J. NORTHROP.

WIND-UP MECHANISM FOR LOOMS.

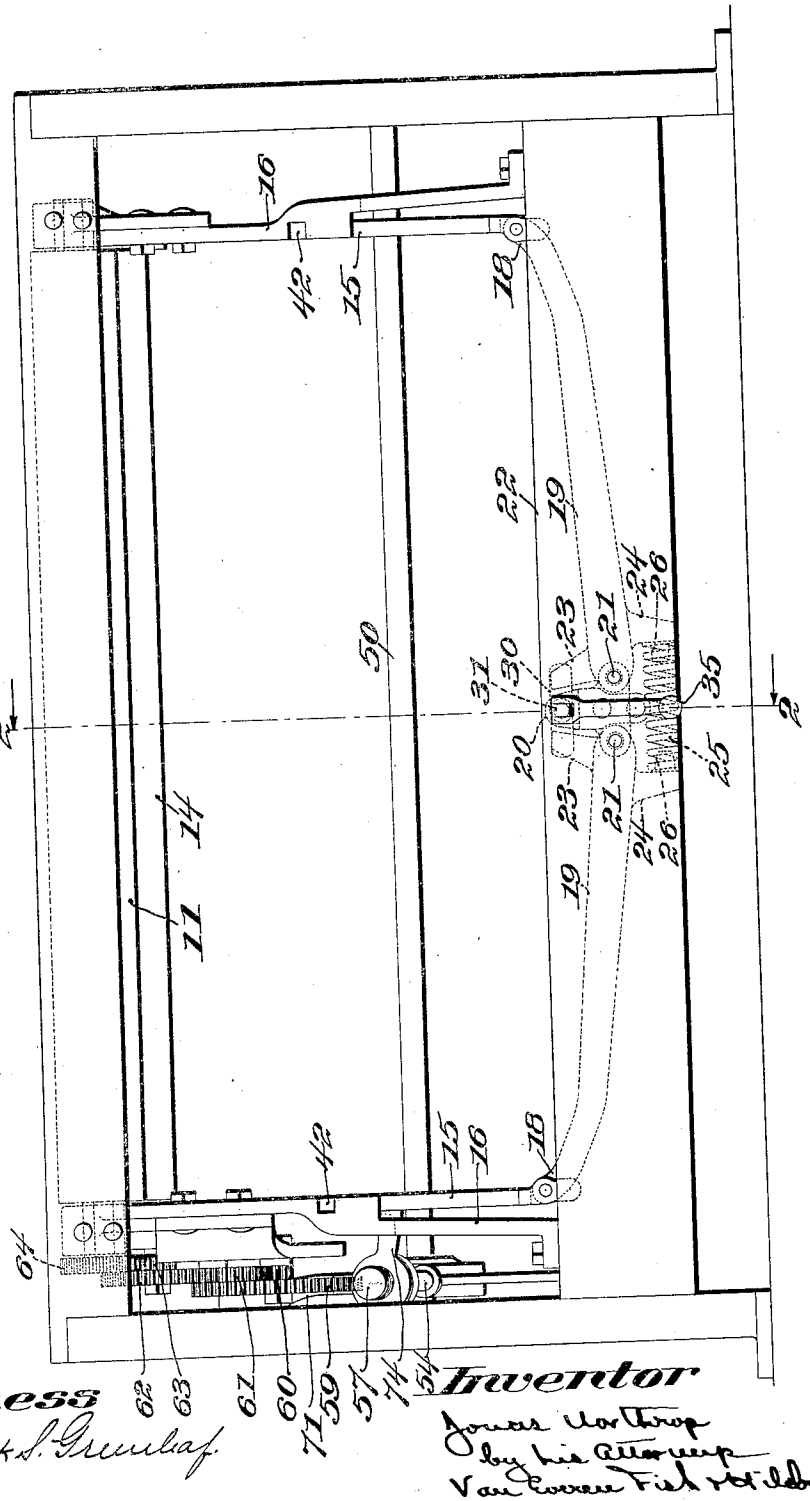
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1,383,478.

