

G. L. WILLIAMS.
LACE WINDER.

APPLICATION FILED SEPT. 18, 1907.

946,628.

Patented Jan. 18, 1910.

2 SHEETS—SHEET 1.

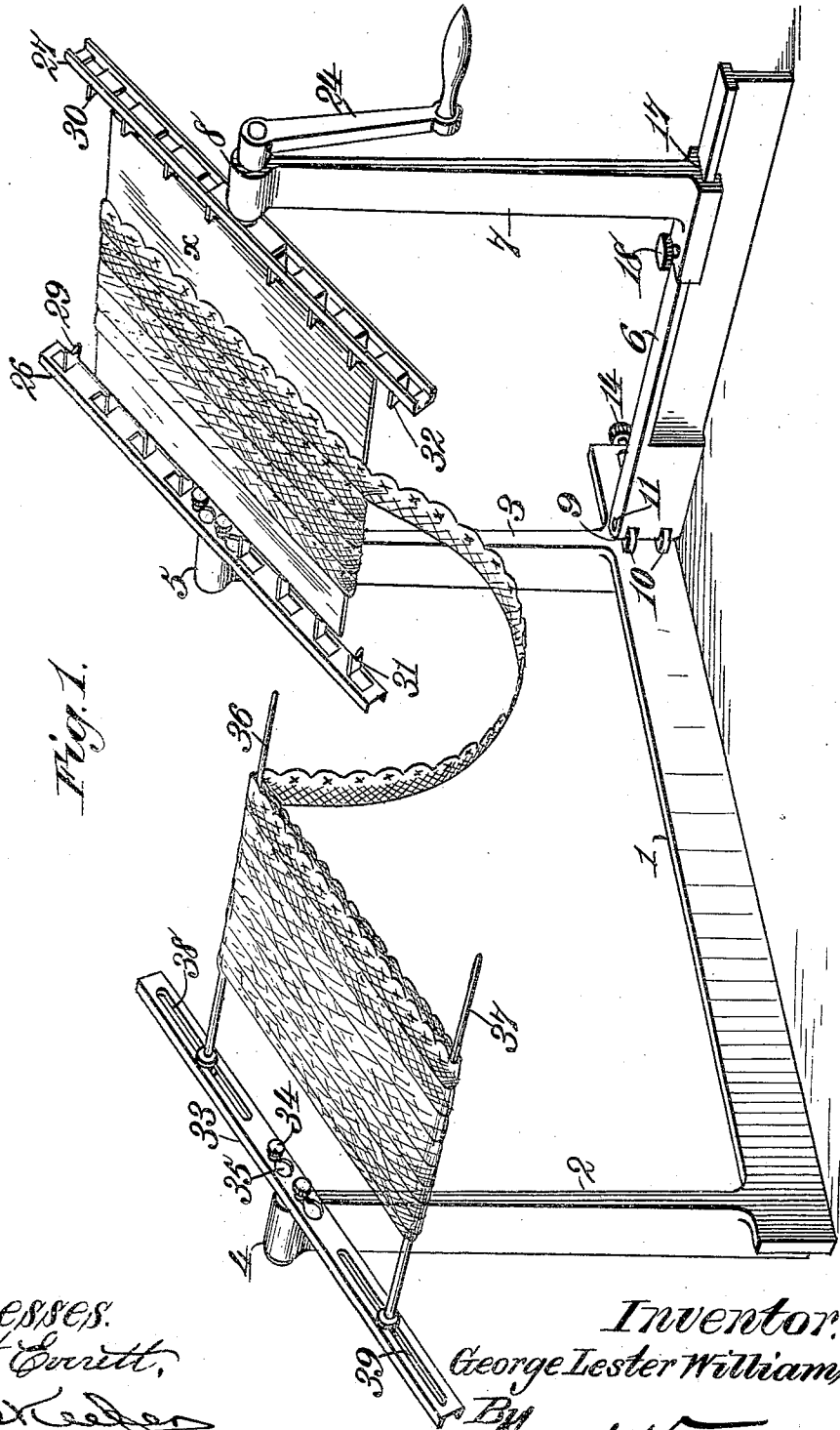


Fig. 1.

Witnesses.
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946,628.

Patented Jan. 18, 1910,
2 SHEETS—SHEET 2.

Fig. 2.

