

Feb. 24, 1953.

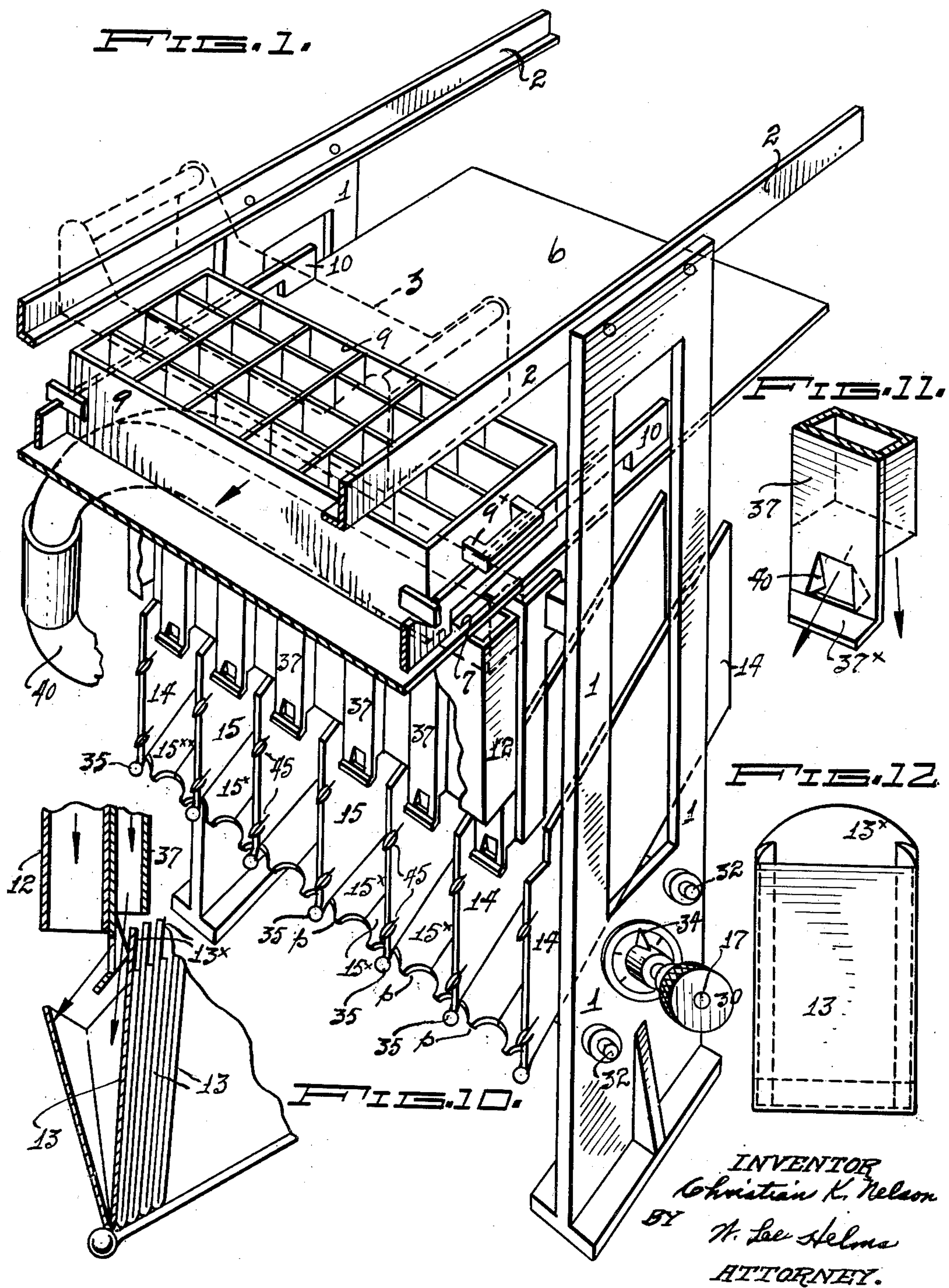
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2,629,369

BAG DISPENSING APPARATUS FOR BAGGING MACHINES

Filed June 3, 1948

4 Sheets-Sheet 1



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BAG DISPENSING APPARATUS FOR BAGGING MACHINES

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FIG. 2.

