(No Model.) 2 Sheets—Sheet 1.

T. WRIGLEY.

DOUBLING MACHINE.

No. 345,656. Patented July 13, 1886.

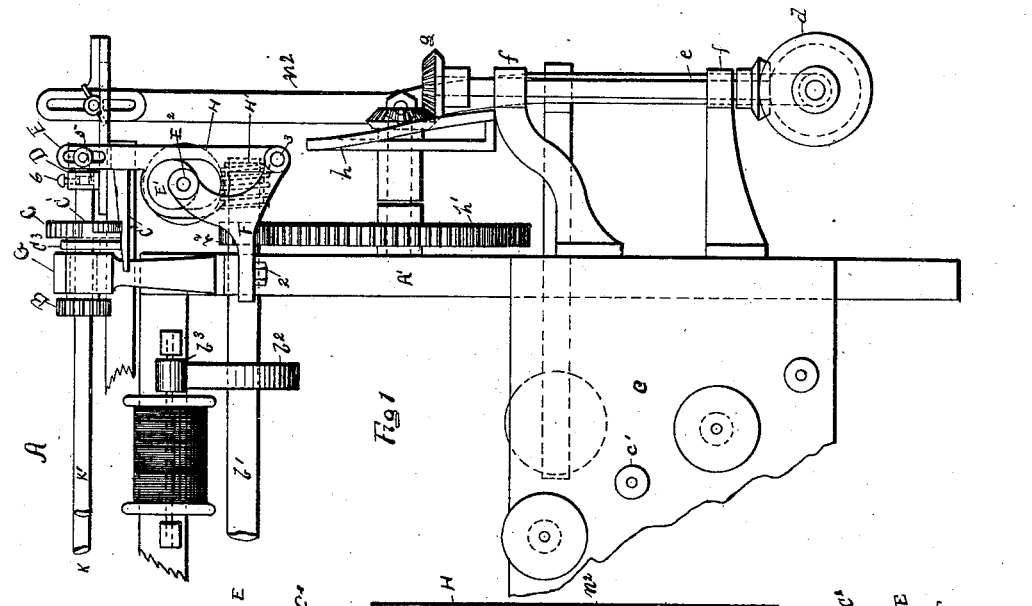

Fig 1

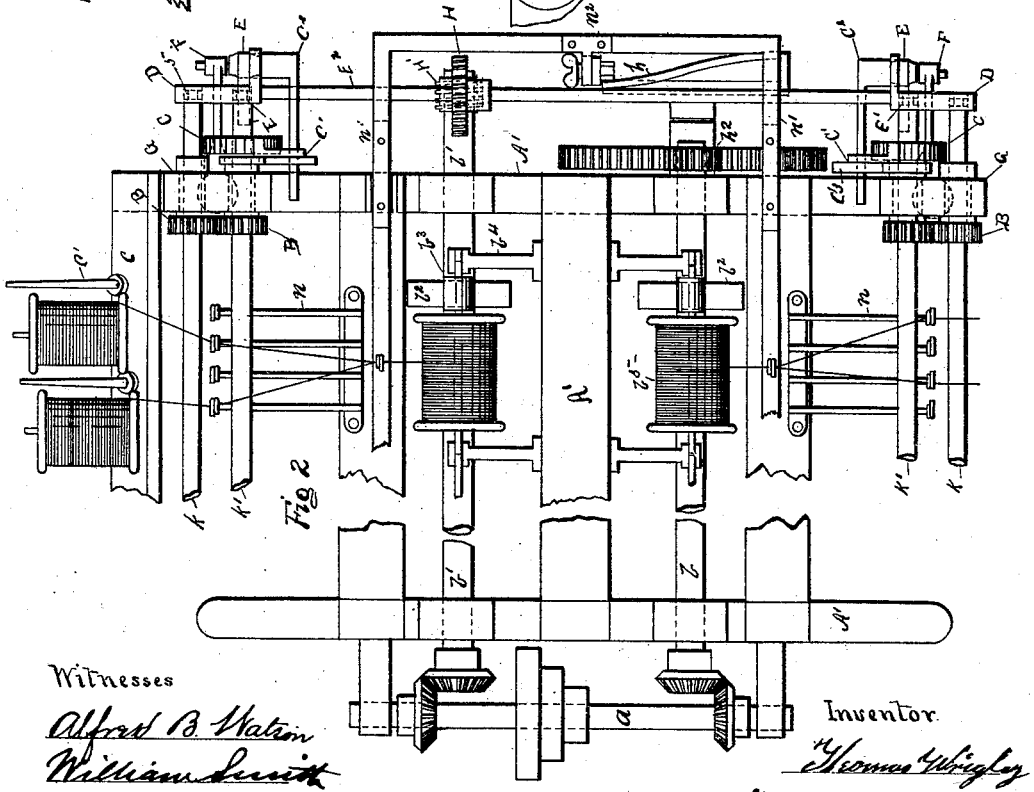

Fig 2

Witnesses
Alfred B. Watson
William Smith

Inventor
Thomas Wrigley
by John Daplis Atty

(No Model.) 2 Sheets—Sheet 2.

