

(No Model.)

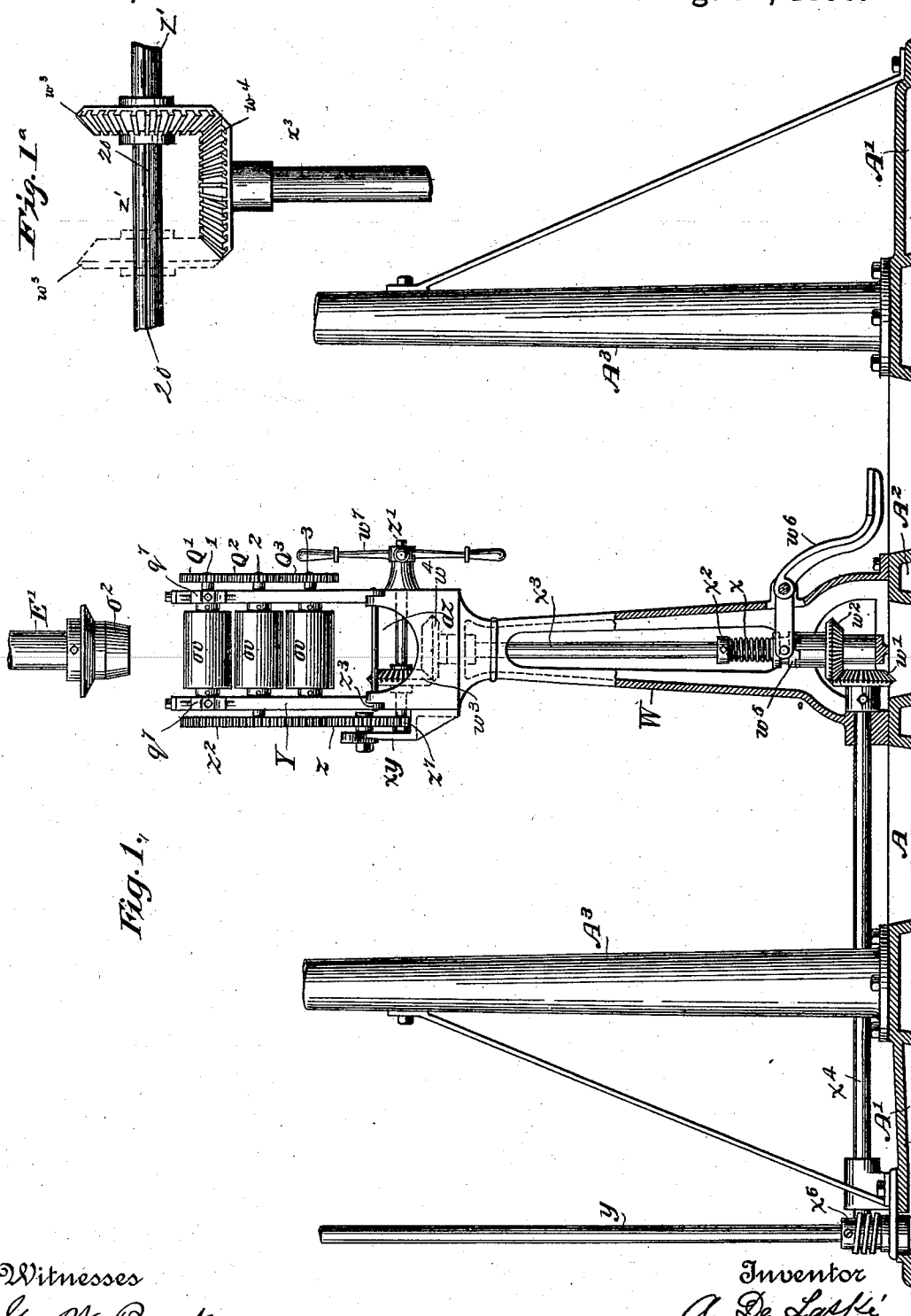
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TAKE-UP MECHANISM FOR CIRCULAR LOOMS.

No. 503,863.

Patented Aug. 22, 1893.



