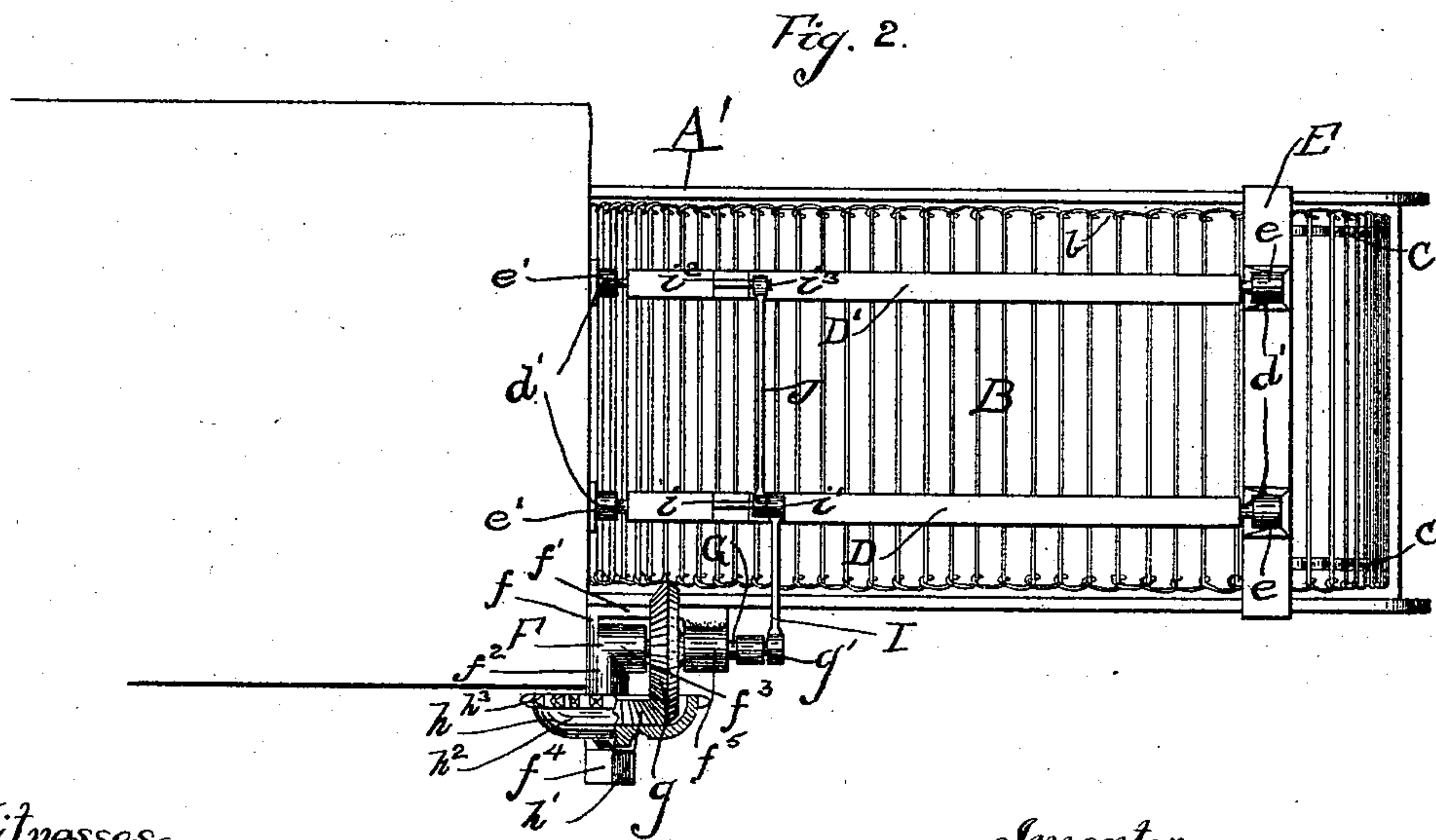
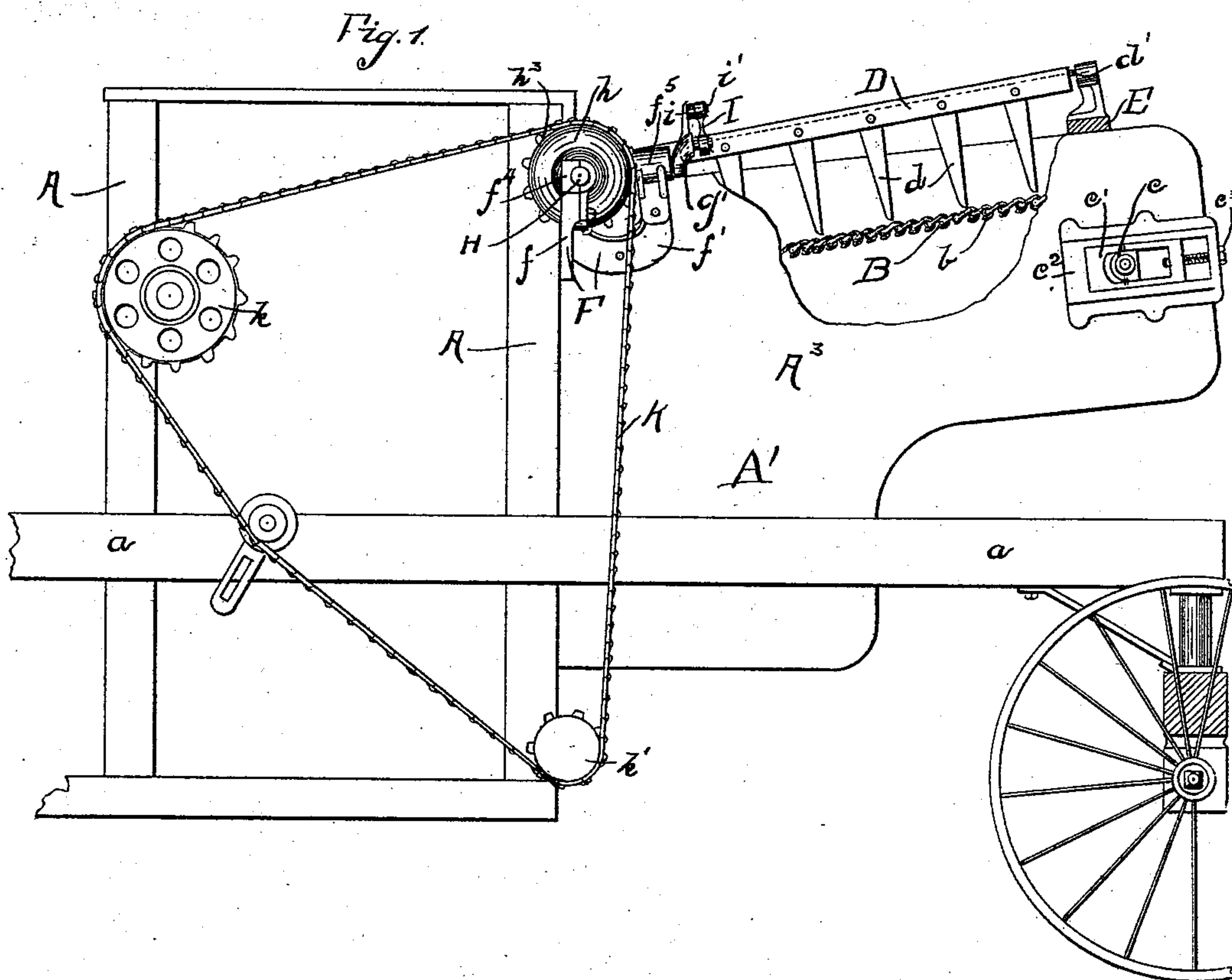


