

R. Kitson
Cotton Picker.

N^o 11,865.

Patented Oct. 31, 1854.

Fig. 1.

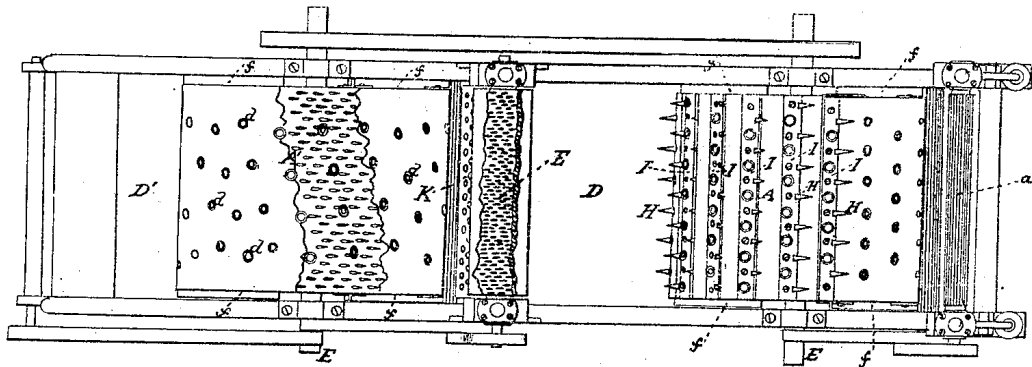


Fig. 2.

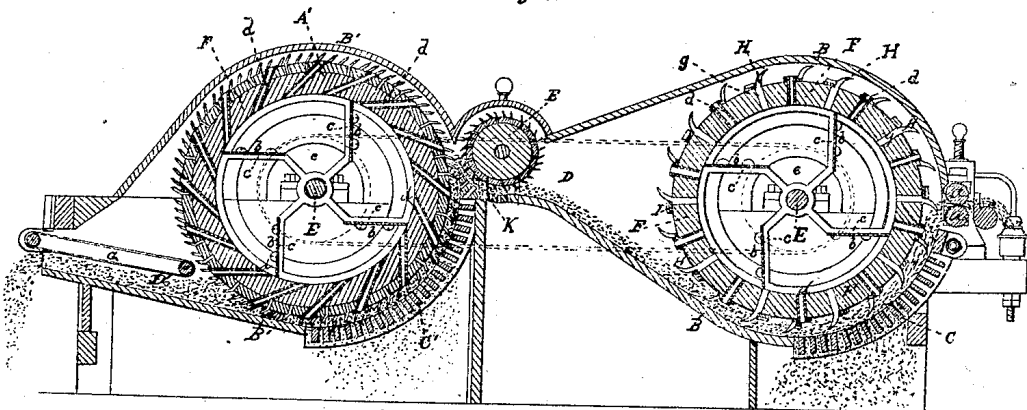


Fig. 3.

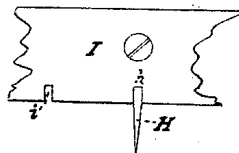
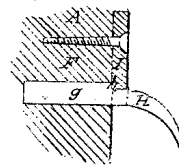


Fig. 4.



UNITED STATES PATENT OFFICE.

RICHARD KITSON, OF LOWELL, MASSACHUSETTS.

MACHINERY FOR PICKING COTTON AND OTHER FIBROUS MATERIALS.

Specification of Letters Patent No. 11,865, dated October 31, 1854.

To all whom it may concern:

Be it known that I, RICHARD KITSON, of Lowell, in the county of Middlesex, and State of Massachusetts, have invented certain new and useful Improvements in Picking-Machines for Picking Cotton and other Fibrous Materials and All Kinds of Waste Rags, Old Material; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1, is a plan of a double cylinder picking machine, constructed according to my invention, the whole of the covering of the machine being removed to show the cylinders. Fig. 2, is a longitudinal vertical section of the same. Figs. 3, 4 are detached views of the teeth of the first cylinder and the means by which they are secured in place.

Similar letters of reference indicate corresponding parts in the several figures.

The first part of this invention has for its object the blowing out of all the impurities whether sand and heavy particles or dust and light particles from the material during the picking operation, whereby the use of the scutching or blowing machine is dispensed with and its duty better performed in the picking machine itself during the picking operation, and the picking operation is assisted. This part of my invention consists in providing a cylinder or other foundation to which the picking teeth are attached with small orifices distributed in large numbers among the teeth for the purpose of enabling streams of air to pass outward from the interior or back of the cylinder by its own centrifugal action. These streams of air enter the fiber from the under side and blow right through it expelling the dust and impurities in an outward direction and all the time loosening the fiber from the teeth and effectually preventing their choking.

The second part of my invention relates to a certain method of securing the larger and heavier kinds of picking teeth to the cylinders, which is hereinafter fully described.

To enable those skilled in the art to make and use my invention, I will proceed to describe its construction and operation.

