No. 655,461. Patented Aug. 7, 1900.

C. SLINGLAND & G. F. KUETT.

WARPING MACHINE.

(Application filed Dec. 16, 1899.)

(No Model.)

2 Sheets—Sheet 1.

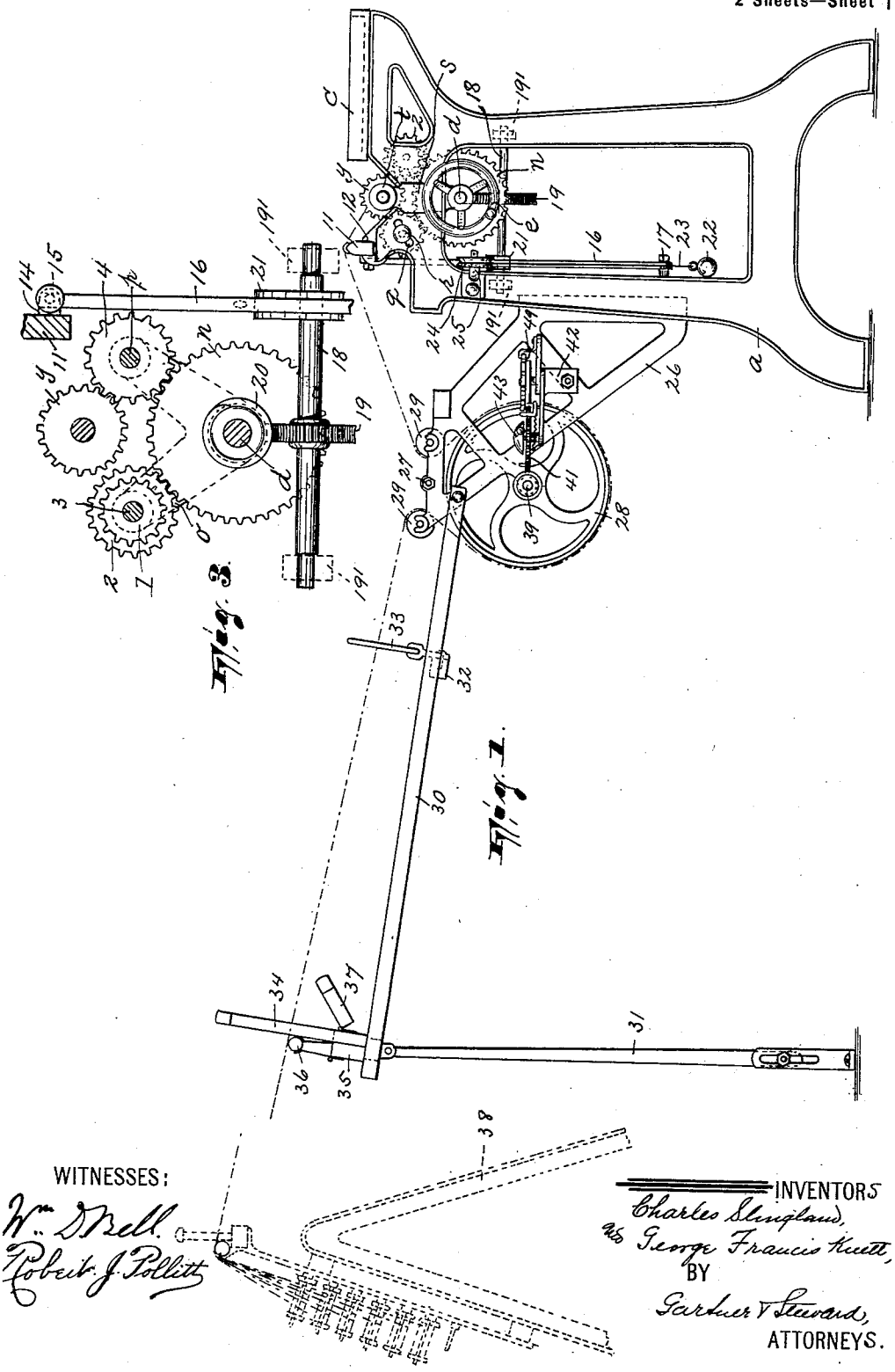

Fig. 3.

Fig. 1.

