

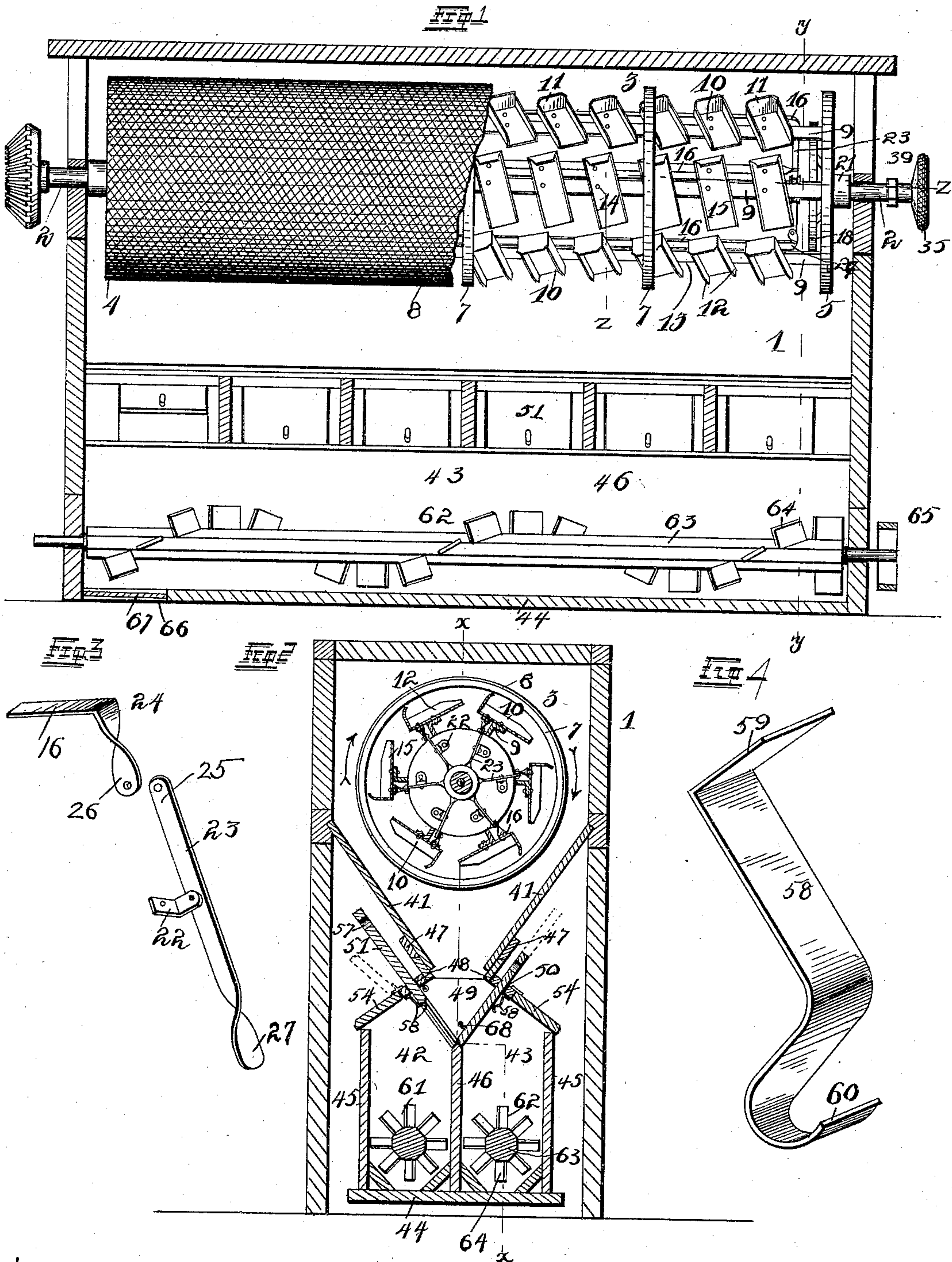
(No Model.)

