Nov. 18, 1952 F. G. DE SANTIS 2,618,025

GEAR COVER OR GUARD FOR TEXTILE DRAFTING APPARATUS

Filed Jan. 6, 1951

Fig. 1

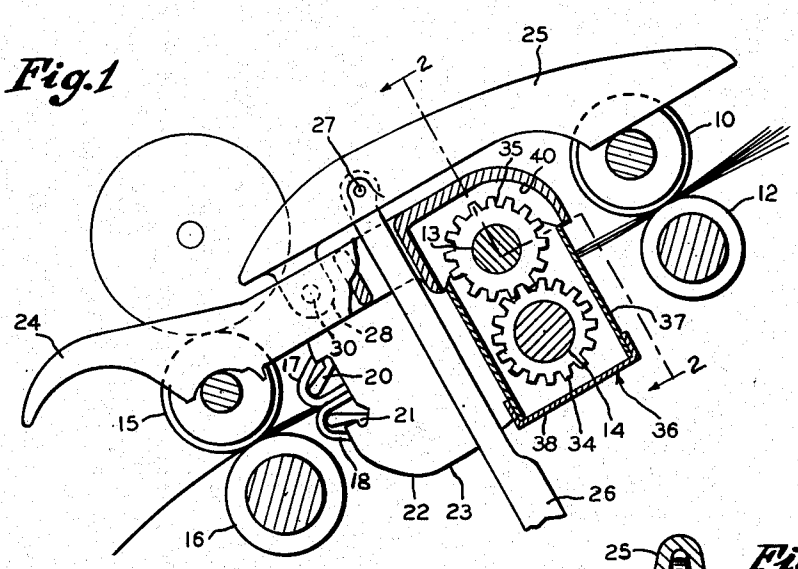


Fig. 2

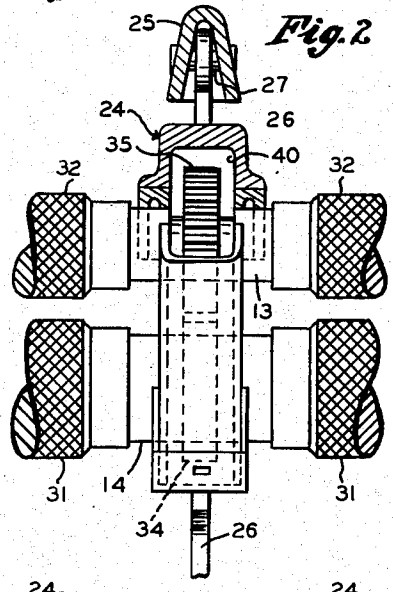


Fig. 3

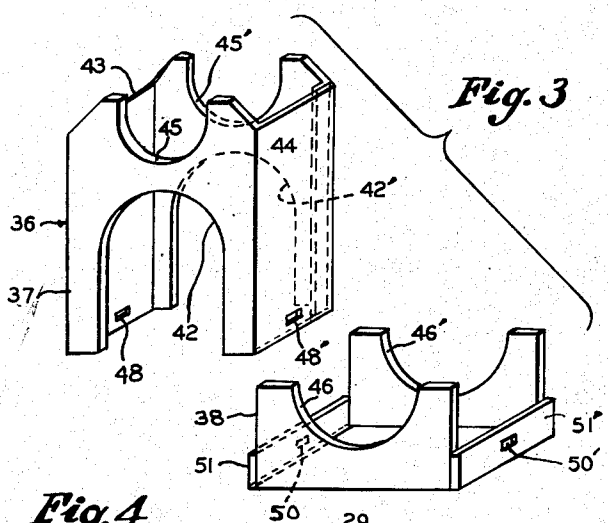


Fig. 4

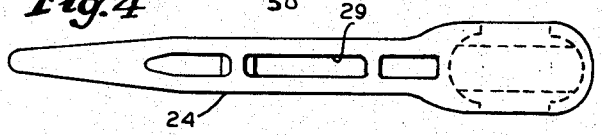


Fig. 5

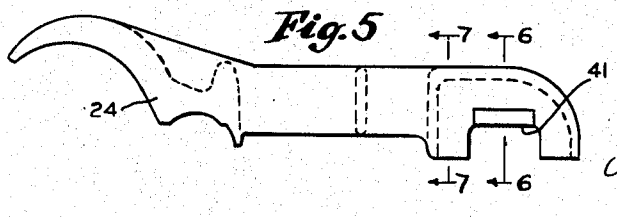
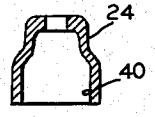