Patented July 5, 1921.

3 SHEETS—SHEET 1.

Fig. 1



Witness

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3 SHEETS—SHEET 2.

Fig. 2

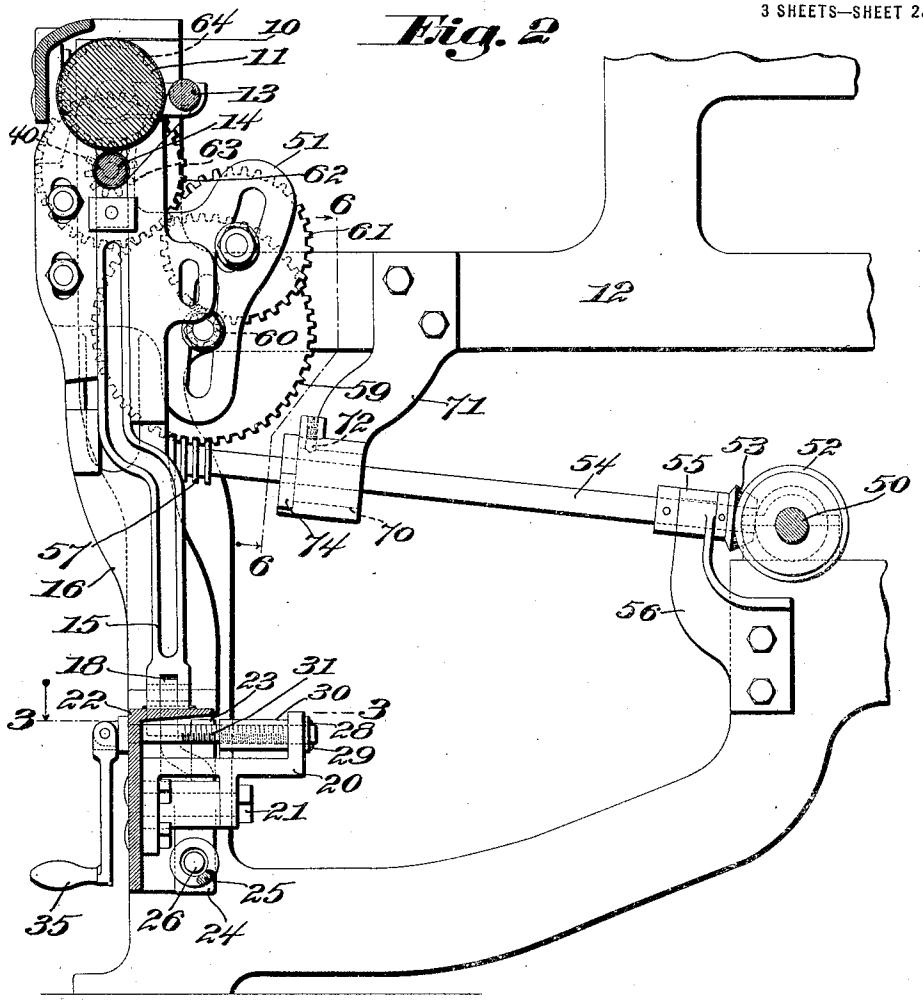
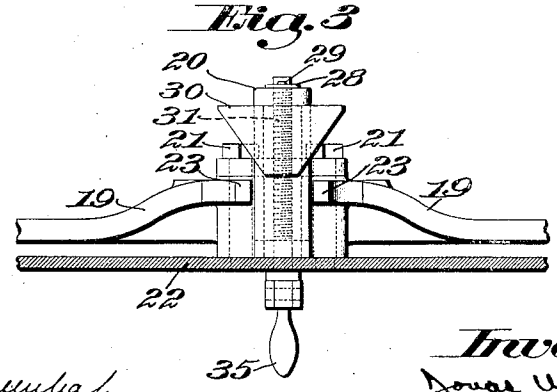


Fig. 3



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3 SHEETS—SHEET 3.

