Jan. 27, 1959 A. F. CLARK, JR 2,870,974

MACHINE FOR COMPRESSING AND ROLLING BEDDING SPRINGS

Filed March 29, 1955

2 Sheets-Sheet 1

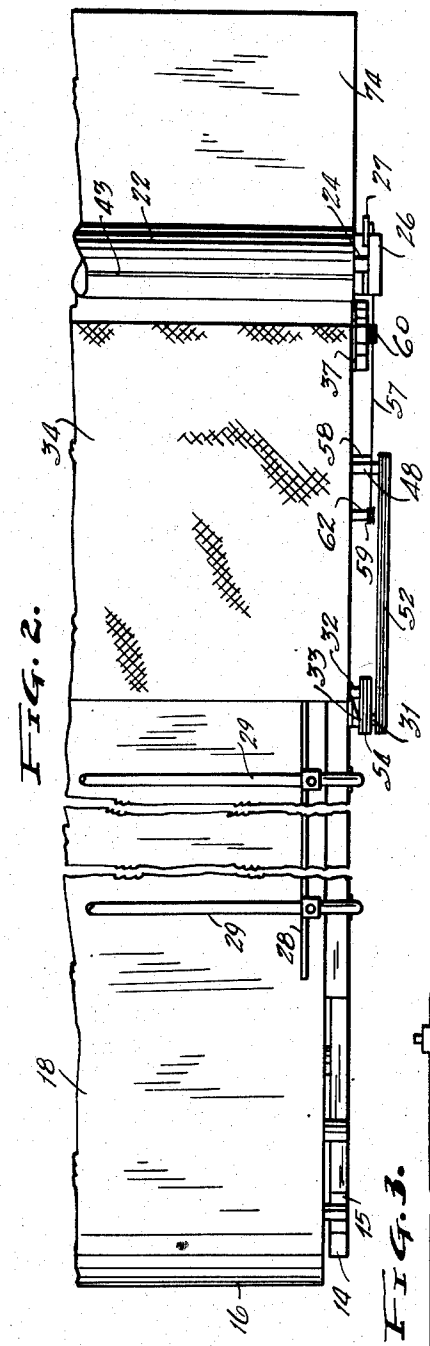

Fig. 2.

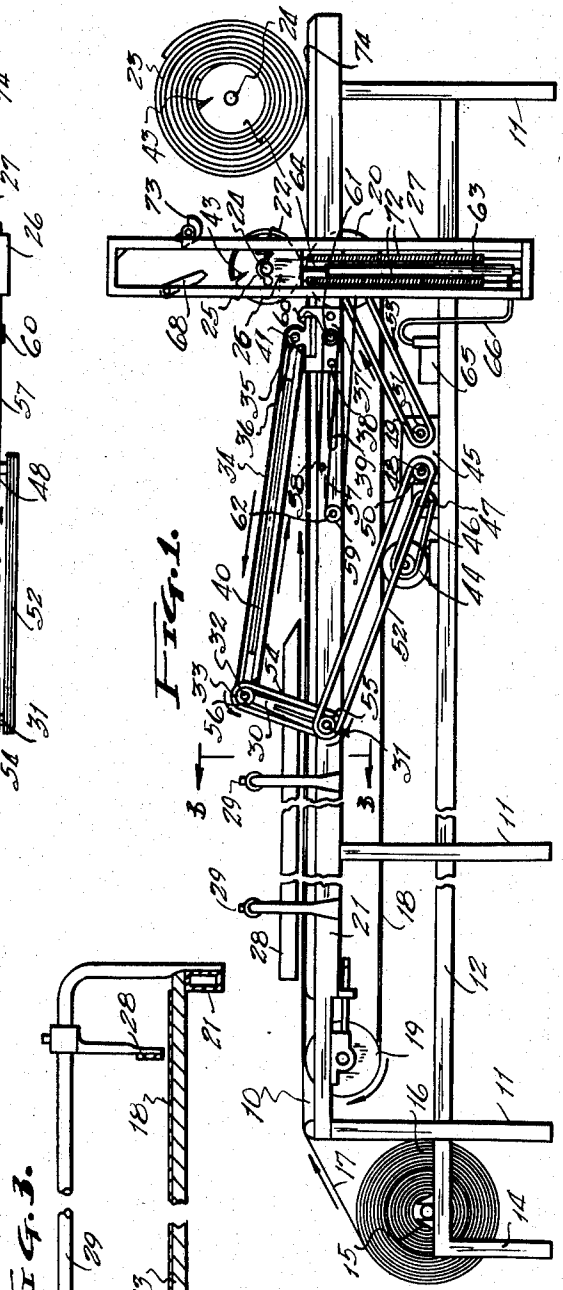

Fig. 1.