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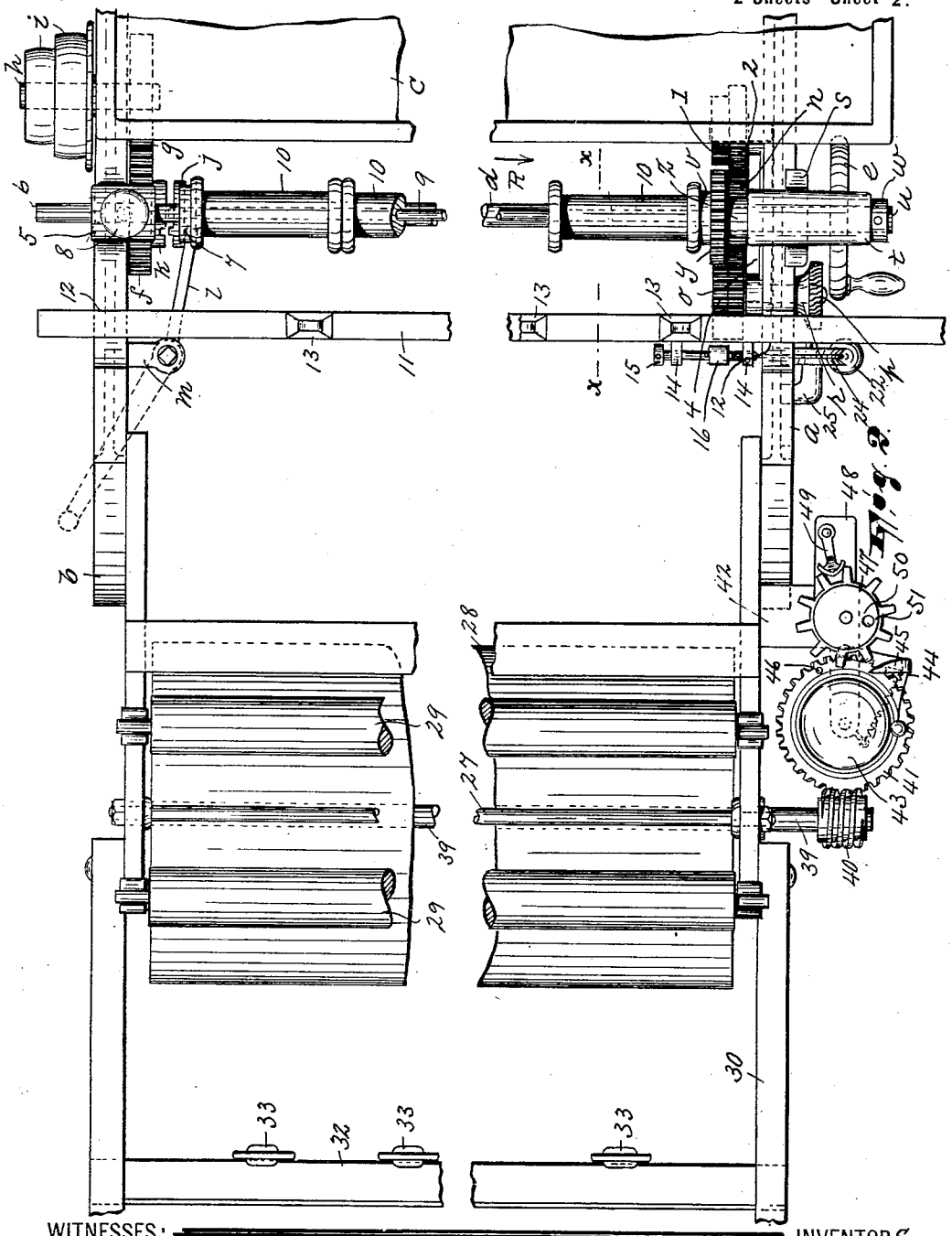

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UNITED STATES PATENT OFFICE.

CHARLES SLINGLAND AND GEORGE F. KUETT, OF PATERSON, NEW JERSEY.

WARPING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 655,461, dated August 7, 1900.

Application filed December 16, 1899. Serial No. 740,510. (No model.)

To all whom it may concern:

Be it known that we, CHARLES SLINGLAND and GEORGE F. KUETT, citizens of the United States, residing in Paterson, in the county of Passaic and State of New Jersey, have invented certain Improvements in Warping-Machines; and we 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, reference being had to the accompanying drawings, and to characters of reference marked thereon, which form a part of this specification.

This invention relates to warping-machines; and it has reference particularly to that class of machines of this nature adapted for winding or filling the bobbins used in some kinds of looms for holding the warp-threads.

The invention consists in the improved warping-machine and in the combination and arrangement of its various parts, substantially as will be hereinafter pointed out, and finally embodied in the claim.

Referring to the accompanying drawings, wherein we have fully illustrated our invention, Figure 1 is a view in side elevation of a warping-machine constructed after the principles of our invention. Fig. 2 is a top plan view of said warping-machine, this view being somewhat enlarged as compared with the showing in Fig. 1; and Fig. 3 is a sectional view on the line $x\,x$ in Fig. 2 and looking in the direction of the arrow R.