Fig 6



Fig. 7



INVENTOR.
Fausto G. DeSantis
BY
W. Russell Greenwood
ATTORNEY

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GEAR COVER OR GUARD FOR TEXTILE DRAFTING APPARATUS

Fausto G. De Santis, Quincy, Mass., assignor, by mesne assignments, to Whitin Machine Works, a corporation of Massachusetts

Application January 6, 1951, Serial No. 204,717

6 Claims. (Cl. 19—131)

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This invention relates, in general, to long draft spinning, roving, and other like textile drafting frames or machines, with which gear-connected top and bottom intermediate drawing rolls or gear-connected upper and lower apron driving rolls, as the case may be, are employed in the mechanism for drafting textile rovings or slivers. More particularly, the invention is especially directed to an improved gear cover or guard for such gear-connected rolls, and has for its chief object the provision of a simple and effective gear cover or guard structure for the driving gears of said rolls.

According to the invention, a weighting saddle bears upon the upper of said gear-connected rolls and an adjoining top roll to weight these rolls, and a removable gear-embracing casing unit has its upper end portion removably inserted within a recessed part of said saddle while the main body portion of the casing extends downwardly in a depending fashion and to such extent that its wall members surround and completely enclose said gears. The side wall members of the casing opposite the flanks of the meshed gears are suitably shaped to removably receive the respective shafts of the upper and lower gear-connected rolls and the casing body rests upon and is supported on the shaft of the lower of said rolls. The casing body member has generally parallel upright solid end walls which completely close the front and rear sides of the casing by extending upwardly from the bottom of the casing and terminating closely adjacent to the entrance of the recess in the saddle. A detachable cover member closes the bottom of the casing and carries means which are shaped to overlie and close the open shaft receiving portions of the side wall members extending from the underside of the inserted shaft of the lower roll to the bottom of the casing body member.

The invention will be described, for the purposes of illustration only, with reference to gear-connected upper and lower apron driving rolls employed in the drafting mechanism of Casablancas and similar long draft spinning machinery but it is here pointed out that the invention is not limited to long draft spinning apron systems since the invention may be used for gear-driven top and bottom intermediate drawing rolls of a three-line roller type long draft spinning frame.

For a more complete understanding of the nature and objects of my invention, reference may be made to the following detailed description which may be read in conjunction with the accompanying drawing, and the novel features of

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the invention will be particularly pointed out in the appended claims.

In the drawings:

Fig. 1 is a view partly in side elevation and partly in section illustrating a gear cover and guard constructed in accordance with the invention and embodied in a Casablancas type drawing mechanism of a long draft spinning frame;

Fig. 2 is a vertical sectional view, on slightly enlarged scale, taken substantially on the line 2—2 of Fig. 1 and partially showing the knurled apron driving rolls without the associated aprons and cradle parts;

Fig. 3 is an angular exploded view showing the casing or body member and the bottom cover member of my improved gear cover and guard;

Fig. 4 is a top plan view of the front saddle member which when assembled with the casing and its cover completes the assembly to form the final gear cover and guard,

Fig. 5 is a side elevation of the front saddle member illustrated in Fig. 4;

Fig. 6 is a vertical section of the front saddle member, taken substantially on line 6—6 of Fig. 5, looking in the direction of the arrows; and

Fig. 7 is a vertical section of the front saddle member, taken substantially on the line 7—7 of Fig. 5, looking in the direction of the arrows.

