

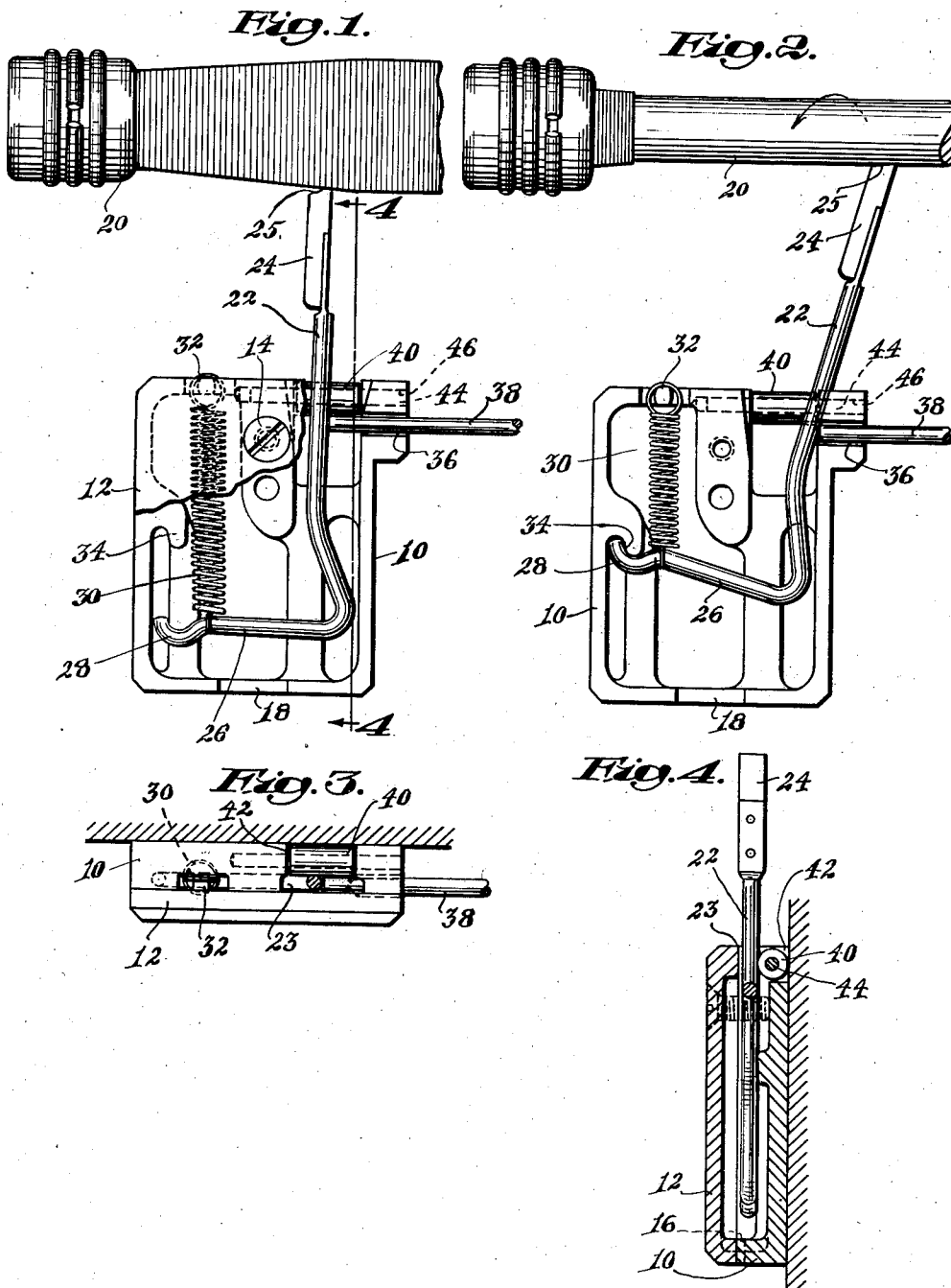
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LOOM FEELER MECHANISM

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LOOM FEELER MECHANISM

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3 Claims. (Cl. 139—281)

This invention relates to improvements in loom feeler mechanisms. More particular it relates to loom feelers which are responsive to a nearly exhausted condition of a bobbin, for actuating the replenishing mechanism of an automatic loom.

