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D. H. BUSHEY

1,777,348

THREAD HOLDER

Filed Nov. 13, 1929

FIG. 1

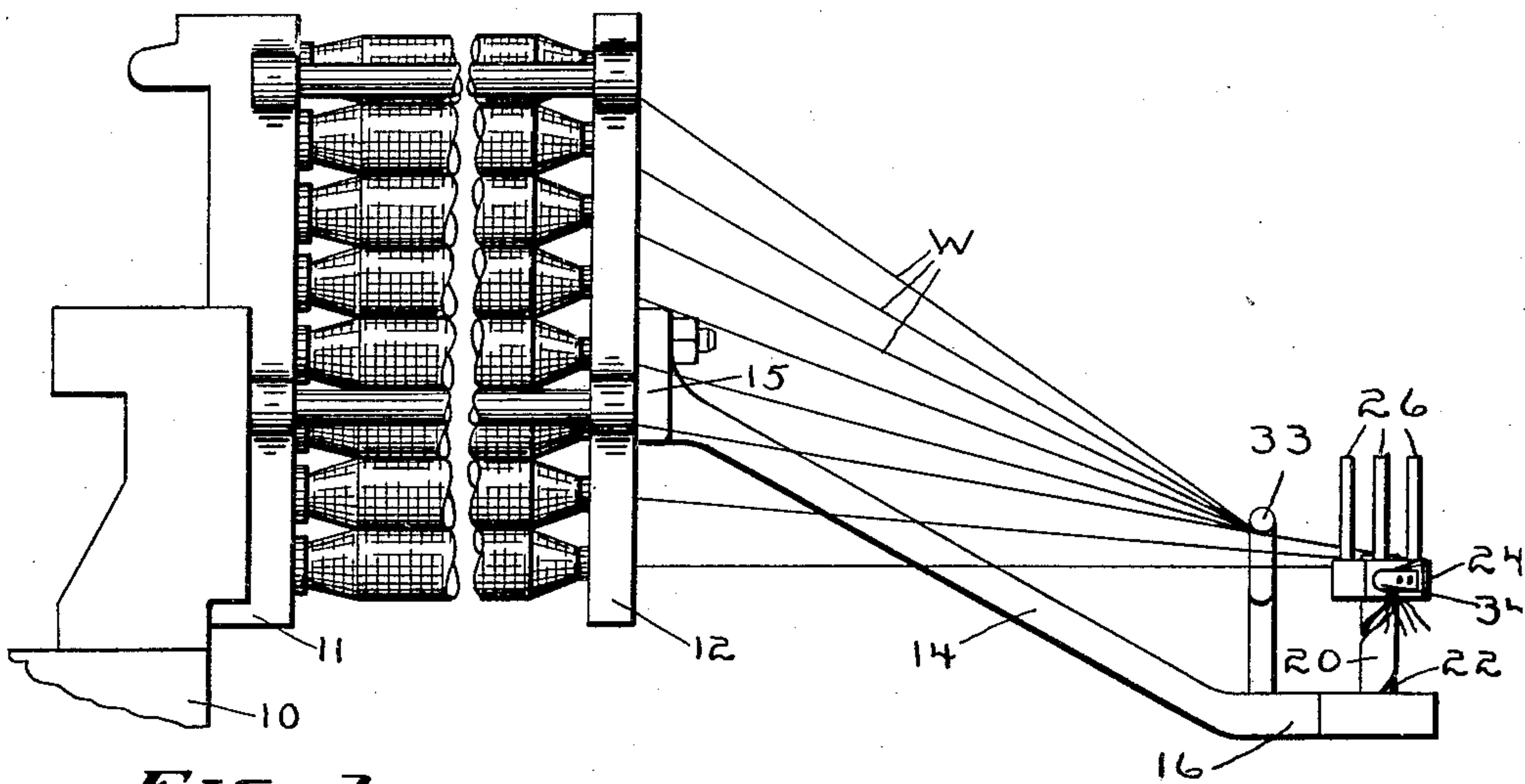


FIG. 2