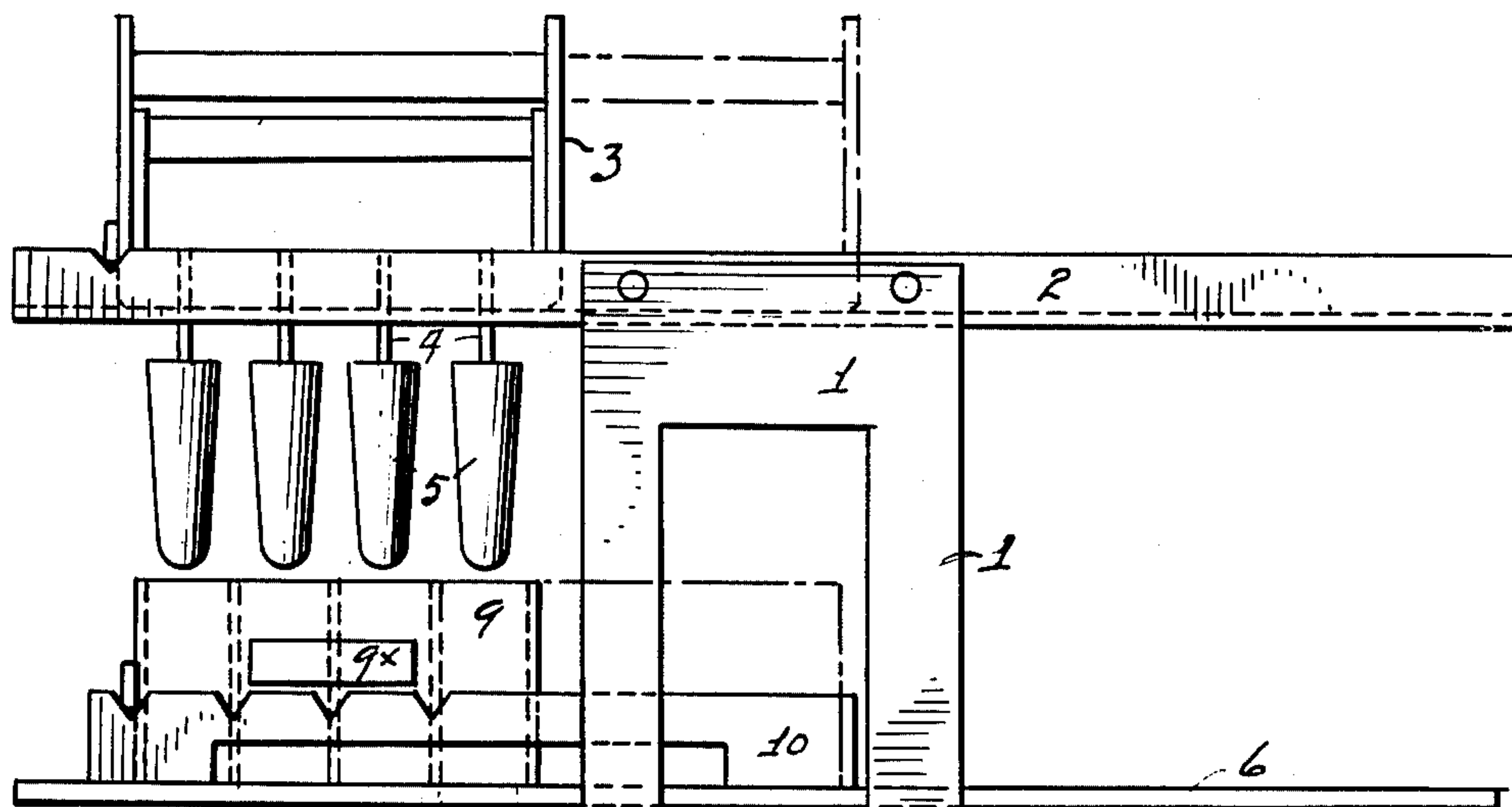


FIG. 7.

