(No Model.) 2 Sheets—Sheet 1.

E. B. DIXON.

MATTRESS TUFTING MACHINE.

No. 595,152. Patented Dec. 7, 1897.

Fig. 1.

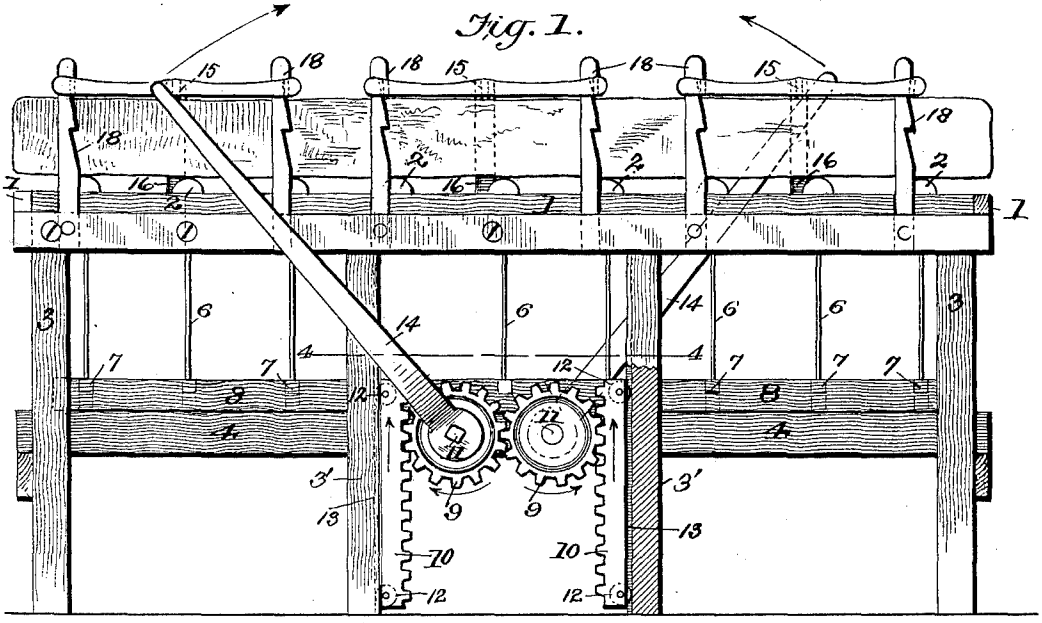
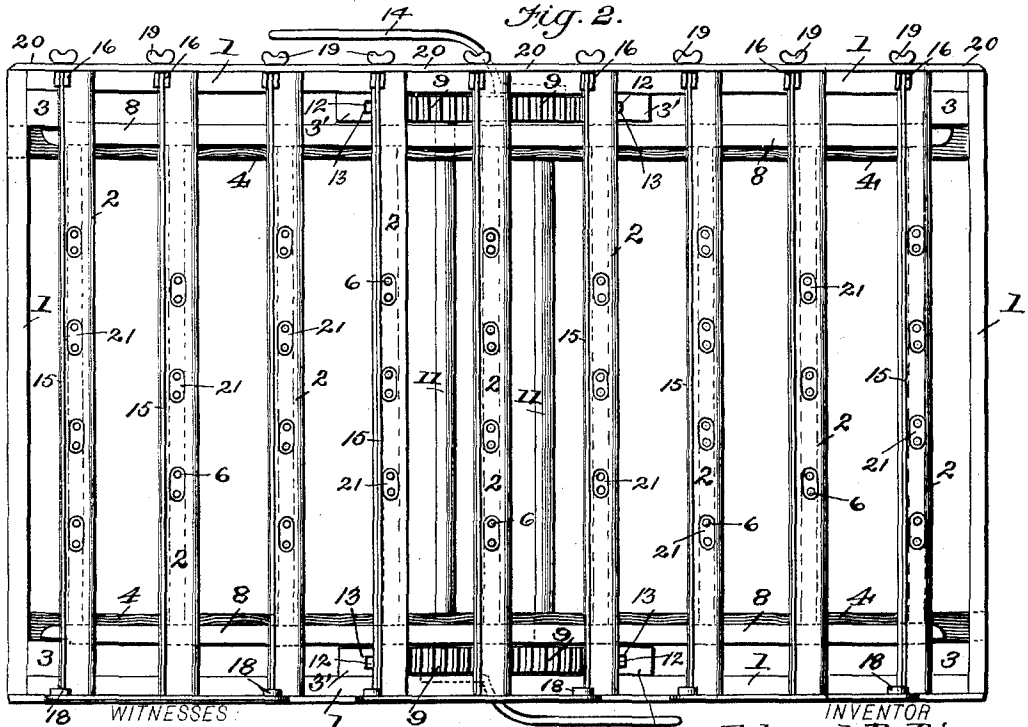


Fig. 2.