(No Model.)

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SEPARATOR FOR CORN SHELLERS.

No. 531,292.

Patented Dec. 25, 1894.



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SEPARATOR FOR CORN-SHELLERS.

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To all whom it may concern:

Be it known that I, JOHN Q. ADAMS, a citizen of the United States, residing at Marseilles, in the county of La Salle and State of Illinois, have invented certain new and useful Improvements in Separators for Corn-Shellers, which are fully set forth in the following specification, reference being had to the accompanying drawings, in which—

Figure 1 represents a side elevation of the rear portion of a corn sheller embodying my invention, one side of the separator frame being partially broken away; and Fig. 2, a plan view of the same with a slight breaking of the gearing.

My invention relates to power corn shellers in general use, and particularly to the separating mechanism for separating the corn from the cobs as the mass is carried over or along by the cob rake.

The invention consists in toothed bars which are arranged over the cob rake or apron lengthwise thereof, and are connected with mechanism whereby an oscillatory movement is imparted to them for stirring up the cobs, as they are carried along by the rake, to facilitate and insure separation of the corn therefrom.

As my invention relates to only a particular part of the machine, it is not necessary to show and describe a complete corn sheller, as in other features of construction it may be of any known type. Only a small portion of the shelling machine is here shown, therefore, and only such general parts of the machine will be referred to as are necessary to an understanding of the construction and operation of the present invention.

