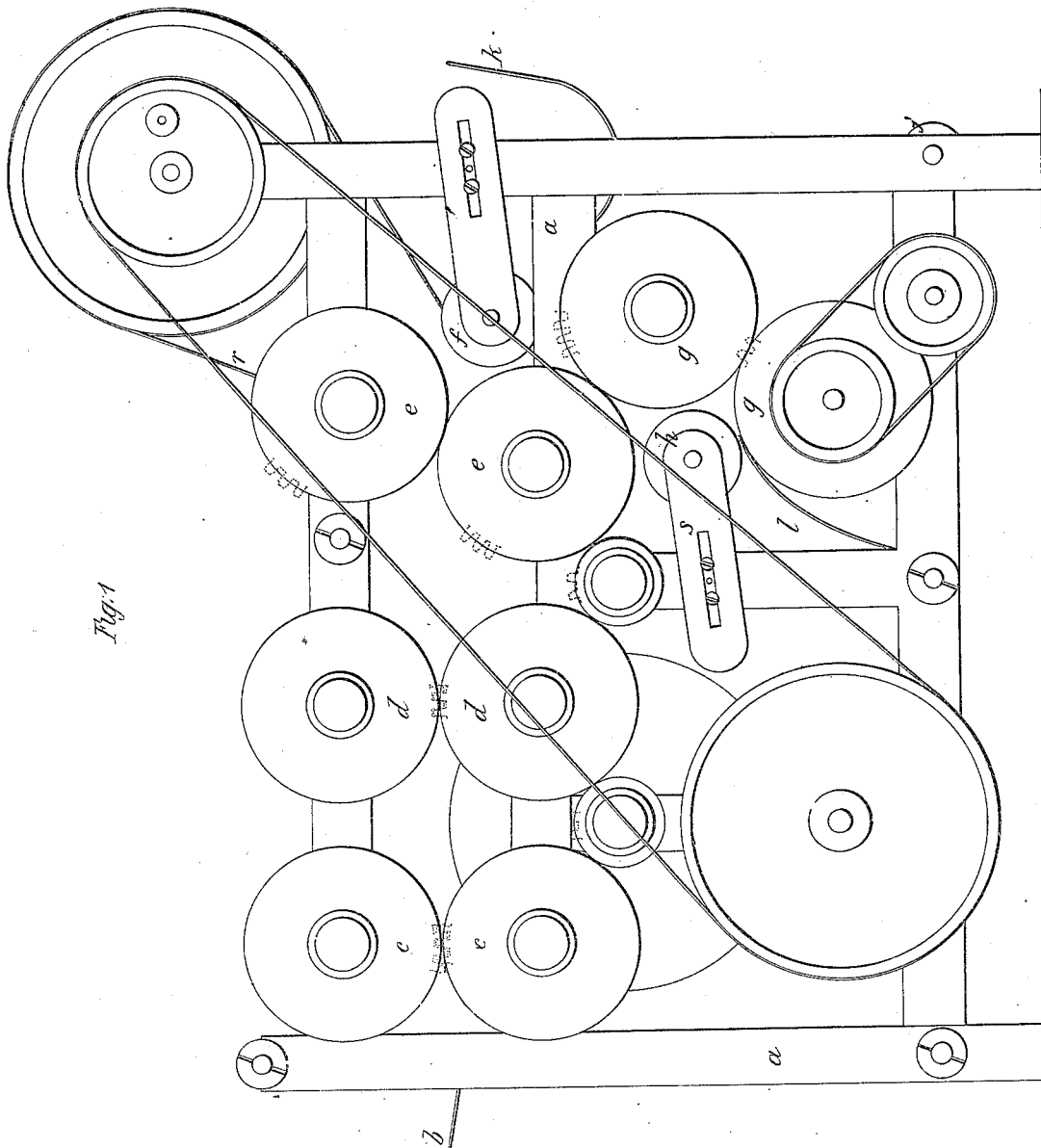


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No. 6,371

Patented Apr. 24, 1849.