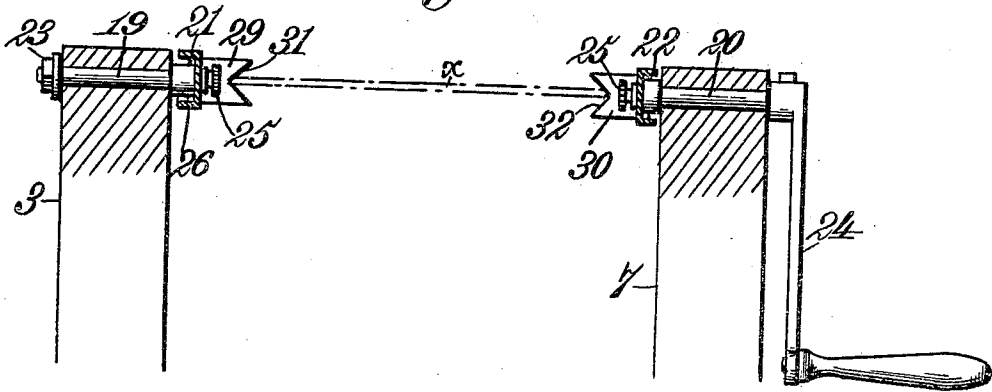


Fig. 3.

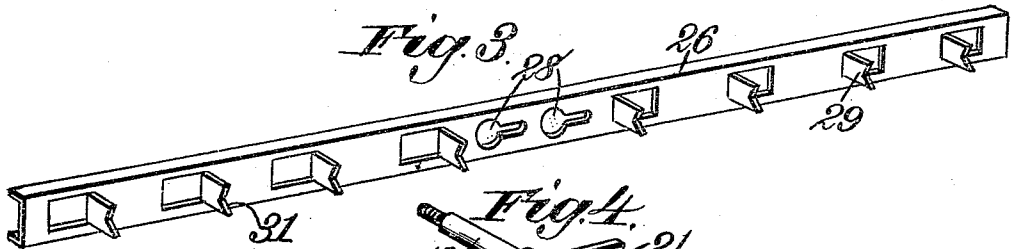


Fig. 4.

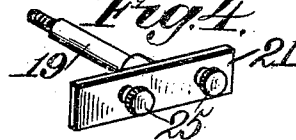


Fig. 5.



Fig. 6.

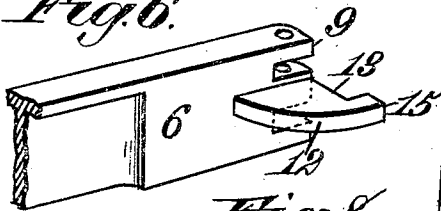


Fig. 7.

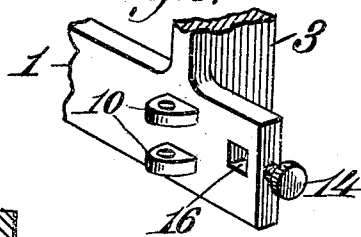
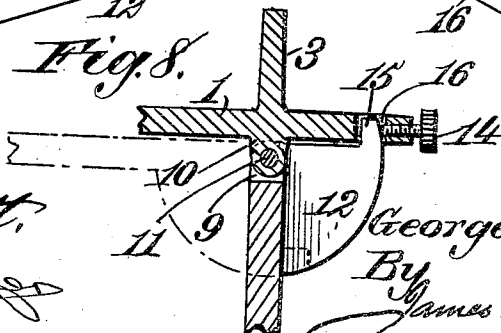


Fig. 8.



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UNITED STATES PATENT OFFICE.

GEORGE LESTER WILLIAMS, OF AMERICUS, GEORGIA.

LACE-WINDER.

946,628.

Specification of Letters Patent.

Patented Jan. 18, 1910.

Application filed September 18, 1907. Serial No. 393,481.

To all whom it may concern:

Be it known that I, GEORGE LESTER WILLIAMS, a citizen of the United States, residing at Americus, in the county of Sumter and State of Georgia, have invented new and useful Improvements in Lace-Winders, of which the following is a specification.

My present invention relates to improvements in devices for winding lace and other textiles from the skeins or hanks upon cards or bolts, and it has for its object primarily to provide an improved winder of this character wherein the card or bolt to receive the lace may be readily inserted and removed, and which during the winding operation is correctly centered and firmly held from slipping or warping out of shape by reason of the tension of the lace, the card engaging devices being so constructed that they are capable of accommodating cards of different lengths and widths.

Another object of the invention is to provide an improved reel that is adjustable to accommodate skeins or hanks of different lengths and which is capable of being readily manipulated to receive the skein and serves to retain the skein in proper condition during its unwinding.

A further object of the invention is to provide a machine of this character wherein the parts are so assembled as to enable them to be readily detached or folded into compact form for shipment or storage, and which in practice will constitute a firm rigid structure.

