May 9, 1933. R. B. SCHMIDT ET AL 1,907,448

CLASSIFYING MACHINE FOR CEREALS

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Fig. 1.

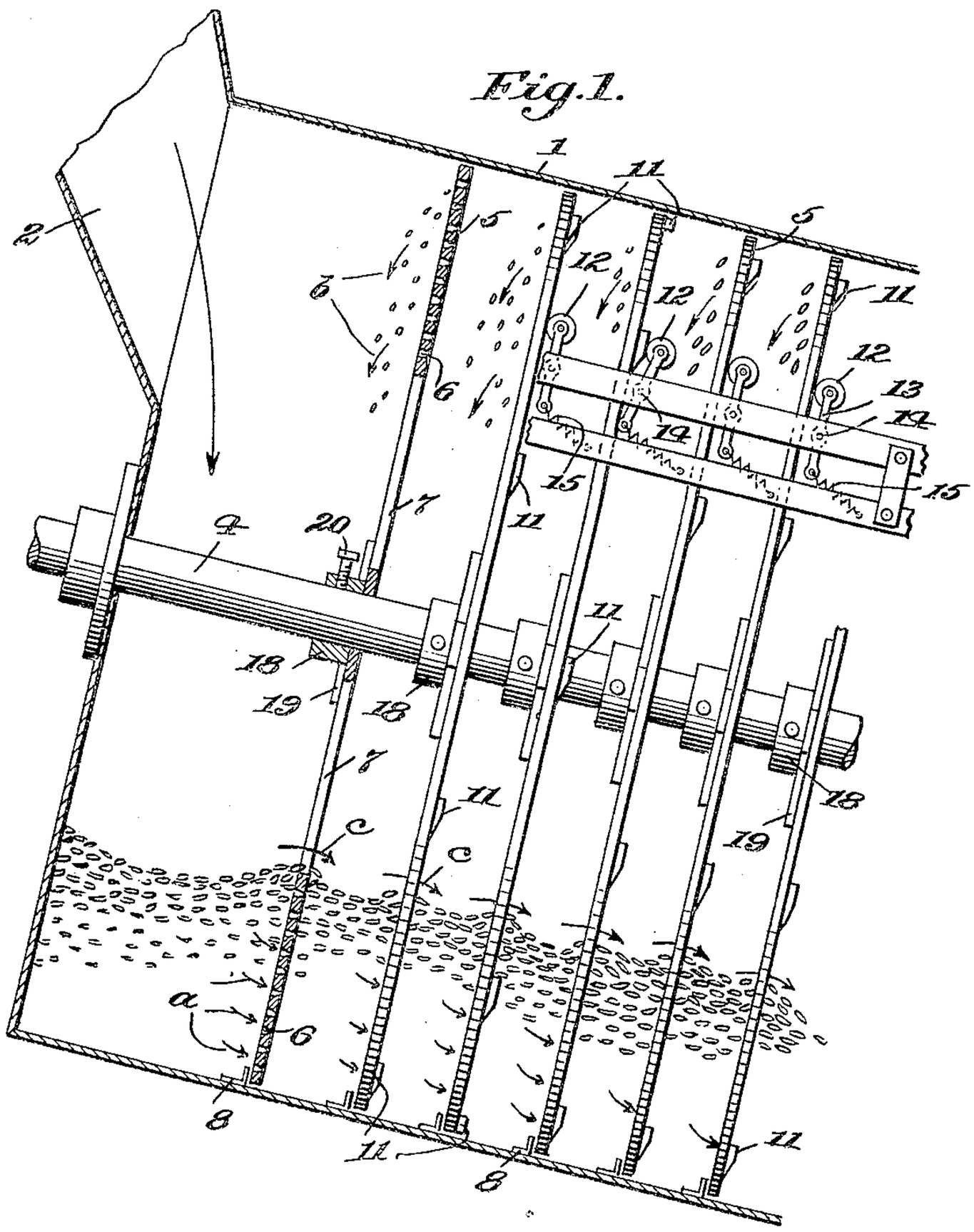

Fig. 2.

