

No. 831,601.

PATENTED SEPT. 25, 1906.

F. M. CHAPMAN.

SPEED DRIVE.

APPLICATION FILED DEC. 4, 1905.

3 SHEETS—SHEET 1.

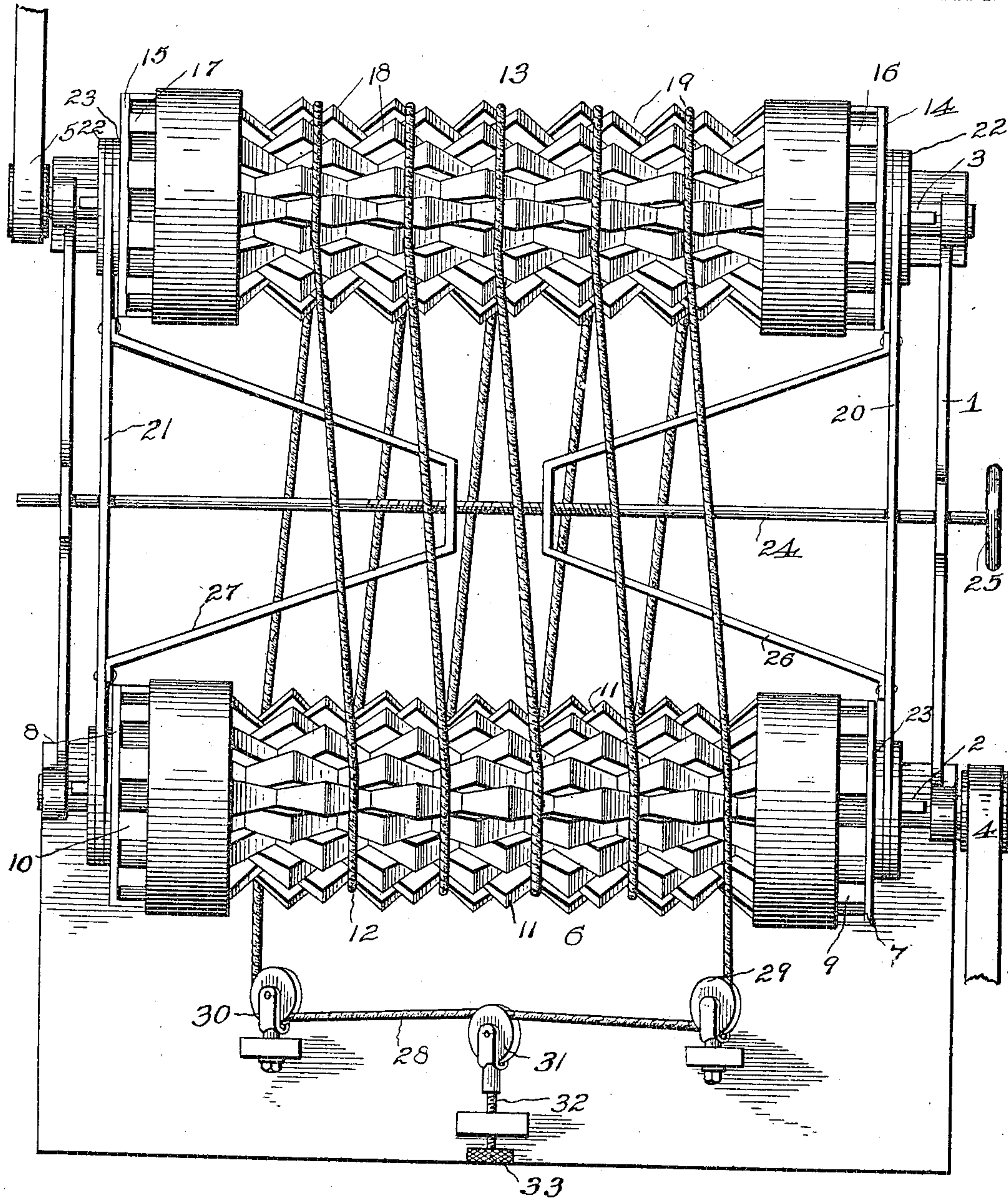


Fig. 1.

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3 SHEETS—SHEET 2.