Witnesses
Geo. W. Breck
Henry W. Lloyd

Inventor
A. De Laski
By his Attorney
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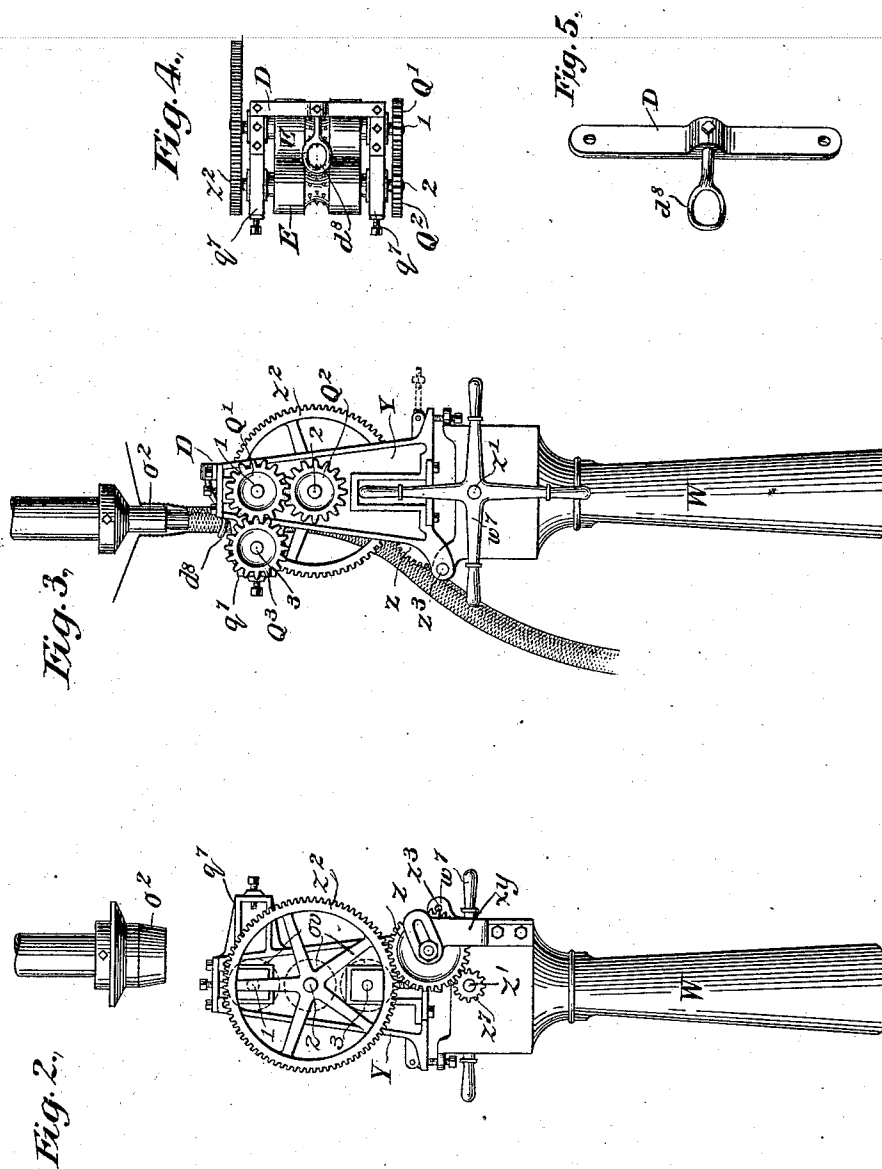
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UNITED STATES PATENT OFFICE.

ALBERT DE LASKI, OF CLEVELAND, OHIO.

TAKE-UP MECHANISM FOR CIRCULAR LOOMS.

SPECIFICATION forming part of Letters Patent No. 503,863, dated August 22, 1893.

Application filed April 10, 1891. Serial No. 388,419. (No model.) Patented in England March 11, 1892, No. 4,817.

To all whom it may concern:

Be it known that I, ALBERT DE LASKI, of Cleveland, in the county of Cuyahoga and State of Ohio, have invented a new and useful Improvement in Take-Up Mechanism for Circular Looms, (for which I have obtained a patent in Great Britain, No. 4,817, dated March 11, 1892;) and I do 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.

