(No Model.)

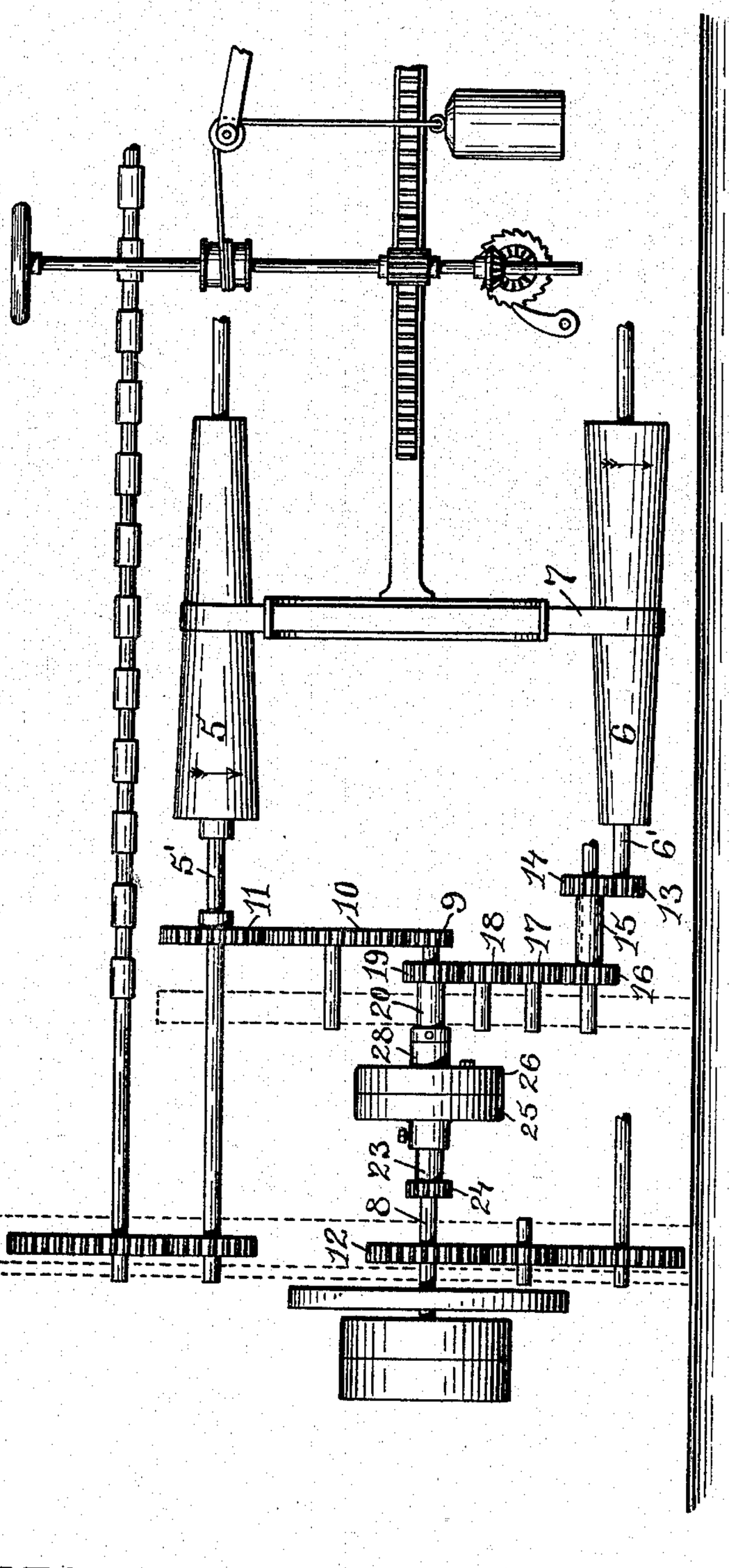
2 Sheets—Sheet 1.

R. B. DALY.

ROVING OR SIMILAR MACHINE.

No. 535,574. Patented Mar. 12, 1895.

Fig. 1.



WITNESSES:

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Chas. H. Luther Jr

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(No Model.) 2 Sheets—Sheet 2.