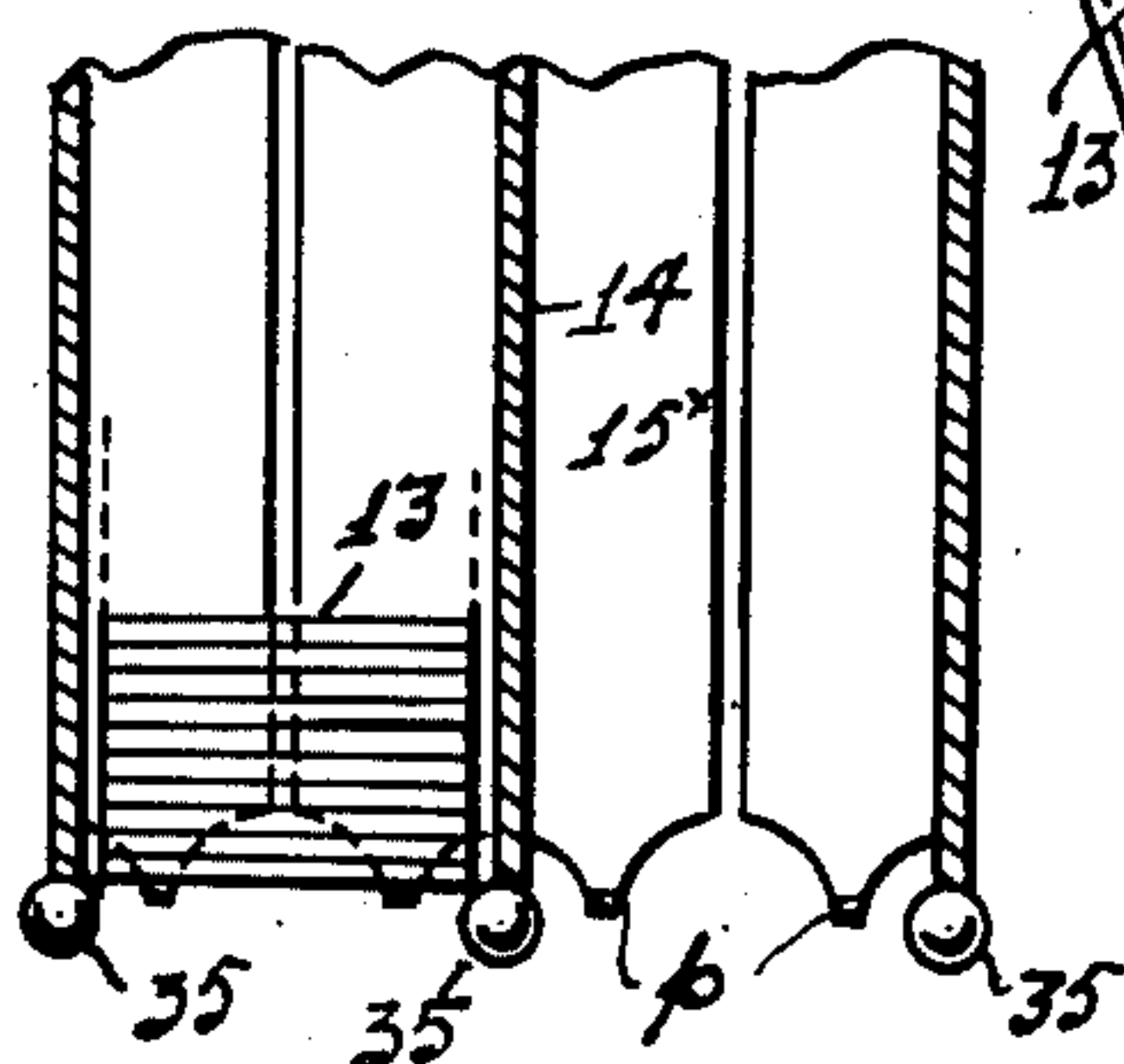


FIG. 9.

