

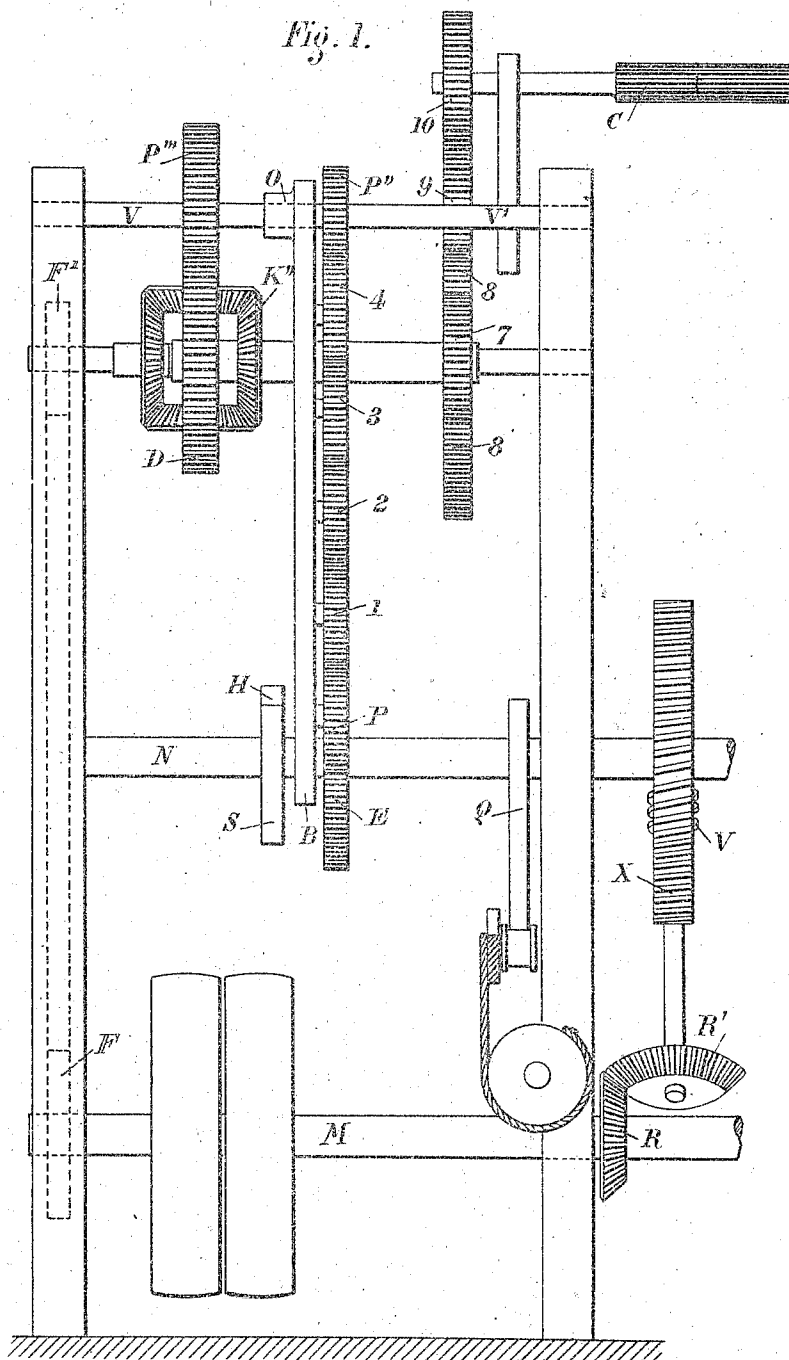
(No Model.)

2 Sheets—Sheet 1.

P. BAZIN.
SPINNING MACHINERY.

No. 550,740.

Patented Dec. 3, 1895.



Witnesses:-

Thos Haynes
George Barry.

