

No. 744,293.

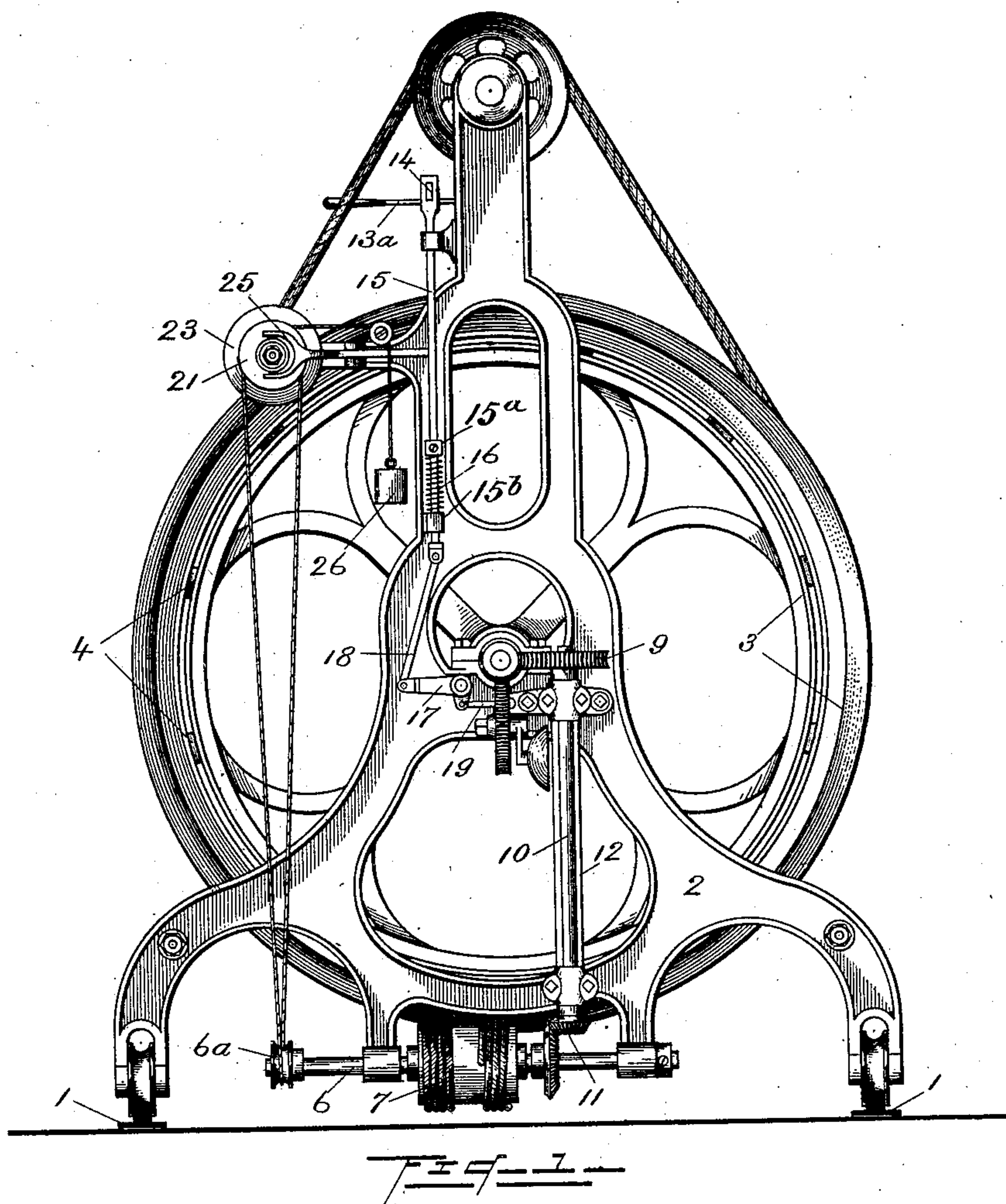
PATENTED NOV. 17, 1903.

R. J. CHOWEN & W. HARTLY.
WARPING REEL.

APPLICATION FILED JUNE 27, 1902.

NO MODEL.

