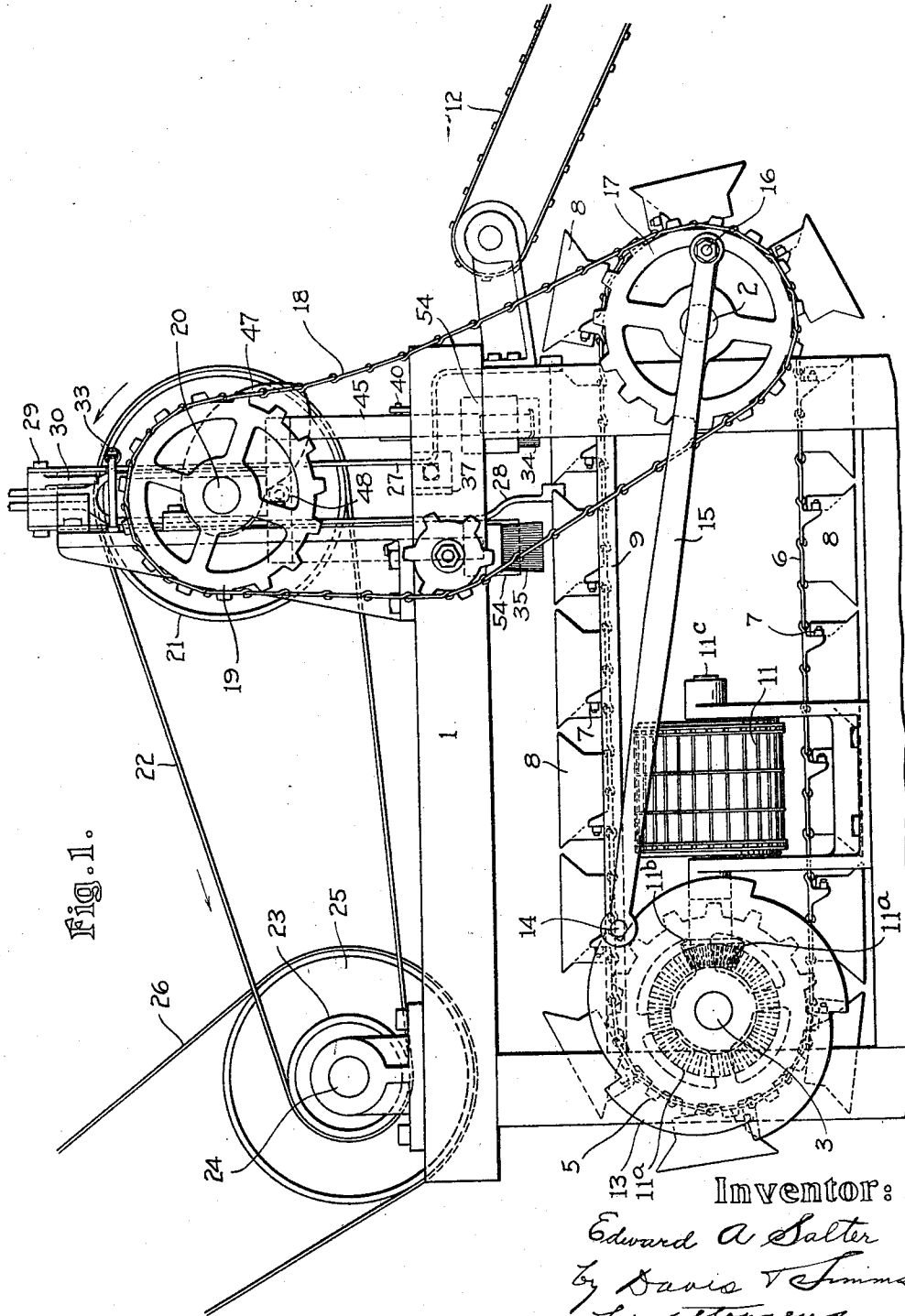


E. A. SALTER.
TRIMMING OR SNIPPING MACHINE.
APPLICATION FILED JAN. 8, 1917.

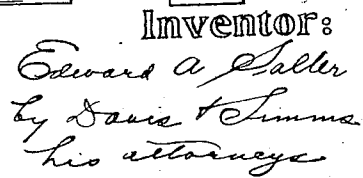
Patented June 19, 1917.
5 SHEETS—SHEET 1.

1,230,227.



1,230,227.

5 SHEETS--SHEET 2.



E. A. SALTER.
TRIMMING OR SNIPPING MACHINE.
APPLICATION FILED JAN. 8, 1917.

Patented June 19, 1917.
5 SHEETS—SHEET 3.

1,230,227.

Fig. 3.

