N. H. BORGFELDT.

Tobacco-Stem Crusher.

No. 202,696. Patented April 23, 1878.

Fig: 1

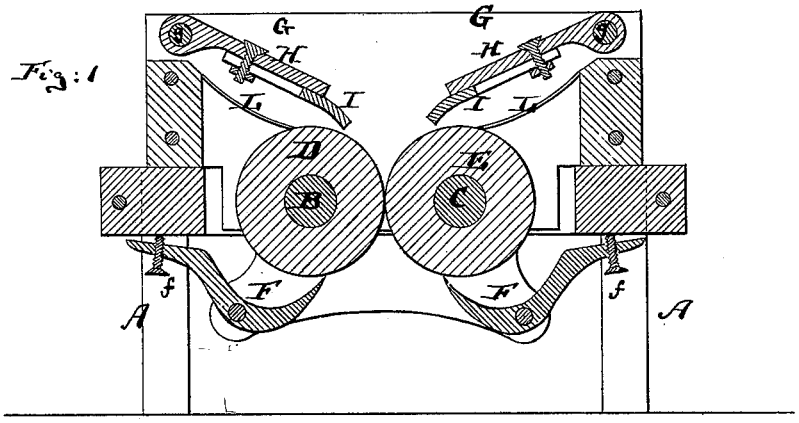


Fig: 2

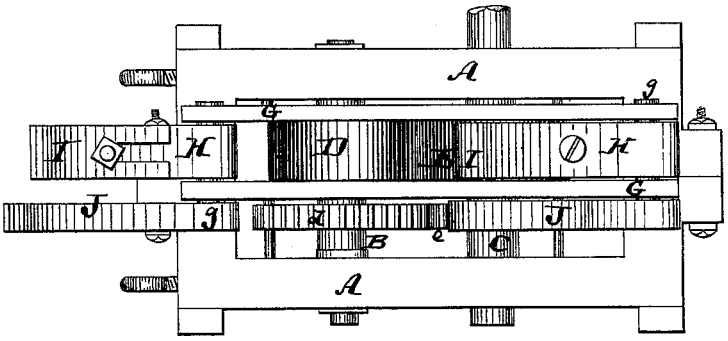
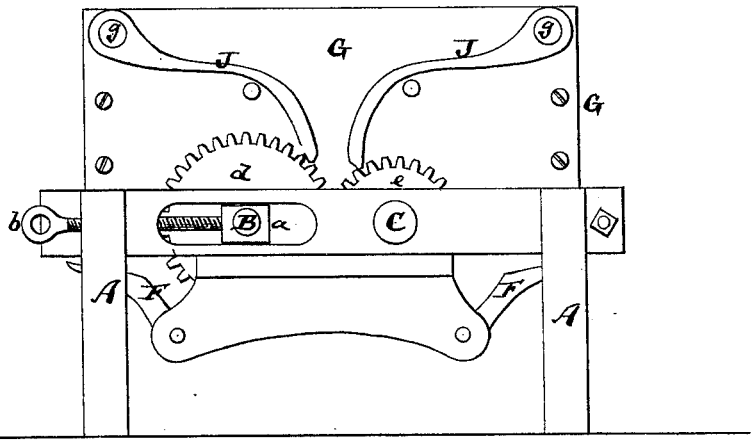


Fig: 3



Witnesses:

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UNITED STATES PATENT OFFICE.

NICHOLAS H. BORGFELDT, OF NEW YORK, N. Y.

IMPROVEMENT IN TOBACCO-STEM CRUSHERS.

Specification forming part of Letters Patent No. **202,696**, dated April 23, 1878; application filed February 27, 1878.

To all whom it may concern:

Be it known that I, NICHOLAS H. BORGFELDT, of the city, county, and State of New York, have invented a new and Improved Tobacco-Stem Crusher, of which the following is a specification:

Figure 1 is a vertical longitudinal section of my improved tobacco-stem crusher. Fig. 2 is a plan or top view of the same; and Fig. 3 is a side elevation of the same.

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

This invention relates to a new mechanism for feeding tobacco-stems to the crushing-rollers, and also to a new mechanism for crushing the stems, and for keeping the rollers in proper condition for continuous operation.