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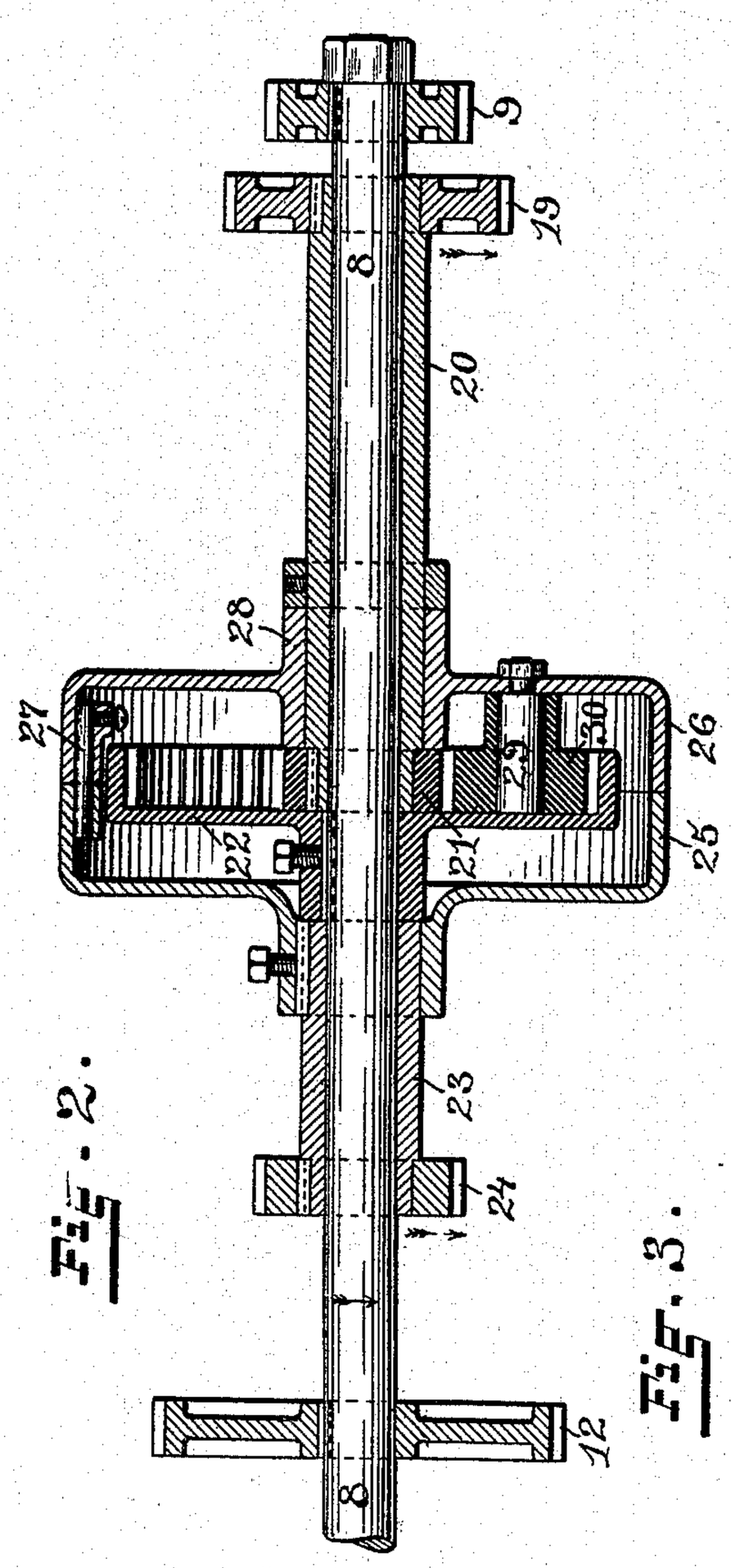

Fig. 2.

