July 10, 1923.

1,461,144

R. E. HANNEMAN

SCREEN FOR CORN SHELLERS

Filed Sept. 9, 1920

2 Sheets-Sheet 1

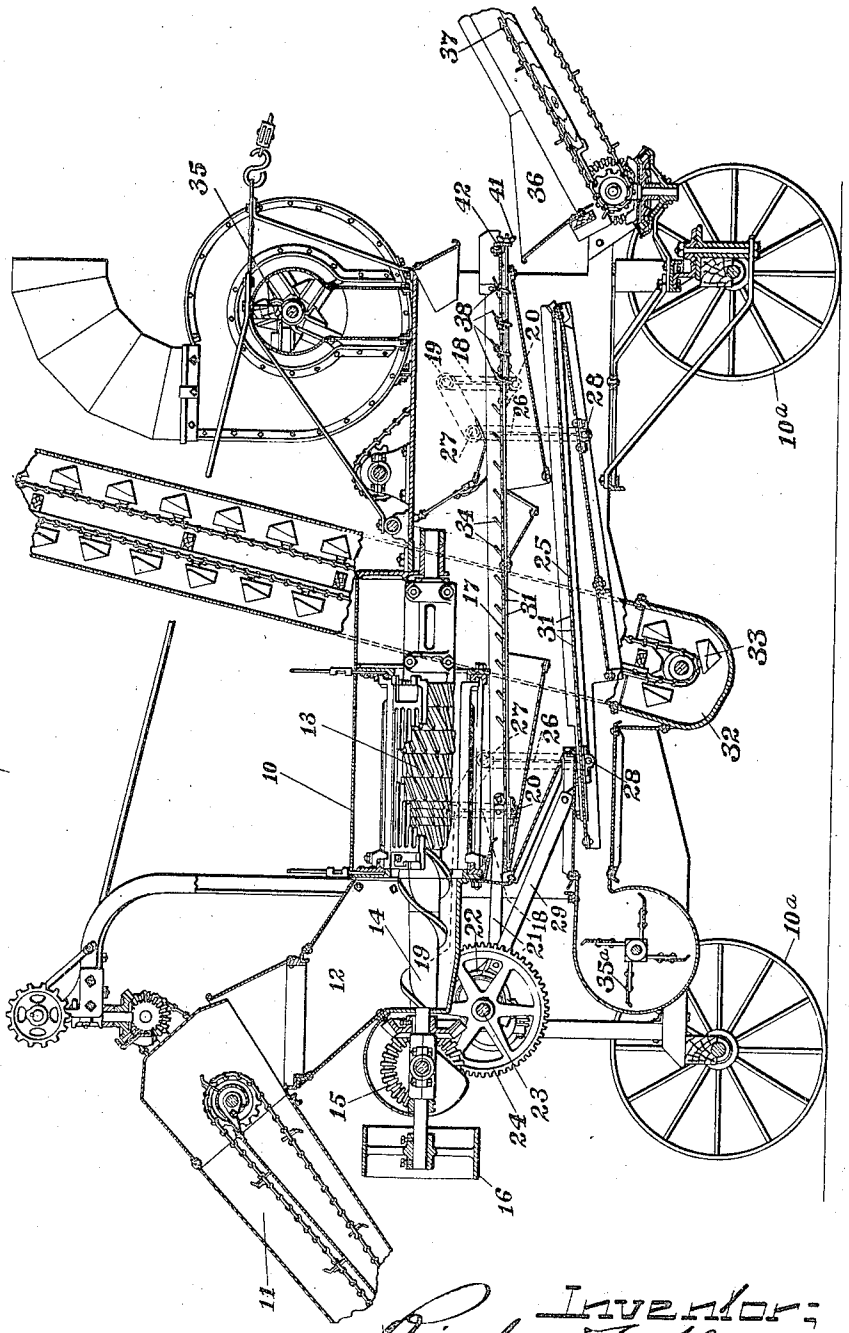


FIG. 1.