2 Sheets—Sheet 1.

F. J. SCHUPP.
BOLTING CHEST.

No. 505,801.

Patented Sept. 26, 1893.



Witnesses

Alfred A. Schupp
Herbert L. Robinson

Inventor

F. J. Schupp.

By His Attorneys

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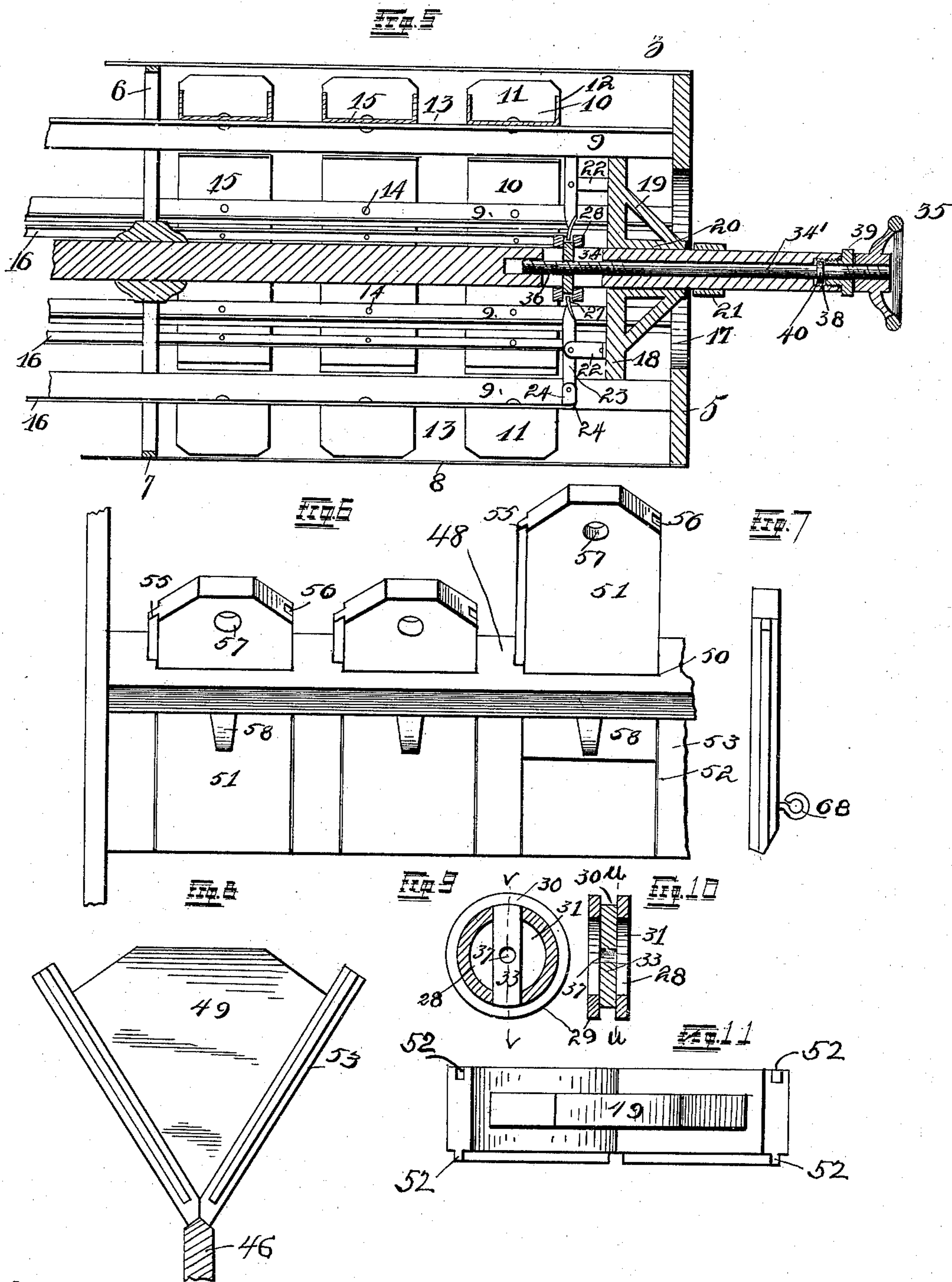
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UNITED STATES PATENT OFFICE.

