

No. 707,745.

Patented Aug. 26, 1902.

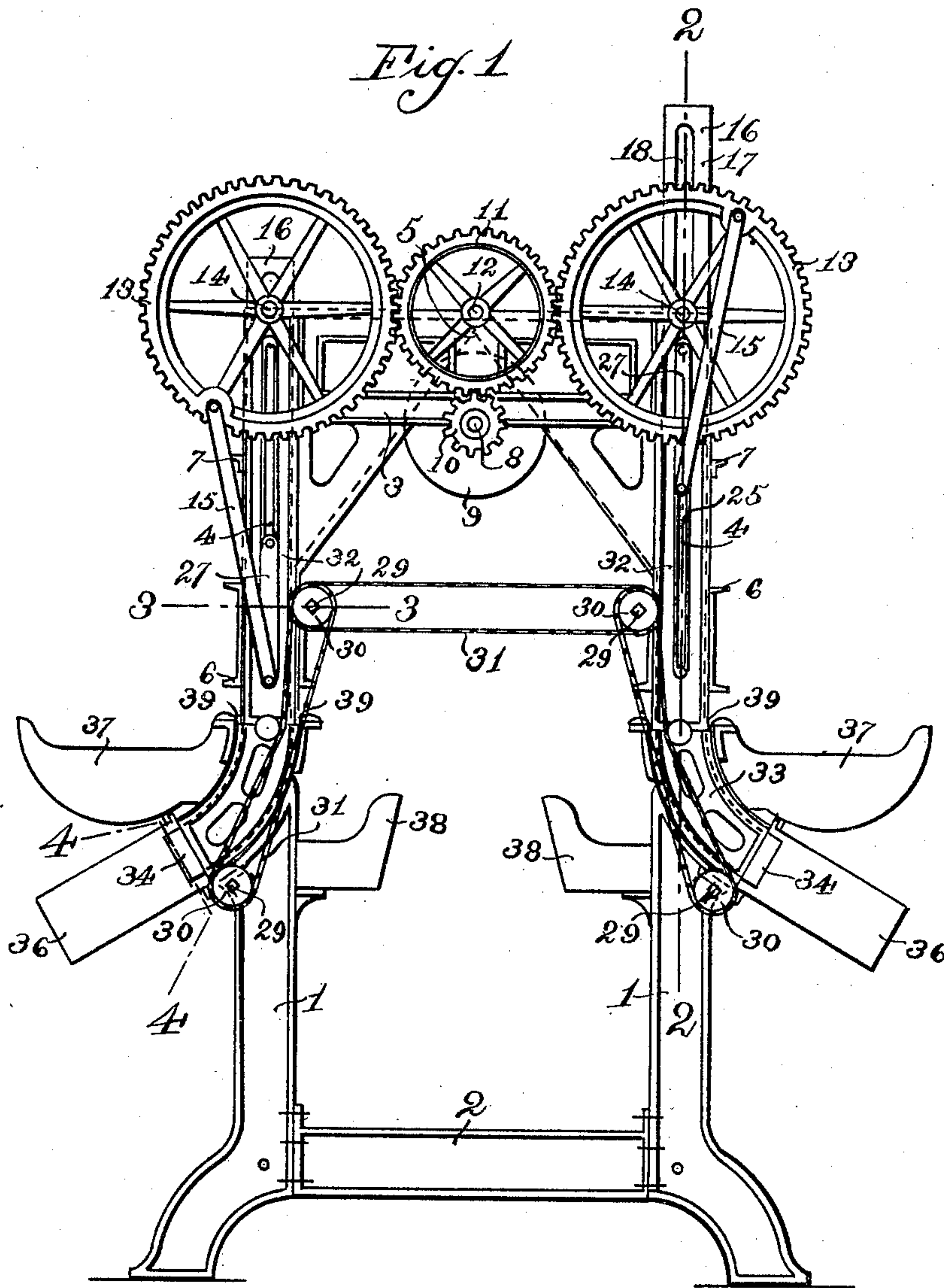
K. WESSEL.

MATTRESS FILLING MACHINE.

(Application filed Aug. 16, 1901.)

(No Model.)

