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2,639,734

STOP MOTION MECHANISM FOR LOOMS

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Fig. 1

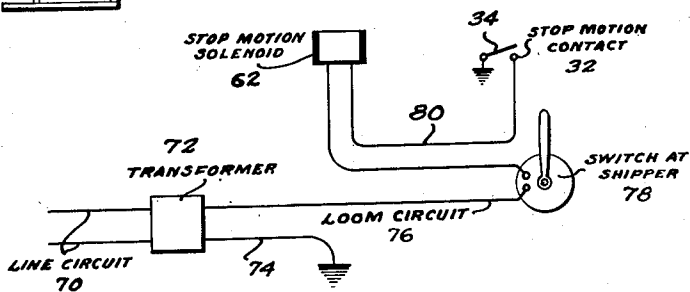
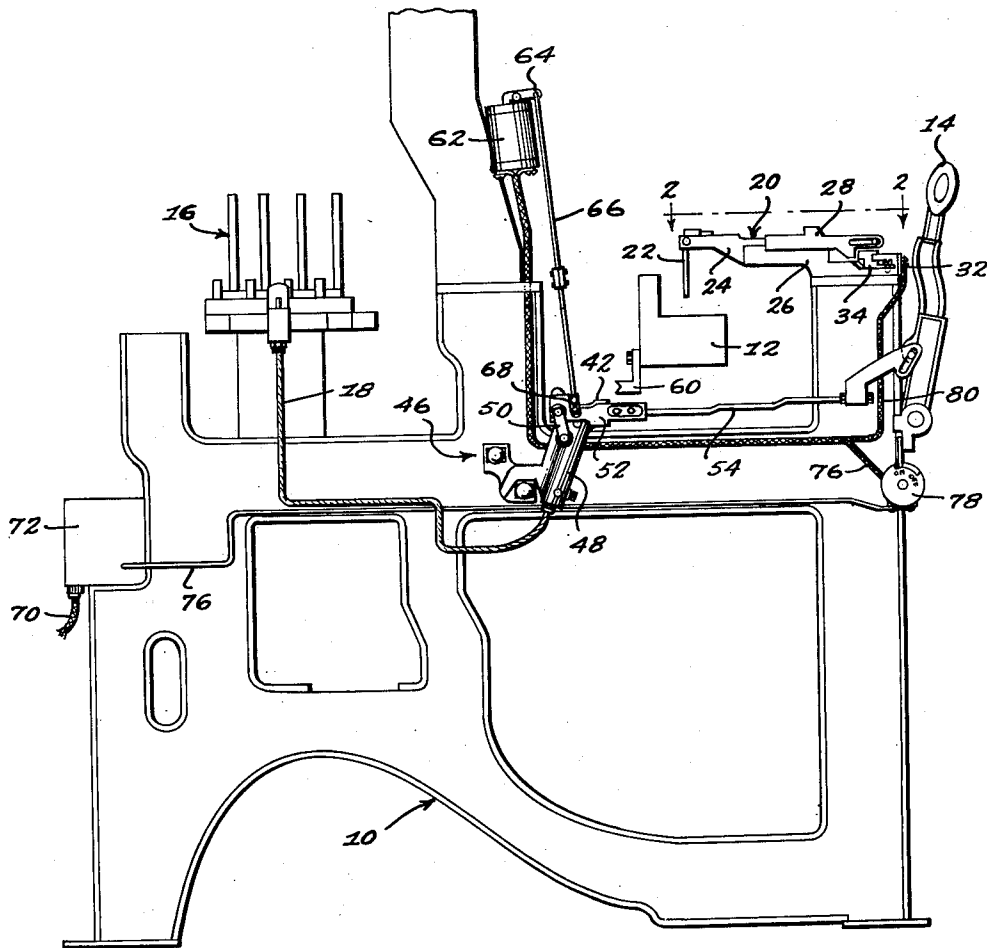


