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L. C. HUSE.

DIAL ADJUSTMENT FOR KNITTING MACHINES.

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NO MODEL.

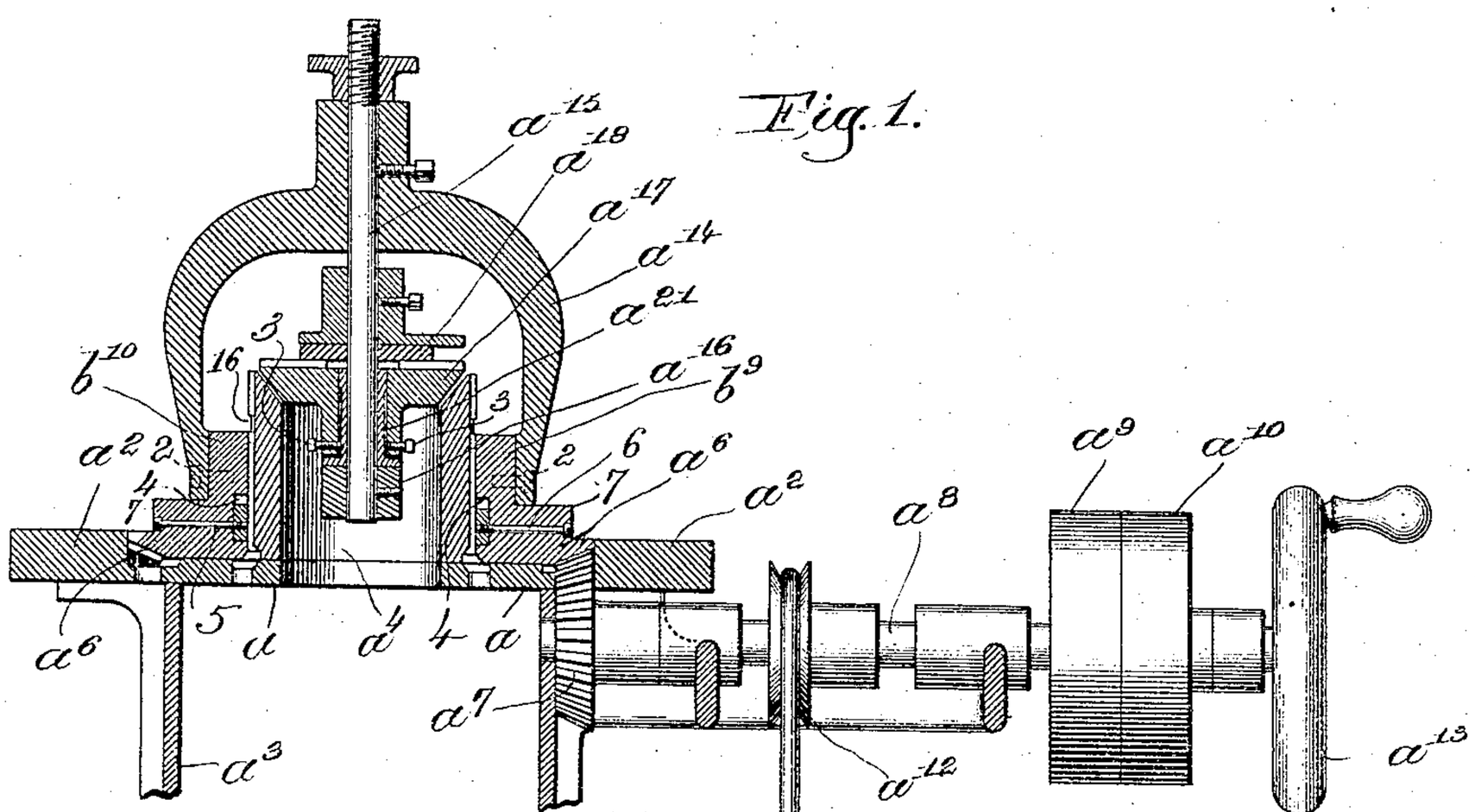

Fig. 1.

Fig. 2.

Fig. 3.

