

No. 646,139.

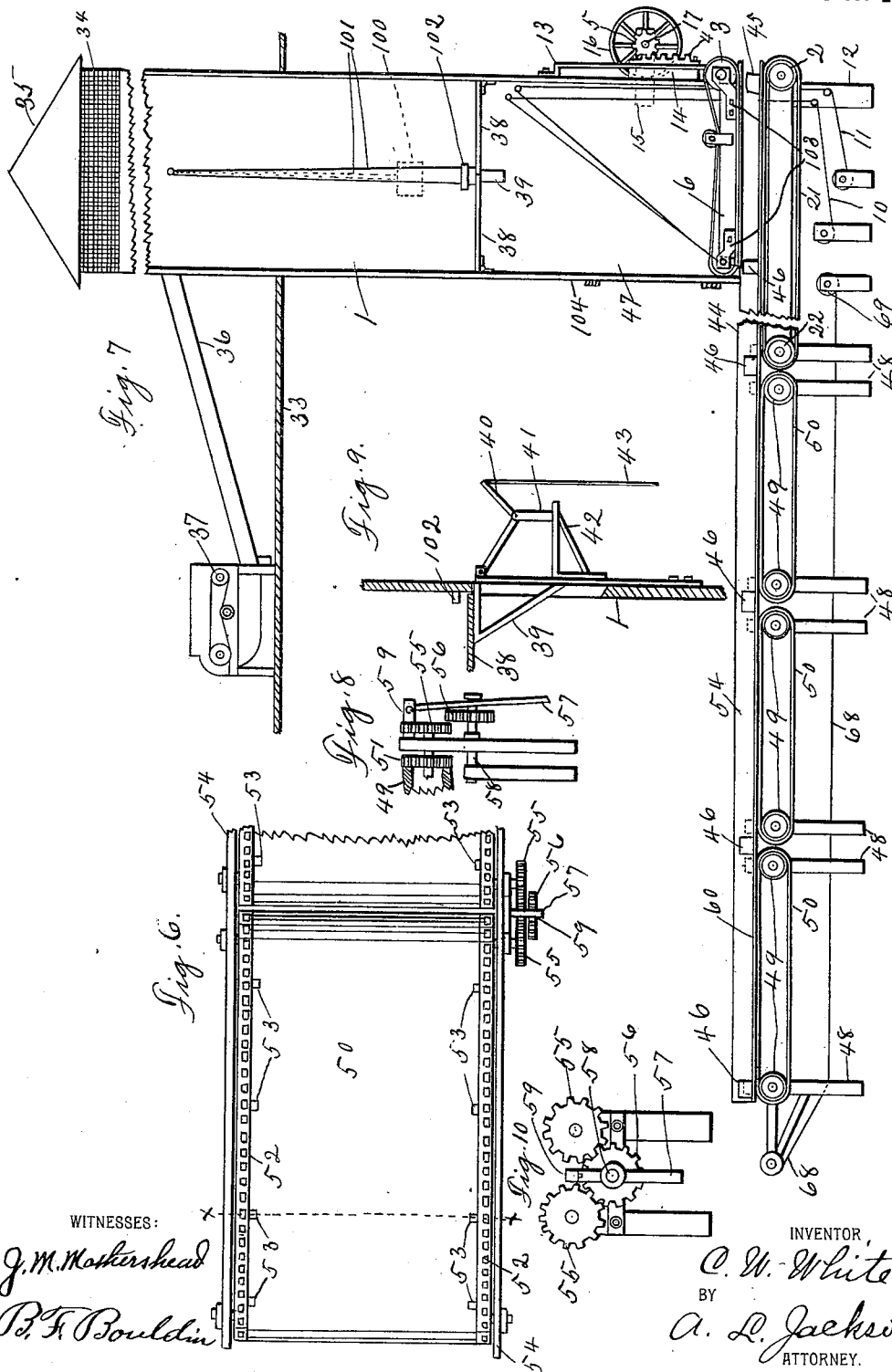
Patented Mar. 27, 1900.