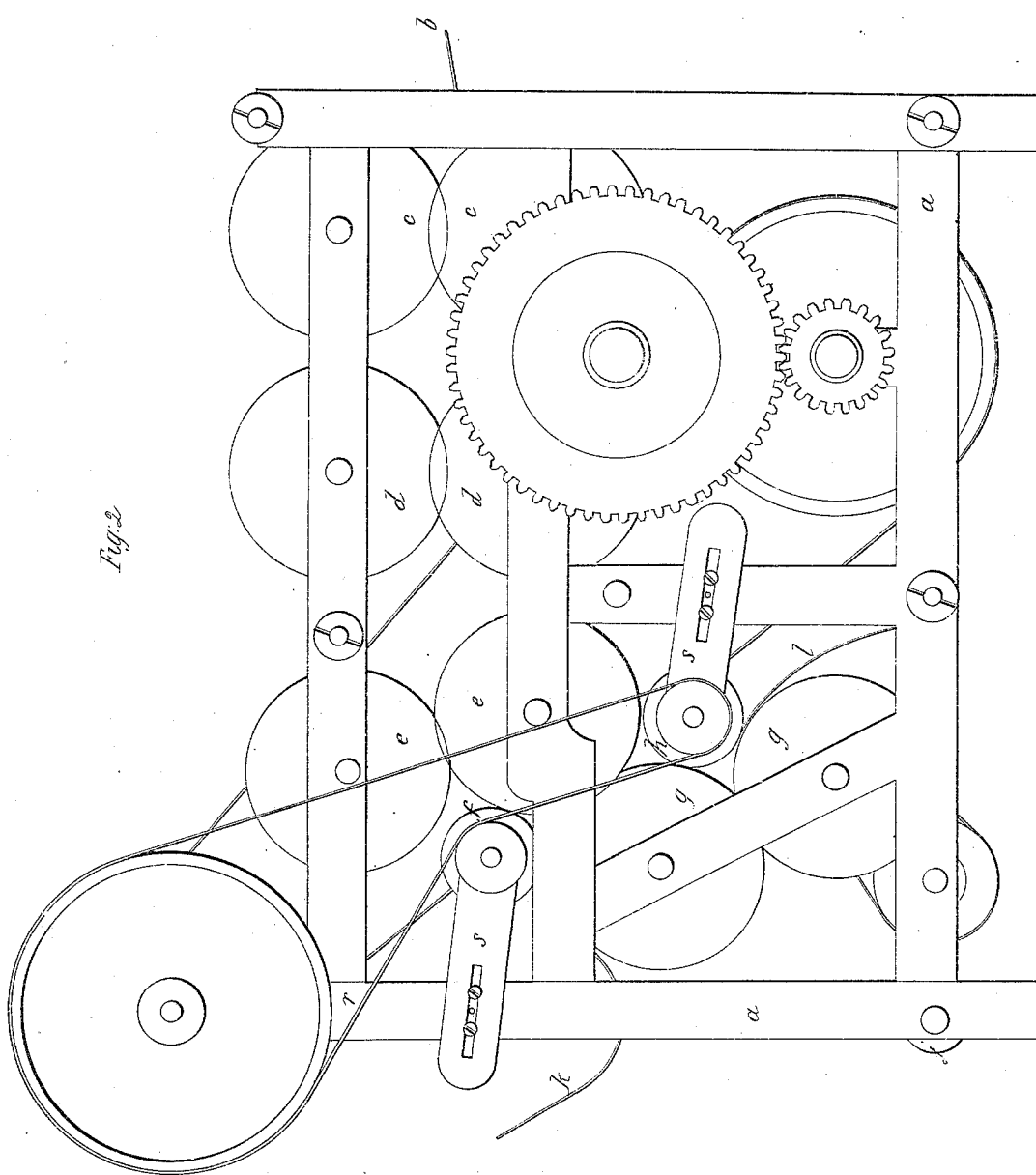


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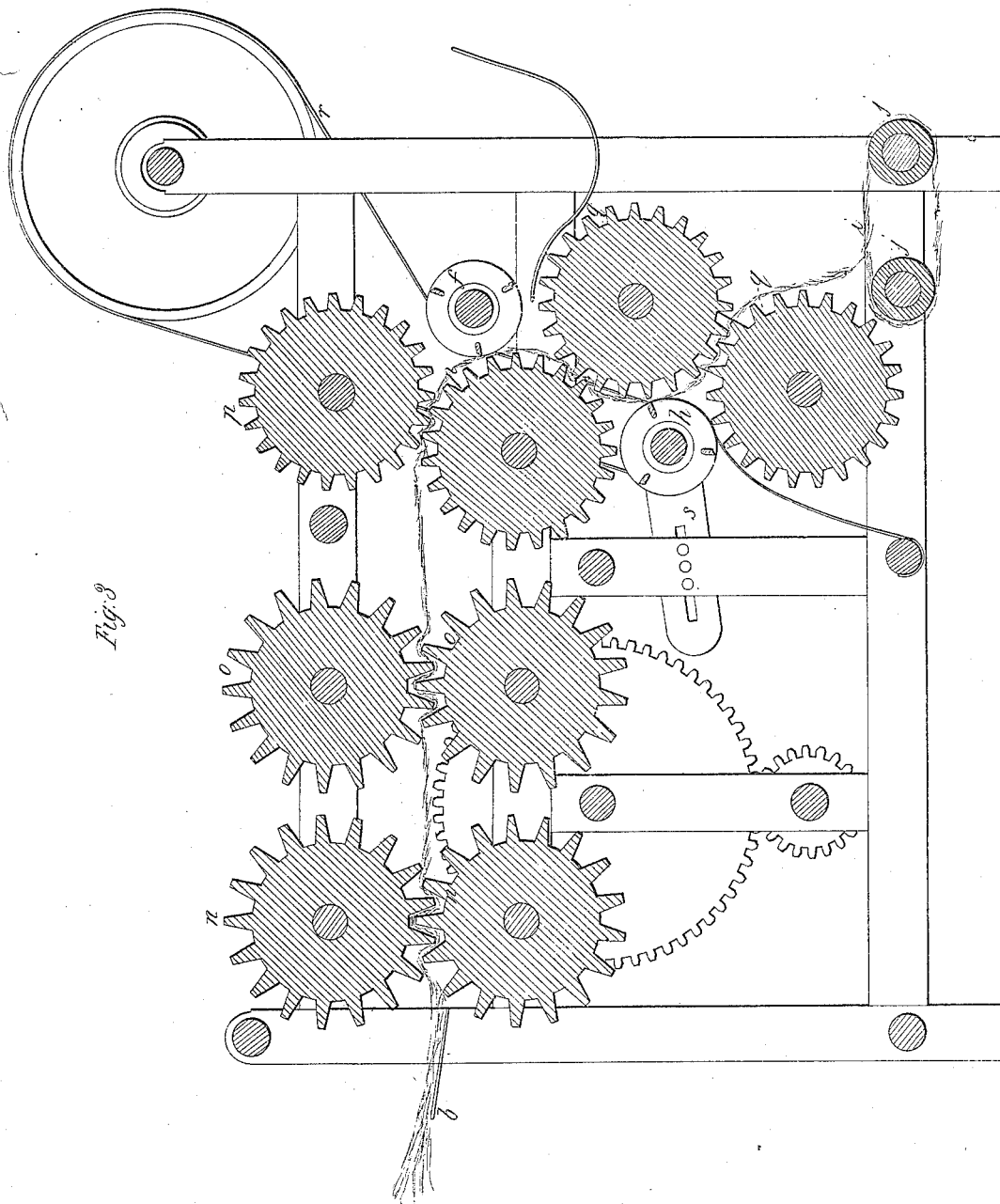


Fig. 3

UNITED STATES PATENT OFFICE.

ALLEN ELDRED, OF OPPENHEIM, NEW YORK.

HEMP-MACHINE.

Specification forming part of Letters Patent No. 6,371, dated April 24, 1849.

To all whom it may concern.

Be it known that I, ALLEN ELDRED, of Oppenheim, in the county of Fulton and State of New York, have invented a new and useful Improvement in Machines for Breaking and Cleaning Hemp and Flax; and I do hereby declare that the following is a full, clear, and exact description of the principle or character which distinguishes it from all other things before known, and of the manner of making, constructing, and using the same, reference being had to the accompanying drawings, making part of this specification, in which—

Figure 1 is an elevation of the right-hand side of the machine; Fig. 2, a like elevation of the left-hand side, and Fig. 3 a longitudinal vertical section.

The same letters indicate like parts in all the figures.

The hemp or flax is broken in my improved machine by passing between a series of geared and interlocking fluted rollers, the first and second sets having large flutes and the third and fourth sets smaller ones, that the woody part broken by the first and second sets may be rebroken by the remaining sets. The first, second, and third sets are arranged in the same plane, or nearly so, that the hemp may pass through between them either in a horizontal or inclined plane, and the fourth or last is placed below the plane of the first, second, and third, that the flutes of the upper roller of this last set may also mesh into the flutes of the lower roller of the third set, and thus cause the broken hemp to pass in a curve over the tips of the flutes or cogs of the lower roller of the third set, that it may be acted upon by rotating beaters or blades to beat or knock out the broken wood on the upper surface, and then pass between the lower roller of the third set and the upper one of the last set, and lie on the tips of the flutes or cogs of the upper roller of the last set in passing down to and between the last set, and then be acted upon by another set of rotating beaters or blades to beat or knock out the broken wood from the opposite side.

