

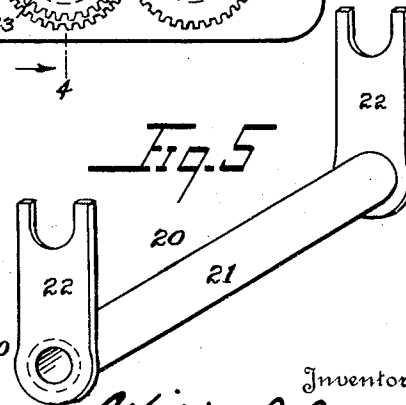
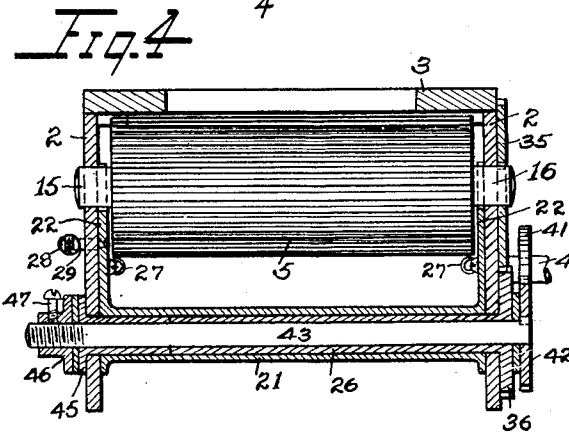
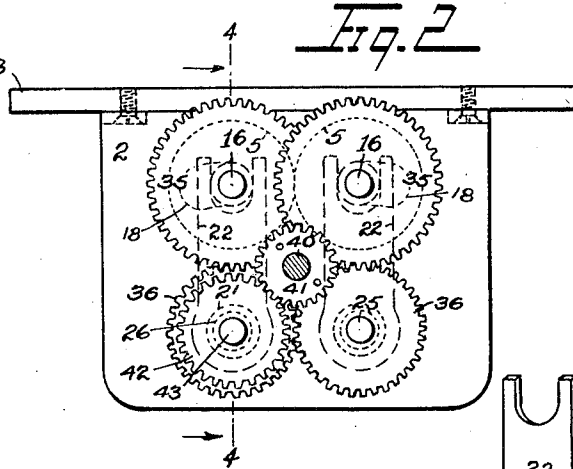
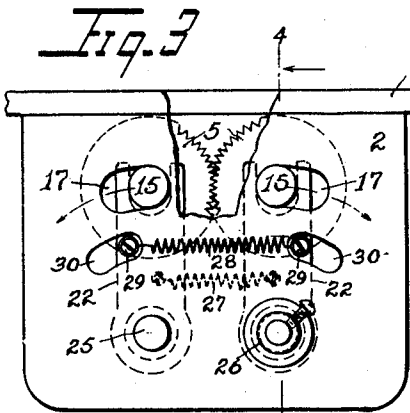
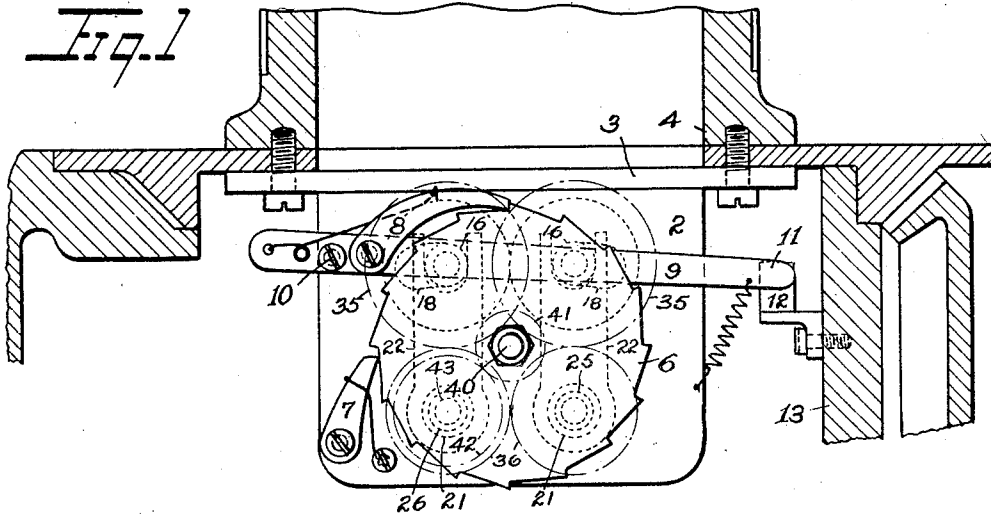
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W. L. LENGEL