Fig. 4

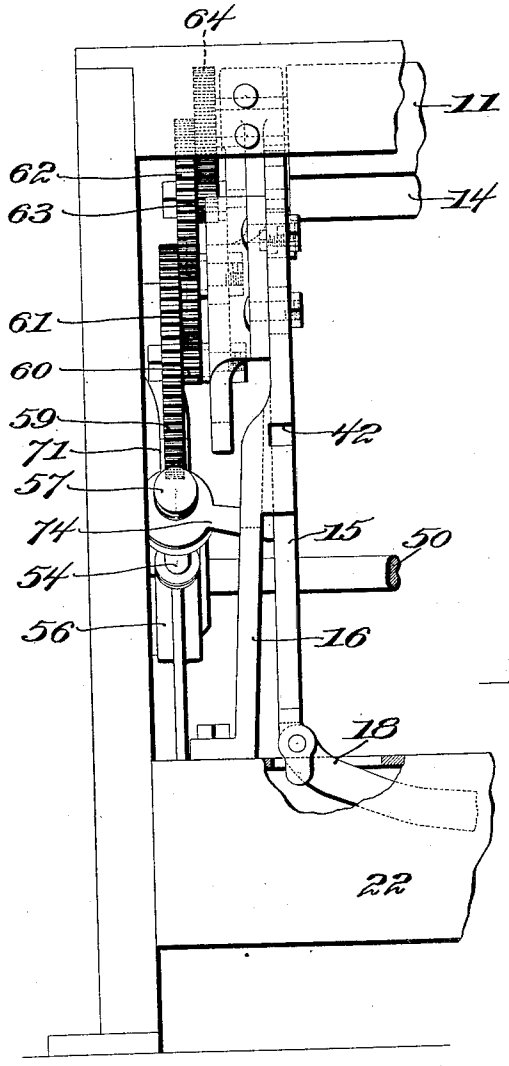


Fig. 5

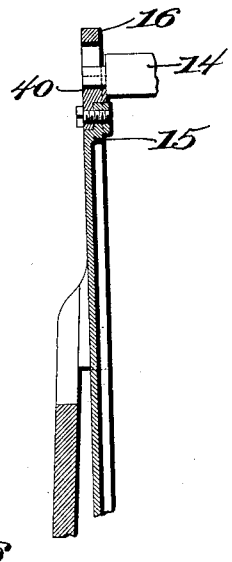
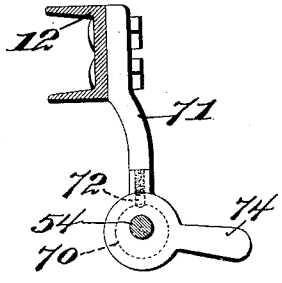


Fig. 6



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UNITED STATES PATENT OFFICE.

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WIND-UP MECHANISM FOR LOOMS.

1,383,478. Specification of Letters Patent. Patented July 5, 1921.

Application filed August 11, 1919. Serial No. 316,548.

To all whom it may concern:

Be it known that I, JONAS NORTHROP, a citizen of the United States, residing at Hopedale, in the county of Worcester and State of Massachusetts, have invented certain new and useful Improvements in Wind-Up Mechanism for Looms; 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.

This invention relates to a wind-up mechanism for looms. The invention has for an object to provide a wind-up mechanism for looms which is of a simple, inexpensive construction and whose operation is positive and efficient.

Wind-up mechanisms for looms as heretofore constructed have usually comprised a combination of racks, pinions, pulleys, gears and, in general, a series of small coöperating elements whose maintenance and upkeep involve considerable expense and trouble. The present invention contemplates a construction of wind-up mechanisms which is extremely simple, inexpensive and in which no racks, pulleys, gears or any of the usual elements are employed. The invention consists in the wind-up mechanism hereinafter described and claimed.