In said drawings, a and b indicate the two side frames of the machine structure, said side frames being surmounted by a shelf or stand c for the loose bobbins, and said shelf or stand also constituting a brace for the side frames, which latter may be otherwise braced in any suitable manner. Connecting said side frames and journaled therein is a horizontal shaft d, one end of which outside of the framing of the machine carries a hand-wheel e and the other end of which carries a gear f, which is disposed inside of and close to the side frame b and which is in mesh with another gear g, that is mounted upon a counter-shaft h, carrying pulleys i, which are adapted to receive the belt whereby power is transmitted to the machine. Upon the shaft d is keyed one member j of a clutch, the other member k of which forms a rigid projection of the gear f, which latter is loosely mounted on the shaft d. The movable clutch member j is manipulated by means of a shifting-lever l, which is fulcrumed in a bracket m.

Inside of and close to the side frame a the shaft d carries another gear n, which is rigidly secured thereon. Between the gear n and the side frame a there is loosely mounted on said shaft a V-shaped frame o, the extremity of one arm of which carries a threaded pin p, which projects through an arc-shaped slot q in the side frame and is provided with a milled nut r, which may be screwed up so as to clamp the V-shaped frame against the side frame in either of two positions, as hereinafter specified.

s is a bearing-bracket which projects upwardly from the side frame a and comprises as a portion thereof an integral sleeve t. In said sleeve is journaled a short shaft u, at one end of which there is a face-plate v and the other end of which carries a collar w, whereby said shaft is held against longitudinal movement. The inner end of said shaft also carries a pinion y, said pinion being spaced from the inner end of the sleeve by a loose collar z. A pinion 1 and a pinion 2, rigidly secured together, are journaled upon a stud 3, mounted in the other arm of the frame o, the pinions 1 and y being adapted to mesh and the pinion 2 and the gear n being in constant engagement. Upon the pin p, carried by the frame o, is journaled another pinion 4, which is in constant mesh with the gear n and may be thrown in mesh with the pinion y when the other pinion 1 is out of mesh therewith. By manipulating the nut r the V-shaped frame may be shifted to and maintained in either of two positions, so as to bring either the pinion 1 or the pinion 4 in mesh with the pinion y, as will be obvious, and since the pinions 1 and 4 are of different diameters, as shown, the speed at which the pinion y rotates by virtue of the power initially imparted from the gear n may be altered.

5 designates a sleeve surmounting the side frame b and constituting a bearing for a short shaft 6, the inner end of said shaft carrying a revoluble face-plate 7, and said shaft being adjustably secured in the sleeve by means of a set-screw 8. The face-plate 7 is disposed

in opposition to the face-plate *v*, and they carry a spindle 9, whose ends are set in the usual manner in recesses centrally disposed in said face-plates. Upon the spindle 9 is strung a series of bobbins 10, the same being adapted to revolve with the face-plates in unison and as practically one body when they have all been jammed against and held in contact with each other by virtue of the longitudinal adjustability of the shaft 6 and the means for maintaining it in position when adjusted.

11 is a traverse-rail which is set and guided in recesses 12, provided for its reception in the top of the side frames *a b*. This traverse-rail carries a series of thread-guides 13, preferably formed of porcelain or other similar material and disposed, respectively, in opposition to the several bobbins. From this traverse-rail extend two projections 14, in which is revolubly mounted a threaded pin 15. Said pin has no lengthwise movement.

16 is a lever which is fulcrumed upon a stud 17, projecting from the side frame *a* and which at its upper end is penetrated by the pin 15 and engaged by the threading thereof. By manipulating the pin 15 the point of engagement of the lever therewith may be altered.

18 is a shaft which is journaled in brackets 19′ on the side frame *a* transversely of the shaft *d*, said shaft 18 carrying a worm-wheel 19, whose teeth are in mesh with the threads of a worm 20, that is carried upon the shaft *d*. The shaft 18 also carries a cam 21, against which cam the lever 16 bears, said lever being by this means vibrated in an obvious manner, so as to reciprocate the traverse-rail 11. The lever 16 is held against the periphery of the cam by virtue of a weight 22 at the free end of a strap or cord 23, which passes over a pulley 24, journaled on a stud 25, projecting from the side frame, the other end of said cord being secured to the lever.

26 designates a pair of brackets that project rearwardly from the side frames, being secured thereto and being braced by a rod 27. In said brackets are journaled a beam 28 and also a pair of rollers 29, said rollers being situated in appreciable proximity to each other and also to the beam.

