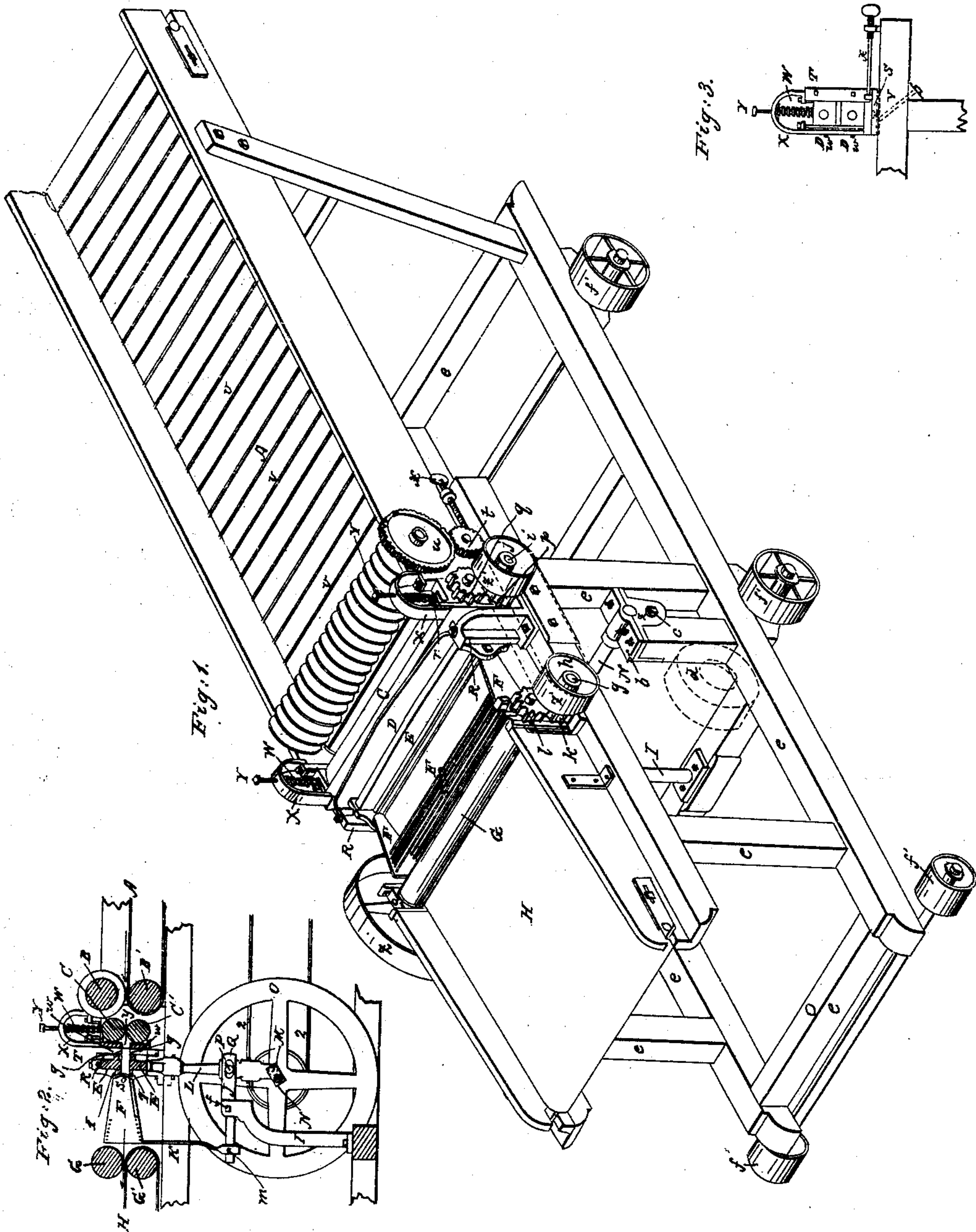


S. H. LITTLE.

Hemp Brake.

No. 16,365.

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Inventor:
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UNITED STATES PATENT OFFICE.

SAMUEL H. LITTLE, OF ST. LOUIS, MISSOURI.

IMPROVEMENT IN HEMP-BRAKES.

Specification forming part of Letters Patent No. 16,365, dated January 6, 1857.

