May 28, 1940. E. C. NICHOLS 2,202,226

FILLING END CONTROL

Filed July 22, 1939 2 Sheets-Sheet 1

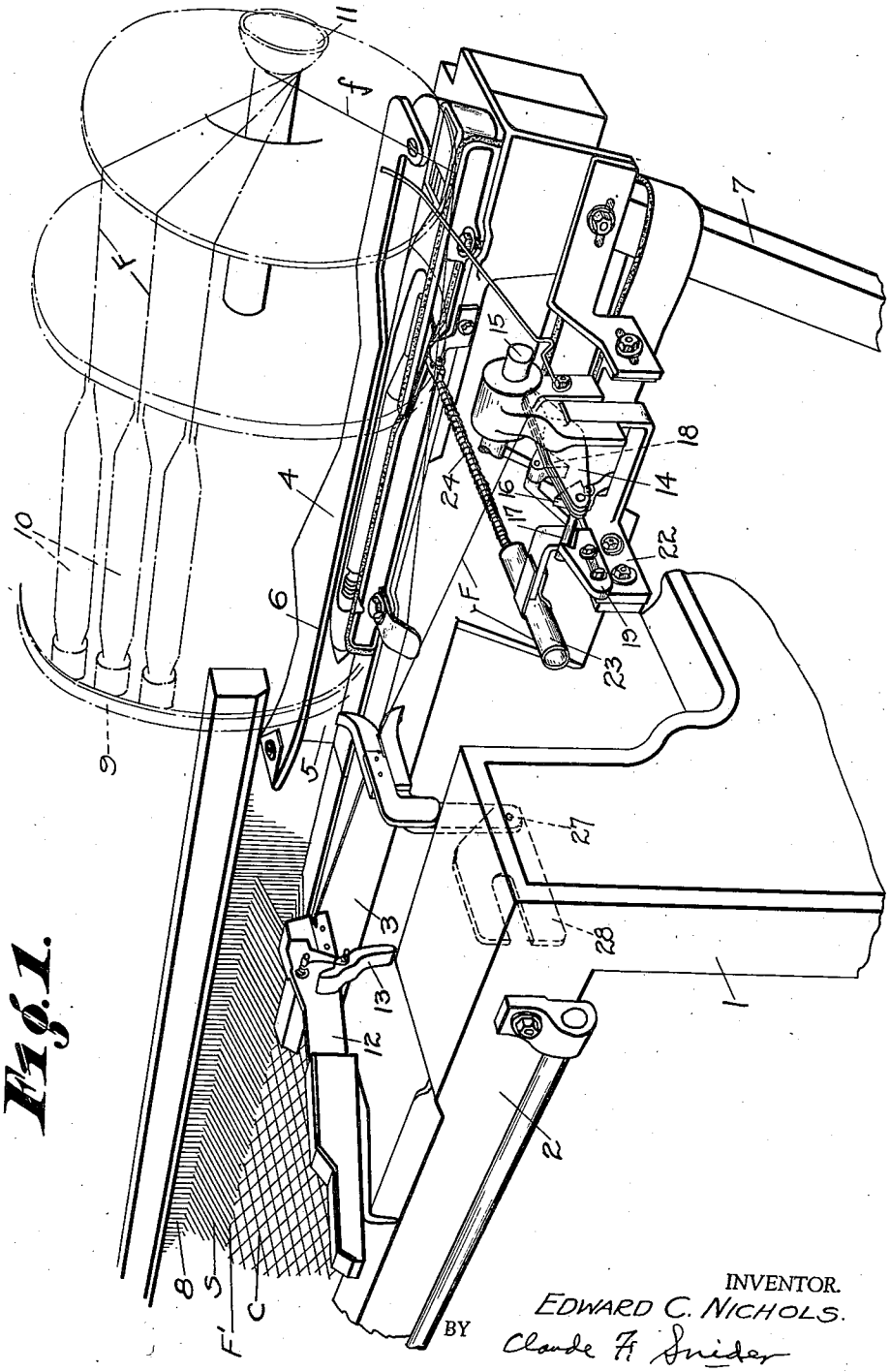


Fig. 1.