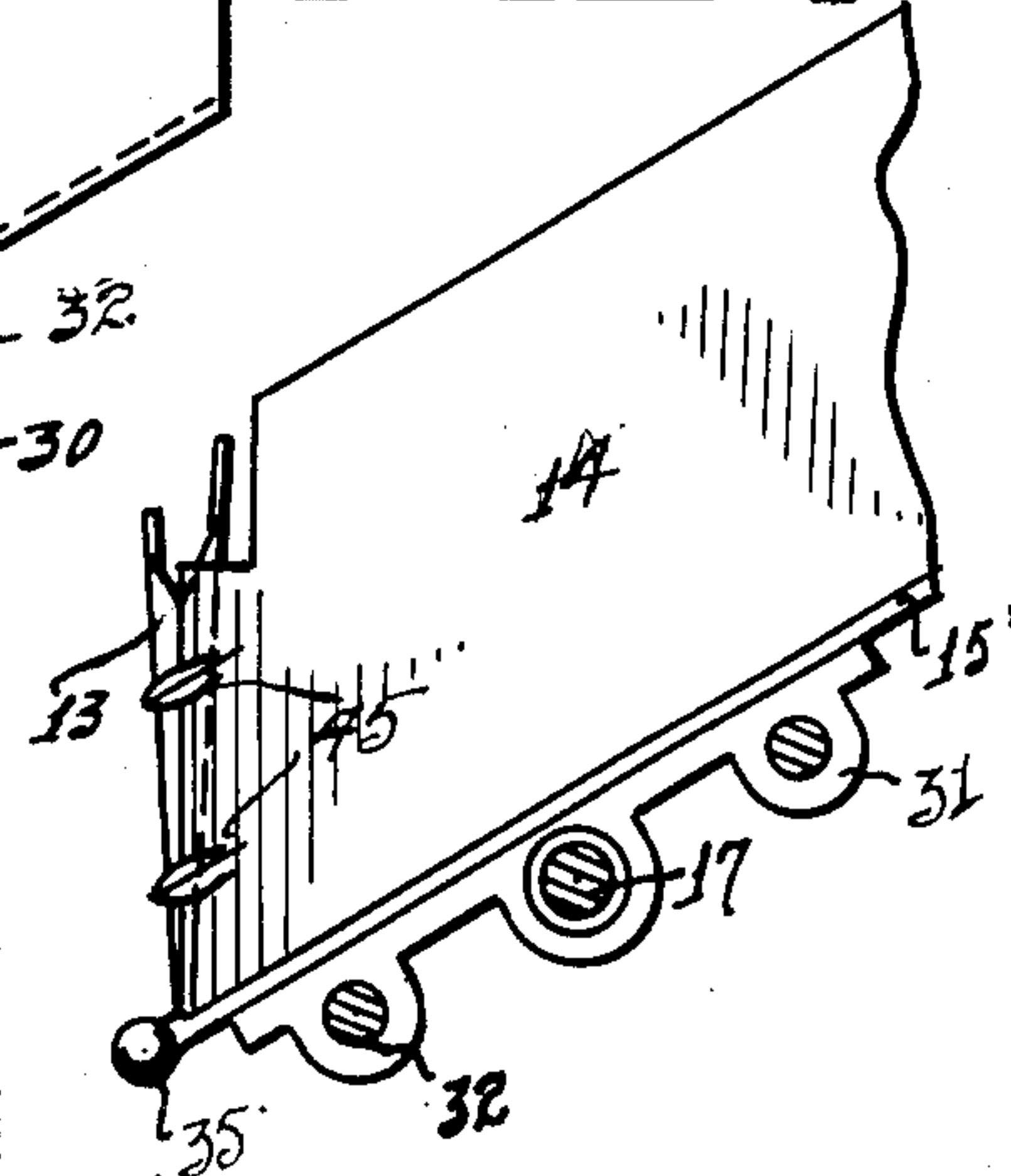
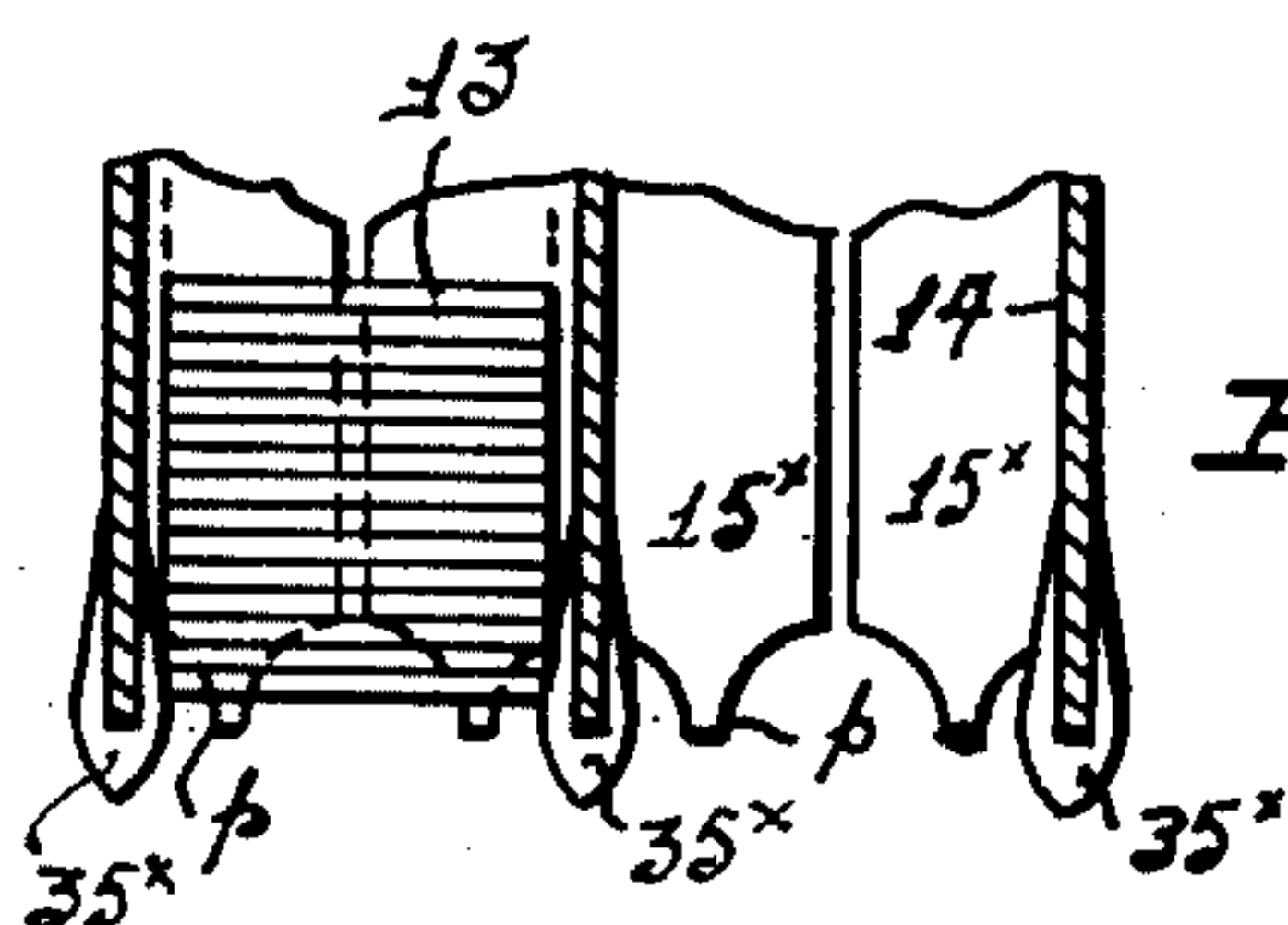


