

No. 661,063.

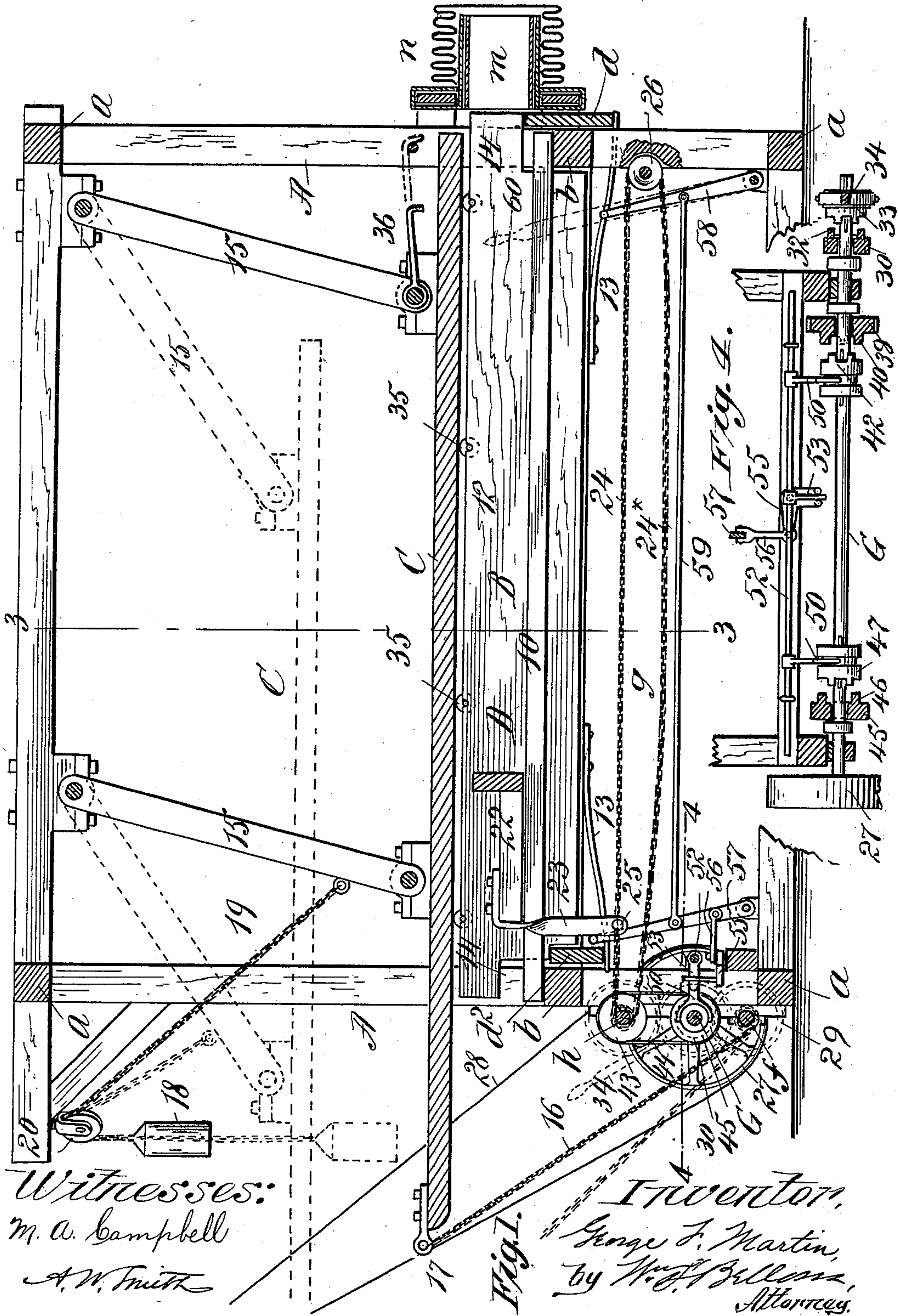
Patented Nov. 6, 1900.

