

No. 672,443.

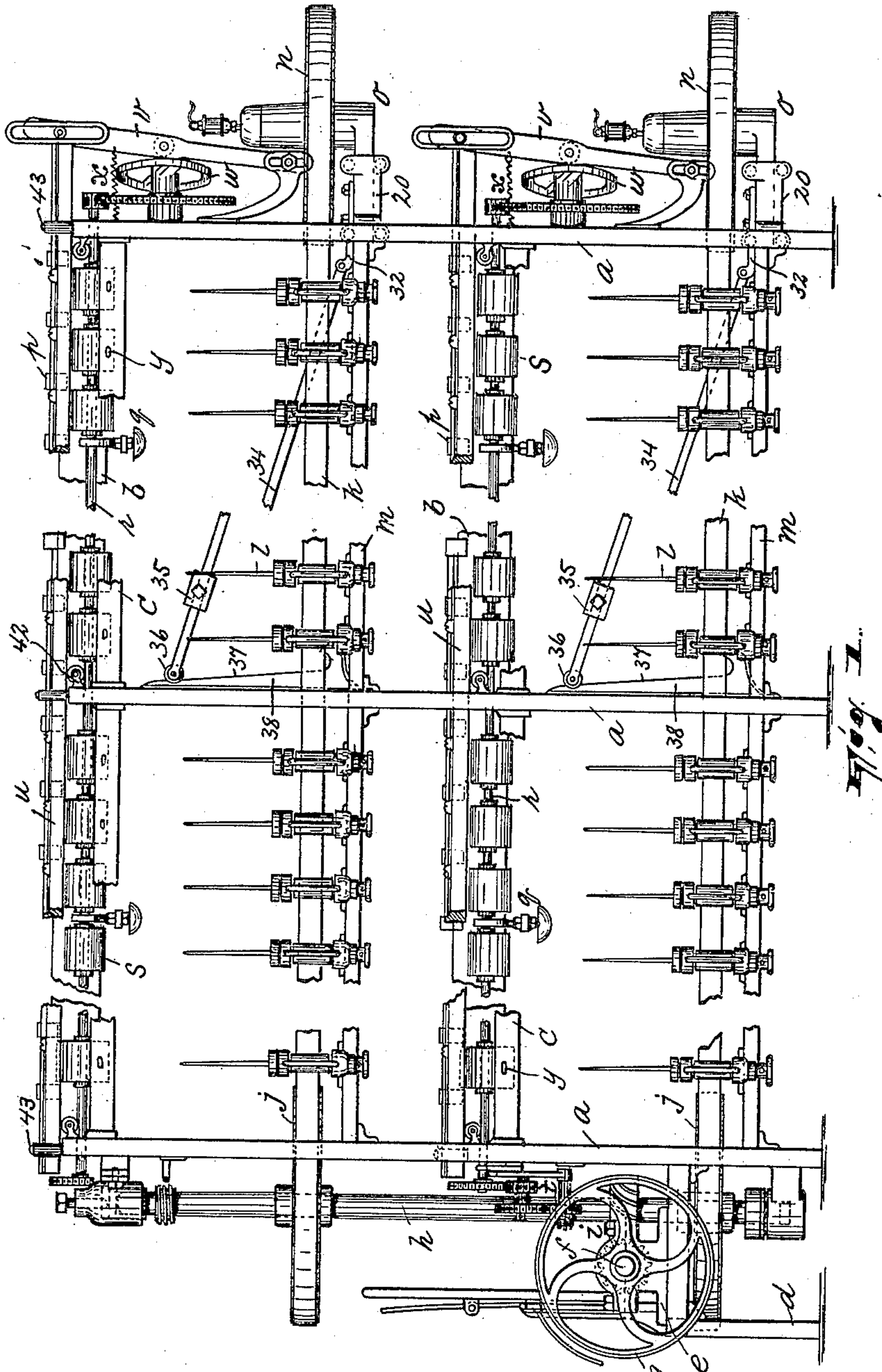
Patented Apr. 23, 1901.

A. HAENICHEN.
SPINNING MACHINE.

(Application filed Jan. 29, 1900.)

(No Model.)

2 Sheets—Sheet 1.



WITNESSES:

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August J. Rahm.