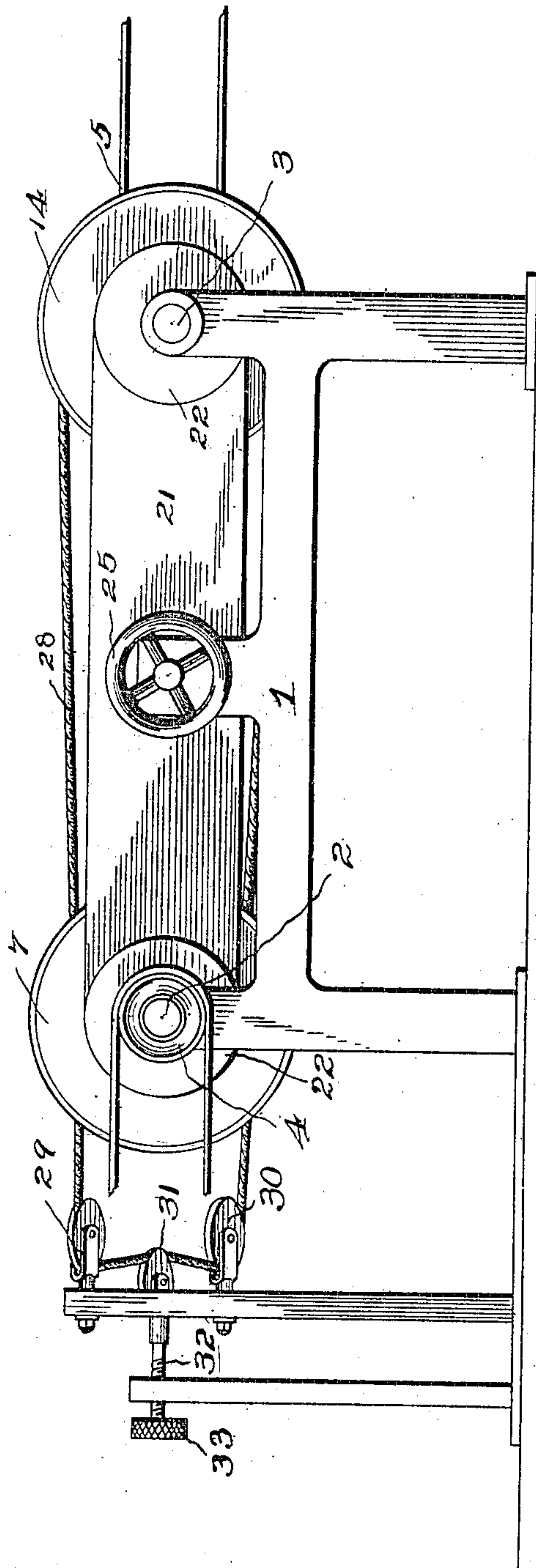


Fig. 2.

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3 SHEETS—SHEET 3.

Fig. 3.