4 Sheets—Sheet 1.



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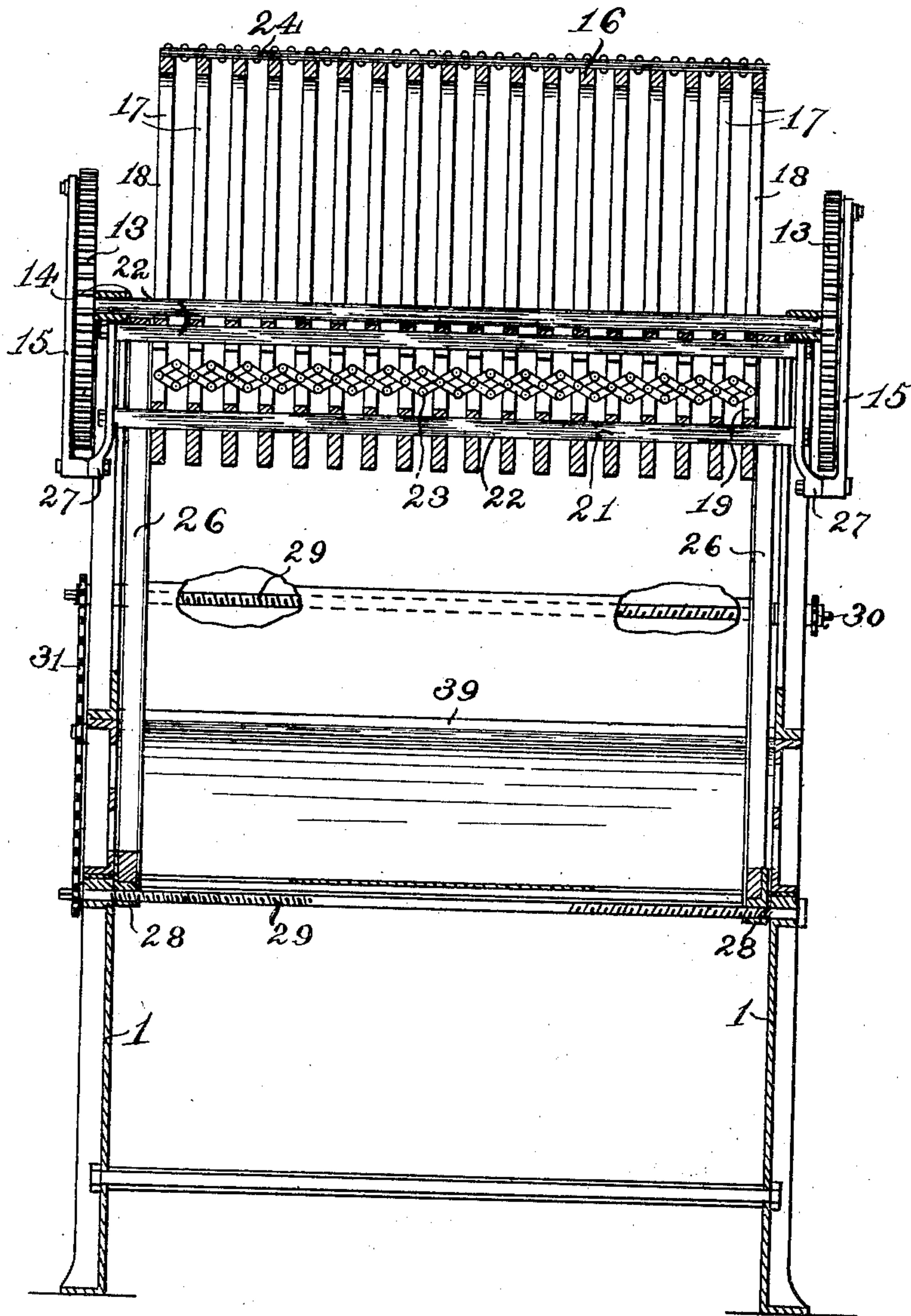
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*Fig. 2.*