FREDERICK J. SCHUPP, OF MARSHALL, MISSOURI.

BOLTING-CHEST.

SPECIFICATION forming part of Letters Patent No. 505,801, dated September 26, 1893.

Application filed September 3, 1892. Serial No. 444,997. (No model.)

To all whom it may concern:

Be it known that I, FREDERICK J. SCHUPP, of the city of Marshall, in Saline county, Missouri, have invented certain new and useful Improvements in Bolting-Chests, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming a part hereof.

My invention relates to improvements in bolting-chests, and consists in the novel arrangement and combination of parts, as will be more fully described and designated in the claims.

The object of my invention is to provide an improved construction of bolting chest wherein the grades of flour may be readily assorted, and which will possess advantages in point of simplicity and inexpensiveness in construction and general efficiency.

A further object of my invention is to combine in the construction of an improved bolting-chest, a reel which serves two definite functions, and which is horizontally adjustable in order that the speed with which the material is forwarded through the reel, may be adjusted and regulated to conform with the necessities apparent in the manufacture of improved flour.

The chest described and claimed can be used in conjunction with any reel but is especially constructed for use with my improved reel to perfect the product and carry out my ideas as to economy.

In the drawings:—Figure 1 is a vertical sectional view taken on a line $x x$ in Fig. 2 and shows the reel in detail with a portion of the bolting-cloth removed to more clearly define the relative position of the parts. Fig. 2 is a vertical cross-sectional view taken on a line $y y$ of Fig. 1. Fig. 3 is a perspective view in detail of a jointed lever, used in the construction of my invention. Fig. 4 is an enlarged perspective view of a spring made use of in carrying out my invention. Fig. 5 is a sectional view taken on a line $z z$ in Fig. 1. Fig. 6 is a perspective view of the sliding trap-doors used in the constructing of the bolting-chest. Fig. 7 is a side elevation of one of the trap-doors. Fig. 8 is a vertical sectional view showing the guide upon which the trap-doors are adjustable. Fig. 9 is a transverse cross-section taken on a line $u u$ of Fig. 10. Fig.

10 is a vertical cross-section taken on a line $v v$ in Fig. 9. Fig. 11 is a plan view of the construction shown in Fig. 8.

Referring to the drawings: 1 indicates the frame of the bolting-chest, having mounted therein upon a shaft 2, a bolting-reel 3. Said bolting-reel 3 is provided with a front head 4 and a tail-head 5. Said bolting-reel 3 has a series of radially arranged arms 6 at points intermediate of its length, and upon the ends of which are secured circumferential bands or hoops 7 over which the bolting-cloth 8 is stretched, with proper means provided for stretching the same. A number of radially arranged angle-bars 9 extend longitudinally through the reel 3 and have suitable fastenings upon the two heads 4 and 5. Pivoted upon the outer side of said angle-bars 9 are a number of horizontally adjustable buckets 10. Said buckets 10 are provided with one end open, while the other end is closed with a flange 11 which extends above the sides 12 and is curved inwardly toward the open ends of said buckets 10 to form a scoop. Said buckets 10 are pivoted thereon with an intervening space 13 between each one in order to admit of the lateral adjusting of said buckets 10. The free ends of the bucket sides 12 are cut downwardly in order to present a suitable scooping surface to the material. The pivots 14 by means of which said buckets 10 are pivoted to said angle-bars 9 are near the center of the bottoms 15 of said buckets 10. A horizontally adjustable, longitudinal bar 16 is pivoted to each horizontal row or series of buckets 10, under the same and between the angle-bar 9 and the rear or scoop-ends of the buckets 10. By this construction it will be seen that if the adjustable bar 16 were horizontally moved in either direction endwise, the buckets 10 would be correspondingly inclined at the angle attained by the length of the movement of said horizontally adjustable bars 16.