G. F. MARTIN.
MATTRESS MACHINE.

(Application filed Sept. 25, 1899.)

(No Model.)

2 Sheets—Sheet 1.



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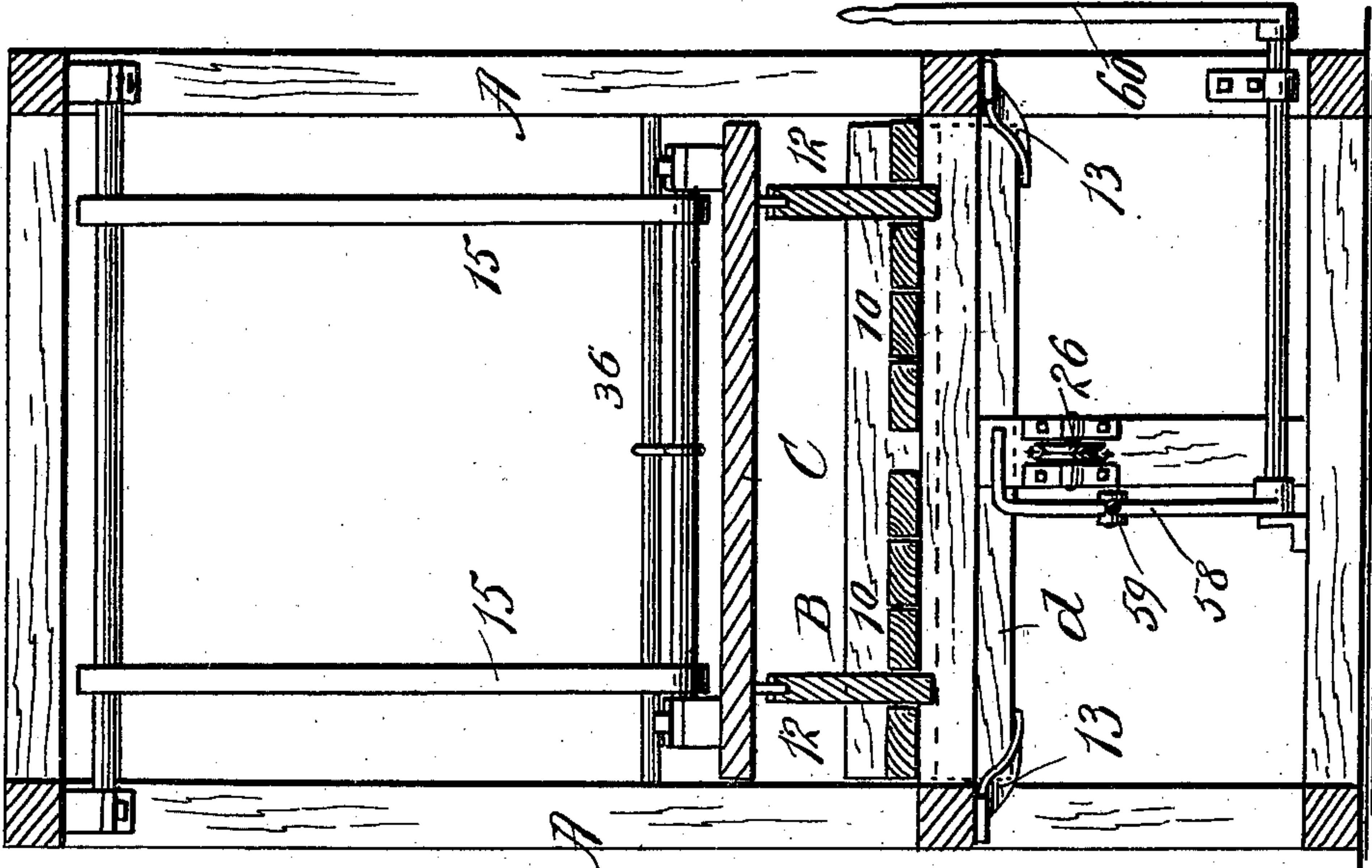