My invention relates to that part of circular looms which involves the means, or mechanism, employed for drawing off, or taking away, from the weaving pin, the tubular woven fabric (whether taken off by itself, or in connection with some sort of tubular lining, or solid core), and usually designated the "take-off" mechanism.

Previous to my invention, mechanisms for this purpose have been devised and used, an instance of one of which is to be seen in Letters Patent granted to me December 20, 1887, No. 375,135, and the take-off mechanism which constitutes the subject of this application might be used in connection with a loom, such, for instance, as shown in my said patent; although I have practically employed it in connection with an improved circular loom, novel features of which I have made the subjects matter of two other applications for Letters Patent, filed simultaneously with this one, and serially numbered, respectively, No. 388,417 and No. 388,418.

My present invention has for its main objects, to provide for use, in connection with an improved circular loom, of that type, which permits the presence of the operative within the frame-work of the loom and beneath the weaving mechanism, (in order to conveniently run, or manage, the machine) a take-off mechanism that will not interfere materially with the movements of the operative, and one over which he can have convenient and perfect control, so as to stop its automatic action at pleasure and manipulate it by hand, and also one which can be adjusted, by the shifting and addition of certain parts, so as to operate perfectly to take off either a woven tube in a practically flattened condition, or to take off a woven tubular jacket which surrounds, either

a solid cylindrical article, or a rubber tube; in which latter case it is necessary, of course, to take off the jacketed and finished article without mashing it.

To enable those skilled in the art to which my invention relates to make and use a take-off mechanism, containing, either wholly, or partially, the novel structural features made the subject of this application, I will now proceed to more fully describe my invention, referring by letters to the accompanying drawings which make part of this specification and in which I have shown my invention carried out in the precise forms, or details, of construction, under which I have, so far, successfully practiced it; in connection with an improved circular loom of my own invention.

In the drawings, Figure 1, is an elevation, or side view partially in section, of my improved take-off mechanism, and showing only so much of the lower portion of a circular loom as is necessary, in order to properly explain the character of my present invention. Fig. 1^a, is a detail skeleton view, on an enlarged scale, of some of the parts seen at Fig. 1, and illustrates, more particularly, the shifting of one of the gears, on a splined shaft. Fig. 2, is a similar elevation, or side view, of the take-off mechanism, viewed in a direction at right angles to that in which it is seen at Fig. 1, and from the left hand side. Fig. 3, is a side view, or elevation, of the contrivance, showing the side opposite to that seen in Fig. 2, and also showing the shifting, of certain parts, and the elimination and addition of certain parts made in changing the take-off mechanism, to adapt it to the removal, from the weaving pin of the loom, of a jacketed hose, or other article, which has to be drawn away from the loom in a tubular, or unflattened condition. Fig. 4, is a partial top-view, of the mechanism shown, in elevation, at Fig. 3. Fig. 5, is a perspective view of one of the devices, detached.

In the several views the same part will be found always designated by the same letters and numerals of reference.

Suitably secured, to a separate foundation support, or to, the central portion of the metallic base-plate, of the loom-frame, is a hollow metallic post, or column-like stand W, within, and on, which are arranged all the

