A. E. RHOADES.

FILLING REPLENISHING LOOM.

APPLICATION FILED MAR. 6, 1914.

1,167,363.

Patented Jan. 4, 1916.

2 SHEETS—SHEET 1.

Fig. 1.

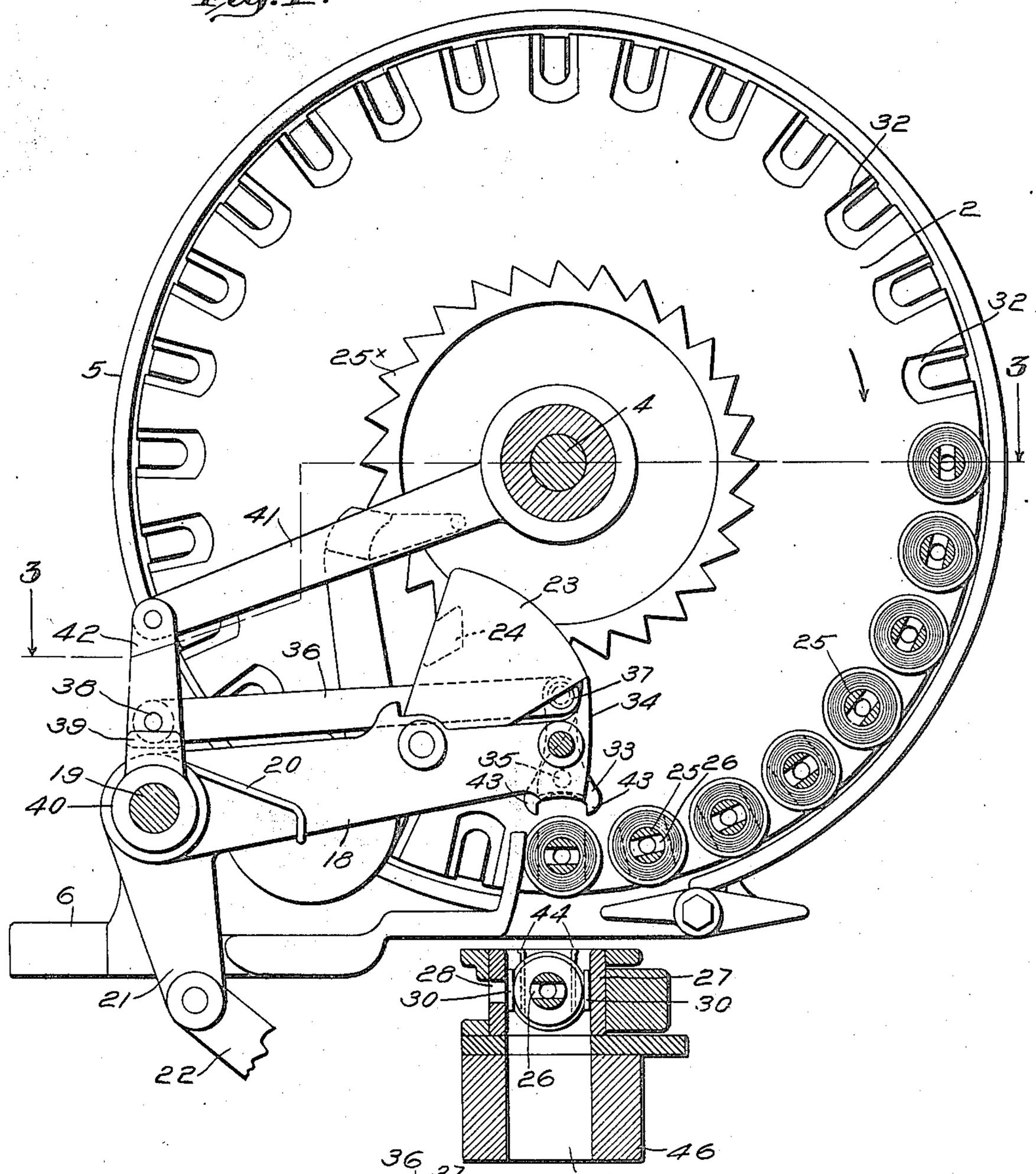
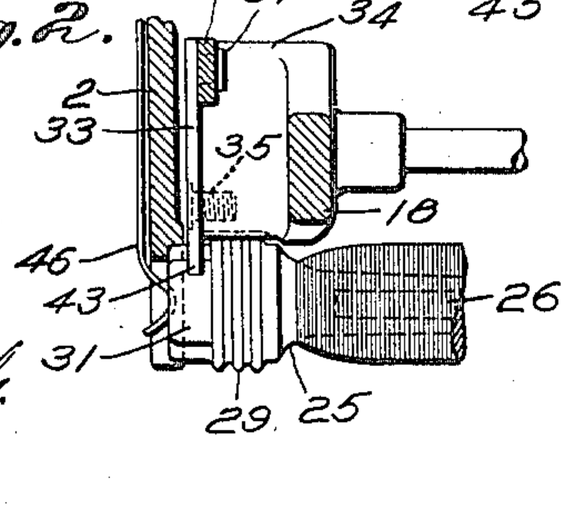