FIG. 8.



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FIG. 3.

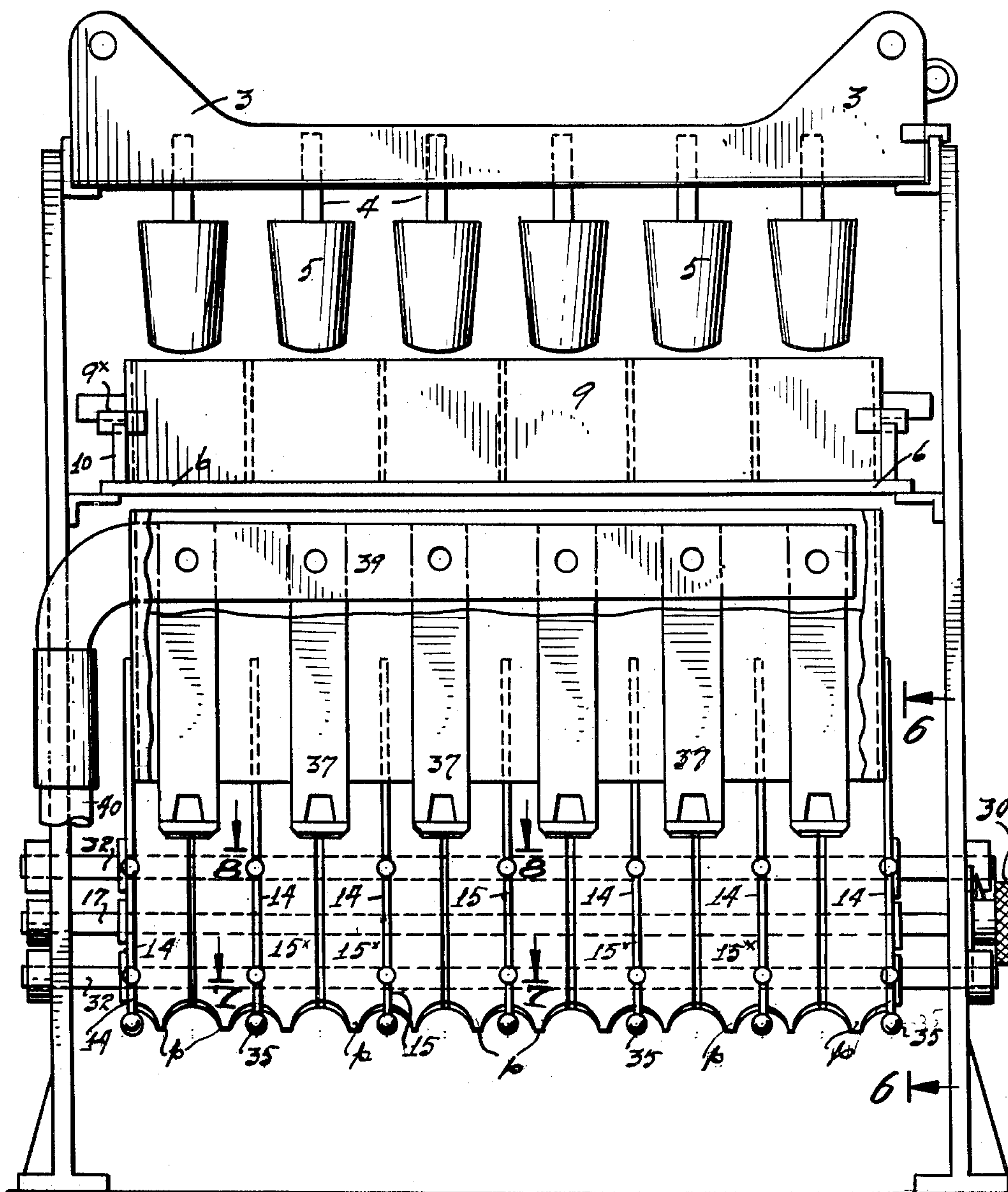
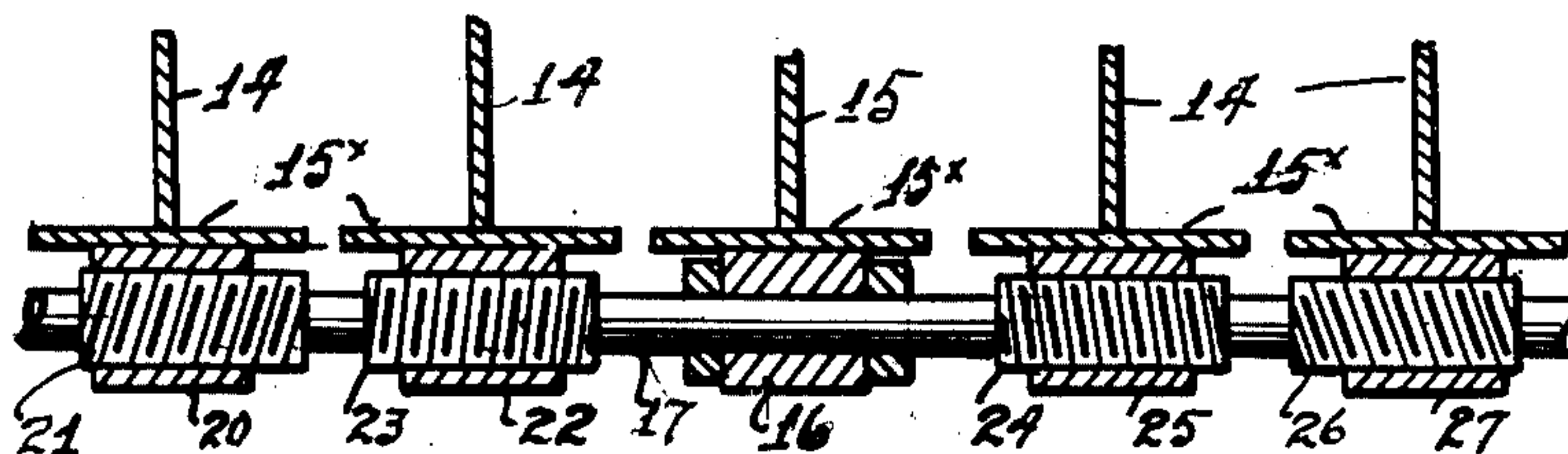


FIG. 6.