In the drawings, A, represents the main frame of the sheller, and a, the side beams or sills thereof by which it is adapted to be mounted on a carriage or truck, which is now the usual way of mounting power corn shellers. At the rear of this frame there is the usual extension or supplementary frame, A', which may be called the separator frame, because in it is mounted mechanism for receiving the cobs and corn and carrying them along to the rear end of the machine where they are discharged, during which travel a separation of the kernels of corn which have been carried along with the cobs is intended

to be effected. The shelling mechanism is, of course, mounted in the main frame, and in the separator frame there is mounted a cob carrier or cob apron, B, running over suitable drums or other rotary drivers, only one of which, C, mounted in the rear end of the frame, is shown. This device is sometimes called a cob apron and sometimes a cob rake. As shown in the drawings it is made up of metal wire bent into connecting transverse loops, b, the bars thereof running transversely of the machine with free open spaces between them. This is a construction of the device called a wire cob rake, and requires no further description here, it being sufficient, for those familiar with this class of machines, to state that this device is constructed, mounted and driven in the machine the same as in corn shellers known and in general use for a number of years past.

It will be understood, of course, that the cobs and shelled corn are delivered from the shelling mechanism at the rear thereof to the inner end of this endless cob rake, and the cobs and corn always go together to this latter device. It is necessary, of course, to separate the corn from the cobs as they are carried along to the discharge end of the machine. This separation is effected quite successfully with the cob apron or rake mentioned above when used alone, yet there will be some corn carried along and discharged with the cobs, being held in the mass of the latter which is moved along by the apron without thorough stirring or breaking up.

The present invention is designed to improve this separation by an additional device which thoroughly stirs up the bed of cobs carried along by the rake, with the result that a practically complete separation of the corn from the cobs is obtained in a much shorter travel than in ordinary machines.

The main device of this mechanism is a pair of rocking or oscillating bars or shafts, D, D', which are provided with downwardly projecting teeth or arms, d, and with journals, d', at each end. These teeth are preferably of spring steel. These shafts are to be mounted lengthwise of the cob rake and immediately over it, and this is accomplished as shown in the drawings by mounting a cross-bar, E, upon the sides of the separator frame

near the outer end thereof, and immediately over the rake. On this cross-bar are bearing brackets, *e*, which are adapted to receive the journals on the outer ends of the shafts forming bearings therefor. Just over the rear end of the separator frame another pair of brackets, *e'*, is secured to the back of the main frame as seen in Fig. 2, which are provided with socket seats adapted to receive the journals at the inner ends of the oscillating shafts, which are simply set in these sockets as seen in Fig. 2. These toothed shafts are arranged with the teeth on the underside thereof, and the latter are of such length as to reach nearly to the cob rake, as seen in Fig. 1. A suitable mechanism must be provided to impart an oscillating movement to these two shafts and preferably arranged to be driven from some of the main driving shafts or wheels of the sheller. A mechanism for this purpose is shown in the drawings, which will now be described. A metal bracket, *F*, cast in right angled form, is adapted to fit the angle between the back of the main frame and one side of the narrower separator frame, one plate of this bracket, *f*, being fitted to the main frame, and the other, *f'*, to the side of the separator frame, as shown in the drawings. The plate, *f*, is provided with a circular enlargement, *f*², on its inner face, which extends inward almost to the plate, *f'*, leaving only a narrow space between the two, as seen in Fig. 2. At its inner end this enlargement is extended outward at a right angle to the outer portion, forming a short circular projection, *f*³. This part of the bracket is bored to form a journal bearing in each section, thus fixing these bearings at right angles to each other. The plate, *f*, extends outward considerably beyond this bearing projection or lug, *f*³, and upon its outer end is also constructed with a bearing, *f*⁴, one part of which is detachable like an ordinary bearing cap and the plate is cut down considerably between these two bearings. The other plate, *f'*, is also provided at its outer end with a journal bearing, *f*⁵, which is similar to the bearing, *f*⁴, one part being detachable the same as in the latter. This bearing, *f*⁵, stands in line with the bearing projection, *f*³, as seen in Fig. 2. A short shaft, *G*, is mounted in the bearings, *f*³, *f*⁵, so that it will stand parallel to the side of the separator frame and just outside the latter, as seen in Fig. 2. A bevel wheel, *g*, is fixed on this shaft and arranged between its two bearings, and the shaft extends outward a short distance from its outer bearing and is provided with a crank arm, *g'*. A similar short shaft, *H*, is mounted in the bearings, *f*², *f*⁴, on the plate, *f*, so that obviously it will lie at right angles to the shaft, *G*. On this shaft, *H*, is fixed a compound gear wheel, *h*, consisting of a bevel gear section, *h'*, partially inclosed by a cup-shaped cap, *h*², within which it lies, the said cap being provided on its rim with a series of sprockets or chain teeth, *h*³. The shafts of these wheels, as explained above,

are at right angles to each other, and the size of the wheels is such that the two bevel gears engage when the shafts are mounted in place, as seen in Fig. 2.