Fig. 2.



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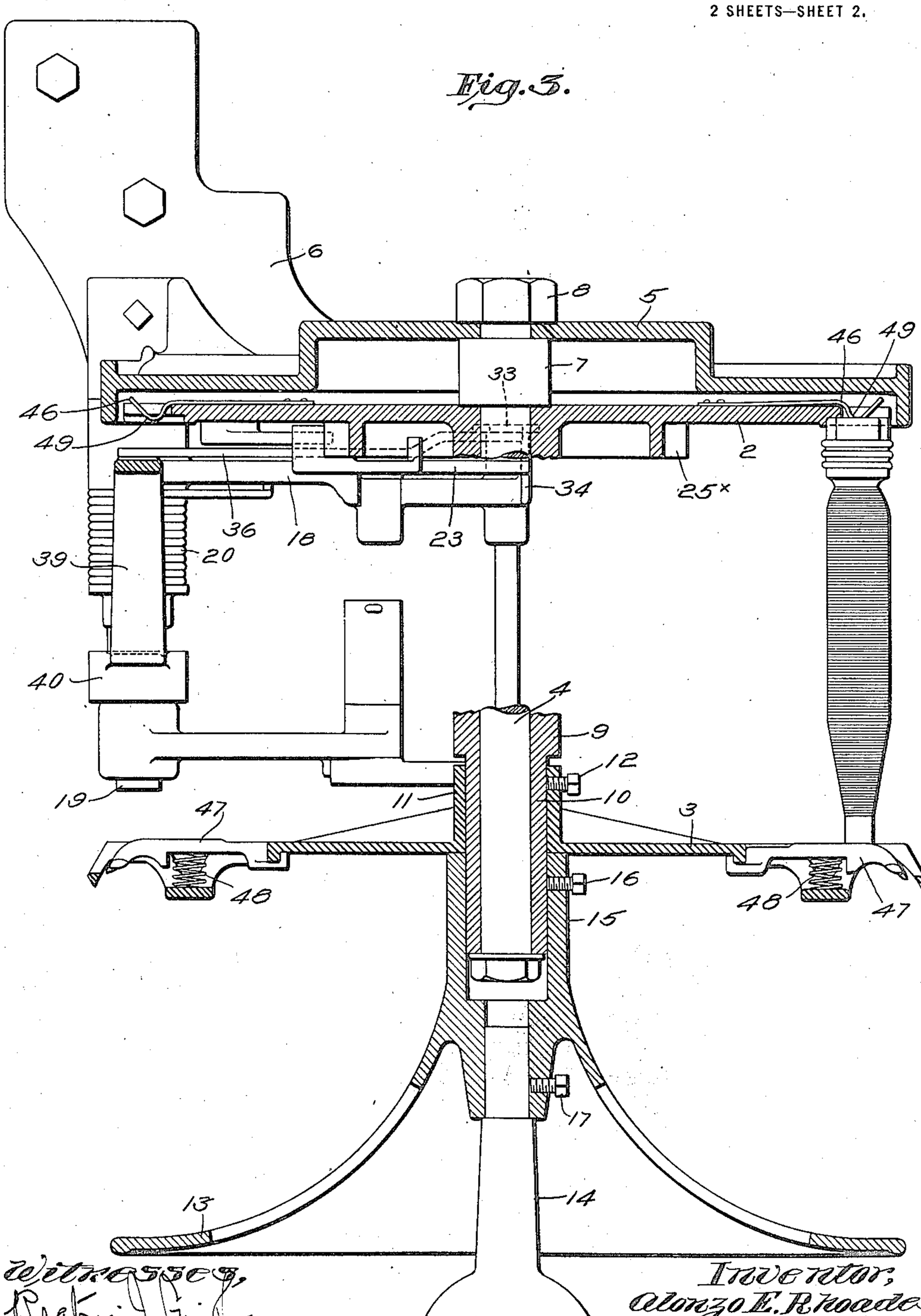
2 SHEETS—SHEET 2.

