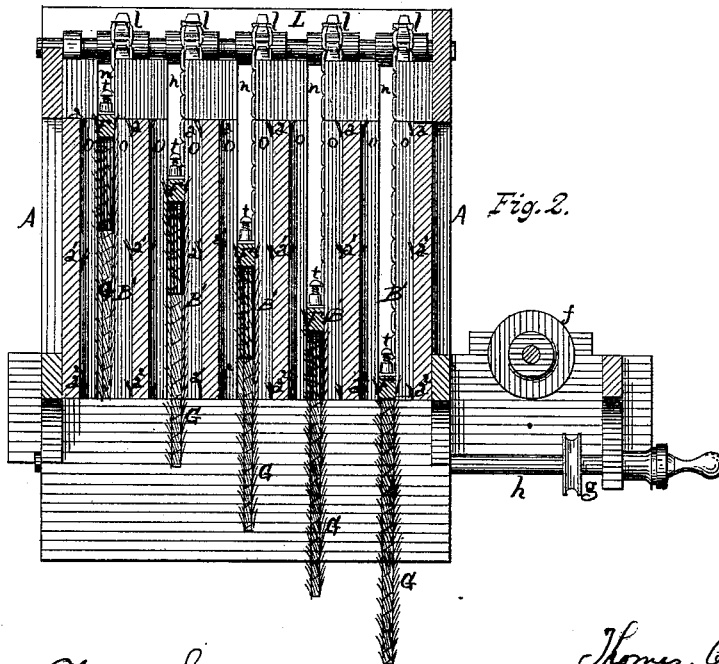
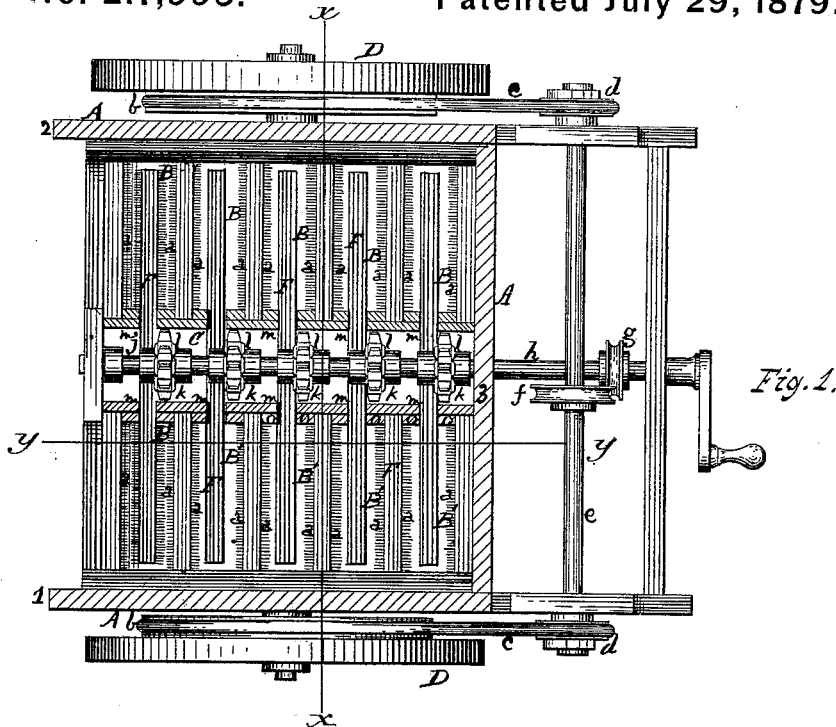


T. C. CRAVEN.  
Cotton-Picker.

No. 217,993.

Patented July 29, 1879.



