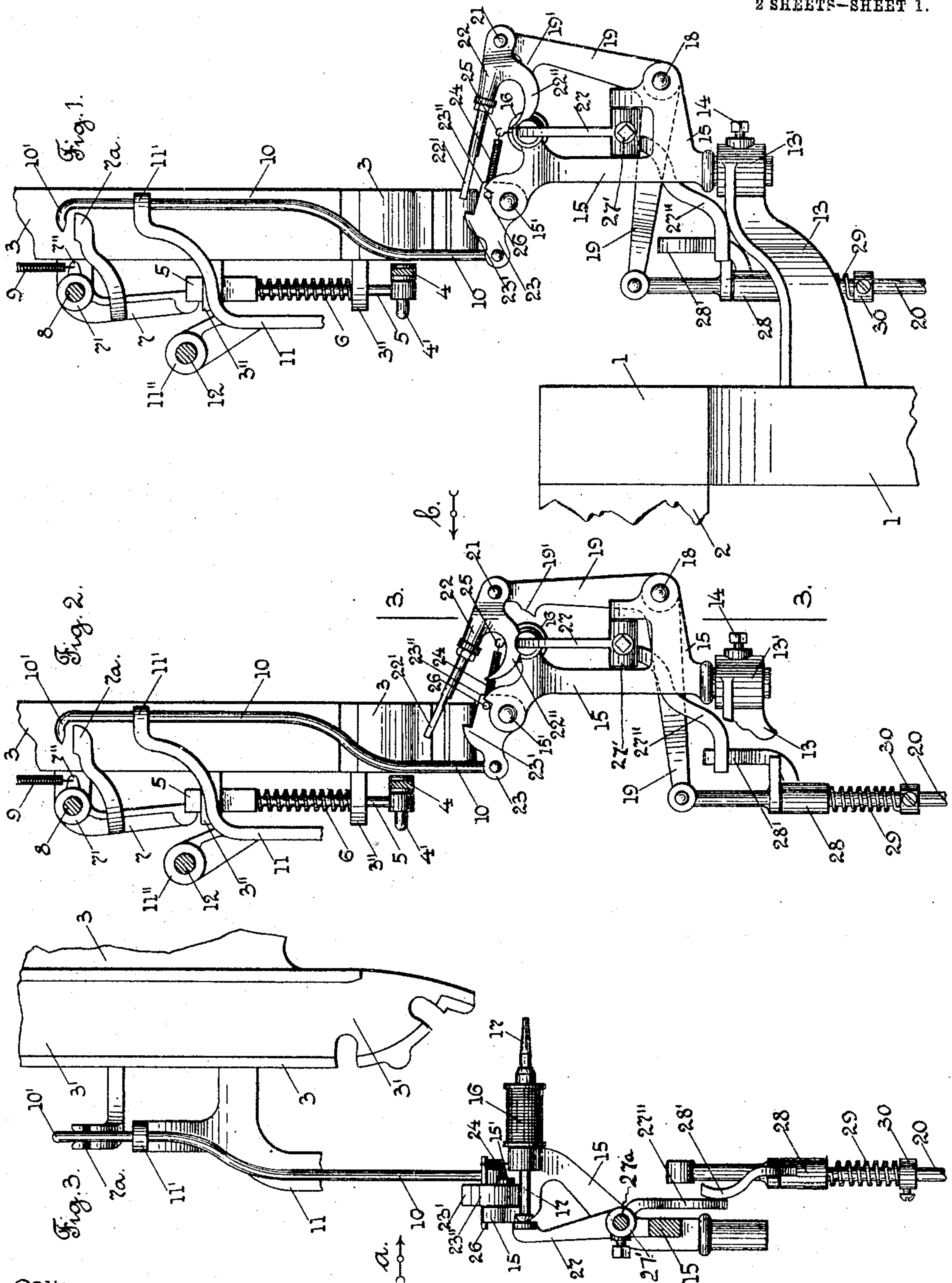


A. A. GORDON, JR.  
WEFT REPLENISHING LOOM.  
APPLICATION FILED DEC. 17, 1908.

959,132.

Patented May 24, 1910.