INVENTOR,

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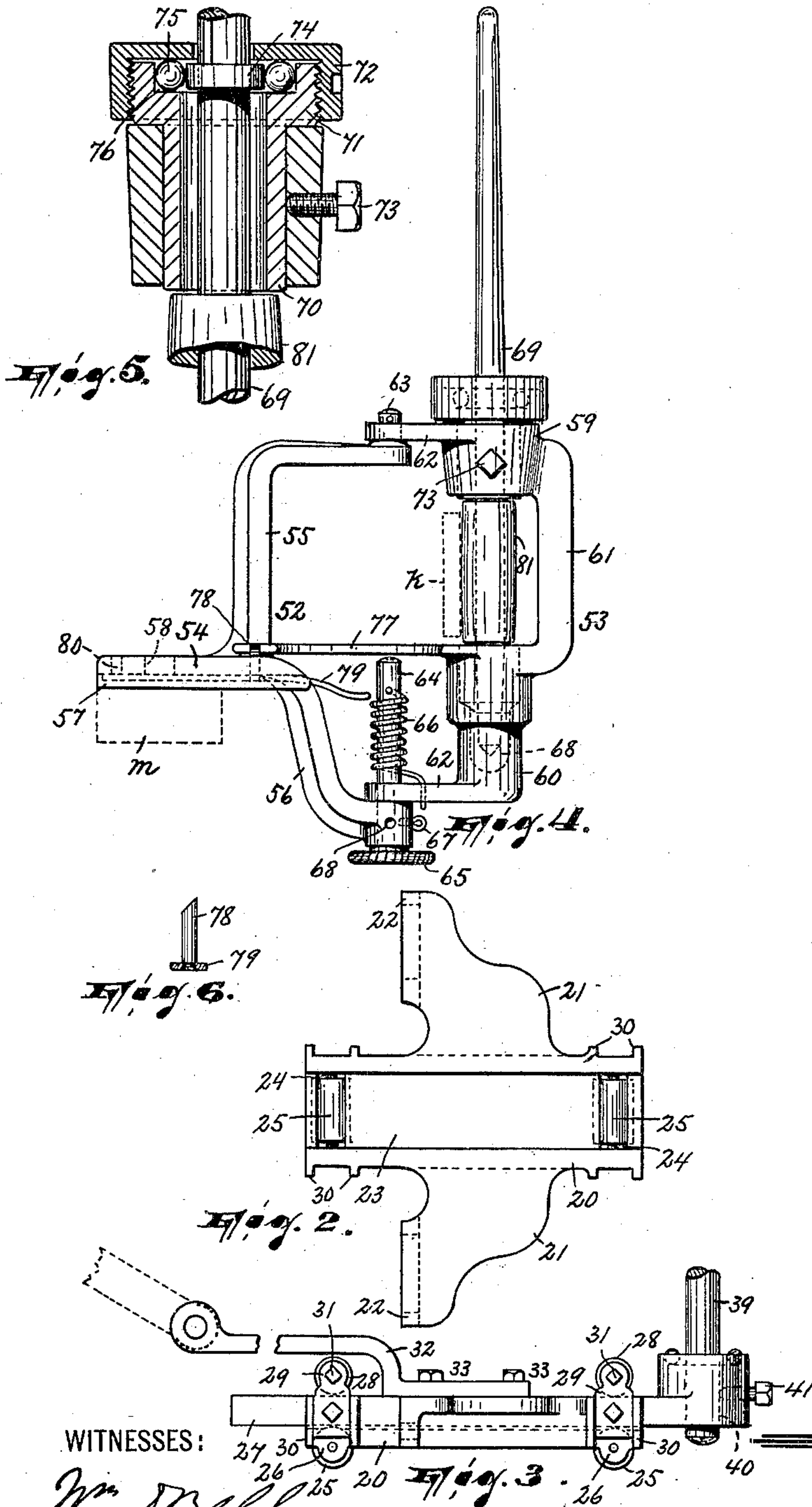
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UNITED STATES PATENT OFFICE.

ADOLPH HAENICHEN, OF PATERSON, NEW JERSEY.

SPINNING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 672,443, dated April 23, 1901.

Application filed January 29, 1900. Serial No. 3,083. (No model.)

To all whom it may concern:

Be it known that I, ADOLPH HAENICHEN, a citizen of the United States, residing in Paterson, in the county of Passaic and State of New Jersey, have invented certain new and useful Improvements in Spinning-Machines; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters and figures of reference marked thereon, which form a part of this specification.

This invention relates to spinning-machines; and it has reference particularly to an improved construction of the machine of this nature described in my application for United States Letters Patent filed October 13, 1899, Serial No. 733,483.