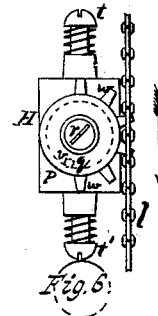
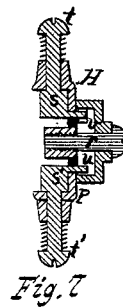
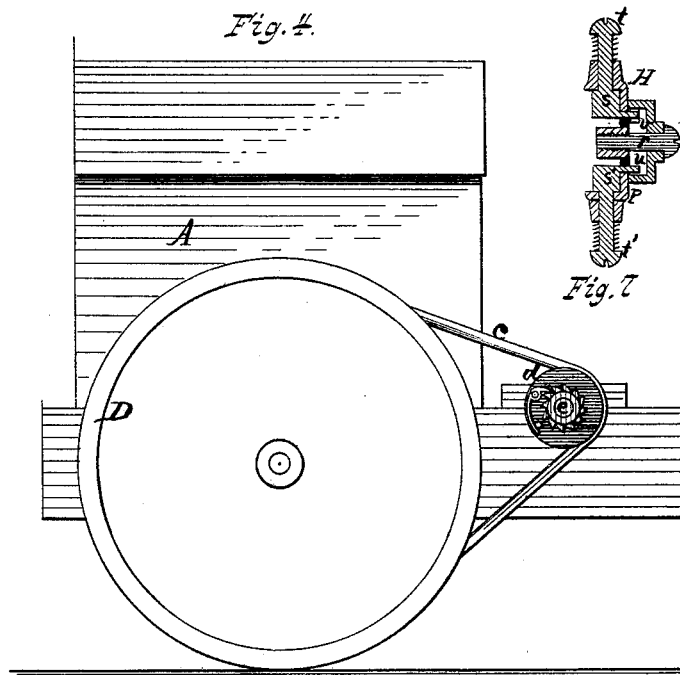
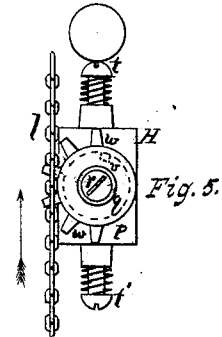
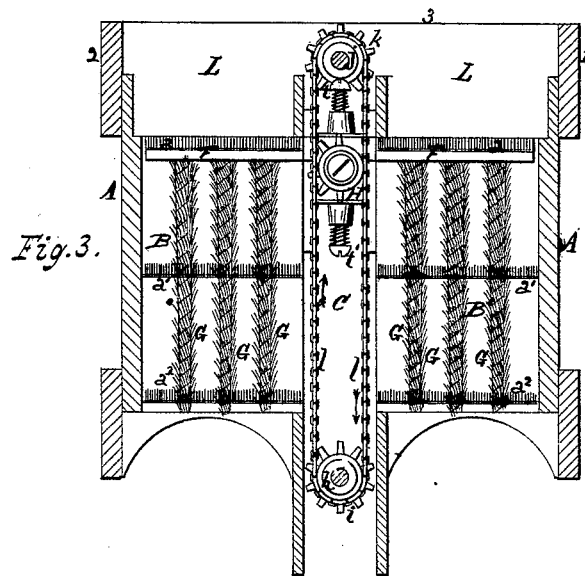
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Witnesses: *Charles Selkirk*  
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# UNITED STATES PATENT OFFICE.

THOMAS C. CRAVEN, OF GREENBUSH, ASSIGNOR OF ONE-HALF HIS RIGHT  
TO OLIVER H. P. CORNELL, OF ALBANY, NEW YORK.

## IMPROVEMENT IN COTTON-PICKERS.

Specification forming part of Letters Patent No. **217,993**, dated July 29, 1879; application filed  
May 8, 1879.