To these and other ends, the invention consists in certain improvements, and combinations and arrangements of parts, all as will be hereinafter more fully described, the novel features being pointed out particularly in the claims at the end of the specification.

In the accompanying drawings—Figure 1 is a perspective view of a lace winder constructed in accordance with my present invention; Fig. 2 is a detail sectional view of the card or bolt holder; Fig. 3 is a perspective view of one of the card engaging members; Fig. 4 is a perspective view of one of the spindles for the card engaging members; Fig. 5 is a sectional view showing the manner of attaching the arms of the reel to the revolving member thereof; Figs. 6 and

7 are perspective views showing the folding connection and locking device between the main frame and the supplemental arm thereon; and Fig. 8 is a sectional view showing the main frame and its supplemental arm locked in fixed relation in full lines and in folded relation in dotted lines.

Similar parts are designated by the same reference characters in the several views.

The machine shown in the present embodiment of my invention is especially adapted for use in winding lace and similar textiles from the usual skeins or hanks and on to cards or bolts which render the lace or other material suitable for exhibition and sale in stores, and it comprises in the present instance generally a base 1 that may be composed of metal or other suitable material having a pair of uprights 2 and 3 in proximity to its opposite ends, the upper ends of these uprights being provided with suitable bearings 4 and 5, respectively, which have their axes arranged preferably in parallel relation. The supplemental arm 6 of the base serves to support an upright 7 having a cooperating bearing 8 at its upper end which has its axis when in operative position in substantial alinement with the axis of the bearing 5.

In order to facilitate transportation of the machine, it is preferable to so connect the supplemental arm to the main portion of the base as to permit a relative folding thereof and for this purpose the arm and base are provided with cooperating hinge lugs 9 and 10 which are connected by a pivot pin or pintle 11, the hinge thus provided serving as a connection between the arm and the base that will permit the parts to be folded into closed relation. In practice, however, the supplemental arm should occupy a position substantially at right angles to the main base, and for this reason it is provided with a segmental stop 12 having a surface 13 adapted to abut against the flat surface of the base and thereby position the supplemental arm at right angles thereto when the arm is moved into operative position and the parts are locked in proper relation by means of a set screw 14 which extends into the end of the base 1 and is adapted to cooperate with a locking projection 15 formed on the

segmental stop, this locking projection being arranged to register with and enter an opening 16 formed in the base.

It is preferable to so construct the card holder as to enable it to accommodate cards of different widths, and for this reason the upright 7 is mounted to slide longitudinally of the supplemental arm of the base, and for this purpose the arm is suitably formed to constitute a guide, the arm shown in the present instance being of substantially a T-form adapted to cooperate with a corresponding channel slide 17 formed on the lower end of the upright 7, a set screw or equivalent device 18 serving to positively clamp the upright in the desired adjusted position.

The holder for centering and revolving the card or bolt during the winding of the lace, is supported by the uprights 3 and 7, the latter being provided with a pair of spindles 19 and 20 journaled in the bearings 5 and 8, respectively, and provided at their inner ends with the driving plates 21 and 22, the outer end of the spindle 19 being provided with a nut or screw 23 to retain it within the bearing, and the corresponding end of the spindle 20 is adapted to receive an operating crank 24. The card engaging members are operatively connected to the respective spindles, and it is preferable to detachably connect them thereto in order that one pair of members may be removed to enable another pair to be substituted, or they may be removed for shipping purposes, and while any suitable form of detachable connection may be employed, it is preferable to employ the form shown embodying a pair of screws or studs 25 arranged at the inner side of each plate and having enlarged heads. The card engaging members 26 and 27 are also provided at points approximately midway of their length with pairs of key-hole slots 28, the enlarged heads being first introduced through the enlarged openings of the slots and then the reduced portions of the screws or studs are inserted into the correspondingly reduced portions of the slots, the latter being sufficiently small to produce a binding action that will prevent accidental unlocking of the members.

The card engaging members may be of any suitable form, but it is preferable to construct them of metal strips of substantially channel form, the flanges serving to stiffen the members sufficiently to permit the requisite clamping action on the cards. The key-hole slots which cooperate with the screws or studs of the spindles are formed in the web portions of the members, the webs lying in the plane of rotation of the holder, and the cards are centered and clamped between the members by means of sets of jaws 29 and 30 which extend inwardly from the respective members, those shown in the pres-

ent instance being struck up from the material composing the webs of the members, and they are provided with convergent card engaging surfaces 31 and 32 which extend in directions transverse to the length of the respective members, the card engaging surfaces of all of the jaws of each set being in alinement.