Loom feelers of the class with which my present invention is concerned have a feeler arm which projects from a relatively fixed casing into engagement with the filler or yarn on a bobbin. The feeler is yieldable both in direction into the casing and in a sidewise direction against the resiliency of a spring which urges it outward toward the bobbin and tends to maintain it perpendicular to the axis of the bobbin. So long as there is yarn on the bobbin with which it can engage, the feeler rides on the yarn and is restrained against side-wise tilting because it slightly indents itself into the relatively soft mass of yarn. When, however, the bobbin is nearing exhaustion of yarn and the feeler finds a bare portion of the bobbin, it slips sidewise along the bobbin producing a tilting or canting of the feeler arm into actuating engagement with the transmission rod of a replenishing mechanism.

The projecting feeler arm is a stiff rod, usually of steel, which, in prior devices, has extended through a shallow opening in a wall of its supporting casing. Although efforts have been made to provide a floating feeler arm, the walls of the shallow opening necessarily must guide and restrain its movements with the result that the feeler arm frictionally rubs on those walls during its almost continuous vibratory movements when riding yarn on a bobbin, and during its side-wise tiltings into actuating contact with the transmission rod of a replenishing mechanism. This continual rubbing of metal on metal, especially when the feeler arm is of steel and the casing is of cast iron, tends to produce wear of one or both of the rubbing surfaces. Also considerable friction is present interfering with a desired sensitivity of the feeler.

It is an object of the present invention to provide a loom feeler mechanism which is more certain and sensitive in operation than the prior loom feeler devices. I provide on the feeler casing, at the mouth of the opening through which the feeler arm projects, a bearing and guiding surface in the form of a roller mounted with its axis transverse of the feeler arm, so that the roller acts as a roller bearing for the arm during its in and out and vibratory movements, and serves as a more or less stationary bearing and guiding surface with which the feeler arm has

only a point contact throughout any tilting of the arm. And such a sliding point contact may be with a different part of the roller surface for each tilting of the arm, depending on the position in which the roller comes to rest prior to such a tilting.

An important feature is that the provision of the mentioned roller bearing, providing a more or less stationary but changing bearing and guiding surface for sidewise movements of the feeler arm permits use of a casing molded or otherwise formed of Bakelite or of any of the various available and suitable plastic materials, thus conserving metal for the urgent war requirements and reducing the difficulties and problems incident to present governmental restrictions on the use of metal.

The best mode in which I have contemplated applying the principles of my invention is shown in the accompanying drawing but these are to be taken as merely illustrative because it is intended that the patent shall cover, by suitable expression in the appended claims, whatever features of patentable novelty exist in the invention disclosed.

In the accompanying drawing:

Figure 1 is a top plan view of feeler mechanism embodying features of my invention shown in operative relation to a filled bobbin, a portion of the casing cover being broken away;

Figure 2 is a similar view showing the feeler arm tilted sidewise as a result of finding a bare portion of bobbin;

Figure 3 is an end view looking at the upper end in Figures 1 and 2, the feeler arm being in section; and

Figure 4 is a cross-sectional view on line 4—4 of Figure 1.

Referring to the drawing, the feeler casing preferably is molded of Bakelite or any suitable plastic or composition material. It is shown as made in two parts of which the part 10 constitutes a generally rectangular box and part 12 a cover for the top open side of the box, held in place by screw 14 and the interengagement of a tongue 16 on the cover in groove 18 in the lower end wall of the box.

The casing 10, 12 as a whole may be secured in any desired manner on a fixed part of a loom, with the feeler end of the casing toward and spaced a predetermined distance from a bobbin 20, as indicated in Figures 1 and 2.

The feeler element may be a stiff metal rod of generally reversed L-shape, mounted within casing 10, 12, but having the feeler leg 22 project-

ing through shallow slot 23 in the casing end wall and equipped with a feeler tip 24. The tip preferably is of hard fibre or the like with bevelled portion 25 providing a chisel-shaped yarn engaging end which can embed itself a little in the mass of yarn on a bobbin when riding thereon under filled bobbin conditions.

Interiorly of the casing, the feeler element has the foot 26 extending approximately at right angles to the leg 22. The end portion of the foot 26 is bent to provide a bearing toe 28 which is slightly concave toward the end of the casing which faces the bobbin 20. A coil spring 30 has one end connected to foot 26 adjacent toe 28 and has its other end anchored at 32 on the end wall which faces the bobbin.

If bobbin 20 were not in position to prevent it, spring 30 would draw the feeler element to its outermost position with the leg 22 approximately perpendicular to the bobbin axis and with toe 28 engaging the inverted hook element 34 which projects interiorly of the casing and constitutes a stop limiting outward movement of the feeler as well as a bearing for the toe end of the feeler element when it tilts sidewise as in Figure 2.