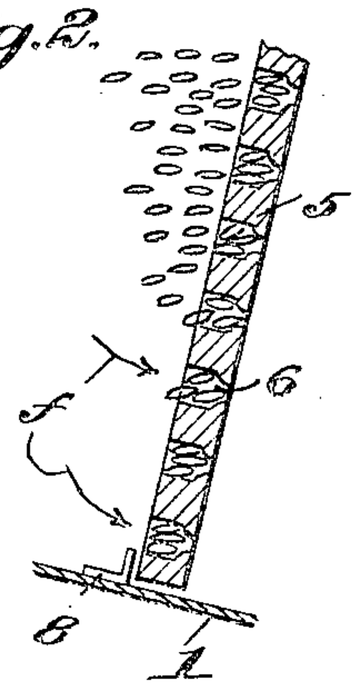

Fig. 3.

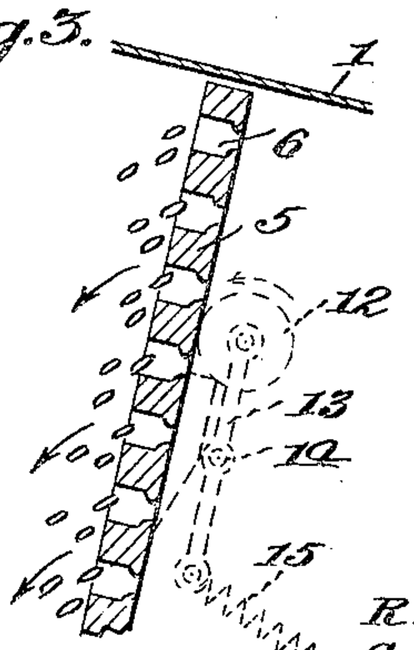

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Fig. 4.