Fig. 1

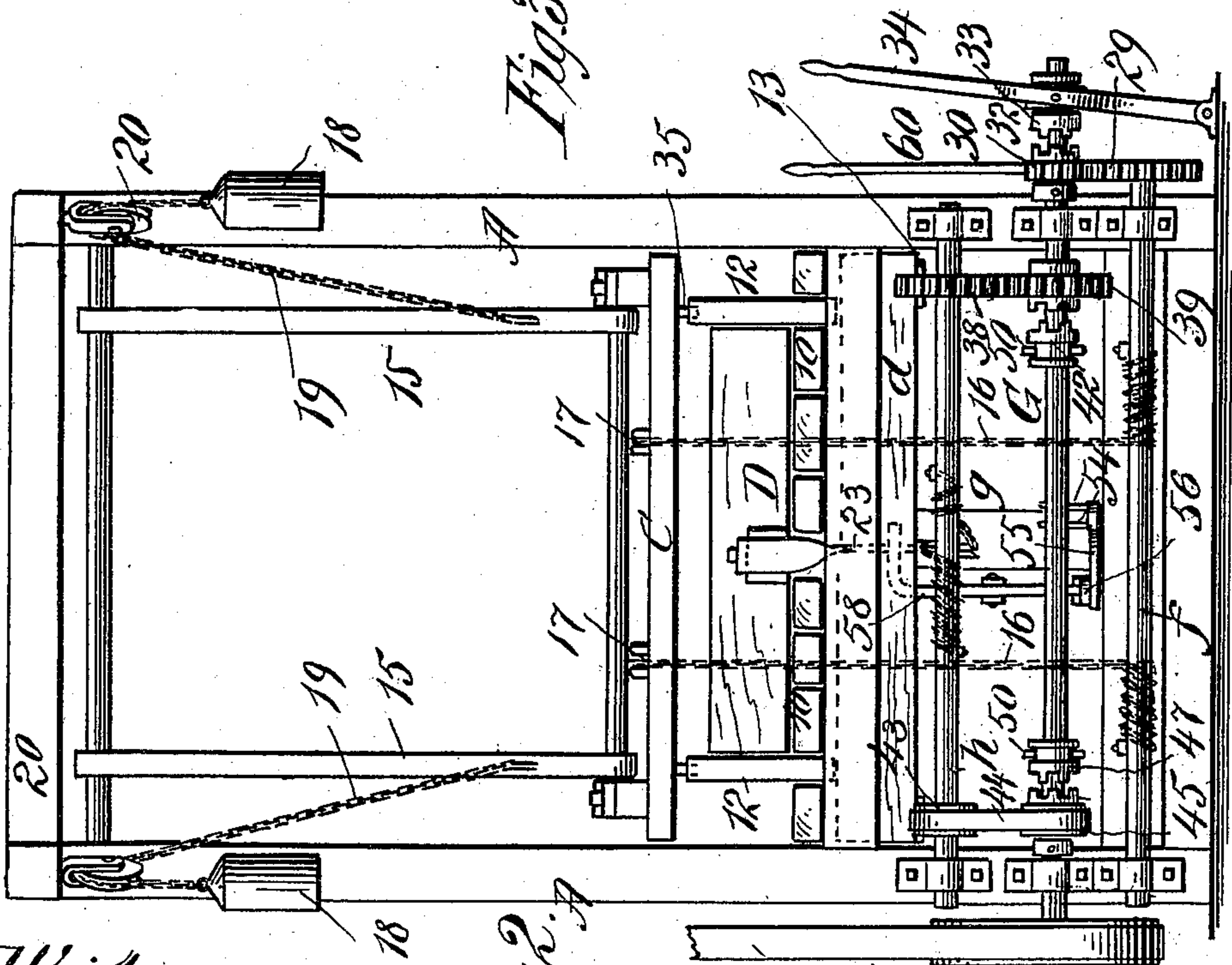


Fig. 2

Witnesses:
M. A. Campbell
J. W. Smith

Inventor
George F. Martin
by *Wm. F. Allen*, Attorney.

UNITED STATES PATENT OFFICE.