C. W. WHITE.
MATTRESS FILLING MACHINE.

(Application filed July 13, 1899.)

(No Model.)

3 Sheets—Sheet 2.



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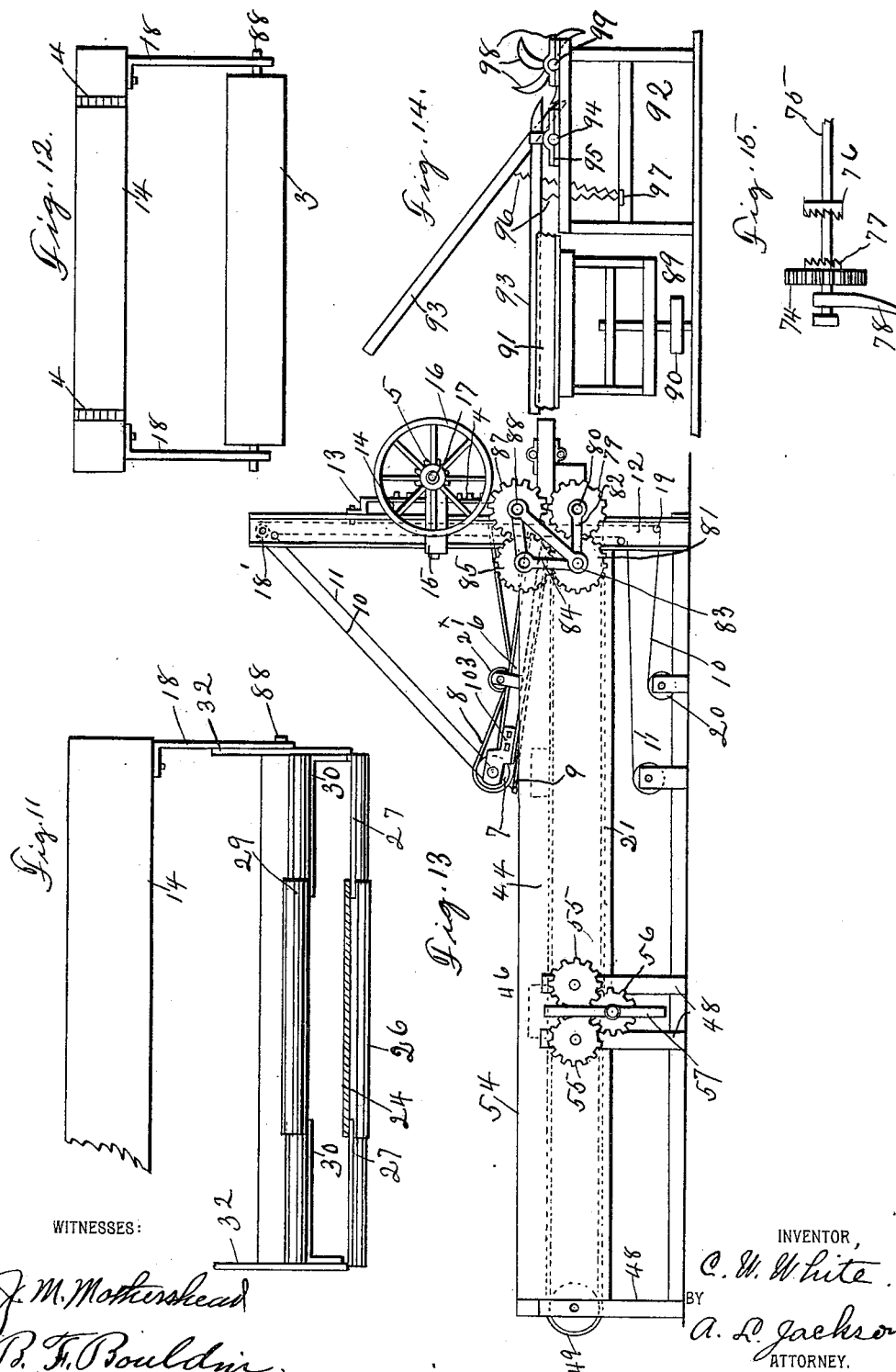
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UNITED STATES PATENT OFFICE.