The card or bolt *x* on which the lace or other material is to be wound, is engaged between the jaws of the members by sliding the upright 7 longitudinally of its supporting arm 6, the locking device 18 being then tightened to retain the card under the proper pressure, and as the jaws engage the longitudinal edges of the card at a plurality of points, buckling or warping of the card is thereby prevented, and in order to prevent slipping of the card by reason of the tension of the lace during the winding operation, the card engaging surface of the jaws present sharp edges which are capable of obtaining a firm hold on the card.

The skeins of lace or other material to be carded are preferably supported on a reel which is mounted in convenient position relatively to the winder, the reel shown in the present instance embodying a revoluble member 33 which is preferably constructed of a strip of channel form, and it is also detachably connected to a supporting spindle which is a substantial duplicate of that shown in Fig. 4, the spindle being provided with a driving or coupling plate having headed screws or studs 34 which are adapted to cooperate with key-hole slots 35 formed in the web of the revoluble member, such a construction permitting the member to be readily uncoupled and removed for shipping and other purposes.

The skeins or hanks usually vary in length, and for this reason the revoluble element is provided with a pair of arms 36 and 37 having their ends resting in longitudinal slots 38 and 39 formed in the web of the revoluble member in order that they may be adjusted relatively to one another to correspond with the lengths of the skeins, a thumb screw 40 serving to retain each arm in adjusted position. These arms receive the skeins at their outer ends, the latter being preferably resilient or capable of springing inwardly or toward one another in order to facilitate application of the skein, and when released they spring apart and thereby secure the skein under the proper tension. This result may be accomplished by so proportioning the strength or rigidity of the revoluble member 33 carrying the arm, or by forming the arms themselves of resilient material.

In practice, the skein of lace or other material is applied to the supporting arms of the reel, as previously described, and the end thereof is attached to the card or bolt

which is engaged by the gripping jaws arranged on the inner sides of the parallel revoluble members 26 and 27, and rotation of the card is effected by means of the crank 5 24 which may be turned by one hand of the operator while the other hand is employed to guide the lace and apply the requisite tension thereto as it is applied to the card. The card after filling may be readily removed by unlocking the screw 18 and withdrawing the upright 7 which serves to separate the gripping jaws of the respective members, and another card may be substituted in the same way.

15 In operating on cards of uniform length, it is unnecessary to adjust the card engaging members relatively to one another in applying and removing the cards relatively thereto, as the application and removal of the 20 cards may be effected in that case by bending the card, which action will proximate the jaw engaging edges of the card and thereby permit them to engage or disengage the jaws.

In shipping the machine, it is preferable to 25 detach the revoluble arms of the card holder or winder and of the reel, and to unlock the supplemental arm 6 of the base by releasing the locking screw 14 and then collapsing it into folded relation to the main portion of 30 the base, and the upright 7 may also be withdrawn from the end of the hinge arm so that all of the parts of the machine may occupy a relatively small space, and they are not liable to become damaged.

35 A winding or carding machine constructed in accordance with the present invention is capable of positioning and holding the cards in a manner that will prevent warping or bending thereof during the winding operation by reason of the tension of the lace or 40 other causes, and the cards may be applied and removed with the greatest facility, and the reel serves to position the skein conveniently to the winder, and it is capable of accommodating skeins of different lengths.

I claim as my invention—

1. A card holder for lace winders embodying a pair of revoluble arms having cooperating sets of card engaging jaws arranged 50 in series to engage each edge of the card toward its opposite ends and at intermediate points.

2. A card holder for lace winders embodying a pair of revoluble members adjustable 55 relatively and provided with cooperating jaws having convergent card engaging surfaces in alinement with one another for centering the cards on said members, said jaws being arranged to engage the edge of a card 60 toward its opposite ends and at an intermediate point.

3. A card holder for lace winders embodying a pair of revoluble members adjustable 65 wardly extending jaws, the jaws of each set

being provided with convergent card engaging surfaces in alinement with one another for centering the card and having sharpened edges for gripping the card edge.

4. A card holder for lace winders embodying a pair of revoluble members, each having a set of inwardly extending jaws struck up from material composing the member and provided with card engaging surfaces. 70

5. A card holder for lace winders involving a pair of revoluble arms, each composed of a strip of material of channel form provided with a set of inturned jaws struck up from the material composing the web of the channel and extending in opposite directions 80 from the flanges thereof.