GEORGE F. MARTIN, OF SPRINGFIELD, MASSACHUSETTS.

MATTRESS-MACHINE.

SPECIFICATION forming part of Letters Patent No. 661,063, dated November 6, 1900.

Application filed September 25, 1899. Serial No. 731,517. (No model.)

To all whom it may concern:

Be it known that I, GEORGE F. MARTIN, a citizen of the United States of America, and a resident of Springfield, in the county of Hampden and State of Massachusetts, have invented certain new and useful Improvements in Mattress-Machines, of which the following is a full, clear, and exact description.

This invention more particularly relates to novel means for movably mounting and operating the compressing-top or press-box cover of a mattress-machine, to novelties in the construction and arrangement of the parts which constitute the press-box, and to improved means for automatically displacing the forward end wall of the press-box at a seasonable time in the operation of the machine, whereby after the mattress-filling material has been compressed the same may, without obstruction, be discharged through the guiding-spout therefor into the mattress-case; to improved means for operating the plunger or push which forces the compressed mattress-filling from the press-box into the mattress-case, which latter means comprises appliances to automatically insure the arrest of the forward movement of the plunger when the same has been sufficiently forwardly projected, and then again to insure automatically the arrest of the latter when the same has been withdrawn to its normal rearward disposition to constitute in substance the rear end wall or closure of the press-box, and, furthermore, to cooperative combinations and arrangements of different departments or positions of the machine, all to the end of the production of a machine for compressing mattress-filling material and for stuffing the mattress-case therewith, which while of the utmost efficiency for satisfactorily performing the work required is comparatively simple in its organization, inexpensive, and susceptible of use with the utmost ease and rapidity; and the invention consists in a mattress-machine embodying the constructions and arrangements hereinafter described and set forth in the claims.

The invention is illustrated in the accompanying drawings, in which—

Figure 1 is a sectional elevation longitudinally of the machine. Fig. 2 is a rear end

elevation of the same. Fig. 3 is a vertical cross-sectional view taken on the line 3 3, Fig. 1. Fig. 4 is a plan and sectional view of mechanism arranged transversely at the rear end portion of the machine below the plane indicated by the line 4 4, Fig. 1.

Similar characters of reference indicate corresponding parts in all of the views.

The supporting structure of the machine comprises the two opposite upright rectangular side frames A, united by the transverse sills or beams *a a* at top and bottom, and the transverse beams *b b* suitably high to constitute the primary supports for the bottom 10 of the press-box B.

The width of the frame structure is as great or greater than the maximum width of mattress for the filling of which the machine is to be used, and the bottom 10 of the press-box consists of a number of separate planks, the ends of which rest on the cross-beams *b b*, the intermediate ones being secured, while those at or near the sides are left unsecured.

12 12 represent the press-box sides, spring-supported for a yielding vertical motion.

13 13 represent supporting-springs secured on the framing and having their free ends, which are extended toward the ends of the machine, supporting the transversely-extending edgewise upright boards or planks *d* and *d*², and upon these the end portions of the press-box sides are directly supported. The press-box sides at their opposite ends are recessed or step-formed, as shown at 14, whereby the sides may have their descending movement under pressure without being obstructed by the framing-beams *b b*. The rear end transverse board, in addition to constituting the one end support for the press-box sides, also constitutes the end wall of the press-box itself.

C represents the compressing-top or press-box cover, and D represents the plunger-bar for the ejection of the compressed mattress-stuffing, and which constitutes the rear end wall of the press-box.

The compressing-top is suspended at the lower ends of the duplicated links 15 15, the upper ends of which are hung from suitable supports therefor provided at the frame-top, so that said top will have its rising-and-falling motion and yet will be constrained al-

ways horizontally. The downward motion is imparted to the top sufficiently forcibly by the winding connection which the duplicated chains, cords, or other equivalent flexible connections 16 have around the shaft *f*, the upper ends of said chain having connection, as indicated at 17, with the rear end of the top C.