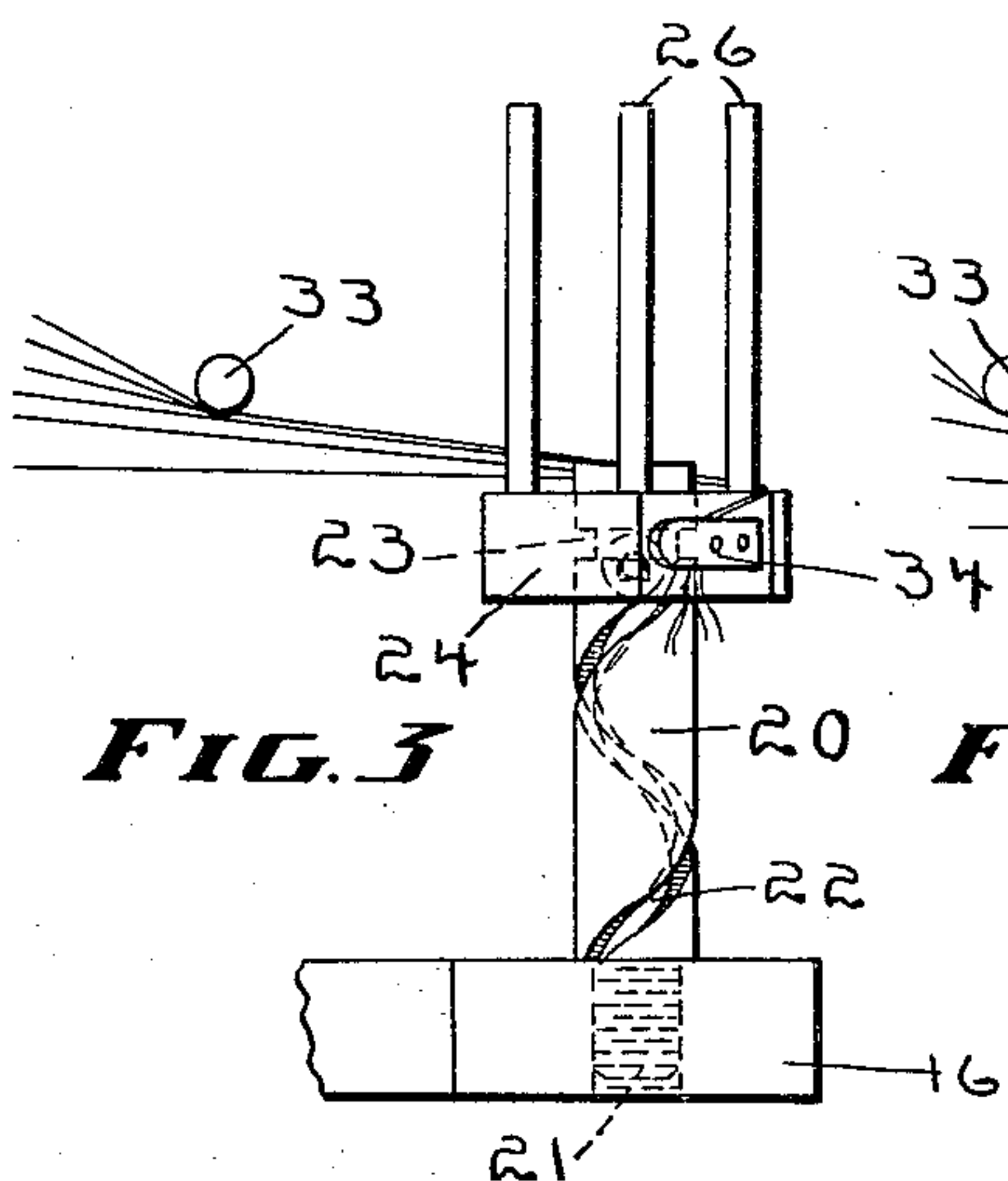
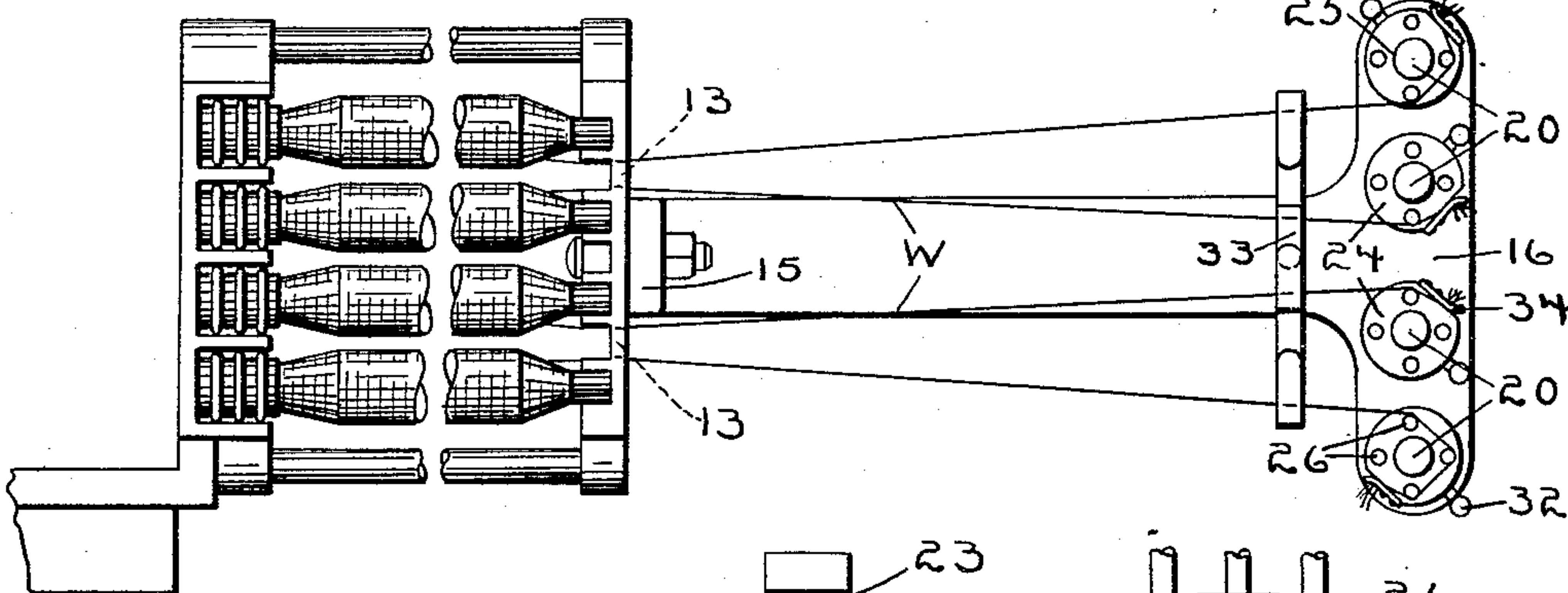