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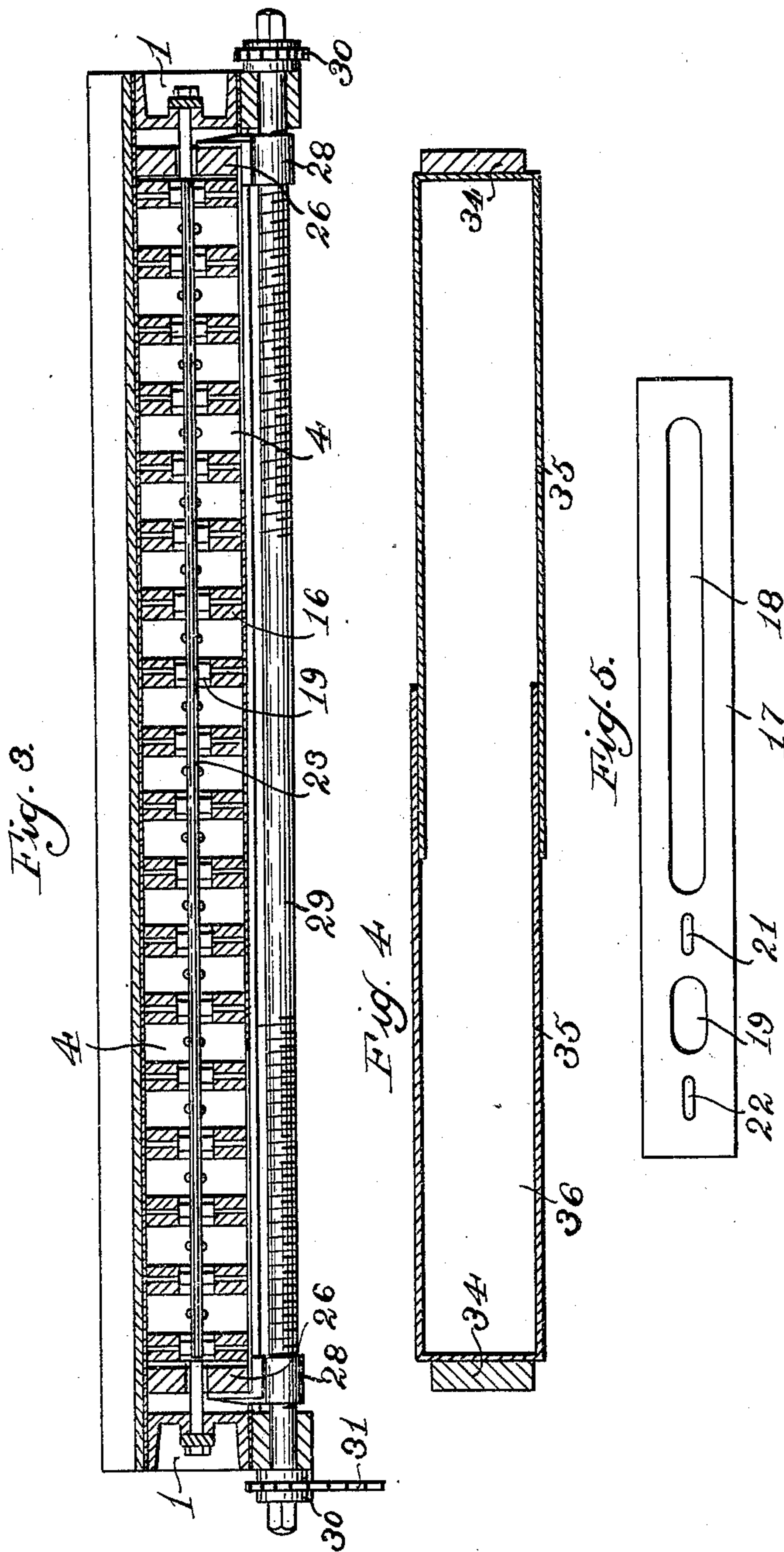
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4 Sheets—Sheet 3.



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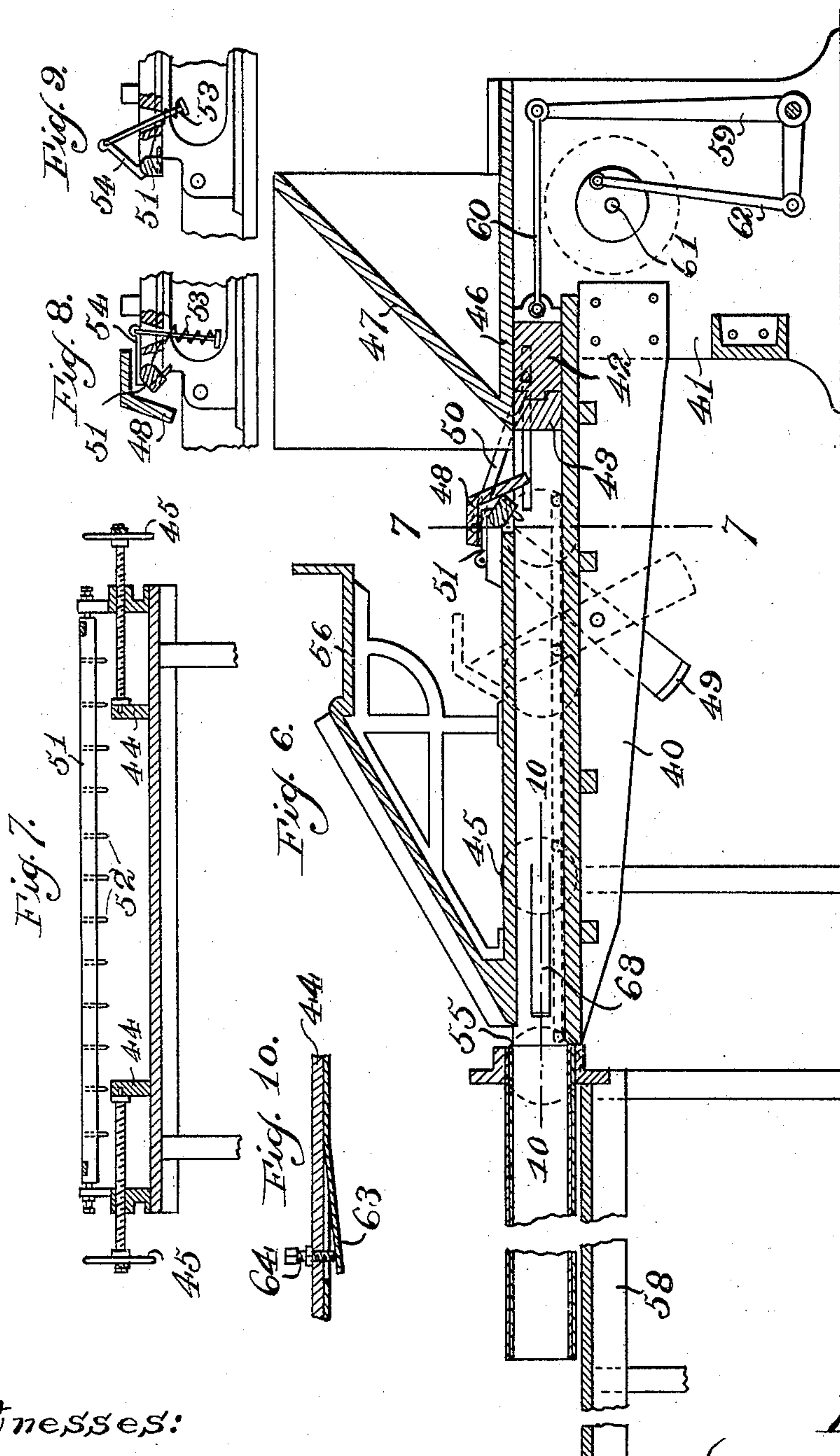