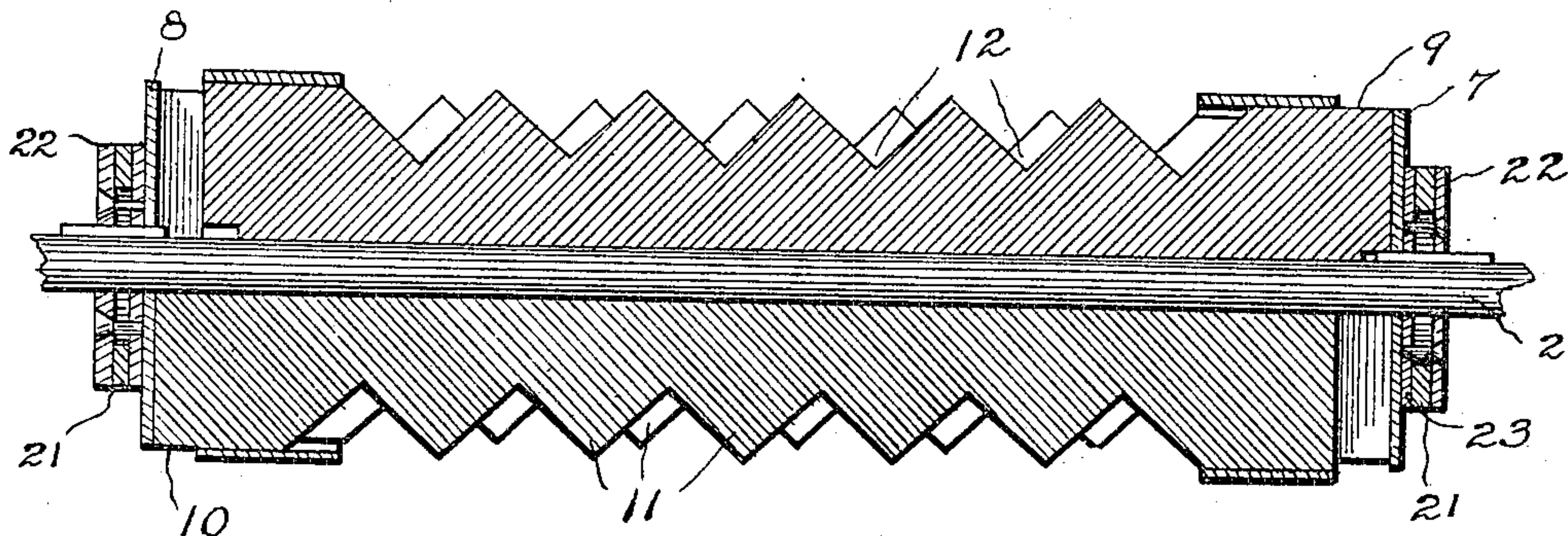
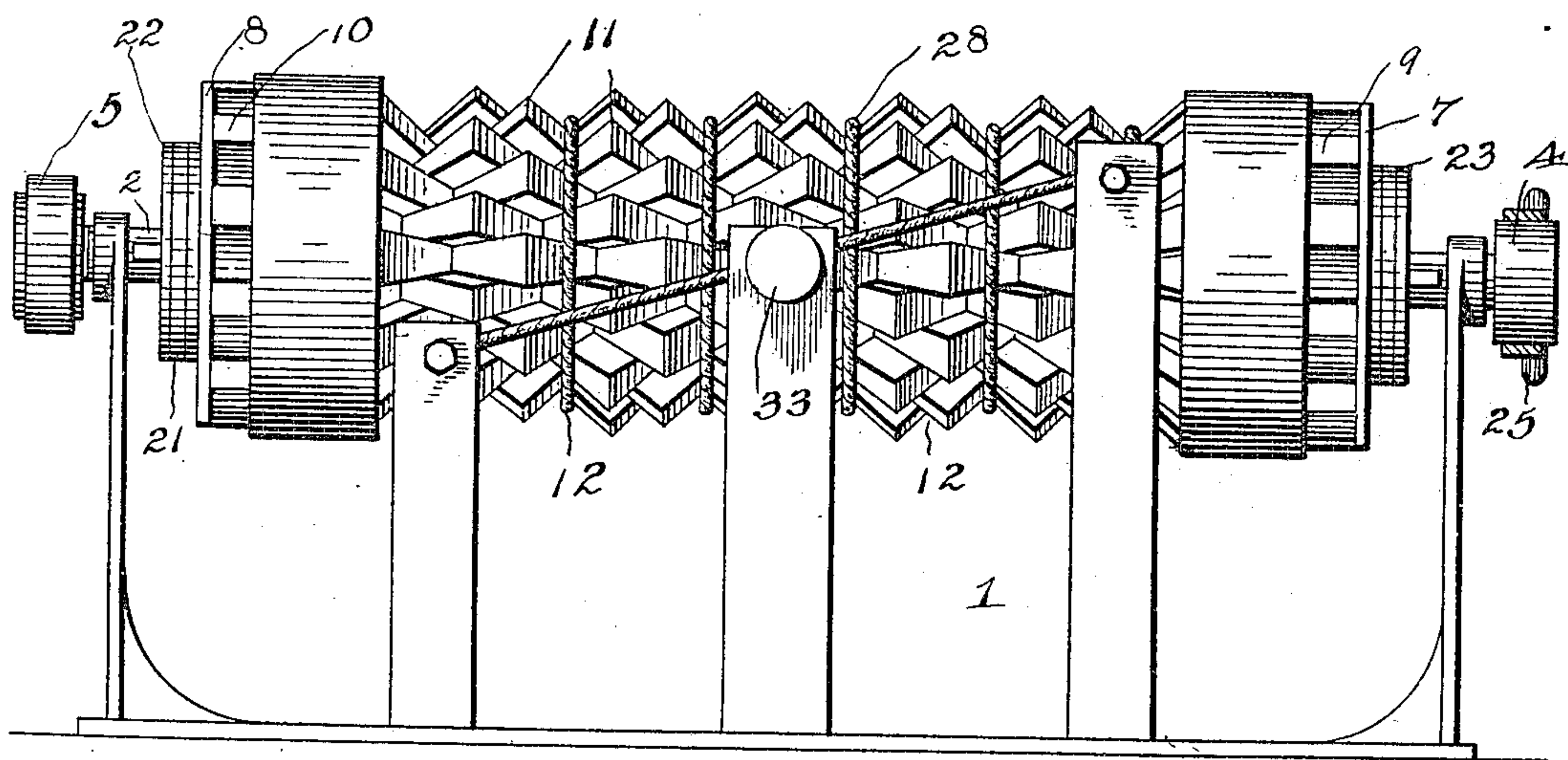