To all whom it may concern:

Be it known that I, SAMUEL H. LITTLE, of St. Louis, in the county of St. Louis and State of Missouri, have invented certain new and useful Improvements in Machines for Breaking and Dressing Hemp; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings, making a part thereof, in which—

Figure 1 represents a perspective view of the entire machine, and Figs. 2 and 3 detached portions thereof which are not clearly shown in the perspective.

Similar letters, where they occur in the several figures, denote like parts in all.

To enable those skilled in the art to make and use my invention, I will proceed to describe the same with reference to the drawings.

A substantial frame, *e e*, &c., which may be mounted on truck-wheels *f' f'*, for facilitating its movement in the field or elsewhere, supports the entire apparatus. Motion is communicated to the various parts of the machine from the band-wheel *Z*, which may receive its motion from any first mover in any of the well-known mechanical ways. The pulley *Z* is arranged on one end of a shaft, *g'*, the other end of said shaft carrying a smaller pulley, *h*, around which and around a similar pulley, *j*, on a shaft or journal, *i*, passes an endless belt, *Z'*. The shaft *g* also carries, just inside of the pulley *h*, a cog-gear, *k*, which takes into a similar cog-gear, *l*, on the journal of the top roll *G*, and gives motion to said top roll. On the central portion of the shaft *g'* is formed a roll, *G'*, Fig. 2, which lies immediately under the one, *G*, and around said lower roll, *G'*, and an adjustable roll at the extreme left-hand end of the machine, passes an endless apron, *H*, for carrying the dressed material from the machine. The top roll, *G*, has its journals in boxes *o o*, which may play up and down in their guides, so as to admit of a yielding of said roll, and the weight of the roll itself may be sufficient to hold it down to the one, *G'*, below it, or springs may be applied for that purpose if found essential. The journal *i* is upon the end of the lower roll, *C'*, Fig. 2, and said roll receives its motion through the belt *Z'*, before described, and by means of its gear-wheel *p*, which takes into a similar gear-wheel, *q*, on the journal of the roll *C*, gives motion

to said roll *C*. The boxes *r r* of the upper roll, *C*, play in guides, but are restrained from rising too freely by means of coiled springs *W W*, pressing against said boxes and against the tops of the yokes *X*, the force or power of said springs being regulated by the set-screws *Y Y*. The rolls *C C'* are the feed-rolls, and in order to regulate the feed properly they should be susceptible of the nicest adjustment. The opposite journal from *i* on the roll *C'* carries a small pulley, around which and around a similar pulley on the corresponding end of the journal of the roller *B'* passes an endless belt to give motion to said roller *B'*, and motion is given to the straightening-roller *B* through the cogged gearing *t u*. (Seen in Fig. 1.) The grooves in the roller *B* are for straightening the hemp, so that it shall pass properly under or between the feed-rollers *C C'* and allow the fiber to be kept straight and unentangled.

The feed-apron *A* is an endless one, and is provided with lags *v*, upon which the hemp-stalks are placed to be carried into and through the machine, said apron passing around the lower one of the rollers *B'* and an adjustable roller at the extreme right-hand end of the machine, so that the apron may be strained up to the proper degree of tension to perform its duty effectually. Close behind the feed-rollers *C C'* (assuming as the front of the machine that in which the material is fed into it) is a wall or partition, *D*, which has an opening, *y*, through it on a line with the point of contact of the rolls *C C'*. Through this opening *y* the material passes after it has been crushed and the woody or pithy portion of it properly broken, said opening being clearly seen in Fig. 2. All that part of the machine in front of and including the wall or partition is so separated from the after part of the machinery as that by means of the set-screws *x* (one only being seen, but both alike) the front portion may be drawn from or advanced toward the rear portion of the machine to regulate the length of stalk that shall be operated upon by the breakers, as will be explained hereinafter.