*To all whom it may concern:*

Be it known that I, THOMAS C. CRAVEN, of the town of Greenbush, county of Rensselaer, and State of New York, have invented certain new and useful Improvements in Cotton-Pickers, which improvements are fully described in the following specification and accompanying drawings, in which—

Figure 1 represents a plan view of the machine. Fig. 2 is a sectional elevation taken on line *y y* in Fig. 1. Fig. 3 is a sectional elevation taken transversely on line *x x* in Fig. 1. Fig. 4 is a side elevation of the machine. Fig. 5 is a side elevation of the device employed to engage with the endless chains for alternately raising and lowering the picker-heads, and illustrating the same when about to change the direction of the movement of the picker-head to cause it to descend. Fig. 6 is a side elevation of the same, illustrating it when about changing the direction of the said picker-head to cause it to ascend. Fig. 7 is a sectional elevation of said device, illustrating its several parts.

The invention relates to certain improvements in that class of cotton-pickers in which are employed vertically-reciprocating barbed extractors, moving through separated chambers provided with horizontally-arranged card-point strips or their equivalents, set at intervals apart, for removing the picked cotton from the extractors.

The invention consists in the several constructions, combinations, and arrangements of parts, as hereinafter described and claimed.

In the drawings, A is the body of the machine, inclosing the several working parts of the same. B and B' are chambers arranged in two series, as shown in Figs. 1 and 3, and so situated as to stand vertically over the rows of cotton-plants to be acted upon, with the furrow between, vertically below the space C between said chambers. The side walls of said chambers are made plane, and are provided at intervals with horizontally-arranged strips of carders *a a'*, placed with their teeth projecting upward, as shown. These carders may be made of stiff bristles or split whalebone, or of small elastic wire or strips of wire-cord, as may be selected.

D D are the carrying-wheels of the machine, which wheels also operate as drive-wheels for giving motion to the several parts of the machine through the medium of the drive-pulley *b*, cord or band *c*, and pulleys *d*, attached to the shaft *e*, and pulleys *f* and *g*, connected by a band and revolving the shaft *h*. Secured to shaft *h* is a series of cog-wheels, *i*. Arranged over the middle space, C, between the series of chambers B B' and B' B', and vertically over the shaft *h*, is the shaft *j*, secured to which are the cog-wheels *k*, corresponding in number with the number of chambers B and B' and the cog-wheels *i* on shaft *h*. The said cog-wheels *i* and *k* are connected and geared together in pairs by endless chains *l*, in such a manner that when the shaft *h* is revolved the shaft *j* will also be revolved with its several cog-wheels *k*, while one side of each endless chain will be moved in an upward direction and the other side downward.

Arranged in the several chambers B B', and extending in a continuous manner through the same from side to side of the machine, are the bars F F', which bars operate as head-pieces for carrying the extractors G G'. These several heads move vertically in a reciprocating manner alternately upward and downward through the chambers B B' with a regular and uniform speed, according as the shaft *h* is speeded through the pulleys *g*, *f*, and *d*, or their well-known equivalents, when driven by the wheels D D. The said bars F are steadied and held in a horizontal position by guide-pieces *m*, secured to the said bars or heads in a firm manner, and working in ways *n*, formed by the vertical pieces *o o*, which separate the chain-chamber C from the chambers B B'. Secured to the head-pieces or bars F in a firm manner, at a point in the middle of the length of each of said heads or bars, is a device, H, which I denominate a "jack-switch." (Shown in Figs. 3, 5, 6, and 7.) The said device is composed of the main plate *p*, (by which the said device is secured to the head F and the other parts are held in place,) the switch-wheel *q*, having cogs made on about one-half of its periphery, as shown, and loosely fitted on pintle *r*, secured to the main plate *p*, the dogs *s s'*, made elastic by springs, and the tripping-pins *t t'*. The

rear side of the switch-wheel is made with a circular recess, *u*, in which is placed the dent or stop *r* at the outer circumference, as shown by full lines in Fig. 7, and by dotted lines in Figs. 5 and 6. The cogs *w* of the switch-wheel *q* are made to engage with the links of the endless chain *l* on the side thereof running upward when the bar or head *F* is to be elevated, and with the links of the side running downward when the bar or head is to be lowered.