FIG. 3

FIG. 4

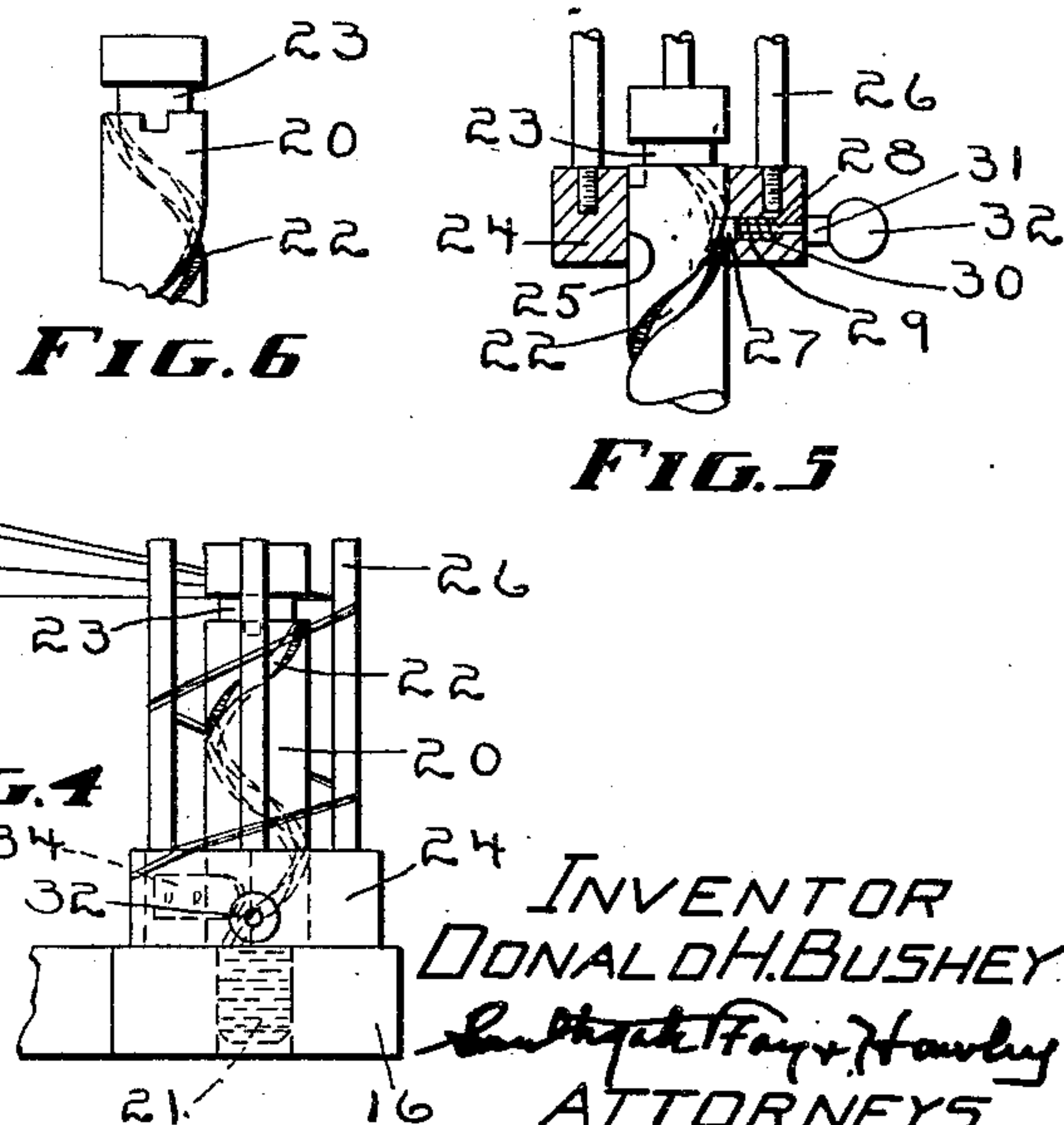


FIG. 6

FIG. 5

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THREAD HOLDER

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This invention relates to thread holders for weft replenishing looms and it is the general object of the invention to provide a device of this kind which will be actuated by gravity to take up slack which may occur in the weft ends extending from the reserve bobbins, the device having a rotary motion through the coaction of a gravity actuated element to effect take-up of weft.

In the usual form of multicolor weft replenishing mechanism vertical stacks of bobbins are arranged between butt and tip guiding plates. The weft ends extend to some form of holder, but it has been found that the jarring of the loom causes a slight rotation on the part of certain of the bobbins, the rotation winding up the weft ends in some cases and rendering them unduly slack in other instances. In either case an objectionable condition exists and it is a further object of a convenient embodiment of my present invention to provide a gravity actuated device which may be caused to rotate as it descends, to exert a constant tendency to take slackness as soon as it occurs.

