Sept. 14, 1943. R. J. S. CARTER 2,329,333

DEWATERING SCREEN

Filed Nov. 10, 1941

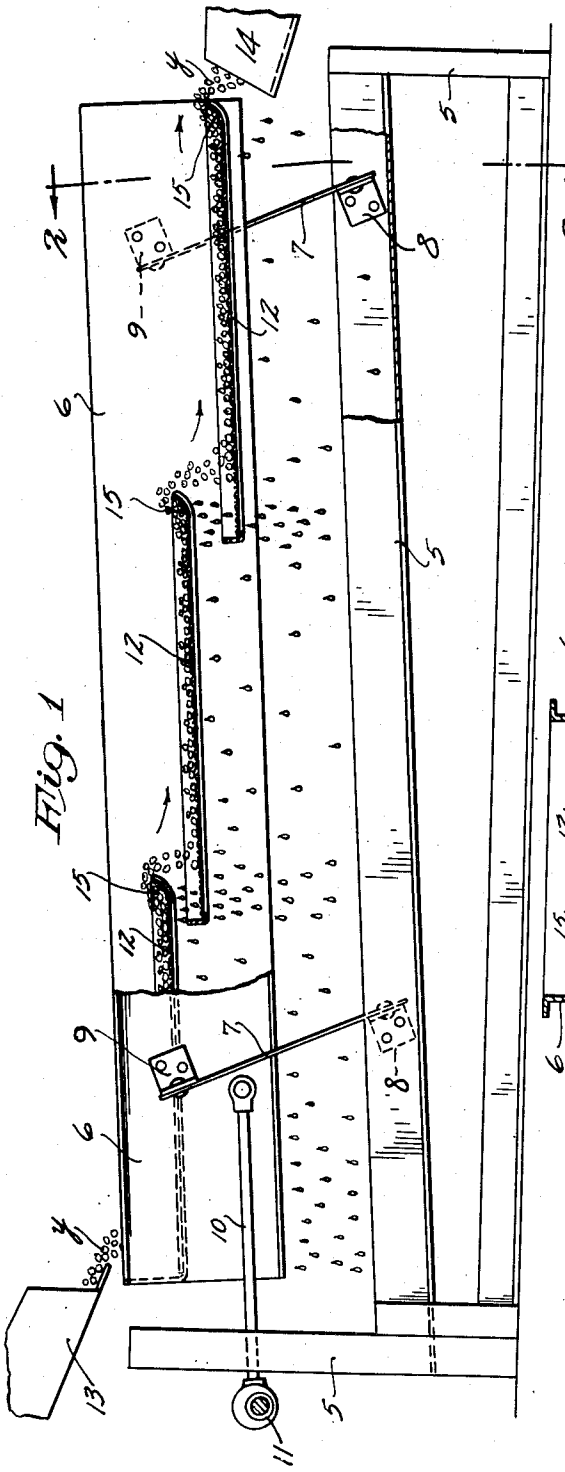

Fig. 1

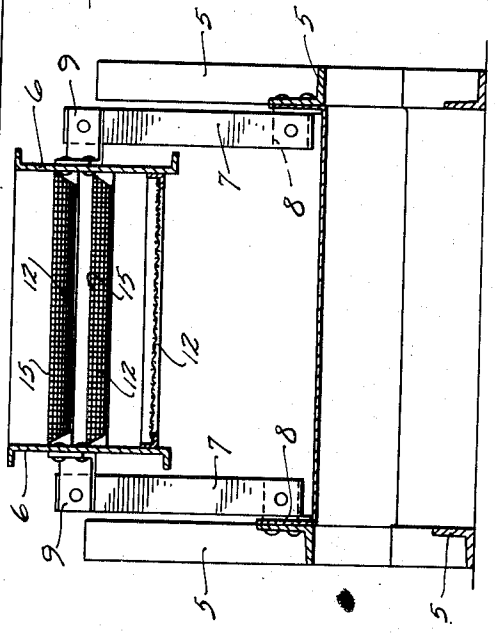

Fig. 2

Inventor
Robert J. S. Carter
By his Attorneys
Murchant & Murchant

Patented Sept. 14, 1943

2,329,333

UNITED STATES PATENT OFFICE

2,329,333

DEWATERING SCREEN

Robert J. S. Carter, Minneapolis, Minn.

Application November 10, 1941, Serial No. 418,523

2 Claims. (Cl. 210—149)

My present invention provides extremely simple and highly efficient apparatus of the type wherein vibratory screens are used to propel the material being dried or freed from surplus water and, generally stated, consists of the novel devices, combinations of devices and arrangement of parts hereinafter described and defined in the claims.