The invention consists in a new construction of guides, which constitute a hopper for feeding the tobacco-stems to the rollers, said guides or plates being hung in a removable funnel or box, and so combined with agitating mechanism that they will be vibrated during the operation of the machine, so that the stems will not be permitted to clog before reaching the rollers.

The invention also consists in new combinations of parts of the mechanism, as hereinafter more fully described.

The letter A in the drawing represents the supporting-frame of my improved stem-crushing machine. In the same are hung two shafts, B and C, which carry the smooth crushing-rollers D and E. Said crushing-rollers are preferably of equal diameters, and are placed close together with their smooth edges, so that the tobacco-stems fed between them will be properly reduced by pressure. For the purpose of always keeping these rollers properly together, the shaft B is made adjustable, being hung in bearings *a*, that are fitted into longitudinal slots of the frame A, and connected with screws *b*, so that they may be properly moved by turning the screws. The two shafts B and C are geared together by toothed wheels *d e*, which are of unequal diameters, as clearly shown in Fig. 3, so that the drum or roller D will revolve slower than the drum or roller E. As already stated, the effect of this unequal motion is to spread the fibers of the tobacco-stems while the stems are being pressed.

The lower parts of the rollers D E are in contact with scrapers F F, which are clearly shown in Fig. 1, and which are pivoted in the frame A, and rendered adjustable by screws *f*, so that they can be set or held in contact with the rollers, even should said rollers wear smaller.

Upon the top of the frame A is placed a removable funnel or open box, G, in which are pivoted two guide-plates, H H, clearly shown in Fig. 1. These guide-plates are provided with extension-slides I I, so that their length may be varied at pleasure, and they are hinged in the box G at their upper outer ends, and inclined toward the rollers D and E, as shown. Saidguide-plates constitute, therefore, a sort of hopper for feeding the tobacco-stems that are thrown upon them to and between the rollers D E. The amount of feed or proportion can be varied by regulating the lengths of said guide-plates, because the closer they are brought together the less rapidly will they allow the tobacco-stems to be fed to the rollers. The pins *g*, on which the guide-plates H H are hung, are connected also on the outer side of the box G with projecting cranks or levers J J, whose ends bear upon the toothed edges of the wheels *d e*, as shown in Fig. 3, so that by revolving the wheels the cranks J J will be vibrated as they come in contact alternately with the teeth and recesses in the edges of said wheels, and the guide-plates H H will likewise be vibrated, to insure the proper agitation of the tobacco-stems and prevent them from clogging in the hopper.

Instead of the cranks J J bearing on the toothed wheels *d e*, which is the arrangement I prefer for shaking the guide-plates, other means may be devised, such as the use of an oval roller, hung in the lower part of each guide-plate and bearing on the pressing-roller beneath, or other suitable devices.

The machine is to be operated by hand-power; but it may be worked also, if desired, by steam or other power. In case it should at any time become clogged or inoperative by some of the tobacco-stems bridging over the space between

the two pressure-rollers, it is only necessary to turn the operating-crank slightly backward, thus allowing the rollers to carry the stems upward in the opposite direction to that in which they are usually moved.

In order to prevent the stems being thrust back over the outer sides of the rollers when the latter are thus turned backward, I attach to the ends of the hopper or box G sheet-metal or other plates L L, which reach close to the peripheries of the rollers, as indicated in Fig. 1, and upon which the backwardly-turned stems are deposited, but from which they will readily drop down again as soon as the rollers are turned in the proper direction.

I claim—

1. The combination of the pressure-rollers D E with the pivoted guide-plates H H in the open feed-box G, substantially as herein shown and described.

2. The pivoted guide-plate H, provided with the extension-slide I, for combined use with pressure-rollers D E, substantially as herein shown and described.

3. The combination of the plates L L with the pivoted guide-plates H and pressure-rollers D E, substantially as and for the purpose specified.

4. The removable box G, combined with the pressure-rollers D E and guide-plates H, substantially as and for the purpose shown and described.

5. The combination of the toothed wheels *d e* and pressure-rollers D E with the agitating-cranks J J and vibrating guide-plates H, substantially as and for the purpose specified.

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Witnesses:

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