Fig. 4.

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UNITED STATES PATENT OFFICE.

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SPEED-DRIVE.

No. 831,601.

Specification of Letters Patent.

Patented Sept. 25, 1906.

Application filed December 4, 1905. Serial No. 290,218.

To all whom it may concern:

Be it known that I, FRANK M. CHAPMAN, a citizen of the United States, residing at Fort Edward, in the county of Washington and State of New York, have invented certain new and useful Improvements in Speed-Drives; 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.

My invention relates to improvements in variable-speed-drive devices.

It has for its object to provide a device of this nature which will be strong and durable and wherein the working diameter may be quickly and easily varied.

The invention consists in the features of construction and combinations of parts hereinafter described, and more particularly pointed out in the claims concluding this specification.

In the accompanying drawings, illustrating the preferred embodiment of my invention, Figure 1 is a plan view of the apparatus or device. Fig. 2 is a side view thereof. Fig. 3 is an end view, and Fig. 4 is a central longitudinal sectional view of the pulley on the driving-shaft.

While the preferred embodiment of my invention is illustrated in the accompanying drawings and its construction and operation are described in this specification, the right is reserved to make such changes from the construction shown and described herein as the scope of the claims hereto appended will permit.

In carrying out my invention I mount the driving and driven shafts on a suitable framework and parallel to each other. Keyed to each of said shafts and longitudinally movable thereon is an expansible pulley comprising a pair of disks or heads each carrying a series of spaced-apart strips or blades extending from the inner face thereof toward the other disk, the strips or blades attached to one disk fitting in the spaces between the blades or strips attached to the other disk. The outer edges of said strips or blades are provided with a series of V-shaped grooves, those in the several strips secured to the same disk being arranged to register in circumferential groups. The corresponding end disks on the two shafts are connected by

cross-bars in which they are journaled between flanges on said disks. A rod provided with right and left hand threads extends between the two cross-bars, whereby they may be caused to move in opposite directions toward or away from each other. As said cross-bars move in opposite directions the disks on each shaft and the strips carried by said disks also move in opposite directions, thereby varying the depths of the V-shaped grooves formed between the projecting lugs on the two sets of strips. A continuous rope passes back and forth from one shaft to the other and engages alternate grooves in the strips on said shafts, so that as the grooves engaged by the rope on one pulley grow smaller by the turning of the oppositely-screw-threaded rod the grooves engaged by said rope on the other pulley become larger, whereby the speed of the driven shaft is varied, but the rope is always kept at the same tension. In order to tighten the rope on the pulleys, if necessary because of stretching, &c., I provide a tension-wheel adapted to engage the rope where it passes from the end of one pulley to the opposite end of the other.