The nature of my invention consists in the employment of the two sets of revolving beaters, which act on the opposite sides of the hemp or flax to beat out the broken wood when com-

bined with the fluted breaking-rollers, arranged so that the hemp or flax lies on the periphery or peripheries of one or more of the said rollers, which thus answer the double purpose of breakers and moving rests for the hemp while being beaten.

In the accompanying drawings, *a* represents a frame properly adapted to the purpose, and *b* a feed-board, on which the attendant spreads out and lays the hemp or flax to be broken, and from this it passes between a pair of fluted rollers, *c c*, placed one above the other at such distance apart as to have the flutes mesh into one another, and to allow the hemp or flax to pass through as the woody part is broken into lengths corresponding with the width of the flutes. From this set of rollers the hemp or flax partly broken passes to a second set of rollers, *d d*, made and arranged in manner similar to the first, on the same level, and at such distance from the first set as to turn clear of them. From the second set the hemp or flax passes to a third set, *e e*, made and arranged in manner similar to the first and second sets, except that the flutes are about one-third narrower, that the woody part broken by the first and second sets shall be rebroken or reduced into shorter pieces. As the hemp or flax passes from the bite of this third set of rollers its weight causes it to pull or hang over the cogs or flutes of the lower one of the third set of rollers, and as it passes down the broken wood is beaten or knocked out of the fibers by the edges of a rotating beater, *f*, consisting of four blades attached to heads on a shaft; and the beating-edges of these beaters are placed so far from the periphery of the breaking-roller as to act on the fibers to knock or beat out the broken pieces of wood, and at the same time the action of the beaters throws the fibers toward the bite of the lower one of the third set of rollers and the upper roller of a fourth set, *g g*, placed below the line of the other sets. After passing between the upper roller, *g*, and the lower one of the set *e*, that side of the hemp or flax which has previously been beaten lies on the periphery of the upper roller, *g*, and then its other surface is acted upon by another set of rotating beaters, *h*, that knock out the remaining pieces of broken wood, and from thence the hemp, &c., passes between the two rollers *g g* and is de-

delivered onto an apron, *i*, that passes around two rollers, *j j*, and is by the motion of this apron delivered in a cleansed state. Two curved guard-plates, *k* and *l*, are used to catch the pieces of broken wood and other impurities as they are beaten out by the rotating beaters, and to prevent them from falling into the flutes of the breaking-rollers and clogging them. The distance between the first, second, and third sets of breakers should be just sufficient to permit the loose pieces of broken wood to fall out, and the bite of these three sets should be as nearly in a line as convenient; but the fourth or last set is placed so near the third or preceding one, and so much below, as to have the lower one of the third set mesh into the upper one of the fourth set, as fully represented in the drawings. By this arrangement the lower roller of the third set and the upper one of the fourth set become the curved and movable rests for the hemp or flax while acted upon by the two sets of beaters, while at the same time they have the effect to reverse the hemp or flax, that it may be cleaned on both sides. The sets of rollers are carried or turned in the direction indicated by the arrows by trains of cog-wheels *u*, &c., and the beaters that move with great velocity are carried by belts *v*, so that by shifting the pulleys on the arbors of the beaters and substituting others of different diameters their relative velocities can be regulated at pleasure. For the purpose of adjusting the edges of the beaters relatively to the periphery of the two rollers against which they beat or clean the hemp or flax, their journals are hung in plates *s*, that are secured to the frame by bolts that either pass through elongated holes, or the plates are provided with a series of holes.

I have described the beaters as consisting

each of four blades attached to heads on a shaft so arranged that the edges of these blades may act on the hemp, &c.; but I do not wish to confine myself to this mode of construction, as any known mode of constructing the beaters will to a certain extent answer the purpose; but I have described the kind of beaters which in practice I have found to answer the best purpose.

Teeth, if desired, may be substituted for the bars, or they may consist of alternate rows of teeth and blades or beaters; in short, this part of the machine may be constructed in any desired manner, so long as it effects the purpose designed substantially in the manner pointed out.

The flutes of the breaking-cylinders should be made of the size usually adopted in hemp-breaking machines, and on the two last sets they should be from one-third to one-half of the size adopted in the first and second; but it should be remembered that I do not wish to limit myself to the number of sets described, as this may be varied. It will, however, be found that four sets answer a good, if not the best, purpose.

What I claim as my invention, and desire to secure by Letters Patent, is—

The arrangement of the rotating beaters, in combination with the arrangement of the two breaking-rollers, which reverse the hemp or flax, that both sides may be acted on in succession, and which constitute moving rests to sustain and move the hemp or flax while acted upon by the rotating beaters, substantially as described.

ALLEN ELDRED.

Witnesses:

ALEXR. PORTER BROWN,
JOHN CLIFTON