30 designates a frame which is pivotally connected to the brackets 26 at one end and at the other end is sustained by an adjustable leg or legs 31, which rest upon the floor. This frame includes a transverse bar 32, upon which is mounted a series of small reeds 33. Near its outer end said frame is surmounted by a large reed 34, which extends approximately across the width of the frame and upon one side of which is hinged on a support 35 a glass bar 36, while upon the other side thereof is hinged a rod 37, preferably of wood.

At 38 in Fig. 1 we show in dotted lines the creel from which the warp-threads are adapted to be taken.

The shaft 39, which constitutes the journal for the beam 28, carries at one end a worm 40, and in engagement with this worm is a worm-wheel 41, which is supported upon a plate 42, that projects from the bracket 26. Surmounting the worm-wheel is a gong having a spring-actuated hammer 44, which is fulcrumed in the plate and a projection 45 of which is adapted to be engaged by a pin 46 upon the worm-wheel. 47 is a star-wheel that is sustained in a plate 48, that projects from the other plate 42, the teeth of said star-wheel being adapted to be successively engaged by the pin 46, and said star-wheel being adapted to be maintained in any position to which the worm-wheel forces it by means of an elastic clip 49, secured to the plate 48. Surmounting the star-wheel is a disk 50, having an orifice 51, through which indices on the star-wheel may be read. The mechanism just described constitutes a registering device having in connection therewith a bell-ringing attachment, so that the material may be automatically measured as it is wound onto the bobbins.

In arranging the warp preparatory to operating the machine the warp-threads are first passed from the creel to the reed 34, whereupon they are divided up into series, each comprising the desired number of threads and each series being passed through one of the reeds 33. Each set or series of threads is then extended over the nearer roller 29, then around under the beam 28, and back over the other roller 29. It will be noticed that the beam 28 is as compared to the rollers 29 of considerable diameter, and by virtue of this fact and the fact that the rollers are placed in appreciable proximity to said beam and also to each other the threads are not only laid and maintained evenly, but a uniform tension is exerted upon them. After extending over the second roller 29 each set of threads is then passed over a thread-guide 13 on the traverse-rail 11 and from thence to the particular bobbin upon which it is to be wound. When power is applied to the machine at the pulleys *i*, it is transmitted through the gearing *g f* to the shaft *d*, (provided the lever *l* has been manipulated so as to throw the clutch members into engagement with each other,) whereupon the gear *n* will be rotated and the motion imparted therefrom to the pinion *y* either through the pinion 4 or the pinion 1, according to the position in which the V-shaped frame has been previously set. The rotation of the pinion *y* effects the rotation in a body, as hereinbefore described, of the several bobbins. While the bobbins are revolving the cam 21 keeps the lever 16 vibrating, and thus produces a constant reciprocation of the traverse-rail, so that the series of threads extending over the several thread-guides will be laid evenly and uniformly upon the several bobbins as the respective thread-guides move from one end to the other of the bobbins. By manipulating the pin 15 the po-

sition of the traverse-rail, and consequently of the several thread-guides, with relation to the corresponding bobbins may be adjusted, as hereinbefore intimated.

If it is necessary at any time to manually effect the winding or unwinding of the warp, this may be done by first disconnecting the clutch members and then manipulating the hand-wheel *e*.

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

In a warping-machine, the combination, with the frame, of a warp-receiving device or devices journaled therein, a revoluble shaft journaled in said frame transversely to said warp-receiving device or devices, another shaft disposed intermediate said warp-receiving device or devices and said first-named shaft, said shaft being parallel to said warp-receiving device or devices, gearing comprising a series of pinions, a movable frame adjustably fulcrumed on said last-named shaft, some of said pinions being operatively connected to said device or devices and said last-named shaft and the remainder of said pinions being of different diameters, disposed in said movable frame, and respectively adapted to connect the members of the other part of said gearing, a worm-wheel mounted on said first-named shaft, a worm on the other shaft in engagement with said worm-wheel, a traverse-rail disposed parallel to said warp-receiving device or devices, a lever fulcrumed in said frame at one end, and operatively connected to said traverse-rail at the other end, a pulley journaled in said frame, a flexible band extending over said pulley and connected at one end to said lever, a weight on the other end of said lever, and a cam carried on said first-named shaft, said lever engaging the cam, substantially as described.

In testimony that we claim the foregoing we have hereunto set our hands this 30th day of October, 1899.

CHARLES SLINGLAND.
GEORGE F. KUETT.

Witnesses:
JOHN MASTERTON,
JOHN W. STEWARD.