Counterweights 18 18 are suspended from chains 19, intermediate portions of which run over the guide-sheaves 20, said chains having connection with the links 15, whereby the tendency of the weight is through the chain and link to lift the compressing-top C and hold it elevated previous to the compression thereby.

While it is true that the weighted chains have elevating and supporting connections with the top, through the links, the chains might in lieu thereof be directly connected to the top.

The plunger-bar D is carried by the longitudinal member 22, which has the depending bar 23, which extends downwardly through a space between the middle bottom constituting planks 10 10, below the bottom of the press-box, and has connected to its extremity the approached ends of the draft-chain *g*, one course 24 of the chain extending rearwardly from the connection-point 25 directly to the winding connection about the horizontal transverse shaft *h*, while the other course 24* of the chain extends from the connection-point 25 horizontally forwardly to the forward end of the machine, passing around the sheave 26, and thence returned to winding connection with the same horizontal shaft *h*.

Manifestly the turning of the shaft *h* in one direction causes the one course of the chain to wind up thereon and the plunger-bar to be forwardly moved, the other course of the chain unwinding, while the rotation of the said shaft in the opposite direction insures a reversal of such operations, resulting in the rearward withdrawal of the plunger.

G represents the main or power shaft of the machine, the same having thereon the driving-pulley 27, around which runs the belt 28. This shaft G is adjacent and parallel with the aforesaid winding shaft or drum *f* for the top-operating chains 16. The said shaft *f* has fast thereon the spur gear-wheel 29, meshing into which is the spur gear-wheel 30, loose on the main shaft G and having its hub constructed to constitute the clutch member 32, adjacent which is the clutch collar or member 33, splined to slide longitudinally on the main shaft, but necessarily rotating with the latter. The said clutch member 33 has combined therewith the operating-lever 34 for throwing it into and out of clutch. When the gear-wheel 30 is in clutch with the shaft, it then rotating will through gear-wheel 29 insure the rotation of shaft *f* and the winding thereon of the chains 16, resulting in the forcible downward movement of the top C for the compression of the mattress-filling ma-

terial heaped into the press-box. The top in descending comes to contact on the upper edge of the press-box sides or upon the peripheries of the rollers 35, provided thereat, and the final portion of the descending motion concurrently with the compression of the mattress-filling material downwardly forces the press-box sides, the supporting-springs 13 therefor correspondingly yielding under the transverse walls or cross-boards which are directly sustained thereon.

It will be understood that at the completion of the descending movement of the top C, which final movement brings the top to a position a little lower than that represented in Fig. 1 and also to a position projected somewhat endwise to the right from the position positively shown, said top is to be temporarily restrained from rising under the elevating action of the counterweights 18, when the clutches 32 33 are disconnected by the detent device or hook 36, which is placed in engagement over the cross-rod projected horizontally between the upright members of the frame and as indicated by the dotted lines in Fig. 1.

As relating to the expelling motion of the plunger D and the retiring motion thereof, certain mechanism will now be pointed out as follows: On the aforesaid shaft or drum *h*, around which the courses of the chain *g* are wound and unwound, as heretofore explained, at the one end portion is the gear-wheel 38, which is fixed thereon and in mesh with the gear-wheel 39, loose on the main shaft G, this gear having on its hub a clutch member 40 for the engagement therewith of the sliding clutch member 42, splined on said shaft G. Upon another portion of the said winding-shaft *h* is the pulley 43, around which runs the open belt 44, the same also running around the pulley 45, formed as one with the clutch member 46, this latter clutch-pulley being loose on shaft G and having to cooperate therewith the adjacent sliding clutch-sleeve 47, spline-engaged on the main shaft. When the shaft G drives shaft *h* through the meshing gears 38 39, it will be in a direction opposite that of the rotation of the main shaft; but when said main shaft G drives the winding-shaft *h* through the pulley 43, open or uncrossed, belt 44, and pulley 45 the motion of the shaft *h* will be in the same direction as that of the main shaft. It will be here explained that under a continuous running of the main or driving shaft G at different times the shaft *h* is to have movements in opposite directions one from the other. Hence when one clutch is in the shaft G will, through gearing 39, drive shaft *h* reversely; but when the other clutch is in shaft G will, because of the open belt, rotate *h* in the same direction therewith. Of course a cross-belt would reverse in the direction of, and hence the employment of, the open belt as a desirable means of transmission. For the greater portion of the time neither of the clutch-collars 40 or 47

