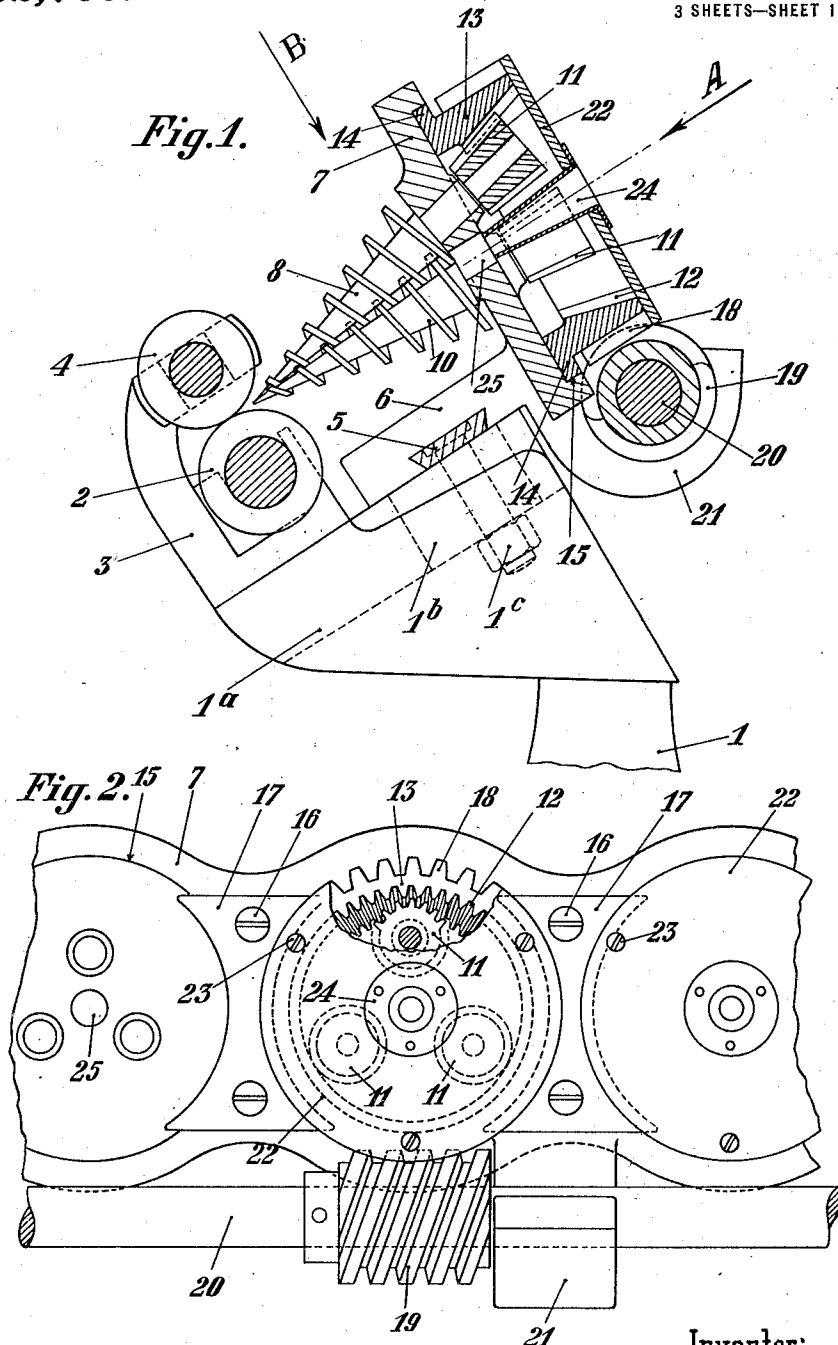


A. WEY.  
SPINNING FRAME.  
APPLICATION FILED JULY 10, 1920.

1,362,768.

