May 23, 1967 C. L. OWENS 3,320,979

HOUSING AND OIL RESERVOIR KIT FOR GEARING OF LOOM LET-OFF

Filed July 30, 1965

FIG. 1

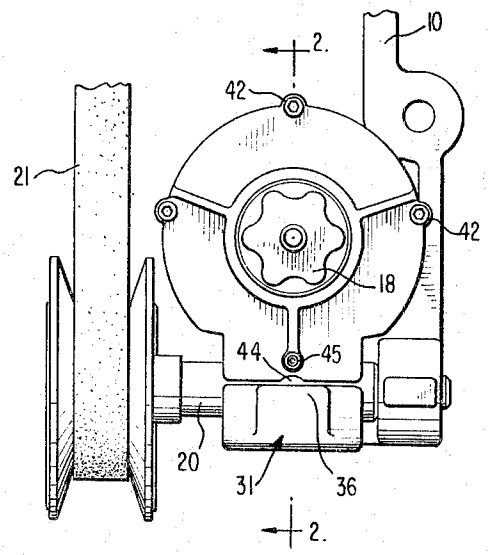


FIG. 2

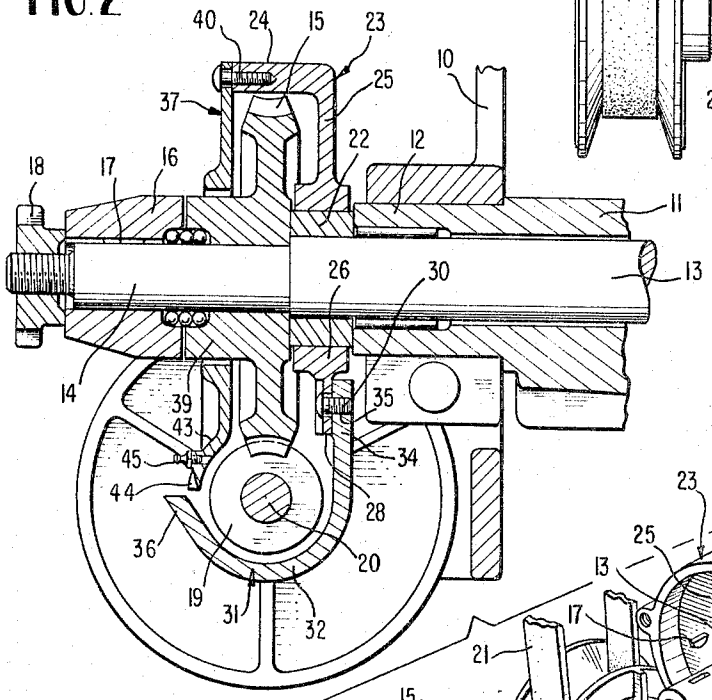
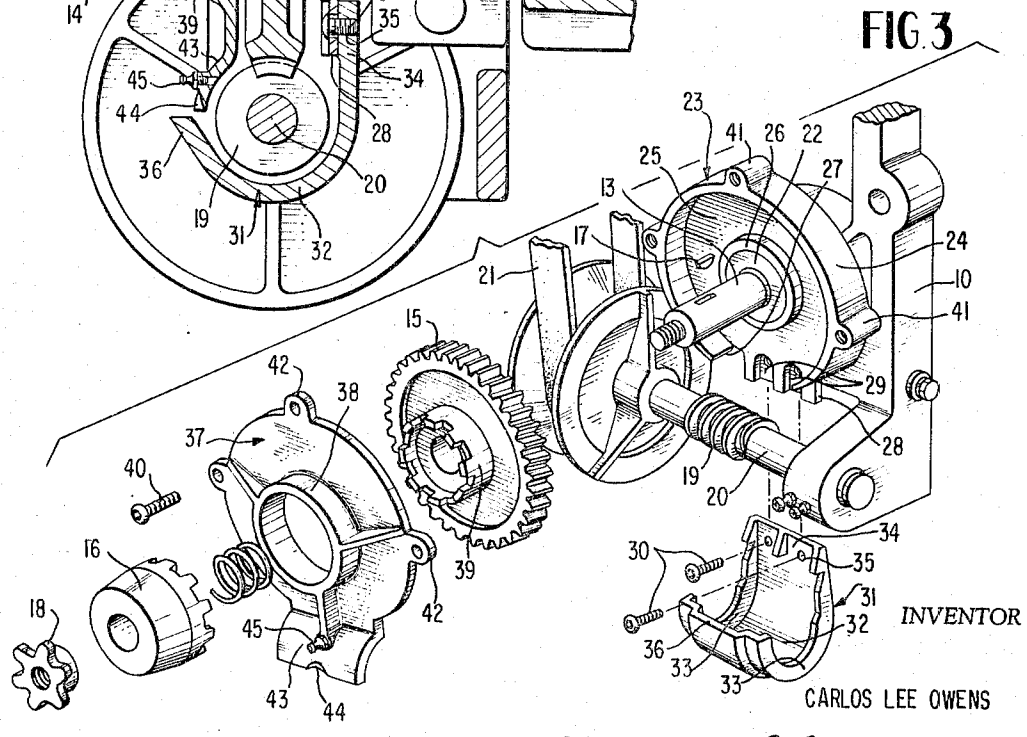


FIG. 3



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HOUSING AND OIL RESERVOIR KIT FOR GEARING OF LOOM LET-OFF

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1 Claim. (Cl. 139—110)

The present invention relates to improvements in let-offs for looms.

