

July 15, 1941.

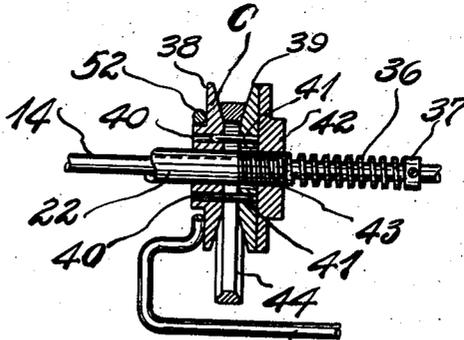
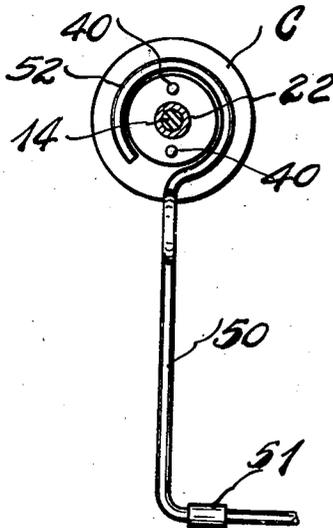
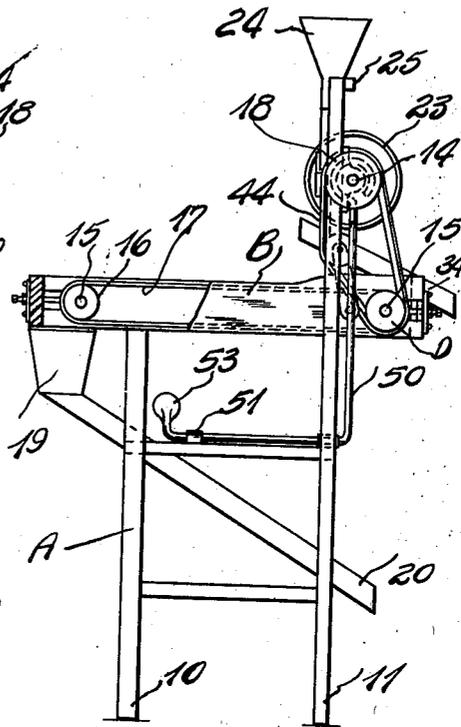
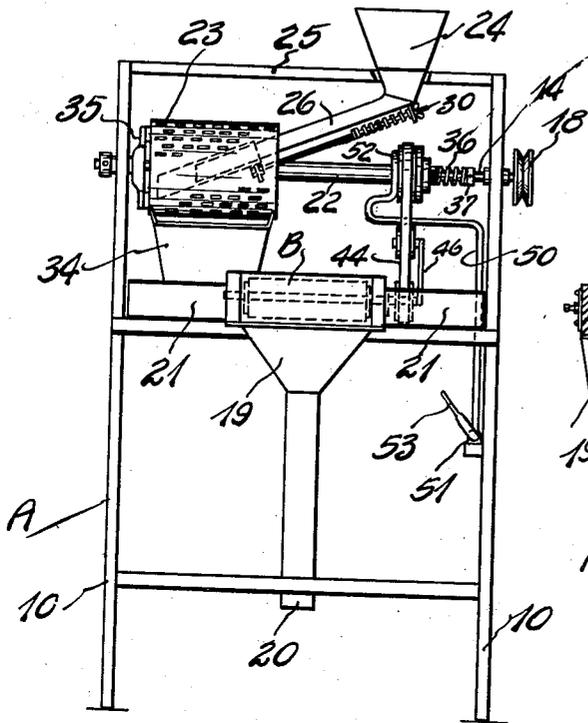
E. A. BOTIMER

2,249,109

PICKING MACHINE

Filed Sept. 26, 1938

2 Sheets-Sheet 1



INVENTOR.
Earl A. Botimer.
BY *Frank C. Harman*
ATTORNEYS.

July 15, 1941.