T. WRIGLEY.

DOUBLING MACHINE.

No. 345,656. Patented July 13, 1886.

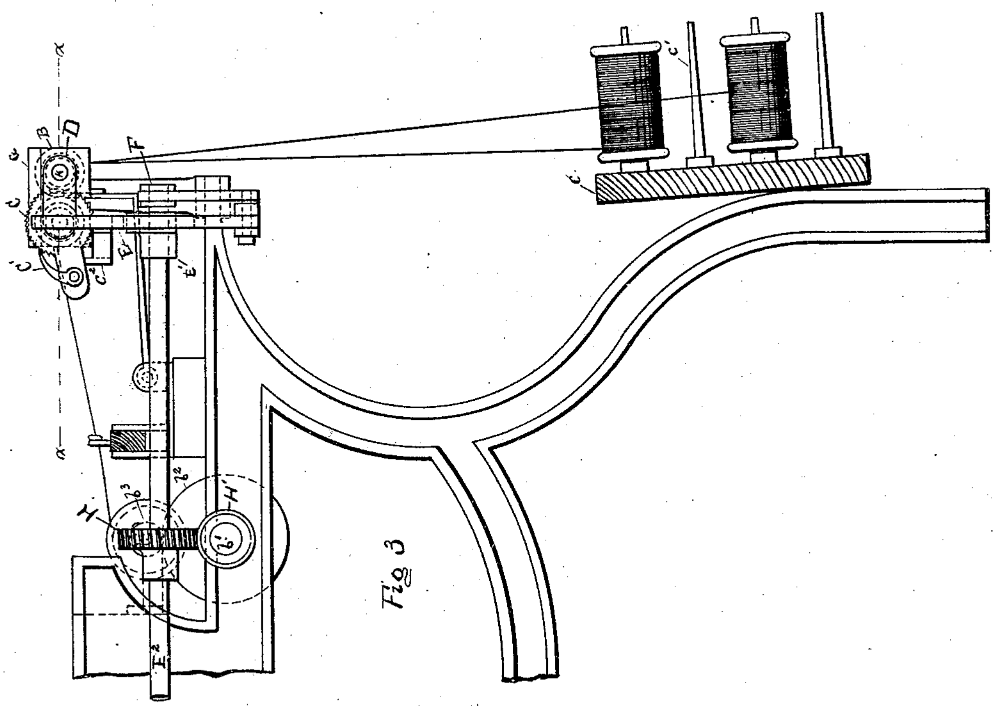

Fig 3

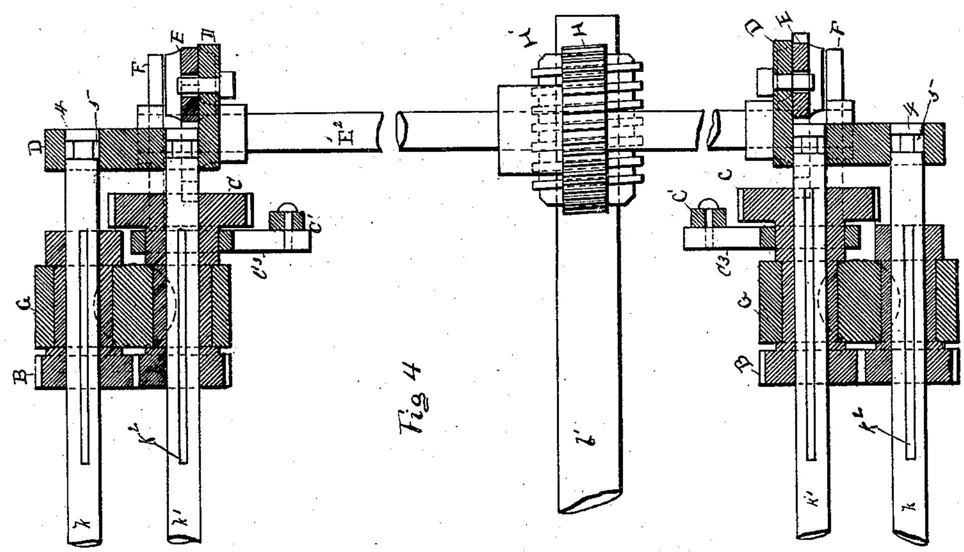

Fig 4

Witnesses

Alfred B Watson

William Smith

Inventor

Thomas Wrigley

John Inglis atty

UNITED STATES PATENT OFFICE.

THOMAS WRIGLEY, OF PATERSON, NEW JERSEY.

DOUBLING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 345,656, dated July 13, 1886.

Application filed January 14, 1886. Serial No. 188,513. (No model.)

To all whom it may concern:

Be it known that I, THOMAS WRIGLEY, a citizen of the United States, residing at Paterson, Passaic county, State of New Jersey, have invented a new and useful Improvement in Doubling-Machines, of which the following is a specification, reference being had to the accompanying drawings, forming a part thereof.

The object of my invention is to provide means wherein the rods employed in doubling-machines for supporting the threads are prevented from being cut by the passing of the threads or filaments over said rods while the same are being unwound from the supply-bobbins arranged on the jack-pins below and are being wound on the receiving-bobbin arranged on the top of the machine.