CHARLES WILLIS WHITE, OF WACO, TEXAS.

MATTRESS-FILLING MACHINE.

SPECIFICATION forming part of Letters Patent No. 646,139, dated March 27, 1900.

Application filed July 13, 1899. Serial No. 723,712. (No model.)

To all whom it may concern:

Be it known that I, CHARLES WILLIS WHITE, a citizen of the United States, residing at Waco, Texas, have invented certain new and useful Improvements in a Combined Extensible and Multiple Machine for Making Mattresses and the Like, of which the following is a specification.

This invention relates to machines for making mattresses and other such articles; and the objects are to construct machines for making several different kinds of mattresses and other articles and to construct machines by which the making of several mattresses may be going on at the same time on one multiple or section and extensible machine, thus reducing the cost of making mattresses. The output of mattresses may be more than doubled on one machine, and the cost of the increased facilities will be inconsiderable when compared with the advantages gained and the time saved.

Other objects and advantages will be fully explained in the following description and the invention more particularly pointed out in the claims.

Reference is had to the accompanying drawings, which form a part of this application.

Figure 1 is a side elevation of the invention, the top of the box being broken away and only the extension feature of the machine being shown. Fig. 2 illustrates the gear for driving the upper compression-roller. Fig. 3 is a plan view of the slats. Fig. 4 is a cross-section of Fig. 6 along the line *xx*. Fig. 5 is a longitudinal section of the tick-holder. Fig. 6 is a plan view of one multiple of the machine and a portion of another multiple. Fig. 7 is a view of a complete machine having a picker connected and having the side of the collector and cleaner-box and the side of the extension and multiple machine taken away to show the interior arrangement. Fig. 8 illustrates the driving-gear of the multiple feature of the machine. Fig. 9 illustrates the manner of supporting a trap-platform and means for dropping the platform. Fig. 10 is a side view of the driving-gear shown in Fig. 8. Fig. 11 is a view looking in the mouth of the tick-holder. Fig. 12 illustrates the hanging of the upper compression-roller. Fig. 13 is a side elevation of the machine without the

collector and cleaner-box, the view being the opposite side of Fig. 1. Fig. 14 is a side elevation of the beating attachment. Fig. 15 shows the shifting means for throwing the clutches in and out of gear for driving and stopping the machine.

Similar characters of reference are used to indicate the same parts throughout the several views.

This invention consists of certain improvements of the collecting and cleaning box of the patent issued to me January 31, 1899, No. 618,489, an improved feature of the driving-gear of that patent, the extension and multiple feature, and the beating attachment. The lower part of box 1, compression-rollers 2 and 3, rack 4, pinion 5, frame 6, drum 7, the traveling apron or belt 8, slats 9, and cables 10 and 11, with their pulleys and drums, are substantially the same in this application as those elements are in said patent. The frame-pieces 12 for the box 1 are improvements over that patent. These frame-pieces are of channel-iron or E-beams of iron. The bearings for compression-roller 2 are bolted on these beams. The brackets 13 for the end pieces 14 are bolted to beams 12. Racks 4 are bolted to the end beam 14. The pinions 5 for operating these racks are mounted in arms 15, which are bolted to the beams 12, and the hand-wheel is mounted on the shaft 17. This wheel is for operating the pinions 5. The compression-roller 3 is mounted in hangers 18, Fig. 12, which are bolted to the end of cross-beam 14, so that this roller moves up and down as the cross-beam moves up and down. The frame 6 is pivotally mounted at one end on the shaft of roller 3, the other end being free to be moved up and down by means of the cable 10, which runs over a pulley 18', under a pulley 19, to a drum 20, Fig. 13, which can be turned by any suitable motive power. Frame 6 has a drum 7 mounted in the free end. An endless traveling apron or belt 8 runs over this drum and the compression-roller 3. When a mattress is to be pressed, a set of slats 9 is placed under the belt 8, so that it will be on top of the bat which is to be forced into the tick, Fig. 13. An idler-pulley 21' is mounted on frame 6 for controlling the tension of the belt 6. The frame 6 has two functions: It serves as a