It is a still further object to provide a guide for the weft intermediate the magazine and the rotary holder which will assist the latter to tighten the weft threads by a downward movement independent of the rotary motion.

It is another object of my invention to provide means for readily moving the weighted element from one vertical position to another, said means normally cooperating with some form of inclined plane to cause rotation, but being retractable so that the device may be moved along its guide without being required to rotate.

With these and other objects in view which will appear as the description proceeds, my invention resides in the combination and arrangement of parts hereinafter described and set forth in the claims.

In the accompanying drawings wherein a convenient embodiment of my invention is set forth,

Fig. 1 is a front elevation of a magazine having my invention applied thereto,

Fig. 2 is a plan of the device set forth in Fig. 1,

Fig. 3 shows a front elevation of the weight and guide therefor on an enlarged scale, the weight being in raised position,

Fig. 4 is a view similar to Fig. 3 but with the weight moved to its lower position,

Fig. 5 is a vertical section through the weight and support therefor, showing the same in position to be effective to tension a weft end, and

Fig. 6 is a detailed elevation of the upper end of the support for the weight, the latter being removed.

Referring to Figs. 1 and 2, I have shown a loom frame 10 having mounted thereon a magazine 11 which may preferably be of a multicolor type capable of supplying four different kinds of weft, as suggested in Fig. 2. The magazine is provided with an outer plate 12 formed with slots 13 through which the weft ends W extend. An arm 14 having a foot 15 secured to the plate 12 extends downwardly and to the right as viewed in Fig. 1, having a small platform 16. The matter thus far described is of common construction, the bobbins moving down one by one under influence of gravity as successive transfers take place, and the platform 16 being provided with some form of thread holder the function of which is to keep the weft ends W substantially taut.

In carrying my invention into effect I have provided the platform with a plurality of guide posts 20, one for each stack of bobbins in the magazine. Each post may be threaded into or otherwise secured to the platform 16, as suggested at 21 in Fig. 3, and is of substantially cylindrical form, having formed therein a helical slot 22. The upper end of slot 22 opens into a groove 23 which extends peripherally around the upper portion of the post.

Each post has mounted therearound a weighted element 24 provided with a bore 25 which loosely fits the post. The weighted element may be formed substantially as shown in Fig. 5 and have secured thereto a plurality of upwardly extending thread engaging pins 26, there being four of these

pins for each weighted element as set forth herein.

Cooperating with the helical slot 22 is a plunger head 27 formed on the inner end of a small rod 28 which extends into a chamber 29 formed in the weighted element. A compression spring 30 is interposed between a wall of the chamber and the head 27 and acts to move the latter into the helical slot. Movement of the plunger inwardly toward the post under influence of the spring may be limited by a shoulder 31 formed on a knob or hand hold 32 into which the rod 28 extends and is secured.

When a supply of fresh bobbins is being applied to the magazine the weighted elements will be moved upwardly from their previously lowered position by withdrawing the plunger until the head 27 is out of the groove 22, after which the weighted element may be moved upwardly until the plunger when released will enter the peripheral groove 23 at a point spaced from that at which the slot 22 enters the groove. The weft ends from any one stock of bobbins will then be passed under a guide wire 33 which extends upwardly from the platform 16. The wefts are then secured to a spring clip 34 which frictionally holds the weft ends between itself and the weighted element. When all the weft ends from any stack of bobbins are thus secured the weighted element is moved angularly about the post until the head 27 of the plunger carried thereby moves downwardly into the corresponding helical slot. Downward motion of the weight will be accompanied by a rotation due to the cooperation of the plunger and the fixed helical slot 22, this downward motion being arrested when the warp threads are taut.

At each transfer from any selected stack the bobbins thereof will move downwardly, thereby causing a slight amount of slackness in the weft ends W, but this is immediately taken up by reason of the fact that the weight moves downwardly and also rotates until the weft ends are taut.