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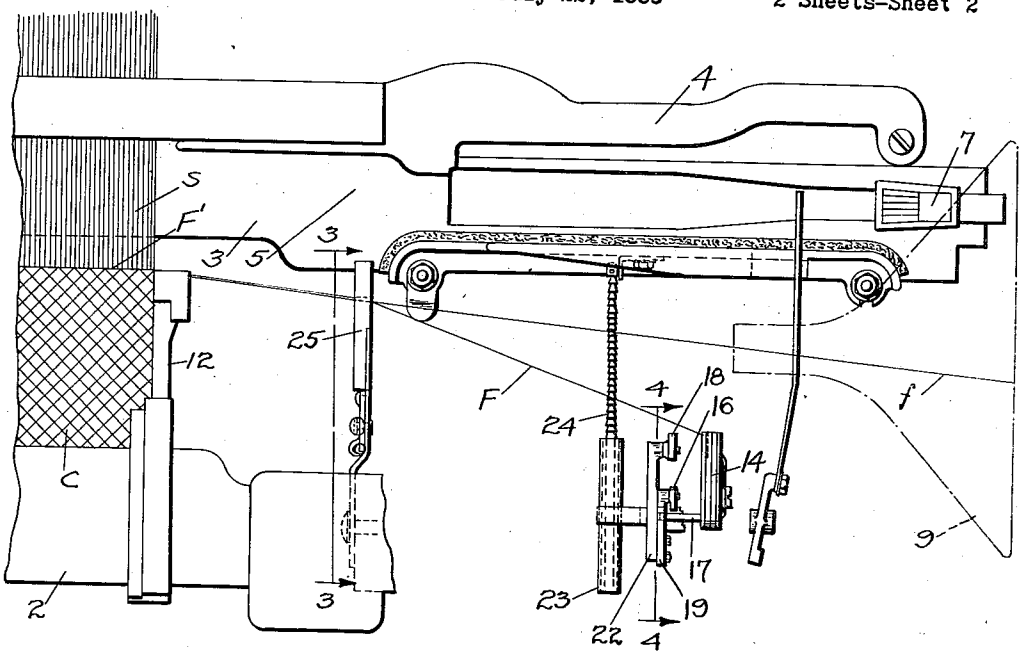


Fig. 2.

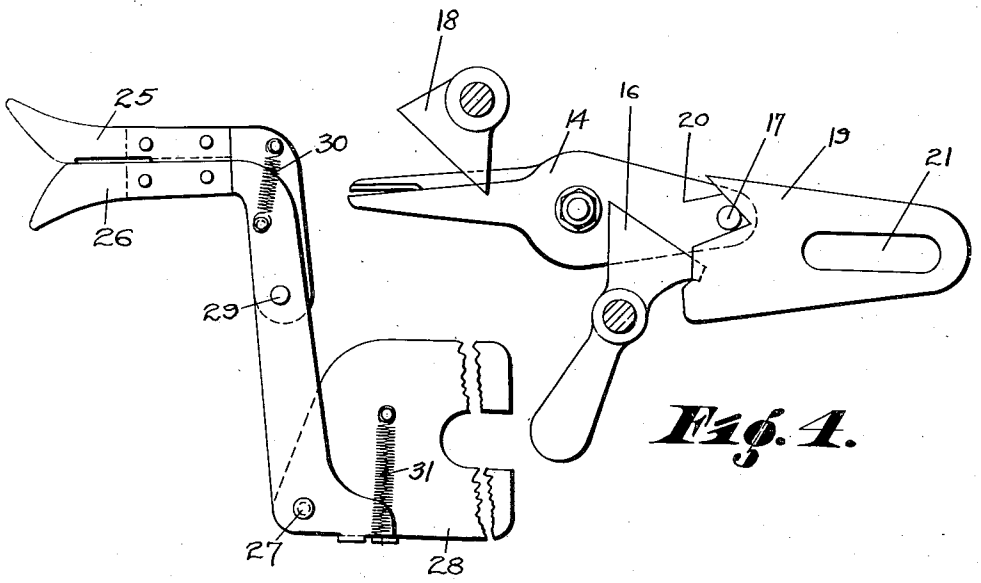


Fig. 4.

Fig. 3.

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UNITED STATES PATENT OFFICE

2,202,226

FILLING END CONTROL

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Application July 22, 1939, Serial No. 286,000

5 Claims. (Cl. 139—260)

The present invention pertains to filling replenishing looms and more particularly relates to the mechanism on such looms for controlling the outgoing filling ends.

The usual filling replenishing loom includes a reciprocating lay having a shuttle box at the replenishing end thereof, replenishing mechanism such as the well-known bobbin changing mechanism, parting and clamping mechanism for parting and clamping the outgoing filling ends (preferably intermediate the ends of the shuttle box), and means such as a temple thread cutter for parting the filling ends adjacent the cloth selvage. It has been proposed to provide means for feeding the loose or parted pieces of the outgoing filling ends forwardly away from the shuttle box so that they cannot be caught and carried into the cloth.

One recent device for feeding the filling ends as aforesaid, comprising a conduit extending forwardly away from the shuttle box and a plunger for feeding the ends through the conduit, is meeting with considerable success. It is found, however, that this and other feeding devices fail to operate properly under certain conditions. More particularly, if the outgoing filling end is held taut, or for other reasons, such filling end when cut by the temple thread cutter may throw upwardly and outwardly of the loom out of range of the feeding device. Also, the clamping means may hold the filling ends so firmly that the feeding means cannot pull the ends out of the clamp, the relatively firm grip of the clamp being essential to proper operation of the parting and clamping mechanism.