Fig. 5

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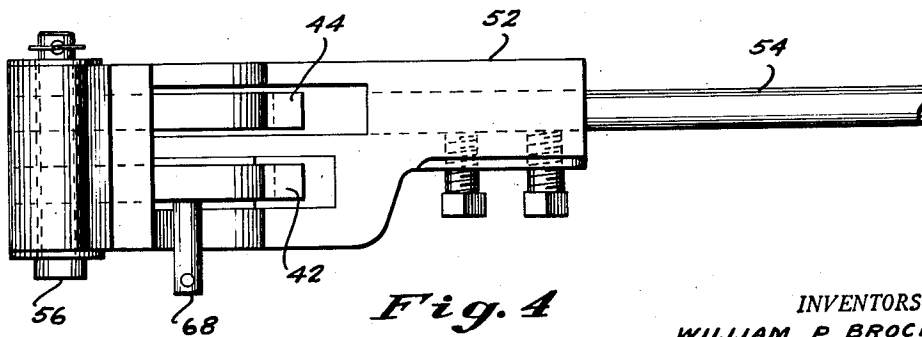
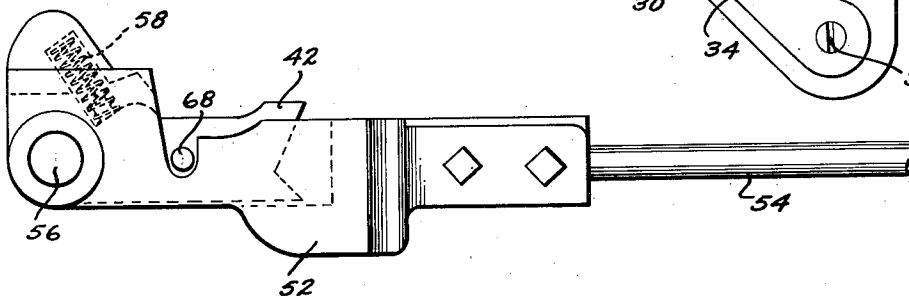
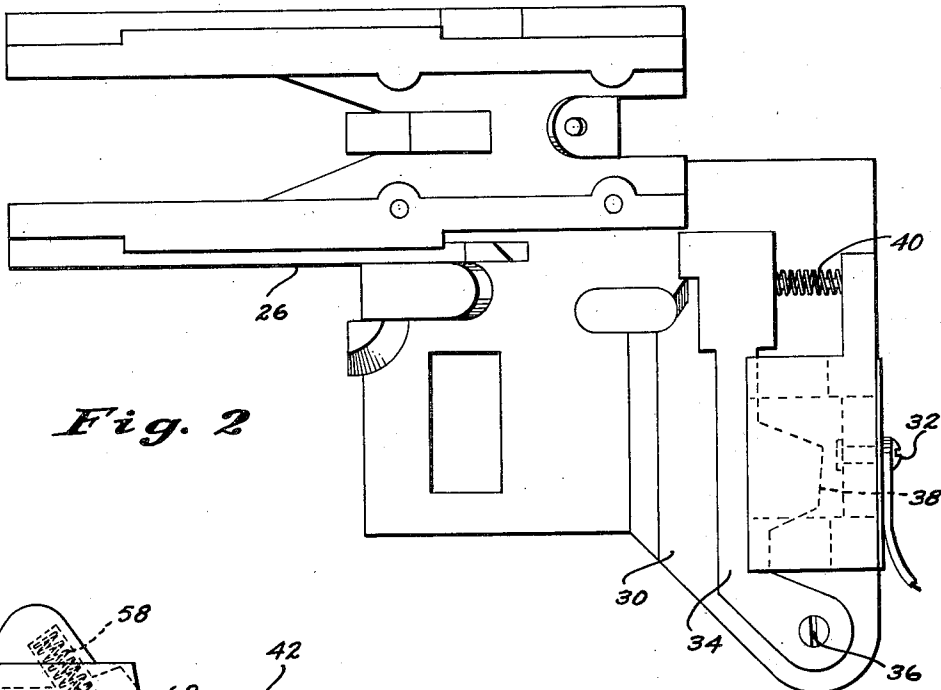
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STOP MOTION MECHANISM FOR LOOMS

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4 Claims. (Cl. 139—349)

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This invention relates to stop motion mechanisms for looms by which operation of a loom may be stopped automatically upon failure of either the filling or of a warp end, and more particularly to an improved means for obtaining stop motion actuation upon filling failure and to a unique arrangement by which this actuating means may be employed in conjunction with warp failure detecting and stop motion actuating means.

Generally described, the stop motion mechanism of the present invention comprises a filling failure detecting means, a warp failure detecting means, a knock-off dog for each of these detecting means, and a common mounting on which these knock-off dogs are carried for independent operation upon actuation selectively or concurrently in response to filling and warp failures. The filling failure detecting means is arranged to particular advantage according to the present invention for stop motion actuation by electrical means in response to the operation of a feeler fork motion.