The two lateral sides 1 2 and the front side, 3, of the body of the machine are continued up to a considerable distance above the upper end of the chambers *B B'*, so as to form a chamber, *L*, into which the cotton will be received before its passage or removal to a box, bag, or other receptacle secured at the rear of the machine, which receptacle is not shown. The upper portion of the chain-chamber *C* and the shaft *j*, with the several cog-wheels, I cover over with a cover of either wood or sheet metal, or such other material as may be selected. The receiving-chamber *L* may also be covered over in whole or part, as may be elected.

Secured to the heads *F F* are the picking-fingers or extractors *G G*, before referred to. These fingers are made to consist of a series of pendent and elastic stocks, made with a round form and tapering somewhat as a whip-stock, wound or covered with elastic teeth, standing upwardly oblique from the body of the said stocks, so that the points of the said teeth will be in an upward direction. These elastic teeth I prefer to form of bristles, short horse-hair, split whalebone or metal, or other equivalent material, which will engage with the cotton when the finger or extractor is drawn upward, and release the same when thrust downward against the carders or combs *a a'*. These fingers or extractors have a length which will permit their points to reach to within a few inches of the ground when the head *F* is depressed or lowered to its full limit.

The manner in which this machine is operated is as follows: The machine is provided with shafts, (not shown,) and drawn by mules or horses walking in one furrow, with the wheels *D D* running in other furrows, and the picking-chambers *B B'* standing vertically over the rows of cotton-plants. The revolving of the wheels *D D* will give motion to the shaft *h* and its cog-wheels *i*, and thereby revolve the endless chains *l l* in the direction indicated by arrows in Figs. 3, 5, and 6, the upper ends of said endless chains being carried by the cog-wheels *k* on shaft *j*. The jack-switches *H*, being attached to the heads *F* of the extractors *G*, are raised and lowered with said heads by the engagement of the cogs *w* of the switch-wheel *q* with the links of the moving chains *l*. When the switch-wheel *q* is in position shown in Fig. 5, so as to engage with the links of the side of the chain running upward, as indicated by an arrow in Fig. 5, the head *F* will be lifted, and when in posi-

tion, as shown in Fig. 6, to engage with the links of the side of the chain running downward, the said head will be lowered.

The manner in which this operation of alternately raising and lowering the head *F* is obtained is as follows: The endless chain *l* is being continuously moved in direction of arrows in Figs. 3, 5, and 6, and the cogs *w* of the switch-wheel *q* will be engaged with links of one side of said chain—say, as in Fig. 5—when the upward movement of the links engaged with will carry the switch-jack and the head *F*, to which it is attached, upward until the upper end of the tripping-pin *t* strikes the lower side of the hub of the cog-wheel *k*, or the shaft *j*, or some unyielding piece, which will force the said trip downward, and carry the dog *s* out of contact or engagement with stop *r*, made with the switch-wheel, when the said switch-wheel will be free to turn on its pintle *r*. As soon as the dog *s* is released from engagement with the stop *r*, the movement of the chain *l* will turn the switch-wheel from the position shown in Fig. 5 to that shown in Fig. 6, so as to bring the cogs *w* of said wheel in engagement with the links of the descending side of said chain, when the stop *r* of the switch-wheel will engage with the dog *s'* below, and the said wheel will be held fixed from turning, and be carried downward with the head *F* by the down-traveling side of the chain until the lower tripping-pin, *t'*, strikes the shaft *h*, or some other unyielding piece, to throw the dog *s'* out of engagement with the stop *r*, and permit the moving chain to shift the switch-wheel to position shown in Fig. 5, for engagement with the upward-moving links, when the stop *r* of the said switch-wheel will engage again with the dog *s*, and fix the said wheel from turning until released by the trip pin *t*, as before.

I prefer to so arrange the heads *F* and their switch-jacks *H* with their respective endless chains that each head may make its up and down movements out of time with the others, though they may be arranged to make the said movements alternately or together, as elected, to suit the requirements of the condition of the cotton-plants and other circumstances connected with them.