Fig. 3.



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UNITED STATES PATENT OFFICE.

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FILLING-REPLENISHING LOOM.

1,167,363. Specification of Letters Patent. Patented Jan. 4, 1916.

Application filed March 6, 1914. Serial No. 823,014.

To all whom it may concern:

Be it known that I, ALONZO E. RHOADES, a citizen of the United States, and resident of Hopedale, county of Worcester, and State of Massachusetts, have invented an Improvement in Filling-Replenishing Looms, of which the following description, in connection with the accompanying drawings, is a specification, like characters on the drawings representing like parts.

The invention to be hereinafter described relates to looms, and more particularly to looms of the filling replenishing type, wherein means are provided to effect a change of filling carriers in a shuttle when the filling on the carrier in service has become practically exhausted. Looms of this general character are known in the art as "feeler" looms, because a device intermittingly feels for the filling in the shuttle and when such device detects complete or substantial exhaustion of the filling, it operates to cause filling replenishment, all as well understood by those skilled in the art. Among the various forms of filling carriers that have been devised for use in feeler looms, is that having a slot or recess in the barrel of the carrier, which is covered by the filling when a working supply is present, but when the filling has reached a predetermined condition of exhaustion permits a feeler device to enter, thereby initiating the operation of the filling replenishing mechanism.

It is essential to a proper operation of the feeler in detecting substantial exhaustion of filling that the filling carrier be placed in the shuttle with the slot or recess in proper position, and attempts have been made to insure such condition by providing the shuttle with guides or cam surfaces to engage the carrier as it enters the shuttle, and somewhat similar features have been employed on the filling feeder, substantially as described in the patents to Straw, No. 1,053,673, February 18, 1913, and Davenport, No. 596,854, January 4, 1898.

The aims and purposes of the present invention are to provide means whereby the rotative position of a carrier in the feeder or hopper will be preserved as the carrier is transferred from the feeder or hopper to the shuttle and the carrier be delivered to the usual holding jaws of the shuttle in proper position for coöperation with the feeler, all of which will best appear from the following description and accompanying drawings of one form of means for carrying the invention into practical effect, it being understood that the invention is not limited to the particular means shown and described, but is defined in its true scope by the claims.

In the drawing: Figure 1 is a sectional elevation of a filling feeder or hopper showing portions of the transferring mechanism, the lay, and shuttle, and association of the present invention therewith; Fig. 2 is a detached detail showing a filling carrier engaged at its base by the transferrer and about to be moved or transferred from the feeder to the shuttle; and Fig. 3 is a section taken on the line 3—3, Fig. 1, some of the parts being broken away.