A principal object of the present invention is to provide in a filling replenishing loom having a lay, replenishing mechanism, parting means adjacent the cloth selvage, parting and clamping mechanism, and filling end feeding means, as aforesaid, clamping means located between such feeding means and the selvage parter for preventing the parted filling ends from throwing out of range of the feeding means, and means for partially opening the combined parter and clamp to permit the feeding means to pull the filling ends out of the clamp thereof.

The foregoing and other objects of the invention are accomplished in the construction illustrated on the accompanying drawings, of which:

Fig. 1 is a perspective view of the replenishing side of a loom having the preferred embodiment of my invention applied thereto;

Fig. 2 is a plan view of the same;

Fig. 3 is a detail view, to a larger scale, taken as indicated by line 3—3 of Fig. 2; and

Fig. 4 is a detail view partly in section on line 4—4 of Fig. 2 but to a larger scale.

The loom shown on the drawings is but fragmentarily illustrated, parts and mechanisms not shown being of suitable usual construction and not of the present invention. In addition, certain of the parts and mechanisms shown are not new, per se. The conventional construction shown includes the loom frame, lay, replenishing mechanism, filling end feeding means, and other parts, as hereinafter described.

The loom frame includes a right hand loom side 1 and a breast beam 2 at the front of the loom. The lay includes a lay beam 3 having a shuttle box 4 at the replenishing end thereof. The inner or mouth end 5 of this shuttle box is open to permit entrance and egress of a shuttle 6 which may be picked by a picker stick 7 at the outer end of the shuttle box. The lay is mounted for reciprocation toward and from the front of the loom and carries a reed 8 for beating picks of filling into the fell F′ of the cloth C. The replenishing mechanism shown is the well known bobbin changing mechanism which includes a rotary magazine 9 containing a reserve supply of bobbins 10. The filling ends *f* from the bobbins 10 are attached to a holder 11 on the magazine. The reserve bobbins are transferred to the shuttle 6 one at a time, as required.

The transfer of a reserve bobbin 10 to the shuttle 6 serves to expel the exhausted bobbin in the shuttle, thus forming a filling end F which leads from the cloth selvage through the shuttle box 4 and through the eye (not shown) of the shuttle. This filling end F is known in the art as the outgoing filling end. The picking of the shuttle through the shed S and the beating of the resulting filling thread into the cloth forms a second filling end which projects from the cloth selvage and extends to the holder 11. This second filling end is formed as a continuation of the end *f* from the incoming bobbin and is known as the incoming filling end. The outgoing and incoming filling ends are parted between the magazine and the cloth selvage, usually close to the cloth selvage. For this purpose, I have shown a temple 12 having the conventional thread cutter 13 therein.

Simultaneously with the replenishing operation, the outgoing filling end F is parted and clamped, preferably intermediate the ends of the shuttle box 4. Suitable means for this purpose may include parting and clamping blades 14.

These blades are supported from a stud 15 and are located in front of the shuttle box 4 intermediate the ends thereof. The combined parter and clamp 14 is arranged and operated to normally occupy a forward position, in which it is shown, but to move rearwardly just prior to each bobbin changing operation and to return forwardly just after each such operation. The parting and clamping mechanism, including the front wall of the shuttle box but excluding the opening and closing means for the blades, may be the same as in patent to Stafford No. 1,552,388 granted Sept. 1, 1925, to which patent reference may be had for a more complete disclosure.

The parting and clamping blades 14 may be opened as they move rearwardly by means of a trip 16. This trip is pivoted, as shown, to engage a pin 17 on the blades and thereby force the blades fully open as they move rearwardly but to yield without affecting the blades during their forward movement. A second pivoted trip 18 is reversely arranged, to close the blades 14 as the latter move forwardly but to yield during the rearward movement of the blades. The trip 16 is so located that it closes the blades 14 at the beginning of the forward movement of the blades, which is substantially simultaneous with the bobbin changing operation. The closing of the blades 14 causes them to part and clamp the outgoing filling end F intermediate the ends of the shuttle box. The ensuing forward movement of the blades serves to withdraw the clamped filling end forwardly out of the shuttle box. The trips 16 and 18 may be substantially the same as in patent to Harris, No. 1,761,625 granted June 3, 1930, to which patent reference may be had for a more complete disclosure.

The trip 18 fully closes the blades 14, thereby providing the firm clamping grip which is required for the blades to withdraw the filling end out of the shuttle box. I provide an additional opening means which may consist of a cam 19 having a cam surface 20 for engaging the pin 17. This cam has a slot 21 by which it is adjustably mounted on a fixed bracket 22. The cam 19 is so located and adjusted that the surface 20 engages the pin 17 and partially opens the blades 14 as the latter reach the end of their forward movement. The partial opening of the blades reduces or partially releases the grip of the clamping blades on the filling end F, and thereby permits the feeding means, hereinafter described, to pull such end out of the clamp.