In the drawings which illustrate the preferred embodiment of the invention, Figure 1 is a front elevation of a part of a loom showing the improved wind-up mechanism; Fig. 2 is a section on the line 2—2 of Fig. 1; Fig. 3 is a sectional plan taken on the line 3—3 Fig. 2 showing the actuating wedge; Fig. 4 is an enlarged side elevation of the left hand portion of the structure shown in Fig. 1; and Figs. 5 and 6 illustrate details hereinafter referred to. The wind-up mechanism illustrated in the drawings is described as follows:

The finished cloth 10 is drawn through the loom by the draw roll 11 journaled in the loom frame 12. The surface of the draw roll 11 is provided with the usual corrugations adapted to engage and grip the cloth 10 as it passes thereover. The cloth after it passes around the draw roll 11 is led up over an idler roll 13 also journaled in the loom frame 12. From the idler roll 13 the cloth leads down to and is wound up on a wind-up roll 14. The draw roll 11 is positively rotated, deriving its motion from the cam shaft 50 of the loom through the take-up mechanism 51. The take-up mechanism is, or may be, of the usual construction and of itself forms no part of the present invention. The rotations of the cam shaft 50 are transmitted to the draw roll 11 through bevel gears 52, 53, shaft 54 journaled in a bearing 55, carried by a supporting bracket 56, worm 57, and train of gears 59, 60, 61, 62, 63, and 64. Provision is made for withdrawing the worm 57 from engagement with the gear 59 by the eccentric bearing 70 (carried by the supporting bracket 71, bolted to the loom frame 12) provided with a movable latch 72 adapted to lock the shaft 54 to maintain the worm 57 in an operative position in mesh with the gear 59. See Fig. 6 (a sectional elevation on line 6, Fig. 2) which shows the hand lever 74 for operating the eccentric bearing.

The wind-up roll 14 is journaled in slides 15 mounted in supporting guides 16 rigidly secured to the loom frame 12. The slides 15 are pivoted at their lower ends to the outer ends of arms 18, of three-arm levers 19. The three-arm levers 19 are pivotally secured by bolts 21 to a bracket 20 bolted to an angle iron 22 extending across the front of and forming part of the loom frame 12. A heavy coil spring 25 is arranged between the lower pair of arms 24, of the three arm levers 19, being held in an operative position between the arms 24 by lugs 26 projecting from the opposing surfaces thereof. Thus it will be observed that the slides 15 and wind-up roll 14 journaled therein are yieldingly held upward by the compression in the coil spring 25 which is exerted against the lower arms 24 thus tending to swing the arms 18 upward about the pivots 21 and holding the wind-up roll 14 against the draw roll 11, so that it is frictionally driven thereby to wind up the cloth 10.

A wedge 30 is arranged between the upper pair of arms 23 of the three arm levers 19. This wedge is actuated by a screw 31 which screws through a threaded hole in the wedge being rotatably supported in the bracket 20 and angle iron 22, see Fig. 2. A washer 28 and cotter pin 29 serve to maintain the screw 31 in an operative position with relation to the bracket 20 and to prevent its withdrawal from the bracket. A crank 35 attached to the forward end of the screw 31 permits the rotation of the screw

31 to cause the wedge 30 to move back and forth. When the crank is turned to force the wedge 30 between the arms 23, the arms 18 are dropped and the wind-up roll is thus lowered.