3 SHEETS—SHEET 1.



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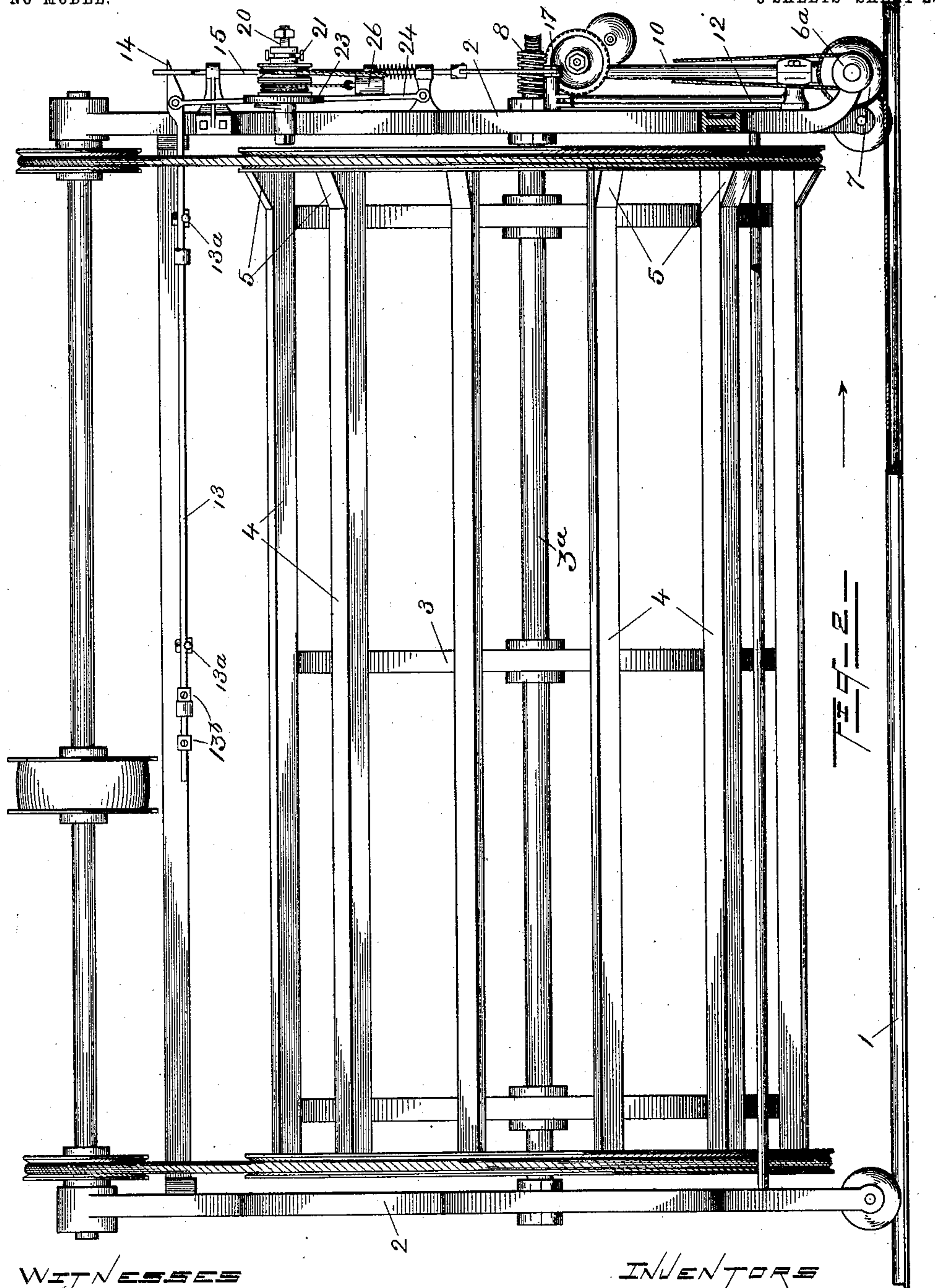