Fig. 4.

Fig. 5.

Fig. 6.

Witnesses:
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UNITED STATES PATENT OFFICE.

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DIAL ADJUSTMENT FOR KNITTING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 766,041, dated July 26, 1904.

Application filed August 6, 1903. Serial No. 168,392. (No model.)

To all whom it may concern.

Be it known that I, LEON C. HUSE, a citizen of the United States, residing at Laconia, in the county of Belknap and State of New Hampshire, have invented an Improvement in Dial Adjustments for Knitting-Machines, of which the following description, in connection with the accompanying drawings, is a specification, like characters on the drawings representing like parts.

This invention has for its object the production of a knitting-machine wherein means shall be provided for accurately adjusting and locating the face of the dial-plate in working relation to the upper end of the needle-cylinder, and while in the embodiment of invention there is shown a particular form of needle and cam cylinder such parts are not of the present invention and are not claimed therein.

Figure 1 of the drawings represents in cross-section a needle-cylinder, cam-cylinder, and yoke sustaining the dial-needle plate, the shaft for actuating the cam-cylinder being in elevation. Fig. 2 is a plan view looking down on part of the machine shown in Fig. 1 with the segmental cam-carrying parts of the cam-cylinder removed. Fig. 3, on a smaller scale, represents the inner side of one of the cylinder-segments removed from the machine. Fig. 4 represents an inner side view of the other segment removed from the machine. Fig. 5 is an enlarged detail of the dial-needle plate, and Fig. 6 is a plan view of the cam-cylinder segments containing the stitch-cam.

In the drawings I have purposely omitted many of the parts of the knitting-machine that my present improvements may be more clearly illustrated, and it will be understood that my invention is applicable to any form of knitting-machine having a cam-cylinder, the particular machine herein partially represented being one adapted for rib-knitting, it using two sets of needles—viz., cylinder-needles and dial-needles—said needles being, however, omitted, as they are of well-known construction.

In the drawings, a^2 represents part of the top or bed of a knitting-machine, supported on suitable standards a^3. The standards have suitable bearings that receive a shaft a^8, provided with a fast and a loose pulley a^9 a^{10} and a hand-wheel a^{13}. The inner end of this shaft has a bevel-gear a^7, that engages teeth at the under side of the ring a^6, forming the base of the cam-cylinder to be described. The base at opposite sides of the uprights b^9 b^{10} is shaped to present two plane surfaces b^2 b^3, having threaded holes b^5.

The inner concaved faces of the projections b^9 and b^{10}, rising from the ring a^6, are cut away to leave overhanging shoulders 4, that constitute parts of the upper portion of the groove that receives the butts of the cylinder-needles. Within the circular portions b^2 b^3 of the ring a^6 I secure by screws 5, inserted through holes formed in a peripheral shoulder 7 of said ring, the needle-lifting cam $7^\times$, while by screws 6, inserted in like manner through an opposite portion of the ring a^6, I secure in place steel cam-plates 8 9. The needle-lifting cam $7^\times$ and the cam-plates 8 and 9 act wholly on the under sides of the butts of the needles. These cam-plates are thus detachably secured to the toothed base of the ring by screws, the outer ends of which are easily accessible to the operator that the cams may be changed whenever desired while the ring a^6 is in position, after first removing the needle-cylinder segments, as will be described.

The plane faces b^2 b^3 of the ring b^6 serve to sustain the flanged lower ends 10 $10^\times$ of two needle-cylinder segments b and b', said flanges having each holes that receive screws b^4, that enter the threaded holes b^5 in said plane faces. The segment b has at its inner side the usual adjustable drawing-down or stitch cam b^6, that may be raised or lowered in usual manner by or through a lever 30, mounted on a stud 31, erected in the segment, and alongside of said stitch-cam is a steel plate or cam portion 20, held in position by a screw, and said cam portion acts on the upper sides of the butts of the needles in opposition to the needle-lifting cam $7^\times$, before described.

