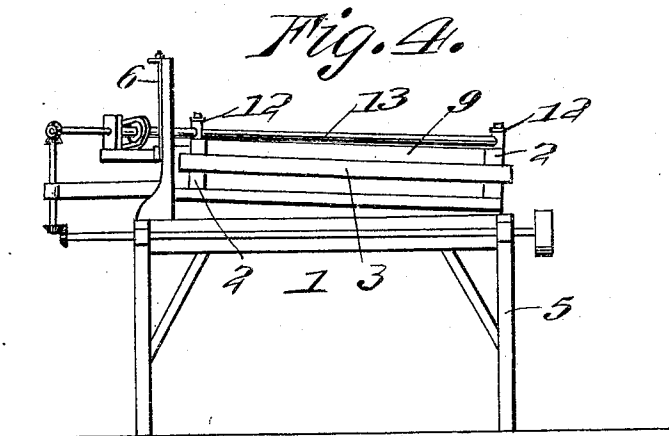
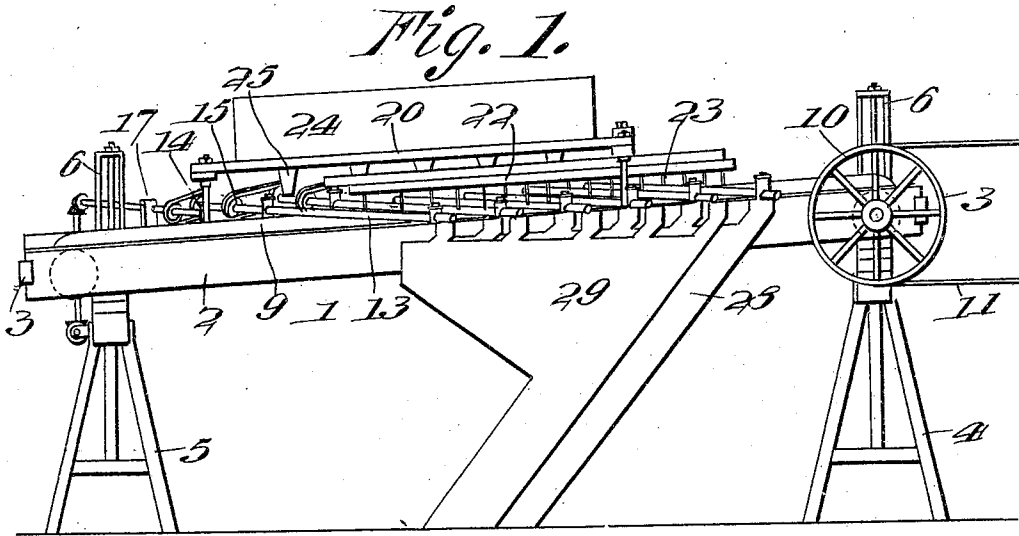


C. A. CROEL.
BEAN SEPARATOR.
APPLICATION FILED MAY 25, 1909.

933,629.

Patented Sept. 7, 1909.
3 SHEETS—SHEET 1.



Witnesses
E. D. B. Brown.
C. H. Giesbauer.

