

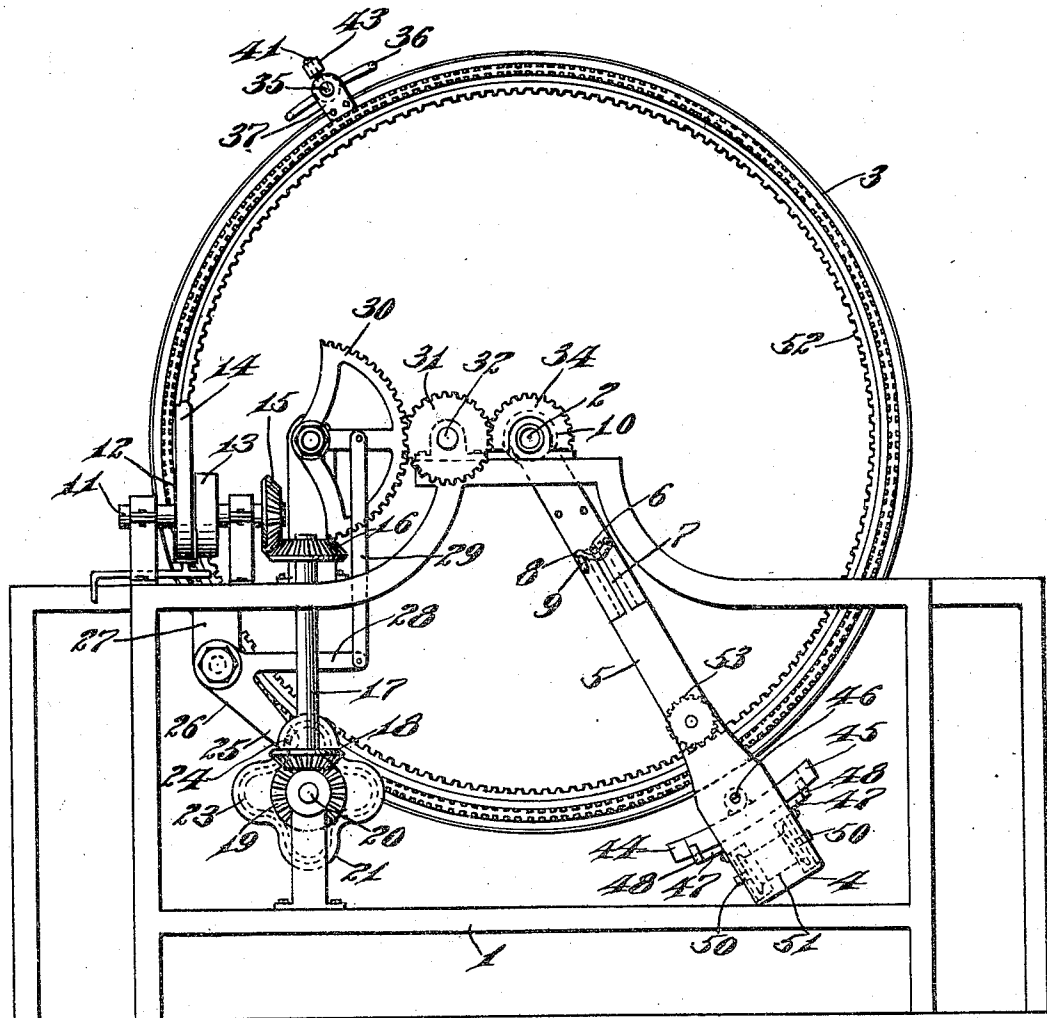
G. W. STOKES.
TAPESTRY PRINTING MACHINE.
APPLICATION FILED JULY 3, 1909.

953,931.

Patented Apr. 5, 1910.

4 SHEETS—SHEET 1.

Fig. 1.



Inventor

George W. Stokes,

By Joshua R. P. Potts,
Attorney

Witnesses
Thos. Roseman.
J. A. L. Mulhall.