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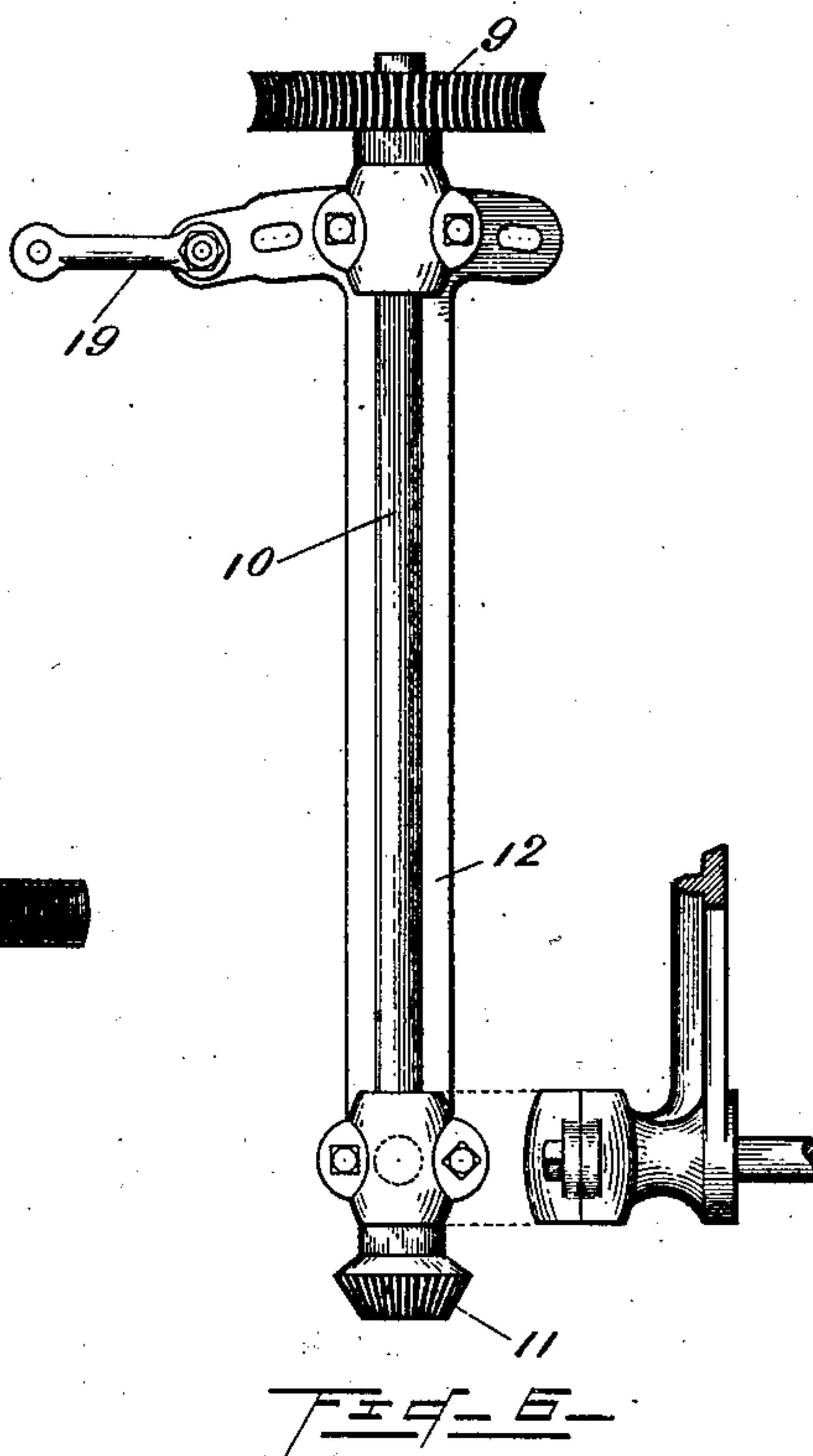