Inventor:-

Philippe Bazin
by attorneys
Forrest & Howard

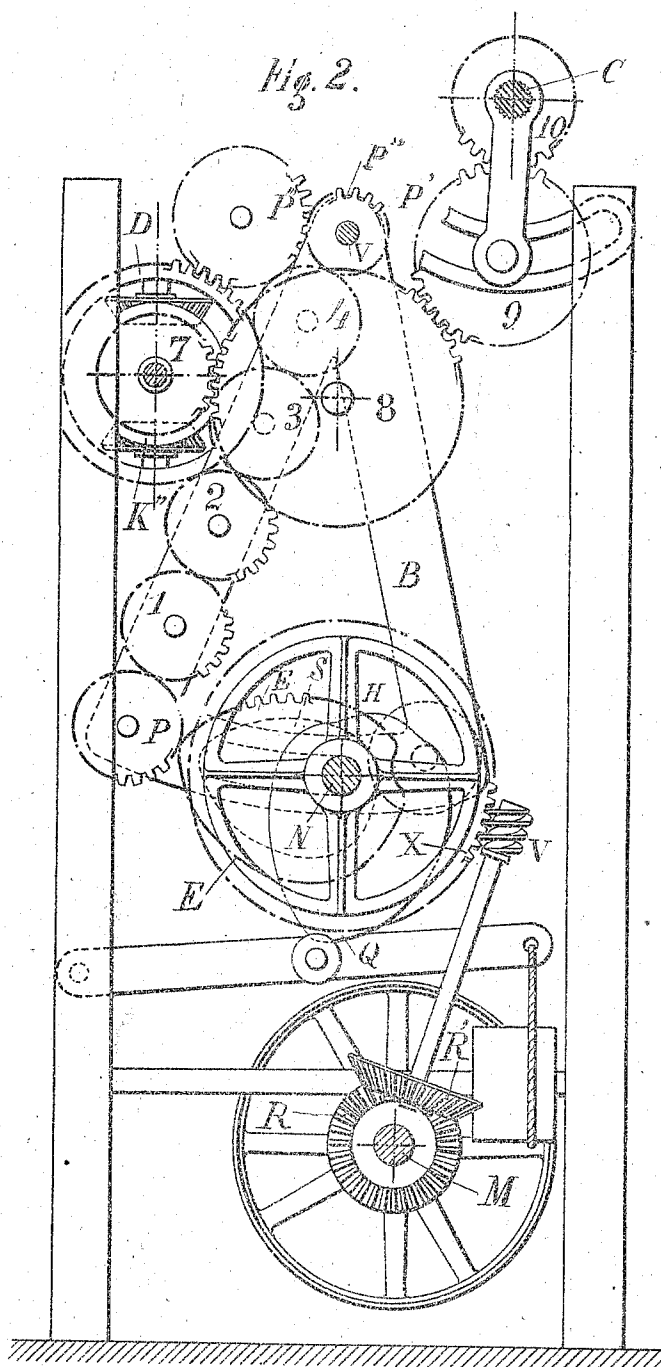
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UNITED STATES PATENT OFFICE.

PHILIPPE BAZIN, OF CONDÉ, FRANCE.

SPINNING MACHINERY.

SPECIFICATION forming part of Letters Patent No. 550,740, dated December 3, 1895.

Application filed March 20, 1895. Serial No. 542,554. (No model.) Patented in France May 2, 1894, No. 238,223; in Belgium May 2, 1894, No. 109,758; in Switzerland May 4, 1894, No. 8,304, and in Germany May 6, 1894, Nos. 79,260, 79,416, and 80,199.

To all whom it may concern:

Be it known that I, PHILIPPE BAZIN, a resident of Condé, in the Republic of France, have invented a new and useful Improvement in Spinning Machinery, (for which I have obtained patents in France, No. 238,223, dated May 2, 1894; in Belgium, No. 109,758, dated May 2, 1894; in Switzerland, No. 8,304, dated May 4, 1894, and in Germany, Nos. 79,260, 79,416, and 80,199, dated May 6, 1894,) of which the following is a specification.

In the spinning of threads in which the twist is very slight—for example, in the spinning of trams—it has always been an object to render the twist as regular as possible, and to so control the delivery of the yarn or thread to the bobbins or spindles as to equalize the draft and to enable it to sustain at all times the necessary tension. To regularize the twist it has generally been considered sufficient to vary the speed of the drawing-rollers at the commencement of the building of the thread on the bobbin or cop and at the time when the thread is upon a small diameter in order to facilitate the starting of the operation, or else, if it has been attempted to obtain the variation during the course of the building, the means which have been used for accomplishing it have been cone-pulleys and belts. These do not, however, afford a practical solution of the difficulty, for the rapidity of the variations to be produced causes always, in the operation of the belt upon the cone-pulleys, such slipping and consequent inexactness that the results obtained are very imperfect.

The object of this invention is to better provide for the variation of the speed of the drawing-rollers in proportion to the diameter of the successive coils of the yarn or thread wound upon the bobbin or cop. To this end I employ toothed gearing for the purpose of driving the rollers, one of the gears of such gearing consisting of a toothed cam corresponding in form and rotating with the cam which produces the rising and falling movements of the rings or bobbins for the distribution of the thread, the said toothed cam communicating a variable motion to a differential movement by which the movement of

the driving-shaft is transmitted to the drawing-rollers.

