May 17, 1932. O. G. SIMMONS 1,858,527

KNIFE FOR HULLERS

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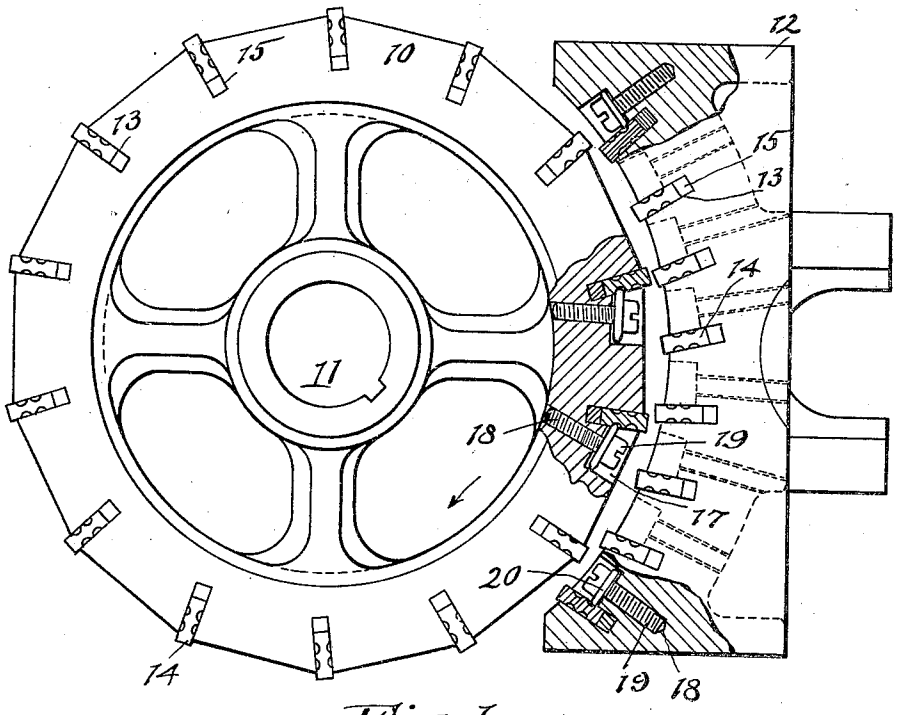



Fig. 1.

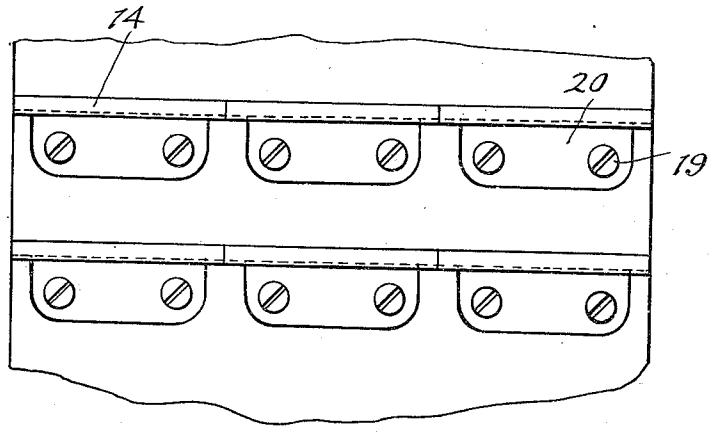



Fig. 2.

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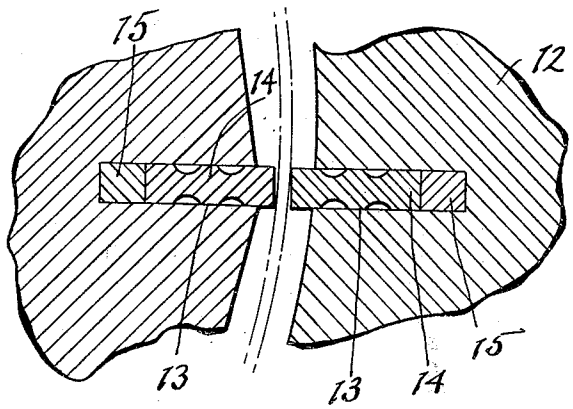
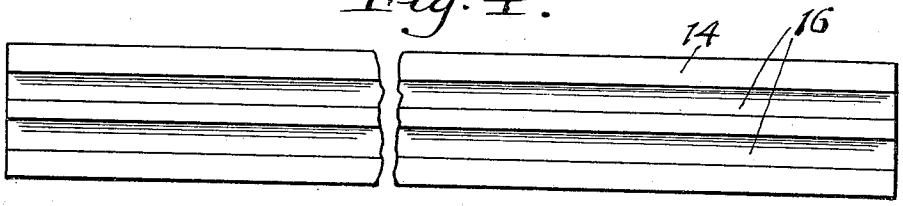



Fig. 3.