More particularly, the invention is concerned with the provision of a cover or housing for gearing associated with the let-off shaft of mechanisms of the type disclosed in prior United States Patents 2,786,491 to J. O. Hunt and 3,156,267 to F. E. Hooper, as well as prior copending application Ser. No. 406,713, filed Oct. 27, 1964, for Improvements in Loom Let-Offs, William J. Rothfuss, et al., now U.S. Patent 3,255,784. In positive type let-offs as disclosed in the above patents and application, it has been customary to operate the worm wheel on the let-off shaft and the coacting worm in a fully exposed state without lubrication. This practice has led to difficulties among which is the presence of large amounts of lint in the weaving room which accumulates on the gearing and causes friction and excessive wear, actually interfering with the operation of the let-off. The use of liquid lubrication on the exposed gearing is not practical mainly because of the presence of an adjacent belt drive which might become contaminated with oil. Also generally it is undesirable to employ oil in an exposed location around textile machinery because of the possibility of spoiling the yarn or cloth.

It is the objective of this invention to solve the above problems concerning the let-off shaft gearing by the provision of a simplified cover or housing kit for the gearing which may be easily applied to the many existing let-offs in the field or to new let-offs at the time of manufacturing. The housing is constructed in three parts for each of assembling in the field with minimum dismantling of the let-off and no alteration of its construction. The housing includes a small oil reservoir with an access opening for the introduction of oil in the field without separating the parts of the housing. The housing or cover protects the associated gearing from lint by fully enclosing the same and also protects the adjacent belt drive from contact with the lubricant. A significant feature of the construction, as previously pointed out, is its ability to be mounted on a conventional let-off without drilling any holes in the let-off mechanism or altering the standard structure in any way whatsoever.

Other objects and advantages of the invention will be apparent during the course of the following detailed description.

In the accompanying drawings forming a part of this application and in which like numerals are employed to designate like parts throughout the same,

FIGURE 1 is a fragmentary side elevational view of a loom let-off equipped with the invention;

FIGURE 2 is an enlarged fragmentary vertical section through the invention taken on line 2—2 of FIGURE 1; and

FIGURE 3 is an exploded perspective view of the invention and associated let-off components.

In the drawings, wherein for the purpose of illustration is shown a preferred embodiment of the invention, the numeral **10** designates the mounting plate of the let-off which corresponds to the plate **14** in the aforementioned Patent 2,786,491. As shown in that patent, the mounting plate and the associated bracket structure **11** is rigidly secured to the adjacent loom side, not shown herein. The bracket structure **11** includes a hub or bearing portion **12** within which is journaled for rotation a let-off shaft **13** which corresponds to the let-off shaft **43** in Patent 2,786,491.

A reduced extension **14** of the let-off shaft **13** has a worm wheel **15** rotatably mounted thereon and coupled thereto for rotation with the let-off shaft by a clutch element **16** keyed at **17** to the let-off shaft and shiftable into and out of coupling engagement with the worm wheel **15**. A hand nut **18** has screw-threaded engagement with the let-off shaft, as shown, so that the clutch element may be manually released or engaged.

The worm wheel **15** and let-off shaft **13** are driven by a worm **19** on an output shaft **20** of the let-off mechanism corresponding to the shaft **33** in Patent 2,786,491. The output shaft **20** is driven by a variable speed belt drive **21**, as disclosed in said patent. A floating spacer **22** is disposed between the bearing portion **12** and the hub of worm wheel **15**, as shown in FIGURE 2. All of the construction thus far described is conventional and corresponds to the construction in the aforementioned United States patents.

As previously stated, the invention proper is concerned with an enclosure or housing for the gear elements **15** and **19** and with supplying lubrication thereto in such a way that the belt drive is protected on contact with oil. The invention attachment comprises a top housing section **23** having a cylindrically curved side wall **24** and an end wall **25**, the forward side of the housing section **23** being open. Formed centrally on the wall **25** is a hub **26** which receives the floating bushing **22** therein with a small clearance so that some relative movement can occur between the parts, if necessary, during rotation of the let-off shaft **13**. As shown, the housing section **23** has a relatively wide bottom opening **27** in its cylindrical side wall and the lower portion of the end wall **25** has a depending mounting flange **28** including forward recesses **29** to accommodate the heads of screws **30** which are employed to attach a lower oil reservoir member **31** to the housing section **23**, rigidly and detachably.

