

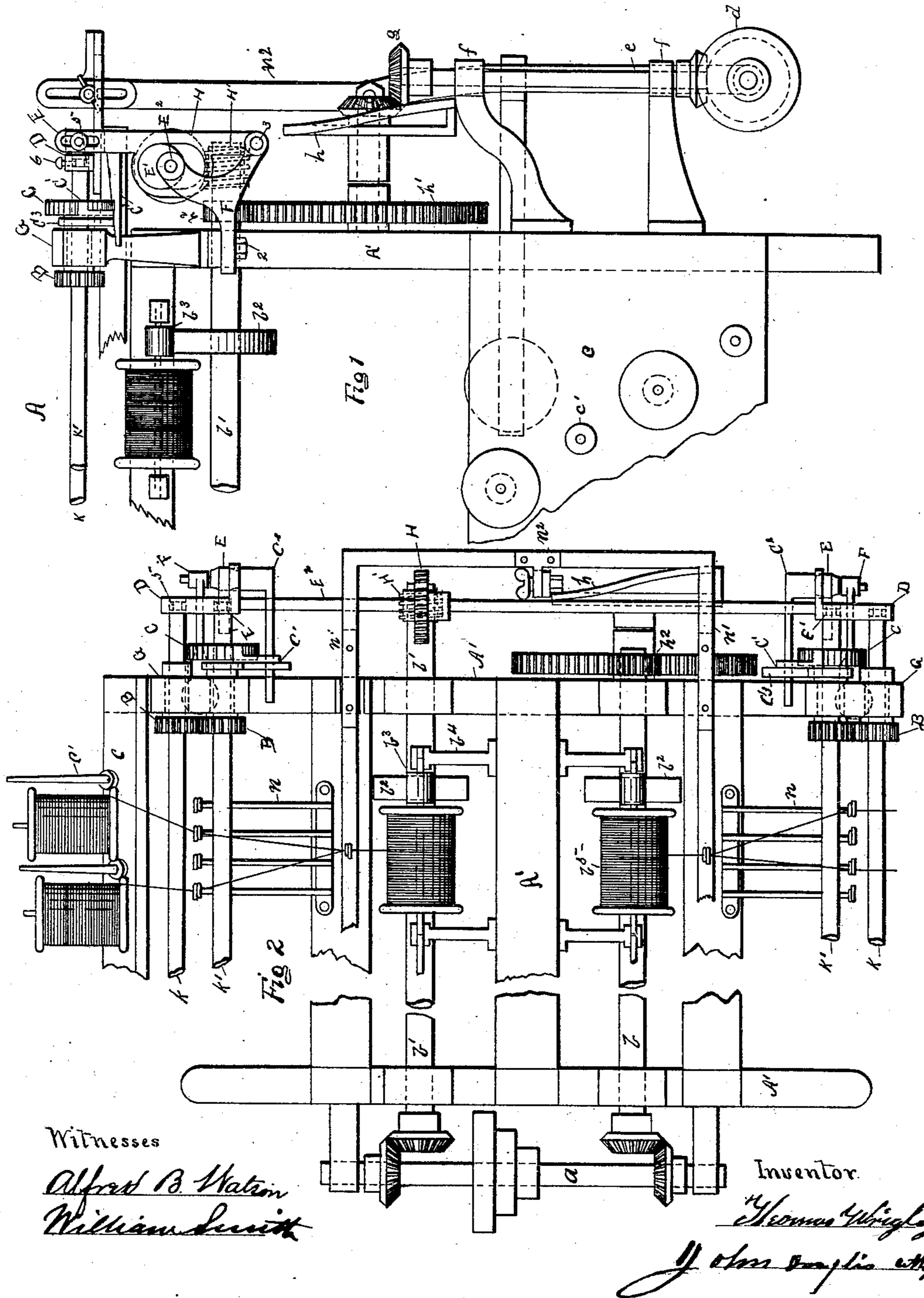
(No Model.)

2 Sheets—Sheet 1.

T. WRIGLEY.  
DOUBLING MACHINE.

No. 345,656.

Patented July 13, 1886.