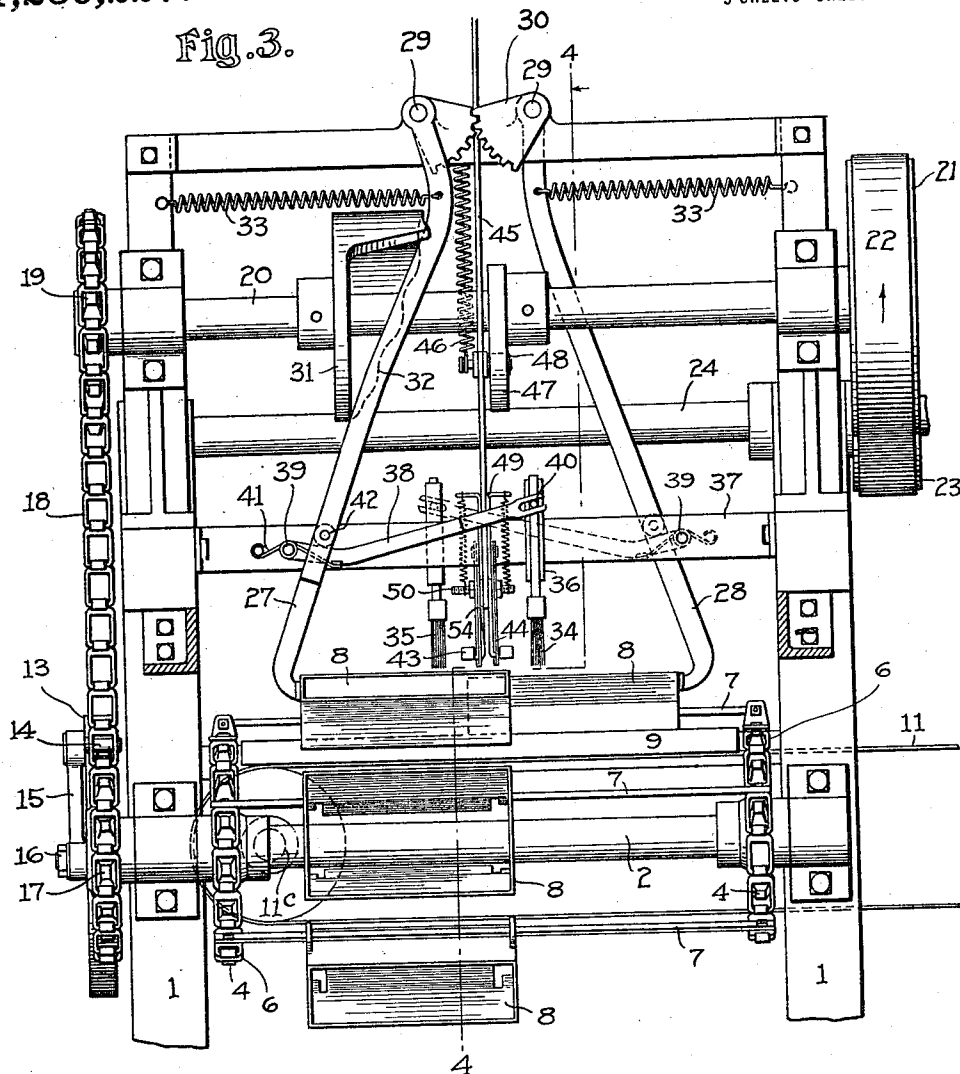
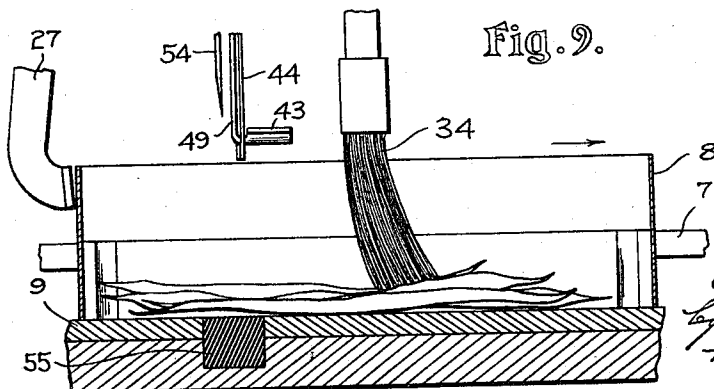


Fig. 9.