2 SHEETS-SHEET 1.



Witnesses  
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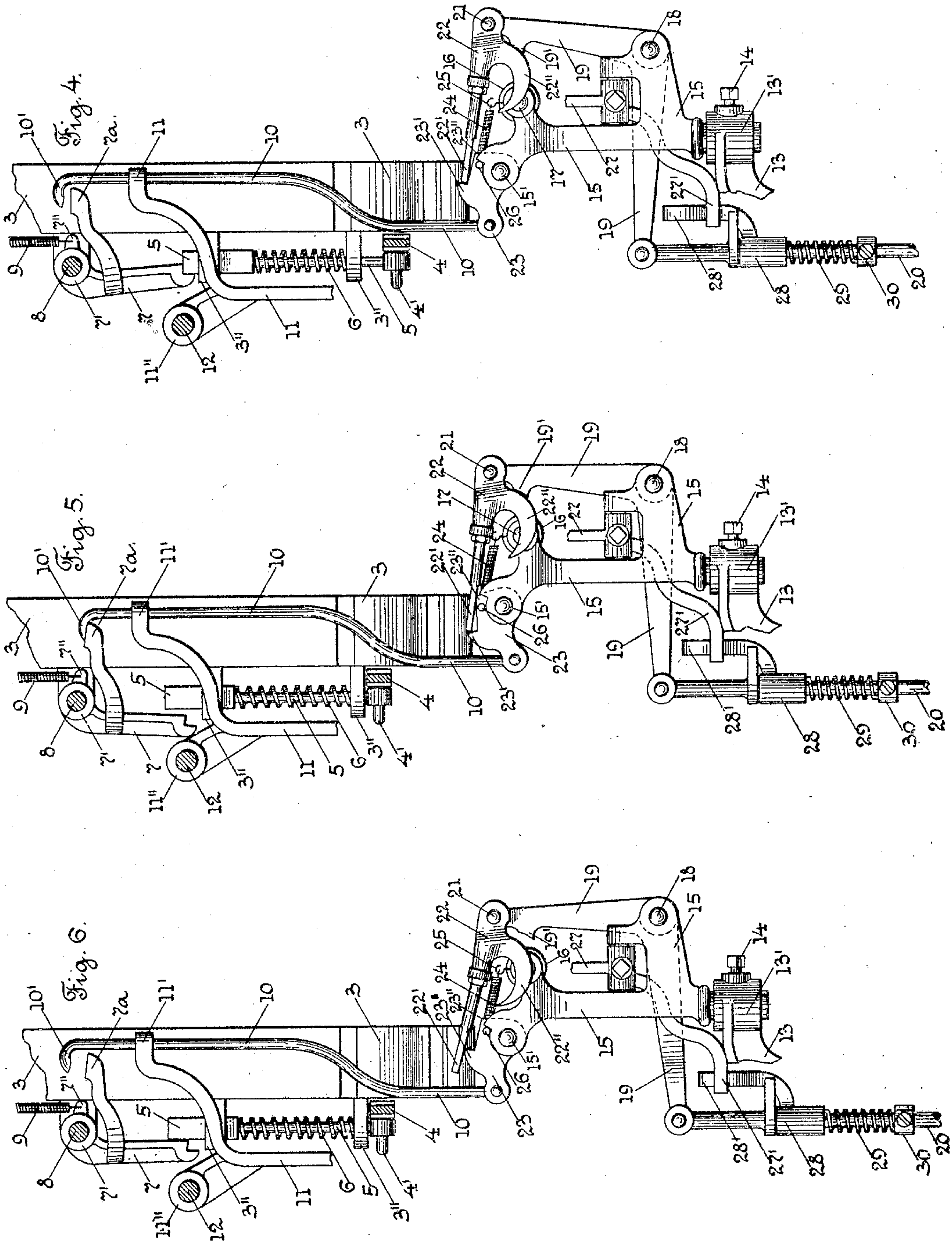
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2 SHEETS—SHEET 2.



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# UNITED STATES PATENT OFFICE.

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## WEFT-REPLENISHING LOOM.

959,132.

Specification of Letters Patent.

Patented May 24, 1910.

Application filed December 17, 1908. Serial No. 468,050.

*To all whom it may concern:*

Be it known that I, ALBERT A. GORDON, Jr., a citizen of the United States, residing at Worcester, in the county of Worcester and State of Massachusetts, have invented certain new and useful Improvements in Weft-Replenishing Looms, of which the following is a specification.