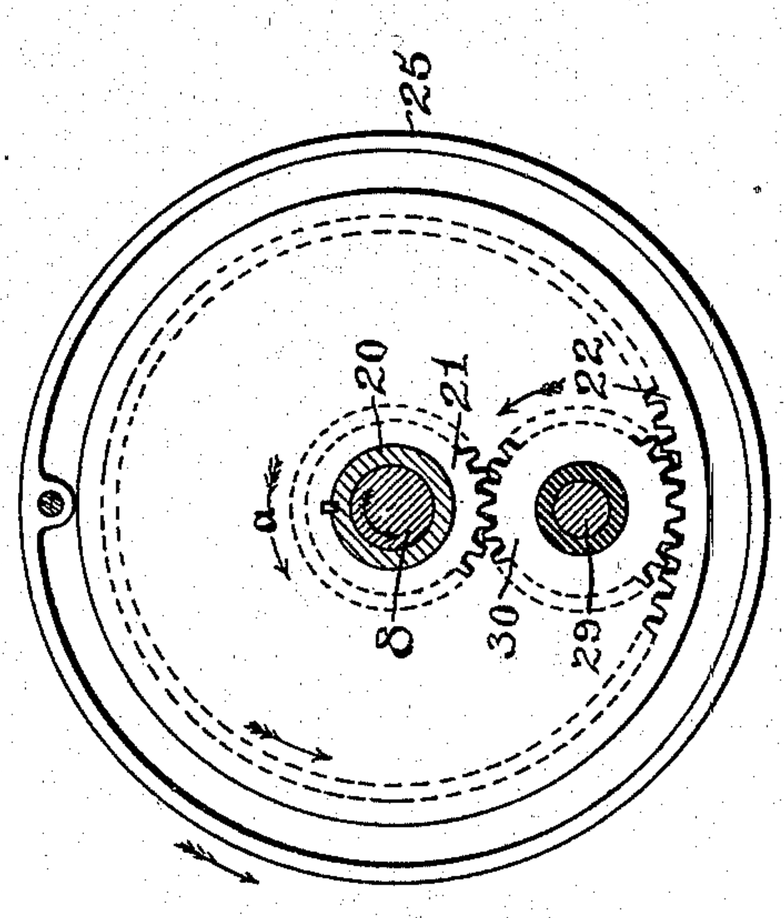

Fig. 3.

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UNITED STATES PATENT OFFICE.

RICHARD B. DALY, OF WOONSOCKET, RHODE ISLAND, ASSIGNOR TO THE WOONSOCKET MACHINE AND PRESS COMPANY, OF SAME PLACE.

ROVING OR SIMILAR MACHINE.

SPECIFICATION forming part of Letters Patent No. 535,574, dated March 12, 1895.

Application filed July 9, 1894. Serial No. 516,914. (No model.)

To all whom it may concern:

Be it known that I, RICHARD B. DALY, of Woonsocket, in the county of Providence and State of Rhode Island, have invented certain new and useful Improvements in Roving or Similar Machines; and I hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming part of this specification.

This invention has reference to improvements in driving mechanisms for roving and similar machines, such as slubbers, fly frames, &c.

The object of the invention is to simplify the construction and to increase the effectiveness of the differential motion.

The invention consists in the peculiar construction of the differential driving mechanism.

The invention still further consists in such other novel features of construction and combination of parts as may hereinafter be more fully described and pointed out in the claims.

Figure 1 represents a front elevation of parts of a slubbing frame showing the cone drivers with the belt shifter, the main shaft with the reciprocal differential motion, together with the system of gearing between the main shaft and the upper cone shaft and between the differential motion and the lower cone shaft. Fig. 2 represents a vertical, longitudinal, sectional view of the differential motion mounted on the main shaft. Fig. 3 represents a vertical, cross-sectional view of the same taken on a line with the surface of the internal gear in Fig. 2, the edge of the casing or frame being shown in full.

In this class of machines where the fiber in the shape of roving is delivered at a constant speed to the bobbin it is necessary to so adjust the speed of the bobbin that the surface speed of the roving wound thereon will not exceed the speed at which the roving is delivered, so that no excessive surface speed is created as layer after layer is wound on and the diameter increased as this would tend to unduly stretch and attenuate the roving. It is also obvious that this surface speed must be adjusted for each traverse of the builder mechanism whereby the layers of roving are built on to the bobbin or spool, while during the traverse of this builder mechanism the speed of the bobbin should remain constant, which has not been possible with the bobbin-driving mechanism as heretofore constructed.

In the drawings 5 and 6 represent respectively the upper and lower cone-drivers mounted in the machine in the usual manner and connected together by the endless-belt 7 which is governed in any well-known manner to transfer the constant speed of the upper cone-shaft 5′ through the surface speed of the cones in a gradually changing degree to the lower cone-shaft 6′.

Journaled in the machine frame is the main shaft 8 provided with the usual driving-pulleys, the inner end of the shaft being provided with the gear 9 from which motion is imparted through the gears 10 and 11 to the upper cone-shaft 5′ and thence in the usual manner to the drawing rolls. On the main shaft 8 is also secured the spindle-gear 12 by means of which and the usual gearing and shafts the spindles are driven.