means for pressing the material into a compact form and as a means of mounting the traveling apron 8, which forces the slats and the bat into the tick. A traveling apron or belt 21, mounted on roller 2 and a drum or roller 22, runs through the bottom of the box 1 and constitutes a bottom for the box. A set of slats 23, Fig. 1, is placed on top of the apron 21 for aiding in forcing the compressed bat into the tick. A tick-holder is mounted at the exit side of the compression-rollers 2 and 3. The tick is placed on the tick-holder, and the compressed bat and the slats passing between the rollers and through the tick-holder shove the tick from the tick-holder as the bat progresses through the holder. The tick-holder is adjustable at each side to make any width mattress. A part 29 of the tick-holder is stationary, and part of it 30 is telescopic relative to the other parts. The whole of the upper part of the tick-holder goes up and down with the upper compression-roller, being connected to the rising-and-falling beam 14. (See Figs. 5 and 11.) The bottom 24 of the tick-holder is supported on the frame of the machine by means of a T-shaped piece of metal 25. This metallic support 25 is bolted to the frame and has a vertical slot 25^x in each leg to make the same adjustable vertically, and the frame has horizontal slots 25^{xx} (see Fig. 1) to make the bottom of the tick-holder adjustable horizontally. Means are provided for attaching a telescopic section to each side of the bottom. A support 26, having a semicircular groove, is attached to each side of the bottom, and sections 27, beaded on the back ends, are so mounted that the beads will slide in the grooves of the support 26. The bottom has a bead 28 at the end for the outer ends of the sections to prevent the sections from sagging. The top of the tick-holder has a stationary section 29 and telescopic sections 30. A guide 31, having a semicircular groove therein, is attached to the top 29 of the tick-holder, and the sections 30 are turned into beads at the ends, and these beads slide back and forth in these grooves to make the top and the sides of the tick-holder adjustable for various-sized mattresses or for pillows or articles. The upper part of the tick-holder is mounted by means of hangers 32, which are attached to the hangers 18. The top of the tick-holder goes up and down with the roller 3. The frame 6 is raised to a vertical position by means of the cable or cables, (there must be a cable at each corner,) and the frame and the compression-roller 3 are raised still higher by the racks 4 and pinions 5. The collecting and cleaning box extends through the second floor 33 and on out the roof of the building in which the machine is located. The top part of the box has wire-netting 34 for the escape of dust and a cover 35 to keep out rain. A chute 36 conducts the material from a picker 37 to the collecting and cleaning box 1.

The improvement for doubling the output

of the machine thus described consists of a false bottom mounted in the collector and cleaner box far enough below the entrance 70 of the chute 36 to hold enough material to form a mattress. This false bottom consists of two sections 38, which are hinged to the inside of the box 1. The sections are supported in a horizontal position for catching 75 the material by means of two spring-triggers 39 of any suitable form, but shown as angular spring-controlled pieces passing through slots in the casing. The triggers are tripped by means of small bell-crank levers 40, which 80 have fulcrums in supports 41. The supports 41 are mounted on the sides of box 1 by means of brackets 42. Cords 43 are attached to the levers and may be extended to any convenient place for a person to trip the false 85 bottom when a signal is given that enough material has been picked to form a mattress. The cords 43 may be extended to the picker-stand. After the false bottom has been tripped and the material precipitated to the real bot- 90 tom of the box the frame 6, which is drawn to a vertical position before the false bottom is tripped, is let down on the material to compress it and force it in the tick. As soon as the material is precipitated the false bottom 95 is replaced automatically by weights 100 to receive material for another mattress, so that while one mattress is being passed through the compression part of the machine and the frame 6 is brought to a vertical position ma- 100 terial is being picked by the picker 37 and forced through chute 36 into the collector and cleaner box and is falling on the false bottom 38. With the machinery thus described one of the kinds of mattresses above referred 105 to can be made. This kind is made of a single bat of material, and the machinery prepares it so that the material can be thoroughly felted together. It will be observed that the principal improvements over the patent is- 110 sued to me on January 31, 1899, previously referred to, are the extension of the box 1 through the second floor of a building and through the roof, so that dust can escape to the air, and the false bottom, whereby the 115 output of the machine can be doubled.