working, or operative, parts of the take-off mechanism. Within this stand is arranged, in suitable bearings, as shown, the central vertical shaft x^3 , which has mounted on it, to turn loosely, near its lower end, a beveled pinion w^2 , that is in constant engagement with a driving bevel pinion w' , that is made fast on the inner end of a horizontal shaft x^4 , that runs close to the base-plate of the machine, and to the door on which the machine rests, and which is provided, at its outer end, with a worm-gear (not shown) that engages with the worm x^6 , on the lower, end of a vertical shaft y . Said shaft, through the medium of a pair of beveled pinions (not shown), receives the necessary power and motion, (at its upper end) from the main drive-shaft of the loom. This mechanism, or combination of devices, for thus conveying the necessary power, or motion, from the main-shaft of the loom to the beveled pinion w^2 , of the take-off mechanism, is, however, shown merely, as one of the means by which said beveled pinion may be driven, and, is, of course, all immaterial to my invention; since the said beveled pinion, and through it the devices of the take-off mechanism, might be driven by entirely different means, or in some other suitable manner. Immediately above the loose, beveled pinion w^2 , of the take-off mechanism, is splined, on the vertical shaft x^3 , a clutch device w^5 , which by means of a suitable spiral spring x , and the fixed collar x^2 (on the vertical shaft) is, normally, kept in clutch with the clutching face of the hub of the loose gear w^2 , so as to keep the shaft x^3 in motion; but, by the use of a foot-lever w^6 , pivoted in the metallic stand, of the take-off mechanism, and properly connected with the clutch device w^5 , by the usual expedient of pins, projecting inwardly from the upper, yoke-like, end of the lever w^6 , and engaging with the circumferential groove of the said device w^5 (all as clearly shown at Fig. 1) the operative can, at pleasure, unclutch the driving pinion w^2 , from the shaft x^3 , so as to stop all the movements of the take-off devices, proper, and for the purpose of manipulating them by hand power (as will be presently explained), whenever occasion may require. On the upper end of the shaft x^3 , is mounted a beveled wheel w^4 , which runs in engagement with a similar gear w^3 , that is splined onto the horizontal shaft, or spindle, z' ; from which, however, it may be easily removed, at pleasure, in a manner and for a purpose to be hereinafter explained.

The spindle, or arbor, z' , which is mounted in suitable bearing boxes, in the upper portion of the metallic stand, is provided, at one end, (and exteriorly of said metallic stand) with a changeable driving pinion z^7 , and at the other end with a hand-wheel w^7 , and, in engagement with the said pinion z^7 , runs an intermediate, and adjustable spur-pinion z ; the stud, or arbor, of which (see Figs. 1 and 2) is fastened in the upper slotted portion of

the laterally projecting bracket $x'y$, of the metallic stand W , and this intermediate pinion z , engages with a spur-gear z^2 , that is mounted, fast, on one end of the central, or middle, one of the three arbors, or spindles, 1, 2, 3, on which are mounted (as shown at Figs. 1 and 2) the three take-off rolls $o'v$, the peripheries of which run sufficiently close together to take the proper bite on the tubular flattened fabric, to be removed from the weaving pin o^2 , of the loom; the peripheral surfaces of the rolls being usually provided with sets of points, or small sharp teeth (such as seen on the rolls shown at Fig. 4) to render the rolls better capable of taking hold of, and pulling away from the weaving-pin of the loom, the flattened tubular fabric. Each of the three arbors, or spindles, on which these said take-off rolls are mounted is provided with a spur-pinion, and these three pinions, Q' , Q^2 , Q^3 , are geared together, as clearly shown, so that all three of the rolls are driven, with a uniform peripheral speed and in the proper directions, through the medium of the driving-gear z^2 .

The upper portion, or head-frame, so to speak, of the take-off mechanism stand, is made separate from the lower, or supporting portion and hinged thereto, as clearly shown at z^8 so that the said head-frame, or upper box-like portion, of the metallic stand may be vibrated back and forth, to a certain extent, at its upper end, and may be set at, and held in, different positions of adjustment, by means of the hinged, threaded rod, a^9 , and nut a^{10} for purposes to be presently explained.

The upper portion of the hollow metallic stand is purposely made with a sufficient opening, or aperture, $a'z$, to enable the operative to insert his hand, as circumstance may require.

E, E, represent two take-off rolls, each made with a circumferential groove, preferably provided with small radial teeth, or sharp points, which rolls are employed, when the machine is adjusted, or arranged, as shown, at Figs. 3 and 4, to take off a jacketed article, (which has to be taken away from the weaving pin and discharged from the loom in a cylindrical, or unflattened condition,) and D, represents a removable and attachable device, comprising a thin, flat, bar, having a laterally projecting oval-shaped, and warped, or bent, eye d^8 , that is used in connection with these grooved rolls, in a manner and for a purpose to be presently more fully explained.