The lower cone-shaft 6′ is provided with the gear 13 which intermeshes with the gear 14 secured to the sleeve 15 to the other end of which the gear 16 is secured, this sleeve being journaled on a shaft secured in the machine. The gear 16 transmits the motion through the gears 17 and 18 to the cone-gear 19 mounted on the end of the sleeve 20 which is rotatably mounted on the main shaft 8 and is furnished at its opposite end with the small central gear 21 keyed to the sleeve. Abutting against the inner or left hand end of this sleeve 20 is the internal gear 22 which is keyed to the main shaft and is considerably greater in diameter than the central gear 21, the size of the gears being determined by experience. Also rotatably mounted on the main shaft 8 is a short sleeve 23 to which the bobbin-gear 24 is keyed. One end of this sleeve rests closely against the sleeve of the internal-gear 22 and to this end of the sleeve is secured the member 25 of a casing or frame of which the member 26 forms the corresponding half, these laterally enlarged members 25 and 26 being secured together by the bolt 27, or in any other manner, to prevent independent rotation thereof, and the member 26 having a bearing-sleeve 28 ro-

tatable on the sleeve 20. To the interior of the member 26 is secured the shaft 29 on which the idle pinion 30 is journaled in a position to engage the teeth of the central gear 21 as well as those of the internal gear 22.

When the machine is started with empty bobbins the speed of the lower cone-driver is regulated to drive the gear 19 at about the speed of the main shaft, resulting in the simple rotation of the differential gearing and of the bobbin-gear 24 at a similar speed, the idle pinion 30 forming at this speed merely a connection with the internal gear. By reference to the drawings it will be evident that the gears 19 and 21 with the sleeve 20 will be driven in the direction of the arrow *a* in Fig. 3, the casing or frame 25 and 26 with the bobbin-gear 24 also being driven at this speed. On the finish of the first layers of roving on the bobbin the belt 7 of the cone-drivers will be automatically shifted to reduce the speed of the lower cone shaft and consequently of the gear 19 with its sleeve and central gear, while the rotation of the main shaft and the internal gear 22 remain constant. The action of the gear 21 and of the internal gear will then be to cause the gear 30 to revolve with the casing or frame formed by the members 25 and 26 being rotated as in the first instance, but at a higher speed and the bobbin-gear 24 moving in unison with the casing, this change being made at the end of each traverse of the builder as in the usual manner for governing differential gears, the surface speed of the roving wound on the bobbin wiil be decreased in proportion as the diameter of the cop increases.

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

1. The combination in a roving machine with the main shaft 8, the gear 22 secured thereto, the sleeve 20 journaled on the shaft 8, and the gears 19 and 21 mounted on this sleeve, of the sleeve 23 journaled on the shaft 8 at the opposite side of the gear 22, the gear 24 secured to this sleeve, the frame or casing member 25 mounted on this sleeve, the frame or casing member 26 journaled on the sleeve 20, means for securing these members together against independent rotation, the shaft 29 secured to the member 26, and the pinion 30 journaled on this shaft and intermeshing with the gears 21 and 22, as described.

2. In a roving-machine, the combination with a shaft, an internal gear secured to the shaft, a sleeve rotatable on the shaft, and gears secured to the opposite ends of this sleeve one of which lies within the internal gear, of an enlarged frame or casing member rotatably mounted on the sleeve, a shaft secured to the frame and extending within the internal gear, a pinion journaled on said shaft and intermeshing with the internal gear, and the gear on the first mentioned sleeve lying within the internal gear, and a gear adapted to be driven by the rotation of the frame.

3. In a spinning frame, the combination with the driving shaft, of a loose sleeve on the driving-shaft having a pair of gears, a second sleeve loose on the first-named sleeve between the two gears and adapted for connection with the bobbins, an internal gear affixed to the driving-shaft, and a pinion carried by the outer sleeve and meshing with the internal gear and with one of the gears on the inner sleeve.

4. In a spinning-frame, the combination of the driving-shaft, a sleeve loosely mounted thereon, a second sleeve fitted loosely on the first-named sleeve and adapted for connection with the bobbin, a gear on the inner sleeve confining the outer sleeve, an internal gear affixed to the shaft, and a pinion carried by the outer sleeve and meshing with the internal gear and the said gear on the inner sleeve.

In witness whereof I have hereunto set my hand.

RICHARD B. DALY.

Witnesses:
HENRY J. MILLER,
M. F. BLIGH.