are in clutch with the clutch members adjacent thereto; but to place the winding-shaft *h* in connection with the main shaft by throwing in the one or the other of the afore-
 5 said clutches as required, according as to whether the plunger *D* is to be forwardly moved or rearwardly, and to insure automatically the stoppage of the plunger when it has reached its proper forward limit and there-
 10 after again when it has reached the proper limit of its reverse motion, mechanism is comprised as follows: Both of the clutch-collars, which are peripherally grooved, are engaged by the forked arms 50 50 of the horizontal
 15 transversely-sliding rod 52. This slide-rod also has the arm 53, having an engagement between the upstanding studs 54 of the bell-crank lever 55, which latter is by link 56 connected to the trip-lever 57, pivoted at its bot-
 20 tom and upwardly extended into the path of the depending bar or abutment 23, provided on and to move in unison with the plunger *D*. The second trip-lever 58 is provided at the forward end of the machine, the two levers
 25 being connected by the link 59. One of the trip-levers has the operating-handle 60, the swinging movement of which insures the swinging of the bell-crank 55 and endwise shifting of the slide rod and the placing of
 30 the one or the other of the clutch members 40 or 47 in clutch to insure the progressive motion of the plunger, the arrangement being such that only one of the clutch members may be in clutch at the same time.

35 So it will be understood in the employment of the machine in the mattress-stuffing operations that after the filling material has been compressed the swinging of the clutch-controlling handle or lever 60 will throw in the
 40 proper clutch to insure the turning of shaft *h* in the direction to produce the forward traveling motion of the pusher, which will continue until the abutment 23 will strike the trip-lever 58, at which time the filling material will
 45 have been entirely forced through the spout *m* into the mattress *n*, placed thereat for the reception of such filling material, and the trip-lever 58 having been thus engaged and moved by the abutment 23 the first clutch
 50 will be thereby thrown out in the forward motion of the pusher arrested. The attendant then throws the operating-handle 60 in the opposite direction, thereby establishing the condition for the reversal of the winding
 55 rotation of shaft *h*, whereupon the plunger *D* will be returned to its normal rearward position, and on reaching such position its abutment 23 will strike against the trip-lever 57, adjacent which it has come, automatically
 60 throwing out the clutch of the reversing mechanism of connection between the main shaft and the winding-shaft *h*.

Having thus described my invention, what I claim, and desire to secure by Letters Patent, is—

1. In a mattress-machine, the elevated frame or supporting structure, the press-box

supported below the top of the frame, yielding supports for the press-box, and a compressing-top, having both a vertical and a
 70 lateral movement, combined with two sets of opposite pairs of links 15, by their upper ends pivotally hung to the upper part of said supporting structure, and on the lower ends of
 75 which the compressing-top is hung, and means for exerting a downward and a lateral draft on said top to carry it at all times in parallelism with the plane of the top of the compressing-box, as shown.

2. In a mattress-machine, the combination
 80 with the elevated framing or supporting structure and the press-box supported thereby below the top thereof, of a compressing-top, two sets of opposite pairs of links 15, by their upper ends pivotally hung to an upper part of
 85 said supporting structure and on the lower ends of which the compressing-top is hung, a shaft, a winding-drum loosely mounted upon the shaft and provided with a clutch connection and a chain or like flexible connection
 90 secured to said top and having a winding engagement with said shaft, means for imparting an occasional winding motion to said shaft and means for exerting an elevating force on
 95 said top to raise the same and insure thereby the unwinding of said flexible connection after the mattress-stuffing operation.