Preferably in the construction of my improved reel, I make use of six of the horizontal rows or series of buckets 10, each series mounted upon the angle iron 9 and having the horizontally adjustable bars 16 pivoted thereto, and said six series mounted in a radial relation with each other, and within the surface of the bolting-cloth 8.

I will now proceed to describe the particular construction by means of which I am able to simultaneously adjust the lateral incline of the six series of buckets 10, by the same movement. The tail-head 5 is provided with a suitable central aperture 17 through which certain parts hereinafter described, project. An intermediate head 18 of such a diameter that it will fit within the angle-irons 9, as shown in Fig. 5, is provided with downwardly projecting arms 19, which serve as supports for said head, the lower ends of said arms 19 being secured to a shell 20 which fits around the shaft 2 and connects with the intermediate head 18, thus forming a stationary, solid surface to which parts may be secured. A suitable rim 21 is provided upon the exterior of the shaft 2 to prevent any lost motion between the head 5 and the bearing for same in the frame 1. Upon the inner face of the head 18 and arranged in a radial position, are small angle braces 22 to which are secured by pivots, jointed levers 23, the connection being such that the levers 23 will be in vertical alignment with the head 18 and having one of its ends twisted at right angles with its length in order that the twisted end may be secured in a recess, as hereinafter described.

The end of the horizontally adjustable bar 16 has a bent portion 24 at right angles with same and which is pivoted to the end of the lever 23, such construction forming the jointed lever above mentioned. The jointed lever 23 pivoted to the angle brace 22 is so placed that if the flat end 27 of said section 23 were pulled in one direction or pushed in the other, the horizontally adjustable bars 16 would describe the same movement. To effect the desired horizontal movement, it is necessary to provide a means for operating the jointed levers, and the horizontally adjustable bars 16 to which are pivotally secured the buckets 10 in horizontal series, of which there are six. It is therefore consistent that there are six of the angle braces 22 secured in a radial position from the shaft 2 upon the head 18 and consequently six of the jointed levers 23 pivoted to said angle braces 22 and the ends 25 of said jointed levers properly pivoted to the ends 26 of the horizontally adjustable bars 16. I have provided a collar 28 consisting of two annular flanges 29 upon a circular disk, an annular recess 30 between said flanges 29, and a circular aperture 31 in said disk to fit over the shaft 2. The collar 28 is provided with a cross-piece 33 which engages a slot 34 provided longitudinally in the shaft 2. When thus mounted upon the shaft 2, the collar 28 is fixed against lateral movement upon the latter, but is adapted to play longitudinally thereon.

The function of the recess 30 in the collar 28 is the reception of the ends 27 of the jointed levers 23 and the adjustment of the collar 28 upon the shaft 2 imparts to said levers 23 and the bars 16 pivoted thereto the desired longitudinal horizontal movement. For the auto-

matic movement of said collar and consequent movement of the buckets 10 mounted upon the horizontally adjustable bars 16, I have provided an attachment consisting of an interior shaft 34' having mounted upon its outer free end, a suitable wheel 35 for the manipulation of the shaft 34', and having its inner end 36 exteriorly screw-threaded to work in an interiorly screw-threaded perforation 37 in the cross-piece 33. To prevent a lost motion in the working of said rod 34', I have provided said shaft 2 with a counter-bore 38 which is interiorly screw-threaded to receive and secure an exteriorly screw-threaded sleeve 39. The inner shaft 34' is provided with a shoulder 40 which fits into the bottom of the counter-bore 38 upon one of its surfaces, and has the inner end of the sleeve 39 engaging its other surface, so that it is impossible for said rod 34' to have any undue horizontal motion. As the perforation 37 is interiorly screw-threaded and receives the exteriorly screw-threaded ends 36 of the inner shaft 34', the collar 28 is correspondingly drawn toward or repelled from the outer end of said shaft when the wheel 35 is turned in either direction. This action operates the levers 23, to the ends of which are pivoted the ends of the horizontally adjustable bars 16 and the buckets 10 pivoted thereto.