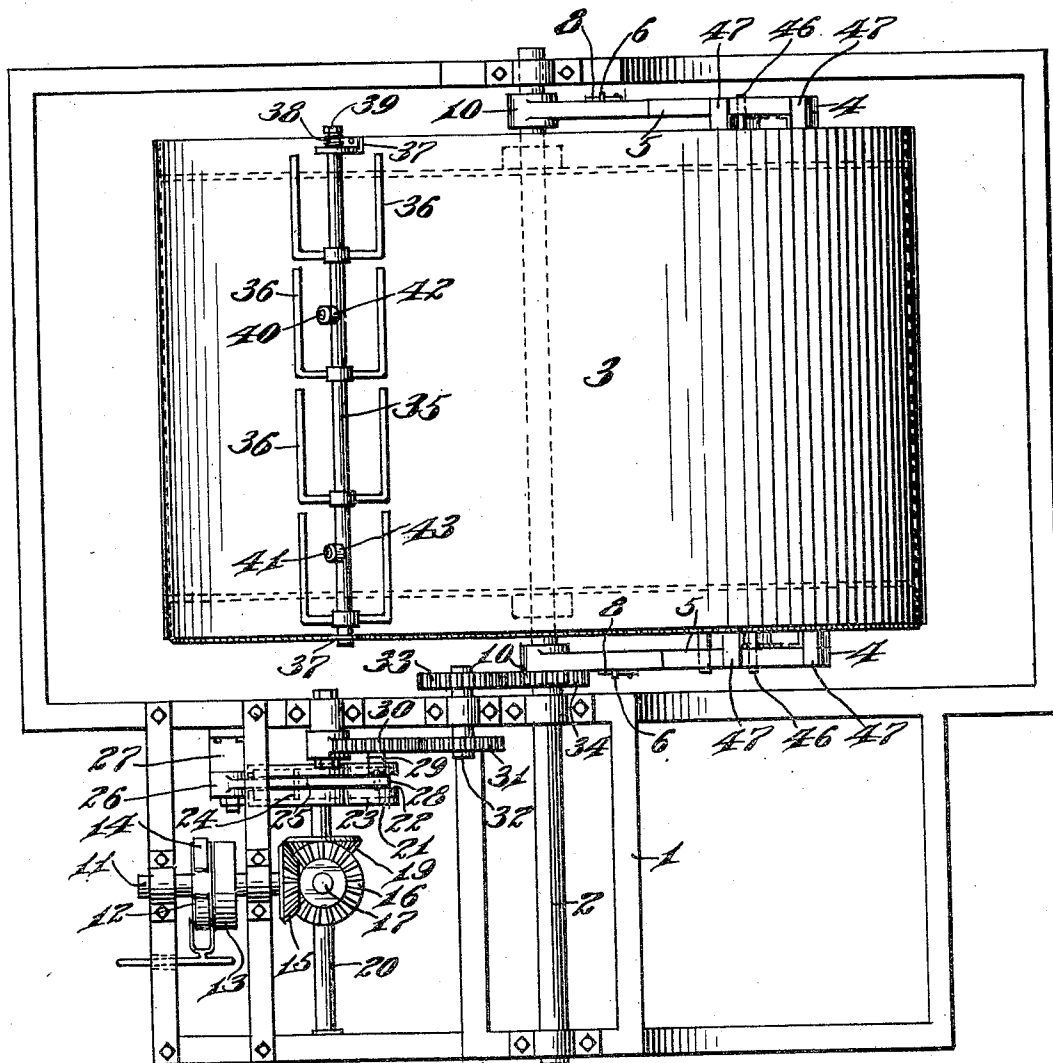
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4 SHEETS—SHEET 2.

Fig. 2.



Inventor

Witnesses
Thos. Roseman.
J. A. B. Mulhall.