The hopper or filling feeder for presenting the filling carriers to be transferred to the shuttle, the transferrer and its actuating and controlling means may be of any usual or desired character. As herein shown, however, the filling feeder comprises the disks 2 and 3 rotatably mounted on a stud or shaft 4 supported from the usual circular plate 5 rising from a bracket 6 which is adapted to be secured to the loom frame. The stud or shaft 4 may be appropriately secured to the plate 5, as by the head 7 and nut 8, and the disk 2 may have a sleeve 9 confined on said stud for rotative movement, as indicated by Fig. 3. The sleeve 9 is preferably reduced, as at 10, to receive the sleeve or hub 11 of the disk 3 which may be secured to the sleeve 9 by suitable means, such as the set screw 12. Likewise the filling end guide and holder, comprising the circular part 13 and stud 14 may be appropriately connected to the disks 2 and 3 for rotary movement therewith, as by means of the sleeve 15, and set screws 16 and 17. These parts and their associated relation may be all as heretofore common in this class of looms.

The disks 2 and 3 serve to support between them a series of filling carriers which are successively moved to the point of transfer by rotation of said disks in the direction indicated by the arrow, Fig. 1. The desired rotative movement of the disks 2 and 3 may be effected by any suitable means, but as shown the transferrer 18 is mounted, as usual, upon the stud 19, and normally held in raised position by a spring 20, its downward movement being effected through the usual arm 21 carrying the swinging member

22 which is adapted to be struck by the usual bunter (not shown) carried by the lay. Rising from the transferrer is a pawl carrier 23, the pawl 24 of which is adapted to engage the ratchet 25× secured to or formed as part of the disk 2, the construction being such that as the transferrer rises following a transfer, the feeder comprising the disks 2 and 3, will be rotated to bring a fresh filling carrier to the point of transfer beneath the transferrer substantially as indicated in Fig. 1.

The general organization of these parts and their association for the purposes noted may be as heretofore common in looms of this type, and as they are well understood by those skilled in the art, further detail description thereof is unnecessary.

The filling carrier or bobbin 25 on which the filling is wound is provided with a recess or slot 26, which, when the carrier or bobbin is transferred to the shuttle should be directly opposite the filling feeler, so that the latter may feel for the filling where it passes over the slot or recess. The filling feeler itself may be of any usual form or construction, and being well known to those familiar with feeler looms, it needs no amplification herein. In the form of the invention shown, however, the shuttle 27 has an opening 28 through which the feeler may pass, so that if the slot or recess 26 of the carrier or bobbin is positioned properly in the shuttle opposite the opening 28 of the shuttle it will be correctly positioned for the action of the feeler.

The filling carrier 25 has the usual head and rings 29 which are adapted to engage and be held by the usual spring holding jaws 30 carried by the shuttle when the carrier is transferred thereto. The present invention contemplates a predetermined relative position of the filling carrier in the shuttle to bring the slot or recess of the carrier opposite the feeler or opening in the side of the shuttle and as one form of means to this end the filling carrier is provided with flattened sides at the base of the head which serve to determine the axial position of the carrier in the feeder and also to coact with means to prevent axial turning movement of the carrier as it is moved between the feeder and shuttle. In the drawing the filling carrier 25 has the flattened head portion 31, Fig. 2, and dotted lines, Fig. 1, which is adapted to be engaged by the walls of the openings or slots 32 formed in the disk 2, so that when placed in the feeder the filling carriers are properly positioned and if they be not rotated as they move between the feeder and shuttle, the slot or recess in the carriers will be directly opposite the opening in the shuttle when a carrier finally comes to rest and is held by the spring jaws of the shuttle.

To control the carrier as it is bodily moved between the feeder and shuttle, means are provided for engaging the carrier and holding it from rotative movement during its trip from the feeder to the shuttle. This means may take various forms, but as shown in the drawings it comprises a member which moves with the carrier as it is being transferred from the feeder to the shuttle and positively restrains rotative movement of the carrier.