A link rod or pitman, *I*, is connected at one end to the crank arm on the shaft, *G*, and is extended inward over the separator to the nearest tooth shaft to the upper side of which it is connected by any suitable hinge or pivot joint. In the drawings this device is shown as a small bracket post, *i*, rising a little above the said shaft and provided with a horizontal pin, *i'*, on which the inner end of the pitman is journaled. A similar bracket post, *i*², is fastened to the upper side of the companion shaft, *D'*, and is provided with a like pin, *i*³. A connecting rod, *J*, is mounted at its respective ends on these respective bracket pins, thereby connecting the two brackets at their upper ends by pivotal joints. Obviously the rotation of the shaft, *G*, will communicate an oscillatory or rocking motion to the rock shaft, *D*, through the action of the crank on the end of the shaft *G*, and the pitman connecting it to the rising bracket post on the said rock shaft, and this rocking movement will communicate to the companion shaft, *D'*, through the action of the connecting rod, *J*, so that the rotation of the shaft, *G*, will communicate a rocking or oscillatory movement to these toothed shafts simultaneously. The device for obtaining this rotation may be varied. As the driving part of the wheel, *h*, is a chain gear in this instance, a chain mechanism must be employed to give motion to this wheel. As indicated in Fig. 1, this mechanism consists of a chain, *K*, running over the said sprocket section, *h*³, a sprocket wheel, *k*, on some revolving shaft of the shelling mechanism, and a guide sprocket pinion, *k'*, arranged as shown in the drawings at the rear lower corner of the main frame.

As the wire cob rake is of endless chain or apron type, it must be kept taut to secure satisfactory working. This may be accomplished by any suitable device. In the drawings the outer roller or drum, *C*, of the cob rake is shown provided with adjustable bearings for this purpose. The bearing boxes, *c*, for the journals of this drum are mounted in slotted blocks, *c'*, the bearings being secured in the slots in the said blocks by journal pins, and the blocks themselves mounted in guide brackets, *c*², on the sides of the separator frame and movable in these guide ways by adjusting screws, *c*³, so that these bearing boxes may be drawn outward at any time sufficiently to keep the cob rake taut.

In action the shelled corn, cobs, and other refuse substance are delivered in a mass from the shelling devices to the cob rake. The latter is slightly inclined upward as indicated in Fig. 1, and as this mixed mass passes along with the movement of the rake it is violently agitated and thoroughly stirred by the lateral vibration of the steel arms on the oscillating shafts. The shafts are oscillated by mechan-

ism sufficiently strong to give these arms power to drive through this mass of cobs and shelled corn and produce a violent agitation thereof laterally, while at the same time it is moving along in the direction of the rake travel and with this rake. The driving mechanism is also constructed relatively to give a sufficiently rapid movement to these oscillating shafts to obtain this thorough agitation or stirring of the passing mass of cobs and corn to effect the quick separation intended. The shelled corn, of course, drops through the spaces in the cob rake as usual, but the mass is so thoroughly and vigorously agitated that the corn separates from the cobs and drops through the rake with much greater rapidity than usual, and so the process of separation is very much more quickly performed and the length of the cob rake may be very much shortened from the usual construction in which it is necessary to extend the cob rake to a considerable distance in order to give time for the old, slower process of separation. The separator frame and cob rake are, therefore, comparatively short, occupying much less space than in machines as heretofore constructed. It will be understood, of course, that the corn dropping through the cob rake passes as usual to the delivery outlet of the machine.

It will be obvious to those familiar with

this class of machines that changes may be made in the mechanical devices and mechanical details of construction herein described and shown, and such changes I contemplate as within my invention so long as the main features of the latter are retained, which consist in the two vibrating or oscillating toothed bars, arranged lengthwise of the cob rake and driven by any suitable mechanism to effect a thorough agitation of the mass of cobs and shelled corn carried along by the cob rake.

Having thus described my invention, what I claim to be new, and desire to secure by Letters Patent, is—

In a corn sheller, a cob rake, in combination with rock shafts, D, D', mounted above and lengthwise of the cob rake, a right angled bracket, F, provided with journal bearings, f^2, f^3, f^4, f^5 , arranged on its right angled plates as described, crank shaft, G, mounted in the bearings, f^3, f^5 , and having bevel gear, g , fixed thereon, shaft, H, mounted in bearings, f^2, f^4 , and having a bevel gear, h' , fixed thereon, connecting devices between the crank of the crank shaft and the said rock shafts, and driving mechanism for rotating the gear, h' , substantially as described.

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Witnesses:

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