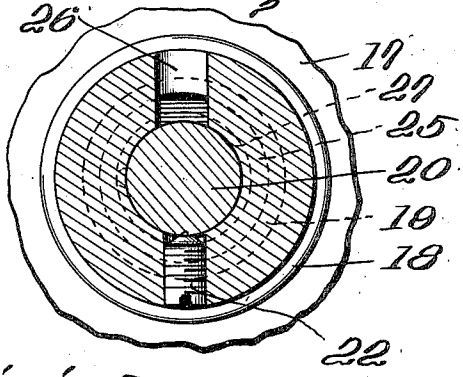
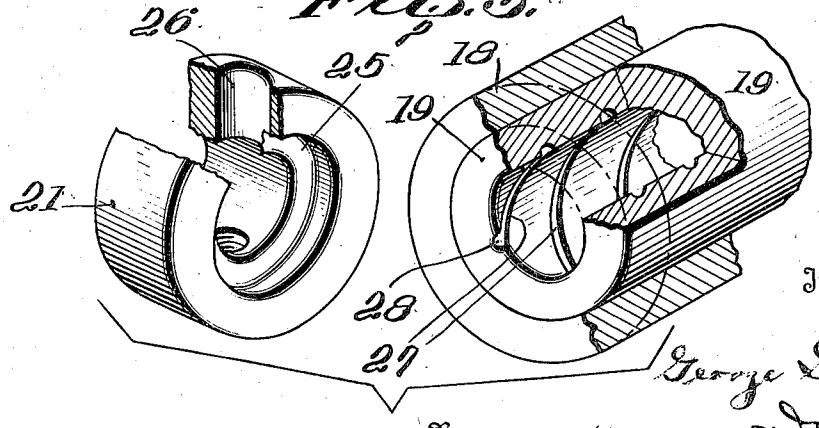


Fig. 5.



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Patented Mar. 22, 1938

2,111,873

UNITED STATES PATENT OFFICE

2,111,873

TRANSMISSION MECHANISM FOR SEWING MACHINES

George Sauer, Berwyn, Ill., assignor to Union Special Machine Company, Chicago, Ill., a corporation of Illinois

Application June 26, 1934, Serial No. 732,518

3 Claims. (Cl. 184—13)

The invention relates to new and useful improvements in a transmission mechanism for a sewing machine wherein the actuating mechanism for the operated parts include an upper rotating shaft and a lower rotating shaft.

An object of the invention is to provide a machine of the above type wherein power is transmitted from one shaft to the other by a train of intermeshing gears, and wherein the idler gear is so mounted in the standard of the machine that lubricating oil may be lifted from an oil bath at the bottom of the standard by said gears and caused to circulate through the supporting bearing for an intermediate gear and the surplus oil returned to the bath at the bottom of the standard.

In the drawings—

Figure 1 is a view partly in front elevation and partly in section of a sewing machine embodying the invention;

Fig. 2 is an enlarged vertical sectional view through the supporting means for the intermediate transmitting gear;

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

Fig. 4 is a sectional view on the line 4—4 of Fig. 2, and

Fig. 5 is a view partly in section and partly in perspective showing the hub of the intermediate gear, the bearing bushings therefor and one of the holding collars with the parts separated and parts broken away to show the inner structure thereof.

The machine to which the invention is applied is of the type shown in the application filed by Norman V. Christensen and Charles F. Rubel, May 9, 1933, Serial No. 670,186. The machine includes a work support 1 which is in the form of a supporting bed for the bearings for the parts beneath the same. Attached to this combined work support and supporting bed is a standard 2 which carries an overhanging arm 3. The needle bar 4 carrying a needle 5 reciprocates in the standard and is operated by a shaft 6 mounted for rotation in the overhanging arm and in a bearing carried by the standard. Beneath the work support is a rotary hook and a feeding mechanism operated from a shaft 7. This shaft 7 is mounted in bearings carried by the bed, and in a bearing 8 carried by a depending portion formed as a part of the standard. The shaft extends through the bearing and is provided with a gear wheel 9. The lower end of the standard is closed by a plate 10 secured thereto by suitable screws 11. Thus an oil bath is formed which is indicated at 12. The gear wheel 9 contacts with the oil bath and will lift the oil from the bath as it rotates. There is an opening in the outer wall of the standard closed by a cap member 13. In the present embodiment of the invention, the upper shaft 6 is a driving shaft, and this shaft extends through the bearing 14 and is provided with a driving belt wheel 15. Mounted on the shaft is a gear wheel 16. Said gear wheel 16 meshes with an intermediate gear 17 which in turn meshes with the gear 9, and thus the driving power applied to the shaft 6 is transmitted through this train of gears to the shaft 7.