The objects of the present invention are, first, to provide an automatic compensating mechanism for maintaining the spindle-driving belts uniformly taut whatever may be the changes in atmospheric or other conditions tending to vary their lengths; secondly, to provide practically frictionless mountings for the thread-guide-carrying rails, and, thirdly, to improve the construction of the spindles and their supporting mechanism, so that said spindles shall be light-running, being impeded in revolving as little as possible, and so as to render them susceptible of being quickly thrown into and out of engagement with their driving means.

The invention consists in a spinning-machine improved along the lines above indicated and in the combination and arrangement of the various parts thereof, substantially as will be hereinafter pointed out and finally embodied in the clauses of the claim.

In the accompanying drawings, Figure 1 is a view in front elevation of my improved spinning-machine. Figs. 2 and 3 are respectively a top plan and side view of a portion of the compensating mechanism. Fig. 4 is a view in side elevation of one of the spindles. Fig. 5 is an enlarged vertical sectional view of the bolster portion of said spindle, and Fig. 6 is a detail view of a certain spring-actuated detent employed for maintaining the

spindle out of engagement with the driving-belt.

The arrangement and construction of parts generally of my improved spinning-machine are substantially like those of the machine of the application above referred to, and so I will only briefly refer to them herein.

The frame of the machine consists of a series of uprights *a*, which are connected together and braced by horizontal beams *b*, disposed the one above the other and also connected by rails *c*. At one end of the frame is a rest *d*, upon which is journaled in bearing-brackets *e* a horizontal shaft *f*, carrying a drive-pulley *g* and connected with a vertical shaft *h*, provided with suitable bearings, through the medium of suitable gearing *i*. The vertical shaft carries sheaves *j*, over which extend endless belts *k*, said belts being adapted to drive the spindles *l*, carried by rails *m*, also connecting the uprights *a*. At the other end of the machine each belt passes over another sheave, *n*, operatively arranged upon a bracket *o*, the construction of which will also be hereinafter particularly described.

p designates brackets for supporting the bobbins upon which the material taken from the spindles is to be wound, said brackets being arranged upon the beams *b*. These brackets are secured upon the top of the beams and project outwardly from each side thereof, so that each pair of brackets accommodates the bobbin at each end. The beams *b* also carry, secured to their under faces, brackets *q*, in which are journaled shafts *r*, carrying rollers *s* for driving the bobbins, the latter being adapted to have frictional contact therewith. The shafts *r* are operatively connected to the shaft *h*, so as to be rotated thereby, through the medium of suitable gearing *t*.

u designates thread-guide-carrying rails that are disposed approximately above the spindles and are adapted to be reciprocated through the medium of suitably-fulcrumed spring-actuated levers *v*, engaging cams *w*, that are driven by gearing *x* on the shafts *r*.

The rails *c* carry series of eyelets *y*, through which the thread extends after leaving the spindles and before passing over the thread-guides on the rails *u*.

I have found that where the machine has

stood idle, as over night, atmospheric and other conditions tend to alter the length of the belts. Moreover, of course, constant use tends to stretch the belts. In order, therefore, to compensate for this alteration in the length of the belts, I have provided the following automatically-acting mechanism:

20 designates supports which project outwardly from the rear end of the machine, being provided with laterally-extending wings or arms 21, having slotted projections 22, whereby said support may be bolted to the end upright *a*. Each support is provided in its upper surface with an elongated groove 23 and with transverse slots 24, communicating with the groove near each end thereof.

25 designates rollers which are journaled in lugs 26, projecting downwardly from the body portion of the support, the perimeters of said rollers projecting through the slots and being elevated at their highest points slightly above the surface of the groove 23. The bracket *o* is provided with an integral laterally-projecting plate 27, which is adapted to slide in the groove, resting on the rollers. In order to keep the plate in place in the groove, other rollers 28, extending over it, are provided, the same being supported by pairs of brackets 29, each of which is adjustable vertically between pairs of ribs 30 and carries a pivot-pin 31, forming one of the journals for the rollers. Upon the plate 27 is mounted a shoe 32, adjustably secured to said plate by a slot-and-bolt arrangement 33. The free end of the shoe 32 is pivotally connected to one end of a rod 34, carrying an adjustable weight 35 and having in its free end a grooved roller 36, which is adapted to receive in its groove and bear against the inclined edge 37 of a projection 38 on the adjoining face of the upright *a*, next to the end upright. Instead of setting the shaft 39 in a socket formed in the bracket *o* (as in the construction of the corresponding portion of the machine disclosed in my above-mentioned application) the bracket is provided with a vertical bore 40, receiving the lower end of the shaft, said shaft being secured in place by a set-screw 41, mounted in the bracket.