Fig. 4.



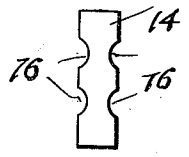




Fig. 5.

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# UNITED STATES PATENT OFFICE

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## KNIFE FOR HULLERS

Application filed September 27, 1927. Serial No. 222,250.

This invention relates to hullers and more particularly to the type of hullers commonly termed cotton seed huller, and has for its primary object to provide a knife for said hullers which is exceptionally inexpensive to manufacture as compared with the types of knives now employed in hullers of this specific nature.

Those familiar with the art, to which this invention relates, are aware of the necessary upkeep pertinent to hullers due to the replacing of the knives of both the cylinder and the concave. This is primarily due to the fact that the knives can only be used for a very short period of time before the usual four cutting edges of the knife become dull, and it is not practical to resharpen the knives inasmuch as a new knife can be purchased as cheaply as the sharpening operation. It is, therefore important that these replacement knives be manufactured as cheaply as possible so as to eliminate, as much as possible, the upkeep in connection with the huller.

The grooves in the cylinder and the concave of the huller for receiving the knives are of a predetermined depth and it has been necessary heretofore to provide knives of a depth in excess of the depth of the grooves. Inasmuch as these knives are made of tool steel, which is expensive, it is one of the primary objects of the present invention to provide a knife suitable for replacement in these hullers which requires only about 1/3rd of the quantity of tool steel heretofore required in producing these knives, and it will therefore be readily seen that the cost in connection with the production of these knives is materially decreased, which results in a material decrease in price to the owner of the huller and thereby materially reduces the upkeep in connection with these hullers. This reduction of material is made possible by the employment of a filler or backer member of inexpensive material positioned at the base of the recesses against which the knife is adapted to abut. This filler or backer member is made of sufficient depth to properly position the knife adjacent the cutting arc so that the huller performs as efficiently as heretofore.

A further object of the invention is to provide an improved manner of retaining the knives within the grooves of the cylinder and concave which includes providing the knives with a pair of longitudinally extending grooves or recesses properly positioned upon opposite sides of the knife. In view of the fact that these knives are provided with four cutting edges so that the same may be reversed, end for end, it is essential that these longitudinally extending grooves or recesses be positioned a definite distance with respect to the cutting edge of the knife.

With the objects above indicated and other objects hereinafter explained in view, my invention consists in the construction and combination of elements hereinafter described and claimed.

Referring to the drawings,

Fig. 1 is an elevational view, partly in section, showing the relationship between the cylinder and the concave of a huller with the knives in their respective grooves, and means for retaining the knives within the grooves;

Fig. 2 is a plan view of a plurality of knives showing the clip for retaining the knives within the grooves;

Fig. 3 is a fragmentary sectional view showing the relationship between the knives of the cylinder and concave and showing the relative position of the backer members with respect to the knives;

Fig. 4 is a top plan view of one of the knives showing the position of the longitudinally extending grooves; and

Fig. 5 is an end view of the knife shown in Fig. 4.

In the drawings, 10 indicates the cylinder of a huller supported upon a transverse shaft 11 and adapted to be rotated about the axis of the shaft 11 in the direction indicated by the arrow. The concave 12 is shown positioned adjacent the cylinder 10 and is suitably secured to the frame work of the huller. It is not thought necessary to illustrate any of the parts of the huller aside from the cylinder 10 and concave 12 inasmuch as the invention does not relate to any parts of the huller other than those illustrated. The cylinder is provided with a plurality of trans-

versely extending grooves 13 suitably spaced apart, and disposed in the grooves 13 are a plurality of knives 14. These knives 14 (composed of tool steel) ordinarily occupy the entire groove 13 which requires that the knives be made a predetermined depth so that the cutting edge of the knives will project outwardly beyond the cylinder a predetermined distance so as to function as a cutter in association with the adjacent knives in the concave 12.