Referring to Fig. 1 of the drawing, I have shown parts of a so-called Casablancas long draft spinning frame embodying upper and lower back or feed rolls 10 and 12, upper and lower intermediate apron driving rolls 13 and 14, and upper and lower front or drawing rolls 15 and 16. Endless upper and lower long-draft aprons 17 and 18 are mounted on the intermediate rolls 13 and 14 respectively and have their front loops guided over the cross arms 20 and 21 of a single U-shaped guide bar or tensor member which is held against the forward recessed edge portions of the vertical side frame members 22 of the usual cradle frame 23 by the aprons. The aprons 17 and 18 thus are restrained from lateral or axial displacement by the side frame members 22 and also are supported so that the portions engaging the fibers have parallel cooperating runs closely adjacent to each other and in operative position for gripping and drafting the textile fibers while delivering them to the front rolls 15 and 16. A front saddle member 24 bears upon the top rolls 13 and 15 and a back saddle 25 bears upon the back top roll 10, the necessary weighting pressure being applied to said saddle members through a pull rod or tension member 26 and transmitted thereto by either a weight or a spring (not

shown), as is a usual and well known practice in the art. The pull rod or tension member **26** is pivoted at its upper end to the forward end portion of the back saddle **25** by a cross pin **27**. Between the front saddle member **24** and the back saddle member **25** there is arranged a hinged connection which, as illustrated in Fig. 1, consists of a finger **28** projecting downward from the forward end of the back saddle **25** in advance of the point of attachment thereto of the pull rod **26**, and the finger **28** projects into the middle vertical slot **29** extending through the body of the front saddle **24** and is secured in place by a pivot pin **30**.

It will be understood, of course, that the bottom rolls **12**, **14** and **16** are all positively driven in the usual manner by suitable gearing located at one end of the spinning frame; that these rolls conform to the customary design being made of steel and built up of a series of short sections joined together end-to-end to form a continuous roll length which extends lengthwise of the machine for substantially its entire length, and that the rolls **12** and **16** are provided at closely spaced intervals therealong with a series of longitudinally fluted bosses (not shown) for gripping the sliver as it is conveyed and drafted while the lower intermediate or apron driving roll **14** is provided with a series of roughened or knurled bosses **31**, as shown in Fig. 2, for actuating the lower long draft belts or aprons **18**. The top rolls **10** and **15** are of conventional design being relatively short and each is formed with a pair of bosses having an outer covering of cork, leather or other yielding material, and they bear upon and are driven by the lower rolls **12** and **16** respectively. The apron driving top roll **13** also is of relatively short length and is provided with two axially spaced, roughened or knurled bosses **32**, as shown in Fig. 2, for actuating a pair of upper belts or aprons **17**, as is customary in apron systems of this nature.

As thus arranged, the bottom rolls **12**, **14** and **16** are positively rotated at successively greater surface speeds whereby the several pairs of upper and lower rolls in the series from back to front of the drafting mechanism will rotate with increased surface velocities to perform the desired drafting action on the fibers and to effect the desired total draft of the fibers as they are conveyed and drafted between the successive pairs of drafting elements of the mechanism during the forward travel of the rovings or slivers therethrough.

A series of driving gears **34** are provided at relatively close intervals on the lower apron driving roll **14** throughout its length for driving each separate intermediate top roll **13**, and each apron driving top roll **13** is provided at its mid-portion with a gear **35** meshing with the associated gear **34** on the lower roll. Thus, the upper intermediate or apron driving top rolls **13** are positively driven from their companion lower apron driving roll **14** to actuate the associated upper and lower long draft aprons **17** and **18** at the same surface speed. It will be understood that all the parts thus far described are or may be of the usual commercial design.

The improved gear cover and guard of the present invention comprises the front saddle member **24** combined with a removable gear-housing unit **36** consisting of a casing or body member **37** and a removable bottom cover member **38**.

The underside of the saddle **24** is recessed as at **40** to accommodate with adequate operating clearance the upper part of the driving gear **35** of the apron driving top roll **13**. As shown in Figs. 2, 5 and 6, the front saddle member **24** is provided with spaced bearing surfaces **41** positioned at the sides of the recess **40** and adapted to engage and to be supported by the shaft of the upper apron driving top roll **13**.

The casing or body member **37** and the bottom cover member **38** of the gear housing unit **36** are each preferably formed from a single piece of sheet metal stamped or cut to provide the requisite developments of the casing and the bottom cover members respectively, after which they are folded or bent to make the respective shapes of the objects shown in Fig. 3. The side walls and lower edges of the casing or body member **37** are cut away as shown in Fig. 3 to provide the open slots or notches **42** and **42'** having arcuate inner ends and of a width to clear the shaft of the lower apron driving roll **14** when in place. The top portions of the side walls of the casing or body member **37** project upwards above the front and rear wall sections **43** and **44** respectively and present tapered corner edges, and the upper edges are slotted or recessed as indicated at **45** and **45'** to clear the driving shaft of the apron driving top roll **13**. The seam or lap joint where the opposed ends of the folded sheet metal piece meet in completing the final folded casing body part **37** either may be left open or these surfaces may be joined together in a suitable manner, as by soldering, brazing, or welding.