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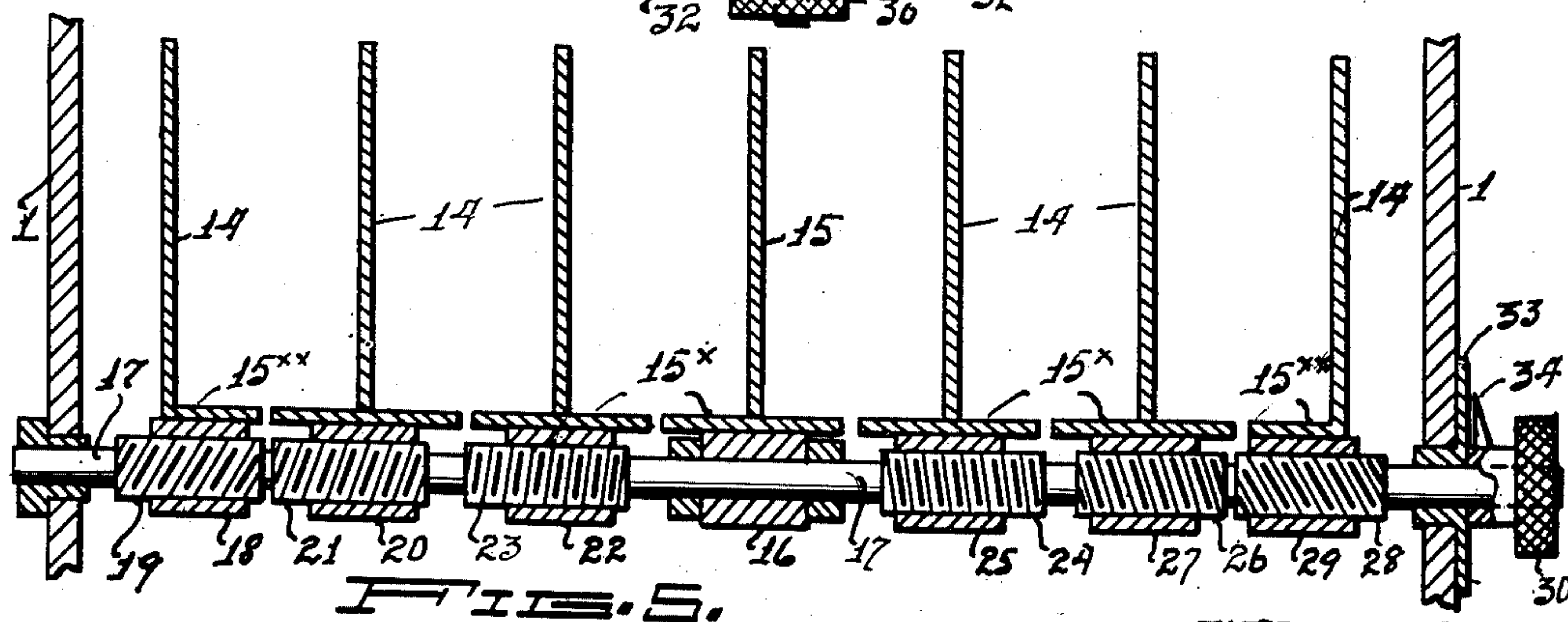
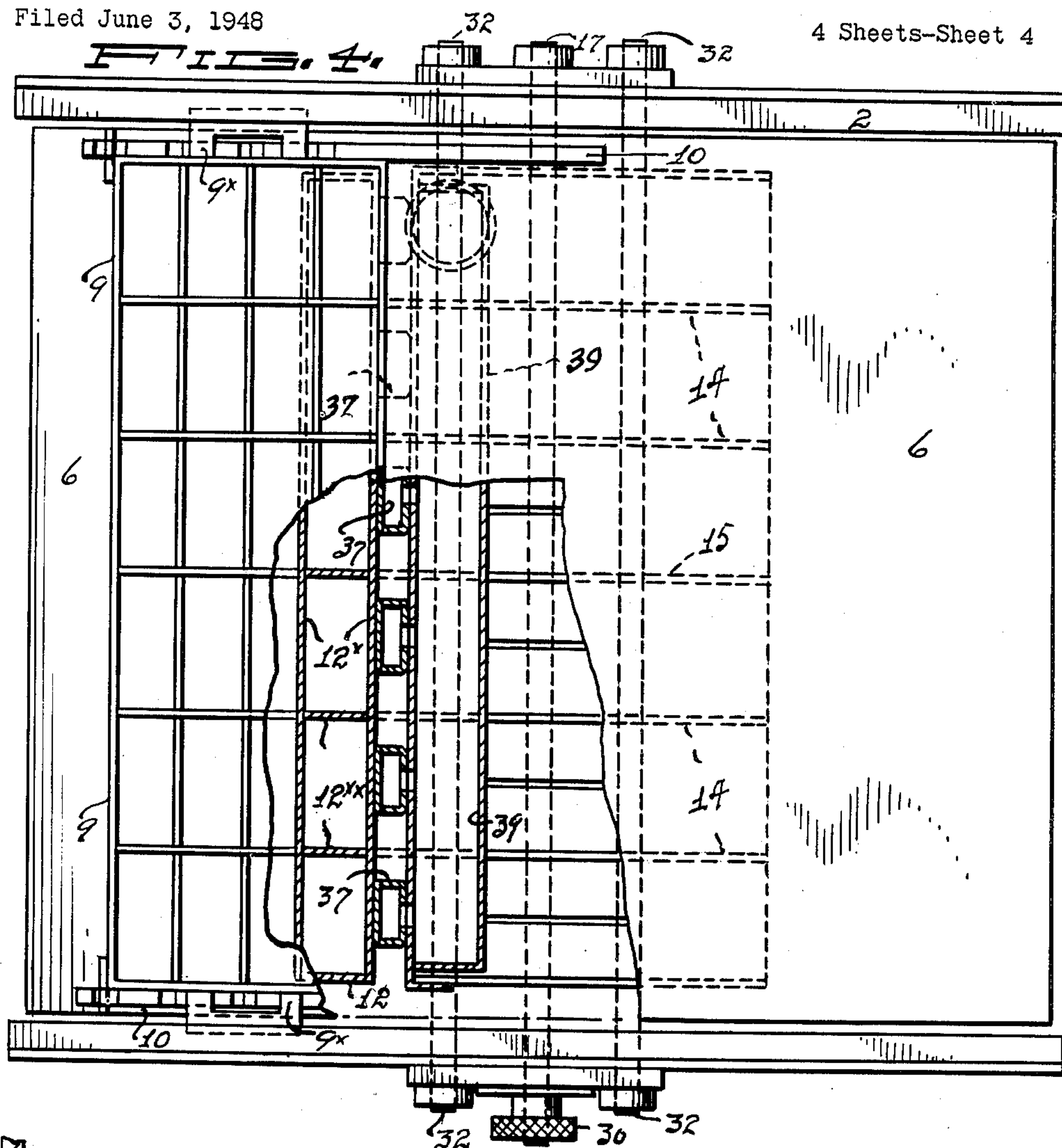
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BAG DISPENSING APPARATUS FOR BAGGING MACHINES

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4 Sheets-Sheet 4



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BAG DISPENSING APPARATUS FOR
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2 Claims. (Cl. 226—2)

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The present invention relates to bagging machines particularly adapted to receive frozen confections, such as ice cream bars on sticks, to cause progressive movement of stacks of bags, and to effect opening of the bag ends preliminary to their reception of the frozen confections, and to release the filled bags.