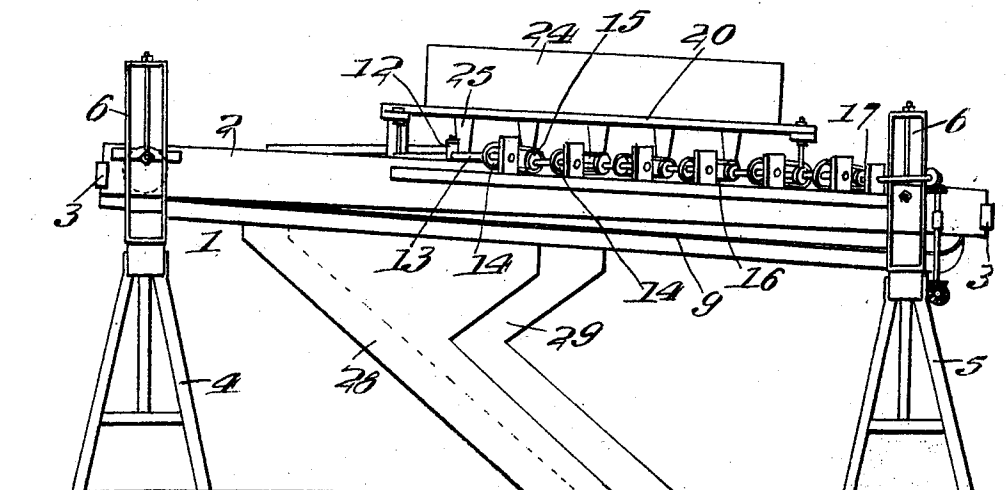
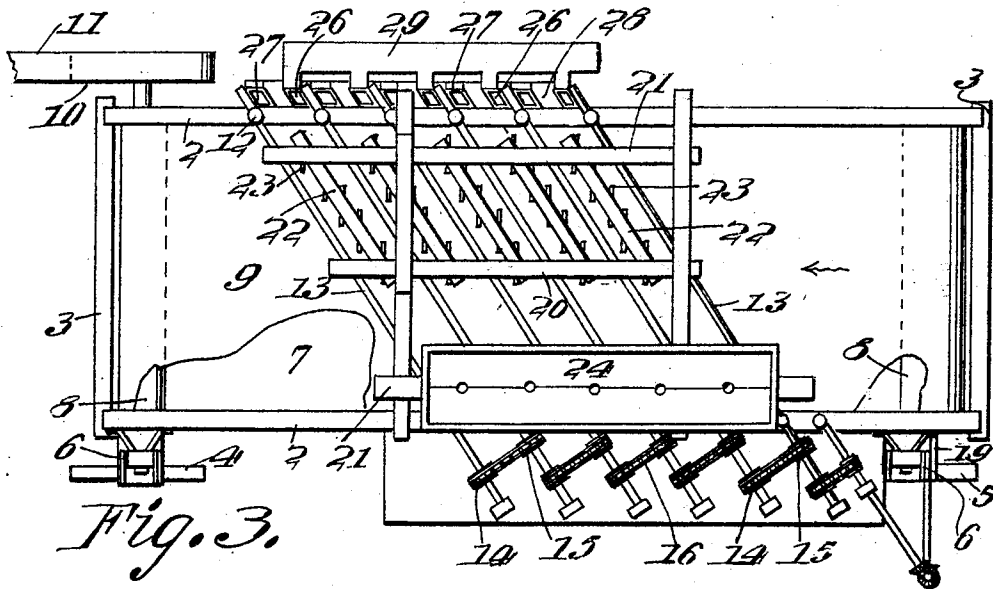
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3 SHEETS—SHEET 2.



Witnesses
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C. H. Griesbauer.