WITNESSES:
Jos. A. Ryan
Amos W. Hart

INVENTOR
Edward B. Dixon.
BY Munn & Co.
ATTORNEYS.

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

(No Model.) 2 Sheets—Sheet 2.

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Fig. 3.

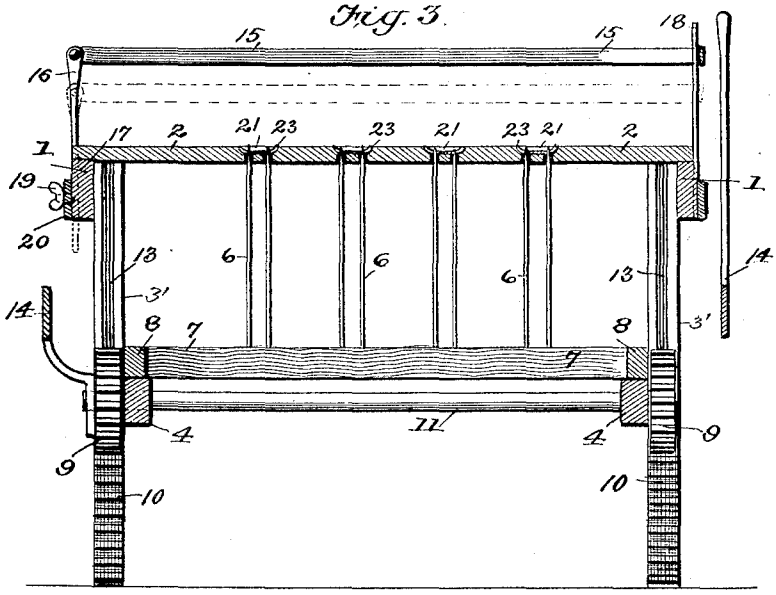


Fig. 6.

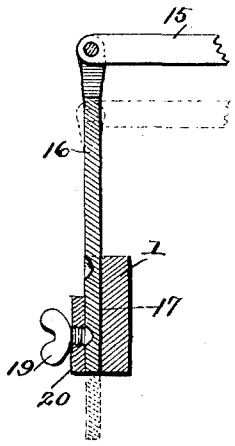


Fig. 4.

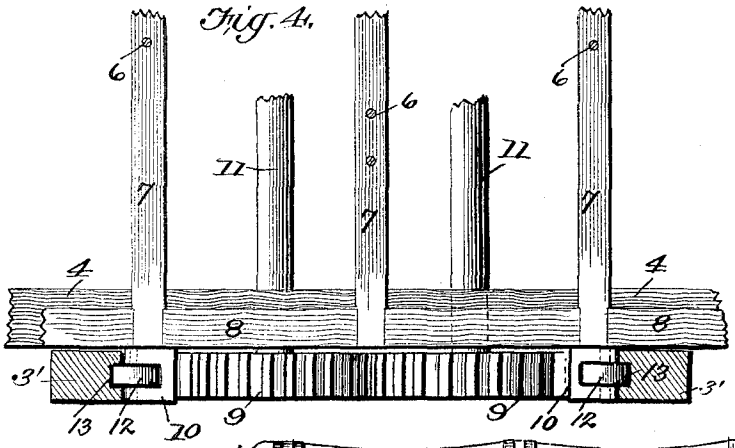


Fig. 7.