Pivotally mounted relative to the transferrer and movable therewith is a member 33, which for identification, may hereinafter be referred to as the carrier controller. The controller 33 is preferably pivoted on the transferrer head 34, as at 35, and at its upper end is jointed to a link 36, as at 37, the other end of said link being pivoted at 38 to an arm 39 projecting from a hub 40 mounted on the stud 19, the construction being such that the transferrer arm 18, the link 36, the controller 33 and the connections between the stud 19 and link 36 constitute in effect a parallel ruler or link motion. Inasmuch as it may sometimes be desirable to move or adjust the stud 19, the hub 40 is preferably loosely mounted thereon and it, as well as the arm 39 and perforce the pivotal point 38, are held in fixed position by connection with some fixed part, such, for instance, as the stud or fixed shaft 4 by means of an arm 41, secured to a projection rising from the hub 40.

By reference to Fig. 1 it will be noted that the carrier controller 33 has a bifurcated or notched end portion, the sides 43 of which are adapted to engage the sides of the flattened head portion 31 of the carrier as the transferrer and controller move down in transferring a carrier from the feeder to the shuttle beneath.

From the construction described as one form of the present invention, it will be seen that at the time of transfer, the carrier controller will move downward with the transferrer and engage the sides of the flattened head of the carrier, said carrier being at such time held in the feeder with its slot or recess in proper position to be directly opposite the opening in the side wall of the shuttle when the carrier is transferred, provided the carrier does not rotate as it moves between the feeder and shuttle. Owing to the fact, however, that the controller turns upon its pivotal mounting as it goes downward in the circular arc of transfer movement, all rotation of the carrier is prevented, as will be readily understood, and the carrier passes into the control of the shuttle jaws with the slot or recess thereof opposite the opening in the side wall of the shuttle.

The described construction presents a good, practical form of the invention, but it is to be understood that the invention is not

limited thereto, as the construction may be variously modified within the true scope thereof, as defined by the claims, and applicant believes himself to be the first in the art to provide means to prevent rotative movement of the filling carrier as it moves between the hopper or feeder and the shuttle during filling replenishment.

Inasmuch as the filling controller retains its hold upon the carrier until the latter passes between the holding jaws of the shuttle, it is not necessary to provide the shuttle with any means to prevent rotation of the carrier or to cause it to be properly placed in the shuttle. After once being placed in the shuttle the usual holding jaws themselves will prevent rotation of the carrier during weaving. In some instances it may be desirable to have the shuttle provided with means in addition to the holding jaws to grasp the base or head of the carrier, and in the drawing such means is indicated at 44, Fig. 1, and may comprise side members adapted as the carrier passes into the shuttle to engage the flattened portions 31 of the carrier.

As a carrier with a fresh supply of filling is transferred to the shuttle which is then in the box at the replenishing side of the loom, it forces the spent carrier out of the shuttle and through a suitable passageway 45 in the lay 46. These details may, of course, be varied.

It is desirable that the carriers be so held in the feeder that when acted upon by the transferrer and carrier controller they shall move bodily downward from the feeder, and the present invention further contemplates the provision of yielding means on the feeder for engaging both ends of the carriers. Heretofore, either the head or tip end of the carriers have been yieldingly held, but increased efficiency and accuracy of operation is secured by giving like or similar support at both ends of the carriers. In the illustrated form of this feature of the invention, the base of the carriers are engaged by individual springs 46, carried by the disk 2, Fig. 3, and the tips of the carriers are engaged by the holders 47 yieldingly held by the springs 48 on the disk 3. The springs 46 are preferably formed as leaf springs having a bend 49 to engage a recess or depression in the carrier base or head, substantially as indicated in Fig. 3.

What is claimed is:—

1. In a filling replenishing loom, the combination of a filling carrier hopper or feeder, a transferrer for transferring a filling carrier from the hopper or feeder to a shuttle, and means movable relatively to the transferrer during the transfer movement and acting on the filling carrier as it is moved between the hopper or feeder and shuttle to preserve the rotative position of the carrier unchanged as it is transferred to the shuttle.