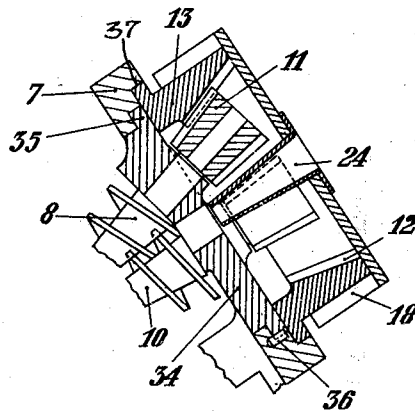
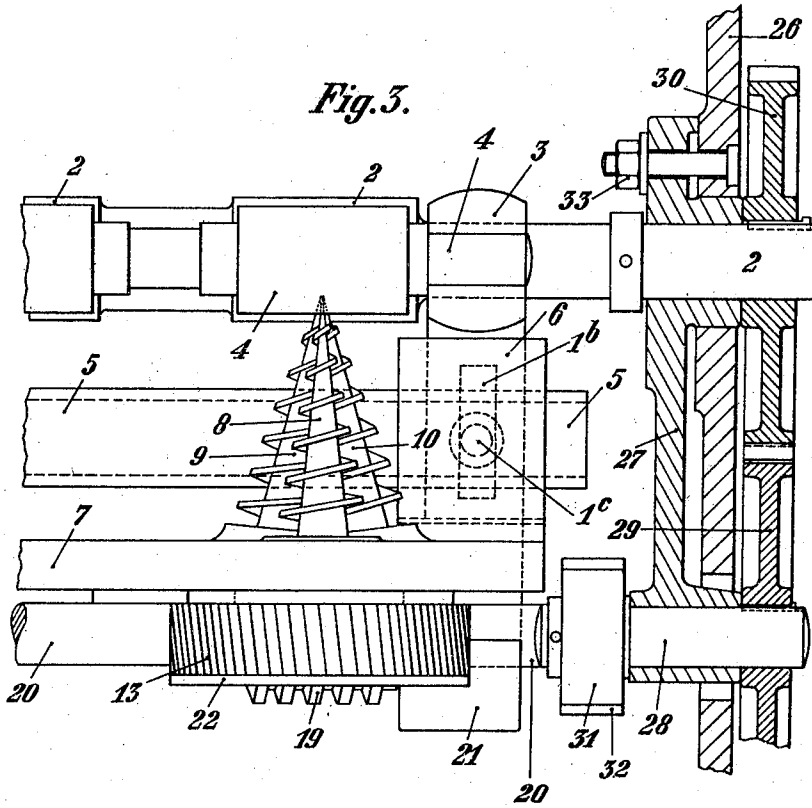
Patented Dec. 21, 1920.  
3 SHEETS—SHEET 1.



Inventor:  
*Alfred Wey*

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 3 SHEETS—SHEET 2.



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*Alfred Wey*

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*Fig. 5.*

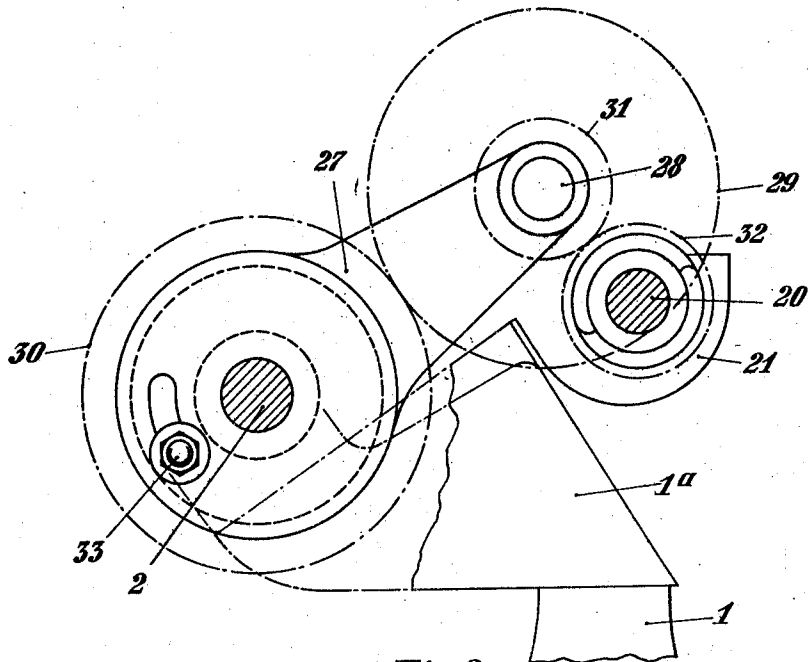
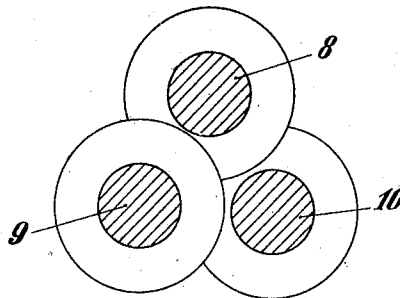


*Fig.6.*



Alfred Wey

# UNITED STATES PATENT OFFICE.

ALFRED WEY, OF SCHWARZENBACH, GERMANY.

## SPINNING-FRAME.

1,362,768.

Specification of Letters Patent.

Patented Dec. 21, 1920.