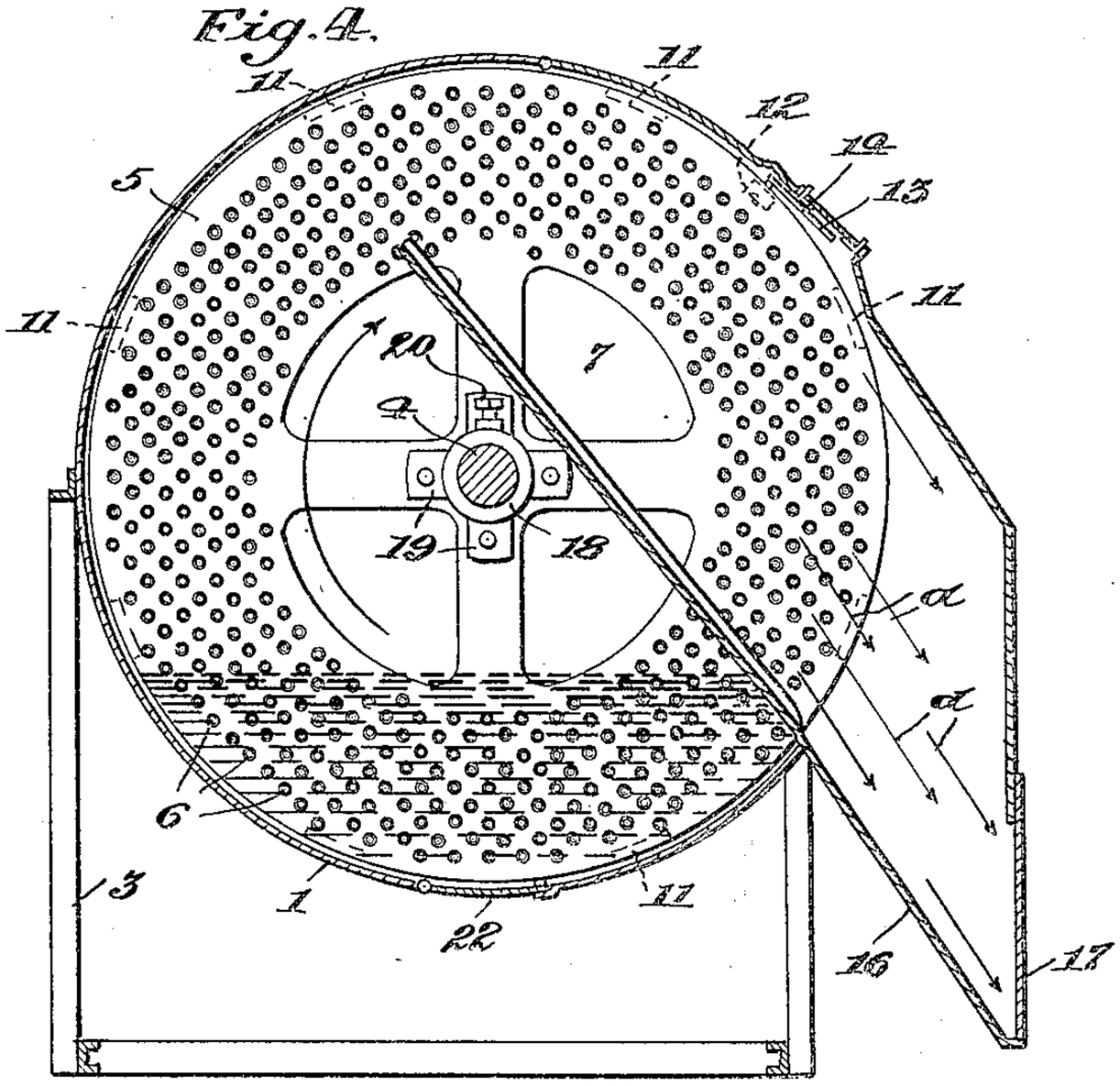
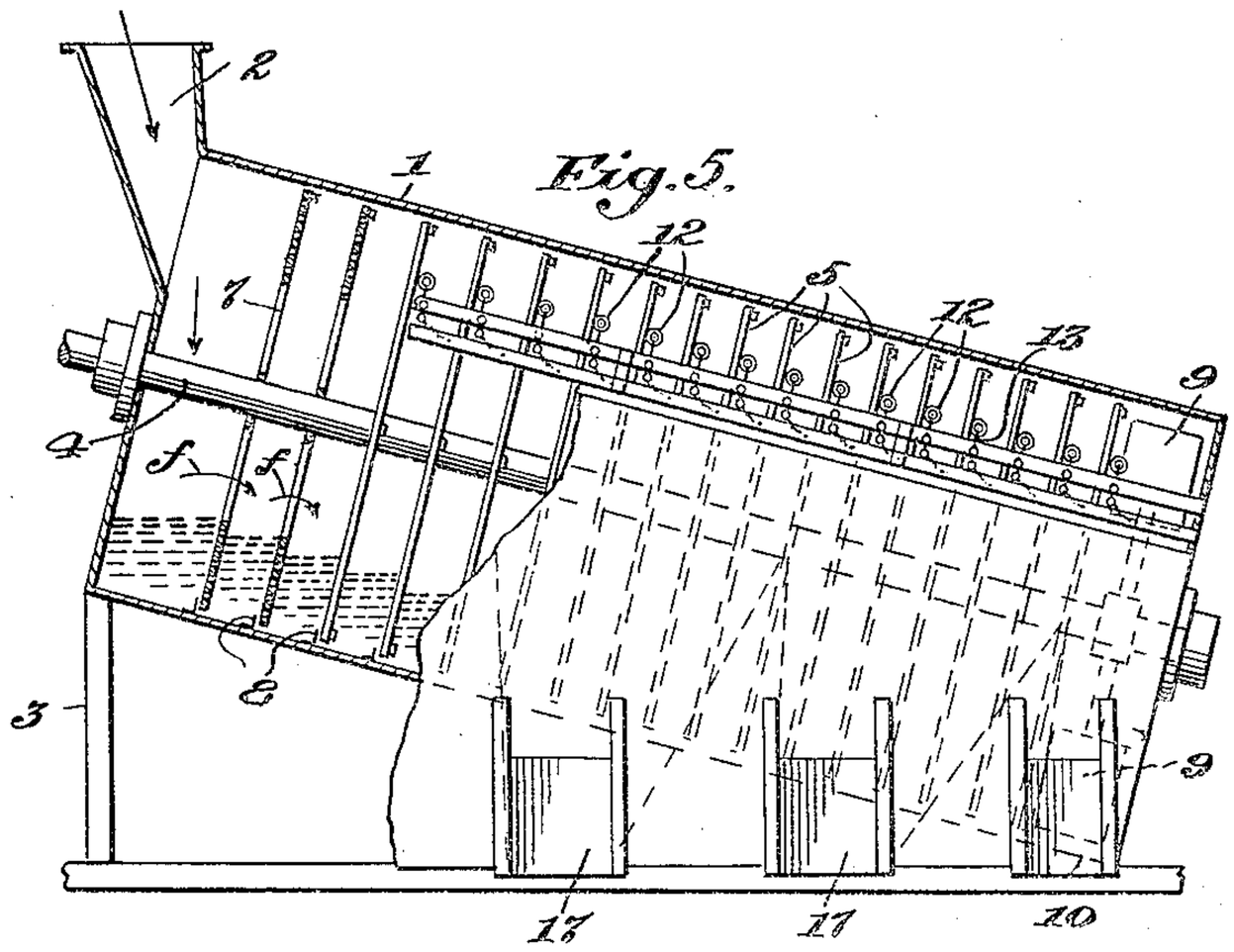