6. A card holder for lace winders embodying a pair of supporting spindles and a pair of oppositely arranged detachable card supporting arms of channel form and having inturned jaws struck from the web portion 85 thereof, each arm being movable transversely of the axis of its respective spindle for locking and unlocking the arm with respect thereto, and clamping means cooperative 90 with the web portion of said arm to prevent such transverse movement thereof during rotation of the spindle.

7. In a device of the class described, the combination of a pair of spindles each having a coupling plate thereon, an arm of channel form to detachably receive said coupling plate between its flanges, and having jaws 95 arranged to engage a card at an intermediate point and also toward its ends and means for removably clamping said coupling plate 100 against the web portion of the channel-shaped arm.

8. A card holder for lace winders embodying a pair of spindles, card supporting members of channel form having card engaging jaws struck from the web portions thereof, coupling plates revoluble with said spindles and removably fitting between the flanges of said members, and means for removably 110 clamping said members to the respective coupling plates.

9. A card holder for lace winders embodying a supporting base, a pair of spindles having card supporting arms thereon, a 115 stationary upright mounted on the base and carrying one of said spindles, an arm mounted in pivotal relation to the base and capable of folding against a side thereof, an adjustable upright slidable longitudinally 120 on the pivoted arm and carrying the second spindle, whereby the axial distance between the card supporting arms may be adjusted, and means for locking the pivoted arm in angular relation to the base, so as to support 125 the adjustable upright in operative position.

10. In a lace winder, the combination with a base having a relatively fixed upright thereon, and a laterally extending arm pivotally attached to said base and having an 130

upright slidable thereon, a pair of spindles mounted in the respective uprights, and card engaging members on the spindles having cooperating jaws for engaging the edges of a card.

11. A reel of the character described embodying a channel shaped revoluble element, and a pair of substantially parallel resilient receiving rods having two of their ends rigidly attached to the web portion of said member and their opposite ends unattached and inherently capable of being sprung toward one another to receive a skein.

12. A reel of the character described embodying a suitably journaled spindle, a coupling plate thereon, a revoluble member of channel form adapted to support means for winding or unwinding lace or other material and constructed to receive said coupling plate between its flanges, and interlocking means for detachably connecting said member to the coupling plate on the spindle, the web portion of the said member being provided with a plurality of radially elongated key-hole slots and the coupling plate having radially spaced headed screws adapted to enter said slots and adjustable to clamp the member to the spindle.

13. A reel of the character described embodying a spindle having a coupling plate thereon, a member adapted to fit the said plate and provided with a pair of skein receiving arms revoluble therewith, and interlocking devices for detachably connecting the said member to the coupling plate.

14. A reel of the character described embodying a spindle, a revoluble member composed of a strip of sheet metal of channel form, a coupling plate on the spindle adapted to fit between the flanges of the member and cooperate with the web thereof, interlocking devices for detachably connecting the member to the coupling plate, and skein supporting arms carried by the member.

15. A reel of the character described embodying a spindle, a revoluble member supported thereon composed of a strip of sheet material of channel form having slots formed in the web and extending longitudinally at opposite sides of its axis, and a pair of skein supporting arms having their

ends arranged to operate in the respective slots and provided with means to clamp against the web portion of said member for locking said arms in adjusted position.

16. A winding machine of the character described embodying a base having a relatively fixed upright thereon, a supplemental arm pivotally attached to the base, an upright slidable longitudinally of the said arm, and a revoluble card holder mounted on the fixed and slidable uprights.

17. A lace winding machine embodying a base having an upright rigid thereon, a supplemental arm pivotally attached to the base, an upright slidable longitudinally of the said arm, and a card holder revolubly mounted between the uprights.

18. A lace winder embodying a base having an upright rigid thereon, an arm adapted to extend at right angles to the base and capable of occupying a folded relation thereto, means for locking the arm in operative position, an upright carried by the arm, and a revoluble card holder mounted on the uprights.

19. A lace winder embodying a base having an upright rigid thereon, a supplemental arm adapted to occupy a position in angular relation to the base and capable of occupying a folded relation thereto, means for positioning the arm in operative position relative to the base, an upright supported by the arm, and a revoluble card holder mounted on the uprights.

20. A lace winder embodying a revoluble card holder, a pair of uprights for supporting the holder, and a base rigidly attached to one of the uprights, a supplemental arm supporting the other upright and pivotally attached to the base, a segmental stop for positioning the arm in proper angular relation to the base, and a locking device cooperating with a part of the stop.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

GEORGE LESTER WILLIAMS.

Witnesses:

E. L. BELL,
ZACH CHILDERS.