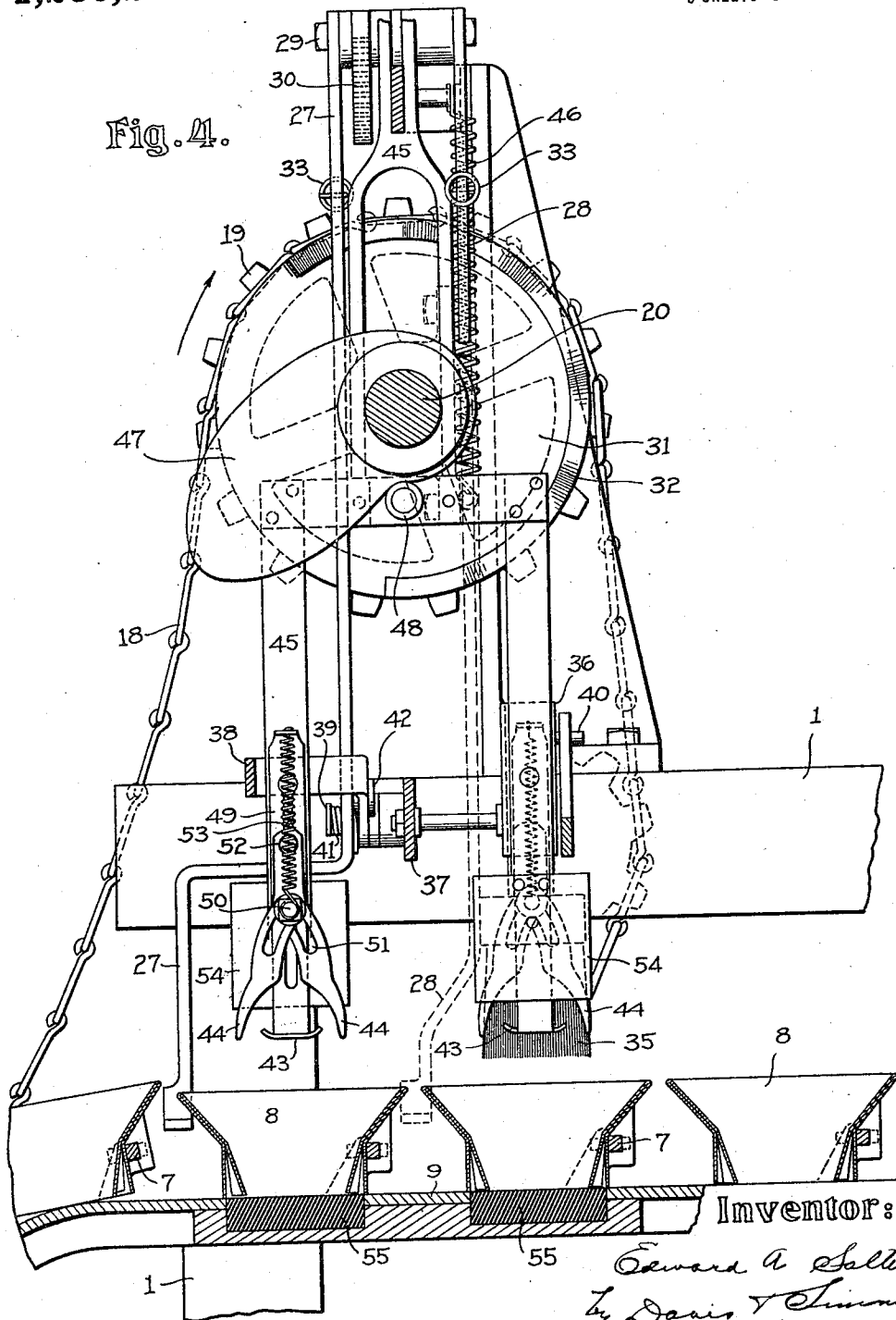
Inventor:
Edward A. Salter
by Davis & Simms
his attorneys

E. A. SALTER.
TRIMMING OR SNIPPING MACHINE.
APPLICATION FILED JAN. 8, 1917.

Patented June 19, 1917.
5 SHEETS—SHEET 4.

1,230,227.

Fig. 4.



Inventor:

Edward A. Salter
by Davis & Simmons
his attorneys

E. A. SALTER.
TRIMMING OR SNIPPING MACHINE.
APPLICATION FILED JAN. 8, 1917.

1,230,227.

Patented June 19, 1917.
5 SHEETS—SHEET 5.

Fig. 5.

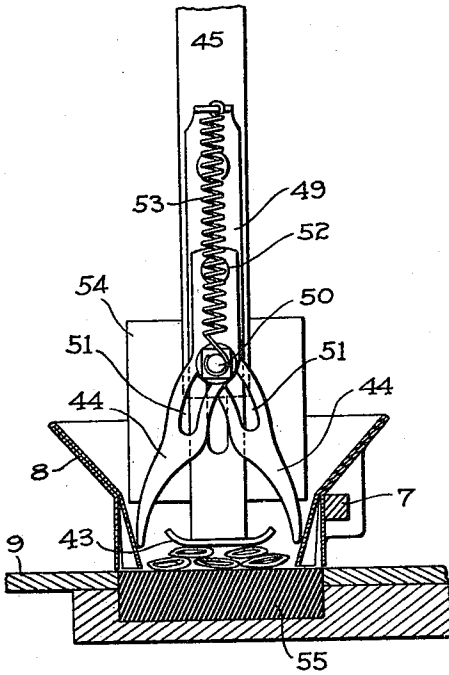


Fig. 6.