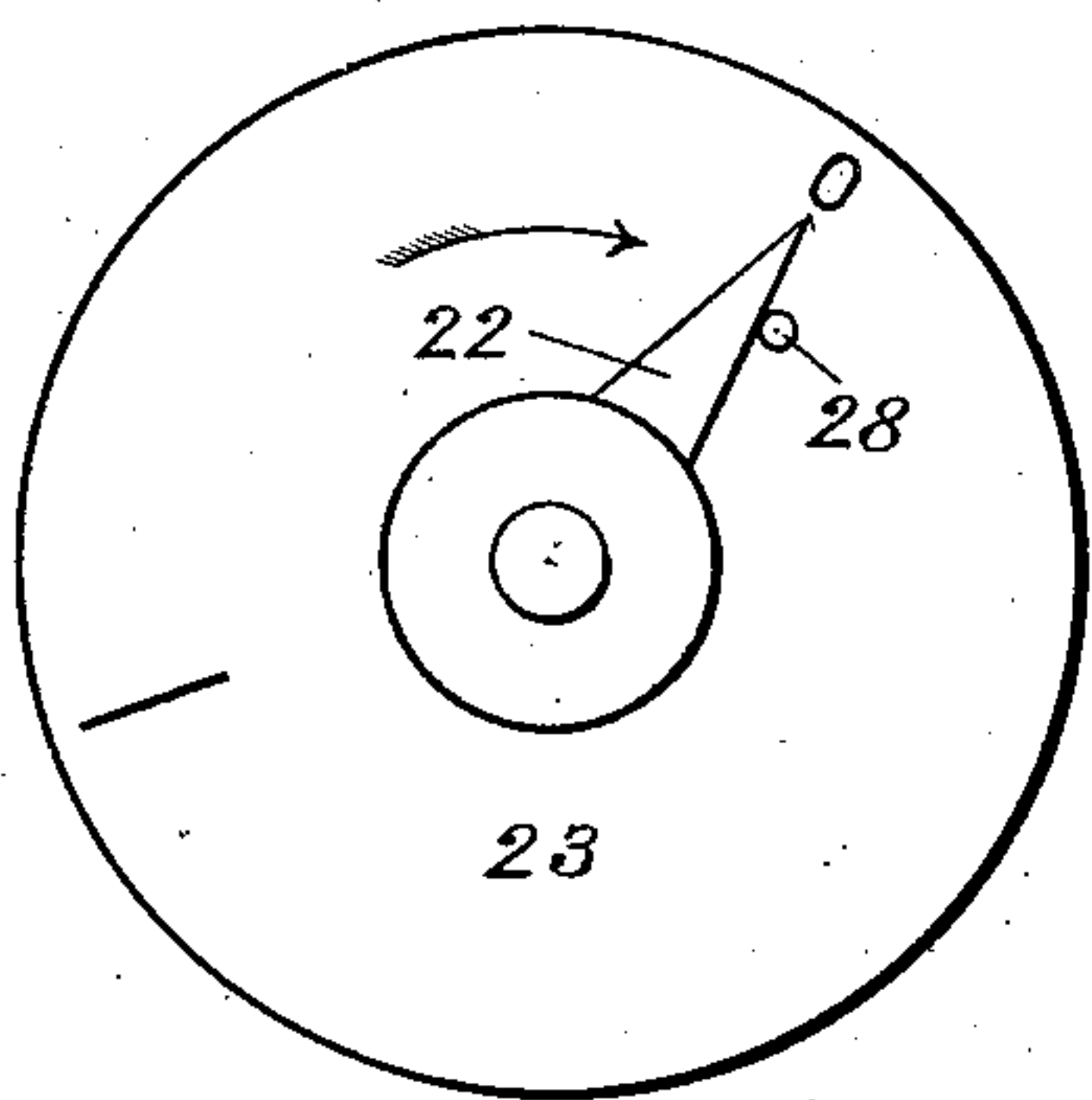
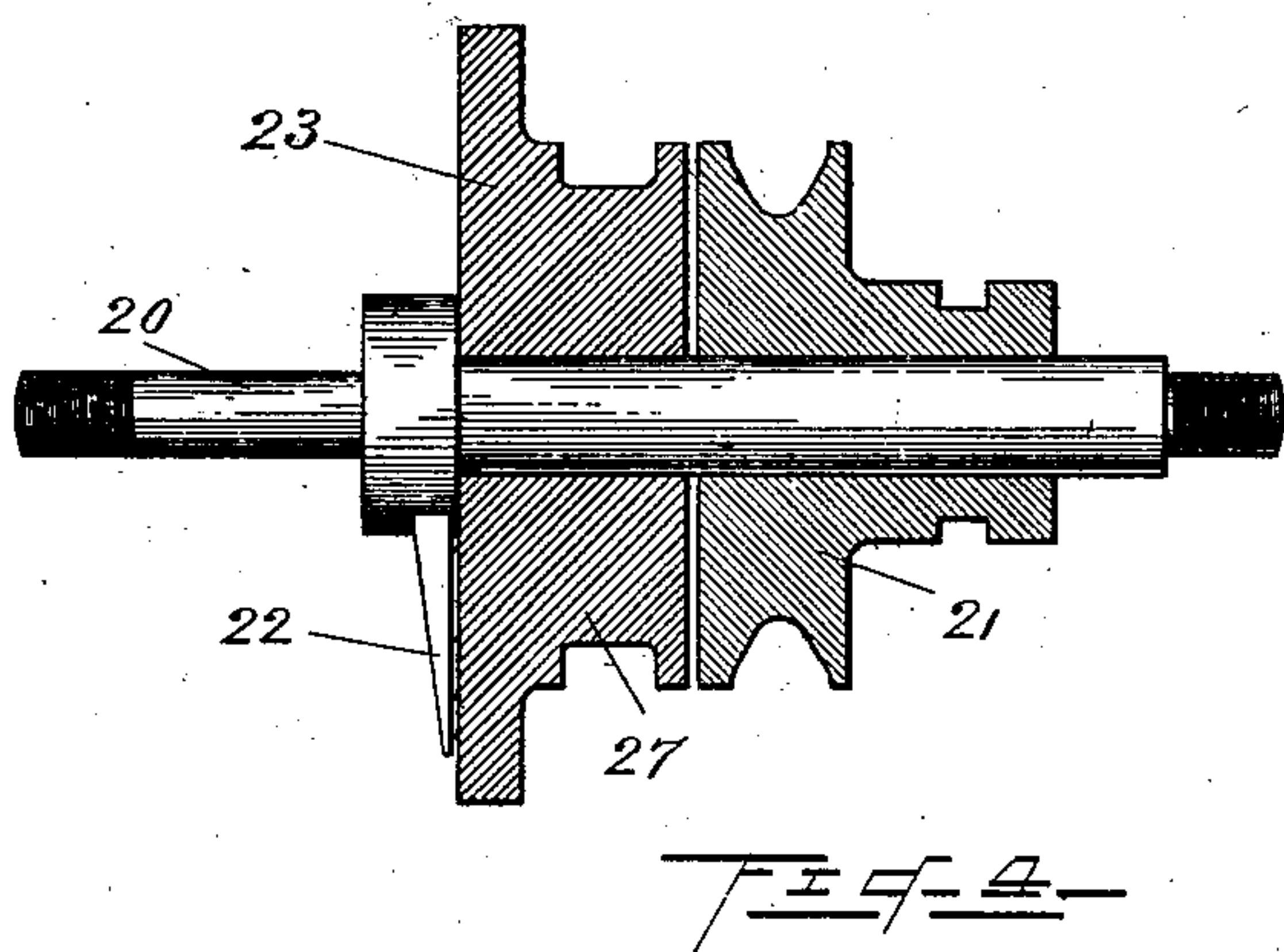
