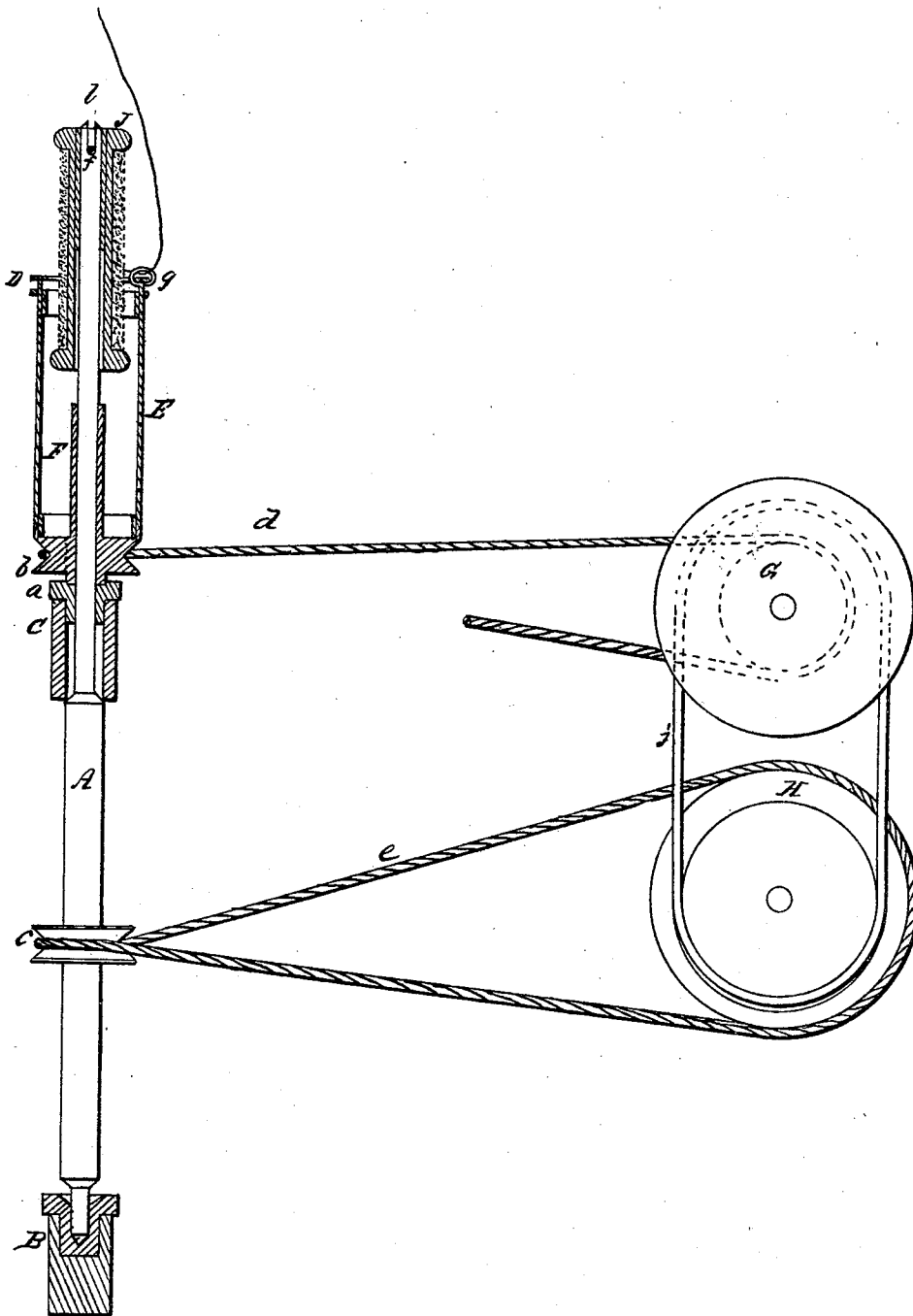


N^o 13,024.