In rear of the wall or partition *D* are arranged the gate-posts *R R* in a vertical position, said posts being furnished with V-shaped tongues, which fit into similarly shaped grooves in the gate *E*, for guiding said gate in its move-

ments. Upon the front side of the gate E (see Fig. 2) are arranged the two breakers *g g*, so as to leave an opening or space, *z*, between them, corresponding to that, *y*, in the partition D, to allow the material to pass through while it continues to be acted upon by the breakers. The distance between the partition D and the breakers *g* may be regulated, as before stated, by the set-screws *x*, and the opening *z* may also be made adjustable to adapt the machine to the variable character of the work to be done and the condition of the material to be acted upon. The rear of the gate E may also be provided with breakers *l l*, which act in concert with the oscillating shoe F, and tends to perfect the breaking and dressing operation. The shoe F is placed immediately behind the gate E, and has a compound motion, which it receives partially from the gate itself, it being pivoted to the gate at *s s*. The peculiar motion of this shoe F, which will be described, shakes the wood or pith from the broken and crushed hemp and allows it to drop out through its slatted top and bottom, while it also conveys the end of the cleaned hemp to the rolls *G G'*, by which it is drawn through and deposited on the apron H. It will be seen that the hemp is first straightened up by the roll B, that it is then caught in its so straightened position and carried through the machine, and all the time operated upon, but never released, so as to allow the fibers to become entangled, and the dressed hemp comes from the machine as straight as the stalks are fed into it, they never being for a moment released, so that they could change from the direct line in which they pass through. In addition to the motion which the shoe F receives from being pivoted at its front end to the sliding gate E, it has another motion at its rear, effected substantially as follows: A crank-shaft, N, is arranged in suitable bearings or boxes, *a*, underneath the machine, and this shaft receives its motion from a belt, 2, passing around a pulley, Z', Fig. 2, thereon. To the crank M on this shaft N is connected one end of the pitman L, the other end being connected to the gate E, so as to drive said gate and the breakers upon it.

I is an upright, in which is hung by the pin *f* a lever, J, one end of said lever having formed on it a curved or cam slot, Q, through which projects a pin or stud, P, which is set in the pitman L, so that the motion of the pitman is communicated through the slot Q to said lever L. On the other end of said lever, by the pivot *m*, is attached a connecting-rod, K, the upper end of said rod being attached at *n* to the shoe F, so that while the front of the shoe keeps pace with the vibrations of the gate, rising and falling with it, the rear portion of the gate has an exactly reversed motion—viz., going up when the gate goes down, and vice versa—so that the shoe not only shakes out the woody matter from

the fiber, but actually aids at its front end in breaking it also.

To keep the journals of the shaft N properly oiled, I make a reservoir of oil in the bottom of the box and hang a wheel, *d*, (shown separately in red lines, Fig. 1,) within it on a pin or shaft, *c*, and upon this wheel the shaft may rest or touch, so that the wheel *d* may be turned around to carry up oil to the journals. *b* is a cap over the box, in which an opening, fitted with a screw, 3, may be arranged for supplying the reservoir with oil.

O is a fly or balance wheel upon the shaft N.

Having thus fully described the nature of my invention, I would observe that I am aware that the throat through which the hemp passes to be acted upon by the beaters has been so arranged that it could be placed at different distances from a throat formed of beating-bars secured in an oscillating frame, and therefore I do not wish to be understood as claiming said arrangement; but

What I do claim, and desire to secure by Letters Patent, is—

1. Placing the feeding-rollers C C' and the throat-bars D D in one and the same movable frame for the purpose of enabling said frame to be so adjusted as to give any desired space between said throat-bars and the beating-bars of the reciprocating gate without varying the distance between said feeding-rollers and the throat-bars, substantially as herein set forth.

2. The securing of the throat-bars D D within their supporting-frame in such a manner that they can be so adjusted as to form a wider or a narrower opening between them for the purpose of adapting the said throat-opening to the reception of hemp-stalks of different sizes; but this I only claim when the said throat-bar-supporting frame is so arranged in relation to the supporting-frame of the reciprocating gate that their distance from each other can be so adjusted that the action of the beaters will be exactly adapted to the size, quantity, and condition of the hemp-stalks fed through said throat, substantially as herein set forth.

3. I do not claim as my invention an oscillating grating used a whipper in machines for breaking hemp, for such I learn is involved in an interference now pending between the applications of S. A. Clemens and C. Simon before the Patent Office; and I am also aware that it has been proposed to rigidly combine a shaking shoe with an oscillating throat-bar frame, and therefore I do not claim said combination as my invention; but I do claim the combination of the shaking shoe F with the reciprocating gate E, when they are arranged substantially as herein set forth.

SAML. H. LITTLE.

Witnesses:

A. B. STOUGHTON,
THOS. H. UPPERMAN.