When the take-off mechanism is to be employed to take away from the weaving-pin o , of the loom, the woven tubular fabric in a flattened condition; the parts used, are all those seen at Figs. 1 and 2, adjusted and operating together as illustrated in said figures, and, in the operation of the mechanism, thus adjusted, the finished and flattened tubular fabric passes down tangentially into contact with and partially around the periphery of the upper one of the three take-off rolls; thence be-

tween the said roll and the upper peripheral portion of the next lower roll, around which latter it makes about a half turn; and thence the material passes between the periphery of the said roll and that of the lowermost one, from whence the flattened fabric is discharged, and is carried off and laid into any suitable receptacle. In the operation of thus taking off the flattened woven fabric, the rotatory shaft x^3 , of course, imparts the necessary continuous movements, through the medium of the pinions w^4 , and w^3 , and the system of spur-gearing shown, to the three take-off rolls; and, to vary the speed of these take-off rolls (to adapt the machine to the taking-off of different sized fabrics, woven at different speeds) the removable, or changeable, pinion z^7 , is removed and a pinion of another size substituted therefor; the spindle of the adjustable pinion z being, of course, shifted in the slot of stand xy to properly engage with the new pinion substituted for z^7 ; all in a manner familiar to the ordinarily skilled mechanic.

As it is sometimes necessary, or expedient, to run the circular loom in different directions, provision is made for reversing the action of the driving pinion w^4 , on the take-off rolls, (which latter must, of course, always revolve in the same direction, to pull the woven fabric away from the weaving-pin of the loom, and properly discharge it.) This provision consists in having the beveled pinion w^3 , removable, as before remarked, from the spindle z^7 , and the latter easily detachable from the metallic stand of the take-off mechanism, so that, in the event of changing the direction of motion of the entire loom mechanism, the operator has simply, while removing the pinion z^7 , to pull, or draw out, the spindle z^7 , and by putting his hand through the aperture az , shift the position of the beveled pinion w^3 , so that it will engage with the pinion w^4 , on the opposite side of the latter, and then replace the spindle z^7 , and reapply its pinion z^7 , when, although the pinion w^4 , may then be rotated in the opposite direction to that in which it previously turned, the spindle z^7 , and all the gears and rolls of the take-off mechanism will rotate in the same direction in which they formerly turned. This shifting of the bevel pinion w^3 , on the splined shaft, or spindle z^7 , is fully illustrated at Fig. 1^a, where I have shown the parts on an enlarged scale, and in which 20 represents the spline, or groove, in the shaft z^7 , and where I have shown the bevel pinion w^3 , shifted to engage with the driving bevel pinion w^4 , at a point diametrically opposite to that at which said pinion w^3 , engages with said gear w^4 , when in the position shown at Fig. 1. The said pinion w^3 , being shown merely in dotted lines, in Fig. 1^a, to better show the shifting manipulation.

When it is desired to shift, or adjust, the parts of the take-off mechanism, to adapt it to the removal from the weaving-pin, of a fin-

ished fabric, or jacketed article, in a cylindrical, or unflattened, condition, all of the rolls, ov , are removed from the machine. The lower one of the three spindles, in the head-frame, is then removed and replaced in suitable journal boxes in the slotted, bracket-like, projections, or lateral ear-pieces q^7 , of the head-frame, in such manner that the spur-gear Q^3 will engage with the pinion Q^7 of the upper spindle 1; and the said upper spindle 1 and the said shifted spindle 3 are then provided with the set of circumferentially grooved take-off rolls E ; all as clearly shown at Figs. 3 and 4 of the drawings. Then by a proper adjustment and securement in place, of the detachable cross-bar, as shown, with its oval-shaped, warped, guide-ring, or eye d^8 , as shown, and a proper adjustment of the hinged head-frame, by means of its adjusting screw-bolt a^9 , and nut a^{10} , see Fig. 3 (so as to bring the space between the two grooved rollers vertically in line beneath the axis of the weaving-pin of the loom) the tubular fabric will be held and guided, as it passes through the eye d^8 ; beneath which it will pass into the bite of the grooved rollers, E , and will be led by them, and drawn away, or pulled down, with a uniform speed, and discharged from the loom in a perfect condition.