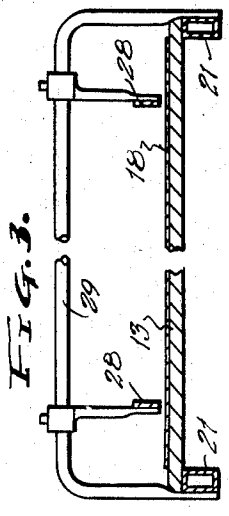

Fig. 3.

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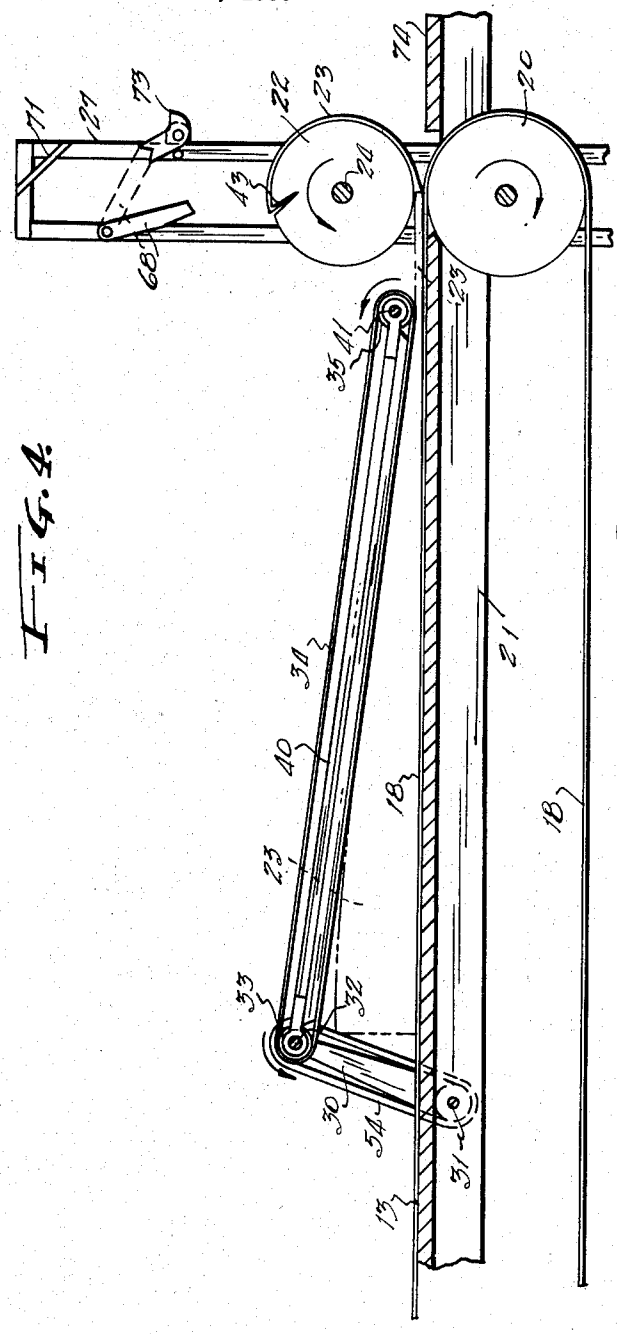

FIG. 4.

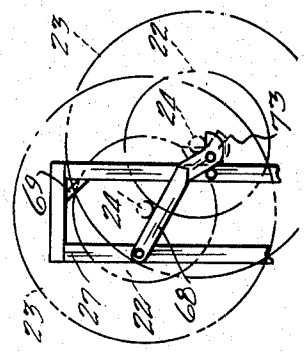

FIG. 7.