George W. Stokes,
By John R. T. Potts.
Attorney

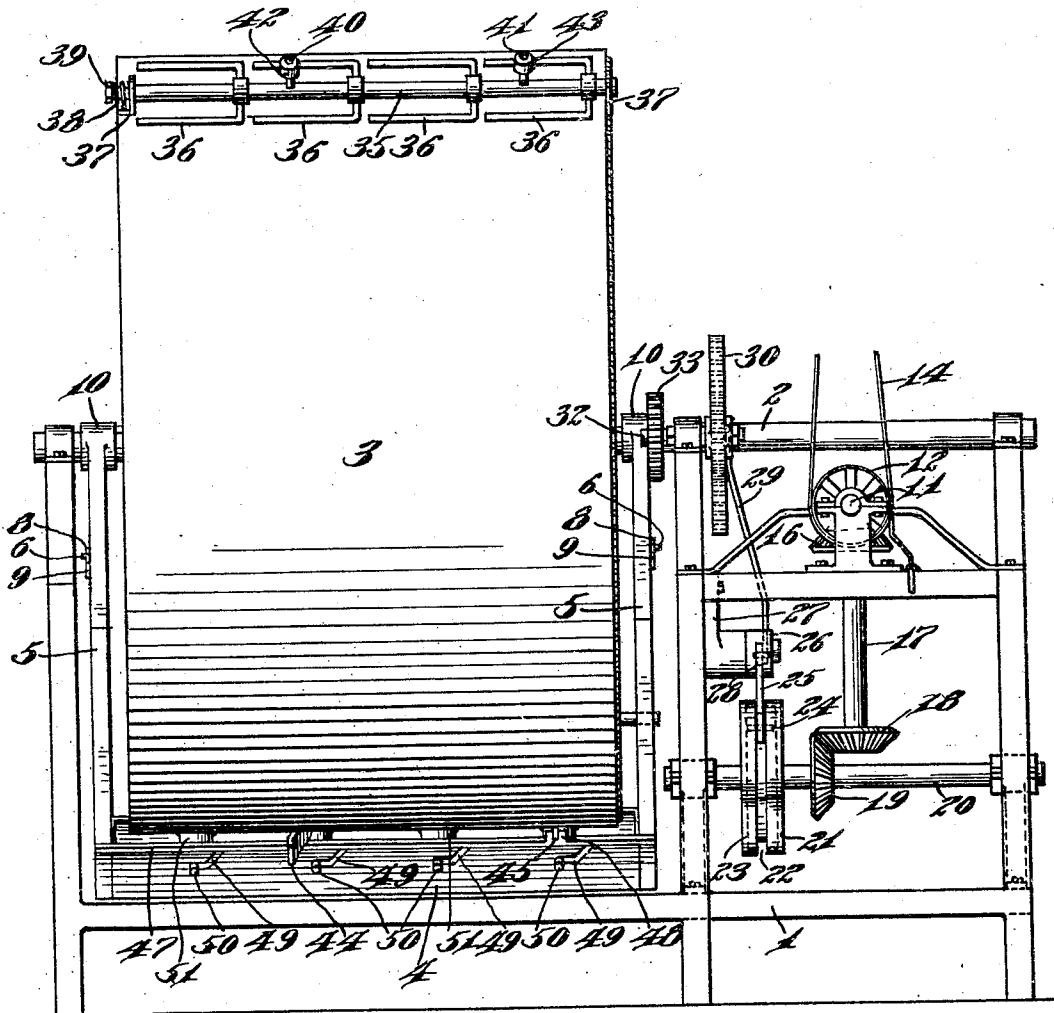
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4 SHEETS—SHEET 3.