Fig. 5.



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UNITED STATES PATENT OFFICE

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CLASSIFYING MACHINE FOR CEREALS

Application filed March 20, 1930, Serial No. 437,599½, and in Argentina January 20, 1930.

The present invention refers to a classifying apparatus for cereals and grain in general, to be operated by hand or motive power and can be used either independently or applied to threshing and/or harvesting machines, and has for its object to permit a complete separation of all grains and other bodies continued in the cereals submitted to classification.

The construction of this apparatus is very simple and produces a very large output with a small requirement as to space and driving power.

The classifier in accordance with this invention is characterized in particular by the perfect classification produced with the sole intervention of perforated discs, disposed, preferably, with some inclination with respect to the vertical, in which perforations the cereal or grain enter at the bottom of the machine and are driven to the upper part thereof, where it is discharged with the help of other auxiliar elements.

With the object that the invention may be clearly understood and easily carried into practice, it has been shown in scheme in the drawings that accompany this specification. In these drawings:

Fig. 1 is a sectional elevation showing a series of discs mounted in condition for work; it can be seen here how the classification is done.

Fig. 2 is a fragmentary section of a piece of the lower part of a perforated disc.

Fig. 3 is a fragmentary section of a piece of the upper part of a perforated disc, showing the special shape given to the perforations.

Fig. 4 shows the apparatus in transverse section with its more important devices, and

Fig. 5 is a view in scheme and partially in section of the classifying apparatus.

In the said figures, the same reference characters indicate the same parts.

At 1 is shown the external jacket of the machine which is provided with an inlet 2 on a frame 3. The machine is provided with a central rotary axle 4, preferably inclined, and on this axle are mounted in succession and at a pre-determined distance, a series of discs 5 with perforations 6, which perforations present at one side of the disc, a section of a diameter consideraby larger than at the other side. These perforations have in almost the full thickness of the disc, a uniform section, which section reduces rapidly, for presenting at the opposite side, the reduced one (Figs. 2 and 3).

The object of this particular shape of the perforations is intended for the grains that are to be classified, to be accommodated therein but to be prevented from traversing the disc, and to permit the passage of the dust carried by the cereal or grain; this makes possible to maintain the perforations clean and, consequently, the capacity is not reduced by the constant accumulation of dust.

The discs 5 are also provided also with central openings 7 through which overflow the cereal or grains as will be seen in the foregoing paragraphs.

The rotary discs 5 are fixed, preferably, to axle 4 by means of a small bushing 18, provided with arms 19 bolted or screwed to the discs, the said bushing being fixed to the axle 4 by pressure screws 20. This particular way permits to easily move the discs for altering the distance between them, according to the work requirements.