Application filed July 10, 1920. Serial No. 395,418.

*To all whom it may concern:*

Be it known that I, ALFRED WEY, a citizen of the Swiss Republic, residing at Schwarzenbach, Germany, have invented certain new and useful Improvements in Spinning-Frames, of which the following is a specification.

My invention relates to spinning frames and more especially to the means for feeding the fibers to the drawing cylinders.

It is the primary object of my invention to provide a spinning frame for drawing fibers of different length and conducting the same into close proximity to the drawing cylinders.

My invention further consists in the constructions, arrangements and combinations of parts hereinafter described and claimed.

In the spinning frame according to the present invention the feeding cylinders usually employed for feeding the roving to the drawing cylinders are replaced by a plurality of conical conveyer worms gearing into each other and ending in a point disposed in immediate proximity to the drawing cylinders. This arrangement causes the roving to be conducted in a curly winding between the threads of the worms, which are preferably three in number, whereby even the shortest fibers are guided until they leave the worms. Owing to the worms having pointed ends the roving can be conducted into the closest possible proximity to the drawing cylinders and the fibers on leaving the threads of the worms are therefore so near the said cylinders that all the fibers and even the shortest ones are gripped by the cylinders. In this way the spreading of the fibers is avoided almost completely and the fibers are attenuated in a uniform and predetermined manner so that the roving can be drawn to a high degree.

In describing my invention in detail reference will be had to the drawings affixed to this specification and forming part thereof, like reference letters referring to like parts throughout the several views.

In the drawings two different preferred forms of my invention are illustrated, Figures 1, 2, 3, 5, 6 showing one of these forms, while Fig. 4 shows the other one.

Fig. 1 is a vertical cross-section of the novel spinning frame, and

Fig. 2 is a plan viewed in the direction of the arrow A (Fig. 1), part of the cover protecting the gear wheels being broken away.

Fig. 3 is an elevation viewed in the direction of the arrow B (Fig. 1), the parts on the right being represented in section.

Fig. 4 is a vertical cross-section of another form of the invention.

Fig. 5 is an elevation of the driving gear,

Fig. 6 is a cross-section of the conveyer worms, drawn to a larger scale.

Referring more particularly to the drawings, 1, 1 are standards carrying supports 1<sup>a</sup>, 1<sup>a</sup>. 5 is a guide rail adjustably fastened to said supports by means of screw bolts 1<sup>c</sup> passing through transverse slots 1<sup>b</sup> in the supports 1<sup>a</sup>, so that the distance between rail 5 and the drawing cylinders can be varied within certain limits. The drawing cylinders 2 and 4 are located in bearings carried on struts 3, 3, the lower cylinder 2 being grooved, while the upper cylinder 4 loosely resting thereon under pressure of a suitable weight is covered with leather, as usual.

On rail 5 grooved arms 6, 6 of a cross-beam 7 are slidably arranged, said cross-beam carrying the conical worms and being adapted, owing to its transversal mobility, to conduct the roving to different points of the leather-covered pressure cylinder, in order to avoid the formation of grooves in the leather cover.

Each one of the feeding and conducting devices arranged side by side on the cross-beam 7 consists of three conical conveyer worms 8, 9, 10 gearing with each other, as shown more particularly in Fig. 6. The worms terminate in points and the three points are almost in mutual contact.

The journals of the worms are provided with bevel wheels 11 of even diameter, the three gear wheels of each feeding device meshing with the internal gear of an annular toothed wheel 13 located in a circular recess 15 of cross-beam 7 by means of an annular flange 14 and held therein by the aid of guide plates 17 fixed to said beam by means of screws 16. A worm 19 on shaft 20 is in gear with the external gear 18 of wheel 13. The bearings 21 of shaft 20 are preferably formed integral with the arms 6 of the cross-beam. The gearing disposed within the annular wheel 13 is protected by a cover 22 fixed to said wheel by screws 23, and a conical nozzle 24 provided on said cover serves to conduct the roving through a boring 25 to the conveyer worms. There are as many worms 19 disposed on shaft 20 as there are conducting devices. Shaft 20

is driven from the grooved drawing cylinder 2 by aid of a change gear (Figs. 3 and 5) arranged on one side wall 26 of the frame. To this end an arm 27 is pivoted to the cylinder 2, said arm carrying a journal 28 with a toothed wheel 29 fixed thereon and gearing with a toothed wheel 30 fixed on said cylinder. The diameters of the wheels 29 and 30 are chosen in correspondence to the number of revolutions required. The journal 28 further carries a smaller toothed wheel 31 meshing with a toothed wheel 32 on shaft 20. In order to vary the speed of revolution in accordance with the desired degree of attenuation the wheel 31 may be replaced by wheels of different diameters. In order to provide for these differences the arm 27 may be turned relatively to the cylinder 2 and may be fixed on the wall 26 by aid of a set screw 33.