2. In a filling replenishing loom, the combination of a filling carrier hopper or feeder, a transferrer for transferring a carrier from the hopper or feeder to a shuttle, a device adapted to engage the carrier as it is transferred, and means for moving said device relatively to the transferrer to preserve the original rotative position of the carrier as it is transferred to the shuttle.

3. In a filling replenishing loom, the combination of a hopper or feeder, a transferrer to transfer a carrier from the hopper or feeder to a shuttle, and a carrier controller acting upon the filling carrier between the feeder and shuttle, and means for moving it relatively to the transferrer during the transfer movement for preserving the rotative position of the carrier as it is transferred to the shuttle.

4. In a filling replenishing loom, the combination of a hopper or feeder, a filling carrier having a slot or opening, a shuttle having an opening in its side wall and jaws for engaging the carrier, a transferrer for transferring a carrier from the hopper or feeder to the shuttle, and means acting to turn the carrier relative to the transferrer as it is moved between the hopper or feeder and shuttle to insure its position in the shuttle.

5. In a filling replenishing loom, the combination of a feeder, a transferrer for transferring a filling carrier from the feeder to a shuttle, and means for engaging the carrier and having a movement with and another movement independent of the transferrer for moving the carrier relatively to the transferrer and preventing rotation of the carrier as it is transferred.

6. In a filling replenishing loom, the combination of a feeder, a transferrer movable in a curved path for transferring a carrier from the feeder to the shuttle, a carrier controller for engaging the carrier as it is being transferred by the transferrer, and means for moving said controller to prevent rotative movement of the carrier disk to its movement in said curved path by the transferrer.

7. In a filling replenishing loom, the combination of a feeder or hopper, a transferrer movable in a circular arc for transferring a filling carrier from the feeder or hopper to the shuttle, means movable with the transferrer to engage the carrier to be transferred, and devices acting through said means to preserve the rotative position the carrier occupies in the feeder or hopper as it is being transferred to the shuttle.

8. In a filling replenishing loom, the combination of a feeder or hopper, a transferrer movable in a circular path for transferring a filling carrier from the feeder or hopper

to the shuttle, means for positioning a carrier in a predetermined rotative position in the feeder or hopper, and means to preserve said rotative position of the carrier unchanged by movement of the transferrer in its circular path as the carrier moves between the feeder or hopper and shuttle.

9. In a filling replenishing loom, the combination of a hopper or feeder, a filling carrier having a slot or recess and a non-circular portion, a shuttle having an opening in the side wall, a transferrer, and a carrier controller having jaws for engaging said non-circular portion of the carrier and holding the carrier from rotative movement as it is moved between the feeder or hopper and shuttle to insure its position in the shuttle with its slot or recess opposite the opening in the side wall of the shuttle.

10. In a filling replenishing loom, the combination of a feeder, a transferrer for transferring a carrier from the feeder to a shuttle, a carrier controller pivotally mounted on the transferrer and movable therewith to engage a carrier, and means for causing the controller to move relative to the transferrer to prevent rotative movement of the carrier as it is moved between the feeder and shuttle.

11. In a filling replenishing loom, the combination of a feeder, a transferrer, a carrier controller for positively engaging a carrier, and parallel link motion connections between the transferrer and carrier controller.

12. In a filling replenishing loom, the combination of a hopper, a transferrer for transferring a filling carrier in a circular arc from the hopper to a shuttle, and means for turning the carrier relative to the transferrer as it is being transferred to preserve the original rotative position of the carrier.

13. In a filling replenishing loom, the combination of a hopper, a transferrer for transferring a filling carrier in a circular arc from the hopper to a shuttle, and means movable with and for turning the carrier relative to the transferrer as it is being transferred to preserve the original rotative position of the carrier.

14. In a filling replenishing loom, the combination of a hopper, a transferrer for transferring a filling carrier in a circular path from the hopper to a shuttle, carrier engaging devices mounted on the transferrer, and means for relatively moving the said devices and transferrer to preserve the original rotative position of the carrier as it is being transferred.

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

ALONZO E. RHOADES.

Witnesses:

ROBERT JAMIESON,

DANA OSGOOD.