Figure 1 illustrates the normal position of the feeler element when riding on a filled bobbin, its leg 22 extending substantially perpendicular to the axis of the bobbin and being maintained resiliently in that position by the yarn on the bobbin in conjunction with the floating interior connection of the feeler element to the spring 30, which tends continually to tilt the feeler element and which does tilt it when the feeler tip 24 finds a bare portion of bobbin along which it can slide.

Protecting through a hole 36 in the side wall of the casing toward which the feeler element tilts is a transmission rod 38 of any suitable and known type of mechanism for replenishing the supply of yarn, as by replacing a nearly exhausted bobbin by a filled one. The transmission rod 38 is yieldably held stationary in its position of Figure 1, by means not shown, when the feeler is riding on a filled bobbin, as in Figure 1. When, however, the feeler element tilts sidewise as in Figure 2 in direction toward the transmission rod 38, as when the feeler tip finds a bare portion of bobbin as in Figure 2, the transmission rod is actuated by the feeler leg 22 to the right in Figure 2 thereby to cause operation of the mechanism (not shown) for replacing the exhausted bobbin by a filled one.

It is an important feature of my invention to greatly minimize friction and the effects thereof which heretofore have been prevalent in feeler devices of this general class. Because the feeler leg 22 projects out of the casing 10, 12 through a shallow slot 23 in the end wall, and because the bobbin 20 ordinarily will rotate, as its yarn is drawn, in the direction of the arrow in Figure 2, the feeler leg of prior devices is urged against the under wall of slot 23 and considerable friction is produced between the feeler leg and the casing, resisting in and out movements of the feeler element and also sidewise tilting thereof. I have discovered that a single roller 40 mounted on the end wall of the casing under the feeler leg improves greatly the efficiency and sensitivity of the feeler mechanism. The roller may be of steel or other suitably hard material and conveniently may be mounted in a cut-out 42 opening into the usual slot 23, as illustrated in Fig-

ures 3 and 4. The roller may be loose on a pin 44 having drive fit in a hole 46 in the casing, with its periphery in position to engage the feeler leg and keep it out of contact with any underneath part of the casing at the end wall. Preferably the roller will be a little longer than the distance of sidewise movement of the feeler leg 22, so that the leg will rest on the roller in all positions of the leg.

It becomes more feasible, with my steel roller bearing for the feeler leg, to mold the casing 10, 12 of Bakelite or of any of the many suitable plastic or composition materials.

In operation, the roller 40 serves as a roller bearing for the feeler leg 22 during its in and out and vibratory movements, and serves as a more or less stationary bearing and guiding surface for the feeler leg during its sidewise tilting movements.

At all times there is but a point contact between feeler leg and roller and the point on the roller is a continually changing one.

I claim:

1. A feeler mechanism for looms, comprising a casing, a feeler element resiliently mounted in the casing and including a stiff rod portion projecting out through a wall of the casing and resiliently movable in directions into and out of the casing and tiltable in a sidewise direction, there being an opening in the wall of the casing through which the said rod portion of the feeler element projects, and a roller mounted in said opening under and transversely of the said stiff rod with its periphery in position supporting said rod out of contact with all under parts of the casing in the region of said wall, the roller constituting a roller bearing for the feeler rod during its in and out movements and constituting a substantially stationary longitudinal guiding and bearing surface for the rod during sidewise tilting of the feeler element.

2. In a feeler mechanism for looms having a casing and a feeler element resiliently mounted within the casing and projecting out through an opening in a wall of the casing, said element being resiliently movable in directions into and out of the casing and tiltable in one sidewise direction, that improvement wherein a roller is mounted in the wall through which said feeler element projects and is disposed transversely of said element with its periphery engaging and supporting the projecting part of the element and with the said sidewise tilting of said element generally in the direction of axial extent of the roller.

3. A feeler mechanism for looms, comprising a casing molded of a plastic material, a feeler element of metal mounted in the casing and projecting out through a wall thereof, a spring within the casing resiliently urging said element in direction outward and also in a sidewise tilting direction, there being an opening in the casing through which said element projects, and a roller of hard wear-resisting material mounted in said opening under and transversely of said projecting element, the periphery of the roller engaging and supporting the projecting part of the feeler element and constituting a roller bearing for its said in and out movements and a longitudinal guiding and bearing surface for its said sidewise tilting movements.

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