Fig. 3



Inventor

Witnesses
Thos. Roseman
J. A. L. Mulhall

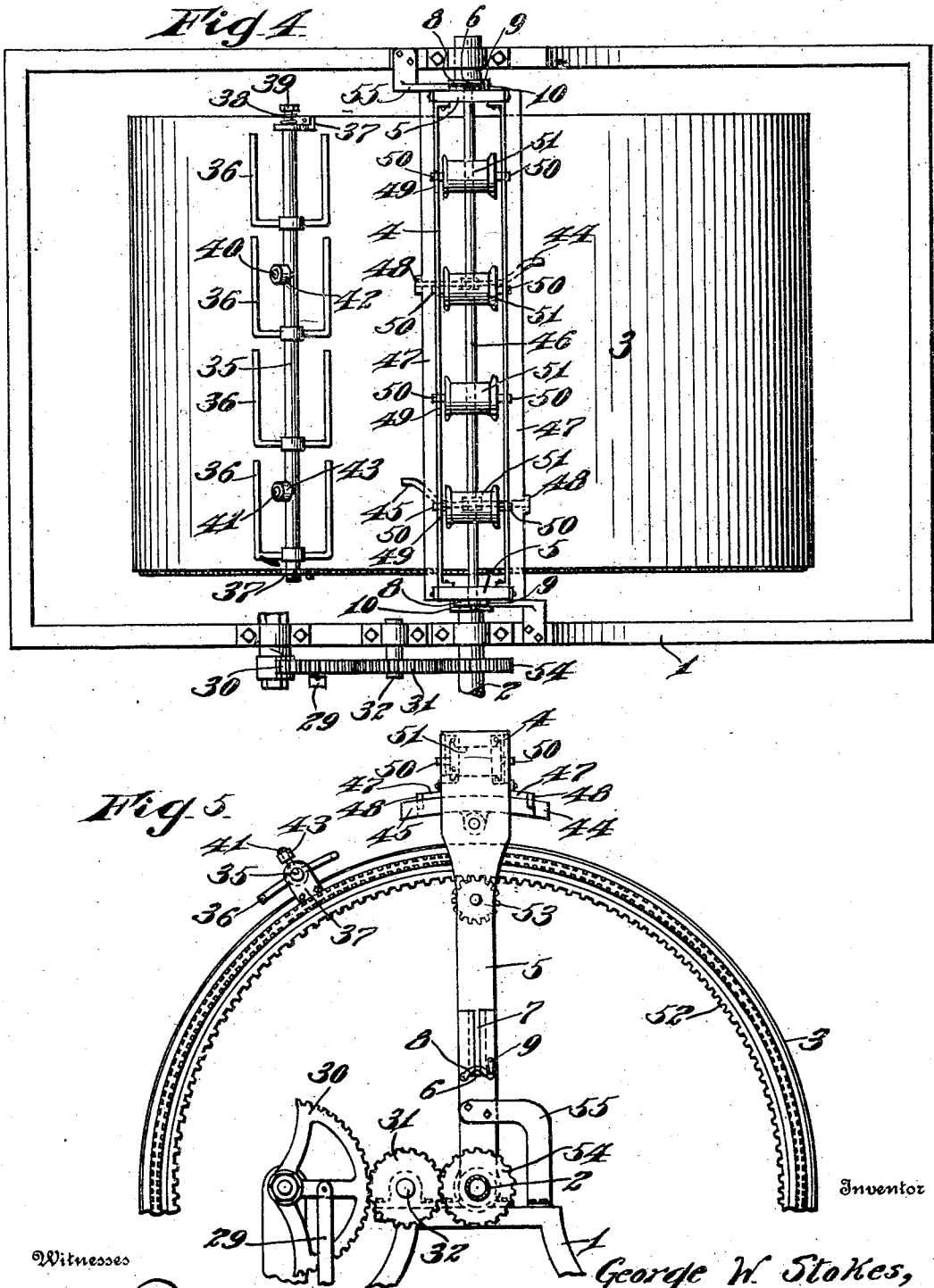
George W. Stokes,
By Joshua R. Stettin, Attorney

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4 SHEETS—SHEET 4.



Witnesses
Thos. R. Remond.
J. A. L. Mulhall.