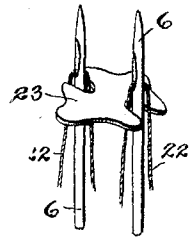
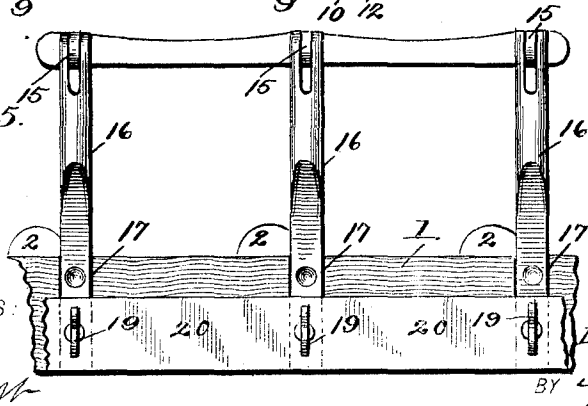


Fig. 5.



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UNITED STATES PATENT OFFICE.

EDWARD B. DIXON, OF GRANTSBOROUGH, NORTH CAROLINA.

MATTRESS-TUFTING MACHINE.

SPECIFICATION forming part of Letters Patent No. 595,152, dated December 7, 1897.

Application filed July 14, 1897. Serial No. 644,564. (No model.)

To all whom it may concern:

Be it known that I, EDWARD B. DIXON, of Grantsborough, in the county of Pamlico and State of North Carolina, have invented a new and Improved Mattress-Tufting Machine, of which the following is a specification.

My invention is an improvement in that class of tufting-machines in which a series of pairs of needles are forced up through the mattress while held by suitable clamps upon a suitable bed or frame.

It is my object to enable the needles to be raised and forced up through a mattress with greater ease than before; also, to simplify and reduce the weight, number, and cost of parts; also, to provide lateral guides or holders for the mattress while on the bed or frame; also, to make such guides vertically adjustable in order to accommodate mattresses of different thicknesses; also, to provide a temporary holder for the tufts, all as hereinafter described.

In accompanying drawings, two sheets, Figure 1 is a side view of the machine, and Fig. 2 is a plan view of the same. Fig. 3, Sheet 2, is a vertical central transverse section of the machine. Fig. 4 is a detail horizontal section on line 4 4 of Fig. 1. Fig. 5 is a detail side view of a portion of the machine. Fig. 6 is a detail section illustrating the vertical adjustment of the mattress-clamps. Fig. 7 is a perspective view illustrating the coaction of the needles with the tufts.

The fixed horizontal rectangular frame 1, Fig. 3, has a series of parallel perforated cross-bars 2. Such frame 1 and bars 2 constitute a table upon which the mattress is laid and clamped while being tufted. The same is supported by vertical legs 3 3, which are attached to the inner side of the frame 1 and connected by horizontal brace-bars 4.

The eyed needles 6 are arranged vertically in pairs and work in the holes of cross-bars 2, each pair being set in a separate holder constructed as a rack-bar and raised and lowered by a pinion that meshes with such rack-bar, as in some other machines. The needles 6 are all secured in the parallel cross-bars 7, Fig. 3, of a rigid but movable frame 8, arranged beneath the fixed table and guided in part by the legs 3. The means for raising and lowering such needle-carrying frame 8 are four pinions or gears 9 and four rack-bars 10, both such gears and rack-bars being arranged in pairs and intermeshing, as shown. Thus there are two gears 9 and two racks 10 arranged in the same vertical plane on each side of the machine, each pair of gears being between two racks. The gears 9 are keyed on the ends of parallel rotatable shafts 11, that extend across the machine beneath the table and have their bearings in the side bars 4, while the rack-bars 10 slide on opposite legs 3′ and have antifriction-rollers 12, that work in guide-grooves 13 in the legs. It will be understood the upper ends of the racks 10 are attached to the sides of the needle-frame 8. A bent lever-arm 14 is attached to one of the gears 9 on each side of the machine, and when the needle-frame 8 is lowered in normal position on the side bars 4, as shown in Fig. 1, the levers 14 project upward at an angle of about forty-five degrees, more or less. I employ two such levers 14 for convenience in operating the machine on either side.