In operation, the slides 15 are moved downwardly by manually rotating the crank 35 so as to move the wedge 30 between the arms 23 and to thereby cause the arms 18 to swing downwardly in an arc about the pivots 21 until the open bearings 40 (see Fig. 5) in the slides 15 register with slots 42 in the guides 16. The lower portion of the guides 16 are extended outwardly somewhat in order to permit the ends of the arms 18 to swing in an arc. When the open bearings 40 register with the slots 42 an empty wind-up roll 14 may be inserted through the slots 42 into the bearings 40 whereupon the handle 35 is turned in the reverse direction thus causing the wedge to move rearwardly and permitting the coil spring 25 to cause the slides 15 and wind-up roll 14 to be gradually moved upward in the guides 16 until the wind-up roll 14 contacts with the draw roll 11. The end of the cloth 10 then is started upon the wind-up roll 14 so that as the draw roll 11 draws the cloth through the loom, the wind-up roll 14 is frictionally driven thereby and operates to wind up the cloth. As the diameter of the wind-up roll and cloth thereon increases, the slides 15 are gradually moved downwardly acting through the arms 18 and 24 to compress the coil spring 25. Thus it will be apparent that increases in diameter of the cloth and wind-up roll 14 are gradually compensated for, and at the same time the periphery of the roll of cloth is yieldingly held against the draw roll 11 so that it is frictionally driven thereby at all times. When the diameter of the cloth upon the wind-up roll 14 has increased to the desired size, the operator severs the cloth and turns the handle 35 to move the wedge 30 forwardly thus moving the slides 15 downward until the open bearing 40 registers with the slot 42 in the guides 16 whereupon the roll of cloth and wind-up roll 14 may be easily withdrawn through the slots 42 and thereafter a fresh wind-up roll is inserted and the operation is repeated.

It will be observed that the construction of the wind-up mechanism is simple, that the various elements such as the slides 15, the three-arm levers 19, and heavy coil spring 25 are of such nature as to last for a long period of time and that power is transmitted to cause movements of the wind-up roll by the wedge 30 and the screw 31 so that the usual small coöperating elements such as pulleys, gears, racks, and pinions are eliminated, thereby reducing the initial cost of the mechanism and the expense of up-keep.

The invention is not limited to the illustrated embodiment thereof but may be embodied in other forms within the scope of the following claims:

1. A wind-up mechanism for looms having, in combination, a draw roll, means for rotating the same, a loom frame having upright members arranged to support said draw roll and rotating means, a wind-up roll, slides mounted in said upright members arranged to support the ends of the wind-up roll, means for yieldingly holding the slides in their upward position, and means for moving the slides downwardly.

2. A wind-up mechanism for looms having, in combination, a draw roll, means for rotating the same, a loom frame having upright members arranged to support said draw roll and rotating means, a wind-up roll, slides mounted in said upright members arranged to support the ends of the wind-up roll, levers coöperating with the slides, and means coöperating with the levers for holding the slides upwardly and moving the slides downwardly.

3. A wind-up mechanism for looms comprising a draw roll, means for rotating the draw roll, guides secured to the loom frame and having slots therein, a wind-up roll, slides received in said guides and having open bearings adapted to receive the wind-up roll, means for yieldingly holding the slides upwardly, and means for moving the slides downwardly to a position in which the bearings register with the slots in the guides to permit withdrawal of the wind-up roll from its bearings.

4. A wind-up mechanism for looms comprising a draw roll, means for rotating the draw roll, guides secured to the loom frame, slides mounted in said guides, a wind-up roll mounted on the slides, and three-arm levers pivotally secured to the loom frame, arranged so that one set of arms coöperate with the slides, means coöperating with a second set of the arms for yieldingly holding the slides upward, and means coöperating with the third set of arms for moving the slides downwardly.

5. A wind-up mechanism for looms comprising a draw roll, means for rotating the draw roll, guides secured to the loom frame, slides mounted in said guides, a wind-up roll mounted on the slides, and three-arm levers pivotally secured to the loom frame, arranged so that one set of arms coöperate with the slides, means coöperating with a second set of the arms for yieldingly holding the slides upward, and a wedge coöperating with a third set of said arms to move the slides downwardly.

6. A wind-up mechanism for looms comprising a draw roll, means for rotating the draw roll, guides secured to the loom frame, slides mounted in said guides, a wind-up roll mounted on the slides, and

three-arm levers pivotally secured to the loom frame, arranged so that one set of arms coöperate with the slides, a spring between the second set of arms arranged to hold the slides upwardly, and a wedge coöperating with a third set of said arms to move the slides downwardly.

7. A wind-up mechanism for looms comprising a draw roll, means for rotating the draw roll, a wind-up roll, means for yieldingly holding the wind-up roll against the draw roll, and means for moving the wind-up roll away from the draw roll including levers movable in a plane parallel to the loom shafts.

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