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GEAR PUMP FOR ARTIFICIAL SILK SPINNING MACHINES

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Fig. 1

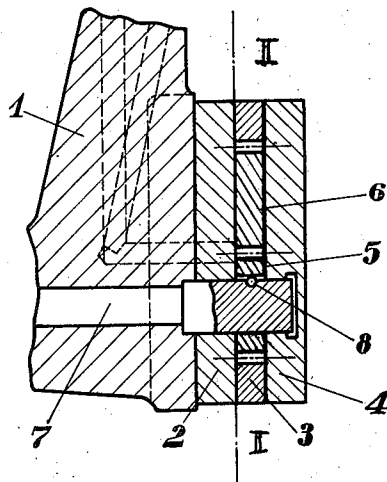


Fig. 2

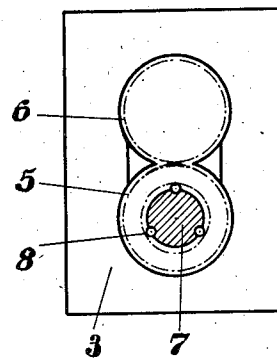
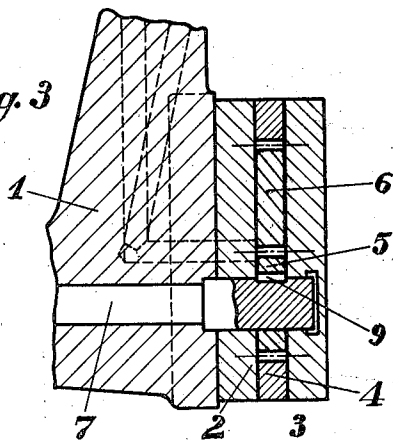


Fig. 3



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GEAR PUMP FOR ARTIFICIAL SILK
SPINNING MACHINES

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In Germany December 20, 1932

1 Claim. (Cl. 103—126)

This invention relates to a gear pump for feeding the composition to be spun in artificial silk spinning machines. In the known pumps of this type the driving wheel of the pump is coupled with the driving shaft in known manner by a key and groove. This method of coupling presents the objection, in connection with gear pumps for artificial silk spinning machines, that, owing to the cutting of the groove in the gear, the lateral packing surface, that is the distance from the bore of the wheel to the root of the tooth, is considerably reduced, which soon results in leakage and consequently in a reduction in the quantity supplied. The depth of the groove can evidently not be reduced indiscriminately, as it must have a depth corresponding to the stresses which arise. Moreover, the groove, in order to prevent premature wear and a one-sided displacement, must be sharp-edged and rectangular, which results in a further reduction of the packing surface. It is known in general mechanical engineering to arrange several keys around the circumference of the shaft. They are mostly so-called tangent keys which are mutually displaced through 120° or 180° and serve for allowing the entire height of the key to act both on the shaft and also on the workpiece in order to transmit the greatest possible power. Consequently, they have an entirely different duty and function to fulfill, so that this known type cannot be compared in any manner with the invention.

The invention relates to gear pumps for artificial silk spinning machines, in which the above mentioned objections are overcome in that the driving gear of the pump is coupled with the driving shaft by loosely inserted balls or cylindrical bolts distributed around the circumference of the shaft. The balls or bolts are preferably so arranged that they engage half in the shaft and half in the gear and in view of the loose insertion of the balls, limited tilting movements are permitted by the gear to compensate for uneven packing surfaces.

This arrangement presents the advantage that the lateral packing surface of the gear is considerably enlarged because the bore of the gear has no deep grooves but only a small semi-circular recess, so that a leakage of the pump and a reduction of the output are avoided. The stress hitherto acting on one key is according to the invention distributed to several catch members, which are distributed around the circumference

of the shaft, so that a corresponding enlargement of the lateral packing surface is possible.

Two embodiments of the invention are illustrated by way of example in the accompanying drawing in which:—

Fig. 1 shows in longitudinal section the main part of a gear pump.

Fig. 2 is a section on line II—II of Fig. 1.

Fig. 3 is a similar view to Fig. 1 showing a modified form of construction.

The pump comprises a support 1 by means of which the pump is clamped on to the spinning machine, a front plate 2, middle plate 3 and rear plate 4. The middle plate serves for accommodating the gear wheels 5 and 6 which deliver the solution from the feed pipe to the spinning nozzle, whereas the front plate 2 and rear plate 4 serve merely for covering or closing the pump. The pump is driven by means of a driving shaft 1 journaled in the support and the pump plates, which shaft is coupled with the driving pump gear 5 by inserted balls 8 or rollers 9 distributed around the circumference of the shaft. The balls or rollers engage half in the shaft 7 and half in the gear 5 so that the gear has only small hemispherical or semi-cylindrical recesses around the circumference of its bore, and consequently the lateral packing surfaces of the gear 5 are only influenced to an immaterial extent. Thus these packing surfaces are considerably enlarged, which has a correspondingly favorable effect on the delivery, output and life of the pump; the balls 8 are loosely inserted between the gear 5 and shaft 7 whereby the gear 5 may tilt within specific limits to compensate for uneven packing surfaces.

We claim:—

In a gear wheel pump for artificial silk spinning machines, the combination of a body member having inlet and outlet ports, a driven gear rotatable in the body member, a driving gear in the body member meshing with said driven gear and having semi-cylindrical recesses in its inner circumference, said recesses being uniformly distributed over the circumference, a driving shaft having corresponding peripheral recesses therein, and coupling elements, such as balls, loosely located in said recesses to couple the driving gear with the shaft and arranged to permit limited tilting movements of the driving gear on the shaft.

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