The general arrangement of the several parts of the machine shown, is, in many re-

spects similar to that of other double cylinder picking machines. The material to be picked is first introduced by the fluted feed rolls *a, a*, to the first picking cylinder, *A*, having the coarsest teeth. This cylinder is incased by a casing, *B*, which has the usual grating *C*, at the bottom for the heavier impurities to fall through, and has a spout, *D*, at the back at whose mouth is placed the feed roll, *E*, to the second picking cylinder, *A'*, which is incased in a casing *B'*, having a grating *C'*, and terminating in a spout *D'*, in which an endless apron *G* is placed, which serves to keep the mouth clear and prevent its choking. The cylinders are made hollow, with open ends and the interior of each is furnished with a number of wings, *b, b*, which are of the whole length of the cylinder and extend from the inner surface any distance toward the axis in the form of the wings of an ordinary fan blower, and are secured to the arms *e, e*, of the open heads which connect the cylinder with its shaft. I have shown (see Fig. 1) the cylinders to be rather shorter than the width of the framing and casing, and the wings extended beyond the ends of the cylinder and out as far as the outer periphery in the form of strips *f, f*, this arrangement will serve to keep the material from clogging up the space between the ends of the cylinders and casing.

The perforations or passages *d, d*, in the circumference *F* of the cylinders, or foundation in which the teeth are secured may be of any size considered best, and it may probably be desirable to vary the size according to the nature of the material for which the picker is intended. The distance between them and the order of their arrangement may also be varied, but as a general rule they cannot be too thickly distributed. I have very successfully employed a cylinder having 100 passages varying from $\frac{3}{16}$ to $\frac{1}{4}$ inch diameter to every square foot of surface, the holes being at equal distances apart. In some cases I propose to use as many holes as teeth, each hole being as close as possible in front of or under the tooth.

I consider the best direction for the passages, to be as nearly as possible parallel with the teeth, as shown in the cylinder, *A*, then the current will tend to loosen and blow the material from the teeth. In order to make the passages smooth, I line them with light metal tubes, or eyelets which are driven

in to a shoulder which is left on the outer end, (see Fig. 2). These eyelets pass through the card clothing, if clothing is used, and through the wooden circumference of the cylinder, and insure the absence of any obstruction to the air by the holes through the wood and clothing not being in line.

By the revolution of the cylinders and fans, a strong current of air is drawn into the cylinder through openings *e, e*, in the sides of the casing and expelled through the passages *d, d*, passing through the fibers, as the latter are separated by the teeth, and producing further separation and loosening; driving out all impurities, which are liberated through the gratings. The fibrous material on the teeth will be gradually loosened from them by the currents of air through the openings *d, d*, as it is carried from the feed rolls toward the open parts or spouts of the cylindrical casings, and when it arrives opposite the spouts, where a comparatively strong blast is induced, will be driven from the teeth and pass into the spouts.

It may be necessary to explain the difference between the operations of and effects produced by my perforated cylinder, and a slotted toothed cylinder or series of toothed bars attached to fans which is sometimes employed in combination with other picking cylinders. The series of toothed bars attached to the fans take the material in a series of strips and the currents of air passing between the strips blow not through the fiber but over the surface at intervals, and are not finely distributed among the teeth, while my cylinder receives the fiber in a continuous lap into which the streams of air freely distributed enter from the under side and are blown right through it. The action of my cylinder is continuous and the feed continuous, but the other has a continuous feed while its own action is intermittent. On the slotted cylinder the fiber is not acted upon by the current till after the action of the teeth, but on the perforated cylinder the blowing and picking operations are performed simultaneously. In consequence of the air not being distributed among the teeth under the fiber in the slotted cylinder, it fails to loosen and remove the fiber if the teeth are set at an angle more acute than 80° , to the cylinder, and the teeth become choked; but in my perforated cylinder the teeth may be set at an angle of 30° , if desired and they can be kept cleared. The advantage of being enabled to set the

teeth at an acute angle is that the wear is mostly on their backs and their points are kept sharp by their own action, but when the teeth are nearly radial, the points are worn down with great rapidity. The perforations may be used with great advantage in the toothed bars above referred to and in a great measure will tend to obviate the difficulties experienced in their use as at present constructed.

The improvement in the mode of securing the teeth is exhibited in the cylinder A, but is shown on an enlarged scale in Figs. 3 and 4. The shank *g* of the tooth H is tapered and driven into a suitable hole in the foundation F. At the back of the tooth there is a shoulder *h*, on the shank which is intended when the shank is driven tight to be flush with the face of the foundation. The teeth are arranged in rows on the cylinder or other foundation, and a strip I, of metal or other material, having a number of notches, *i*, in one edge of sufficient width to receive the teeth, is secured to the cylinder or foundation in such a way that the backs of the notches fit close up to the backs of the teeth, and the parts of the strip at the back of the notches rest on the shoulders, *g*, of the teeth. The strip thus serves to hold the teeth secured against either turning or drawing out, and hence one of the greatest difficulties attendant upon the use of teeth of hooked form in picking heavy materials is overcome.

I do not claim the employment of a series of toothed bars attached to fans with spaces between them for the issue of currents of air,

But what I claim as my invention and desire to secure by Letters Patent, is

1. Providing the cylinder or other foundation to which the picking teeth are secured with orifices or perforations distributed in all directions among the teeth for the purpose of blowing a number of streams of air among the teeth from the under side of and through the fiber, and thereby expelling outwardly during the picking operation all dust and dirt, and loosening the fibers and finally blowing them from the teeth substantially as herein set forth.

2. I claim the method of securing the teeth H, in the cylinder by means of notched strips I, and shoulders, *h*, on the teeth substantially as described.

RICHARD KITSON.

Witnesses:

WILLIAM A. RICHARDSON,
WILLIAM P. WRIGHT.