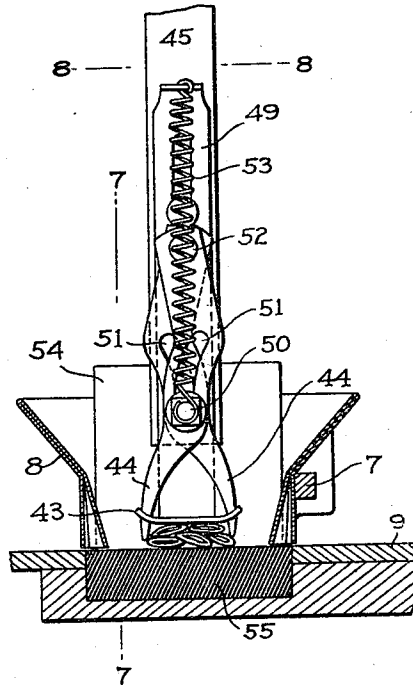


Fig. 7.

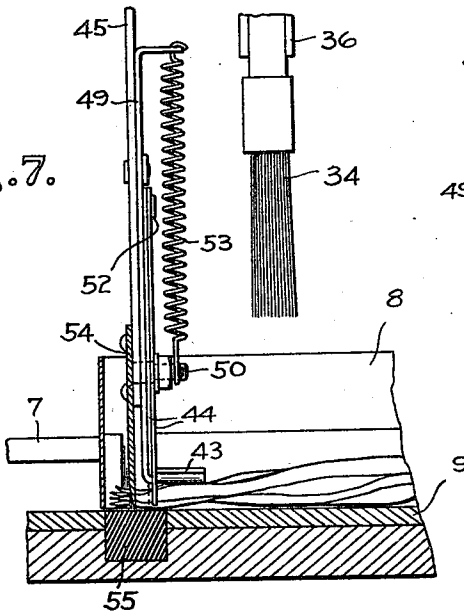
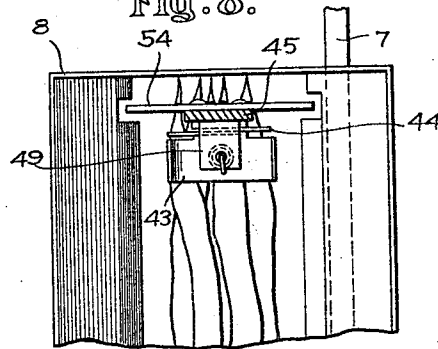


Fig. 8.



Inventor:

Edward A. Salter
by *Davis & Sumner*
his attorneys

UNITED STATES PATENT OFFICE.

EDWARD A. SALTER, OF NORTH ROSE, NEW YORK.

TRIMMING OR SNIPPING MACHINE.

1,230,227.

Specification of Letters Patent.

Patented June 19, 1917.

Application filed January 8, 1917. Serial No. 141,229.

To all whom it may concern:

Be it known that I, EDWARD A. SALTER, a citizen of the United States, and resident of North Rose, in the county of Wayne and State of New York, have invented certain new and useful Improvements in Trimming or Snipping Machines, of which the following is a specification.

The present invention relates to trimming or snipping machines for cutting off the ends of string beans or other articles in which the lengths differ or have variation, and an object of this invention is to provide a construction which will insure that the ends of the articles are brought to a certain position so that the proper amount will be trimmed or cut off. Another object of the invention is to provide an improved construction which will utilize a knife having a reciprocating or chopping movement. A further object of the invention is to provide a bunching mechanism which will form and hold the articles in a bunch so that they will not be displaced by the cutting mechanism. To these and other ends the invention consists of certain parts and combinations of parts all of which will be hereinafter described, the novel features being pointed out in the appended claims.

In the drawings:—

Figure 1 is a view in side elevation of a bean snipping machine embodying the present improvements;

Fig. 2 is a plan view of the machine;

Fig. 3 is an end view of the machine, the feeding belt being removed;

Fig. 4 is an enlarged section on the line 4—4, Fig. 3;

Fig. 5 is an enlarged detail view of the bunching mechanism, showing the position of the latter during its movement to bunch the beans;

Fig. 6 is a view similar to Fig. 5, showing the beans held by the bunching mechanism and the knife moved to cutting position;

Fig. 7 is a sectional view on the line 7—7, Fig. 6;

Fig. 8 is a section on the line 8—8, Fig. 6, and

Fig. 9 is a detail sectional view showing the articles held by a brush during the shifting of a bucket.