TAKE-UP MECHANISM FOR KNITTING MACHINES

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Attorn

UNITED STATES PATENT OFFICE.

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TAKE-UP MECHANISM FOR KNITTING MACHINES.

Application filed May 16, 1923. Serial No. 639,237.

My invention relates to take-up mechanism for knitting machines and particularly to an improved mounting and driving of the cooperating feed rolls thereof as fully described in connection with the accompanying drawing, the novel features being pointed out in the subjoined claims.

Fig. 1 is a side elevation of a take-up mechanism embodying my invention, part of the knitting machine to which it is attached being shown in section.

Fig. 2 is a similar view to Fig. 1 of the take-up mechanism alone with the ratchet drive wheel and pawl removed.

Fig. 3 is an opposite side view to the one shown in Fig. 2.

Fig. 4 is a front vertical section on the line 4—4 of Figs. 2 and 3.

Fig. 5 is a separate view of one of the roll-swinging carriers.

The take-up mechanism is carried, as usual, in a frame having depending side plates 2, 2, and an apertured top plate 3, secured directly to the bottom of the needle cylinder 4, as shown, or to an extension of the latter, in well known manner. Rotation of the feed rolls 5, 5 may be provided for in any well-known manner, the preferred means shown and commonly employed comprising a frame-carried ratchet wheel 6, having a detent pawl 7, and a driving pawl 8 mounted on a spring-retracted lever 9, the latter being pivotally supported on the frame at 10 with an extension 11 for action thereon of a cam 12 at each rotation of the knitting machine. In the rotated needle cylinder type of machine indicated in the drawing, the cam 12 is secured to the machine standard 13 or a fixed part of the machine; but in the type in which the needle cylinder is held and the cam cylinder rotated, cam 12 would be carried by the latter, so that each rotation of the knitting machine will turn ratchet wheel one or more teeth,—the latter being connected through a train of gears as heretofore to the respective feed rolls 5, 5.

The take-up mechanism above briefly referred to, is of the type generally employed, and to which my improvements relate, my objects, among others, being to provide for regulating the tension exerted by the feed rolls so as to vary the same in accordance with the quality and delicacy of the knitted

fabric; and to maintain the parallelism of the yieldingly spreadable rolls so as to avoid the distorted and biased feed heretofore frequently occurring due to a pocket or fold of material forcibly spreading said rolls at one end only.

In the construction shown in the drawings, the feed rolls 5, 5, as usual, have axle extensions 15 and 16 at each end thereof engaging respectively in slotted apertures 17 and 18 in the spaced side plates 2, 2 so as to permit said rolls to spread apart as usual under spring tension for the passage of thickened goods, and to insure that these rolls will always remain parallel no matter at what point in their length such spreading action is exerted, I provide them with special parallel spread-controlling devices 20, shown separately in Fig. 5.