The removable cover member **38** has a pair of sheet metal upright side members **46** and **46'** which are spaced apart to receive and embrace the side wall members of the casing body member **37** and to extend upwardly over the exterior surface thereof for sufficient distance to cover the open slots or notches **42** and **42'** in the side walls of the casing body member between the bottom thereof and the underside of the driving shaft of the lower apron driving roll **14** when the casing body member **37** and its cover **38** are assembled with the rolls. The upper edges of the side members **46** and **46'** are slotted or notched, as shown in Fig. 2, to clear the underside of the driving shaft of the lower apron driving roll **14** when the cover is in place.

In order to detachably secure the bottom cover member **38** to the casing body member **37** suitable snap fastening means are provided which are here shown as slots **48** and **48'** formed through the front and back wall sections **43** and **44** respectively of the casing body member **37** midway across said sections but near the bottom edges thereof and having cooperating relationship with a pair of inwardly extending projections **50** and **50'** respectively struck from the material of the upstanding front and rear flanges **51** and **51'** respectively of the cover member **38**.

From the foregoing description it will be apparent that the invention provides a gear cover and guard structure which is of simple and compact construction, inexpensive to manufacture, and one which is capable of providing effective protection to the gears driving either apron-actuating rolls or equivalent gear-connected drawing rolls from dirt, accumulations of lint and/or fly, and accidental injury.

It will be understood that the hollow casing or body member **37** and the detachable bottom cover member **38** which comprise the removable gear-housing unit **36** are not to be limited to being made as sheet metal structures since they may,

if desired, be formed as separate die-cast parts having the shapes here shown without departing from or sacrificing the advantages of the present invention.

The weighting system, and more specifically the arrangement of the saddle members here shown for exerting pressure on the rolls of the drawing mechanism, is incorporated in the drawing mechanism according to the invention set forth in my copending application, Serial No. 256,195, filed November 14, 1951, entitled Pressure apparatus for the drawing mechanism of textile machinery, and forms the subject of the invention as defined in the claims of the above-mentioned copending application.

What is claimed is:

1. In a textile drafting apparatus having a pair of gear-connected upper and lower apron driving rolls, a combined gear cover and guard comprising a saddle member having a recessed portion at its underside to receive the upper part of the driving gear of the upper apron driving roll and presenting spaced bearing portions at each side of said recess in engagement with and supported by the shaft of said upper apron driving roll at each side of said gear, and a removable gear housing unit which includes a casing having its upper end portion inserted within said recess and depending therefrom with side wall members surrounding and enclosing said gears, said casing having its side wall members opposite the flanks of said gears shaped to removably receive the respective shafts of the upper and lower apron driving rolls and supported on the shaft of said lower roll, the bottom and the front, back and side walls of said casing being closed.

2. In a textile drafting apparatus having a pair of gear connected upper and lower apron driving rolls, a combined gear cover and guard comprising a saddle member having a recessed portion at its underside to receive the upper part of the driving gear of the upper apron driving roll and presenting spaced bearing portions at each side of said recess in engagement with and supported by the shaft of said upper apron driving roll at each side of said gear, and a removable gear housing unit which includes a casing having its upper end portion inserted within said recess and depending therefrom, said casing having upright front, back and side wall members enclosing said gears, the side wall members being disposed opposite the respective flanks of said gears and notched to removably receive the respective shafts of the upper and lower apron driving rolls and supported on the shaft of said lower roll, and a removable cover member closing the bottom of said casing.