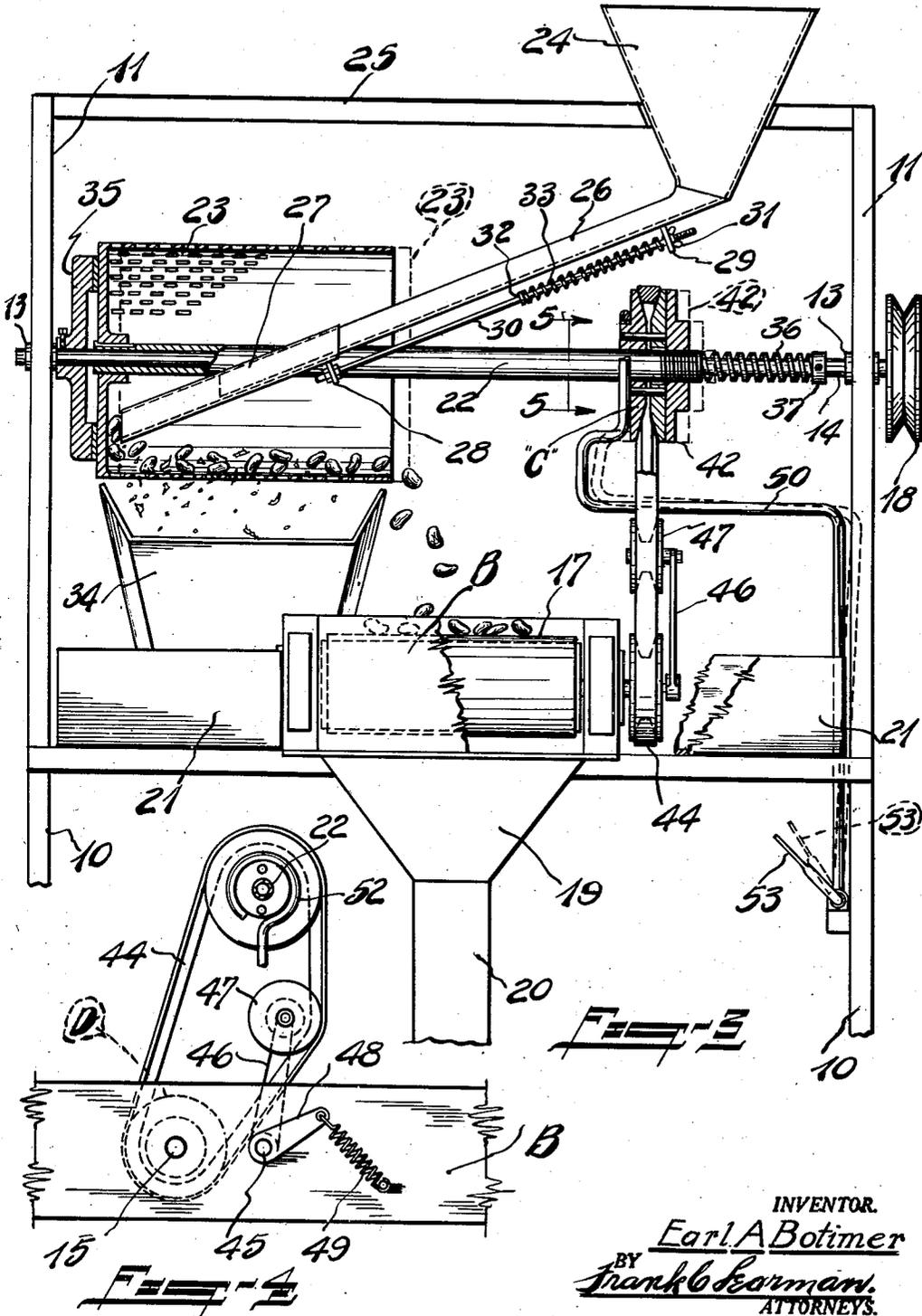
E. A. BOTIMER

2,249,109

PICKING MACHINE

Filed Sept. 26, 1938

2 Sheets-Sheet 2



INVENTOR.
Earl A. Botimer
BY *Frank C. Seaman*
ATTORNEYS.

UNITED STATES PATENT OFFICE

2,249,109

PICKING MACHINE

Earl A. Botimer, Bay City, Mich.

Application September 26, 1938, Serial No. 231,673

5 Claims. (Cl. 209—284)

This invention relates to bean pickers and similar machines and more particularly to a hand picker, where operators pick the commercially unsalable beans from the good product as the conveyor carries them across the machine.

One of the prime objects of the invention is to design a very simple and inexpensive picker including means for screening sand, dirt, pods and other foreign matter from the product, as it travels through the machine.

Another object is to provide simple, practical, manually operable means for controlling the speed of travel of the belt conveyor.

A further object is to provide an easily operable control mechanism for declutching the drum and conveyor driving means and arresting the flow of the product to the belt conveyor.

A further object still is to design a very simple, yet substantial machine composed of few parts, all of sturdy construction, which can be readily manufactured, and which is easy to assemble and operate.

With the above and other objects in view, the present invention consists in the combination and arrangement of parts, hereinafter more fully described, illustrated in the accompanying drawings, and more particularly pointed out in the appended claims, it being understood that changes may be made in the form, size, proportion, and minor details of construction, without departing from the spirit, or sacrificing any of the advantages of the invention.