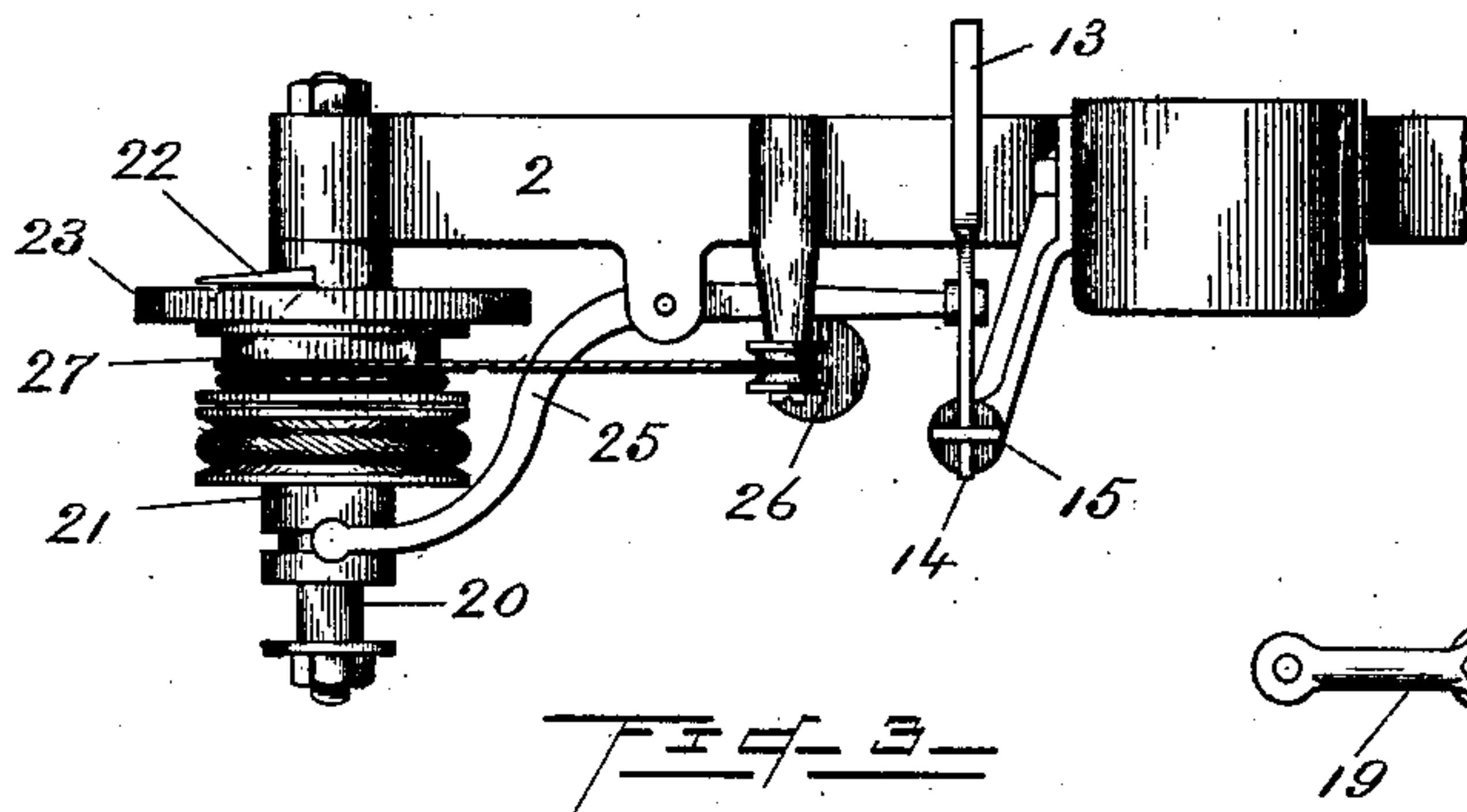
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3 SHEETS—SHEET 3.



