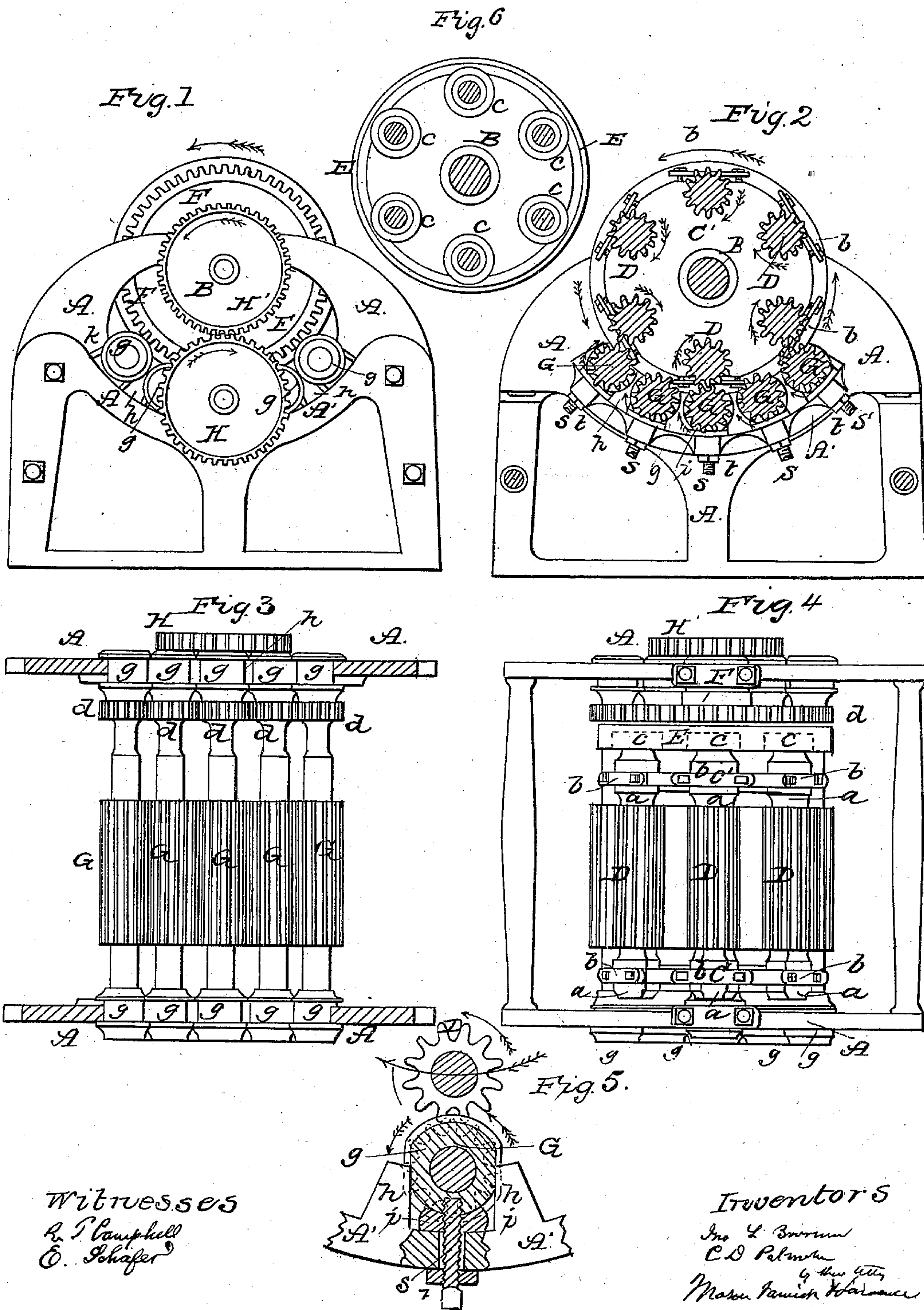


BOORUM & PALMITER.

Hemp and Flax Brake.

No. 43,452.

Patented July 5, 1864.



UNITED STATES PATENT OFFICE.

JOHN L. BOORUM AND CLEBRON D. PALMITER, OF HOMER, NEW YORK.

IMPROVEMENT IN FLAX AND HEMP BRAKES.

Specification forming part of Letters Patent No. 43,452, dated July 5, 1864.

To all whom it may concern:

Be it known that we, JOHN L. BOORUM and CLEBRON D. PALMITER, of Homer, Cortland county, State of New York, have invented a new and Improved Machine for Treating Flax and Hemp; and we do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, making a part of this specification, in which—

Figure 1 is a vertical elevation of one end of our improved machine. Fig. 2 is a vertical section taken through the machine. Fig. 3 is a top view of concave-rollers. Fig. 4 is a top view of the machine complete. Fig. 5 is a sectional view in detail, showing the mode of supporting the rollers of the concave and attaching them to the frame of the machine. Fig. 6 is a diagram representing the large inside gear-wheel and the arrangement of the roller-pinions in the same.