These devices, as shown in the drawing, are formed of a sleeve shaft 21 with rigid radially extending end arms 22, 22, the latter forked at their free ends to engage with axle extensions 15 and 16 of their respective rolls 5, 5. These sleeve shafts 21, extend transversely between side plates 2, 2 and rotatably fit over plate-carrier drive shafts 25, 26 forming part of the drive mechanism hereinafter described, said shafts being spaced beneath their respective rolls 5, 5 in parallel relation with the normal position of the latter. The tension springs 27, 27 for said rolls 5, 5, are secured, as shown, to the opposing end arms 22, 22, and an additional tension spring 28 is shown engaging arm studs 29, 29 projecting through wall apertures 30, 30. This construction, as readily understood, insures that when a spreading force is exerted between any part of the rolls, such movement will be carried by the nearest radial arms 22 through its sleeve 21, to the opposite arms 22 causing both ends of the rolls 5, 5 to move in a parallel arc as desired, the slotted side wall apertures 17 and 18 for axle extensions 15 and 16 curving in a concentric arc from the pivot centers of sleeves 21, 21.

Each feed roll 5, 5 is driven through a gear wheel 35, 35 secured to its axle extension 16 adjacent the outer face of one side wall 2, said gears being out of alinement, as shown, to permit closing together and spreading apart of the rolls, and each gear 35, 35 is in constant mesh with its respective

one of intermeshing gears 36, 36 carried by shafts 25, 26.

The driven ratchet wheel 6, mounted on wall-carrier stud or post 40, carries a concentric pinion 41 meshing with a second gear 42 on drive shaft 26 to drive the latter and intermeshing gears 36, 36, each of the latter driving its respective roll gear 35, 35.

To regulate and control the fixed drive effected by ratchet wheel 6, and adjust the same to different qualities and textures of the knitted goods and avoid the harmful slippage of the rolls upon the non-feeding fabric, I provide a friction control between gear 42 and gear 36; shaft 26 for this purpose being formed with a central aperture and carrying one of gears 36 fixed thereto at one end and a friction disc 45 fixed thereto at the opposite end adjacent the outer face of its side wall 2. Gear 42 is fixed to a shaft 43 extending through the central aperture of shaft 26, said shaft 43 carrying on its free end a threaded friction disc 46 with a locking set screw 47, and friction washers of fiber or the like are interposed respectively between discs 45 and 46 and between gears 42 and 36. By regulatively adjusting threaded friction disc 46 a definite friction between gears 42 and 36 may be had to determine the maximum feeding pull of rolls 5, 5, and when such maximum is exceeded gear 42 idly turns its shaft 43, without rotating gear 36 and the rolls remain at rest on the goods though still exerting a maximum feeding strain thereon.

While I have shown and described a complete and preferred embodiment of my take-up device giving improved and entirely satisfactory results in practice, I do not desire to limit myself to this specific detail con-

struction, as modifications within the spirit of my invention will readily suggest themselves.

What I claim is:

1. A take-up mechanism for knitting machines comprising cooperating yieldably spreadable rolls having independent driving gears, a pair of intermeshing gears respectively engaging said roll gears, a tubular shaft for one of said intermeshing gears having a friction disc at its opposite end, a freely rotatable shaft in said tubular shaft carrying at one end a driven gear and at its opposite end an adjustable friction disc, and friction washers between said discs and gears.

2. A take-up mechanism for circular knitting machines comprising a carrier frame dependently secured to the needle cylinder, a pair of fixedly spaced parallel shafts mounted in said frame, loose sleeves on said shafts each having a pair of rigidly-spaced roll-carrying arms, a pair of fabric-feed rolls spreadably carried by the respective sleeves in positively maintained parallel relation below the knitting point, and springs arranged to normally close together said rolls.

3. A take-up mechanism for circular knitting machines comprising a carrier frame dependently secured to the needle cylinder, a pair of spring-retracted fabric-feed rolls spreadably carried by said frame below the knitting point, and roll-carrier means adapted to positively maintain said spreadable feed-rolls in parallel relation irrespective of varying thickness of the passing fabric at different parts of its width.

In testimony whereof I affix my signature.

WILLIAM L. LENGEL.