The extension feature of the machine is the increased length of the lower traveling apron or belt 21 and the extension of the frame beyond the bottom of the box 1 far enough to 120 receive material thereon to form a mattress outside of the box 1. This is for making mattresses of a different kind from the mattresses above described. A part of the frame 44 of the machine is extended at the bottom. This 125 extension 44 makes an open-top box, into which material is placed by hand, and layers of different material may be placed in the box to form the mattress. A pad 45 is placed in front of the material near compression- 130 roller 3, Fig. 7, and a pad 46 is placed behind the material for holding the material in proper form and to assist in forcing the material into the tick. The pads are made of flexible ma-

terial and must be somewhat smaller or thinner than the mattress. When enough material has been placed in the open-top box to form a mattress, it is passed through the machine by operating the traveling belt 21. The frame 6 is set at a slight angle, so that the material will start under the frame 6. The traveling belt 8 is operated when the belt 21 is driven, and the sides of these adjacent to each other run in the same direction. Frame 6 being set at an angle the material is somewhat compressed before it reaches the compression-rollers 2 and 3. The end 47 of the box 1 may be provided with a door 104, through which material may pass. The extension is used for making mattresses such as are found on the market—that is, mattresses which are made of different material or the whole mattress made of the same material, but not put in condition for felting, and consequently not composed of a single bat. The extension feature of the machine adapts it for making any kind of a mattress which is made by compressing material and forcing the same into a tick. The machinery for compressing the single-bat mattresses, or, as they are known in the trade, "cotton-down" mattresses, is used for compressing other kinds of mattresses.

This invention has also a multiple feature—that is, extensions or sections, as between rollers 49. By means of the multiple or sectional feature mattresses are made of different material, or several layers with alternating layers of different material can be made. There may be as many multiples or sections of the machine as there are to be layers of material. Starting with the first multiple one employee puts on a layer of material. This layer is shifted to the next multiple or section, where another employee puts on top of the first layer a different layer of material. The two layers are shifted to a third multiple or section, where another or third employee puts on top of the two layers a third layer of material different from that put on at the second multiple or section, but may be like the material put on at the first multiple, or it may be different from both layers. This operation is continued until the desired number of layers are put on to make the kind of mattress wanted. In this manner several mattresses can be in process of manufacture at the same time. When sufficient layers of material are placed to form a mattress, the whole number are forced together through the machine previously described for compression and for forcing the same into a tick. The multiples or sections are so arranged that one or any number of them can be used without using all of them. The mechanism of the multiples or sections will now be described in detail.

Fig. 13 illustrates the machine with one multiple. Fig. 7 illustrates a machine with three multiples or sections. Each multiple or section consists of four upright posts 48, two