George W. Stokes,
Joshua R. V. Potts,
Attorney

UNITED STATES PATENT OFFICE.

GEORGE W. STOKES, OF PHILADELPHIA, PENNSYLVANIA.

TAPESTRY-PRINTING MACHINE.

953,931.

Specification of Letters Patent.

Patented Apr. 5, 1910.

Application filed July 3, 1909. Serial No. 505,849.

To all whom it may concern:

Be it known that I, GEORGE W. STOKES, a citizen of the United States, residing at Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Tapestry-Printing Machines, of which the following is a specification.

My invention relates to an improved tapestry printing machine, and more particularly to an improved mechanism designed for filling drums of printing machines with yarn, an object of the invention being to provide improvements of this character, which enable the utilizing of drums of comparatively small diameter, and which may give to the tapestry a length of warp approximating twice the circumference of the drum.

A further object is to provide an improved spool carrying frame with improved means for oscillating the same about a drum, to position the warp threads upon the drum.

A further object is to provide an improved thread or yarn catch, which is operated by cams on the yarn carrying frame, so as to catch the thread when the frame oscillates on the drum, or when the drum is oscillated below the frame.

With these and other objects in view, the invention consists in certain novel features of construction, and combinations and arrangements of parts as will be more fully hereinafter described and pointed out in the claims.

In the accompanying drawings, Figure 1, is a view in side elevation illustrating my improvements. Fig. 2, is a top plan view. Fig. 3, is a view in end elevation. Fig. 4, is a plan view of a modification, and Fig. 5, is a fragmentary view in side elevation of the structure shown in Fig. 4.

1 represents a frame supporting a shaft 2, on which a drum 3 is secured. This drum 3 is of the ordinary type, and may be made in various ways other than illustrated.

4 represents a spool carrying frame supported by arms 5, the latter each comprising two members telescoping together, one member having a pin 6 thereon, movable in a slot 7 in the other member, adapted to be locked by a pivoted catch 8, the latter held by a button 9, against accidental movement. These arms 5 are provided with sleeves 10 supported to turn on shaft 2, and permit the

frame to move around the drum, or the drum turn inside of the frame, as the case may be.

11 represents a driving shaft upon which fast and loose pulleys 12 and 13 respectively, are provided, and adapted to be driven by a belt 14 from any desired source of power. The shaft 11 has a beveled gear 15 secured thereon, which meshes with a beveled gear 16 on a vertical shaft 17, supported in frame 1, and this shaft 17 has a beveled gear 18 thereon, transmitting motion to a beveled gear 19 on a countershaft 20, and an eccentric 21 is secured upon this shaft 20, and is provided with a peripheral groove 22, communicating with a series of cam grooves, or rather continuous grooves 23, constituting a series of cams in engagement with a cross pin 24 on one member 25 of a bell-crank lever 26, the latter fulcrumed to a bracket 27 on frame 1. The other member 28 of bell-crank lever 26 is connected by a link 29 with a toothed segment 30, and said segment 30 meshes with a pinion 31 on a short shaft 32, parallel with the main shaft 2, and upon which shaft 32 a pinion 33 is fixed, and meshes with a pinion 34 on one of the sleeves 10, so as to transmit oscillatory movement to the spool frame, as will be hereinafter pointed out.

My improved yarn catch as shown most clearly in Fig. 2, comprises a rod 35 having a series of U-shaped wire yarn catching fingers 36 thereon, is supported to slide in brackets 37 secured to the drum, and a coiled spring 38 on one end of said rod 35 between a bracket 37 and a nut 39 on the end of the rod, holds the yarn catching fingers 36 in normal position, and pins 40 and 41 respectively on said rod, are provided with anti-friction rollers 42 and 43 respectively, to be contacted with by cams 44 and 45 respectively, in accordance with the direction of movement of the spool frame. These cams 44 and 45 are secured upon a rod 46, the latter supported in the spool frame 4 and the cams 44 and 45 contact with parallel bars 47 on the inner face of the spool frame, and are each provided with a lug 48 to engage the edge of one of said bars 47, and prevent any pivotal movement of the cams. These spool frames 4 are provided with openings or slots 49, to accommodate trunnion 50 of the yarn supply spools 51. The drums 3 as ordinarily made, are provided with an internal rack 52, and in order to

steady the yarn frame, and insure an easy running device, a pinion 53 is provided on one of the arms 5 and runs on the rack 52.