In the construction shown in Fig. 4 the journals of the conveyer worms are located in a flanged disk 34 seated with its flange 35 in corresponding recesses 37 of the cross-beam 7 and secured against displacement by lock pins 36. By this arrangement the single conducting devices are rendered easily exchangeable.

The operation of the spinning frame described is as follows: The roving being supplied to the conveyer worms by the nozzle 24 is conducted by said worms toward the drawing cylinders which always grip those fibers of the roving which have been fed forward first and draw them in the direction of the bobbin (not shown) provided for the twisting of the thread. The pointed ends of the conveyer worms being in close proximity to the point of contact of the drawing cylinders and the feed being uniform and thread-like, the roving is safely guided under permanent control in a wave-like uniform manner until it is gripped by the drawing cylinders. In the devices hitherto in use the roving was left to itself during its passage from the feeding cylinders to the drawing cylinders and in consequence thereof the shorter fibers lost their support, a non-uniform thread and a loss of fibers resulting therefrom. In contradistinction thereto in the spinning frame according to the present invention even the shortest fibers are gripped without losing their rearward connection. The drawback of a whirling of the roving and consequent loss of fibers is avoided and the roving is securely conducted toward the drawing cylinders in a compact form, thus allowing to attenuate the fibers in a more perfect manner and to a higher degree. Therefore in order to obtain the same final product the attenuation may be far greater and a stronger roving may be used than before. For this reason a smaller number of flyers is required and in consequence

thereof much room, capital and driving power is saved.

The term "conveyer worms" used in this specification is meant to comprise all forms of screws and worms adapted to feed the roving to the drawing cylinders.

I claim:—

1. A device of the kind described comprising a plurality of conical conveyer worms in gear with each other.
2. In a device of the kind described in combination, a pair of drawing cylinders and a plurality of conical conveyer worms in gear with each other disposed with their ends in close proximity to said cylinders.
3. In a device of the kind described in combination, a roving feeding device, a pair of drawing cylinders and a plurality of conical conveyer worms in gear with each other inserted between said feeding device and said cylinders.
4. In a device of the kind described in combination, a pair of drawing cylinders, a plurality of conical conveyer worms in gear with each other disposed with their ends in close proximity to said cylinders and gearing adapted to drive all the worms in the same direction.
5. In a device of the kind described in combination, a pair of drawing cylinders, a plurality of conical conveyer worms in gear with each other disposed with their ends in close proximity to said cylinders, bevel gear wheels on said worms and a rotary internal gear wheel surrounding and meshing with said gear wheels.
6. In a device of the kind described in combination, a pair of drawing cylinders, a plurality of conical conveyer worms in gear with each other disposed with their ends in close proximity to said cylinders, bevel gear wheels on said worms, a rotary external and internal gear wheel surrounding and meshing with said gear wheels and a worm shaft in gear with the external gear of said internal gear wheel.
7. In a device of the kind described, in combination, a pair of drawing cylinders, a plurality of conical conveyer worms in gear with each other disposed with their ends in close proximity to said cylinders and means for feeding the roving into the space between the broad ends of said worms.
8. In a device of the kind described in combination, a pair of drawing cylinders, a plurality of conical conveyer worms in gear with each other disposed with their ends in close proximity to said cylinders, a carrier in front of said worms and a disk removably seated in said carrier and forming the bearing for said worms.
9. In a device of the kind described in combination, a pair of drawing cylinders, a carrier in front of said cylinders, a plural-

- ity of converging bearings in said carrier, conical conveyer worms located in said bearings with their ends in close proximity to said cylinders, bevel gear wheels on said worms above said carrier, an annular external and internal gear wheel surrounding and meshing with said bevel gear wheels and a worm shaft in gear with said toothed wheel.
- 10 10. In a device of the kind described in combination, a pair of drawing cylinders, a carrier in front of said cylinders, a plurality of converging bearings in said carrier, conical conveyer worms located in said bearings with their ends in close proximity to said cylinders, bevel gear wheels on said worms above said carrier, an annular external and internal gear wheel surrounding and meshing with said bevel gear wheels, a seat in said carrier for said annular wheel, plates fixed to said carrier and overlapping said wheel, a cover on said wheel and a worm shaft in gear with said toother wheel.
- In testimony whereof I affix my signature.
- ALFRED WEY.