

(No Model.)

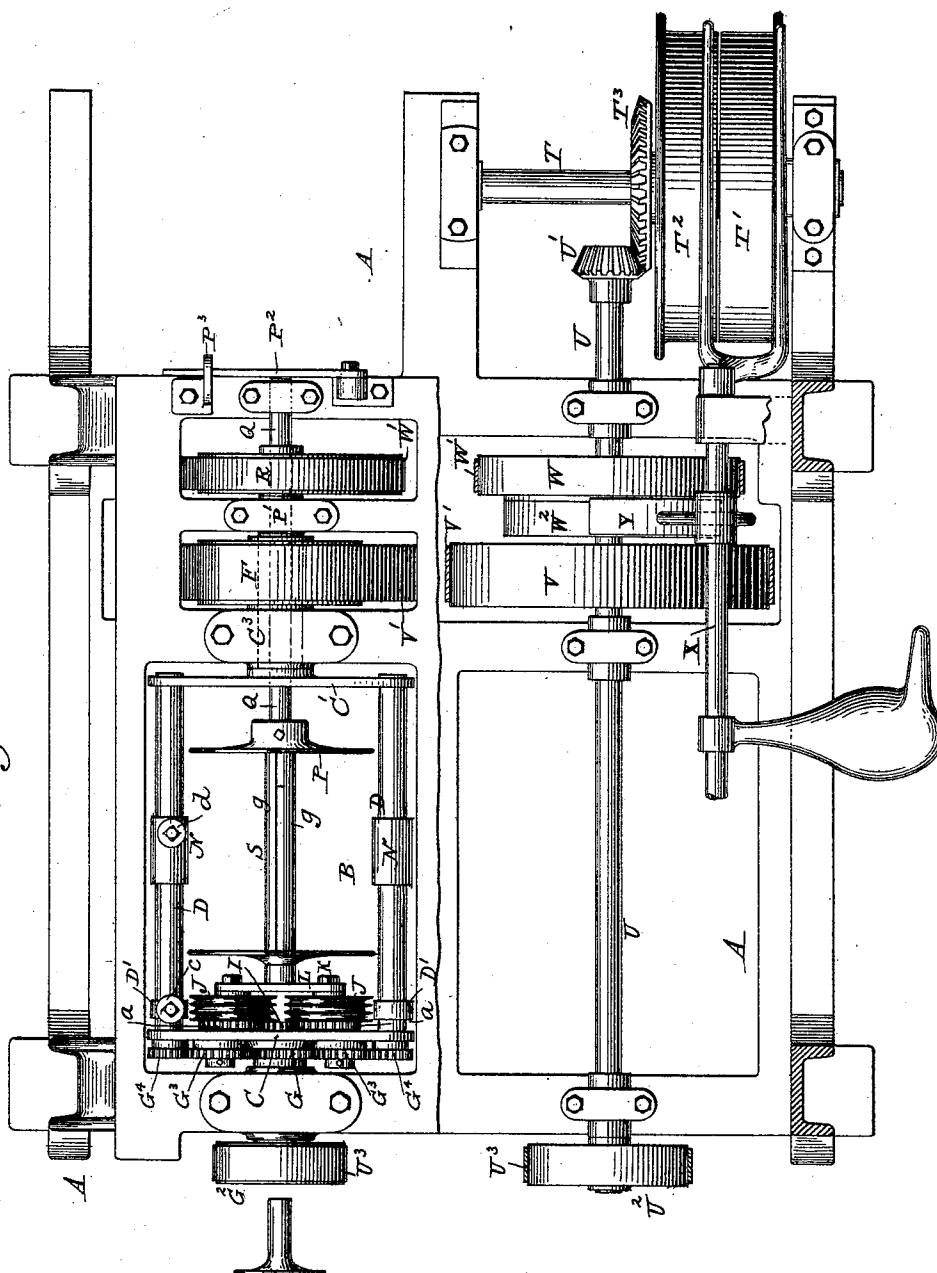
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J. H. MONROE & I. COURTENAY.
SPINNING AND BALLING MACHINE.

No. 500,343.

Patented June 27, 1893.

Fig. 1.



WITNESSES

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2 Sheets—Sheet 2.

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Fig. 2.