In order that the thread-guide-carrying rails may move freely and without undue friction, I have mounted upon the uprights a series of roller-carrying brackets 42 43, the rollers of the brackets 42 being arranged under the rails and supporting the same and the rollers of the others being arranged to bear against both sides of the rails.

I now proceed to describe my improved construction of spindle and spindle-supporting means.

52 and 53 designate two brackets pivotally connected together, as hereinafter described. The bracket 52 consists of a plate 54, from which extends integral and angular upwardly and downwardly projecting arms 55 and 56, respectively, said plate being provided upon

its under surface and along its side edges with flanges 57, which, when the plate is secured to the spindle-rail *m* by means of a bolt passing through an orifice 58 in said plate, slightly space the plate from the rail. The bracket 53 comprises a sleeve portion 59 and a socket portion 60, the former being sustained vertically above the latter by a bar 61, integrally connecting them. From the sleeve and socket project arms 62, which are pivotally connected to the arms 55 and 56 of the bracket 52 by means of an integral pintle 63 on the arm 55 and an adjustable pin 64, the latter preferably penetrating the lower arm 62 and the arm 56. The pin is provided with a milled head 65, and the bracket 53 is connected to it through the medium of a spiral spring 66, coiled about said pin and penetrating the same at one of its ends and the lower arm 62 at its other end. The spring normally tends to turn the bracket 53 on its pivot on the other bracket, and in order to adjust the tension of the spring a removable pin 67 is provided, being adapted to be set in registering holes in the pin 64 and arm 56. In the socket 60 is arranged a bushing, in which the lower and tapered end of the spindle 69 is stepped, and in the sleeve 59 is arranged a thimble 70, having a threaded flange 71 on its upper end, which is adapted to bear upon the top of the sleeve and onto which is screwed a cap 72, also penetrated by the spindle. The thimble is removably held in place by a set-screw 73, arranged in the sleeve and adapted to bind against the thimble. The spindle carries a glass-hard annulus 74, having contact with balls 75, arranged in a ball-race 76, formed in the flange part of the thimble about the spindle.

77 designates an arm which projects rearwardly from the upper portion of the socket 60 and which is adapted to be engaged by a vertically-movable detent 78, having its upper end beveled off and projecting through the plate 54, being mounted upon a plate-spring 79, projecting under the plate 54, and riveted thereto, as at 80. So long as the detent 78 engages the arm 77 the spring 66 is prevented from acting to move the bracket 60 so as to force the spindle-whirl 81 against the belt *k*; but when the free end of the plate-spring 79 is depressed the detent will release the arm 77 and permit the whirl, under action of the spring 60, to bear against the belt, so as to drive the spindle.

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

1. In a spinning-machine, the combination, with a frame, of spaced revoluble sheaves, a driving-belt extending over and adapted to be driven by said sheaves, one of said sheaves being movable relatively to the other, and means tending to space said sheaves the one from the other, said means comprising two members the one of which has an inclined bearing-surface and the other of which is ar-

ranged between said inclined bearing-surface and the movable sheave and operatively engages the same, substantially as described.

2. In a spinning-machine, the combination, with a frame, of spaced revoluble sheaves, a driving-belt extending over and adapted to be driven by said sheaves, one of said sheaves being movable relatively to the other, and means tending to space said sheaves the one from the other, said means comprising two members the one of which has an inclined bearing-surface and the other of which is arranged between said inclined bearing-surface and the movable sheave, having pivotal connection with the latter and engaging the former, substantially as described.

3. In a spinning-machine, the combination, with the frame, of spindles journaled therein, spaced revoluble sheaves, a bracket movably arranged in said frame and carrying one of said sheaves, a belt extending over said sheaves and adapted to drive the spindles, a projection mounted on said frame and having an inclined bearing-surface, and a weighted rod pivotally connected to said bracket at one of its ends and bearing against the inclined surface of said projection at the other of its ends, substantially as described.

4. In a spinning-machine, the combination, with the frame, of spindles journaled therein, spaced revoluble sheaves, a roller-carrying support projecting from said frame, a movable bracket mounted in said support and guided between the rollers thereof, said bracket carrying one of said sheaves, a belt extending over said sheaves and adapted to drive the spindles, a projection mounted on said frame and having an inclined bearing-surface, and a weighted rod pivotally connected to said bracket at one of its ends and carrying a roller bearing against the inclined surface of said projection at the other of its ends, substantially as described.