Referring more particularly to the draw-

ings, 1 indicates a frame on which is mounted two shafts 2 and 3, the shaft 2, having two loose sprockets 4 thereon while the shaft 3 has two sprockets 5 secured thereto to turn therewith. About the sprockets 4 and 5, two sprocket chains 6 are passed, these chains being connected at intervals by cross pieces or guide bars 7, thereby forming an endless conveyer of the belt type. Mounted on the guide bars 7, for moving in the direction of the length of the bars, and transversely of the path of the conveyer are buckets or receptacles 8 which preferably have flaring side walls and open bottom walls, these buckets or receptacles being moved on the bars by a suitable mechanism, one form of which will be hereinafter described. A table 9 is arranged in such a manner that it closes the bottoms of those buckets on the uppermost lap of the conveyer so that articles deposited in the buckets will be confined therein during a certain portion of the travel of such buckets, the table being provided at 10 with an opening through which the contents of the buckets are discharged. Beneath this opening, an endless belt or other conveyer 11 is mounted to conduct the articles discharged through the opening 10 to one side of the machine, and this conveyer may be driven from the shaft 3 by means of a bevel gear 11^a on the shaft meshing with a bevel gear 11^b on a shaft 11^c of the conveyer. If desired, this conveyer may have openings 11^d therein, large enough to permit the tips of the beans to fall therethrough, but too small for the passage of the main portions of the beans, thus causing a separation of the tips of the beans. These openings may be elongated transversely of the line of travel of the conveyer so that the main portions of the beans extend transversely of the openings. The material may be fed to the buckets 8 by any suitable means such, for instance, as an endless conveyer 12 which has its discharging end directly over the bucket conveyer to discharge into the buckets 8 as the latter reach such discharging end.

The bucket conveyer is fed by a step-by-step movement, this preferably being accomplished by providing a shouldered or ratchet wheel 13 on the shaft 3, and engaging such

wheel by a tooth 14 on the end of a piston
 rod 15, the latter being eccentrically con-
 nected at 16 to a sprocket wheel 17 which is
 secured to the shaft 2 so that the shaft and
 the sprocket wheel turn together. The
 sprocket wheel is given continuous rotation
 in any suitable manner as, for instance, by
 the sprocket chain 18 which also surrounds
 the sprocket wheel 19 on a shaft 20, the
 latter having also thereon a pulley 21 con-
 nected by a belt 22 to a pulley 23 on the
 shaft 24, which carries also a pulley 25
 adapted to be connected by a belt 26 with a
 line shaft overhead.
 Mechanism is provided for moving the
 buckets or receptacles 8 transversely of the
 conveyer in order that the articles within
 the buckets or receptacles may be brought
 to proper positions to be acted upon by the
 cutting mechanism. This bucket moving
 mechanism, in this instance, embodies two
 pushers 27 and 28, one operating in advance
 of the other on a bucket to push the latter in
 one direction, while the other operates later
 on the bucket to push the same in the oppo-
 site direction. In this instance, these push-
 ers are connected together for simultaneous
 movement, and to this end are in the form
 of swinging arms pivoted at 29 above the
 uppermost lap of the conveyer and con-
 nected together by gear segments 30, so that
 as one moves in one direction, the other
 moves in the opposite direction. Prefer-
 ably, the movement is effected by a cam 31
 arranged on the shaft 20 and having its
 operative face 32 engaging the arm of the
 pusher 27, to move the latter in one direc-
 tion; this face 32 being rolling so that the
 pushing action is not continuous but is in
 the form of a series of impulses so that the
 contents of the buckets or receptacles are
 subjected to a jarring action. Springs 33
 act on the pushers 27 and 28 to move the
 latter to their normal positions. The pusher
 27 begins to act on its bucket or receptacle
 while the bucket conveyer is moving, but
 does not complete its shifting action until
 after the bucket conveyer has completed its
 movement one step. This shifts the bucket
 or receptacle to one side of the line or path
 of travel of the buckets. On the next move-
 ment of the bucket conveyer one step, the
 pusher 28 coöperates with the opposite end
 of the bucket or receptacle 8 which was pre-
 viously shifted by the member 27, and moves
 the latter into the line or path of travel of
 the buckets; this movement of the bucket
 conveyer and also after the latter has com-
 pleted its movement. The purpose of mov-
 ing the buckets endwise over the table 9 is
 to cause the beans to be brought alternately
 into engagement with the opposite walls of
 the buckets.
 With the end in view of producing a