In the process of canning vegetables, such as corn cut from the cob and peas removed from the shell, as a preliminary step to such operations, such articles are always subjected to washing and, in fact, they are generally conveyed to the places for canning by a stream of water, and hence, come from the water not only soaked but with a great deal of water adhering thereto. It has also been common to conduct the said vegetables over vibratory screens to precipitate and remove the surplus water therefrom. In this last noted operation considerable trouble has been caused by the tendency of the wet corn or peas to collect in bunches or groups in which water is not readily precipitated; and this is especially true in respect to corn which has relatively flat wet surfaces that cause greater surface adhesion between the kernels.

I have found that the effectiveness of the dewatering operation may be very greatly increased by breaking up the bunches or adhering groups of particles, such as corn or peas or the like, and bringing each individual particle into moving surface contact with other particles, and that these and other important results may be accomplished by providing upstanding flanges or raised portions at the delivery ends of the screens; all as will hereinafter be more fully explained in connection with the drawing which illustrates my invention.

Referring to the drawing wherein like characters indicate like parts throughout the several views:

Fig. 1 is a view partly in side elevation and partly in vertical longitudinal section showing the machine or apparatus embodying my invention; and

Fig. 2 is a transverse vertical section taken on the line 2—2 of Fig. 1.

In the apparatus illustrated, the numeral 5 indicates a rectangular frame work and the numeral 6 indicates a vibratory shoe which is supported for endwise vibratory movements from the frame 5 by links 7. These links 7 are here shown as leaf springs, the lower ends of which are anchored to the frame 5 by brackets 8 and the upper ends of which are connected to the sides of the shoe 6 by brackets 9.

The shoe 6 is arranged to be given endwise vibratory movements through suitable means such as connecting rods 10 that are subject to a power-driven eccentric or crank 11. The shoe 6 carries a plurality of screens 12 onto the upper or head member of which the articles to be dewatered and which are indicated by the character *y* may be delivered from a supply spout 13 or the like.

The general arrangement of the parts so far described in detail may be assumed to be of well known construction and operation wherein under the forward and upward movement given to the shoe and screen by the links 7, the stock will be propelled forward regardless of whether or not the screens are level or slightly inclined in either direction in respect to the travel of the stock. The numeral 14 indicates a receiving spout or receptacle into which the last screen 12 is arranged to deliver. Of course, there can be any desired number of screens.

It will, of course, be understood that vibratory movements may be imparted to the screens by any of the well known or any suitable means.

The important feature of this invention is found in the manner in which the delivery ends of the screens are formed or provided with dam-acting upturned flanges 15 which produce important actions that greatly improve the efficiency of the dewatering screens, all as will be made clear from the description of the operation following.

Operation

Wet stock, such as shelled peas, kernels of corn, or similar particles delivered on to the first vibratory screen, will move, under vibratory action of the screens, progressively from end to end of each screen and progressively from one screen to the other in a direction from left to right in respect to Fig. 1. Of course, as the stock particles progress over each screen, water will continuously be precipitated from the stock during such movement. As previously indicated, however, there is a tendency of the wet stock particles to become more or less bunched up by surface adhesion during their passage over the intermediate portions of the screens, and such bunches of stock particles tend to retain relatively large volumes of water and thereby retard the dewatering process. However, in the machine described, the stock particles are caused to build up to an increased depth adjacent the dam-act-

ing flanges 15 in a manner which retards the forward velocity of the material at this point, breaks up any bunches of particles, and causes each particle to come into moving surface contact with numerous other particles of the mass. This action results in greatly increased efficiency of the mechanism firstly because individual particles are capable of retaining much less water than bunches of particles and, secondly, because the wiping action of the particles upon each other increases the rate of flow of water from the particles and, thirdly, perhaps because the retardation of velocity gives the material more chance to precipitate fluid for a given linear travel. In practice this great increase in efficiency is clearly evidenced by the very greatly increased amount of water that is precipitated out of the mass at its flange-equipped delivery end portion as compared to conventional machines devoid of such dam-acting flanges. In fact, an observation of the operation of the improved machines hereof indicates that the greatest percentage of the water precipitated out of the stock during its progress over any given screen is greatest immediately adjacent the dam-acting flanges of that screen, and that most of the water is, in fact, precipitated out of the mass immediately adjacent the flange of the first screen. The dam-acting flanges 15 at the delivery ends of the screens may be produced in various different ways, but best results seem to be accomplished by curving the delivery ends of the screen upwardly so that there are no sharp corners left for accumulation of particles or bunches of particles, and the entire mass will be kept moving although at a retarded rate of speed.

What I claim is:

1. In a device of the kind described, a vibratory shoe, means supporting said shoe for vibratory movements in a general horizontal direction, and a plurality of screens extended in a general horizontal direction and mounted on and carried by said shoe with the delivery ends of upper screens overlapping the receiving ends of lower screens, said screens, at their discharge ends, terminating in upturned flanges that operate to cause the materials to be upwardly projected in initiating the fall thereof from the one screen onto the next lower screen.

2. The structure defined in claim 1, in which said upturned flanges on the discharge ends of said screens are formed by bodies of the respective screens turned upward on curved lines.

ROBERT J. S. CARTER.