I will now first describe my invention in detail, with the aid of the accompanying drawings, and afterward point out its novelty in a claim.

Figures 1 and 2 of the drawings represent elevations at right angles to each other of as much of a ring-spinning machine as is necessary to illustrate my invention.

M is the main driving-shaft of the machine, from which motion is transmitted to the grooved roller C by the pinions F F' and their intermediaries, and thence by the differential movement D and the toothed wheels 7 8 9 10, the first of these wheels being keyed upon the long hub of the pinion K' of the differential movement. In order to permit to the wheel D of the differential mechanism the variable movement necessary to produce the variations of speed of the grooved roller C, I employ an intermediate shaft N, upon which are keyed the two similar cams E and Q, and which is driven by the driving-shaft M in any suitable manner—for example, by means of the bevel-gears R R', the endless screw V, and the worm-gear X. The cam Q actuates the ring-rail, and consequently controls the formation of the successive conical layers upon the bobbin or cops, as in all ring-spinning machines. The cam E, which is toothed, transmits motion to the gear D of the differential mechanism by means of a train P 1 2 3 4 P' P'' P'''. It is evident that by reason of its special form this toothed cam E modifies the movement of the differential gear D proportionally to its successive diameters. By means of the differential movement D this variation is transmitted to the pinion 7 and to the drawing-rollers C, of which consequently the speed is varied at every instant of the winding of the thread. With each variation of the diameters of the winding of the thread produced by the cam Q there corresponds a variation of the speed of the drawing-rollers produced by the cam E. When the cam Q brings the traveler to the position to wind the thread upon the large diameter of the cone, the cam E gives the drawing-rollers their maximum speed. When the said cam Q brings the traveler to

the position to wind the thread upon the point of the bobbin, the said cam E gives to the rollers their minimum speed. Between these two extreme points the variations are corresponding and proportional, because the toothed cam E has the same profile as the cam Q and the conjugated movement⁺

As the special form of the toothed cam E tends to change every instant the distance between the axes of the cam E and pinion P provision must be made for permitting this variation to be produced while maintaining the toothed cam E and the pinion P in proper gear. This result is obtained in the following manner: It has been stated that the toothed cam E is keyed upon the shaft N. Its center of rotation is then invariable. On the contrary, the axle of the pinion P is supported in a triangular or sector-like frame O P B, oscillating at O about the shaft V V' and carrying along its branch O P the intermediate pinions 1 2 3 4, which transmit the movement of the pinion P to the pinion P' and consequently to the pinion P'' and gears P''' and D. The variable speeds imparted to the pinion P by the toothed cam E are then transmitted to the large gear D of the differential movement and consequently to the roller C.

The pinion P', instead of being driven by intermediate gears 1 2 3 4, may be driven by the intermediate shaft and bevel-gears or by an endless chain

In the arrangement which I preferably employ the oscillating movement of the movable frame or sector O P B is produced not solely by the toothed cam E, but at the same time by a second antagonistic cam S, keyed also upon the shaft N and operating upon a roller H, secured upon the other branch O B of the sector and calculated to maintain exactly in gear

the teeth of the cam E and the pinion P. In this manner the engagement is always sure, the strain on the shaft N is equilibrated, and the movement of the sector is smoother and more certain than if a spring or a counterpoise were employed instead of the roller and cam S, which might evidently be done.

Such is substantially the arrangement which I employ to give to the differential movement and consequently to the rollers a variable motion appropriate to the diameters of the winding of the thread upon a bobbin or cop during the formation of a conical layer in order to obtain uniformity of twist through all parts of the thread from one end to the other of each layer. This mechanism may be combined with that which is generally employed to lay the thread at the bottom of the bobbins at the commencement of the building; but I prefer to make the bobbin with a conical face corresponding with the cone of the winding.

What I claim as my invention is—

The combination with the toothed cam E and the differential movement for transmitting motion to the drawing rollers, of a train of gearing between said toothed cam E and said differential movement, a movable sector carrying said train and a cam S of a form corresponding with the cam E for controlling the movement of the said sector, substantially as herein described.

In witness whereof I have hereunto set my hand in the presence of two subscribing witnesses.

PHILIPPE BAZIN.

Witnesses:

SCHRISTE FUBE,
CLYDE SHROPSHIRE.