dragging action on the beans within the
 buckets, while the latter are moving endwise,
 two drag producing devices 34 and 35 are
 provided. In this instance, these elements
 are in the form of vertically movable
 brushes mounted in guides 36 on a cross piece
 37 of the frame 1, and arranged so that they
 do not enter the buckets until the step-by-
 step movement is completed. The brush 34
 enters the bucket which is being shifted
 transversely by the pusher 27 and engages
 the beans within such bucket, and the brush
 35 enters the bucket which is being shifted
 by the pusher 28 to engage the beans in such
 bucket. The engagement of the beans by
 the brushes is comparatively slight, being
 sufficient to hold the beans against move-
 ment until such beans are engaged by the
 end of the bucket, after which the brush
 permits the beans to slip thereunder. Oper-
 ation of the brushes may be effected by
 levers 38, which are pivoted at 39 to the
 cross bar 37 and have their free ends en-
 gaging the brushes at 40. Springs 41 act
 on the arms 38 and tend to elevate the lat-
 ter with their brushes, while rollers 42 on
 the pusher arms 27 and 28 engage the upper
 surfaces of the levers 38 and depress the
 latter during the latter part of the endwise
 movement of the buckets.
 It is desirable to employ a bunching
 mechanism which will operate upon the
 beans within the buckets or receptacles to
 bunch the latter prior to the snipping or
 severing of the ends. In this instance a
 bunching mechanism is provided for each
 of the pushers; this mechanism preferably
 comprising a presser foot 43 and two grip-
 pers 44 operating on opposite sides of the
 presser foot. The pair of bunching mech-
 anisms are preferably arranged on a single
 movable frame 45 which is guided vertically
 on the frame 1 of the machine above the
 upper lap of the conveyer. A spring 46
 tends normally to hold the bunching mech-
 anisms in an elevated position out of the
 path of the buckets or receptacles, while a
 cam 47, arranged on the shaft 20, acts on
 the roller 48 to depress the frame 45 to
 carry the two bunching mechanisms into two
 of the buckets or receptacles after the latter
 have been shifted endwise. The beans are
 first engaged by the presser foot 43 which is
 mounted on a slide 49 arranged on the frame
 45. This slide 49 carries a pin 50 which
 works in curved slots 51 in the grippers 44
 and tends to move said grippers about their
 common pivot 52, to swing their lower ends
 into engagement with opposite sides of the
 bunch held by the presser foot 43, as will be
 seen more clearly by referring to Figs. 5
 and 6. With the raising of the frame 45, a
 spring 53 acts on the slide 49 and tends to
 move the latter with the presser foot 43 and
 the grippers 44 to their normal positions.

After the beans have been bunched, they are subjected to two snipping or cutting devices each of which is preferably in the form of a blade 54 carried by one of the arms of the frame 45 and brought into action during the latter part of the bunching action. A rubber or other yielding pad 55 may be arranged under each of the knives 54 to prevent the dulling of the latter.

In the operation, beans are fed to the conveyer 12 and by the latter are discharged into the receptacles 8 as such receptacles reach the discharging end of such conveyer 12. After beans are received within the receptacle, the pusher 27 is brought into action to shift the receptacle 8 transversely of the bucket conveyer, while the bucket or receptacle is being moved by the conveyer. This brings the beans against one wall of the bucket and after the movement of the bucket conveyer has ceased, the sidewise or transverse movement of the bucket continues and at the same time the brush 34 enters the bucket and acts on the beans in such a manner as to hold against movement those beans which are not in engagement with the wall of the bucket, so that such wall will eventually contact with all the beans, after which the brush will permit the beans to be moved relatively thereto. When the transverse or sidewise movement of the bucket is completed, the presser foot 43 engages the beans in the bucket and causes the grippers also to engage the beans to produce a bunch. During the latter part of the bunching action, the knife 54 which is nearer the intake end of the machine severs or snips the ends of the bean in proximity to the end wall of the bucket. Upon the completion of the snipping action, the cutter and the grippers move first away from the beans leaving the presser foot in engagement therewith to strip them from the cutter, after which all of such parts are withdrawn from the bucket. The bucket conveyer now starts to move under the action of the pitman 15 and during this movement the pusher 28 coöperates with the bucket, whose operation was previously described, to shift the latter into line with the other bucket. This shifting is not completed when the bucket conveyer again stops so that the brush 35 can enter the bucket 8 to operate upon the beans therein, in the same manner as the brush 34 had previously operated, with the exception that the beans are now caused to engage with the opposite wall of the bucket. When the bucket has completed its movement into line with the other buckets, the second bunching mechanism comes into operation to bunch the beans again after which their other ends are severed. The beans with their severed ends are carried step-by-step to the opening 10 through which they drop onto the con-

veyer 11 which separates the tips from the main portions of the beans and carries the main portions to any suitable point.