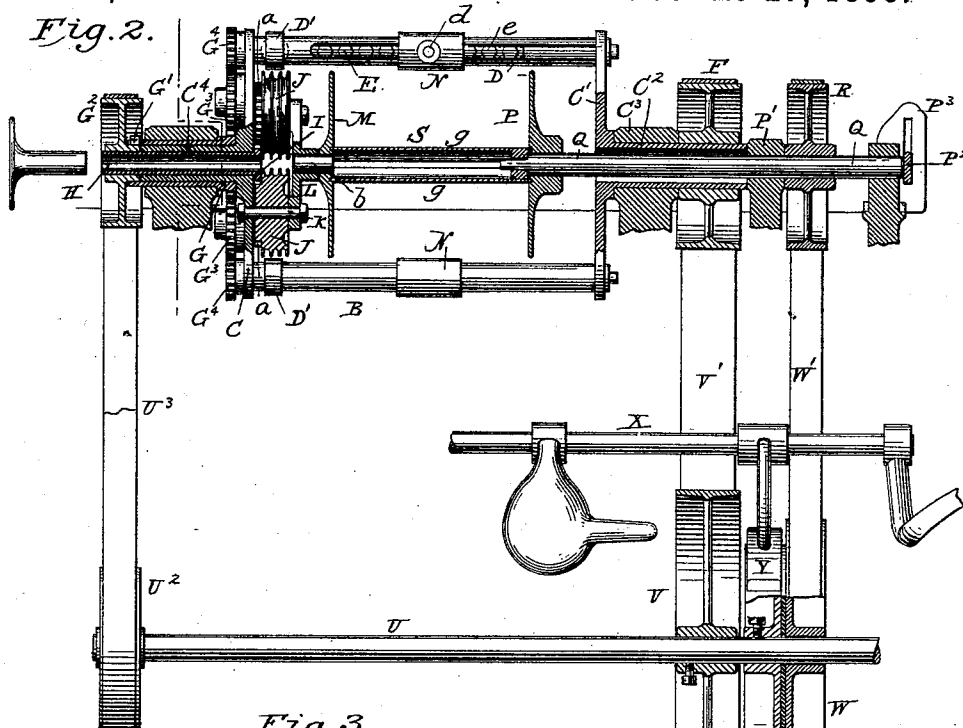


Fig. 3.

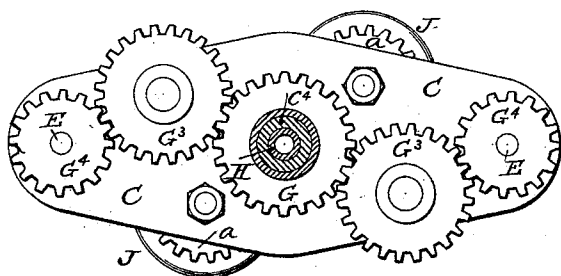
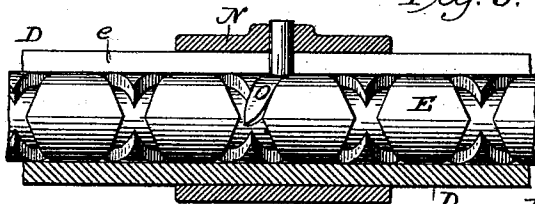


Fig. 5.



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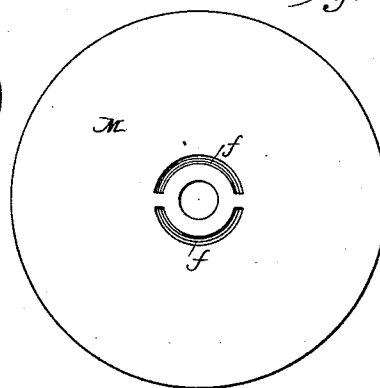


Fig. 4.

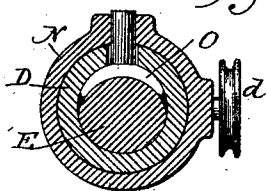


Fig. 6.

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UNITED STATES PATENT OFFICE.

JAMES HARVEY MONROE AND ISRAEL COURTENAY, OF ST. JOHN'S,
NEWFOUNDLAND.

SPINNING AND BALLING MACHINE.

SPECIFICATION forming part of Letters Patent No. 500,343, dated June 27, 1893.

Application filed February 24, 1893. Serial No. 463,570. (No model.)

To all whom it may concern:

Be it known that we, JAMES HARVEY MONROE and ISRAEL COURTENAY, subjects of the Queen of Great Britain, residing at St. John's, Newfoundland, have invented certain new and useful Improvements in Spinning and Balling Machines, of which the following is a specification.