My invention relates to weft replenishing looms, and particularly to that class of weft replenishing looms in which a filling detecting mechanism having a solenoid and magnetized feeler is used.

The object of my invention is to improve upon the construction of some of the parts of a weft replenishing loom of the type referred to, and more particularly to improve upon the filling detecting mechanism, and of the parts connected therewith, shown and described in the Letters Patent of the United States, No. 948,568.

In the class of filling detecting mechanisms referred to, the magnetized feeler feels through an opening in the shuttle, and detects the practical exhaustion of filling on the bobbin in the shuttle. On the practical or substantial exhaustion of filling in the active shuttle, the magnetized feeler which is mounted in a solenoid, is drawn out from the solenoid by a metallic band on the bobbin, to allow a dagger or lever to move into an operative position, and put into operation the mechanism for releasing the bobbin which has been selected by the selecting mechanism from a compartment in the magazine.

In the construction shown and described in said Letters Patent, the vertical movement of the rod which operates a retaining arm, to allow a spring actuated rod to rock or move a cradle or support in the magazine, and drop a bobbin from a compartment in the magazine, is controlled through the dagger or lever above referred to, and the operation of a cam and cam lever, and during the revolution of the operative part of the cam, the vertically moving rod is moved down and held down, and not allowed to return to its normal position, until released by the continued revolution of the cam. In case of two or more drop shuttle boxes on the loom, the engaging end of the vertically moving rod, forming a part of the bobbin selecting and releasing mechanism, is moved back and forth over the retaining arms of

the bobbin releasing mechanism, according to the movement of the shuttle boxes.

It has been found in practice, that if the vertically moving rod or other device, is not immediately released and allowed to return to its normal raised position, after it has been moved down to operate the bobbin releasing mechanism, to allow its engaging end to be moved over another retaining arm of the selecting mechanism, by the movement of the shuttle boxes, the proper shifting of the shuttle boxes, and the mechanism connected therewith may be interfered with, and the shuttle boxes cannot be shifted as rapidly as desired.

In my improvements, I provide for the return of the rod or other device, for operating the bobbin releasing mechanism, to its normal inoperative position, immediately after it has been moved, independently of the rotary movement of the cam, which, through intermediate connections, moves said rod.

In carrying out my improvements, as shown in the drawings, and described herein, I provide an intermediate lever or device, termed a releasing lever or device, which in this instance is connected with the vertically moving rod of the bobbin selecting and releasing mechanism, which device, in the normal operation of the loom is out of the path of an operating dagger or lever, but when a bobbin is to be transferred from the magazine, said device is in the path of and adapted to be engaged by said dagger or lever, which is preferably positively operated by a cam lever and cam, to move down a vertically moving rod, and to put into operation mechanism for releasing a bobbin from the magazine, and then immediately release said rod, and allow it to return to its normal position, independent of the operation of the cam mechanism.

I have only shown in the drawings a detached portion of a filling detecting mechanism of the class referred to, which is fully shown and described in the Letters Patent, No. 948,568, above referred to, with my improvements combined therewith, sufficient to enable those skilled in the art to understand the construction and operation of the same.

Referring to the drawings:—Figure 1 is a front view of the filling detecting mechanism at the magazine end of the loom, and



parts connected therewith, and operated thereby, similar to what is shown in said Letters Patent, No. 948,568, with my improvements combined therewith, looking in the direction of arrow *a*, Fig. 3. Fig. 2 corresponds to Fig. 1, but shows a different position of some of the parts. Fig. 3 is a section, on line 3, 3, Fig. 2, looking in the direction of arrow *b*, same figure. The dagger and lever shown in Fig. 2 are removed in this figure. Fig. 4 corresponds to Fig. 1, but shows the filling detector dagger in operative position. Fig 5 corresponds to Fig. 4, but shows a different position of some of the parts. Fig. 6 corresponds to Fig. 5, but shows a different position of some of the parts.