The intermediate gear 17 is provided with a hub 18 within which is a bushing 19. This bushing is carried by a stationary shaft 20 fixed in the walls of the standard by suitable set screws. At one end of the hub 18 is a collar 21 which is fixed to the shaft 20 by means of a set screw 22. At the other end of the hub 18 is a collar 23 which is fixed to the shaft by means of a set screw 24. These two collars hold the intermediate gear from lateral movement on the shaft 20, while at the same time permitting free rotation of the gear.

The collar 21, as shown in Figures 2, 3 and 5, is provided at the inner face thereof adjacent the bushing 19 with a cylindrical recess 25. It is also provided with a radial opening 26 which leads into this recess 25. This forms an oil chamber. The oil taken up by the gear 9 is handed to the gear 17 and to the gear 16, and as these gears rotate, it will be thrown therefrom, and some of the oil returning by gravity to the oil bath at the bottom of the standard will enter the opening 26, passing into the recess 25, and thus keep the chamber well filled with oil. The bushing 19 is provided with a spiral groove 27, the end 28 of which extends all the way to the end of the bushing, and therefore, the oil in the chamber formed by the recess 25 will pass in through this open end of the spiral groove and be caused to flow through the bearing, well lubricating the movable contacting parts of the bushing with the shaft, and the surplus oil which is not used up will be discharged from the other end of the spiral groove. The collar 23 has a similar cylindrical recess 29, and a radial opening 30 which leads thereto. The surplus oil fed into this chamber formed by the opening 30 and the recess 29 will fill the chamber and overflow and pass back into the bath at the lower end of the standard. It will thus be seen that the oil is caused to circulate through the bearing which not only keeps the bearing lubricated, but keeps it

flushed clean of any sediment that might otherwise collect.

The bearing 14 for the upper shaft has an oil passage 31 therethrough, and oil is supplied from the port 32. The bearing 8 has an oil passage 33 therethrough and oil is supplied to this passage from the port 34. This provides a very efficient way of lubricating the respective bearings for the shafts adjacent the transmitting gears and also for the bearing for the intermediate gear.

It is obvious that changes in the details of construction can be made without departing from the spirit of the invention as set forth in the appended claims.

Having thus described the invention, what I claim as new and desire to secure by Letters Patent, is—

1. In a sewing machine, a work support, a hollow standard, an overhanging arm carried by the standard, a rotary shaft in said overhanging arm and extending through said standard, a gear on said shaft, a rotary shaft beneath the work support extending into said standard, a gear carried by said last-named shaft, a stationary shaft carried by said standard, an intermediate gear mounted on said shaft and meshing with said respective gears on the shaft in the overhanging arm and beneath the work support, means for closing the lower end of said standard for forming an oil sump in which the lowermost gear rotates so that lubricating oil is carried to the gears and thrown therefrom into the standard above said stationary shaft, a bushing located between the intermediate gear and the stationary shaft and turning therewith, said bushing having a spiral groove formed therein open at the ends of the bushing, a collar fixed to said shaft at each end of said bushing, each collar having an oil chamber communicating with the groove in the bushing, and opening into the hollow standard, said openings being disposed so that oil descending by gravity will be collected in one of said openings and forcibly fed by the spiral groove through the rotating of the parts and discharged from the other opening.

2. In a sewing machine, an enclosed casing for mechanism, a shaft disposed in said casing, a rotatable member journaled on said shaft, stationary thrust members engaging said rotatable member at either side of its bearing and preventing endwise movement of said rotatable member on said shaft, said thrust members and bearing being constructed and arranged to provide a continuous lubricant duct having an inlet collecting port in one thrust member and an outlet discharge port in the other thrust member, and means for supplying lubricant to the inlet port in the thrust member.

3. In a sewing machine, an enclosed casing for mechanism, said casing being provided with a lubricant sump in the lower portion thereof containing a fluid lubricant, a shaft disposed in said casing and held from rotation, a rotatable member journaled on said shaft, thrust members fixed to said shaft and engaging the rotatable member at either side of its bearing and preventing endwise movement of the rotatable member on said shaft, one of said thrust members having an inlet port at the upper side thereof, the other thrust member having an outlet port, and a continuous lubricant duct connecting the inlet port and the outlet port for furnishing lubricant to the bearing for said rotatable member, said duct being so disposed and arranged as to cause lubricant to flow from the inlet port to the outlet port when the rotatable member is rotated and means adapted to extend into said lubricant and coacting with said rotatable member for distributing lubricant throughout the casing and to the inlet port.

GEORGE SAUER.