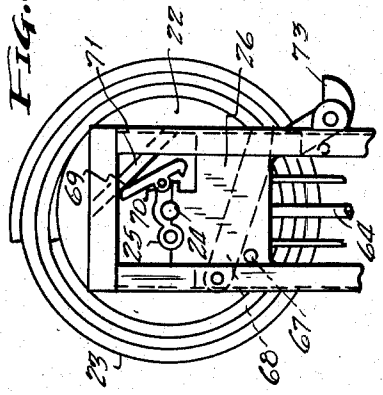

FIG. 6.

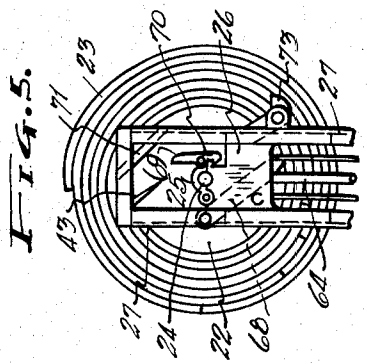

FIG. 5.

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MACHINE FOR COMPRESSING AND ROLLING BEDDING SPRINGS

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Application March 29, 1955, Serial No. 497,675

5 Claims. (Cl. 242—55)

This invention relates to machines for compressing and rolling bedding springs, or inner springs for mattresses, and it has particular reference to devices for use in reducing or compressing such springs to a compactness suitable for reeling onto a spool or reel to be dispensed in bed units, as desired, and its principal object resides in the provision of a mechanism whereby continuous lengths of the fabricated bedding springs can be made up in relatively long strips, preferably of a length suitable to provide multiples of bedding units, and compressed to a relative thinness and rolled into rolls or bolts.

An object of the invention is that of providing a simple and economical means for packaging bed springs so that storing and shipping can be facilitated, avoiding the usual bulkiness and unwieldy character of conventional bed spring units which are generally packaged in crates or boxes singly, or by stacking the same in superposed arrangement, which involves the avoidable expense of proper packaging and the excessive space required in shipping or storage.

Another object of the invention resides in the provision of a mechanism which is generally automatic in operation and by which bed springs of conventional dimensions can be cut from strips of considerable length capable of being compressed to such thinness as to be tightly rolled and thus handled and transported with greater ease than is possible with ordinary packaging methods.

Broadly, the invention contemplates the provision of a machine of simple design in which is embodied a conveyor mechanism by which continuous strips of prefabricated bed springs can be moved along a table, compressed and rolled while heavy paper, or other suitable material, is wound upon the roll to separate each turn of the springs whereby to insure against premature expansion or unwinding of the springs until it is desired to dispense portions thereof for the construction of mattresses, or the like.

While the foregoing objects are paramount, other and lesser objects will become manifest as the description proceeds, taken in connection with the appended drawings wherein:

Figure 1 is a side elevational view of the invention illustrating the table, conveyor, and compressing mechanism, and illustrating the vertically movable reel bearings and releasing mechanism of a completed reel.

Figure 2 shows a fragmentary plan view of the invention illustrating a spring strip being moved along the table.

Figure 3 is a transverse sectional view of the invention, on lines 3—3 of Figure 1, showing the arrangement of guide shoes.

Figure 4 is an enlarged fragmentary portion of the machine, shown also in longitudinal section, illustrating one of the conveyor drums, the reel and reel supporting frame, the releasable reel bearings, and compressing mechanism.

Figure 5 is a side elevational view of the upper portion

of the reel supporting frame and releasable bearings, the reel being almost completed.

Figure 6 shows the reel supporting frame in fragmentary side elevation showing the completed reel being released from its bearings, and

Figure 7 diagrammatically illustrates, in broken lines, the movement of the released completed reel to the receiving platform, as shown in Figure 1.

Accordingly, the invention comprises a table **10** which has a plurality of sets of legs **11** and a subframe structure **12** therebelow, as shown in Figure 1, which extends beyond the receiving end of the working surface **13** of the table **10** and provides a support **14** for the bearings **15** of a paper roll **16** from which a strip of paper **17** is reeled to move along the working surface **13**, as shown in Figure 2.