In the accompanying drawings, 1 is a portion of the loom side or end frame, 2 is a portion of the breast beam, 3 is a portion of a stationary magazine, which may have two or more vertically extending guide-ways or compartments 3' for the bobbins, not shown, 4 is a sectional part of an arm or connection on a rocking cradle or support, located at the lower end of the magazine, to support a bobbin, and having thereon a stud or pin 4', which is pivotally connected with the lower end of a vertically extending rod 5, which is loosely mounted in the extensions 3'' on the rear of the stationary magazine 3. A helically coiled expansion spring 6 encircles the rod 5, and acts to move said rod upwardly, to allow the bobbin cradle or support to rock and release a bobbin, when the upper end of said rod 5 is released from engagement with the lower end of a downwardly extending retaining arm 7. The retaining arm 7 has its hub 7' loosely mounted on a transverse shaft 8. A helically coiled contraction spring 9, fast at one end to a lug 7'' on the hub 7' and at its other end to a stationary point, acts to move back the retaining arm 7 over the upper end of the rod 5. The retaining arm 7 has a side arm 7<sup>a</sup> thereon, the end of which extends in the path of and is adapted to be engaged by the upper hooked end 10' on the upper end of a vertically moving rod 10, forming a part of the bobbin selecting and releasing mechanism. The upper part of the rod 10 is guidingly held in the upper slotted end of an extension 11' on a swinging frame 11, having its hub 11'' loosely mounted on a rod 12. Secured to the loom side 1 and extending out therefrom is a stand 13, see Fig. 1, the outer end of the stand 13 has a boss 13' thereon, which has adjustably secured therein by a set screw 14, the lower end of a stand 5, which in this instance carries the different parts of the detecting mechanism, and which consists in this instance of an electric coil or solenoid 16, Fig. 3, in which is loosely mounted and slides the magnetized feeler 17, which is

adapted to engage with the filling on a bobbin in the active shuttle, not shown, and to be drawn out of the solenoid on the practical exhaustion of the filling on the bobbin. All of the above mentioned parts may be of the usual and well known construction, and are the same as shown and described in the United States Letters Patent, No. 948,568, above referred to.

I will now describe my improvements, and the parts connected therewith. Pivotaly mounted on a stud 18, on the stand 15, is the hub of an angle lever 19, which is operated every second pick by a cam lever, and cam, not shown, through a connector or rod 20. The upwardly extending arm of the lever 19 has pivotally mounted thereon, on a stud 21, a lever or dagger 22. The dagger 22 is provided with a blade 22', which is preferably flattened at its end. A downwardly extending curved or cam-shaped extension 22'' on the dagger 22, is adapted to rest in its inoperative position, on an extension 19' on the lever 19, see Fig. 1. When, through the downward movement of the connector 20, the upper arm of the angle lever 19 is moved toward the magazine, as shown in Fig. 2, the cam-shaped extension 22'' on the dagger 22, rides on and slides over the outer end of the feeler 17, as long as the feeler is not drawn out of the solenoid, as shown in Fig. 2. When the filling on the bobbin is practically exhausted, the feeler 17 will be drawn out of the solenoid, and will allow the extension 22'' on the dagger 22 to pass by its outer end, as the lever 19 moves toward the magazine, and the blade 22' of the dagger 22 will engage a notch 23' on a lever 23, which I term a releasing device, to move said device 23, which in this instance is pivotally mounted on a stud 15' on the stand 15, and pivotally connected to the lower end of the rod 10, to move down said rod 10, and cause it to engage the arm 7<sup>a</sup> on the retaining arm 7, and move said retaining arm 7, and cause it to release the rod 5, and allow the spring 6 to operate to move up said rod 5, and rock a cradle or support for a bobbin, all as fully described in the United States Letters Patent, No. 948,568, above referred to. The continued movement of the dagger 22 and device 23, causes said dagger to be raised, through the engagement therewith of the shoulder 23'' on the device 23, see Fig. 5, and to be disengaged from the notch 23' thereon, see Fig. 6, and allow the device 23 to move back to its normal position, see Fig. 6, through the action of the helically coiled contraction spring 24, attached to said lever and to a hook 25. A pin 26 on the device 23, limits the backward movement of said device, by engaging a notch on the stand 15. A two-armed lever 27 has its hub 27' pivotally mounted on a