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2 Sheets-Sheet 2

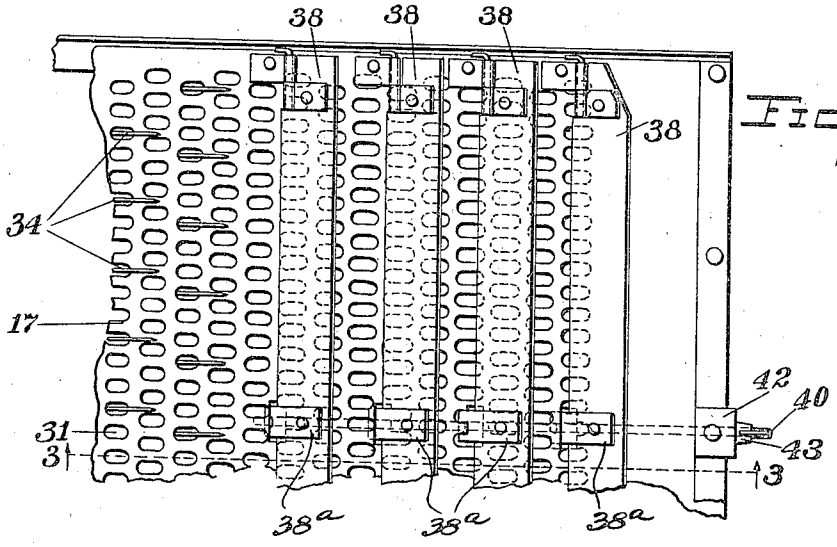


Fig. 2.

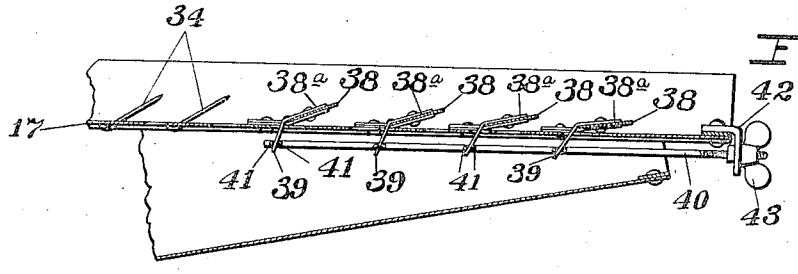


Fig. 3.

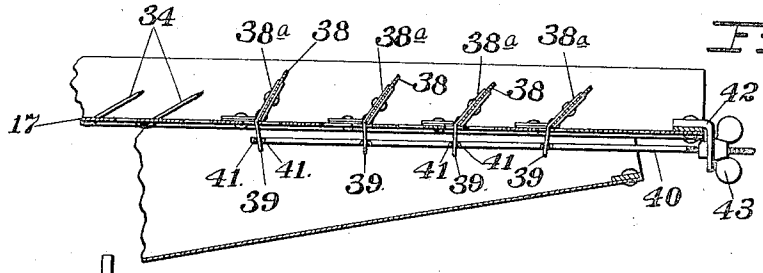


Fig. 4.

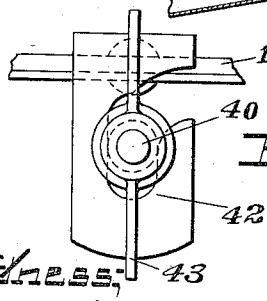


Fig. 5.

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Patented July 10, 1923. 1,461,144

UNITED STATES PATENT OFFICE.

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SCREEN FOR CORN SHELLERS.

Application filed September 9, 1920. Serial No. 409,048.

To all whom it may concern:

Be it known that I, RICHARD E. HANNEMAN, a citizen of the United States, and a resident of East Moline, in the county of Rock Island and State of Illinois, have invented certain new and useful Improvements in Screens for Corn Shellers, of which the following is a specification, reference being had to the accompanying drawings.