drums or rollers 49, a traveling endless apron or belt 50, sprocket-wheels 51 on the ends of rollers 49, and sprocket-chains 52. (See Figs. 4 and 6.) Each multiple is also provided with a suitable frame supported on uprights 48 and suitable driving-gear. The sprocket-chains 52 are attached to the belt 50 by means of lips 53, and the sprocket-wheels 51 are bolted to the ends of drums 49. A pair of side pieces 54 serve as a side frame for all the multiples. The driving-gear is mounted on one side of the multiples and consists of cog-wheels 55, mounted on the shafts of drums 49, and a shifting pinion 56. The pinion 56 is mounted on a suitable shaft and a shifting-lever 57 is mounted on the shaft 58 and pivotally connected to an arm 59, which is attached to the frame for the multiples. One end of the first multiple is adjacent to the extension 44 of the machine and the other end is adjacent to the second multiple, the other end of the second multiple is adjacent to the end of the third multiple, and so on to the last multiple. When so arranged, all can be geared together by throwing the shifting pinions in mesh with the cog-wheels. It will be seen that one or all or any number of the multiples can be thus geared together and driven by the driving-gear of the machine. Slats 60 are placed on the traveling aprons for aiding in shifting the material from one multiple to another and from the last multiple to the extension of the machine and thence through the machine by which the material is compressed and forced into a tick. The slats travel with the aprons, and thus shift the material; but the slats are very thin and narrow and can be drawn back without drawing the material back, the traveling aprons not moving while the slats are being drawn back. The material will be held by the aprons sufficiently to prevent the material from moving back with the slats. The material projects down between the slats enough to be held by the aprons. Auxiliary slats 61 for each multiple are hinged at one edge to the slats 60, as illustrated in Fig. 4. Any number of slats may be used. Two slats 62, extending the entire length of the machine, serve as frame-pieces for the edges of the multiples and the extension of the machine. The auxiliary slats are for the purpose of making mattresses of different widths and making such articles as pillows and cushions, as any one of them can be turned up to form the outer limit of the stuffing material, as clearly indicated in Fig. 4. Fig. 4 illustrates how one of the auxiliary slats is turned up for making a narrow mattress. The auxiliary slats are so thin that they will not interfere with the making of mattresses, although they are lying on top of the other slats. The slats 60 and 62 are attached to cross-piece or slat holder 64, and antifric-tion-rollers are attached to the slat-holder 64. A rod 65 is attached to slat-holder 64 by means of brackets 66, and the antifric-tion-rollers 67 are mounted on this rod.

These rollers prevent wear of the traveling apron or belt 50 as they bear upon the apron, and when the slats and apron are relatively moved the friction on the latter is diminished. A pad 46 is placed at each end of each mattress in formation. These pads hold the material in proper form. The pads go forward when the material goes forward. The material and the slats all go forward when driven by the traveling aprons. The upper slats are withdrawn by the cable 11, and the lower slats 60 are withdrawn by means of the cable 68, which is wound on the drum 69. Withdrawing the slats will not move the material, the material being prevented by the friction of the aprons 50. The pads are removed as each reaches the front or entrance end of the tick-holder and replaced behind by hand to commence a new mattress. The traveling aprons at the exit part of the machine are driven by the compression-rollers 2 and 3. These rollers are driven by the gearing illustrated in Figs. 1, 2, and 13. Roller 2 is driven by cog-wheel 70. Cog-wheel 70 is driven by pinion 71. Pinion 71 is driven by sprocket-wheel 72 and sprocket-chain 73. Sprocket-chain 73 is driven by a sprocket-wheel 74. This sprocket-wheel may be mounted loosely on the shaft 75, which is a power-shaft and has a clutch 76 rigid therewith. The hub of the wheel has a cooperating clutch 77 for engaging clutch 76, as shown in Fig. 15. A lever 78 is used for throwing these clutches in and out of gear or mesh. When the roller is not to be in use, the clutches are thrown out of mesh, and when they are to be used in driving the roller they are thrown in mesh by the lever 78. Gearing for driving the roller 3 is located on the opposite side of the machine. A spur gear-wheel 79 is mounted on shaft 80. Wheel 79 drives a spur gear-wheel 81, which is mounted in the swinging arm 82 of the triangle 84, which is formed of swinging arms. Wheel 81 drives a spur gear-wheel 85, which is mounted in corner 86 of triangle 84. Spur-gear 85 drives a spur gear-wheel 87, which is mounted on the shaft 88 of roller 3. It will be seen that gear-wheels 81, 85, and 87 are held positively in mesh by the links which form the triangle 84. The cross-link 120 prevents the sagging of the spur-gear. The links which apparently form sides of the triangle are independent of each other, but hold the spur-gear in mesh, while these gear-wheels are moving to allow up-and-down motion of the roller 3 and to allow the roller to occupy various positions, as when there are variations in the size of the mattresses or other articles. As roller 3 rises, the wheel 81 is held in mesh with wheel 79 by means of the swinging arm 82. By means of the intermediate spur-gear the adjacent surfaces of rollers 2 and 3 are made to turn in the same direction. The material is pressed and at the same time forced between the rollers and through the tick-holder and into the

tick, the tick being stretched over the tick-holder.