What I claim as my invention and desire to secure by Letters Patent is:—

1. In a machine of the class described, an endless conveyer having transverse guides thereon, buckets movable on said guides, and means for shifting said buckets in opposite directions on the guides, and means for cutting off the ends of the article contacting with opposite walls of the buckets.

2. In a machine of the class described, an endless conveyer, buckets movably mounted on the conveyer, and a device entering the buckets to contact with the articles therein in order to cause them to contact with a wall of the bucket for the severing of such end.

3. In a machine of the class described, an endless conveyer, bottomless buckets carried by the conveyer and movable transversely of the path of travel of the conveyer, and a table over which said buckets are carried to close the bottoms thereof, means for shifting the buckets in opposite directions on the conveyer, and means for cutting off the ends of beans coöperating with opposite end walls of the buckets.

4. In a machine of the class described, buckets movably mounted on the conveyer, and two pushers, one acting successively on the buckets to shift them in one direction and the other acting successively on the buckets to shift them in the other direction, and means for cutting off the ends of the articles contacting with opposite walls of the buckets.

5. In a machine of the class described, an endless conveyer, buckets on the conveyer, mechanism for feeding said conveyer step-by-step, means for causing the articles to be brought alternately against opposite end walls of the buckets, and cutting devices entering said buckets while the latter are stationary to cut the ends of the articles within the bucket against the end walls.

6. In a machine of the class described, an endless conveyer, mechanism for feeding the conveyer step-by-step and a pair of cutting devices for operating on opposite ends of articles moved by the conveyer, said cutting devices being movable to engage the articles while the conveyer is stationary.

7. In a machine of the class described, an endless conveyer, bottomless buckets on the conveyer, a table over which the bottomless buckets are caused to travel to support the articles within the buckets, mechanism for feeding the conveyer step-by-step, and a pair of cutting devices movable to engage the articles within the buckets while the conveyer is stationary.

8. In a machine of the class described, an endless conveyer having transverse guides thereon, bottomless buckets movable on said

guides, a table over which said buckets are carried to support the articles therein, means for shifting said buckets in opposite directions on the guides to bring the articles alternately against opposite walls of the buckets, and means for cutting off the ends of the articles contacting with such walls.

9. In a machine of the class described, an endless conveyer having transverse guides thereon, means for feeding said conveyer step-by-step, bottomless buckets movable on said guides, a table over which said buckets are carried to support articles therein, means for shifting the buckets in opposite directions on the guides, and means for cutting off the articles contacting with such walls, said means comprising two cutting devices, one movable into a bucket after it has been shifted in one direction, and the other movable into a bucket after it has been shifted in the other direction.

10. In a machine of the class described, an endless conveyer having transverse guides thereon, means for feeding the conveyer step-by-step, bottomless buckets movable on the guides, a table over which the buckets are carried to support the articles therein, means for shifting the buckets in opposite directions on the guides, two devices entering the buckets to contact with the articles therein while the buckets are shifting on the guides in order to cause the articles to contact with opposite walls of the buckets, and two cutting devices each moving into a bucket while the conveyer is stationary to cut off the ends of the articles contacting with a wall of the bucket.

11. In a machine of the class described, an endless conveyer having transverse guides thereon, bottomless buckets movable on the guides, a table on which the buckets are carried to support the articles therein, means for shifting the buckets in opposite directions on the guides, two devices entering the buckets to contact with the articles therein while the buckets are shifting on the guide in order to cause the articles to contact with opposite walls of the buckets, and means for cutting off the ends of the articles contacting with such walls.

12. In a machine of the class described, two shafts each provided with a pair of sprocket wheels, the wheels on one shaft being mounted to turn thereon, two sprocket chains each connecting a sprocket wheel on one shaft with a sprocket wheel on the other shaft, transverse guides connecting said sprocket chains, a pitman eccentrically connected at one end to the shaft on which the sprocket wheel turns, and having a tooth at the opposite end, a notched wheel on the other shaft engaged by said tooth, means for driving the shaft on which the sprocket wheels turn, bottomless buckets movable on the guides, means for moving the buckets

in opposite directions, a table over which the buckets are carried and means for cutting off the ends of the articles contacting with opposite walls of the buckets.

13. In a machine of the class described, an endless conveyer, bottomless buckets thereon, a table over which the buckets are carried for supporting the articles in the buckets, means for moving the buckets transversely of the path of travel of the conveyer relatively to the table, and means for cutting off the opposite ends of articles within the buckets.