A belt conveyor **18** is operated over a pair of drums **19** and **20**, the latter being rotatably supported beneath the longitudinal frame members **21** of the table **10**, so that the conveyor **18** moves longitudinally of the working surface **13** of the table **10**, the paper **17** being frictionally attached thereto and moved thereby toward the reel **22** upon which it is rolled with the continuous strips of bed springs **23**, as will be presently made manifest.

The reel **22** is supported at each end of its spindles **24** in releasable bearings **25** supported on blocks **26** slidably arranged in frame members **27** located on each side of the table **10** and extending thereabove, as shown in Figures 1 and 4, so that as the rolls of prefabricated strips of bed springs **23** are increased in diameter the bearings **25** are moved upwardly. This movement is accomplished by a hydraulic mechanism in each frame member **27** which will be presently described.

The lengths of prefabricated springs **23** are of standard depth or thickness for enclosure in conventional innerspring mattresses when introduced to the invention, and in operation the springs are passed between the guide shoes **28** which are spaced apart and adjustably arranged on an inverted U-shaped bracket **29** whose leg members are secured to the longitudinal frame members **21** of the table **10** so that the bracket **29** is transversely thereof and the shoes **28** can be moved longitudinally of the bracket for proper spacing.

On each side of the table **10**, and intermediate its ends, is an arm **30** which is pivotally secured to a shaft **31** extending transversely through the frame members **21** of the table **10**. The upper ends of the arms **30** are connected by a shaft **32** upon which a roller **33** is arranged for rotation therewith. A belt **34** is operated over the roller **33** and over a companion roller **35** arranged near the reel supporting frame members **27** and journalled at each end in bearings **36** on slidinng blocks **37** attached to the frame members **21** and secured by bolts **38** in slots **39** for automatic adjustment longitudinally of the table **10**.

The rollers **33** and **35** are rigidly separated by bars **40** which are secured at each end of the shaft **32** of the roller **33** and to the spindles **41** of the roller **35** and, by reason of this rigid connection and the pivots at both ends of the arms **30** and the bearings **36**, the assembly is capable of limited movement longitudinally of the table **10**. The belt **34** is inclined toward the table **10** in the direction of travel of the conveyor **18** but is operated in an opposite direction from that of the latter, as indicated by the arrows appearing in Figures 1 and 4, so that the spring strips **23** are compressed beneath the roller **35** under the pressure of the belt **34** and fed to the reel **22** which is freely rotatable on its spindles **24**. Thus, when the ends of the spring strips **23** are secured in the V-shaped slot **43** longitudinally of the reel **22** the strips **23** are rolled thereupon by urging the latter toward the reel through the combined action of the conveyor **18** and the belt **34**.

The conveyor **18** and the belt **34** are driven by an electric motor **44** supported on the subframe **12** below the table **10** through a gear reduction box **45**, the motor **44** having a belt **46** which drives a pulley **47** on the gear reduction box which has two shafts **48** and **49** on which are pulleys **50** and **51** whose belts **52** and **53**, respectively, drive the drum **20**, carrying the conveyor **18**, and the belt **34** through the V-belt **54** connecting the pulley **55**, on the shaft **31**, with the pulley **56** on the shaft **32**, as illustrated in Figure 1.

The sliding blocks **37**, to which the bearings **36** are attached, are tensioned against the action of the belt **34** and the conveyor **18** by cables **57**, one of the ends of which are secured to pins **58** in the frame members **21** of the table **10** and arranged over pulleys **59** and **60**, the latter being pivotally mounted on stub shafts **61** on the blocks **37** while the pulleys **59** are mounted on stub shafts **62** on the frame members **21**, the opposite ends of the cables **57** are secured to the reel supporting frames **27**. In this manner a snubbing action is afforded to allow flexibility without undue resiliency as the spring strips **23** are compressed under the belt **34** upon the moving conveyor **18**.

A hydraulic cylinder **63** is supported in each of the frames **27** and each has a plunger **64** supporting one of the bearing blocks **26** in the frames **27** so that when fluid is pumped into the cylinders **63** by the pump **65** through the tube **66** the bearings **25**, supporting the reel **22**, can be moved upwardly as the reel increases in diameter, and controls are provided for the proper operation of the hydraulic pump **65**. Thus as the reel **22** grows larger and has reached its maximum diameter the hydraulic mechanism is caused to raise the same upwardly in the frames **27** until pins **67** on the blocks **26** engage swinging levers **68** on the frames **27** and move these members upwardly, as shown in Figures 5 and 6, and until the tail portions **69** of the latch members **70** of the bearings **25** engage the inclined bars **71** at the upper ends of the frames **27** to release the latches.