The plane face b^3 of the ring a^6 sustains the cam-cylinder segment b', grooved at its inner

side at its lower end to present a shoulder 12, substantially in line with the shoulders 4, before described, of the uprights b^9 b^{10}, for acting upon the upper sides of the butts of the needles. This segment also has the usual groove 13, through which to insert or withdraw needles. The upper ends of these two segments have each secured to them by screws $32^{\times}$ semicircular rings 14 15, the inner edges of which enter an annular groove 16, encircling the needle-cylinder, the ends of said rings abutting on the upper ends of said uprights, as shown in Fig. 1.

The segment b sustains the main thread-guide b^7, having the eye b^8 and held in adjusted position on a stand 33 by a set-screw 34. This segment also sustains a stud 35, on which is mounted loosely the cam 36, that is rotated in usual manner and in its movement step by step turns a lever 37, connected with movable parts (not shown) of the dial-cam. The lever is mounted on a bracket 38, also sustained by said segment.

From the foregoing description it will be understood that by removing the screws b^4 either or both of the cam-cylinder segments may be detached from the toothed part of the cam-cylinder and be withdrawn bodily laterally from the needle-cylinder and needles thereon, leaving the needles in the grooves of the needle-cylinder.

The uprights b^9 b^{10} have secured to them by screws 2 the legs of a yoke a^{14}, that receives adjustably in its upper end a rod a^{15}, the lower end of which enters the space in the needle-cylinder. The lower end of this rod has connected with it by a suitable screw a block a^{16}, which constitutes a support for the hub of the dial-plate a^{17}, said plate being sustained loosely with relation to the rod, but being restrained from rotation by or through the needle-cylinder during the operation of knitting, as is well understood. The rod has fixed to it above said dial-needle plate a dial-needle cam a^{18}. This cam rotates with the cam-cylinder, as usual, and reciprocates the dial-needles to and fro in the dial-needle bed. It is essential that the face of the dial-needle bed support the dial-needles, so that they in their reciprocations shall cross the plane of movement of the cylinder-needles at exactly the proper points, and heretofore considerable difficulty has been experienced in locating the face of the dial-needle plate exactly in proper relation to the upper end of the needle-cylinder.

To provide for adjusting the dial-needle plate in a simple manner, I have inserted from the lower end of the hub of the dial-needle plate a flanged sleeve a^{21}, that fits the rod a^{15}, and have fixed the somewhat enlarged upper or inner end of said sleeve (see Figs. 1 and 5) to the dial-needle plate, the chief part of the sleeve to its lower or flanged end being out of contact with the interior of the hub. The hub of the dial-needle plate is shown as provided with a plurality of screws 3, the points of which contact with the sleeve near its end which is not secured to the dial-needle plate, and by turning said screws in one or the other direction the end of the hub of the dial-needle plate may be swung more or less with relation to the sleeve until the desired level for the face of the dial-needle plate with relation to the cylinder-needles and the upper end of the needle-cylinder is secured.

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

1. In a knitting-machine, a needle-cylinder, means to actuate a series of needles therein, a dial-needle plate, a rod to sustain the same within and at the upper end of the needle-cylinder, and means intermediate the hub of said dial-needle plate and rod to adjust the face of the dial-needle plate and place the same exactly in operative relation to the upper end of the needle-cylinder.

2. In a knitting-machine, a needle-cylinder, a cam-cylinder, a rod, a dial-needle plate sustained by said rod, the hub of said dial-plate having a sleeve fitting the rod, one end only of the sleeve being in contact with the dial-plate, a plurality of screws carried by the hub of the dial-plate and impinging against said sleeve at its end disconnected from the dial-plate, the adjustment of said screws serving to swing the free end of the hub and tip the face of the dial-plate to place the same in accurate working position with relation to the upper end of the needle-cylinder.

3. In a knitting-machine, a dial-plate having in its hub an elongated sleeve fixed to said plate at one end and out of engagement therewith at its opposite end, a vertically-sustained rod to which said sleeve is fitted, and means for adjusting the face of said dial-plate with relation to the longitudinal axis of said rod.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

LEON C. HUSE.

Witnesses:
GEO. P. MUNSEY,
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