The operation of the structure shown in Figs. 1, 2 and 3, is as follows: The shaft 11 is driven by the belt 14, and through the medium of beveled gears 15 and 16, drives shaft 17, and the latter through the medium of gears 18 and 19, drives countershaft 20. As countershaft 20 revolves, it turns the eccentric 21 thereon, and the grooves 23, which constitute a series of cams, will oscillate the bell-crank lever 26, and the member 28 of said lever, through the medium of link 29, will oscillate segment 30, transmitting an oscillatory motion to pinions 31, 33 and 34, and oscillate the arms 5 and the spool frame 4 thereon. The cams of the eccentric, are of such a length as to transmit an oscillatory movement of the arms, and the spool frame, which will turn the arms and the spool frame in both directions, a distance slightly greater than the circumference of the drum 3.

While Fig. 4, illustrates a modification in which the frame is stationary, it also shows the relative positions of the cams 44 and 45, with the rollers 42 and 43 respectively, and this is one position in the operation of the preferred form, save, of course, that the spool frame 4 is moving, while the drum is stationary, and as this figure illustrates this relation, the description is based thereon.

As the frame 4, which we will assume is moving to the left of the drum as shown in Fig. 4, approaches the yarn catching fingers 36, the cam 45 will engage roller 43, and move the rod 35, and all of the fingers 36 longitudinally in position to receive the yarn from the spools 51, between the ends of one set of fingers, and the adjacent set of fingers, and when the cam 45 is moved off of the roller 43, as the frame 4 oscillates in the other direction, the spring 38 will project the rod 35, and its fingers 36 to its former and normal position, and catch the yarn, so that the return or opposite movement of frame 4, will position another set of warp threads around the drum, and as the frame 4 approaches fingers 36 from the opposite direction, cam 45 will engage roller 42 and move the fingers as before.

In the modification shown in Figs. 4 and 5, gear 33 is dispensed with, gear 31 engaging a gear 54 fast on shaft 2, and brackets 55 secured to frame 1, are adapted to be secured to the arms 5, and hold the arms 5 of the spool frame 4 against rotary movement. In this modification, therefore, when the oscillatory motion is transmitted by the segment 30 through gears 31 and 54 to shaft 2, the drum will be oscillated, while the frame 4 will be held stationary, and while the operation of the rollers 42 and 43 with cams 44 and 45 will be the same, in effect, they

will operate exactly opposite to that above described.

With the parts as above explained, a rug or tapestry may be made of a length approximately twice the circumference of the drum. If a shorter length is desired, a second yarn catcher would of course, have to be employed, and a great many variations might be made in the general form and arrangements of parts described without departing from my invention, and hence I do not restrict myself to the precise details set forth, but consider myself at liberty to make such changes and alterations as fairly fall within the spirit and scope of the claims.

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

1. In a machine of the character described, the combination with a drum, and a spool carrying frame having a rotary support concentric with the drum support, of means for transmitting an oscillatory movement to one of said parts relative to the other, to position the yarn on said drum.

2. In a machine of the character described, the combination with a drum, and a spool carrying frame having a rotary support concentric with the drum support, of an eccentric, means for turning the eccentric, and means for transmitting an oscillatory motion from the eccentric to one of said first mentioned parts to position the yarn upon said drum.

3. In a machine of the character described, the combination with a stationary drum, of a yarn catcher on the drum, a spool carrying frame having a rotary support concentric with the drum support, and means for transmitting an oscillatory movement of the frame around the drum.