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UNITED STATES PATENT OFFICE.

RICHARD J. CHOWEN AND WILLIAM HARTLY, OF PETERBOROUGH,
CANADA.

WARPING-REEL.

SPECIFICATION forming part of Letters Patent No. 744,293, dated November 17, 1903.

Application filed June 27, 1902. Serial No. 113,395. (No model.)

To all whom it may concern:

Be it known that we, RICHARD J. CHOWEN and WILLIAM HARTLY, both of the town of Peterborough, Province of Ontario, Canada, have invented certain new and useful Improvements in Warping-Reels; and we do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, which form part of this specification.

The present invention relates to that class of warping-reel or section-builder for woolen or worsted dressing machines in which the section-pins are entirely dispensed with and the more modern practice of section-building employed, whereby the deposits of yarn or fibrous material are formed in regular layers one upon the other into substantially truncated cones and in such a manner that one of such sections—namely, the first—becomes a form or guide for the building or laying of the subsequent sections in a regular series of like cone-shaped deposits on the reel in the rotation thereof until the desired number of ends constituting the warp are obtained, when the same is ready to transfer, as in the usual operation of beaming.

The invention consists of an improved mechanism for automatically operating the machine longitudinally synchronously with the rotation of the warp-reel, whereby the ribbon-like form of fibrous material is fed to the reel with a gradual and uniform lead toward that end of the reel upon which the section-building is commenced and consisting, essentially, of a transverse shaft supported in the lower portion of the frame and carrying a drum encircled by a cable the ends of which extend in opposite directions longitudinally of the machine and are anchored to the floor or platform for the purpose hereinafter described, and also means for operating said shaft conjointly with the rotation of said reel.

The invention consists also of an improved form of indicator for automatically registering the width of each section, whereby as the machine is moved step by step the required distance to form each truncated cone of yarn or fibrous material upon the cross-arms of the reel in overlapping layers one upon another the subsequent section when completed will

conform with the previously-formed cones in such a manner as to present an even and unbroken surface on the periphery of the body built or laid up in the manner described. Furthermore, the width of section can be varied to any desired width to suit all classes of material and the spacing maintained uniformly throughout.

The object of the invention is to provide an efficient, durable, and readily-operated warping-reel comparatively simple in construction and positive in operation and one in which the objectionable features and disadvantages under which the operator worked heretofore are amply provided against, effecting a saving of time and giving a superior resultant material in such a condition as to give a uniform quality of warp.

To such ends the invention consists in the construction and combination of parts hereinafter particularly described and claimed, reference being had to the accompanying drawings which form part thereof, in which similar figures of reference refer to like parts throughout.

For convenience the drawings illustrating the invention show in this instance a well-known type of warping-reel adapted for the reception of our improvements. For that purpose the additional brackets and bearings necessary are formed as integral parts of the frame. The invention is applicable to a large majority of the different types of warping-reels in use at the present time, either to be applied as an additional attachment to existing machines or as a combination in the manufacture of new machines.