14. In a machine of the class described, an endless conveyer, buckets mounted for movement on the conveyer transversely of the path of travel of the conveyer, two pivotally mounted pushers one acting in advance of the other to push a bucket in one direction on the conveyer and the other acting to return the bucket to its normal position on the conveyer and means for cutting off the ends of the articles contacting with opposite walls of the buckets.

15. In a machine of the class described, an endless conveyer, buckets mounted for movement on the conveyer transversely of the path of travel of the conveyer, two pushers connected together for simultaneous movement, one acting in advance of the other to push a bucket in one direction on the conveyer and the other acting to return the bucket to normal position, a spring acting on the pushers to return them to normal positions, a cam acting on one of the pushers to effect the operating movement of the pusher and means for cutting off the ends of the articles contacting with opposite walls of the buckets.

16. In a machine of the class described, an endless conveyer, means for feeding the conveyer step-by-step, buckets mounted for movement on the conveyer transversely of the path of travel of the conveyer, two pushers, one acting on the buckets to push them in one direction, partially while the conveyer is moving and partially while the conveyer is stationary and the other acting to return the buckets to normal positions, partially while the conveyer is moving and partially while the conveyer is stationary, and while the buckets are being shifted by the pushers, to act on the articles therein to cause such articles to contact with opposite walls of the bucket and means for cutting off the ends of the articles contacting with opposite walls of the buckets.

17. In a machine of the class described, an endless conveyer, means for feeding the conveyer step-by-step, buckets mounted on the conveyer transversely of the path of travel of the conveyer, two pushers connected together for simultaneous movement, one acting in advance of the other to push a bucket in one direction, and the other act-

ing to return the bucket to normal position, and two devices slidably mounted above the buckets and operated by the pushers to enter buckets which are being shifted by the pushers while the conveyer is stationary, in order to engage the articles in the bucket to cause such articles to contact with certain walls of the bucket, and means for cutting off the ends of articles contacting with such walls.

18. In a machine of the class described, mechanism for causing a plurality of articles to be arranged with one of their ends in a common plane, a bunching mechanism acting on such articles after they have been so arranged, and a cutting device acting to sever such ends while the articles are held by the bunching mechanism.

19. In a machine of the class described, an endless conveyer having buckets thereon, means for causing a plurality of articles within the buckets to be arranged with their ends in a common plane, a bunching mechanism for entering such buckets after the articles have been so arranged, and a cutting device for removing such ends of the articles.

20. In a machine of the class described, an endless conveyer, buckets thereon, means for causing a plurality of articles within the buckets to be arranged with their ends in a common plane, a bunching mechanism entering said bucket and comprising a pusher for coöperating with the top of said bunch and two grippers coöperating with opposite sides of the bunch, and a cutting device for removing such ends from the articles while they are held by the bunching mechanism.

21. In a machine of the class described, an endless conveyer, means for moving the conveyer step-by-step, means for causing the articles carried by the conveyer to be brought with one of their ends in a common plane, a bunching mechanism acting on the articles after they have been so arranged and while the conveyer is stationary, and cutting mechanism acting on the articles to remove such ends while the articles are held by the bunching mechanism.

22. In a machine of the class described,

an endless conveyer, means for moving said conveyer step-by-step, two cutting devices for removing opposite ends of articles moved by the conveyer, said cutting devices operating on such articles while the conveyer is stationary, and means for bringing the articles to positions where their opposite ends may be removed by the cutting devices.

23. In a machine of the class described, an endless conveyer, means for moving the conveyer step-by-step, buckets on the conveyer, a bunching mechanism entering the buckets successively while the conveyer is stationary, and a cutting device for operating on the articles held by the bunching mechanism while the conveyer is stationary.

24. In a machine of the class described, an endless conveyer, mechanism for moving the conveyer step-by-step, buckets on the conveyer, a knife entering the buckets successively while the conveyer is stationary, a knife carrier, a presser foot yieldingly supported on the knife carrier to engage the articles in the bucket prior to the knife, and two pivoted grippers to engage the articles on opposite sides of the presser foot, said grippers being controlled by the presser foot.

25. In a machine of the class described, an endless conveyer, mechanism for moving the conveyer step-by-step, two movable cutting devices for removing opposite ends of the articles moved by the conveyer, means for bringing the articles to positions where their opposite ends may be removed by the cutting devices, and two movably mounted presser feet one for each cutting device to hold the articles against movement during the cutting action and to strip such articles from said cutting devices after the cutting action.

26. In a machine of the class described, an endless conveyer, buckets movably mounted thereon, means coöperating with opposite ends of the buckets for producing a jarring of the buckets, and means for cutting off the ends of the articles contacting with the opposite walls of the buckets.

EDWARD A. SALTER.