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

This invention relates to improvements in machinery for breaking and scutching flax and hemp. The great object of our invention is to cause a series of rollers to operate both as breakers and scutching-rollers, and thus at one and the same operation to bruise the boon or woody matter and free it from the fibers of flax without cutting or injuring the same, as will be hereinafter described; and another object of our invention is to combine with a concave bed of fluted rollers a series of rotating fluted beaters arranged around a central rotating axis in such manner that while all of these beaters revolve in the same orbit each one will have an independent revolution about its own axis, all of the rollers and beaters being driven from a single shaft, as will be hereinafter described; and, in conjunction with the above arrangement, our object is to provide for an elastic yielding motion of each one of the rollers constituting the concave during the passage through the machine of the material to be dressed, as will be hereinafter described.

To enable others skilled in the art to make and use our invention, we will describe its construction and operation.

In the accompanying drawings, A represents the frame of the machine, and B a horizontal

shaft which has its bearings in said frame. Near the ends of shaft B, and within the frame A, heads C C' are rigidly secured, so as to turn with this shaft; and in these heads are arranged at regular intervals apart the journal-boxes *a a* of the shafts of fluted rollers D D, as shown in Fig. 4. The axes of the fluted breakers D are concentric with the axis B, about which they all revolve; and the journal-boxes of these breakers are held in place around the heads C C' by means of straps *b b*, which will admit of said breakers being removed and replaced at pleasure. The shafts of the breaking-rollers D D extend out from one of the heads C', and have keyed to them pinion spur-wheels *c c*, the teeth of which engage with the teeth of wheel E, as shown in Fig. 6. This wheel E, together with the large spur-wheel F, are keyed to a collar which turns loosely on the main shaft B, and the latter wheel F engages with the pinion-wheels *d d*, which are keyed to the shafts of the rollers G of the concave. The shaft of the central roller, G, carries on its end, outside of frame A, a spur-wheel, H, which engages with the teeth of a spur-wheel, H', that is keyed to and turns with the main shaft B.

It will be seen that when the main shaft B is turned it will carry with it the series of breaking-rollers D D, and that these rollers will receive a rotary motion, independently of the motion of the shaft B, through the medium of the spur-wheels *c c*, inside gearing-wheel, E, spur-wheels H H', pinion-wheels *d d*, and the large spur-wheel F; and as the spur-wheel F receives its motion from a pinion-wheel, *d*, driven by the two wheels H H', the breaking-rollers will be driven at a much greater speed than the rollers of the concave; hence these breaking-rollers will not only break up the woody matter of the flax, but they will at the same time operate as scrapers and softeners, and thus free the shive or woody matter almost entirely from the fiber.

The arrangement of gearing for communicating motion to the two sets of fluted rollers is such, and this gearing is so timed, that the elevations or ribs of one roller will pass between the corresponding ribs of the other roller without these rollers touching each other. This allows of a free space between the ribs and channels of the "concave" and "cylinder"

rollers for the receptions of the stalks of flax after they are broken or crimped, and during this crimping operation the rollers D will clean off the bits of broken wood, in consequence of their increased rate of speed over the rollers G, which make up the concave. To further facilitate the separation of the boon from the fibers, the journal-boxes *g g* of the rollers G are adjusted between fixed guides *h h*, (shown in Figs. 1, 2, 3, and 5,) and supported upon elastic blocks *i i*. The screws *s s* pass loosely through the curved supporting-bar A' of frame A, and are tapped into the boxes *g g*, so that by the application of a jam-nut, *t*, to each one of said screws the distance between the surfaces of the two sets of rollers can be adjusted and confined at any desired point, according to the condition of the material subjected to the machine. Each end of all the rollers that form the concave being supported upon an elastic bearing, it will be seen that during the operation of passing the stock through the machine a rapid vibration will be imparted to it, which will materially assist in shaking and depriving the fiber of its woody matter, which will freely escape between the rollers G.

By varying the size of the gearing H H' we can feed faster or slower, as the condition of the stock requires, and this we can do without increasing or diminishing the speed of the main driving-shaft.

If desirable, the rollers which constitute the concave can be arranged on top of the revolving and rotating breakers without in any manner changing the principle of our invention.

Having thus described our invention, what we claim as new, and desire to secure by Letters Patent, is—

1. A hemp or flax treating machine in which the stock is subjected at one and the same time to the breaking and scraping action of a series of rollers which revolve about a common axis in one direction and rotate in an opposite direction about their own axes, when said rollers thus operate in conjunction with a bed of rollers or a rolling bed, substantially as described.

2. Adapting a series of fluted rollers, D, to break and clean flax and hemp, and also to operate in conjunction with a concave bed of fluted rollers, G, without touching the latter, substantially as described.

3. Giving the several motions to the heads C C, rollers D D, and concave bed of rollers G, through a single shaft, B, substantially as described.

4. Providing for an elastic or shaking motion of the rollers of the concave, in combination with a series of rollers which revolve about a common axis, substantially as described.

5. Giving a reverse rotary motion to the concave bed of rollers G to that given to the rollers D about their common axis B, substantially as described.

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Witnesses:

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JNO. PATTEN.