Referring more particularly to the drawings, 1 is the main or general framework in which the driving-shaft 2 and the driven shaft 3 are mounted. The driving-shaft carries a pulley 4, adapted to receive the belt from an engine or motor. The driven shaft carries a belt-pulley 5, from which desired machinery may be driven. On the shaft 2 is mounted the expansible pulley 6, comprising two beads or disks 7 and 8, keyed to the shaft, but longitudinally movable thereon, and carrying sets of projecting strips or blades 9 and 10, respectively. Said strips or blades are formed with series of lugs 11, between which are series of V-shaped grooves 12. The shaft 3 carries an expansible pulley 13, similarly constructed as pulley 6 of heads 14 and 15, and sets of strips or blades 16 and 17, having lugs 18 and V-shaped grooves 19.

The heads or disks 7 and 14 and 8 and 15 are connected by cross-bars 20 and 21, respectively, said cross-bars fitting between pairs of flanges 22 23 on each head or disk. The cross-bars are connected by the revolvable rod 24, carrying a hand-wheel 25 and provided with right and left hand threads adapted to respectively engage threaded

apertures in brackets 26 and 27, fastened to the cross-bars 20 and 21, respectively.

The continuous rope 28, which is mounted on the pulleys, as previously described, passes over two guide-wheels 29 and 30, where it extends between the end of one pulley to the opposite end of the other pulley. Between said wheels 29 and 30 is arranged the adjustable wheel 31, which is preferably mounted on a screw 32, carrying a hand-wheel 33.

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

1. In a device of the character described, an expansible pulley comprising two oppositely-slidable sections, each comprising a head or disk carrying a series of radially-arranged strips having a series of V-shaped grooves, the strips on one disk intermeshing with those on the other disk, and means to move said sections toward and away from each other.

2. In a device of the character described, the combination with a driving, and a driven shaft, of an expansible pulley mounted on each of said shafts, each pulley comprising two oppositely-slidable sections, each section consisting of a head or disk carrying a series of radially-arranged strips having series of V-shaped grooves, the strips on one disk of each pair intermeshing with those on the other disk of the same pair, flexible connection between said pulleys and means to contract and expand said pulleys.

3. In a device of the character described, the combination with a driving, and a driven shaft, of an expansible pulley mounted on each of said shafts, each pulley comprising two oppositely-slidable sections, each section consisting of a head or disk carrying a series of radially-arranged strips having a series of V-shaped grooves, the strips on one disk of each pair intermeshing with those on the other disk of the same pair, flexible connection between said pulleys, said flexible connection passing back and forth between said pulleys and engaging alternate grooves therein, and means to contract or expand said pulleys simultaneously.

4. In a device of the character described, the combination with a driving, and a driven shaft, of an expansible pulley mounted on each of said shafts, each pulley comprising two oppositely-slidable sections, each section

consisting of a head or disk carrying a series of radially-arranged strips having series of V-shaped grooves, the strips on one disk of each pair intermeshing with those on the other disk of the same pair, a continuous flexible connection between said pulleys engaging alternate grooves therein, means to tighten said flexible connection on said pulleys, and means to contract or expand said pulleys simultaneously.

5. In a device of the character described, the combination with a driving, and a driven shaft, of an expansible pulley mounted on each of said shafts, each pulley comprising two oppositely-slidable sections, each section consisting of a head or disk carrying a series of radially-arranged strips having series of V-shaped grooves, the strips on one disk of each pair intermeshing with those on the other disk of the same pair, a continuous flexible connection between said pulleys engaging alternate grooves therein, cross-bars connecting the corresponding ends of the pulley-sections, a bracket on each of said cross-bars, a revoluble rod having right and left hand threads engaging apertures in said brackets and means to turn said rod.

6. In a device of the character described, the combination with a driving, and a driven shaft, of an expansible pulley mounted on each of said shafts, each pulley comprising two oppositely-slidable sections, each section consisting of a head or disk carrying a series of radially-arranged strips having series of V-shaped grooves, the strips on one disk of each pair intermeshing with those on the other disk of the same pair, a continuous flexible connection between said pulleys engaging alternate grooves therein, a pair of grooved wheels, an adjustable grooved wheel arranged between said pair of grooved wheels, said flexible connection passing from one end of one pulley between said pair of wheels and said adjustable wheel, and thence to the opposite end of the other pulley, and means to contract or expand said pulleys simultaneously.

In testimony whereof I affix my signature in presence of two witnesses.

FRANK M. CHAPMAN.

Witnesses:

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