The particular embodiment of feeding means shown consists of a fixed conduit 23 having a wool lining (not shown) therein, and a plunger 24. The conduit 23 extends forwardly away from the lay and shuttle box and is located inwardly of the loom from the blades 14. The plunger 24 is rigidly fixed to the lay and projects forwardly into the conduit. The plunger is ridged so that as it reciprocates with the lay it will engage the outgoing and incoming filling ends and feed them forwardly into and through the conduit. The specific feeding means is not, per se, of the present invention, it being disclosed and claimed in copending application of C. D. Brown, S. N. 284,028, filed July 12, 1939.

It will be apparent that under certain conditions the filling ends, and particularly the ends F, may throw upwardly and outwardly as soon as they are parted by the cutter 13, thereby moving out of engagement with the plunger 24. To prevent this action of the filling ends, I provide a holder which may comprise upper and lower jaws 25 and 26. The lower jaw 26 is formed on an arm which is pivoted at 27 to a fixed stand 28. The upper jaw 25 is pivoted to said arm at 29 and the jaws are urged together by a light spring 30. A spring 31 urges the jaws rearwardly but permits them to yield forwardly if engaged by a trapped shuttle. These jaws are located in front of the inner end 5 of the shuttle box, to engage the filling ends between the plunger 24 and the temple thread cutter 13. The jaws hold the filling ends, preferably with a light clamping grip. The plunger 24 readily pulls the outgoing ends F out of the jaws 25, 26 and out of the partially opened clamp 14.

Having fully disclosed the preferred embodiment of my invention, I claim:

1. In a filling replenishing loom, the combination of the lay having a shuttle box at the replenishing end thereof, replenishing mechanism incidentally forming the usual outgoing filling ends, means for parting and clamping said filling ends intermediate the ends of said shuttle box and withdrawing them forwardly out of said shuttle box, means for partially reducing the grip of said clamp after each withdrawing action thereof, and means for pulling said ends out of said clamping means and feeding them forwardly away from said shuttle box.

2. In a filling replenishing loom, the combination of the lay having a shuttle box at the replenishing end thereof, replenishing mechanism incidentally forming the usual outgoing filling ends, a combined parter and clamp moving rearwardly and forwardly to part and clamp the outgoing filling ends and withdraw them forwardly out of said shuttle box, means for partially reducing the grip of said clamp after each withdrawing action thereof, means for clamping said filling ends in front of the inner end of said shuttle box, means for parting said filling ends adjacent the cloth selvage, and means located between said clamps for pulling the loose filling ends out of said clamps and feeding them forwardly away from said shuttle box.

3. In a filling replenishing loom, the combination of the lay having a shuttle box at the replenishing end thereof, replenishing mechanism incidentally forming the usual outgoing filling ends, a combined parter and clamp moving rearwardly and forwardly to part and clamp the outgoing filling ends and withdraw them forwardly out of said shuttle box, means for partially reducing the grip of said clamp after each withdrawing action thereof, means located in front of the inner end of said shuttle box for holding said filling ends, means for parting said filling ends adjacent the cloth selvage, a conduit extending forwardly from a point between said holding means and said clamp, and means for pulling the parted filling ends out of said clamp and holding means and feeding them forwardly into said conduit.

4. In a filling replenishing loom, the combination of the lay having a shuttle box at the replenishing end thereof, the usual bobbin changing mechanism, means engaging the outgoing filling ends and feeding them forwardly away from said shuttle box, and a parting and clamping mechanism for said outgoing filling ends, said mechanism comprising parting and clamping blades moving rearwardly prior to each bobbin changing operation and forwardly after each said operation, means for opening said blades as they move rearwardly, means for closing said blades to part and clamp the outgoing filling end as the

blades move forwardly, and means for partially opening said blades at the end of each forward movement thereof to thereby reduce the grip on the filling end and permit the latter to be pulled out of said clamp by said feeding means.

5. In a filling replenishing loom, the combination of the lay having a shuttle box at the replenishing end thereof, the usual bobbin changing mechanism, means engaging the outgoing filling ends and feeding them forwardly away from said shuttle box, means for parting said filling ends adjacent the cloth selvage, and parting and clamping mechanism located in front of and intermediate the ends of said shuttle box, said mechanism comprising parting and clamping blades moving rearwardly prior to each bobbin changing operation and forwardly after each said operation, a trip for fully opening said blades as they move rearwardly, a trip for closing said blades to part and clamp the outgoing filling end at the beginning of each forward movement of the blades, and a cam for partially opening said blades at the end of each forward movement thereof.

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