3. In a textile drafting apparatus having gear-connected upper and lower apron driving rolls, a combined gear cover and guard comprising a saddle member having a recessed portion at its underside to receive the upper part of the driving gear of the upper apron driving roll and presenting spaced bearing portions at each side of said recess in engagement with and supported by the shaft of said upper apron driving roll at each side of said gear, and a removable gear housing unit consisting of a casing member having a pair of parallel upright side wall members respectively shaped to removably receive the respective shafts of said upper and lower apron driving rolls and supported on the shaft of said lower roll, said side wall members embracing the driving gears of both the said upper and lower apron driving rolls and having their upper ends extending upwardly and inserted within the recessed portion of said saddle member, said casing also having substantially parallel upright end walls completely closing the front and rear sides of the casing by extending upwardly from the bottom thereof and terminating closely adjacent to the entrance of said recess in the saddle, and a removable cover member closing the bottom of said casing.

4. In a textile drafting apparatus having gear-connected upper and lower apron driving rolls, a combined gear cover and guard comprising a saddle member having a recessed portion at its underside to receive the upper part of the driving gear of the upper apron driving roll and presenting spaced bearing portions at each side of said recess in engagement with and supported by the shaft of said upper apron driving roll at each side of said gear, and a removable gear housing unit consisting of a casing member having a pair of parallel upright side wall members respectively having open slots or notches to removably receive the respective shafts of said upper and lower apron driving rolls and supported on the shaft of said lower roll, said side wall members embracing the driving gears of both the said upper and lower apron driving rolls and having their upper ends extending upwardly and inserted within the recessed portion of said saddle member, said casing also having substantially parallel upright end walls completely closing the front and rear sides of the casing by extending upwardly from the bottom thereof and terminating closely adjacent to the entrance of said recess in the saddle, and a removable cover member closing the bottom of said casing, said cover member having a pair of spaced upright side members embracing the side wall members of said casing and extending upwardly over the exterior surface thereof for sufficient distance to cover the open slots or notches in the side walls of said casing between the bottom thereof and the underside of the driving shaft of said lower roll when said casing and said cover are assembled with the rolls.

5. In a textile drafting apparatus having front and rear pairs of top and bottom drawing rolls, and gear-connected upper and lower intermediate apron driving rolls, a combined gear cover and guard comprising a front saddle member having a recessed portion at its underside to receive the upper part of the driving gear of the upper intermediate roll and presenting spaced bearing portions at each side of said recess in engagement with and supported by the shaft of said upper intermediate roll at each side of said gear, a removable casing comprising a pair of parallel upright side wall members each shaped to removably receive the respective shafts of said upper and lower intermediate rolls and supported on the shaft of said lower roll, said side wall members embracing the driving gears of both the upper and lower intermediate rolls and having their upper ends extending upwardly and inserted within the recessed portion of said saddle member, said casing also having end walls completely closing the front and rear sides of the casing by extending upwardly from the bottom thereof and terminating closely adjacent to the entrance of said recess in the saddle, a removable cover member closing the bottom of said casing, a pressure-applying back saddle member hingedly connected to said front saddle member extending over and engaging the shaft of the rear top roll, and means for applying weighting pressure on said back saddle member.

6. A textile drawing mechanism comprising in

combination, a pair of top and bottom feed rolls, a pair of top and bottom drawing rolls spaced apart from said feed rolls, upper and lower co-acting endless belts or aprons intermediate said drawing rolls and said feed rolls for conducting roving or sliver passing between them to said drawing rolls, gear-connected upper and lower rolls through the rear loops of the upper and lower belts respectively for actuating the belts, a front saddle member having a recessed portion at its underside to receive the upper part of the driving gear of the upper apron driving roll, said saddle bearing upon the shaft of said upper apron-driving roll and upon the shaft of said top drawing roll, and a removable gear housing unit comprising a casing member including spaced side wall members opposite the flanks of said gears, said casing member being adapted to rest upon the lower apron driving roll and having the upper marginal edge portions notched to accommodate insertion therethrough of the upper apron driving roll, said side wall members having their upper ends extending upwardly above the front and back wall elements of the casing and

inserted within the recessed portion of said front saddle member, the front and back walls of said casing extending upwardly from the bottom thereof and terminating with their upper edges proximate to the entrance of the recessed part of said front saddle to completely close the casing at its front and rear sides, a removable cover member closing the bottom of said casing, and means associated with said casing and said cover member detachably fastening the cover member to said casing.

FAUSTO G. DE SANTIS.

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The following references are of record in the file of this patent:

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