These and other features of the present invention are described in further detail below in connection with the accompanying drawings, in which:

Fig. 1 is an end elevation of a loom frame with the relative disposition of sufficient operating elements indicated to illustrate the arrangement of a stop motion mechanism incorporating the present invention;

Fig. 2 is a plan view taken generally from the position 2—2 in Fig. 1 to illustrate the arrangement of the stand member employed according to the present invention for the feeler fork slide;

Fig. 3 is an enlarged detail illustrating the mounting arrangement for the stop motion knock-off dogs;

Fig. 4 is a plan view corresponding to Fig. 3; and

Fig. 5 is a schematic wiring diagram of the electrical circuit by which the stop motion mechanism is actuated according to the present invention upon filling failure.

Referring now in detail to the drawings, and more particularly at first to Fig. 1, a conventional form of loom frame is indicated by the reference numeral 10, with a lay for the loom represented at 12 and a shipper lever at 14. The loom frame

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10 is also shown as being fitted with a conventional type of sliding bar warp failure detecting means or the like, as at 16, arranged in the usual manner with a flexible plunger tube 18 for actuation of the stop motion mechanism as is explained further below.

Also, a conventional form of feeler fork motion is indicated generally at 20 arranged at the front of the loom frame 10 in relation to the lay 12. This feeler fork motion 20 incorporates the common arrangement of a filling feeler fork 22 pivoted on the end of a slide 24 so that it is disposed in relation to a grate (not shown) on the lay 12 for detecting filling failure and for causing actuation of the slide 24 upon such filling failure. Actuation of the slide 24 results in moving it forwardly on the loom frame 10 in a stand member 26, and this forward movement of the slide 24 also causes forward movement of a related element 28 that is commonly referred to as a "straddle bug" through which the filling replenishing mechanism (not shown) for the loom is commonly actuated. According to the present invention, the stand member 26 for this feeler fork motion 20 is modified to adapt it for electrical actuation of the stop motion mechanism upon filling failure as mentioned above.

For this purpose, the stand member 26 is formed as shown best in Fig. 2 with a lateral base portion 30 on which an electrical contact 32 is carried in a suitably insulated mounting. This lateral base portion 30 of the stand member 26 also carries a lever 34 which is pivoted on the base portion 30, as at 36, and is adapted, as by a lateral projection 38, to make the electrical contact 32, although this lever 34 with its lateral projection 38 is normally positioned in spaced relation from the contact 32 as by yieldable spring means or the like at 40. The lever 34 is further arranged on the stand member 26 so that it is operated to make the contact 32 whenever the slide 24 of the feeler fork motion 20 is actuated, this arrangement consisting in the embodiment illustrated in the drawings of the disposition of the extending end of the lever 34 in the path of forward movement of the straddle bug 28 upon actuation of the slide 24 (compare Fig. 1), so that the lateral projection 38 on the lever 34 is forced back against the electrical contact 32 by this motion of the straddle bug 28.

When the electrical contact 32 is made in this manner upon filling failure, an electrical circuit (see Fig. 5) is closed to actuate the stop motion mechanism either selectively or concurrently with the previously mentioned warp failure detecting means 16. The actual stop motion operation is accomplished by knock-off dogs 42 and 44 arranged in a common mounting 46 for independent operation, respectively, upon filling failure and warp failure. The common mounting 46 for the knock-off dogs 42 and 44 consists of a bracket 48 adapted for attachment on the loom frame 10 and fitted with a pivot link 50 joining this bracket 48 to an end fitting 52 for a knock-off rod 54 which extends to a connection with the shipper lever 14 and constitutes the means by which the shipper lever 14 is shifted to off position upon operation of the stop motion mechanism.

The knock-off rod end fitting 52 serves as the direct mounting means for the knock-off dogs 42 and 44 which are pivoted in this end fitting 52 on the same pivot pin 56 by which the end fitting 52 is joined through the pivot link 50 to the mounting bracket 48 (see Figs. 3 and 4). The end fitting 52 is further formed to accommodate depressing springs 58 which bear on the knock-off dogs 42 and 44 to maintain them normally inactive at a retracted position within the end fitting 52. These springs 58, however, allow either or both of the knock-off dogs 42 and 44 to be raised in response to filling or warp failure so that their forward ends are disposed in the path of a bunter 60 carried by the lay 12 and through which the backward movement of the lay 12 is transmitted to the knock-off rod 54 to shift the shipper lever 14 to off position whenever the stop motion mechanism is actuated.