In the drawings:

Fig. 1 is a front elevational view of my bean picker.

Fig. 2 is a side elevational view thereof, the frame being broken away to show the endless conveyor.

Fig. 3 is an enlarged, fragmentary part sectional view showing the operating mechanism, the broken lines illustrating the position of the drum and drive when declutched.

Fig. 4 is an enlarged detail showing the belt tightener.

Fig. 5 is an enlarged sectional view taken on the line 5—5 of Fig. 3.

Fig. 6 is an enlarged sectional view of the variable speed drive.

Referring now more particularly to the drawings, the letter "A" indicates a preferably structural frame including front and rear legs 10 and 11 respectively, the rear legs 11 projecting above the front legs, and bearings 13 at least one of which is a thrust bearing are mounted thereon

and accommodate a shaft 14 which is journaled therein in the usual manner.

A conveyor frame "B" is mounted on the main frame of the machine, and spaced apart shafts 15 are journaled thereon, rollers 16 being mounted on said shafts within said frame, and an endless belt 17 is trained over said rollers and forms a carrier for the product to be picked.

A drive pulley 18 is provided on the one end of the shaft 14 and is drivingly connected to a motor, (not shown) or to any other suitable source of power.

In practise the operator sits in front of the machine, and the conveyor belt travels towards said operator, the beans discharging from the belt into a hopper 19 provided at the one end of the conveyor frame, said hopper opening into a chute 20 which leads to a bin or receptacle (not shown).

Small trays or boxes 21 are provided on opposite sides of the endless carrier and are adapted to receive the hulls, discolored beans, and other foreign matter removed from the good product by the operator as it is carried to the hopper by the endless belt.

This belt, hopper, etc. is of conventional design and is used on hand picking machines at present in general use.

In practise I have found it very desirable to screen out sand, small splits, and other foreign matter as the beans flow from the feed hopper, and I therefore provide a sleeve 22 on the shaft 14, and mount a cylindrical screen or drum 23 on the one end thereof with the head of the drum keyed on said sleeve to rotate therewith.

A feed hopper 24 is mounted on the cross member 25 which connects the upper ends of the members 11, and an angularly disposed trough 26 opens thereinto as shown, an extension chute 27 being telescopically connected to the end of said spout and extends into the cylindrical drum 23, so that the product flows direct from the feed hopper to the drum. A leg 28 depends from the chute 27, and a similar leg 29 depends from the spout 26, a rod 30 being anchored to the leg 28, and extends through a suitable opening in the leg 29, the end being threaded to receive a wing nut 31 as usual.

A washer 32 is solidly mounted on the rod 31 as shown, and a spring 33 is interposed between the washer 32 and the leg 29, thus yieldingly securing the extension chute 27 in set position, and it will be obvious that the feed can be regulated by adjusting the open end of the extension 27 with relation to the end wall of the drum,

the beans discharging into said drum and thence being discharged from the open end of the drum onto the endless belt 17 as the machine is driven, the sand, pods, and other foreign matter being screened out and discharging into the inclined chute 34 as the machine is driven.

A friction clutch plate 35 is mounted on the shaft 14 directly adjacent to and in engagement with the drum 23, and a coil spring 36 is interposed between the opposite end of the sleeve and the collar 37 so that the drum 23 is normally forced into driving contact with the clutch 35.

The endless belt is driven from the sleeve 22, a split pulley C being mounted on said sleeve, and comprises the identically similar members 38 and 39 respectively, the member 38 being bored to provide a driving fit so that it is solid on the sleeve, while the member 39 is bored so that it loosely fits on the sleeve 22 and is adjustable thereon, openings 40 being provided in the member 38 in alignment with laterally disposed pins 41 which are mounted on the member 39. An adjusting member 42 is mounted on this sleeve 22, and is bored and threaded to engage the threaded section 43 of the sleeve, and it will be obvious that this adjusting member can be rotated to force the member 39 toward the member 38, narrowing the groove in the pulley and thereby increasing the effective driving diameter thereof.

A V-belt 44 is trained over this pulley C, thence being trained over the pulley D which drives the endless belt 17. A belt tightener is provided as shown in Fig. 4 of the drawings and comprises a transversely disposed shaft 45 which is mounted in the conveyor frame B, a lever 46 being mounted on one end of said shaft, and an idler pulley 47 is journaled on the end of said lever and engages the belt 44. A crank 48 is provided on the opposite end of the shaft 45 and a spring 49 is anchored thereto and to the conveyor frame, so that a tension is provided on the belt at all times.