4. In a machine of the character described, the combination with a stationary drum, a yarn catcher on the drum, a spool carrying frame having a rotary support concentric with the drum support, an eccentric, means for transmitting motion to the eccentric, and means for transmitting from the eccentric to the frame an oscillatory movement of the latter on the drum.

5. In a machine of the character described, the combination with a frame, a horizontal shaft on the frame, a drum on said shaft, arms mounted to turn on said shaft at opposite sides of the drum, a spool carrying frame on the free ends of said arms, a yarn catcher on the drum, and means for transmitting an oscillatory movement to the arms to oscillate the frame around the drum.

6. In a machine of the character described, the combination with a frame, a shaft mounted on the frame, a drum fixed to the shaft, arms mounted to turn on the shaft at opposite sides of the drum, a spool

carrying frame on said arms, a yarn catcher on said drum, means for transmitting an oscillatory movement to the arms to move the frame about the drum, and means on the

5 frame for operating the yarn catcher.

7. In a machine of the character described, the combination with a frame, a shaft mounted on the frame, a drum fixed to the shaft, arms mounted to turn on the

10 shaft at opposite sides of the drum, a spool carrying frame on said arms, a spring held longitudinal rod, yarn catching fingers on the rod, pins on said rod, rollers on said pins, cams on said spool carrying frame to

15 engage said rollers, and means for transmitting an oscillatory movement of the frame on said drum.

8. In a machine of the character described, the combination with a frame, a

20 shaft mounted on the frame, a drum fixed to the shaft, arms mounted to turn on the shaft at opposite sides of the drum, a spool carrying frame on said arms, a longitudinally movable spring held yarn catcher on

25 said drum, a rod on said spool carrying frame, cams secured between their ends on said rod, lugs on said cam engaging the edges of said frame, and means for transmitting an oscillatory movement of the

30 frame on the drum.

9. In a machine of the character described, the combination with a frame, a shaft mounted on the frame, a drum fixed to the shaft, arms mounted to turn on the

35 shaft at opposite sides of the drum, a spool carrying frame, said arms comprising two sections removably secured together, a yarn catcher on the drum, and means for transmitting an oscillatory movement to said

40 arms and frame.

10. In a machine of the character described, the combination with a frame, a shaft mounted on the frame, a drum fixed to the shaft, arms mounted to turn on the

45 shaft at opposite sides of the drum, a spool

carrying frame, a yarn catcher on the drum, an internal rack on the drum, a pinion on one of said arms engaging said internal rack, and means for transmitting an oscillatory movement to said frame on the drum. 50

11. In a machine of the character described, the combination with a frame, a shaft mounted on the frame, a drum fixed to the shaft, arms mounted to turn on the shaft at opposite sides of the drum, a spool 55 carrying frame, a yarn catcher on the drum, a gear fixed to one of said arms, an eccentric, a segmental gear oscillated by said eccentric, and means for transmitting oscillatory motion from said segmental gear to said first 60 mentioned gear.

12. In a machine of the character described, the combination with a frame, a shaft on the frame, and a drum secured on the shaft, of arms at opposite sides of the 65 drum, sleeves at the inner ends of the arms mounted to turn on the shaft, each of said arms comprising two sections telescoping together, catches locking said telescoping members together, a spool carrying frame 70 on the outer ends of said arms, a yarn catcher secured on the drum, a gear wheel on one of said sleeves, a short shaft, a gear on said short shaft meshing with said first mentioned gear, a second gear on said short 75 shaft, a segmental gear meshing with said last mentioned gear, a bell-crank lever, a link connecting one end of the bell-crank lever to said segmental gear, an eccentric, a pin on the other end of said bell-crank lever 80 engaging the eccentric, and means for turning the eccentric.

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

GEORGE W. STOKES.

Witnesses:

R. H. KRENKEL,

J. A. L. MULHALL.