In making mattresses on the extension and on the multiples of the machine it is not necessary that the frame 6 be raised. Raising this frame and letting it down and adjusting the same for making mattresses requires considerable time. For making mattresses on the extension of the machine and on the multiples the pressure-frame is set at an angle and made stationary, and the raising and lowering of the frame is dispensed with and time is saved. The two traveling aprons or belts having their adjacent parts running in the same direction the material is compressed and forced forward as compressed to the compression-rollers and is forced into the tick by these rollers. There can be no binding of the material in the machine, because the adjacent parts of the belts or aprons run in the same direction. After the mattress leaves the machine with the tick on, the end of the tick is sewed up and the mattress is pounded to even up the material and to take out all lumps and to fill out all parts of the tick evenly before finishing. The mattress is received on a rotating table 89. The table may be rotated by the pulley 90 with any suitable motive power. The mattress 91 is received on the table, and as the table is rotated the mattress is pounded by the pounding attachment 92. A plurality of arms 93 are pivotally mounted on a shaft 94, which is journaled in bearings 95. Spiral springs 96 are attached to each arm and to a cross-beam 97. The short ends of the arms are rounded, and the arms are operated by means of dogs 98, which are rigidly attached or mounted on a shaft 99, which may be rotated or revolved by any suitable power. The power for driving the pounding attachment may be the same power which drives the machine, with all its attachments. As this shaft is revolved the dogs 98 engage the rounded ends of the arms 93 and depress them and raise the other ends up, and as soon as the dogs release the arms the arms fall on the mattress. The force of stroke depends on the strength of the springs 96 and the weight of the arms.

Provision is made for replacing the trap or false bottom 38 automatically. Weights 100 (shown in dotted outline in Fig. 7) are attached to the cords 101. As soon as the material for forming the bat is thrown from the false bottom the bottom is drawn back to its place by the weights 100, and the false bottom is prevented from going too high by means of two stops 102, one attached to each side of box 1 on the inside thereof.

All the traveling aprons or belts may have means for regulating the tension thereof. Figs. 7 and 13 illustrate how frame 6 is constructed. The bearings 103 are bolted to the frame-pieces and may be bolted at different adjustments to take up any slack that may

be in the belts after they have run awhile. The extension and multiple parts of the machine may have similar means for taking up the slack.

5 Various changes may be made in the construction and in the assembling of the various parts of the machine herein described without departing from the intent of the invention.

10 While I may use the multiples alone and in connection with the compressing mechanism in making mattresses, it is obvious that I may also employ in connection therewith the collecting-frame extending above the compressing mechanism to place an extra top to
15 any mattress formed on the multiples and prior to its being compressed.

Having fully described my invention, what I claim as new, and desire to secure by Letters
20 Patent, is—

1. In a mattress-making or similar machine, the combination with a mattress forming and compressing mechanism, of a frame projecting upward therefrom, a false bottom contained within said frame, triggers for supporting said bottom in position, and means for withdrawing the triggers from their supporting position, whereby, as a mattress is being formed and compressed, material for
25 the formation of another mattress may be supplied above and supported by the said false bottom.

2. In a mattress-making or similar machine the combination with a mattress forming and compressing mechanism, of a box-like frame extending above the same and provided with a hinged bottom, triggers for supporting said bottom in position, means for withdrawing the triggers from their supporting position, and devices to automatically return the bottom to its closed position after having dumped its load, whereby the operation of the machine is made continuous.