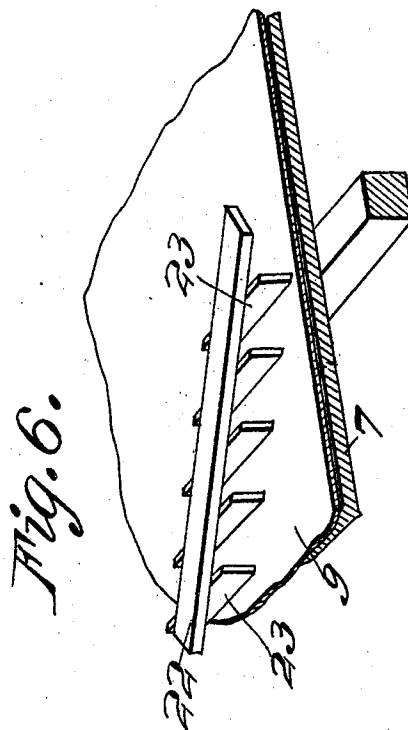
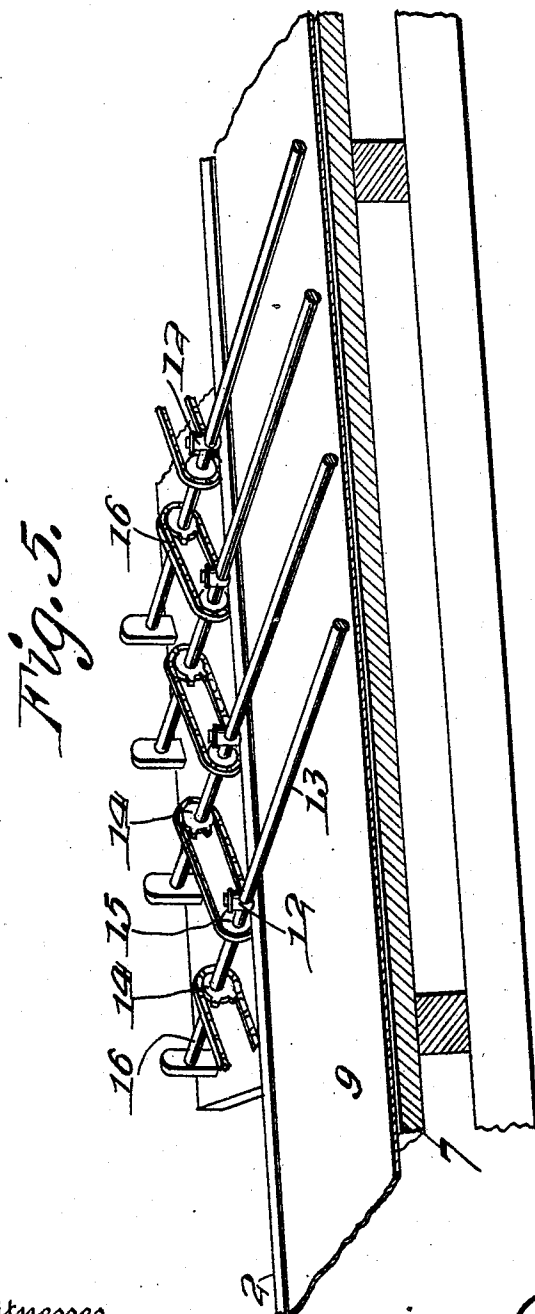
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3 SHEETS—SHEET 3.



Witnesses
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UNITED STATES PATENT OFFICE.

CLARENCE ADELBERT CROEL, OF ITHACA, MICHIGAN.

BEAN-SEPARATOR.

933,629.

Specification of Letters Patent.

Patented Sept. 7, 1909.

Application filed May 25, 1909. Serial No. 498,159.

To all whom it may concern:

Be it known that I, CLARENCE A. CROEL, a citizen of the United States, residing at Ithaca, in the county of Gratiot and State of Michigan, have invented certain new and useful Improvements in Bean-Separators; and I do 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 improvements in bean separators.

The object of the invention is to provide a machine of this character having an improved construction and arrangement of separating mechanism whereby dirt, stones and imperfect beans will be thoroughly separated and removed from the perfect beans.

A further object is to provide a bean separating machine which will be comparatively simple in construction, efficient and reliable in operation and well adapted to the purpose for which it is designed.

With the foregoing and other objects in view, the invention consists of certain novel features of construction, combination and arrangement of parts, as will be more fully described and particularly pointed out in the appended claims.

In the accompanying drawings, Figure 1 is a side view, of one side of the machine; Fig. 2 is a side view of the opposite side; Fig. 3 is a top plan view with part of the separating mechanism removed; Fig. 4 is an end view of one end of the machine; Fig. 5 is a detail perspective view; Fig. 6 is also a detail perspective view showing the baffle strips.

In the embodiment of my invention, I provide a main supporting frame 1 comprising longitudinal side bars 2 which are connected at their opposite ends by cross bars 3. The frame 1 is supported at its opposite ends on suitable benches or trestles 4 and 5, the trestle 4 being of greater height than the trestle 5, whereby the frame is supported in a longitudinally inclined position. On one end of the trestles 4 and 5 are arranged suitable elevating devices 6 which are here shown in the form of standards and which are provided to support one edge of the frame 1 at a greater elevation than the opposite edge, so that said frame will incline laterally as well as longitudinally.