Figure 1 is an end elevation of the warping-reel, showing the improved operating mechanism attached thereto. Fig. 2 is a side elevation, with part of the frame cut away, of the warping-reel, in which is clearly shown the mechanism for controlling the operation of section building. Fig. 3 is a top plan view of a portion of the right end frame of Fig. 2, showing the indicator and the mechanism for operating the same. Fig. 4 is a longitudinal sectional view in detail of the indicator. Fig. 5 is a view in detail of the indicator, showing the index-finger and indicating-disk. Fig. 6 is a detail view in elevation of the vertical

spindle supported in the movable frame carrying the bearings, and Fig. 7 is a side elevation of a portion of one of the cross-arms of the warp-reel with the section-builder attached thereto and showing a longitudinal section through the yarn or thread wound thereon.

The rails 1 and the longitudinally-traveling frame 2, supporting the reel 3, are well-known features of this class of invention, the latter being indispensable. The means employed to rotate the reel are unimportant other than in providing the proper rotary motion which through intermediate means operates the reel longitudinally synchronously with the rotation thereof.

Attached to the cross-arms 4 of the reels 3 and preferably at the right-hand extremity are the coning attachments or section-builders 5, an essential part of this method of section building. The inclined faces form a guide for the formation of the first section of thread or yarn in the reeling operation, so that this first cone-like deposit of yarn or fibrous material becomes a form or guide for the laying up successively of a regular series of such cone-like deposits.

Supported in bearings located in the lower portion of one of the end frames is the transverse shaft 6, carrying fixedly thereon the cable-drum 7, the rotating of which operates the machine longitudinally by the winding and unwinding conjointly of a cable which encircles the drum 7. The ends of the cable extend in opposite directions longitudinally of the machine and are anchored to the floor, and sufficient free cable is contained in a number of windings thereof upon the drum for the operation of the machine. The cable may be in one piece or of two of equal length, as desired. In the latter case the two additional ends are made secure to the drum in place of the center portion of a single cable.

Carried fixedly on the extension of the reel-shaft 3^a is the worm 8, meshing with the worm-wheel 9, carried fixedly on the vertical spindle 10 and communicating the rotary motion imparted thereby to the drum-shaft 6 through the bevel-gears 11.

To move the machine longitudinally upon the rails 1 when the reel 3 is at rest necessitates the disengaging of some portion of the train of mechanism operating the drum-shaft 6, and for simplicity of construction it is found preferable to provide means for throwing in and out of mesh the worm and worm-wheel 8 and 9, respectively. For this purpose the frame 12, containing the bearings for the vertical spindle 10, is pivoted at its lower extremity to the end frame and secured at the upper end in a manner to allow of its vibrating transversely, for the purpose hereinbefore described.

To control the operation of the machine longitudinally and provide a ready means for throwing the operating mechanism in and out of action there is a sliding rod 13, car-

ried in suitable supports and actuated by one or more levers 13^a, located in a position convenient for the operator. On the extension of the rod 13 is a cam 14, protruding through an elongated slot in the tappet-rod 15 and adapted to slide therein and gaged by the stop-collars 13^b on the rod 13. The inclined face of said cam forces the tappet-rod, with the adjustable collar 15^a, downwardly against the spring 16, which rests on the bracket 15^b, and forces the tappet-rod upwardly when released from the downward pressure of said cam. The object of this spring in place of a positive motion for throwing the worm and worm-wheel in mesh is to allow the worm to revolve until the teeth coincide. To convert the vertical motion of the tappet-rod 15 to a suitable transverse motion for vibrating the frame 12, carrying the vertical spindle 10, there is a bell-crank 17, connected to the aforesaid rod and frame by connecting-rods 18 and 19.