Actuation of the stop motion mechanism upon warp failure is accomplished through the previously mentioned flexible plunger tube 18, running from the warp failure detecting means 16 to the mounting bracket 48 for application to the bottom face of the knock-off dog 44 in the usual manner. Actuation of the stop motion mechanism upon filling failure, on the other hand, is accomplished by means of the previously mentioned electrical circuit which includes the contact 32 and a solenoid 62 having an actuating arm 64 from which a connecting rod 66 runs to a lateral pin 68 fitted in the knock-off dog 42 so that this dog 42 is raised to active position whenever the solenoid 62 is energized.

The arrangement of this electrical circuit by which the solenoid 62 is energized upon filling failure to operate the knock-off dog 42 in this manner is illustrated schematically in Fig. 5, while its structural disposition on the loom frame 10 is indicated in Fig. 1. As shown, the circuit comprises a line circuit 70 running to the loom through a transformer 72. From the transformer 72 a low voltage loom circuit is taken off, one leg 74 of which is grounded to the loom frame 10 and the other leg 76 of which runs to the solenoid 62 and should preferably include a spring biased switch 78 arranged to open the loom circuit whenever the stop motion mechanism has been actuated to shift the shipper lever 14 to off position. The solenoid 62 is also connected through a line 80 to the insulated electrical contact 32 on the stand member 26 so that whenever this contact 32 is made by the lever 34, the electrical loom circuit is completed by grounding it to the loom frame 10 at this point too, and thereby energizing the solenoid 62.

A stop motion mechanism arranged according to the present invention as just described above has the very important advantage of reducing substantially the number of operating parts and the complexity of the operating mechanism as compared with loom stop motions heretofore commonly in use, which advantage not only provides much more dependable service, but also results in simplifying greatly the "fixing" attention required and consequently reduces "down time" as well as maintenance and replacement costs.

The present invention has been described in detail above for purposes of illustration only and is not intended to be limited by this description or otherwise except as defined in the appended claims.

We claim:

1. In a loom of the type incorporating a filling feeler fork and a slide on which said fork is pivoted, stop motion mechanism comprising a stand member for said slide, an electrical contact on said stand member and insulated therefrom, a lever pivoted on said stand member for movement by said slide to make said contact but normally spaced from said contact, an electrical circuit including said contact, a knock-off dog, and means actuated by said electrical circuit for operating said knock-off dog upon making of said contact.

2. In a loom of the type incorporating a filling feeler fork and a slide on which said fork is pivoted for causing actuation of said slide upon filling failure, stop motion mechanism comprising a stand member for said slide, an electrical contact on said stand member and insulated therefrom, a lever pivoted on said stand member and normally positioned thereon in spaced relation from said contact but arranged for operation from said slide to make said contact whenever said slide is actuated, an electrical loom circuit including said contact, a knock-off dog, and means actuated by said electrical loom circuit for operating said knock-off dog upon making of said contact.

3. In a loom having a warp failure detecting means and incorporating a filling feeler fork and a slide on which said fork is pivoted for causing actuation of said slide upon detection of filling failure by said fork, stop motion mechanism comprising two knock-off dogs, a common mounting means carrying said dogs for independent operation, actuating means for operating one of said knock-off dogs from said warp failure detecting means upon warp failure, and means for operating the other of said knock-off dogs upon detection of filling failure by said filling feeler fork, said last mentioned means comprising a stand member for said slide, an electrical contact on said stand member and insulated therefrom, a lever pivoted on said stand member and adapted to make said contact, said lever being yieldably positioned on said stand member in spaced relation from said contact and arranged for operation to make said contact whenever said slide is actuated, an electrical loom circuit including said contact, and means actuated by said electrical loom circuit for operating said last mentioned knock-off dog upon making of said contact.

4. In a loom having a warp failure detecting means and incorporating a filling feeler fork and a slide on which said fork is pivoted, stop motion mechanism comprising: a first knock-off dog; means for actuating said first dog from said warp failure detecting means; a second knock-off dog;

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means for actuating said second dog from said filling feeler fork and slide, said last mentioned means comprising a stand member for said slide, an electrical contact on said stand member and insulated therefrom, a lever pivoted on said stand member for movement by said slide to make said contact but normally spaced from said contact, an electrical circuit including said contact, and means actuated by said electrical circuit for operating said knock-off dog upon making of said contact; and a common mounting means carrying said first and second knock-off dogs for independent operation and thereby rendering said

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stop motion mechanism responsive selectively or concurrently to warp and filling failures.

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