

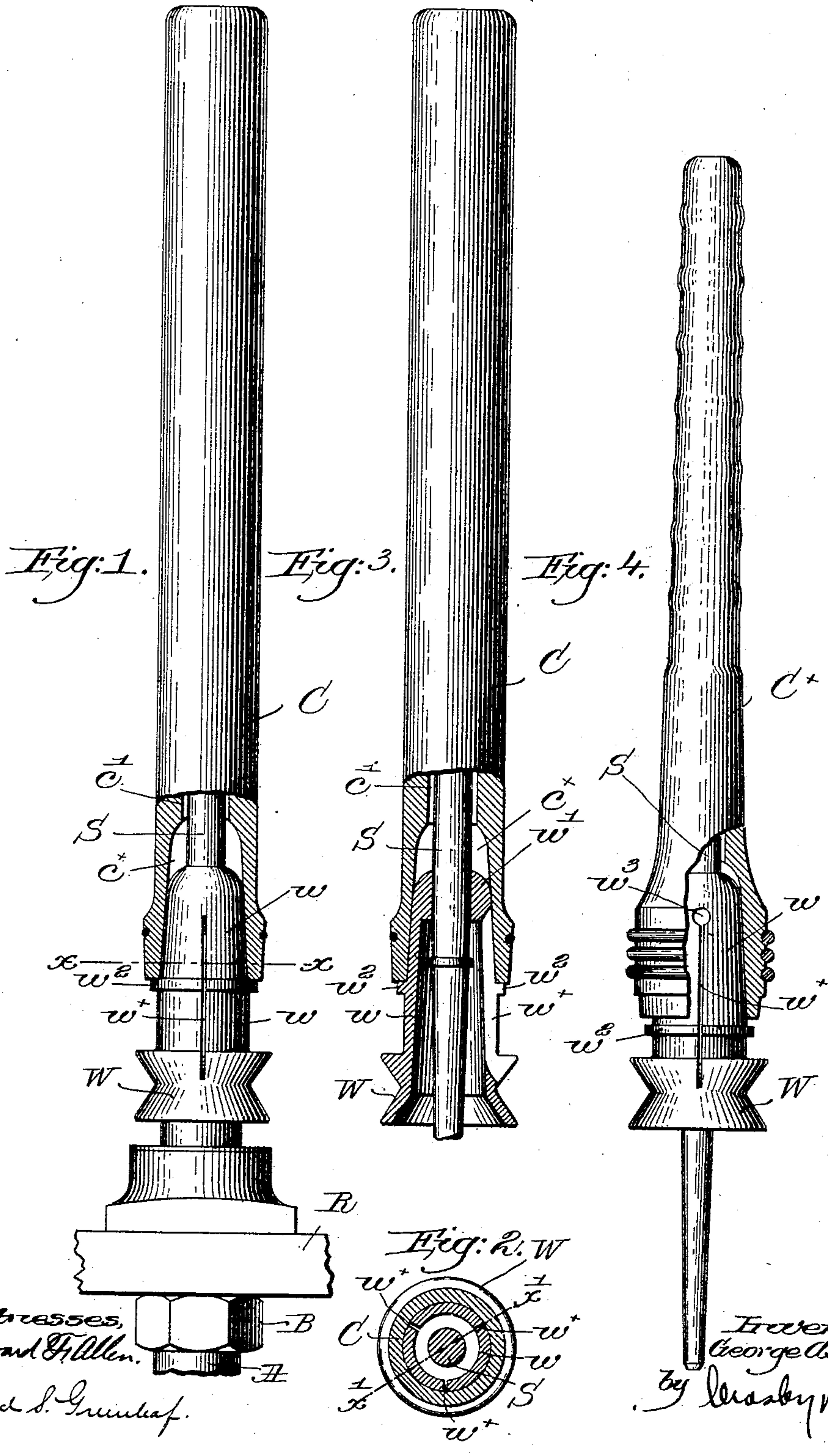
No. 713,618.

Patented Nov. 18, 1902.

G. A. DRAPER.
SPINNING SPINDLE.

(Application filed Apr. 4, 1902.)

(No Model.)



UNITED STATES PATENT OFFICE.

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SPINNING-SPINDLE.

SPECIFICATION forming part of Letters Patent No. 713,618, dated November 18, 1902.

Application filed April 4, 1902. Serial No. 101,311. (No model.)

To all whom it may concern:

Be it known that I, GEORGE A. DRAPER, a citizen of the United States, and a resident of Hopedale, county of Worcester, State of Massachusetts, have invented an Improvement in Spinning-Spindles, of which the following description, in connection with the accompanying drawings, is a specification, like letters on the drawings representing like parts.

10 This invention relates to spinning-spindles; and it has for its object the production of novel means for connecting or coupling a detachable yarn-carrier to the spindle to rotate therewith.