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4 Sheets—Sheet 4.



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# UNITED STATES PATENT OFFICE.

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## MATTRESS-FILLING MACHINE.

SPECIFICATION forming part of Letters Patent No. 707,745, dated August 26, 1902.

Application filed August 16, 1901. Serial No. 72,277. (No model.)

*To all whom it may concern:*

Be it known that I, KARL WESSEL, a citizen of the United States, residing at St. Paul, in the county of Ramsey and State of Minnesota, have invented certain new and useful Improvements in Mattress-Filling Machines; 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 novel construction in a mattress-filling machine, the object being to provide a device of this description of simple construction which will work with great rapidity and is easily adjusted for any desired size, weight, and quality of mattress; and it consists in the features of construction and combinations of parts hereinafter fully described and claimed.

In the accompanying drawings, illustrating this invention, Figure 1 is a side elevation of a machine constructed in accordance with this invention. Fig. 2 is a sectional view of same on the line 2 2 of Fig. 1. Fig. 3 is a detail sectional view on the line 3 3 of Fig. 1. Fig. 4 is a detail sectional view on the line 4 4 of Fig. 1. Fig. 5 is a detail view in elevation of one of the plates of which the plungers are composed. Fig. 6 is a vertical longitudinal section of a modified form of this machine. Fig. 7 is a transverse section of same on the line 7 7 of Fig. 6. Figs. 8 and 9 are detail views of devices for retaining the filling material in the forming-chute. Fig. 10 is a detail sectional view on the line 10 10 of Fig. 6.

The preferred form of machine, as illustrated in Fig. 1, comprises an iron frame consisting of four corner posts or standards 1, arranged in pairs, each pair being connected together by means of the lower cross pieces or beams 2 and upper cross-frames 3, the latter being adapted to form a support for the drive-gear. Between said pairs of standards 1 are formed two vertical forming-chutes or formers 4, the walls of which are preferably composed of sheet metal secured at its ends to said standards 1. The upper inner wall of each chute or former is turned inwardly, and

the inner walls of both chutes or formers converge toward each other, meeting at an apex or gable 5. The said walls of said chutes or formers 4 are braced by means of channel-beams 6 and angle-irons 7 to prevent them from bulging.

Mounted in hangers on the lower edges of the cross-frames 3, at the middle of the latter, is the drive-shaft 8, carrying a pulley 9 at one end and also carrying gear-pinions 10, intermeshing with gear-wheels 11 on a counter-shaft 12, journaled in bearings on the upper ends of said cross-frames 3. The said gear-wheels 11 also intermesh with gear-wheels 13 on counter-shafts 14, journaled in bearings upon the upper ends of said standards 1. The said gear-wheels 13 are provided with crank-pins and are connected, by means of pitmen 15, with vertically-reciprocating plungers 16, moving in said chutes or formers 4. Each of said plungers 16 consists of a plurality of parallel plates or slats 17, provided with longitudinal slots 18 for the passage of the shaft 14 and with slots 19, 20, and 21, through the latter two of which bars pass and in the former of which the links of a lazy-tong-lever connection 23 between all of said slats or plates are pivotally secured. Said slats or plates 17 are similarly connected together at their upper ends by means of lazy-tong levers 24. The said bars 22 pass through vertical slots 25 in the standards 1 and similar slots in movable side plates 26 in said chutes or formers 4 and are secured at their ends to bars 27, to the lower ends of which the pitmen 15 are pivotally connected. Said movable side plates 26 are provided with projections 28, having right and left screw-threaded openings to receive the similarly-threaded ends of shafts 29, by turning which said side plates are moved toward or away from each other, thereby increasing or decreasing the width of the chutes or formers 4, as may be desired. The said shafts 29, of which there are four, are geared together by means of sprocket-wheels 30 and sprocket-chains 31 and are squared at their ends to receive cranks whereby they are turned. Obviously by turning one of said shafts the motion is transmitted to all of same, thereby