Our invention relates to combined spinning and balling machines, and consists in a novel combination of parts whereby the intervention of wooden bobbins is avoided and the extra labor of balling is rendered unnecessary.

In the accompanying drawings,—Figure 1 is a top plan view of a portion of our improved machine on two different planes; Fig. 2, a vertical longitudinal sectional view of the same; Fig. 3, a vertical transverse sectional view on the line $x-x$ of Fig. 2; Fig. 4, a face view of one of the bobbin disks or heads; and Figs. 5 and 6, views illustrating certain details of construction hereinafter particularly specified.

A indicates the main frame, which may be of any usual and ordinary construction, carrying the flier and the bobbin, and various other parts of the apparatus.

The flier B comprises two heads C C' which are maintained the proper distance apart by means of two longitudinally-slotted tubes D which inclose the screw shafts E. One of the heads, C', is provided with a hollow journal or gudgeon C² which is mounted in a suitable box or bearing C³ and is provided beyond the said bearing with a pulley F. The opposite head C of the flier is provided with a similar hollow journal C⁴ which is encircled by a sleeved pinion G, the outer end of which is notched as shown in Fig. 2 to receive a lug G' projecting from the hub of a band wheel or pulley G². This band wheel G² is secured fast upon the end of a steel tube H, which fits within the hollow gudgeon and carries at its inner end the pinion I. This pinion I engages with the grooved rollers J J, or more properly speaking, with pinions $a a$ formed

upon or secured to said rollers. Rollers J J, are each carried by or mounted upon a short shaft K secured at one end to the head C of the flier, and connected at the opposite end to a head or plate L. This plate or head L is provided with a central bore or opening to receive a short stud shaft b projecting from the outer face of the bobbin disk or head M.

The sleeved pinion G to which we have already referred, gears into two idlers G³, G³, mounted upon the outer face of the flier head C, and these idlers in turn engage pinions G⁴, G⁴, secured upon the ends of the screw shaft E.

Secured upon each of the slotted tubes D, which are fast in the heads C, C', is a block D' which carries a small grooved wheel or guide pulley c which is directly opposite the grooved roller J.

Mounted upon each of the sleeves or tubes D so as to be free to move back and forth thereon, is a traveler N, which carries a grooved wheel or guide pulley d to receive the yarn from wheel c ; and which is provided also with a swiveled yoke or nut O to enter the threads in the screw shaft E,—the stem or shank of said yoke or nut passing through the slot e formed in the tube or shell D.

P indicates the second head or disk of the bobbin,—said disk being secured upon the inner end of a shaft Q which passes freely through the hollow journal or gudgeon C² and is provided with a band wheel or pulley R. Shaft Q is mounted in a suitable bearing P', on the main frame, and is adapted to slide lengthwise with its disk P,—said shaft being held normally against such longitudinal movement by means of a lever P² working in suitable guides P³ on the main frame.

Disk M is provided with two substantially semi-circular seats ff on its inner face, to receive the end of the spindle S,—the opposite end of the spindle being supported by the shaft Q which projects beyond the inner face of disk P.

The spindle S is composed of two plates or

bars *g* nearly semi-circular in cross section. When these bars are inserted into the openings *f*, as shown, their opposite ends are held the proper distance apart by means of the shaft *Q* whose end projects between and supports them.

The yarn passes through the tube *H*, thence around the grooved rollers, *J*, *J* over the grooved wheels *c*, and to the traversing or traveling rollers *d* from which it passes to the bobbin spindle.

The power for actuating the traversing screws is independent of the flier-rotating and bobbin-rotating devices, and hence the winding of the bobbin may be easily controlled and rendered uniform during the increase in the size of the bobbin.

The band wheel *G*² is the means of communicating motion to the screw-gearing, and also to the feed rolls *J*; while the bobbin and the flier are driven respectively from the band wheels or pulleys *R* and *F*. When these various parts are put in motion, the yarn will be fed upon the rotating spindle from the wheel *d*, which is carried lengthwise of the spindle by means of the screw *E*, until the yarn reaches the disk *P*, whereupon the direction of travel of the said wheel or roller is reversed, owing to the formation of right and left threads on the screw and the employment of the swivel nut or yoke *O* which is sometimes termed a butterfly. When, now, the yarn reaches the disk *M*, the direction of travel of the block *N* and its wheel *d* is again reversed. This operation continues until a sufficient quantity of yarn has been wound upon the spindle, when the machine is stopped. The handle or lever *P*² is now raised, and the shaft *Q* is moved outward about an inch, carrying with it the disk *P*. The outer end of the spindle being unsupported, it collapses, and may be readily removed from the disk *M* and withdrawn from the center of the ball.