Between the side bars 2 of the frame 1 and

adjacent to their upper edges is arranged a table or platform 7 and between the opposite ends of the side bars 2 adjacent to each end of the table 7 is mounted a belt supporting roller 8. Around the rollers 8 is arranged an endless rubber belt 9, the upper stretch of which rests on and is slidably engaged with the table 7. The shaft of one of the rollers 8 projects a suitable distance beyond the adjacent side bar 2 and has mounted thereon a drive pulley 10 to receive a drive belt 11, whereby the machine is connected with any suitable driving mechanism.

Arranged diagonally across the belt and mounted at their opposite ends in suitable bearings 12 are cylindrical separating rolls 13. The rolls 13 are mounted in such position that they just touch or engage the belt 9 and one end of the rolls projects beyond the side of the adjacent side bar 2 and on said projecting ends of the rolls are fixedly mounted sprocket gears 14 and 15, around which are passed sprocket chains 16 whereby each roll is operatively connected with the next adjacent roll. The sprocket wheel 14 on the end roll of the series, connected by a sprocket chain 17 to a sprocket wheel 18 on a drive shaft 19 whereby motion is imparted to the rolls to turn the same in the proper direction. In the operation of the machine, the belt 9 is driven in a direction toward the upper or highest end of the machine, as shown by the arrow in Fig. 3 of the drawing, while the rolls 13 are geared to turn in a reverse direction to the movement of the belt.

Arranged above the main frame 1 and supported thereon in any suitable manner is a supplemental frame 20 to the lower side of the longitudinally disposed side bars 21 of which are connected a series of diagonally arranged cross bars 22, said bars being parallel with or extending at the same angle of the rolls 13. On the cross bars 22 are secured a series of depending flexible baffle strips 23 which are preferably formed of rubber and are disposed at right angles to the edge or line of travel of the belt 9 and are substantially perpendicular thereto. The baffle strips 23 are spaced apart on the bars 22 and are so arranged that the ends of each of the strips project beyond or overlap the end of the adjacent strip, by which arrangement, any object on the belt coming in contact with the strips from one direction is permitted to pass between the same, but one

coming in contact with the same from the opposite direction will be carried thereby to the opposite edge of the belt. The strip supporting bars 22 and the series of baffle strips secured thereto are arranged between each pair of separating rolls 13. The beans to be cleaned are fed into a suitable hopper 24 in any suitable manner and from said hopper are discharged through suitable feed tubes 25 arranged in the bottom of the trough and projecting downwardly to near the surface of the belt and adjacent to the highest side edge of the same. At the lower side edge of the machine is arranged a series of discharge troughs 26 and 27 by means of which the perfect beans and the imperfect beans and foreign matter are received from the machine and conveyed to suitable discharge chutes 28 and 29.

In the operation of the machine, the beans are fed from the hopper 24 to the feed tubes 25 onto the belt between each pair of separating rolls, as hereinbefore described. The beans on reaching the belt will be drawn upwardly thereby toward the upper roll or the roll above each feed tube. As the belt is moving in an upwardly direction, the tendency of the belt will be to hold the beans and foreign matter into engagement with the rolls, while the latter by reason of their turning in the opposite direction from the moving of the belt will tend to force the beans and foreign matter downwardly or to drive them back. Stones, dirt, decayed beans or any foreign matter having a rough surface will be held by the belt against the rolls, while the beans that are round and smooth will roll down until they strike the next roll below. Thus, it will be seen that the perfect beans are on one side of the roll and the poor beans and foreign matter are on the other side. As the frame 1 and belt are inclined laterally, the beans and foreign matter in engagement with the opposite sides of the rolls will have a tendency to move toward the lower or discharging edge of the belt from which they are discharged into the proper troughs provided to receive the same.