When the switch-wheel is in position shown in Fig. 6, the head *F* will be carried downward by the chain *l*, and will thrust the several gathering-fingers or extractors downward past the cotton-bulbs until their points reach the ground, when the switch-jack will be operated so as to reverse the switch-wheel and cause the chain to raise the head *F*, and with it the said extractors, and cause the elastic teeth on the outer surface to engage with the cotton and pull it up and from the plant, and carry it upward into the chambers *B B'*, the portions of cotton adhering to the upper portion of the extractors being carried upward into the upper portion of the said chambers, and that on the lower portion of said extractors into the lower portion of the same chambers, so that all the

cotton stripped from the plant will be deposited in said chambers. When the head is made to again descend, the carders  $a$   $a^1$   $a^2$  will engage with the cotton already deposited, while the extractors will run downward, freed from the cotton they previously deposited, and engage with the cotton on the plants to strip the same and carry their load upward to make a second deposit, when the head  $F$ , preceding the extractors, will carry the cotton previously carried into the chambers and retained by the carders  $a$   $a^1$   $a^2$  upward and cast it out of said chambers into the receiving-chambers  $L$  above. A third rise of the head will deposit the cotton picked by the second rise of the same head into the said chamber also, and so the operations will be repeated successively as long as the machine is kept in motion. After a time the receiving-chamber will become so filled that at each subsequent deposit from chambers  $B$   $B'$  the cotton in the receiving-chamber will be forced out rearward, as the elevated front and lateral sides, 1, 2, and 3, of the said chamber will operate to force the escape of the cotton from said chamber at the open rear into the receptacle prepared to receive it. If elected, a small platform may be secured to the rear side of the machine for the support of a bag or basket, and a boy may be employed to stamp the cotton therein with his feet, while he, with his hands, may draw the cotton from the chamber  $L$  into said receptacle.

When it is desired to convey the machine from place to place, and hold the extractors and their heads from moving their full distance, the attendant will place a bar in the chain-chamber at a short distance below the upper shaft,  $j$ , so that the lower trip-pins,  $t'$ , will strike the same when the switch-jacks are carried down a short distance. For this purpose I provide a bar, and sockets in the front side of the body of the machine for holding said bar while the machine is being conveyed from place to place.

It is evident that this machine may be so enlarged as to take several rows, if desired, and that the height of its chambers and length

of extractors may be increased or lessened, according to the nature of the plants the machine may be constructed to operate upon.

It is also evident that two sets of chains operating with two sets of jack-switches at the ends of the heads  $F$ , instead of at the middle point of their length, may be employed without departing from the spirit of my invention.

It is also evident that one jack-switch may be made to carry and operate several heads and but one chain, where it is desired that the several heads shall have a simultaneous upward and downward movement.

It is also evident that cog or chain gear may be employed to give motion to the several shafts, instead of pulleys and bands or cords.

I am aware that the picking-fingers or extractors  $G$  have been used before, and are old and well-known devices for stripping cotton from the plants. I therefore do not claim them as my invention.

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

1. The combination, with the picking-fingers  $G$ , attached to head  $F$  and working through chambers  $B$   $B'$ , provided with carders  $a$   $a^1$   $a^2$ , with their points reaching down to near the ground when fully lowered, and their points up at the lower end of said chambers when said fingers are fully raised, of the endless chains  $l$   $l'$  and switch-jacks  $H$ , substantially as set forth.

2. The combination, with the revolving endless chain  $l$  and movable head  $F$ , of the switch-jack  $H$ , substantially as and for the purpose set forth.

3. The switch-jack  $H$ , composed of plate  $p$ , loose switch-wheel  $q$ , carrying stop  $v$ , dogs  $s$   $s'$ , and trip-pins  $t$   $t'$ , in combination with the endless chain and stationary or unyielding pieces  $j$   $h$ , substantially as and for the purpose set forth.

THOS. C. CRAVEN.

Witnesses:

ALEX. SELKIRK,  
ROBT. B. FINCH.