In order, therefore, to reduce the amount of tool steel required to produce these knives, and yet not impair their effectiveness and efficiency, I provide at the base of each of the recesses 13 filler or backer members 15 of a depth sufficient to properly position the cutting edge of the reduced knife in proper cutting position, as clearly shown in Fig. 3. The knives are each provided with a pair of longitudinally extending grooves 16 disposed upon opposite sides thereof extending throughout the entire length of the knife. At suitable positions along the periphery of the cylinder are a plurality of recesses 17, clearly shown in Fig. 1. Adjacent the side of the knife 14 in the direction of rotation of the cylinder 10 and extending inwardly from these recesses 17 are threaded openings 18 adapted to receive bolts 19 which securely clamp substantially rectangularly shaped plates 20 within the recesses 17. The ends of these plates 20 are adapted to engage with the inner or lower longitudinally extending grooves 16 of the knives 14 to such an extent that when the bolts 19 are turned up tightly within the openings 18, the knives 14 are securely clamped within the grooves 13 of the cylinder 10 and against the edge of the groove in opposition to the direction of rotation of the cylinder 10.

The concave 12 is similarly provided with a plurality of these grooves 13 adapted to receive therein the knives 14 and each of the knives are adapted to abut the filler or backer members 15, as clearly shown in Fig. 1. These knives 14 are also secured within the grooves 13 of the concave 12 by bolts 19 engaging screw-threaded openings 18 in the concave 12, and the plates 20 are adapted to be rigidly secured in engagement with one of the longitudinally extending grooves 16 of the knife 14, as heretofore explained.

It will be understood that these knives 14 are provided with four longitudinally extending cutting edges so that they may be reversed within the grooves 13, end for end, or front for back, so that all four edges may be employed. It is, therefore, necessary that the longitudinally extending grooves 16 of the knives 14 be positioned in such a manner that the plates 20 will engage each of the grooves and securely retain the knife within the recess depending upon the cutting edge being in operation.

In Fig. 2 I have shown the knives 14 made up in three sections, although any number of sections may be employed, but it will be noted that the rectangularly shaped plates 20 are adapted to suitably engage the longitudinally extending grooves 16 of the knife 14 substantially throughout its entire length which results in greater contacting engagement between the plates 20 and the grooves 16 of the knives so as to more securely hold the knives 14 within the grooves 13.

It will, therefore, be noted that I have materially lessened the quantity of material previously required in manufacturing knives for use in connection with hullers, and have further provided a new manner in which the knives are secured within the grooves of the cylinder 10 and the concave 12, and in view of the former the expense in connection with the production of these knives is materially lessened and the cost to the owners of the hullers for replacing these knives is likewise materially lessened, thereby reducing to a considerable extent the upkeep in connection with the hullers.

Having thus described my invention, I claim:

1. A knife for hullers and the like of the type having a cylinder and a concave provided with knife grooves comprising a relatively flat metallic bar of rectangular cross section having cutting edges extending along the longitudinal edges thereof and of a width shorter than the depth of the knife grooves in the cylinder and concave whereby when the knife is secured in position in a knife groove with its cutting edge properly exposed it will not reach the bottom of the groove, said metallic bar having a pair of grooves arranged on opposite sides of the bar and extending parallel with the cutting edges thereof, each groove of each pair of grooves being arranged a fixed distance from its adjacent cutting edge whereby the bar may be reversibly secured in the knife groove of the cylinder or concave with a groove of the bar in proper position to be engaged by a knife retaining means.

2. In combination with a huller having a cylinder and concave provided with radially extending knife grooves and longitudinally extending recesses adjacent such grooves, knives formed of relatively flat metallic bars of rectangular cross section having cutting edges extending longitudinally of their opposite side edges disposed in said grooves and of such a width that they do not extend to the bottom of the grooves when secured therein in the proper cutting position, filler members at the base of said grooves with which the inner edges of said knives abut, a plurality of spaced longitudinally extending grooves provided upon opposite sides of said knives with each groove arranged a fixed distance from its adjacent cutting edge, plates arranged in the

longitudinally extending recesses of the cylinder and concave and engaging with one of the grooves in the knives and means for securing said plates in position and clamping the knives in the grooves of the cylinder and concave.

In testimony whereof, I hereunto affix my signature.

OLIVER G. SIMMONS.