Patented Jun. 5, 1855.



UNITED STATES PATENT OFFICE.

WM. DARKER, JR., OF WEST PHILADELPHIA, PENNSYLVANIA, ASSIGNOR TO J. B. THOMPSON.

RING-SPINNING FRAME.

Specification of Letters Patent No. 13,024, dated June 5, 1855.

To all whom it may concern:

Be it known that I, WILLIAM DARKER, Jr., of West Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented a new and useful Improvement in the Ring-Spinning Frame; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawing, forming part of this specification, which represents a vertical section of my improvement.

The object of this improvement is to enable the speed of the spindles to be increased without increasing the danger of breaking the threads.

The great obstacle to the increase of speed in the common ring spinning frame beyond a certain degree, is that the friction of the traveler upon the ring becomes so great as to produce such a degree of tension as to break the thread. I propose to reduce this friction by giving to the ring a rotary motion at a slower speed than but in the same direction as the spindle and this invention consists in certain methods of applying the ring and securing the bobbin to the spindle for that purpose.

To enable others skilled in the art to make and use my invention I will proceed to describe its construction and operation.

A, is one of the spindles of a ring spinning frame; B, is the step rail, and C, a rail corresponding to the ring rail of the common frame, serving in this case also as a guide rail. The spindle carries a whirl *e*, by which it receives motion through a band *e*, from the spindle band cylinder H, arranged in the usual manner. D, is the ring which is supported at the top of a tin or other light metal socket E, large enough to receive the bobbin and secured to a tube F, fitting easily on the spindle and resting on the top of the guide *a*, in the rail C. This tube F, carries a whirl *e*, by which it receives rotary motion through a band *d*, from a cylinder G, the said rotary motion being also imparted to the ring likewise. J, is the bobbin, which has a wire *f*, inserted transversely through it near the top to form

a bail and to rest for the purpose of supporting the bobbin in a slot *l*, at the top of the spindle. The bobbin is bored out about half its depth from the top to fit snugly to the spindle but the lower half is bored large enough for the tube F, to pass freely into it. This allows the tube to be of proper length to steady the ring and at the same time allows the ring to be raised by the rail C, high enough to wind to the top of the bobbin.

g, is the traveler.

The band cylinders H and G, are to receive motion the one from the other through a band *j*, running over two cone pulleys at one end and hence their relative speeds may be properly adjusted with facility by shifting the band.

By causing the spindle to revolve at the rate of, say, ten thousand revolutions per minute and the ring to revolve at a speed of, say, four thousand, the friction of the traveler on the ring will be no greater than if the spindles revolved at a speed of six thousand with the ring stationary and hence there will be no greater danger of breaking the thread. Generally speaking this improvement will enable the spindles to be run at nearly double the ordinary speed and this without the same trouble, for it will obviate the necessity of changing the travelers to use lighter or heavier ones for finer and coarser yarn as is necessary in the common ring frame, which alone will effect an important saving in a manufactory employing a large number of spindles. It affords facility for varying the relative speeds of the spindles and rings while the machine is in operation by simply shifting the band *j*, along the cone pulleys; this variation of the relative speed during the operation is necessary to enable a uniform tension to be produced upon the thread in building conical or shuttle bobbins.

What I claim as my invention and desire to secure by Letters Patent, is—

1. The method substantially herein described of applying the rings to enable them to receive rotary motion, that is to say attaching them to the top of metal

sockets E, which are large enough to receive the bobbins and are secured to tubes F, which revolve easily upon the spindles.

2. The within described method of attaching the bobbin to the spindle by a bail f, which drops in a slot at the top of the spindle, whereby the bobbin is properly secured and the tube is allowed to be of

proper length to steady the ring without interfering with the bobbin.

WILLIAM DARKER, JR.

Witnesses:

WM. H. THOMPSON,

SAMUEL HANCOCK,

JAMES HARGREAVES.