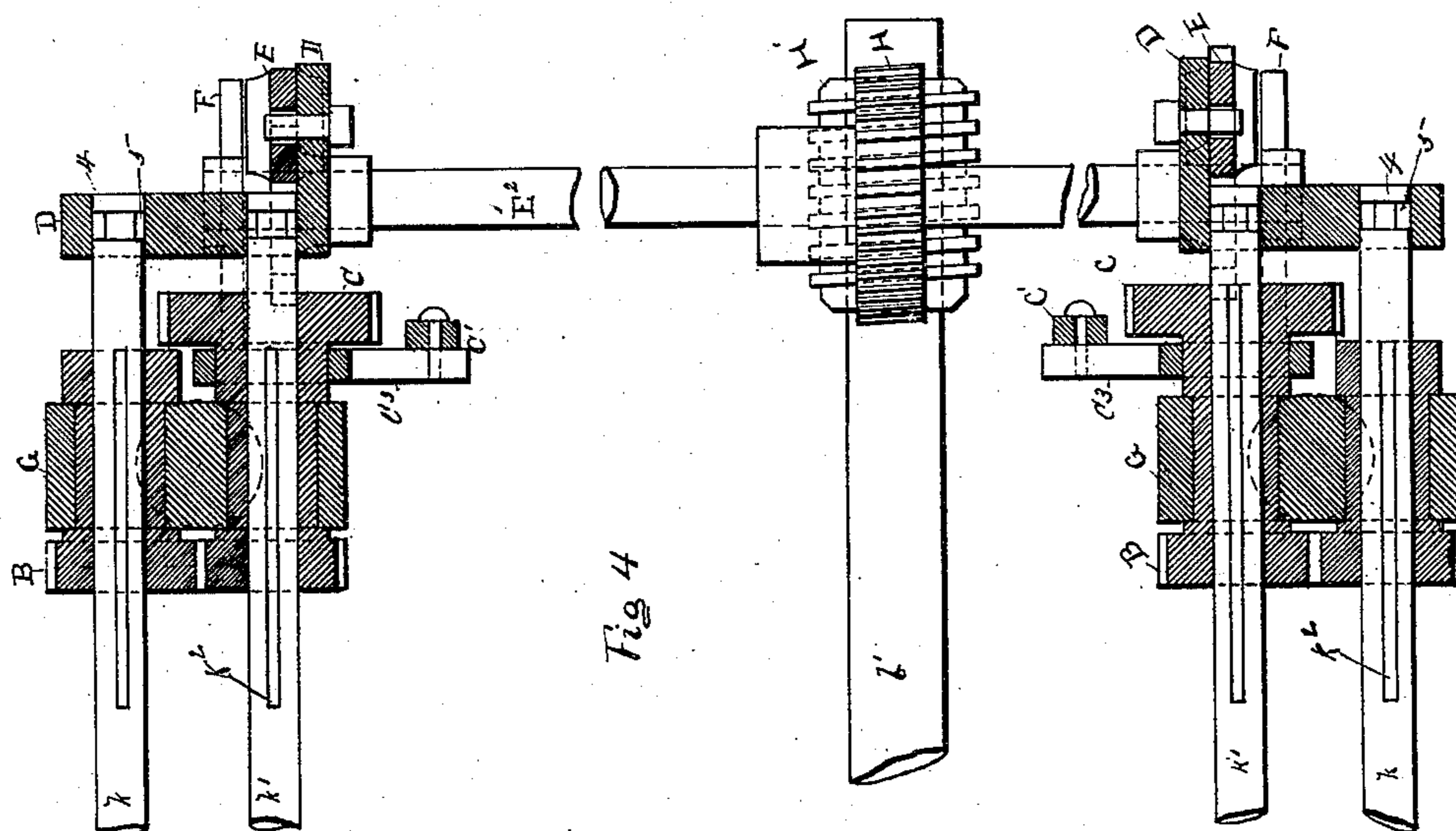
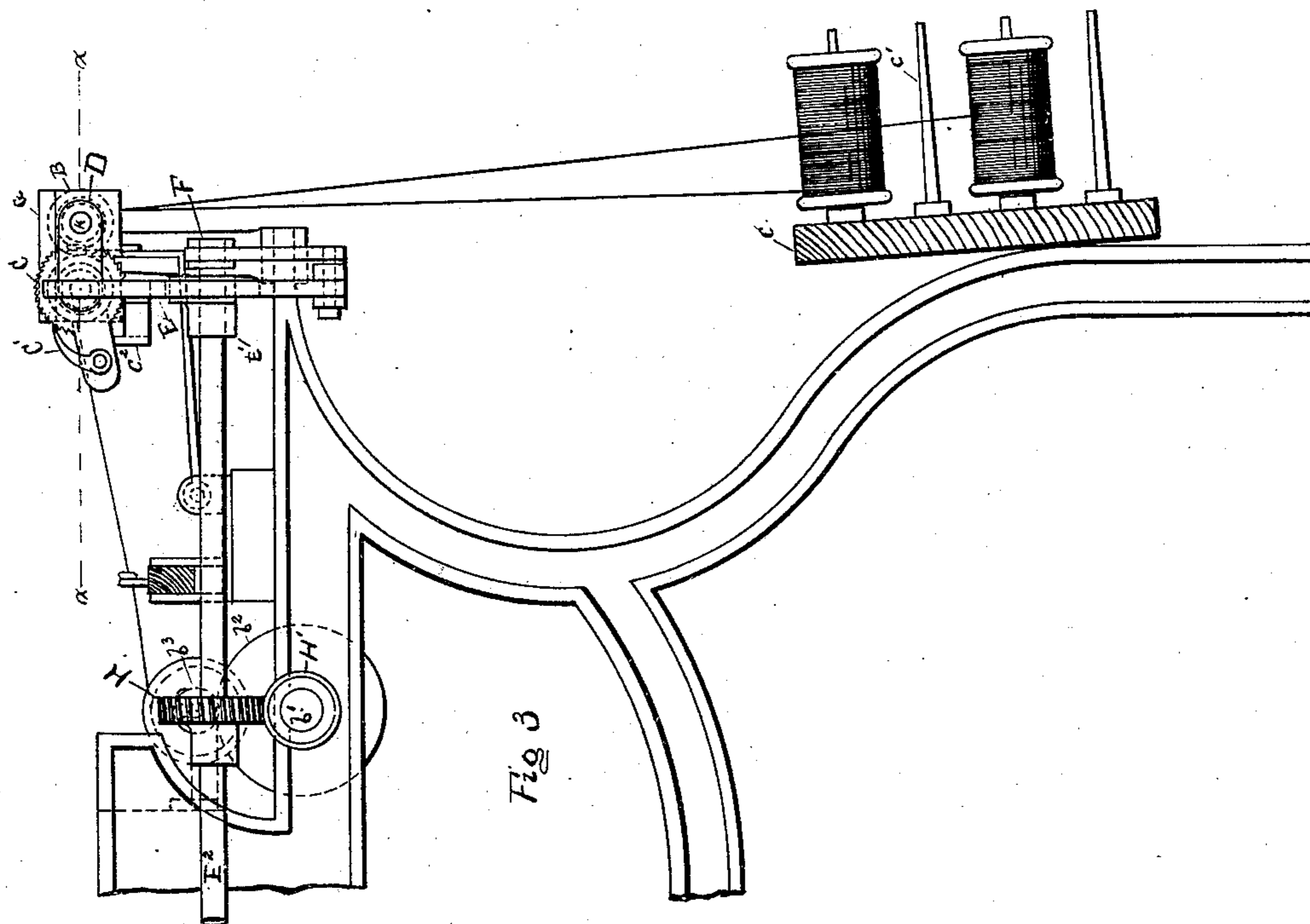
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Witnesses