The primary object of the invention is to simplify and expedite the filling of bags with various articles, particularly ice cream bars on sticks, and particularly to overcome problems incident to the opening and subsequent release of the bags, so that such opening operation may be assured, and the filled bags may properly be released from the machine. These problems are augmented when gusset, fold-over-bottom, types of bags are employed, and the invention enables use of such bags, and with rapid filling operations.

The invention will be described with reference to the accompanying drawings, in which:

Fig. 1 is a perspective view, partly broken away, showing the primary elements of the machine embodying the invention, the view being taken toward the front of the machine;

Fig. 2 is a side elevation of the machine;

Fig. 3 is a rear elevation of the machine, partly broken away;

Fig. 4 is a plan view partly broken away;

Fig. 5 is a vertical section on the line 5—5, Fig. 2 showing the adjusting means for walls of the bag compartments;

Fig. 6 is a fragmentary view similar to Fig. 5.

Fig. 7 is a fragmentary horizontal section on the line 7—7, Fig. 3;

Fig. 8 is a horizontal section on the line 8—8, Fig. 3;

Fig. 9 is a view in elevation of one of the side wall members of the bag compartment assembly, the supporting and adjusting rods being shown in section and a bag being shown in position after partial opening thereof;

Fig. 10 is a schematic view in vertical section through the center of one bag compartment and through the air blast tube and article chute showing the action of the air blast on the foremost bag;

Fig. 11 is a fragmentary perspective view of the lower end portion of an air blast tube;

Fig. 12 is a plan view of a gusset bag for which the machine is adapted.

Referring to Figs. 1 and 2 of the drawings, the machine embodiment therein shown comprises vertical standards 1 which support at their tops parallel guide rails 2 upon which a stick rack 3 may be moved forwardly and backwardly. In the operation of the machine this stick rack will re-

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leaseably hold the sticks 4 of a plurality of rows of ice cream bars indicated at 5.

The standards are spaced by a table plate 6 which may be welded to or otherwise held by the standards, this plate being formed with an intermediate transverse aperture indicated at 7, Fig. 1, so that an entire row of confections may drop through plate 6 when the sticks holding the same are released from the stick holder.

It will be noted that the table or plate 6 extends at both sides of its discharge aperture 7, and that an article holding carriage 9, the latter being formed with rows of compartments, may be moved to bring the compartments successively into register with the table discharge opening 7. In the present embodiment the carriage 9 is provided with a handle at each end thereof as indicated at 9x, and these handles rest upon the tops of supporting bars 10, carried by the table 6. The carriage slides on said bars 10 and relatively to the table discharge opening 7.

The compartment carriage 9 is filled by release of the sticks 4 through any suitable stick releasing means of the stick rack. Such stick clamping and releasing means is common in the art and forms no part of the present invention. With the stick rack and article holding carriage 9 lying in the position of Fig. 2, release of the sticks will cause all of the ice cream bars 5 to fall into the compartments of the article holding carriage, and inasmuch as the right hand row of compartments are in register with the table discharge opening 7, that row of ice cream bars will fall through the table into article guiding chutes leading to bags for the article, as later to be described.

Referring again to Fig. 2, when the right hand row of articles has been released and discharged into the table discharge aperture 7, the remaining three rows will be held in their respective compartments, because they will rest upon the table. Then, the article holding carriage will be moved to the right and by successive action, each row of compartment held articles will be discharged through opening 7, and at this point the article holding carriage will lie in the position of Fig. 1 for reverse movement and action as before, after receiving a fresh supply of articles released from a second stick holder carrying ice cream bars suspended by their sticks and held by releasable clamping devices of the said known type.

The article receiving chutes which lie in register with the table discharge aperture 7 may comprise spaced transverse plates 12x and crosswise intermediate plates 12xx, the structure as a whole being indicated at 12.

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Below the said article receiving chute arrangement 12 is a compartment arrangement for the bags. A suitable bag is shown in Fig. 12, the bag being provided with an upstanding flap or lip 13x, the bag as a whole being designated by numeral 13.

The bag compartments consist of a plurality of upright plates 14 which plates are movable and a central plate 15 which is fixed. Each of the movable plates, with the exception of the outermost plates, is centered with respect to a supporting base plate 15x which, in each case, forms a bottom supporting area for the bags. The outermost plates 14 are provided with inwardly extending bag supporting areas 15xx.

The central compartment plate 15 and its base plate 15x is carried by a sleeve 16 within which is a shaft 17 which is freely rotatable with respect to sleeve 16.

Referring more particularly to Figures 5 and 6 it will be noted that beginning at the left of Fig. 5 there is disposed an internally threaded carrier sleeve 18 for the outermost plate 14 within which is a worm 19 on shaft 17. The next vertical compartment plate is mounted on a sleeve 20 to receive worm gear 21. The next vertical compartment plate is mounted on a sleeve 22 threaded to receive worm 23.

Again referring to Fig. 5, it will be noted that the upright compartment plate to the right of the fixed plate 15 is mounted on a sleeve 25 threaded on worm 24. The adjacent compartment plate 14 is mounted on a sleeve 27 internally threaded to receive worm 26; and the outermost right hand compartment plate 14 is mounted on a sleeve 29 internally threaded to receive worm 28.