It will now be seen from the above descriptions and by reference to the drawings that the connection between the parts is complete and if the operator were to operate the wheel 35, the lateral incline of the buckets 10 would be correspondingly moved, that is, the inclines of the sides of said buckets are changed, so that they either resume a vertical position or a position at any angle desired. The nearer a horizontal position that the buckets are adjusted, the faster and farther the material is thrown toward the discharge end and the nearer a vertical position at which they are placed, the slower the material is fed. The bent portion in the back 11 of the bucket 10 scoops up the material and forces it against the bolting-cloth 8 when the series of buckets has reached a certain altitude in its revolution.

Having now described the construction and operation of the reel, I will proceed with the bolting-chest compartments and conveyers shown in the illustrations. The conveyer compartments are located directly under the reel 3 and have cant-boards 41 which lead downwardly and inwardly to the conveyer compartments, of which there are two, 42 and 43, and the opening between the lower ends of said cant-boards 41 is equally divided over the compartments 42 and 43, which consist of a base-construction 44, sides 45 and a central partition 46. A longitudinal angle construction 47 is secured to the lower outer sides of the cant-boards 41, with the angle piece 48 projecting at right angles with said cant-boards 41. The conveyer compartments are divided longitudinally by triangular shaped

pieces 49 which are placed cross-wise in the opening between the cant-boards 41 and which has its free lower point adjacent the upper edge of the division board 46. The projecting angle boards 48 are provided with a number of slots 50 running longitudinally therein, which are constructed as a guide for trap-doors 51, hereinafter described. Also secured to the under sides of said boards 48, and extending downwardly and inwardly and meeting at the central partition 46, and in which are placed coinciding guides 52, are longitudinal timbers 53. The upright triangular shaped partitions 49 are placed between said guides 52 and by this construction it will be seen that the material discharged by the reel can only get into the conveying chambers 42 and 43 when one or more of the trap-doors 51 are drawn out of their normal positions in the guides 52. The terminus of the angle board 48 is connected with the upper terminals of the side walls 45 by hinged lids 54, which allow of the lifting of same for the examination of the contents and the manipulation of the trap-doors 51, as hereinafter set forth. One of the sides of said trap-doors 51 is provided with a tongue flange 55, and the other edge with a groove 56, said flange and groove respectively registering with the corresponding guides 52 of the timbers 53. The upper ends of said trap-doors 51 are provided with a suitable opening 57 by means of which the same may be drawn upwardly, and the same can be held in any desired position by a spring 58 which is secured to the under side of the angle board 48 adjacent to the hinged portion 54. The spring is provided with an end portion 59 at right angles with same and which is secured to the angle board 48 and the opposite end of said spring rounded and bent at a right angle opposite to the end 59, and said rounded end adapted to spring inwardly and engage the lower end of the trap-door 51 when the same is drawn upwardly out of its normal closed position. Therefore it will be seen that the entrance of flour into this conveyer is controlled by the adjustment of the trap-doors 51 and that if a certain grade is desired, the door 51 under that part of the reel can be opened and the flour will pass through the same and into the conveyer chambers 42 and 43, in case both doors were opened. Located in the lower portion of each of the chambers 42 and 43 and revolving longitudinally therein, are spiral conveyers 61 and 62. They consist of shafts 63 octagon shaped in cross-section and upon which are paddles or blades 64 arranged in a spiral position and extending from one end to the other of the chamber. At one end is provided a pulley 65 for the revolving of said conveyer and at the other end in the lower base of the frame is an opening 66 to which the conveyer carries the flour and through which it is discharged. The bottoms of the chambers 42 and 43 should be so constructed that the conveyer blades 64 will as nearly as