At this stage the hydraulic fluid is released from the cylinders **63** by the latch members **70** allowing the blocks **26** to descend in the frames **27** with the aid of pull springs **72**, so that the ends of the levers **68** drop upon dogs **73**, also pivoted to the frame members **27**, in the manner shown in Figures 6 and 7, to form a track by which the reel is detached from the bearings **25** and caused to roll downwardly and outwardly over the dogs **73**, as diagrammatically illustrated in Figure 7, and drop on the platform **74** to the position shown in Figure 1. The dogs are thus tripped to cause the levers **68** to assume their depending position and the dogs **73** are returned to their normal positions, as shown in Figure 4. The completed roll can then be removed from the platform **74** and a new reel placed in the bearings **25**, as shown in Figure 1.

Manifestly, the structure herein shown and described is capable of certain changes and modifications in design and structure without departing from the spirit of the invention or the scope of the appended claims.

What is claimed is:

1. In a device for rolling innersprings for bedding, in combination, a feed and guide table having means for supporting a reel at one end thereof for receiving compressed innersprings, the reel supporting means comprising a frame extending above the table, and a vertically movable bearing on each side of the frame, a reel supported in the bearings transversely of the table, hydraulic means in the frame for raising the reel bearings as the innersprings are reeled on the reel, automatic means at the top of the frame for releasing the hydraulic means and the reel when a predetermined length of innersprings is reeled thereon, means supported above the table for compressing the innersprings as they are moved longitudinally of the table, means for moving the innersprings toward the reel, and driving means for the moving means.

2. In a device for compressing and rolling innersprings for bedding, in combination, a conveyor and compressing table having a reel support on one end, the reel support comprising a frame on each side of the table and extending thereabove, a vertically movable bearing in each frame and a reel rotatably supported thereon, hydraulic means in the frames raising the bearings therein as the innersprings are rolled onto the reel, compressing and feeding means above the table and urging the innersprings onto the reel, and means in the top of the frames for releasing the hydraulic means and the reel as the latter reaches a predetermined diameter.

3. In a compressing and reeling machine for mattress springs, in combination, a table having a conveyor thereon and a reel support at one end, the reel support comprising a frame arranged on each side of the table and extending thereabove, a bearing in each frame and a reel supported on the bearings transversely of the table, hydraulic means in the frames urging the bearings upwardly therein as the spring material is wound on the reel, a compressing device on the table impinging the spring material against the conveyor and cooperating with the latter to move the material toward the reel, and means for releasing the reel from the bearings and releasing the hydraulic means when a predetermined length of the material is wound thereon.

4. In a machine for compressing and rolling continuous lengths of bedding springs, in combination, a table having a conveyor belt operating longitudinally thereof, a reel support on one end of the table comprising a vertical frame extending above the table and a pair of vertically movable bearings mounted therein, a reel supported in the bearings transversely of the table, hydraulic means in the frame automatically elevating the reel as the bedding springs are reeled thereon, and releasable when the reel has reached maximum diameter, a compressing belt supported above the table and cooperating with the conveyor to compress the springs and move them toward and upon the reel, means for winding a strip of paper on the reel between the turns of the springs, and means for automatically releasing the reel when it is of predetermined diameter.

5. In a reeling mechanism for continuous lengths of bedding springs, in combination, a table having a conveyor operating longitudinally thereof and a reel support at the discharge end of the conveyor, the reel support comprising a frame extending vertically above the table and having vertically movable bearings therein, a reel supported on the bearings adapted to receive the lengths of bedding springs wound thereon, means for winding a strip of paper on the reel between turns of the bedding springs, means above the table cooperating with the conveyor compressing the bedding springs as they are moved toward and upon the reel, means for elevating the reel as it is rotated, and means for releasing the elevating means and the reel upon a predetermined number of turns thereof.

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