stud 27<sup>a</sup>, supported on the stand 15, and its upper arm extends in back of and in the path of the rear end of the magnetized feeler 17. The lower arm 27'' of the lever 27 extends 5 in the path of, and is adapted to be engaged by an upwardly extending curved or cam-shaped arm 28', having its hub 28 loosely mounted on the connector 20, and yieldingly held and moved on the arm 27' of the lever 10 27, through a helically coiled tension spring 29, which encircles the rod 20, and is held at its lower end by a collar 30 attached to said rod. A slotted arm 20<sup>a</sup> on the rod 20, holds the arm 28' in its proper position rela- 15 tive to the lever arm 27' and limits the upward movement of the hub. As the connector 20 is lowered, at predetermined intervals, the hub 28 and arm 28' are lowered with said connector 20, and the engagement 20 of the arm 28' with the lower arm 27'' of the lever 27, will cause the other arm of said lever to engage and move inwardly or position the magnetized feeler 17, as shown in Fig. 3. The downward movement of the 25 rod 20, and hub 28 and arm 28' allows the outward movement of the feeler 17.

The operation of my improvements connected with the filling detecting mechanism, and the bobbin selecting and releasing mechanism, from the above description in connection with the drawings, will be readily understood by those skilled in the art.

In the normal operation of the loom, and when there is no filling to be transferred 35 from the magazine into the running shuttle, the connector or rod 20 will be raised and lowered every other pick, through a cam and cam lever, not shown, to rock the angle lever 19, and move the dagger 22 carried 40 thereon, from the position shown in Fig. 1 to the position shown in Fig. 2. The cam-shaped extension 22'' on said dagger rides on the rear end of the feeler 17, and prevents the end 22' of the dagger 22 engaging 45 with the notch 23' on releasing device 23.

When in the operation of the loom, the filling on the bobbin in the active shuttle is substantially or practically exhausted, and the feeler 17 is drawn toward the magazine 50 out of the solenoid 16, so that the cam-shaped extension 22'' on the dagger 22 can drop down below the plane of the rear end of the feeler 17, then on the movement of the dagger 22 toward the magazine, the end 55 22' thereof will engage with the notch 23' on the releasing device 23, as shown in Fig. 4, and in the continued movement of the lever 19 and the dagger 22, will rock said device 23, and move down the rod 10, as shown in 60 Fig. 5, to cause it to engage the arm 7<sup>a</sup> on the retaining arm 7, and release the rod 5, and allow the cradle or support for the bobbin to rock and release a bobbin, preparatory to its being transferred from the maga-

zine into the running shuttle. The contin- 65 ued movement of the arm 19 and the dagger 22 will, through the engagement of the shoulder 23'' on the device 23, raise the engaging end 22' of the dagger 22 and disengage it from the notch 23' on the device 23, 70 as shown in Fig. 6, and allow the coil spring 24 to act to return the lever 23 to its normal position, and also raise the rod 10, as shown in Fig. 6, leaving said rod free to be moved 75 at its upper end, according to the movement of the shuttle boxes, or pattern indicating device, preparatory to another transfer of filling, all as will be fully understood by those skilled in the art.

It will be understood that the details of 80 construction of my improvements may be varied if desired.

The essential feature of my invention is the releasing lever or device, intermediate the filling detecting mechanism, and the 85 filling carrier or bobbin selecting and releasing mechanism.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent is:— 90

1. In a weft replenishing loom, having a magazine for filling carriers, and a filling carrier selecting mechanism and releasing mechanism, the combination with a filling 95 detecting mechanism, and a dagger or lever controlled as to its operative position by the feeler of said filling detecting mechanism, of a releasing lever or device operated by said dagger, and connected with the filling releasing mechanism. 100

2. In a weft replenishing loom, a solenoid, a magnetized feeler, a dagger or lever controlled as to its operative position by said feeler and means for operating said dagger, a releasing lever or device, engaged 105 and operated by said dagger, and released from engagement with said dagger, and connections from said device to the bobbin releasing mechanism and said bobbin releasing mechanism. 110

3. In a weft replenishing loom, having a filling detecting mechanism, comprising a solenoid, and a magnetized feeler mounted in the solenoid, and movable longitudinally therein, the combination with said feeler, of 115 a pivotally mounted two-armed lever, one arm adapted to engage and positively move forward said feeler after it has been moved backward, and the other arm extending in the path of and adapted to be engaged and 120 positively moved at predetermined intervals by a moving arm or lever, and said moving arm or lever.

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