From the foregoing description it will be seen that we employ no fixed bobbin but merely two disks between which is placed a removable and collapsible spindle, thus saving the intervention of wooden bobbins and the extra labor of balling. It will also be noticed that by giving the bobbin no longitudinal movement, and by causing the feed wheels *d* to traverse or travel in a path parallel to the bobbin spindle, the machine is rendered much shorter and more compact than heretofore.

T indicates a shaft journaled in the base of the frame and carrying fast and loose band wheels *T*¹ and *T*², and the bevel gear *T*³, said band wheels being adapted to receive a belt from any desired motor. At right angles to shaft *T* is a second shaft *U* carrying at one end a bevel gear *U*¹ to mesh with pinion *T*³, and at the opposite end, a band wheel *U*² about which the belt *U*³ from wheel *G*² passes. Beneath the wheels *F* and *R*, the shaft *U* is pro-

vided with fast and loose wheels *V* and *W*, about which, and the corresponding wheels above, pass the belts *V*¹ and *W*¹. Adjacent to the loose wheel *W*, and secured fast upon the shaft, is a friction wheel or disk *W*² which, by reason of its frictional engagement with the wheel *W* imparts motion to the latter when the shaft is rotated. Above the shaft *U* is another shaft *X* which is so connected with other parts of the machine, that when the yarn breaks, the belt shifter, carried or operated by the shaft, will throw the belt from the fast pulley *T*¹ to the loose pulley *T*², and thus stop the machine. Such a device as this is common and has been long in use in machines of this character and hence we shall show only such parts of said mechanism as are necessary to proper understanding of our invention. To this shaft *X*,—which for convenience we will term the stop shaft,—we secure a brake or block *Y* which when the shaft turns in its bearings to shift the belt, shall bear upon the friction disk *W*² and prevent overrunning after the belt has been shifted, as occurs in the present machines.

Having thus described our invention, what we claim is—

1. In combination with a rotatable flier, a collapsible bobbin mounted therein, and a driving shaft for the bobbin adapted to hold or sustain the latter against collapse, all substantially as shown and described.

2. In combination with the flier *B* provided with the hollow gudgeons or journals *C*² and *C*⁴, a sleeved pinion *G* surrounding the gudgeon or journal *C*⁴, a hollow shaft *H* passing through the gudgeon *C*⁴ and provided at its inner end with a gear wheel *I*, and at its outer end with a band wheel *G*², the grooved rollers *J* provided with gear teeth *a* to mesh with the gear wheel *I*, the screw shafts *E* each provided with gears or pinions *G*⁴, intermediate gears *G*³ connecting the gears *G*⁴ with the sleeved pinion *G*, and the traversing yarn guide *N* mounted upon the screw shafts, all substantially as shown and described.

3. In combination with the rotatable flier *B*, the rotatable bobbin mounted therein and comprising the plates or disks *M* and *P* and the collapsible shaft or spindle *S*, and a longitudinally moving shaft *Q*, carrying disk *P*, and adapted to support one end of the collapsible spindle, and to thereby sustain the bobbin against collapse all substantially as shown and described.

4. In combination with the rotatable flier *B*, the bobbin mounted therein, comprising the disks or plates *M* and *P*, and the collapsible spindle *S*; the shaft *Q* projecting through the disk *P* and adapted to sustain the outer ends of the collapsible spindle, and means for holding the shaft *Q* in proper position whereby the said shaft shall hold the bobbin against collapse.

5. In combination with disk or plate M having the pockets or recesses *f*, the disk or plate P provided with a shaft Q which projects beyond the inner face of said disk, a locking device for holding the shaft Q in proper position, and a collapsible spindle comprising two transversely curved bars fitting at one end into the sockets *f*, and sustained at their opposite ends by the inwardly projecting ends of the shaft Q, all substantially as shown and described.

In witness whereof we hereunto set our hands in the presence of witnesses.

JAMES HARVEY MONROE.
ISRAEL COURTENAY.

Witnesses to signature of J. H. Monroe:

FREDERICK TOPPING,
H. W. TOPPING.

Witnesses to signature of I. Courtenay:

SAMUEL G. S. COLTON,
W. THOMAS COURTENAY.