simultaneously adjusting the widths of both chutes or formers. The slats of the plunger next to said plates 26 are connected with the latter, so as to follow their lateral motion, and by means of the lazy-tong-lever connections between said slats the entire plungers are evenly adjusted in width to fit the chutes or formers at all times.

The points 32, at which the inner walls of the chutes or formers 4 extend inwardly toward each other, form the mouths or intakes of the chutes, and the lower ends of the plungers move from a given point below said mouths or intakes to a given point above the same, thereby allowing the filling for mattresses fed upon the inclined walls to fall into their paths and be forced into said chutes or formers. The lower ends of said chutes or formers 4 are curved outwardly, as at 33, the movable plates 26 being likewise curved, said curved portions extending through an arc of about sixty degrees. The lower ends of said plates 26 project from the mouths of said chutes or formers 4, as at 34, said projecting ends each carrying a channel-shaped member 35 of laterally telescopically adjustable delivery-chutes 36, forming the delivery ends of said chutes or formers 4 and adapted to have mattress-covers drawn over same. The filling material introduced at the upper ends of the chutes or formers 4 is compressed by said plunger to a certain compactness in the manner of a bale and is gradually forced through said chutes and the curved portions thereof into said delivery-chutes 36 and through the latter until such compact filling strikes the end of the mattress-cover, whereupon it withdraws said mattress-cover while filling the same. The degree of compactness or compression imparted to said filling is regulated partially by friction on the walls of the chute, but more particularly by the curved portions of same, in which the friction is greater than in the straight portion of the chute. The dimensions of the said curved portions for producing a given degree of compactness to the filling has been determined by experiment, and as this degree of compactness is seldom or never varied in practice other means for regulating same are not essential but may be provided. The device hereinafter described in connection with the modified form of machine shown in Figs. 6 to 9, inclusive, may be used if desired. Means are also provided for introducing a covering for the filling, which may cover the same on four sides or on top and bottom only. It is generally desired to cover such filling on top and bottom only. Hence in the drawings means for introducing such covering for top and bottom only are illustrated. For this purpose roll-cotton is used, although it is obvious that unrolled cotton might be employed. The rolls or the unrolled cotton folded or laid zigzag is introduced into receptacles 37 and 38, one of which is on each side of each chute or former 4 adjacent its curved

portion. The ends of the cotton are passed over rounded projections extending transversely across the machine on each side of each chute and thence through the lateral slots 39 in the side walls of the latter. The said covering is engaged by the filling and drawn with same through the remaining portions of said chutes and into the mattress-cover, said cotton being thus stretched very uniformly over the filling and having no wrinkles.

This machine is extremely simple, cheap, and efficient, introducing the filling at a uniform compression and operating with great rapidity. Besides this, it dispenses entirely with skilled labor.

In Figs. 6 to 10, inclusive, is shown a modified form of this machine, in which the forming-chute lies horizontally. Said forming-chute is supported on legs and upon a bracket 40, secured at one end to a frame 41, carrying the drive mechanism. The lower wall of the chute is extended rearwardly to rest upon said frame 41, and upon said extended portion the plunger 42 moves. Said plunger may be constructed as shown in Figs. 2 and 3; but instead of being laterally adjustable it may be constructed, as shown in Fig. 6, to receive heads 43, varying in length to accord with various widths of the chute, the latter being laterally adjustable by means of the inner side plates 44, which are moved by means of the hand-screws 45. A plate 46, carrying an inclined plane 47, is mounted on said frame 41 and covers said plunger 42 when the latter is at the rearward limit of its movement. The filling material is fed upon said inclined plane 47 and slides down into the path of said plunger 42. The length of the latter is greater than the length of the open space between the inlet end of the forming-chute and the plate 46, so that the filling material which is not forced into the forming-chute will rest upon said plunger and drop into said open space when said plunger reaches the rearward limit of its movement. Owing to the fact that the filling material is very bulky and light, it is necessary to provide means for forcing the same into the path of said plunger 42, and to this end a second plunger 48, carried by two parallel arms 49, pivotally mounted upon said bracket 40, is provided. Said plunger 48 receives its motion from said plunger 42 by means of the connecting-links 50 and enters said open space as said plunger 42 approaches the rearward limit of its movement, thereby forcing filling into the path of the latter. As said plunger 42 approaches the forward limit of its movement said plunger 48 moves to the position shown in dotted lines, thereby permitting further filling to drop into its path. In order to prevent filling once forced into said forming-chute from springing back into said open space, a shaft 51 is journaled at the inlet end of said chute in alinement with the upper wall thereof. Said shaft carries a plu-