possible gather up all of the flour and carry it to the opening 66 which can be closed by a door 67 which is adjustable. Upon the inner sides of the trap-doors 51 and at a point adjacent the partition 46, is provided a suitable means such as the hook 68 for lifting the door up without the necessity of walking around the machine to do so. It also serves to prevent the pulling out of the doors 51 from their guides. In order to open a door upon the opposite side of the machine, the door upon the side at which the operator is standing is first raised, at which time he can readily reach in and take hold of the bolt 68 and push the same up, until the spring 58 engages the lower end of said door, as shown in Fig. 2.

Having described the construction and combination of parts, I will now proceed to detail the operation of the complete construction.

Premising that the ground material is being fed into an aperture in the front head and that the buckets 10 are inclined at a certain angle, it will be seen that the material will be picked up in the front end of the reel and the force of the turning of said reel will throw the material forward, that is, it will be passed from one series of buckets to another, thus forwarding it inwardly toward the tail end and at the same time allowing a good deal of it to be forced against the bolting-cloth 8 both by the movement of the reel and its own gravitation. The greater angle at which the buckets are placed, considering the vertical position as its normal one, the faster and farther the material will be thrown toward the tail-end and the greater impetus will be given to the material to force it against the bolting-cloth. To adjust the lateral incline or angle of the buckets 10, I have provided the construction heretofore described by the manipulation of which I can change the position as stated, without stopping the machinery. The combination of functions which enable the conveying and agitating of the material assists in the improvement of the product and also allows of the running of the machinery at a speed far less than could have been maintained with the use of other reels to produce the same result. I have found from actual experiments that this fact is true and that the product is of a much finer quality, with a large saving in the material.

The simpleness of operation and durability of construction, enable by the construction of the conveyer compartments as heretofore described, an improved method of carrying for the flour discharged by the reel.

The construction of the trap-doors with a tongue and groove connection or joint between the same and their guides guarantees the working of said trap-doors and their permanency of position.

The construction which allows of the opening of the doors from either side of the ma-

chine is an important one and will be found to facilitate the operation of the complete machine.

Having described my invention, what I claim is—

1. As an improvement in bolting chests, the combination, with the chest proper provided with cant boards, of a two-part conveyer, sliding and independently adjustable doors 51 for the latter, and a spring 58 for each door, provided with a rounded projection 60 adapted to normally bear against the under side of the door and engage the lower edge of the latter when elevated; substantially as and for the purpose set forth.

2. As an improvement in bolting chests the combination, with the chest proper provided with a conveyer, of a reel constructed with a means for horizontally adjusting a series of conveyer buckets, consisting of a shaft 2 provided with a slot 34, a collar 28 having annular flanges 29, an annular recess 30, a

cross-piece 33 which secures said collar upon the shaft 2 and allows a reciprocating, longitudinal movement thereon, a screw-threaded perforation 37 in said cross-piece 33, an interior shaft 34' having one end exteriorly screw-threaded to operate in said perforation 37, its opposite end provided with a wheel 35 for operation, an interiorly screw-threaded counter-bore in the outer end of said shaft 2, a collar 40 upon said shaft 34', a sleeve adapted to screw into said bore 38 and prevent any longitudinal movement in said shaft 34' and jointed levers 23 having one end in a recess 30, a horizontal adjustment of said shaft 34' changing the position of the horizontally adjustable bar 16, substantially as set forth.

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

FREDERICK J. SCHUPP.

Witnesses:

HERBERT S. ROBINSON,
ALFRED A. EICKS.