3. In a mattress-machine, the combination with the elevated framing or supporting structure and the press-box supported thereby below the top thereof, of a single compressing-
 100 top, two sets of opposite pairs of links which by their upper ends are pivotally hung to upper end portions of the said supporting structure, and on the lower ends of which the compressing-top is hung, the winding-shaft *f*, the
 105 connection 16 secured to said top and having winding engagement with said shaft, a driving-shaft *G* having a clutch-provided gear-wheel loose thereon, a clutch member having
 110 a sliding engagement on the driving-shaft *G* to engage and disengage said clutch-provided gear, a gear-wheel on the winding-shaft engaged by the first-named gear and means for operating the clutch member.

4. In a mattress-stuffing machine, in combination, the press-box, the compressing-top *C*, pairs of links 15 by which the top is suspended, the winding-shaft *f*, the connection
 120 16 secured to said top and having winding engagement with said shaft, a driving-shaft *G* having a clutch-provided gear-wheel loose thereon, a clutch member having a sliding engagement on the main shaft to engage and
 125 disengage said clutch-provided gear, a gear-wheel on the winding-shaft engaged by the first-named gear, means for operating the sliding clutch member, the guide-sheaves 20, the counterweights 18, the flexible connections 19, on which the weights are connected
 130 which run over the said sheaves, and are connected to one of each of the pairs of said links.

5. In a mattress-machine, the press-box having the sides thereof spring-supported and

downwardly yielding, in combination with a compressing-top, and means for imparting the compressing downward motion thereto, substantially as described.

5 6. In a mattress-machine, in combination, the press-box having the opposite upstanding sides spring-supported and downwardly yielding under pressure, and provided with the rollers 35 at their upper edges, the compressing-top C supported by the paired links 15, a winding-shaft and means for operating it and the flexible connection in winding engagement with said shaft and secured to the compressing-top, substantially as described.

15 7. In a mattress-machine, the press-box having the sides and the wall at the discharging end thereof spring-supported, the compressing-top, and means for moving it forcibly downwardly toward and against the upper edges of said press-box sides insuring under compression, the lowering of said sides and of said depressible end wall, a plunger within the press-box, and means for operating it.

25 8. In a mattress-machine, the combination with the framing of the machine, and the springs 13, 13, provided thereon, of the cross-boards d and d^2 supported by said springs and the opposite longitudinal boards 12, 12, supported on said cross-boards and all vertically movable, of the compressing-top C, the links on which the same is supported, and means for imparting the downward motion to said top to bring it forcibly against the upper edges of said side boards.

35 9. In a mattress-machine, the combination with the elevated framing or supporting structure and the press-box supported thereby below the top thereof, of a single compressing-top, two sets of opposite pairs of links which by their upper ends are pivotally hung to upper end portions of the said supporting structure, and on the lower ends of which the compressing-top is hung, and the plunger D, the main shaft G, the winding-shaft f and the winding-shaft h , arranged in parallelism, and the sheave 26, the chain 16 connected to the top and engaging shaft f , the chain g having both ends thereof connected to the plunger, and one course thereof extended directly to winding engagement with said shaft h , while the other course thereof extends forwardly around said sheave, and returns to winding and unwinding engagement with the shaft h , and separate means for placing the shafts f and h in connection with the said main shaft G to be rotated thereby.

60 10. In a mattress-machine, the combination with the elevated framing or supporting structure and the press-box supported thereby below the top thereof, of a single compressing-top, two sets of opposite pairs of links which by their upper ends are pivotally hung to upper end portions of the said supporting structure, and on the lower ends of which the compressing-top is hung, and the plunger D, the main shaft G, the winding-shaft f and the

winding-shaft h , arranged in parallelism, and the sheave 26, the chain 16 connected to the top and engaging shaft f , the chain g having both ends thereof connected to the plunger, and one course thereof extended directly to winding engagement with said shaft h , while the other course thereof extends forwardly around said sheave, and returns to winding and unwinding engagement with the shaft h , means for placing the shafts in connection with the said main shaft G to be rotated thereby, and separate shiftable driving mechanisms between the shaft G and shaft h , and means for placing the one or other thereof in its driving connection, for the purposes set forth.