The reservoir member **31** includes a curved side wall **32** which extends around the worm **19** to enclose the same and also includes arcuate flanges **33** at its ends which lie adjacent the ends of the worm in assembly and receive the shaft **20** in relatively close-fitting relation. An upper flat extension **34** on the reservoir member **31** is apertured at **35** to receive the attaching screws **30**, previously identified. The forward inclined lip **36** of the reservoir member is recessed on its inner sides so that the needle of an oil can or the like may readily introduce oil into the reservoir surrounding the worm **19**.

The invention attachment or kit further comprises a front cover plate **37** of generally circular configuration, including a central tubular hub **38** which loosely engages over the hub **39** of worm wheel **15** with adequate clearance, as shown in FIGURE 2. The front cover plate **37** is detachably rigidly secured to housing section **23** by a plurality of circumferentially spaced screws **40**, received by tapped bosses **41** on the housing section **23** and apertured lugs **42** on the front cover plate.

The front cover plate **37** includes an integral depending forwardly offset cylindrically curved extension **43** to cover the open space immediately above the reservoir lip **36** and to thereby complete the enclosing of the worm **19**, except for a small gap for the introduction of oil, as depicted in FIGURE 2. The extension **43** preferably has a small notch **44** to facilitate the introduction of oil into the reservoir **31**.

It may now be seen that the invention provides a simplified three-part housing and oil reservoir for the let-off gearing elements **15** and **19**, and the invention may be applied to the let-off or removed therefrom in the field

without drilling any holes in the let-off mechanism or modifying the standard construction of the let-off in any manner whatsoever. The three major components 23, 31 and 37 of the invention are held together detachably by two sets of screws 30 and 40 and the entire assembly is suspended from the let-off shaft by the hub 26 of housing section 23 which simply rides on the bushing 22 of the let-off mechanism. Contact of the reservoir flanges 33 with the shaft 20 will counteract any tendency for the housing attachment to rotate with the let-off shaft and the bushing or spacer 22. Consequently, it is unnecessary to positively anchor the housing attachment to the mounting plate 10 and hence no holes need be drilled or other alterations made in the conventional mechanism.

Oil in the reservoir 31 can be replenished at any time from an oil can and the housing parts can be quickly separated, when necessary. The invention attachment satisfies a particular need in a simplified and very economical manner and the advantages of the construction should now be readily apparent to those skilled in the art.

It is also preferred to mount an alemite lubricant fitting on the extension 43, as indicated at 45, to permit the introduction of semisolid lubricant into the reservoir in some instances, as found desirable. This arrangement allows an alternative-type of lubrication where either liquid or semisolid lubricants can be used.

It is to be understood that the form of the invention herewith shown and described is to be taken as a preferred example of the same, and that various changes in the shape, size and arrangement of parts may be resorted to, without departing from the spirit of the invention or scope of the subjoined claim.

Having thus described my invention, I claim:

In a loom let-off mechanism, a rotary let-off shaft, a worn wheel on the let-off shaft to drive the same, a worm and worm shaft beneath the worm wheel and let-off shaft and extending at right angles thereto, the worm meshing with the worm wheel to drive the same, the improvement comprising an attachment kit housing and oil reservoir for the worm wheel and worn adapted to be readily mounted in the field, said attachment kit consisting of a generally cylindrical housing section which is cup-like and having an open side, one end wall and an annular

wall, the annular wall having a bottom opening, the end wall of the housing section having a depending apertured mounting flange integral therewith, the housing section engaging over the worm wheel covering the top of the inner side thereof, the end wall having a central hub receiving the let-off shaft and serving to suspend the attachment kit bodily therefrom, a cylindrically curved oil reservoir member arranged below the lower side of the worm and worm shaft and having arcuate side flanges adapted to contact the worm shaft to resist rotation of the attachment kit with the let-off shaft, the reservoir member having an apertured vertical wall for registry with the depending apertured mounting flange, fastener elements detachably connecting the mounting flange and vertical wall rigidly, the reservoir member having an inclined and forwardly projecting lip extending from its cylindrically curved portion and terminating near the elevation of the axis of the worm shaft, and a front generally flat cover plate detachably secured to the open side of the housing section and covering the outer side of the worm wheel and having a central clearance opening to receive a hub portion of the worm wheel rotatably, the front cover plate having an integral depending arcuate extension thereon surrounding an upper quadrant of said worm and being of approximately the same width as said reservoir member, the last-named extension being spaced from the top of said lip and defining therewith a gap to facilitate the introduction of oil into the reservoir member, the reservoir member being substantially narrower along the axis of the worm shaft than the diameter of said housing section and cover plate.

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