5 reality of teeth 52 and is normally held in the position shown in Figs. 6 and 8 by means of springs 53, actuating arms 54 on said shaft in an obvious manner. The head of the plunger 42 engages said teeth 52 as it enters said forming-chute and turns said shaft 51 against the action of said springs 53. As said plunger moves rearwardly said teeth 52 resume their normal position, projecting into the path of and preventing the filling from leaving said forming-chute. The delivery end of said chute or former is laterally adjustable, the two parts of same being carried by said side plates 44 and moving therewith. A slot 55 is provided between the main portion and the delivery-end portion of said forming-chute for the admission of the cotton top, the roll of same lying upon the support 56 and passing down an inclined plane 57, leading from said support 56 to said slot 55. The mattress-cover is drawn over said delivery end and is gradually withdrawn by the filling as the latter emerges from the chute. The end portion of the mattress is supported upon a table 58. Said plunger 42 receives its motion from bell-crank levers 59, pivoted upon the frame 41, being connected with one arm of each by means of links 60. The other arms of said bell-crank levers are connected with a crank-shaft 61 by means of pitmen 62. In order to regulate the compactness or degree of compression imparted to the filling, two leaf-springs 63 are fitted into recesses in the side plates 44 and are rigidly secured therein at one end, the free ends being adapted to be engaged by set-screws 64, passing through said side plates 44 to force said free ends inwardly to contract said former laterally, whereby the resistance to the passage of the filling may be increased or diminished at will and its compactness thus controlled. The said devices for preventing the filling from springing back out of the forming-chute as the plunger leaves the latter may also be provided on the machine illustrated in Figs. 1 to 5, inclusive; but it has been found that such devices are not essential to perfect operation, and same are therefore omitted from the drawings to avoid complexity.

50 I claim as my invention—

1. In a mattress-filling machine, the combination with a forming-chute, means for adjusting the width thereof, a reciprocating feeding and packing plunger arranged to operate in said chute, means for continuously reciprocating said plunger, and means whereby the width of said plunger is varied to correspond with the adjusted width of the forming-chute.

2. In a mattress-filling machine, the combination with a forming-chute adjustable in width, of a reciprocating feeding and packing plunger also and correspondingly adjustable in width, means for continuously reciprocating said plunger, and means for simultaneously effecting the adjustments in width of said chute and plunger.

3. In a mattress-filling machine, the combi-

nation with a forming-chute, and means for adjusting the width thereof, of a plunger movable into and out of said forming-chute and adjustable in width, means for continuously reciprocating said plunger, and connection between said plunger and said adjusting means for adjusting the width of said forming-chute, whereby said plunger will be adjusted in width simultaneously with said forming-chute.

4. In a mattress-filling machine, the combination with a forming-chute having laterally-movable side walls whereby the same is made adjustable in width, of a reciprocating plunger movable into and out of said chute, means for presenting filling material to the action of said plunger, whereby said filling material is compressed into said chute in successive increments, means for adjusting the width of said plunger, connection between said plunger and said side walls of said forming-chute whereby the plunger will be adjusted in width simultaneously with said forming-chute, and means for continuously reciprocating said plunger.

5. In a mattress-filling machine, the combination with a forming-chute and a reciprocating plunger movable therein, said plunger being adjustable in width, means for continuously reciprocating said plunger, and means for constantly presenting the filling material to the action of said plunger, of devices common to both said forming-chute and said plunger for simultaneously adjusting the width of each.

6. In a mattress-filling machine, the combination with a forming-chute, means for continuously feeding a filling thereto in successive increments, compressing said filling therein and forcing same therethrough, of devices for adjusting the width of said forming-chute and said feeding and compressing means, and means controlling the degree of compactness or compression imparted to said filling.

7. In a mattress-filling machine, the combination of a feed chute or passage adapted to receive a mattress or other cover over the discharge end thereof, and means for feeding a filling material through said chute or passage, the sides of said feed chute or passage having openings therethrough to permit the application of a lining to the surface of said material whereby the lining is engaged by the surface of the filling material and is drawn therewith into and through the chute or passage, as and for the purpose set forth.

8. In a mattress-filling machine, a feed chute or passage adapted to receive a mattress or other cover over the discharge end thereof, means for continuously compressing a filling material into and feeding the same through said chute or passage and into said cover, said feed chute or passage having openings therethrough whereby a lining may be introduced into said chute or passage, applied to the surface of said filling material and engaged by



and fed along with said material into said cover, as and for the purpose set forth.