When it is desired to change the speed of travel of the endless belt, the operator merely rotates the adjusting member 42 to increase or decrease the effective driving diameter of the pulley C, and the speed of the belt is increased or decreased as desired, the idler mechanism serving to provide the necessary driving tension at all times.

A declutching mechanism is provided for stopping the endless belt 17 and drum 23, and comprises a shifting lever 50 formed as clearly shown in Figs. 1 and 2, this lever being journaled in bearings 51 provided on the frame, and a loop section 52 engages the pulley section 38, and when the operator's knee is forced against the flatted section 53 of the lever 50, the sleeve and complete drum assembly will slide longitudinally on the shaft 14 and out of engagement with the clutch plate 35 thus stopping the endless belt and drum 23.

In practise the product to be picked is placed in the feed hopper 24, thence it flows down the trough 26, through the chute 27 and into the drum 23, where the sand and other foreign matter is screened into the chute 34, the product being discharged from the drum onto the traveling belt 17, the culls splits and commercially unsalable product being picked from the belt, and are deposited in the boxes 21 by the operator as the product is carried along, the good stock dis-

charging into the hopper 19 and thence flowing to a suitable bin or receptacle.

I wish to direct particular attention to the fact that the speed of travel can be easily and quickly adjusted to regulate the volume of stock deposited on the belt, and also that the belt and drum travel can be arrested by declutching the drum 23, from the clutch plate 35 to enable the operator to catch up when an unusually bad batch of beans is flowing through the machine, or for any other reason.

What I claim is:

1. A picking machine of the class described and comprising a main frame, a feed hopper mounted thereon, a drive shaft, a perforated sifting drum concentric with and freely rotatable about said shaft and having one open and one closed end, an extensible chute leading from the feed hopper and extending into said sifting drum, said chute discharging the product to be processed at a point directly adjacent the closed end wall thereof, a clutch plate on said shaft adjacent the closed end wall of the drum, means for forcing the end wall of the drum into driving engagement with said clutch plate, means for shifting said sifting drum out of driving engagement with said clutch plate, and means for driving said shaft.

2. A picking machine of the class described and comprising a main frame, a feed hopper, a drive shaft, a freely rotatable sleeve on said shaft, a perforated shifting drum concentrically mounted on said sleeve and having one open and one closed end, a telescopic chute leading from the hopper to the inside of said drum for discharging the product to be processed at a point directly adjacent the closed end wall thereof, a clutch plate on said shaft, and means for shifting said sleeve and drum assembly to move the end wall of the drum out of driving engagement with said clutch plate.

3. A picking machine of the class described and comprising a main frame, a drive shaft, a feed hopper on said frame, a freely rotatable sleeve on the drive shaft, a perforated sifting drum concentrically mounted on said sleeve and formed with one open and one closed end, a telescopic chute leading from said hopper into said drum for discharging the product to be processed at a point directly adjacent the closed end wall thereof, a clutch plate on the main shaft, resilient means engageable with said sleeve and normally tending to force said drum into driving engagement with the clutch plate, and means associated with said sleeve for shifting said sifting drum out of engagement with said clutch plate.

4. A picking machine of the class described and comprising a main frame, a drive shaft mounted thereon, a feed hopper on the frame, a sleeve longitudinally slidable and freely rotatable on the shaft and a perforated sifting drum concentrically mounted on said sleeve and formed with one open and one closed end, a clutch plate mounted on said shaft and in driving engagement with the closed end wall of said drum, a spring pressed extensible chute leading from said hopper into said sifting drum with its discharge end spaced a predetermined small distance from the closed end wall of the drum, and manually operable means for shifting said sleeve and drum assembly out of driving engagement with said clutch plate and the end of the chute against the closed end wall of the drum for cutting off

the flow of the product being processed to said drum.

5. A picking machine of the class described and comprising a main frame, a shaft journaled thereon, a clutch plate solid on the shaft, a longitudinally movable sleeve rotatably mounted on said shaft and including a concentrically mounted perforated sifting drum normally disposed in driving engagement with said clutch plate, and provided with one closed and one open end, a feed hopper on said frame, an extensible in-

clined chute leading from said hopper and extending into said sifting drum, with the lower end of the chute spaced a predetermined small distance from the closed end wall of the drum, manually operable means for shifting the sleeve and the drum assembly out of engagement with said clutch plate and the closed end wall of the sifting drum against the lower end of the chute for automatically cutting off the flow of the product being processed to said sifting drum.

EARL A. BOTIMER.