In order to equally adjust the width of the compartments, worms 19, 21, and 23 have successively reduced pitch. That is to say, the pitch of the worm threads on worm 19 is greater than the pitch of either of the worms 21 and 23, and the pitch of worm 21 is greater than the pitch of worm 23. Reference to Fig. 5 will show that the same worm-pitch variation is made with respect to worms 24, 26, and 28, inclusive. Thus, when shaft 17 is rotated by thumb wheel 30 to a position at which there is an even adjustment of each compartment size, and in which there is an increase in compartment width of one-quarter inch, the compartment walls immediately opposite the central fixed wall will have a progressively greater movement toward the standards 1. As shown in Figs. 5 and 6 worm gears 19, 21 and 23 slope to the right whereas worm gears 24, 26 and 28 slope to the left. Central wall 15 is fixed as it has no worm gear beneath it. Clearly the separate walls 14 to the left of element 15 move as a unit in one direction while the separate walls 14 to the right of element 15 move as a unit in an opposed direction. Clearly also, when the nearest wall 14 to the left of element 15 moves $\frac{1}{8}$ inch, then in order to avoid crushing of the bags in the second compartment removed from element 15 the second wall 14 must move $\frac{1}{4}$ of an inch, viz. $\frac{1}{8}$ inch for itself, plus $\frac{1}{8}$ inch due to the movement of the wall 14 secondly removed from central wall 15. Obviously the outermost wall 14 to the left of element 15 must be moved $\frac{3}{8}$ inch. The same movement is simultaneously effected to the right of element but in an opposed direction by the rotation of element 17. Manifestly the chutes can be simultaneously enlarged to accommodate various bag sizes.

As shown in Figs. 4 and 9 the base plates 15x

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have depending ears 31 apertured to receive guide rods 32 supported by the standards 1. A dial 33 carried by one of the standards may co-act with the pointer 34 on thumb wheel 30, to indicate the position of adjustment in width of the bag holding compartment.

It will be noted that the bag holding compartments are inclined, and by such means the weight of a stack of bags will by gravity cause them to move progressively to the front as the foremost bags are filled and discharged. The foremost bag within each compartment will, at its bottom margin, be restrained by a rounded or ball formation 35 at the ends of the upright compartment walls which bound each compartment, and back of each rounded or ball shape bag-restraining member 35 the base support of the bags is supplied with a gap or clearance, so that the bottom margins of each bag are not supported throughout when the bag reaches the front of the compartment and is ready to receive an article dropped through the appropriate chute 12. At this point the bag is supported only by relatively narrow supporting areas which constitute pointed areas p of the base plates 15x and 15xx.

Heretofore it has been very difficult to employ bags which have side gussets or inwardly folded side margins which at their base are in turn increased in thickness through closing the bottom of the bag by folding over upon itself and cementing in position the base of the bag body. In such case there are 8 thicknesses of the bag material at the base margins, and release of the filled bag has required deflection or bending of its base margin which action is resisted by so many overlying thicknesses of the bag material at such point. By means of my said construction the base margins of the bag are permitted to remain in position while the article received in the bag in the downward drop thereof deflects the base of the bag to somewhat arcuate formation, enabling it to slip downwardly over the points p and to drop downwardly out of its compartment while the margins of the bag substantially throughout its length are still guided by contact of said rounded or ball-shaped members. This, it is believed, constitutes a new principle in the release elements of bagging machines.

The foremost bag within each compartment is blown open by a blast of air from an air tube 37 there being one air tube for each bag-holding compartment. As shown in Fig. 4, the air tubes communicate with a manifold 39 in communication with a pipe 40 (Fig. 1) leading to a blower. The bottom end of each air tube is of special formation, as shown more particularly in Fig. 11. The front wall of each tube 37 is extended downward and provided with an air-deflecting lip 37x above which is an air aperture bounded by rearwardly extending triangular fingers 40. The said downward extension of the air tube is approximately the length of the flap 13x at the top of the bag (see Fig. 12). Thus, when the foremost bag reaches the fingers 40 and a downward air blast passes through the appropriate tube 37 a suctional effect is produced on the front wall of the bag lying opposite the bag flap 13x. This is due to the flow of air through the aperture bounded by the fingers 40 as deflected by inclined lip 37x. Thus the bag is blown open to the position shown in Fig. 10 and is ready to receive the first row of articles dropped through the chute 12 appropriate to the bag compartment.

In Fig. 8 I have shown a modification of the

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rounded or ball shape bag-restraining members in that they are pear shaped and taper inwardly along the sides of the bag compartment walls 14, so that the latter support the pear-shaped members at the longitudinal axes thereof. Also in Figs. 1 and 2 I have shown similar guiding abutments carried by the compartment walls 14 and 15 above the members 35 as indicated at 45.

Having described my invention, what I claim and desire to secure by Letters Patent is as follows:

1. A bag filling machine comprising a plurality of article receiving chutes, a plurality of air blast chutes adjacent and behind said receiving chutes, and having a protruding front wall provided with an outwardly pointing air deflecting lip and an aperture with inwardly pointing fingers, a plurality of inclined receiving compartments having moveable walls and adopted to move gusseted bags under the force of gravity and located below said chutes, and lug friction holders adapted to retain the movement of empty bags against the force of gravity but to release a filled bag.

2. The apparatus of claim 1 wherein said compartment walls consist of a central fixed wall, a

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plurality of left walls moveable as a unit to the left of said fixed wall, and a plurality of right walls moveable as a unit to the right of said fixed wall; a plurality of left handed worms beneath said plurality of right walls whereby the compartment walls are moveable as a unit to effect compartments adapted to receive gusset bags of different sizes.

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