9. In a mattress-filling machine, a chute or passage, a reciprocating plunger operating therein for feeding a filling material there-  
5 through, a mattress or other cover adapted to receive said filling material from the discharge end of said chute or passage, said chute or passage provided with slots or open-  
10 ings, to receive linings therethrough whereby said lining is engaged by and fed along with said material into said cover, as and for the purpose set forth.

10. In a mattress-filling machine, a chute or  
15 passage constructed to receive a mattress-cover over the delivery end thereof, means for delivering a filling material into said chute or passage, means for continuously feeding  
20 said material through said chute or passage and into said cover, said chute or passage provided with slots adjacent the delivery end thereof through which a lining material for  
25 the surface of said material may be introduced into said chute or passage, said lining material being adapted to be engaged by said  
filling material and drawn into and through  
said chute or passage and into said cover, as  
and for the purpose set forth.

11. In a mattress-filling machine, the com-  
30 bination with a forming-chute, a plunger, means for reciprocating the same into and out of one end thereof and adapted to force continuously filling in successive increments  
35 into and through said chute and compress same therein, of means for introducing a lining into said chute between the ends of the latter to be engaged by the surface of and  
forced through said chute with said filling.

12. In a mattress-filling machine, the com-  
40 bination with a reciprocating plunger, of a forming-chute in which said plunger moves and through which it is adapted to force a filling, a telescopically-adjustable mouth on  
45 said forming-chute adapted to have a mattress-cover drawn over same, and lateral slots in said forming-chute for introducing cotton to cover said filling and be drawn into the  
mattress-cover therewith.

13. In a mattress-filling machine, the com-  
50 bination with a reciprocating plunger comprising a plurality of parallel plates mounted side by side and relatively movable, whereby said plunger is adjustable in width, of a forming-chute in which said plunger moves and  
55 through which it is adapted to force a filling, means for adjusting the inner width of said forming-chute, a telescopically-adjustable mouth on said forming-chute adapted to have a mattress-cover drawn over same, said form-  
60 ing-chute being provided with lateral slots for the introduction of cotton or other suitable covering for said filling, said filling being adapted to engage said covering to draw same through said forming-chute.

65 14. In a mattress-filling machine, the combination with a reciprocating plunger com-

prising a plurality of plates laterally movable and connected together by lazy-tong levers, whereby, by adjusting the distance between  
70 any two of said plates, the entire series will be similarly adjusted, of a forming-chute in which said plunger moves and through which it is adapted to force a filling, means for ad-  
75 justing the inner width of said forming-chute, and a telescopically-adjustable mouth on said forming-chute adapted to have a mattress-cover drawn over same, said forming-chute being provided with lateral slots for the in-  
80 troduction of cotton or other suitable covering for said filling, said filling being adapted to engage said covering to draw same through said forming-chute.

15. In a mattress-filling machine, the combination with a forming-chute, and plates lat-  
85 erally movable therein for adjusting the inner width thereof, of a plunger reciprocally movable in said forming-chute and adjustable in width to correspond with the width of  
90 said forming-chute, said plunger being connected with said plates and laterally rigid therewith, whereby said forming-chute and said plunger are simultaneously adjusted, and a laterally telescopically adjustable  
95 mouth on said forming-chute adapted to have a mattress-cover drawn over same, said forming-chute being provided with lateral slots for the introduction of cotton or other suitable covering for said filling, said filling being  
100 adapted to engage said covering to draw same through said forming-chute.

16. In a mattress-filling machine, the combination with a forming-chute and plates lat-  
105 erally movable therein for adjusting the inner width thereof, of a plunger reciprocally movable in said forming-chute comprising a plurality of parallel plates mounted side by side and which are laterally movable and con-  
110 nected together by lazy-tong levers, whereby by adjusting the distance between any two of said plates the entire series will be similarly adjusted, said plunger being connected with  
115 the adjustable plates in said forming-chute and laterally rigid therewith, whereby said forming-chute and said plunger are simultaneously adjusted in width, and a laterally telescopically adjustable mouth on said form-  
120 ing-chute adapted to have a mattress-cover drawn over same, said forming-chute being provided with lateral slots for the introduction of cotton or other suitable covering for  
said filling, said filling being adapted to en-  
125 gage said covering to draw same through said forming-chute.

17. In a mattress-filling machine, the combination with a forming-chute curved at its  
125 delivery-end portion and carrying a laterally telescopically adjustable mouth adapted to have a mattress-cover drawn over same, of laterally-movable plates fitting within said  
130 forming-chute and adapted to adjust the inner width of same, a plunger longitudinally movable in said forming-chute and laterally



adjustable, said plunger being laterally rigid with said plates and adjustable by moving said plates.