This invention relates to improvements in power-operated corn shellers, and more particularly to improvements in the vibrating screening devices through which the corn kernels are ejected while the cobs and husks that such kernels have been separated from are otherwise removed from the surface of the screen. In machines of this character it is common to provide such screening devices with means for preventing some of the shelled corn from passing off at the end of the screen with the cobs due to the oscillating and vibrating of the screen, instead of passing through the holes of the screen, as intended. Such means for preventing the escape of some of the kernels are in the form of cross-pieces on the face of the screen adjacent to that end at which the cobs leave the screen, and, so far as I am aware, such cross-pieces—or "dams" as they are usually termed—have been fixed in position. Such fixed position of these dams has been found unsatisfactory for the reason that if the screen is vibrated at too great a speed quite an amount of the shelled corn will not have time or opportunity to escape through the screen openings but will be carried over such dams with the cobs and be lost. On the other hand if the screen is vibrated at too slow a speed the cobs will fail to be properly carried over the dams and will accumulate on the screen and thus act to detract from the efficiency of the screen with respect to permitting the kernels of corn to drop through the screen openings. It is the object of my invention to so improve the said screening member that the dams referred to may be adjusted to and held in different angular positions with respect to the surface of the screen so that they may act properly and effectively as to both the shelled corn and the cobs regardless of the speed with which the screen is vibrated. Other objects of the invention are to so construct and arrange the several dams with which such screen will ordinarily be provided that they will have connection with a common actuating device so that they may be simultaneously adjusted, and also to so construct them that in each adjustment one dam will vary from another dam with respect to the degree of angularity that it projects from the screen's surface, —the attaining of the last-named object being desirable because of the fact that in view of the manner in which the screen is pivotally hung the amount of up and down swinging movement of the outer end thereof is less than towards its other end, and consequently it is desirable that the height of the dams diminish from the innermost to the outermost one. I attain the objects specified by the construction and arrangement of parts hereinafter more particularly described.

In the drawings,—

Fig. 1 is a longitudinal vertical section through a well-known type of power-operated corn sheller, the uppermost vibrating screen of which is provided with my improvements;

Fig. 2 is a plan view of a portion of a screen embodying my improvements;

Fig. 3 is a longitudinal section taken at line 3—3 of Fig. 2 and showing the dams adjusted to their lowest position;

Fig. 4 is a view similar to Fig. 3 but showing the dams raised to their highest position; and

Fig. 5 is an end view of the means for adjusting and locking the dams in their different positions.

Referring to the drawings, and particularly now to Fig. 1 wherein is shown a power-operated corn-sheller of a well-known make, the following is a brief description of so much of the machine as is necessary to a clear understanding of the advantages attained by the use of my improved screen in such a machine; 10 indicates the body of the shelling machine supported as usual by wheels 10^a. The corn to be shelled is elevated by an elevator 11 and passes through a hopper 12 to the usual shelling means that is indicated generally by 13, it being carried into the shelling means by a screw conveyor 14 that is driven by the gear mechanism 15, which in turn is driven through a pulley 16 that will be belt-connected with a suitable source of power, such as a tractor, for example. The corn, the cobs and the husks after passing through the shelling means 13, all drop onto an upper screen 17 which em-

bodies my improvements that will be particularly described hereinafter. Such screen is suspended in the body 10 by links 18 that have pivotal connection at 19 with such body and at 20 with the screen, and because of the fact that the links near the outermost end of the screen are a little longer than the other links the up and down movement of the outer end of the screen is less than its other end when such screen is vibrated as usual. The screen is given the required vibrating and oscillating movements in the construction shown, through a pitman 21 pivotally connected at one end to the screen and at its other end to an eccentric 22 mounted on a shaft 23. On this shaft is also mounted a gear 24 that is driven from the gear mechanism 15. 25 indicates the usual lower screen with which machines of this type are provided. It is suspended below the screen 17 by links 26 pivotally attached at their upper ends at 27 and at their lower ends to said lower screen at 28. This lower screen is moved through a pitman 29 connected to an eccentric, which, like the other eccentric, is mounted on the shaft 23. In each of the screens are a series of openings 31 of a size to permit the kernels of corn to pass through. Such kernels in passing from the lower screen enter a trough 32 from which they are elevated to the point of discharge by the usual elevator 33. The husks and cobs that lie upon the upper screen 17 are advanced toward the outer end of such screen by the engagement therewith of the usual inclined spikes 34 on such screen. The husks and lighter particles of material are removed by means of a suction fan 35 but the cobs are kept moving towards the outer end of the screen and fall from such end into a hopper 36 from whence they are carried away by the usual elevator 37. 35ª indicates the usual blower fan that is provided for removing any small light particles that may be deposited with the kernels upon the lower screen 25.