The cereal or grain introduced through the inlet 2 falls to the bottom of the machine in the first space comprised between the head wall of the cylinder and the first rotating disc which makes a frictional contact with the cereal or grains.

The first series of discs of the classifier are provided with perforations of a diameter relatively small with the object that they classify only small seeds, such as those of rape, turnip and grains, which enter the perforations as indicated with the arrows *a* (Fig. 1). These seeds are carried by the disc up to the upper part of the machine, where they are discharged (arrows *b* Fig. 1). As it will be seen, the mentioned seeds are discharged at the same side of the machine where they were taken by the discs.

The cereal or grain that is not taken by the first disc passes to the next space (between

disc and disc) through the central openings 7 of the disc, as is indicated by arrow *c*.

In this space takes place a work similar to that described and the machine is provided with so many discs of small perforations as will be necessary according to a previous calculation for the complete elimination of small seed contained by the cereal.

Next to the discs with small perforations are disposed series of discs with larger ones, where the grain of large size can accommodate (wheat or flax).

In these other successive spaces is produced a work similar to that for small seeds, but in the body of cereal now exist only grain of regular size and larger (oats and cevadilla). The normal grains are taken (see arrows *f*) and carried by the discs for subsequent discharge, while the larger ones, not taken by the discs, overflow the central openings 7 (arrows *c*) until they reach the extremity of the classifier where a set of blades 9 forces them out through the outlet 10.

In order that the discharge of grain or seeds take place in a perfect way, the apparatus is provided with the following device. On the periphery of the corresponding discs are placed series of salients 11 (Figs. 1 and 4) which, during their rotation, strike against rollers 12 supported on a lever 13 pivoted at 14, which rollers tend to apply to the discs by the action of a spring 15. When salients 11 pass roller 12 (which occupies the position 12′, Fig. 1) against the action of the spring, the roller beats the disc producing a vibratory movement of same, which movements constitutes a very important help for the cereal to discharge completely from the perforations of the disc.

The cereal thus classified is discharged from the perforations and falls (arrows *d* Figs. 1 and 4) to an inclined plane 16 on its way to outlet 17.

The possibility of a perfect work of the apparatus, carrying its axle inclined, has a singular importance for the adaptation of same to harvesting and threshing machines, since during work of these machines, owing to the imperfection of the ground it is impossible to maintain the classification on apparatus that work at exact horizontal plane, while in our case, the inclination mentioned gives margin to certain oscillation without resenting the work.

The apparatus is provided also, on jacket 1, with a survey window for permitting the observation of the work done and carries also another small window 22 for discharging the cereal that remains in the machine when the operation is over or when the apparatus is required for the classification of other seeds.

During work and for avoiding some seeds sliding on the bottom of the jacket, passing under the discs, a tight joint 8 is placed in front on the lower part of the machine, fixed to the jacket.

It is obvious that many alterations may be introduced in the construction and details without departing from the scope of the invention which will be more clearly set forth in the following.

Having now particularly determined and ascertained the nature of our invention and how same can be carried into practice, we declare that what we claim is:

A machine for classifying cereals and grain and adapted for use in the field, comprising a jacket inclined upwardly the horizontal from the discharge end towards the feed end at a comparatively large angle. a grain inlet therefore, an axle extending substantially centrally through the said jacket, a plurality of perforated classification discs mounted in spaced relation on the said axle, the perforations of each disc or series of discs being graduated in size with respect to those of the adjacent discs, each disc having a substantially central opening therethrough, discharge means for each of the said discs, a set of blades mounted on the axle at that end of the jacket remote from the grain inlet and closely adjacent the last disc on the axle, and an outlet adjacent the said set of blades; whereby the grain coming through the said inlet falls adjacent the first classifying disc into frictional contact therewith, the said disc picking up by means of its perforations grain of a particular size and discharging the same, the rejected grain of larger size being passed through the central opening to the next disc or series of discs where the action is repeated until the grain which passes from the last disc to the blades is substantially of the same size the blades discharging that grain through the outlet.

In testimony whereof we have signed our names to this specification.

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