The invention consists in devices which will be hereinafter fully explained, and pointed out in the claim.

Figure 1 of the drawings shows a portion of one side of a doubling-machine in elevation, having my invention thereon, in which figure a portion of the machine-frame, jack-board, supporting-rods, &c., are removed. Fig. 2 is a plan of the same, showing the parts which are omitted from Fig. 1, and also part of the opposite end of the machine, but having the jack-board on one side of the machine removed. Fig. 3 shows a portion of one end of the machine in elevation, the jack-board and traverse-bar being shown in section; and Fig. 4 is a sectional plan of part of the same, taken on line x x of Fig. 3 with the guide-rods in elevation, and showing parts on both sides of the machine.

A represents a portion of an ordinary doubling-machine, having the usual frame, A′, driving-shaft a, bobbin-driving shafts b b', jack-board, and pins c c', cam h, gear h' h^2, fullers n, traverse-bars n', friction-wheels and spindles b^2 b^3, and lever n^2, connected with the traverse-bars.

The machine A, which is constructed the same as is usual with this class of machines, does not need to be further described herein.

On one end of the bobbin-driving shaft b', I arrange and secure by means of a key or otherwise a worm, H′, which worm I arrange on said shaft to engage and actuate a worm-wheel, H, that I arrange for such engagement on a transverse-shaft, E^2. The shaft E^2, which I journal in the upper part of brackets F, I also provide with eccentrics E′, while the brackets F, I secure to the machine-frame, each by a bolt, 2. On studs 3, that I secure in the lower part of each of the said brackets F, I pivot levers E, which levers I provide with suitable openings to adapt them to the eccentrics E′, arranged on the shaft E^2, which eccentrics I arrange in the said openings to vibrate the levers E.

On the rods K and K′, I arrange brackets D, the same having orifices 4, suitable to pass over the rods K K′, which brackets I connect to the levers E by means of studs that pass through the brackets D and enter slots formed in the tops of the levers. This construction permits the studs to accommodate themselves in the slots to the vibrating movement of the levers E.

The rods K K′, which I provide with an annular groove or channel, 5, I secure in the orifices 4 by means of a set-screw, 6, which construction, while it secures the rods K K′ to the bracket D, to be reciprocated thereby, permits the rods to revolve in their respective orifices 4.

On each of the thread-supporting rods K K′, I arrange a sleeve, B^8, having integral therewith a gear-wheel, B. The wheels B, arranged on the rods K K′, mesh together, and turn their respective rods by means of channels formed in the sleeves to accommodate feathers K^2, arranged on the rods K K′. This permits the rods to slide back and forth through the sleeves and wheels B, and permits the sleeves to revolve in the standard G, while the sleeves and their gears B are prevented from longitudinal motion in the standards G by means of collars that are formed on the sleeves therefor.

On the sleeve of the rod K′, I arrange and suitably form or secure a ratchet-wheel, C, and pivot on the sleeve a pawl-arm, C^3, having a pawl, C′. The pawl-arm C^3, which is mounted on the sleeve of the rod K′, is engaged and actuated by a tapering arm, C^2, that I arrange on and secure to each of the levers E. The threads or filaments, which are taken from the supply-bobbins on the jack-pins c', are taken up to and over rods K and K′ through the fuller n, and guides on the traverse-bar n', where the several strands employed in doubling are brought together and are wound on the receiving-bobbin in the usual way, as shown. The machine being supposed

to be in motion, the operation is as follows: The worm H', by means of worm-wheel H, turns the shaft E^2 and eccentrics E', and by means of eccentrics E', vibrates levers E and brackets D, and by means of the said brackets D, moves the rods K and K' longitudinally through the standards G and their respective gear, B. As the levers E are being vibrated, each tapering arm C^2, at each inward movement of the lever E carrying the same, engages the under edge of one of the pawl-arms C^1, and by means of its taper raises the pawl-arm C^3, which action on the pawl-arm causes the pawl C' to engage the ratchet-wheel C and take up a tooth on the ratchet-wheel at each movement of the pawl which turns the wheel C and rod K', and by means of gears B turns the rod K.

It will be seen that by this my invention I secure to each of the thread-supporting rods K and K' a rotary and reciprocating movement, which secures absolute protection to the rods and prevents them from being cut by the threads or filaments, while the same are passing over the rods in the operation of doubling, and when it is understood that considerable tension on the threads is required to keep the threads from kinks, &c., the advantage of my invention will more fully appear.

Having described my invention, I claim as new and desire to secure by Letters Patent—

The combination, with the shaft *b'*, having worm H' thereon, of the shaft E^2, the worm-wheel H, and eccentric E' thereon, lever E, block or bracket D, rods K K', sleeves B^8 B^8, gear-wheels B B, ratchet-wheel C, arm C^3, pawl C', and tapering arm C^2, whereby the thread-supporting rods are reciprocated through the sleeves while being revolved thereby, substantially as and for the purpose set forth.

THOMAS WRIGLEY.

Witnesses:
WILLIAM SMITH,
ERNST FRANKE.