The indicator and its accessories constitute the parts which have more immediately to do with the adjustment of the reel for building similar warp-sections of any desired width. It is carried on a stud 20, supported by an arm projecting from the frame of the machine and actuated, preferably, by a friction-clutch 21, connected by a belt with the pulley 6^a on the drum-shaft 6. The essential features of the indicator are the index-finger 22 and rotary indicating-disk 23. Upon the latter is registered the width of section after having been determined in the usual manner. For this purpose the disk 23 may be graduated, or, better, a temporary mark, as shown in Fig. 5, may be used. The operation of the indicator is controlled by the same levers 13^a that control the operation of the drum-shaft 6, and for which purpose a lever 24, fulcrumed to the frame and pivotally connected to the sliding rod 13, is employed to operate the clutch-lever 25. When the section is complete, the yarn is secured in the usual manner and the machine moved longitudinally in the direction of arrow by hand, a distance equal to that traveled in laying said section plus the width of a new section. The depth and inclination of the cone-like deposit determines the distance traveled in laying each section, and the nature and quality of the yarn or fibrous material controls the width of each section. The resetting of the machine for the laying of the next section is made possible by the liberating of the drum-shaft 6, in the manner already described, and throwing in operation the indicator. After the machine is thus reset, the drum-shaft is again thrown in operation, simultaneously disengaging the friction-clutch 21 and liberating the indicating-disk, so that it may return to zero. The returning of the disk to zero is preferably performed by gravity, and for which purpose there is a weight 26, suspended by a cord which encircles a drum 27, an integral part of the disk 23. To check the rotation of the disk in the direction

actuated by gravity and so that it will come to rest at zero, there is a stop-pin 28, as shown. In this latter position it is ready for the setting of another warp-section.

5 The mechanism for operating the indicator is unimportant, any well-known means may be employed to rotate the actuating-clutch 21. For simplicity of construction the belt, as shown, is preferable, and when used in
10 combination with the mechanism hereinbefore described it is found convenient to operate the indicator from the drum-shaft 6—that is, indirectly from the floor or platform. Nevertheless by substituting a pair of idlers
15 for the driving-pulley 6^a on the drum-shaft and a divided belt in place of the endless belt running over the idlers and the ends extended in opposite directions parallel of the machine and secured to the floor or platform in a man-
20 ner similar to the cable on the drum 7 it will then be operated independently of the drum-shaft and directly from the floor or platform and work with equal efficiency.

Having described our invention, what we
25 claim as new, and desire to secure by Letters Patent, is—

1. A longitudinally-movable frame, a rotatable warping-reel mounted therein and provided with coning attachments, a rotary indi-
30 cator mounted on said frame and provided with an actuating-clutch, means for rotating said clutch synchronously with the longitudinally-traveling frame, and means for engaging and disengaging said clutch, for the
35 purpose hereinbefore set forth.

2. A longitudinally-movable frame, a rotatable warping-reel mounted therein and provided with coning attachments, an index-
40 finger and rotary indicating-disk mounted on said frame, an actuating-clutch rotating synchronously with the longitudinally-traveling frame and adapted to engage said indicating-disk, and means for automatically re-
45 leased by said clutch, for the purpose hereinbefore set forth.

3. A longitudinally-movable frame, a rotatable warping-reel mounted therein and provided with coning attachments, an index-
50 finger and rotary indicating-disk mounted on said frame, an actuating-clutch adapted

to engage said indicating-disk whereby it will register the width of section, a device for automatically returning said indicating-disk to zero, and means for rotating said clutch syn- 55
chronously with the longitudinally-traveling frame, for the purpose hereinbefore set forth.

4. A longitudinally-movable frame, a rotatable warping-reel mounted therein and provided with coning attachments, an actuating- 60
drum and drum-shaft carried by said frame, a cable encircling said drum and extending longitudinally of said frame, and anchored to the floor or platform upon which the machine stands, and means for rotating said 65
drum-shaft synchronously with the rotating of said reel, for the purpose hereinbefore set forth.

5. A longitudinally-movable frame, a rotatable warping-reel mounted therein and provided with coning attachments, a transverse 70
shaft carried by said frame and provided with a cable-drum, one or more cables anchored to the floor or platform upon which the machine stands and encircling said drum, a ver- 75
tical spindle carried by said frame and means on spindle for rotating said shaft synchronously with the rotating of said reel, for the purpose hereinbefore set forth.

6. A longitudinally-movable frame, a rotatable warping-reel mounted therein and provided with coning attachments and the shaft 80
of said reel having a worm thereon, a vertical spindle carried by said frame and mounted to vibrate transversely thereon and provided with a worm-wheel adapted to mesh 85
with said worm, a transverse shaft carried by said frame and provided with a cable-drum, said shaft communicatively connected to said spindle by gears fast thereon, one or more 90
cables encircling said drum and anchored to the floor or platform upon which the machine stands, and a mechanism for engaging and disengaging said worm and worm-wheel, for the purpose hereinbefore set forth. 95

Signed at Peterborough this 16th day of November, 1901.

RICHARD J. CHOWEN.
WILLIAM HARTLY.

Witnesses:

JOHN BAIN,
T. E. KENDREY.