In order to more efficiently separate the foreign matter and poor beans from the perfect beans, I provide the baffle strips 23 so that any perfect beans after having rolled down against the lower cylinders cannot pass up again with the poor beans and foreign matter as a good bean is smooth and will not cause friction enough on the belt to push the flexible baffle strips up and pass beneath the same, but will stay on the lower sides of the strips and will be gradually rolled across the belt and discharged with the other perfect beans which are in engagement with the lower rolls. Should a stone or other rough object have rolled down with the good beans, it will, after being carried

along, be again brought up by the belt and into engagement with the baffle strips whereby owing to its rough surface, the frictional contact with the belt will be sufficient to force the same under the edge of the baffle strips and thus separate the same from the good beans, said foreign matter or imperfect bean will thus pass toward the lower edge of the belt and be discharged with the other imperfect beans and foreign matter above the baffle strips.

From the foregoing description, taken in connection with the accompanying drawings, the construction and operation of the invention will be readily understood without requiring a more extended explanation.

Various changes in the form, proportion and the minor details of construction may be resorted to without departing from the principle or sacrificing any of the advantages of the invention, as defined in the appended claims.

Having thus described my invention, what I claim is:

1. In a machine of the class described the combination of a supporting frame, belt supporting rolls revolubly mounted in said frame, an endless belt arranged around said rolls, a series of separating rolls arranged diagonally across said belt and mounted to engage the same, a series of baffle strips arranged between said rolls and means whereby the beans are fed to said belt between the rolls.

2. In a machine of the character described, a main supporting frame inclined in both a longitudinal and lateral direction, a table arranged in said frame, belt supporting rollers revolubly mounted in the opposite ends of the frame, an endless rubber belt arranged around said rollers and having its upper stretch slidably engaged with said table, a series of separating rolls arranged diagonally across said belt and mounted to engage the same, a series of flexible baffle strips arranged between said rolls, and means whereby the beans are fed onto said belt between said rolls.

3. In a machine of the character described, a main supporting frame, means to support said frame in a longitudinally and laterally inclined position, an endless resilient belt operatively arranged on said frame, means to drive said belt in the proper direction to move the upper stretch of the same toward the highest end of the machine, a series of cylindrical separating rolls arranged diagonally across and in engagement with said belt, means to operatively connect said rolls together, means whereby they are driven in a reverse direction to the movement of the belt, a series of flexible baffle strips arranged between said rolls, means to support said strips in engagement with said belt whereby imperfect beans and foreign matter may be

drawn beneath the same by the belt but which will prevent perfect beans from being drawn upwardly by the belt, and means whereby the beans are fed onto the belt between each pair of said rolls.

4. In a machine of the character described, a supporting frame arranged as herein shown and described, a rubber belt adapted to travel on said frame, a series of separating rolls arranged diagonally across said belt and revolubly mounted in engagement therewith, means to drive said rolls in a reverse direction from the movement of the belt whereby imperfect beans and foreign matter will be held in engagement with one side of the rolls and perfect beans will be rolled back into engagement with the next lower roll, a series of separating troughs arranged along one side of the frame and adapted to receive the perfect beans and the foreign matter and imperfect beans separated by said belt and rolls, and discharge chutes connected with said troughs.

5. In a machine of the character described, a main supporting frame, means to hold said frame in a longitudinally and laterally inclined position, belt supporting rolls rev-

olubly mounted in the opposite ends of said frame, a table arranged in said frame between said rolls, an endless rubber belt arranged around said rolls to travel over said table, means whereby one of said rolls is driven to operate said belt, a series of bean separating rolls arranged diagonally across said belt and in engagement therewith, means to drive said rolls in the opposite direction to the movement of the belt, a series of flexible baffle strips arranged between each of said rolls, the ends of said strips projecting beyond the adjacent end of the next strip, a supplemental frame arranged above and secured to said main frame to hold said baffle strips in operative engagement with said belt, a bean distributing hopper, and a series of feed tubes connected with said hopper to discharge the beans therefrom between each pair of said rolls.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

CLARENCE ALDELBERT CROEL.

Witnesses:

O. G. TUTTLE,
GEO. R. ALLEN.