18. In a mattress-filling machine, the combination with a forming-chute curved at its delivery end portion and carrying a laterally telescopically adjustable mouth adapted to have a mattress-cover drawn over same, of laterally-movable plates fitting within said forming-chute and adapted to adjust the inner width of same, a plunger longitudinally movable in and adapted to force a filling through said forming-chute, comprising a series of parallel slats mounted side by side and connected with a set of lazy-tong levers whereby by adjusting the distance between any two of said slats the entire series will be similarly adjusted, the two outer slats of said series being laterally rigidly connected to said laterally-movable plates in said forming-chute, whereby when said plates are adjusted said plunger is simultaneously adjusted in width to correspond with the width of said forming-chute.

19. In a mattress-filling machine, the combination with a forming-chute curved at its delivery-end portion and carrying a laterally telescopically adjustable mouth adapted to have a mattress-cover drawn over same, of laterally-movable plates fitting within said forming-chute and adapted to adjust the inner width of same, a plunger longitudinally movable in and adapted to force a filling through said forming-chute, comprising a series of parallel slats mounted side by side and connected with a set of lazy-tong levers whereby by adjusting the distance between any two of said slats the entire series will be similarly adjusted, the two outer slats of said series being laterally rigidly connected to said laterally-movable plates in said forming-chute, whereby when said plates are adjusted said plunger is simultaneously adjusted in width to correspond with the width of said forming-chute, said forming-chute being provided with lateral slots for the introduction of cotton or other suitable covering for said filling, said filling being adapted to engage said covering to draw same through said forming-chute.

20. In a mattress-filling machine, the combination with a reciprocating plunger adjustable in width, of a laterally-adjustable forming-chute coacting with said plunger to form a mattress-filling, said plunger being adapted to continuously deliver said filling in increments into and move the same through said forming-chute, said forming-chute being provided with lateral slots for the introduction of cotton or other suitable covering for said filling, the surface of said filling being adapted to engage said covering to draw same through said forming-chute.

21. In a mattress-filling machine, the combination with a vertically-reciprocating plunger, of a forming-chute coacting with said plunger, said forming-chute being curved on

its delivery end so as to deliver said mattress-filling laterally, at an angle, to that portion of said forming-chute in which said plunger operates.

22. In a mattress-filling machine, the combination with a plunger, of a forming-chute coacting with said plunger, said forming-chute being curved at its delivery end, whereby the passage of the filling is resisted and the latter compressed to a given compactness.

23. A mattress-filling machine, comprising a forming-chute, means for adjusting the width of said forming-chute, a reciprocating plunger movable into and out of one end of said forming-chute, and means for continuously presenting mattress-filling material in front of the mouth of said forming-chute and between the limits of motion of said plunger, means for forcing said filling into the path of said plunger, and devices at the mouth of said forming-chute adapted to be moved out of the path of the incoming filling and project behind the same to prevent said filling from leaving said mouth of said forming-chute, the delivery end of said forming-chute being adapted to receive a mattress-cover, whereby said filling will enter said mattress-cover thereover and withdraw same from said forming-chute, substantially as described.

24. A mattress-filling machine, comprising a forming-chute, means for adjusting the width of said forming-chute, a plunger movable into and out of one end of said forming-chute, means for continuously presenting filling material in front and into the path of said plunger, said forming-chute being provided with a slot adjacent the rear end of same through which a cotton fabric or top is adapted to be inserted to be engaged by the surface of said filling, the rear end of said forming-chute comprising an open-ended casing adapted to receive a mattress-cover which said filling and said cotton fabric or top are adapted to enter and which serve to withdraw said cover from said forming-chute, substantially as described.

25. In a mattress-filling machine, the combination with a forming-chute, adjustable in width and having an open-ended casing forming a delivery end adapted to receive a mattress-cover telescoped thereover, of devices for continuously presenting filling material into said forming-chute and forcing same therethrough and into said mattress-cover, said forming-chute being provided with a slot between its ends adapted to admit a layer of suitable material adapted to form a top for said filling, the latter being engaged by the surface of said filling and drawn thereby through said forming-chute and into said mattress-cover therewith, substantially as described.

26. In a mattress-filling machine, the combination with a forming-chute adjustable in width and having an open-ended casing forming a delivery end adapted to receive a mattress-cover telescoped thereover, and provided



between its ends with a transverse slot adapted to admit a lining material, of a reciprocating plunger adapted to receive a separate head to correspond with each variation in the  
5 width of said forming-chute and operating into and out of the other end of said forming-chute, and means for continuously presenting filling material into the path of said plunger, whereby said filling is forced into and  
10 through said forming-chute into said mat-

tress-cover, the surface of said filling engaging said lining material and drawing same therewith into said mattress-cover, substantially as described.

In testimony whereof I affix my signature 15  
in presence of two witnesses.

KARL WESSEL.

Witnesses:

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GUY CHASE.