It will be perceived that by moving the free end of either lever 14 in direction of arrow, Fig. 1, the several gears 9 will be rotated simultaneously, (those of each pair necessarily rotating in opposite directions,) thus raising the rack-bars 10, and thereby the needle-frame 8, so that the needles 6 are caused to project up through the perforated cross-bars 2 and through the mattress lying thereon. It is likewise obvious that upon moving the lever 14 to its former normal position the needle-frame 8 will be lowered and the needles 6 retracted—*i. e.*, drawn down through the mattress and perforated bars 2. This operation is effected with comparatively little effort, since the needles 6 are held in a single frame 8, that has little friction with its guides, and for the further reason that but two sets of gears 9 and racks 10 are required to effect the desired movement in place of the many heretofore employed.

The means for clamping the mattress upon the bed or frame 1 consist of a series of sets of metal bars 15, that are hinged to vertically-adjustable posts or bars 16, arranged in guide-grooves 17, formed in one side of the frame 1 and projecting above it; also, of pairs of vertical catches 18, which are arranged on the opposite side of frame 1 and engage the free ends of the sets of clamping-bars 15 when the

same are lowered upon the mattress, as shown n Fig. 3.

For holding the posts 16 at any height to which they may be adjusted I employ a series of winged clamp-screws 19, Fig. 6, which work in a metal bar or plate 20, that also serves to confine the posts 16 in their guide-grooves 17.

It will be noted, Fig. 1, that the catches 18 are provided with a series of notches or shoulders, which correspond to the different vertical adjustments ordinarily required for the sets of clamp-bars 15.

Each of the perforated bars 2, Fig. 1, is provided with cavities or depressions 21 at the points where the pairs of needles 6 work through said bars. Such cavities 21 are for the purpose of holding tufts, as shown.

In operating the machine the needle-frame 8 is first elevated, as before described, to bring the eyes of the needles 6 above the perforated table, then tufting-cords 22 are passed through the needles and the latter lowered to the original normal position, next the tufts 23, Fig. 3, are put in place in the cavities 21 of bars 2, and, lastly, the filled mattress to be tufted is laid upon the perforated table or bars 2 and the clamping-bars 15 turned down and engaged with the catches 18. Upon depressing either lever 14 the needles 6 pass up through the bars 2 on both sides of the tufts 23 and carry the cords 22 up through the mattress, when they are drawn out of the needle-eyes and tied, which completes the operation. The needle-frame 8 is then lowered, and the bars 15 are released from catches 18 and turned back, when the mattress may be removed from the table.

It will be observed the adjustable posts 16 serve as guides for the mattress, which is placed with one side in contact with them.

In practice springs may be employed to depress the movable needle-frame 8 after the tufting-cords have been drawn out of the needles. Ratchet-bars may also be provided for engaging and holding the lever-arms 14 temporarily depressed.

What I claim is—

1. In a mattress-tufting machine, the combination with a table having a series of perforations, of a vertically-adjustable frame arranged under such table, and carrying the needles as specified, two sets of rack-bars attached to opposite sides of such movable frame, two sets of connected gears which mesh with said racks and with each other, as shown, and a lever connected with one of the sets of gears, as shown and described, to operate as specified.

2. The improved mattress-tufting machine, comprising the fixed frame 1, the perforated cross-bars 2, held thereon, the vertically-movable frame 8, arranged beneath such mattress-table, or support, and carrying a series of pairs of needles; a pair of rack-bars attached and arranged vertically on each side of such movable frame; vertical fixed guides 3′; a pair of gears arranged between the rack-bars and meshing with them and with each other; two parallel shafts whereon the gears are keyed; and lever-arms for rotating the gears; as shown and described.

3. In a mattress-tufting machine, the combination, with the perforated table, of the adjustable mechanism for securing mattresses of different thicknesses, the same consisting of the posts 16, which are adjustable vertically, means for securing them in any adjustment, the clamping-bars hinged to said posts, and the vertical catches having a series of shoulders, or notches, for engaging and holding the said bars at different heights, as shown and described.

4. In a mattress-tufting machine, the combination, with the perforated table, of the vertically-adjustable posts; vertical guide-grooves for the same; a bar or plate 20, spanning such grooves; a series of clamping-screws working in said plate, and adapted to bear upon the posts; clamping-bars hinged to the posts; and catches having a series of notches, for engaging the free ends of the clamping-bars; as shown and described.

EDWARD B. DIXON.

Witnesses:
D. L. ROBERTS,
F. T. PATTERSON.