5. In a spinning-machine, the combination, with the frame, of revoluble spindles mounted in said frame, bobbin-supporting and bobbin-driving means also arranged in said frame, means for driving the spindles, thread-guide-carrying rails, means for reciprocating said rails, and roller-carrying brackets mounted in said frame, the rollers of said brackets engaging the under and side surfaces of said rails, substantially as described.

6. The combination, with a spindle, of two hinged members, one of said members carrying the spindle and the other of said members being adapted to be secured to a suitable support, and the spindle-carrying member being spring-actuated, a plate-spring projecting from one of said members, and a detent carried by said plate-spring and adapted to engage the other member, substantially as described.

7. The combination, with a spindle, of two hinged members, one of said members being stationary and adapted to be secured to a

suitable support and the other member carrying the spindle and having a projection, the spindle-carrying member being spring-actuated, a plate-spring projecting from the stationary member, and a detent carried by said plate-spring, its free end being beveled off and adapted to engage said projection, substantially as described.

8. The combination, with a spindle, of two hinged members, one of said members being stationary, comprising a plate and being adapted to be thereby secured to a spindle-rail, and the other of said members carrying the spindle and having a projection, said spindle-carrying member being spring-actuated, a plate-spring adapted to be secured at one of its ends between said plate and the rail, and a detent projecting from the free portion of said plate-spring, its free end being beveled off and adapted to engage said projection, substantially as described.

9. The combination, with a spindle, of two hinged members, one of said members carrying the spindle and being elastically controlled and the other of said members being adapted to be secured to a suitable support, and an elastically-mounted detent arranged in said last-named member and adapted to engage said first-named member, substantially as described.

10. The combination, with a spindle, of two members having pairs of arms and having said arms pivotally connected to each other, one of said members being adapted to be secured to the spindle-rail and the other of said members carrying the spindle, a pin constituting one of the pivots of said pivotal connection, and a spring coiled about said pin and engaging the same and one of said arms, substantially as described.

11. The combination, with a spindle, of two hinged members having pairs of arms and having said arms pivotally connected to each other, one of said members being adapted to be secured to the spindle-rail and the other of said members carrying the spindle, a pin constituting one of the pivots affording pivotal connection between said arms, a spring coiled about said pin and engaging the same and one of said arms, said pin being movable revolubly, and means for adjusting said pin, substantially as described.

12. The combination, with a spindle, of two members having pairs of arms and having said arms pivotally connected to each other, one of said members being adapted to be secured to the spindle-rail and the other of said members carrying the spindle, a pin constituting one of the pivots of said pivotal connection, a spring coiled about said pin and engaging the same and one of said arms, said pin being movable revolubly in the arm of the stationary member, and said arm and the pin having openings adapted to register with each other, and a pin adapted to be inserted into said openings, substantially as described.

13. The combination, with a spindle, of two members having pairs of arms and having said arms pivotally connected to each other, one of said members being adapted to be secured to the spindle-rail and the other of said members carrying the spindle, a pin constituting one of the pivots of the pivotal connection, a spring coiled about said pin and engaging the same and one of said arms, and a spring-actuated detent adapted to secure the spindle-carrying member against actuation of said spring, substantially as described.

14. The combination, with a spindle, of a supporting member comprising a sleeve portion, a thimble mounted in said sleeve portion and penetrated by said spindle, said thimble having an annular enlargement resting upon the top of said sleeve portion, antifriction devices arranged in said enlargement, a hardened annulus fixed on said spindle and adapted to bear against said antifriction devices, and a cover secured on said enlarge-

ment and extending over the recess therein, substantially as described.

15. The combination, with a spindle, of a supporting member, comprising a sleeve portion, a thimble mounted in said sleeve portion and penetrated by said spindle, said thimble having an enlargement, an annulus fixed on said spindle within the enlargement, a recess formed in said enlargement about the annulus and open toward the same, antifriction devices disposed in said recess, and a cover on the enlargement, said cover being penetrated by the spindle and extending over the recess and annulus, substantially as described.

In testimony that I claim the foregoing I have hereunto set my hand this 18th day of January, 1900.

ADOLPH HAENICHEN.

Witnesses:

WM. D. BELL,

JOHN W. STEWARD.