15 In spinning-spindles now known to me it is common to provide an upturned cup to receive and hold by frictional engagement the tapered base of a filling-carrier or bobbin, hereinafter designated as a "yarn-carrier," such
20 cups being carefully reamed out to make a tight fit with the tapered base. Bobbins are also driven by the frictional contact between the interior of the enlarged bores thereof at their lower ends and the exterior of the upper part of the sleeve-whirl. The yarn-carriers are liable to shrink and swell with changes of temperature and humidity, and the resulting variation in diameter makes it difficult to accurately fit the cup or holder or
30 sleeve-whirl and at the same time preserve the proper position relatively to the length of the spindle. Such variation in the vertical position of the yarn-carrier on the spindle is objectionable, as the yarn will not be accurately
35 laid thereupon during the spinning operation. In order to compensate for the changes in the diameter of the base of the yarn-carrier, the cup has been split or made expandible, and it has also been provided with an expandible holding device; but all of these devices, as well as the common cup form of holder, externally engage the yarn-carrier, and when the spindle is running at high speed the centrifugal force tends to loosen the grip
45 or hold between the yarn-carrier and the holding device.

In my present invention I have devised an expandible or elastic holding device to interiorly engage the yarn-carrier, and thereby
50 overcome the objections hereinbefore referred

to, for the centrifugal force due to high spindle speed, together with the spring of the metal, acts to more securely hold the yarn-carrier in position on the spindle.

The various novel features of my invention 55 will be hereinafter described, and particularly pointed out in the following claims.

Figure 1 is a view in elevation of a spinning-spindle embodying one form of my invention, the detachable yarn-carrier being 60 shown in section at its base. Fig. 2 is a cross-section on the line $x x$, Fig. 1, looking down. Fig. 3 is a view similar to Fig. 1, but showing the whirl and its sleeve or connection with the spindle in vertical section on the line x' 65 x' , Fig. 2; and Fig. 4 is a view in side elevation and section of a modified form of holding device for the yarn-carrier, the latter being shown as a filling-carrier or bobbin of well-known character. 70

The spindle S, bolster-case A to receive the pintle of the spindle and to be held in place on the spindle-rail R, Fig. 1, by a nut B, may be and are all of usual or well-known construction. 75

I have herein shown my invention as embodied in a sleeve-whirl spindle, and, referring to Figs. 1, 2, and 3, the metal whirl W is shown as provided with a tubular or sleeve-like extension w , having a slight external taper and preferably and usually made integral with the whirl and thickened at its extremity, as at w' , Fig. 3, to surround and be forced 80 securely upon the spindle in well-known manner. 85

In accordance with my invention I make the extension radially elastic or expandible between the spindle and the whirl by longitudinally slotting it, as at w^x , three such slots being shown in Fig. 2, though I do not limit 90 myself to the number or width of the slots, as that will depend upon the thickness of the sleeve and the desired degree of expansibility. By this construction the sleeve w , which forms the connection between the whirl and the 95 spindle, is made radially expandible, so that when the yarn-carrier C, longitudinally bored at c to loosely receive the spindle, is pushed down upon the part w the elasticity of the latter will enable it to readily enter the open- 100

ing c^x in the base of the yarn-carrier and tightly hold the same by frictional engagement therewith. The spring of the metal and the centrifugal force due to the speed of rotation of the spindle act to radially expand this holding device, so that the higher the spindle speed the tighter will the yarn-carrier be engaged and held in place. The top of the whirl may serve as a stop to position the yarn-carrier vertically; but preferably I form a stop on the sleeve or holding device w , and I have herein shown an external segmental flange or stop w^2 on the sleeve at the desired height above the whirl.

The operative pushes the yarn-carrier down until its lower end rests upon the stop, Figs. 1 and 3, and thereby the yarn-carrier will always be accurately positioned with relation to the length of the spindle.

In Fig. 4 I have shown the upper end of the slot w^x as enlarged, as at w^3 , to give greater expansibility to the holder, and the yarn-carrier C^x is the well-known form of filling-carrier used in the shuttles of automatic filling-replenishing looms.

It will be seen that the slots do not in any instance extend completely through the whirl, and this is important, as the whirl thus strengthens the lower or free end of the sleeve or holder w and obviates any liability to rupture if the spindle should be running free and at high speed.

Should the slots extend completely through the whirl, the heavy sections thereof would exert so great a strain upon the arms of the sleeve by centrifugal force with quite a long leverage that there would be serious danger of rupture of the parts.

Having fully described my invention, what

I claim as new, and desire to secure by Letters Patent, is—

1. A spinning-spindle, a whirl, and a radially-expansible sleeve connecting said spindle and whirl and constituting a coupling or holding device to enter and frictionally engage the interior of a detachable yarn-carrier at the base thereof and thereby detachably connect it with the spindle.

2. A rotatable spindle, a whirl, and a longitudinally-slotted sleeve connecting the spindle and whirl and adapted to enter and frictionally engage the base of a yarn-carrier and thereby detachably connect it with the spindle.

3. A rotatable spindle, a whirl, a longitudinally-slotted elastic sleeve connecting the spindle and whirl and having a segmental stop to define the position of the yarn-carrier longitudinally of the spindle, and a detachable yarn-carrier adapted to loosely receive the spindle and to be frictionally engaged within its base by the sleeve.

4. A rotatable spindle, a whirl having an integral, coaxial sleeve thickened at its end and adapted to be rigidly secured to the spindle, the sleeve being externally tapered and longitudinally slotted between its thickened end and the whirl, and a detachable yarn-carrier adapted to be entered at its base by the sleeve, to be thereby frictionally connected with the spindle.

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

GEORGE A. DRAPER.

Witnesses:

E. D. BANCROFT,
CLARE H. DRAPER.