3. In a mattress-making machine provided with a collecting and cleaning box and compression-rollers; means for driving said rollers consisting of spur-gear, a gear-wheel on the shaft of each roller and intermediate spur gear-wheels for giving proper motion to said rollers, swinging arms forming a triangular frame for mounting and controlling the motion of said intermediate spur-gear, and a swinging arm for connecting said frame to the shaft of the lower roller, said frame being mounted on the shaft of the upper roller.

4. In a mattress-making machine, the combination with a box for cleaning and collecting material, traveling aprons adjacent thereto for compressing said material into the form of a mattress, an extension projecting from the lower part of the machine, and a traveling apron carried by said extension, whereby material may be arranged on said extension in the form of a mattress and then fed to the
65 compression-aprons.

5. In a mattress-making machine provided with a cleaning and collecting box, compression-rollers, and a frame for mounting said box and rollers; said frame having E-shaped beams at the rear end, the lower compression-roller having fixed bearings, the upper compression-roller having movable bearings, brackets bolted to said E-shaped beams, a cross-bar mounted in said brackets, the bearings for said upper roller being bolted to said cross-bar, and means for raising and lowering said cross-bar.

6. In a mattress-making machine provided with means for cleaning and collecting and compression-rollers for compressing material into bats; one of said rollers being mounted in movable bearings and the other roller being mounted in stationary bearings, means for transmitting positive motion from said stationary roller to the movable roller consisting of spur-gear mounted on the shafts of said rollers and intermediate spur-gear, a swinging arm, and swinging arms forming a triangle for mounting and holding said gear in mesh.

7. In a mattress-making machine provided with means for compressing material into mattresses and forcing the same into ticks; means for arranging material for one or more mattresses outside of said machine consisting of an extension of the bottom part of said machine and one or more sections, one section being detachably connected to said extension and the other sections being connected to each other end to end, and means for operating said machine with the extension and said sections.

8. In a mattress-making machine provided with means for compressing material into mattresses and forcing the same into ticks; means for preparing material for one or more mattresses consisting of separate sections of said machine connected to said machine and to each other.

9. In a mattress-making machine provided with means for compressing material into mattresses and forcing the same into ticks; separate sections extending to said machine and on which material is prepared for one or more mattresses and means for shifting the material into said machine to be compressed into mattresses.

10. A mattress-making machine provided with means for compressing material into a mattress, a frame extending from the lower part of said machine, separate mattress-forming sections supported by said frame, and means for shifting the material from one section to another.

11. The combination with a mattress-making machine of one or more sections, a frame connecting said machine and said sections, a traveling endless apron for each section, and gearing whereby one or more or all of said sections may be driven from the power of said machine.

12. The combination with a mattress-making machine of one or more sections, a frame connecting said machine and said sections, a

traveling endless apron for each section, slats extending out of said machine over said sections, and means for shifting material from one of said sections to another successively 5 and from the last section to the said machine to be compressed into mattresses.

13. The combination with a mattress-making machine of one or more sections, and slats for carrying material from said sections to 10 another successively and from the last section to said machine and means for moving the slats.

14. The combination with a mattress-making machine of one or more sections and slats 15 for said sections, each section being provided with an endless traveling apron and auxiliary slats hinged to said first-named slats for the purpose set forth.

15. The combination with a mattress-making machine of one or more sections and slats 20 extending over all of said sections and over

the bottom of said machine, each multiple having an endless traveling apron, drums for mounting said aprons, sprocket-wheels attached to said drums, a sprocket-chain mounted 25 on said sprocket-wheels and attached to said apron, and shifting driving-gear.

16. The combination of a mattress-making machine of a series of sections connected thereto, endless belts carried by each section, 30 gearing for operating said belts to advance the material from one section to another, and means at the end of the series of sections for compressing the material into the form of a mattress. 35

In testimony whereof I set my hand, in the presence of two witnesses, this 10th day of July, 1899.

CHARLES WILLIS WHITE.

Witnesses:

D. B. AXTELL,
J. T. ROGERS.