The object and effect of the oval-shaped eye d^8 , are to avoid the partial flattening of the cylindrical article (if tubular and compressible), in an opposite direction, which practice and experience have demonstrated it is the tendency of the grooved rollers to effect; and to prevent the injurious effects, on some kinds of finished articles, resulting from any such partial flattening of the finished fabric, or from any pinching of the fabric, at opposite points, between the peripheral surfaces of the take-off rolls, and at the vicinity of the circumferential lines where the grooves run into the plain surfaces of the peripheries.

I have found, by practice and experience, that not only is it necessary to employ some guiding device, such as the eye d^8 , which will distort the cylindrical fabric, if hollow, in the direction indicated, but also that it is very important to have this guiding eye shaped so, as to lie as closely as possible to the peripheral surfaces of the take-off rolls, where the finished article enters the bite of the rolls, and, for this reason, I make the elliptically-shaped guide-eye, curved, or warped, as indicated (see Figs. 3 and 5), in order that it may guide and hold the finished fabric, or article, in the best possible shape to permit the take-off rolls to draw away the article, without any injurious effect on the latter; and I consider this structural feature of the take-off mechanism an important one, where the said mechanism has to be used under the conditions and for the purposes illustrated at Figs. 3 and 4.

It will be observed that, when adjustable in either of its two positions, or when doing either of the two species of work for which it is de-

signed, my improved take-off mechanism, while it is necessarily located in the center of the loom frame, and immediately beneath the weaving-pin, is capable of being operated, 5 through the means shown or some other, in such manner, that the connection between the vertical shaft x^3 , and the source from which power and motion is imparted to said shaft, can be placed close to the floor, and so as not 10 to obstruct the free passage, or walking, of the operative, all around the take-off mechanism, so that he can have perfectly free access to the shuttles and threads, and other devices of the over-head, weaving mechanism. It will also be 15 seen that the operative can, very conveniently, stop and hold in an inoperative condition, the driving mechanism of the take-off, with one foot, while at the same time, he can, by the use of the hand-wheel w^7 , manipulate the take-off 20 rolls (either while the loom is running, or not) for any of the well known purposes for which this operation may be necessary, or convenient.

Of course, many of the precise details of construction, as well as the forms and proportions 25 of the parts, may be varied, without materially changing the novel structural features of the take-off mechanism herein shown and described.

30 Having now so fully explained the construction and operation (under both conditions of adjustment) of my improved device that those skilled in the art can make and use a take-off mechanism involving, either partially or 35 wholly, the novel structural features made the subject of this application, and wishing it to be understood that the separable features may be separately employed with more or less advantage, though I prefer to have 40 them combined in one mechanism, what I

claim as new, and desire to secure by Letters Patent, is—

1. In a take-off mechanism, the combination with a suitable supporting stand; a vertical shaft arranged therein; the horizontal spindle 45 z' geared to said vertical shaft; the take-off rolls; and a system of gears by which the necessary motion is transmitted from spindle z' , to the said take-off rolls, of a hand-wheel applied to said spindle; and a clutch mechanism 50 connecting the lower end of said vertical shaft with a constantly rotating drive-gear and provided with a foot-lever, or treadle; all substantially as and for the purposes set forth.

2. In a take-off mechanism, the combination, 55 with the stand, or column W, provided with a swinging and adjustable head-frame having brackets and bearing boxes, and the removable take-off rolls, of means, for driving said rolls, and a shifting roll-spindle and gear, as 60 specified; whereby the said mechanism may be transposed from one adapted to take off a flattened fabric to one adapted to take off a tubular fabric; all substantially as hereinbefore 65 set forth.

3. In a take-off mechanism adapted to the removal of a finished article in a tubular condition, the combination with a pair of circumferentially grooved take-off rolls, of an elliptically shaped and bent, or warped, guide- 70 ring, for the tubular article, arranged in close proximity to the bite of the said take-off rolls on the article; all substantially as and for the purpose hereinbefore set forth.

In witness whereof I have hereunto set my 75 hand this 6th day of April, 1891.

ALBERT DE LASKI.

In presence of—

J. N. MCINTIRE,

M. E. FOXTEN.