In place of the usual dams that are fixedly carried by the outer end portion of the upper screen 17 and act to retard to some extent the passage of the cobs toward the discharging end of that screen and that are intended to entirely prevent corn kernels passing over such end with the cobs, I have provided a series of adjustable dams that may be set so as to stand at varying angles to the surface of the screen in order that proper ejection of the cobs may at all times be secured regardless of whether the screen is vibrated slowly or rapidly and at the same time will ensure against the corn kernels being carried over the end of the screen with the cobs. Each dam, indicated by 38, is formed of a comparatively long narrow strip and extends transversely across the screen over the upper surface thereof, the several dams of the series lying parallel with each other and spaced a short distance apart. At each of its ends each dam is hingedly secured to one of the side bars of the screen, the hinges, in the construction shown, (see Fig. 2) being located adjacent to the inner or lower edge of the dam so that such edge will always lie close to the surface of the screen and thus prevent the wedging of any material between the screen and dam. Each dam has secured to its upper face, by riveting as shown or otherwise, an arm formed of a strap of metal that at the lower edge of the dam is bent downwardly and projects through an opening in the screen, as clearly shown in Figs. 3 and 4, said downwardly-turned portions in effect constituting handles by means of which the dams can be turned on their hinges. Said arm members are indicated by 38ª; they are secured in place on their respective dams so as to be in alinement with each other, as clearly shown in Fig. 2 and are preferably arranged substantially midway of the length of the dams. In the down-turned portion 39 of each arm, in the construction shown, is a hole, and as such holes are in alinement with each other provision is thus made for connecting the several members 38ª—39 together by a rod extending through the holes. Such a rod is indicated by 40, and as shown it is connected with each downwardly-turned portion 39 by means of two cotter-pins 41 passing through the rod at opposite sides of the part 39. At its outer end the rod 40 is supported in a bracket 42 secured to the end rail of the screen. A wing nut 43 on the screw-threaded end of the rod furnishes the means by which the rod 40 can be adjusted longitudinally, and, as will be understood, the extent to which the rod is so adjusted will determine the degree to which the dams will be swung up or down.

As clearly shown in Figs. 3 and 4 the bends given to the metal straps 38ª—39 are different one from the other, the result being that each dam is at all times held at a slightly different angle than the angle of any other dam, and they are so arranged on the screen that the innermost dam stands at the greatest angle to the screen and the outermost one at the lowest angle,—in other words, the angles at which the dams stand progressively decreases from the innermost to the outermost dam.

By my improvements the dams can be easily, quickly, accurately and simultaneously shifted to stand with respect to the surface of the screen in such positions as best enable them to perform their stated functions under the varying speeds that may be imported to the screen.

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

1. The combination with a vibratory

screen, of a plurality of dams spaced a distance apart and extending over the surface of the screen and projecting from such surface at different angles, and means for varying the angular position of the dams while maintaining them at different angles relatively to each other.

2. The combination with a vibratory screen, of a plurality of dams connected together and spaced a distance apart and extending over the surface of the screen and projecting from such surface at different angles, and means for simultaneously varying the angular position of the dams while maintaining them at different angles relatively to each other.

3. The combination with a vibratory screen, of a series of dams spaced a distance apart and extending over the surface of the screen and projecting from such surface at different inclinations, the degree of inclination of the dams varying progressively from one end of the series to the other.

4. The combination with a vibratory screen, of a series of dams spaced a distance apart and extending over the surface of the screen and projecting from such surface at different inclinations, the degree of inclination of the dams varying progressively from one end of the series to the other, and means for varying the inclination of each dam while maintaining the said progressive variation in inclination.

5. The combination with a vibratory screen, of a series of dams connected together and spaced a distance apart, said dams extending over the surface of the screen and projecting from such surface at different inclinations, the degree of inclination of the dams varying progressively from one end of the series to the other, and means for simultaneously varying the inclination of each dam while maintaining the said progressive variation in inclination.

6. The combination with a vibratory screen, of a plurality of pivoted dams spaced a distance apart and extending over the surface of the screen, a member secured to each dam and projecting through the screen, each of said projecting portions of such members being inclined at a different angle to the surface of the screen, a longitudinally-movable rod connected with said differently-inclined projecting portions, and means for adjustably connecting said rod with the screen frame.

7. The combination with a vibratory screen, of a plurality of pivoted dams spaced a distance apart and extending over the surface of the screen, a member secured to each dam and projecting through the screen, each of said projecting portions of such members being inclined at a different angle to the surface of the screen, the inclination of said portions varying progressively, a longitudinally-movable rod connected with said differently-inclined projecting portions to maintain them and the dams that they are respectively connected with in said progressively-inclined positions, and means for adjustably connecting said rod with the screen frame.

RICHARD E. HANNEMAN.