The condition depicted in Fig. 3 is that which exists at the beginning of the operation of the device, while that shown in Fig. 4 may be considered to exist after the last bobbin has been transferred from the corresponding stack. As previously stated, the weight may be moved from the position shown in Fig. 4 to that set forth in Fig. 3 by withdrawing the plunger head 32, the upward movement being quick and without rotation on the part of the weight.

It will be noted that the spring clip 34 is in a lower position in Fig. 4 than in Fig. 3, from which it will be understood that the taking-up of the slack in the weft ends is due not only to the rotation of the weight but also to the fact that the same moves down-

wardly, the weft ends being subjected to a combined winding or wrapping motion and also to a downward pull.

I do not wish to be limited to the particular form of structure set forth herein as the rotary motion by which the slack weft ends are wound up may be brought about by the cooperation of two relatively movable elements one of which moves under influence of gravity and the other of which is held against downward motion, one of the elements rotating to effect the described result.

From the foregoing it will be seen that I have provided a simple means for keeping the weft ends of reserve bobbins substantially taut so that they will not become entangled with each other or any moving part of the loom. It will also be noted that the take-up of the weft slack is due to two features, one being that arising from the rotary motion of the weight and the other due to its descent. Furthermore, the plunger by means of which the rotation is effected may be withdrawn to permit quick setting of the weight when it is desired to restore the same to its upward position.

Having thus described my invention it will be seen that changes and modifications may be made therein by those skilled in the art without departing from the spirit and scope of the invention and I do not wish to be limited to the details herein disclosed, but what I claim is:

1. In a thread holder for a magazine having a plurality of reserve bobbins from each of which extends a weft end, a pair of members one of which is mounted for rotation and has the weft ends attached thereto, one of said members being gravity actuated and movable by gravity when slackness occurs in the weft ends, and cooperating connections between the members to cause rotary movement of the member attached to the weft ends when the gravity actuated member moves under action of gravity.

2. In a thread holder for a magazine having a plurality of reserve bobbins from each of which extends a weft end, a pair of members one of which is mounted for rotation and has the weft ends attached thereto, one member being free to move under action of gravity when slackness occurs in the weft ends, and connections between the members including an inclined plane to cause rotation of the first named member when the gravity actuated member descends.

3. In a thread holder for a magazine having a plurality of reserve bobbins from each of which extends a weft end, a pair of members movable with respect to each other and having screw thread connections, one of said members being connected to the weft ends and rotatable to take up slack therein and one of said members being movable downwardly under the action of gravity, one member being

stationary to cause rotary motion of the member attached to the weft ends.

4. In a thread holder for a magazine having a plurality of reserve bobbins from each of which extends a weft end, a stationary member, a movable member, a screw thread formed on one of said members, a part formed on the other member to engage the screw thread to cause relative motion of the members when one of them moves vertically, one of said members being attached to the weft ends, one of said members moving downward under the action of gravity when slackness occurs in the weft ends, and one of said members thereupon rotating to take up slackness in the weft ends.

5. In a thread holder for a magazine having a plurality of reserve bobbins from each of which extends a weft end, a stationary member, a movable member guided thereby, cooperating connections between the members including an inclined surface, whereby relative motion of the parts in a vertical direction will cause rotary movement on the part of one of the members, the weft ends being attached to the member having the rotary motion, a vertical relative displacement taking place between the members when slackness occurs in the weft ends to take up said slackness.

6. In a thread holder for a magazine having a plurality of reserve bobbins from each of which extends a weft end, a stationary screw threaded member, a movable member guided thereby and having internal threads to cooperate with the stationary member, the latter member being rotatable on the stationary member and having the weft ends attached thereto, the second named member moving downwardly and also rotatively with respect to the first member under action of gravity to take up slack which occurs in the weft ends.

In testimony whereof I have hereunto affixed my signature.

DONALD H. BUSHEY.