Alfred B Watson  
William Smith

Inventor

Thomas Wrigley  
John Briggs & Co.

# 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''*, fullers *n*, traverse-bars *n'*, friction-wheels and spindles *b<sup>2</sup> b<sup>3</sup>*, and lever *n<sup>2</sup>*, 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<sup>2</sup>*. The shaft *E<sup>2</sup>*, 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<sup>2</sup>*, 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<sup>s</sup>*, having integral there-with 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<sup>2</sup>*, 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<sup>s</sup>*, having a pawl, *C'*. The pawl-arm *C<sup>s</sup>*, which is mounted on the sleeve of the rod *K'*, is engaged and actuated by a tapering arm, *C<sup>2</sup>*, 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<sup>2</sup> and eccentrics E', and by  
 means of eccentrics E', vibrates levers E and  
 5 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 taper-  
 ing arm C<sup>2</sup>, at each inward movement of the  
 10 lever E carrying the same, engages the under  
 edge of one of the pawl-arms C<sup>3</sup>, and by means  
 of its taper raises the pawl-arm C<sup>3</sup>, which ac-  
 tion on the pawl-arm causes the pawl C' to  
 engage the ratchet-wheel C and take up a  
 15 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  
 20 K and K' a rotary and reciprocating move-  
 ment, which secures absolute protection to the  
 rods and prevents them from being cut by the

threads or filaments, while the same are pass-  
 ing over the rods in the operation of doubling,  
 and when it is understood that considerable 25  
 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— 30

The combination, with the shaft b', having  
 worm H' thereon, of the shaft E<sup>2</sup>, the worm-  
 wheel H, and eccentric E' thereon, lever E,  
 block or bracket D, rods K K', sleeves B<sup>s</sup> B<sup>s</sup>,  
 gear-wheels B B, ratchet-wheel C, arm C<sup>3</sup>, 35  
 pawl C', and tapering arm C<sup>2</sup>, whereby the  
 thread-supporting rods are reciprocated  
 through the sleeves while being revolved there-  
 by, substantially as and for the purpose set  
 forth.

THOMAS WRIGLEY.

Witnesses:

WILLIAM SMITH,  
 ERNST FRANKE.