11. In a mattress-stuffing machine, the press-box, and the plunger D, placed therein, a driving-shaft, the shaft h driven from the driving-shaft, the sheave 26 placed at the opposite end of the frame, and a chain wrapped around the shaft h and the sheave, and to which the plunger is fastened, combined with a mechanism for driving the chain in one direction so as to push the plunger toward the rear end of the presser-box, and shiftable connections connected with said mechanism for reversing the movement of the chain and returning the plunger to the forward or outer end of the box, and which connection is adapted to be so moved that the shaft h will not operate the chain in either direction, substantially as described.

12. In a mattress-stuffing machine, the press-box, the plunger D placed therein, a driving-shaft, the shaft h driven from the driving-shaft, the sheave 26 at the opposite end of the frame, the chain g wrapped around the shaft h and the sheave, and to which chain the plunger is connected, combined with a mechanism for reversing the forward movement of the shaft h for the purpose of returning the plunger to the outer end of the box after it has been forced forward for the purpose of forcing the material into the ticking, and a mechanism placed at each end of the box whereby the shaft h is automatically thrown out of gear when the plunger reaches the length of its movement either forward or back, substantially as specified.

13. In a mattress-stuffing machine, the combination with the winding and unwinding shaft h having the gear 38, and pulley 43 fast thereon, the plunger D, and the chain connections g arranged substantially as described, of the driving-shaft G having the clutch-provided gear 39 loose thereon, and the open belt 44, the clutch members 42 and 47 splined and sliding on the shaft G, means for connecting and disconnecting them respectively and separately with the adjacent clutch-provided gear and pulley, for the purpose set forth.

14. In a mattress-stuffing machine, the combination with the press-box and the plunger D having the depending abutment member 23, the winding and unwinding shaft having

the gear 38 and the pulley 43 fast thereon, the chain *f* having connections with the plunger and with the shaft *h*, substantially as described, the driving-shaft *G* having the
 5 clutch-provided gear 39 loose thereon, and directly-meshing gear 38, and having the clutch-provided pulley 45 loose thereon, and the open belt 44 around both pulleys 45 and
 10 sliding on the shaft *g*, means for connecting and disconnecting them respectively and separately with the adjacent clutch-provided gear and pulley, and a device engaging to axially slide both said clutch members and
 15 arranged to be operated in opposite directions to be thrown out of clutch by said abutment 23 at the termination of the forward and the backward movement of the plunger.

15. In a mattress-stuffing machine, the combination with the press-box and the plunger *D* having the depending abutment member 23, the winding and unwinding shaft having the gear 38 and the pulley 43 fast thereon, the chain *g* having connections with the plunger and with the shaft *h*, substantially as
 25 described, the driving-shaft *G* having the clutch-provided gear 39 loose thereon, and directly-meshing gear 38, and having the clutch-provided pulley 45 loose thereon, and
 30 the open belt 44 around both pulleys 45 and 43, the clutch members 42 and 47 splined and

sliding on the shaft *g*, the slide-rods 52 having the arm 53 and having the forks 50, 50, engaging the clutch members 40 and 47, the bell-crank lever 55 engaging the arm 53, the
 35 trip-levers 57 and 58, the connecting-link 59 and the link 56, substantially as and for the purposes set forth.

16. In a mattress-stuffing machine, a suitable framework, links supported therein from
 40 their upper ends, and a cover for the compression-box loosely connected to the lower ends of the links, combined with a compression-box, having vertically-moving sides, and a mechanism connected directly to the end of
 45 the cover for both depressing it upon the vertically-movable sides and forcing the cover endwise at the same time, substantially as set forth.

17. In a mattress-machine, the press-box
 50 having the sides thereof downwardly movable and a yielding support which is provided therefor, in combination with a compressing-top, and means for imparting the compressing downward motion thereto, substantially
 55 as described.

Signed by me at Springfield, Massachusetts, this 23d day of September, 1899.

GEO. F. MARTIN.

Witnesses:

WM. S. BELLOWS,
 M. A. CAMPBELL.