(No Model.) 2 Sheets—Sheet 1.

J. W. FRIES.

MACHINE FOR TREATING TOBACCO LEAVES.

No. 534,148. Patented Feb. 12, 1895.

Fig. 1.

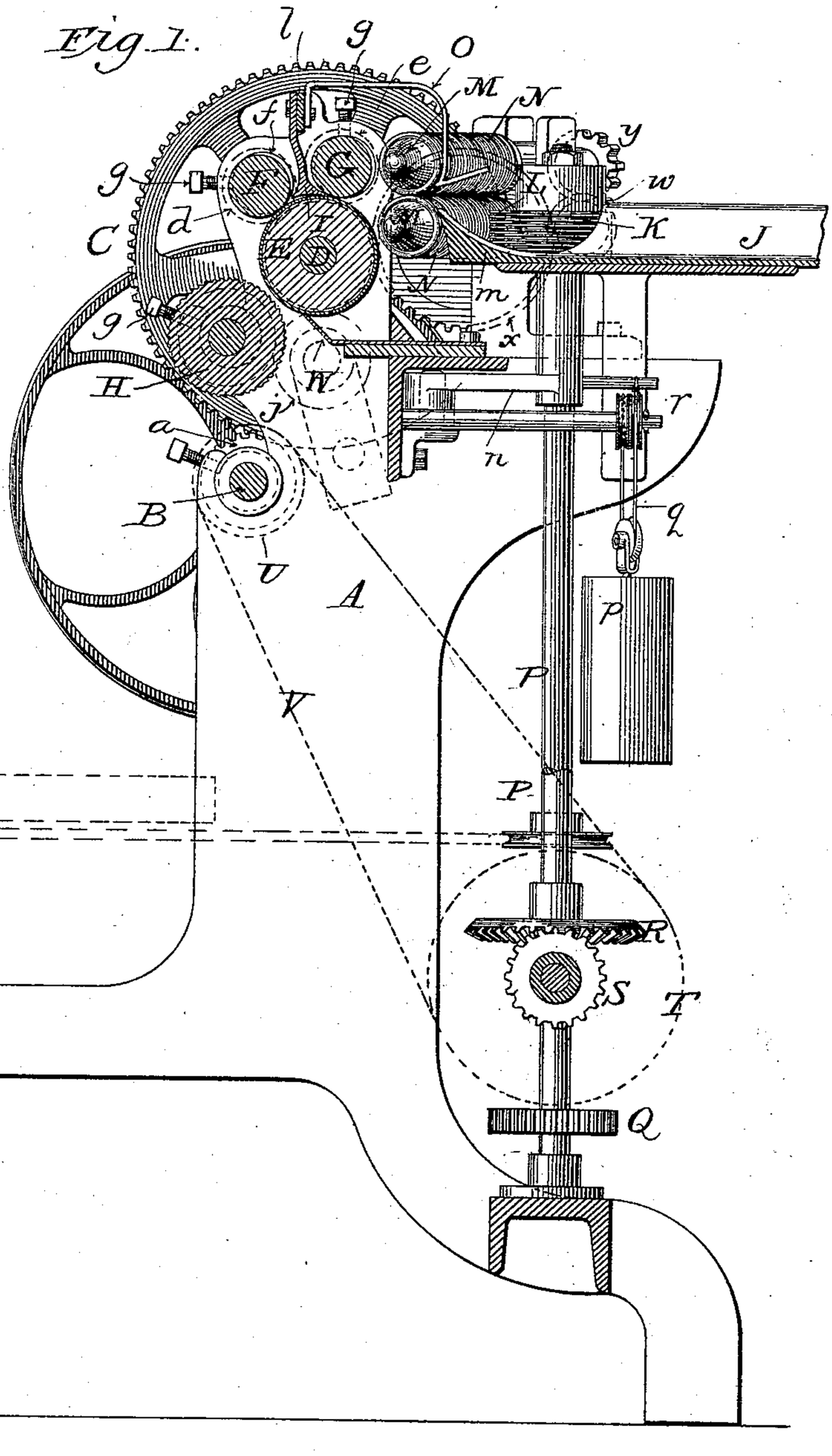


Fig. 8.

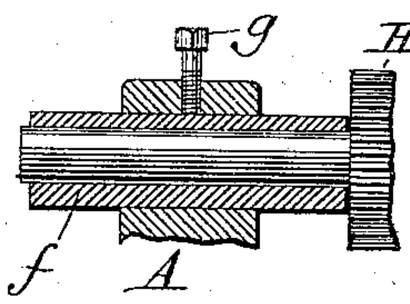
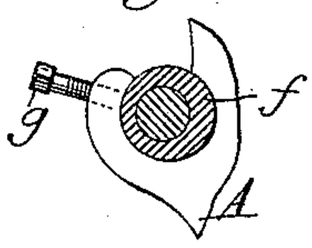


Fig. 9.



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Clo. Burdine.

Inventor,
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by Dodger Lowe,
Attys.

(No Model.) 2 Sheets—Sheet 2.

J. W. FRIES.

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Fig. 2.

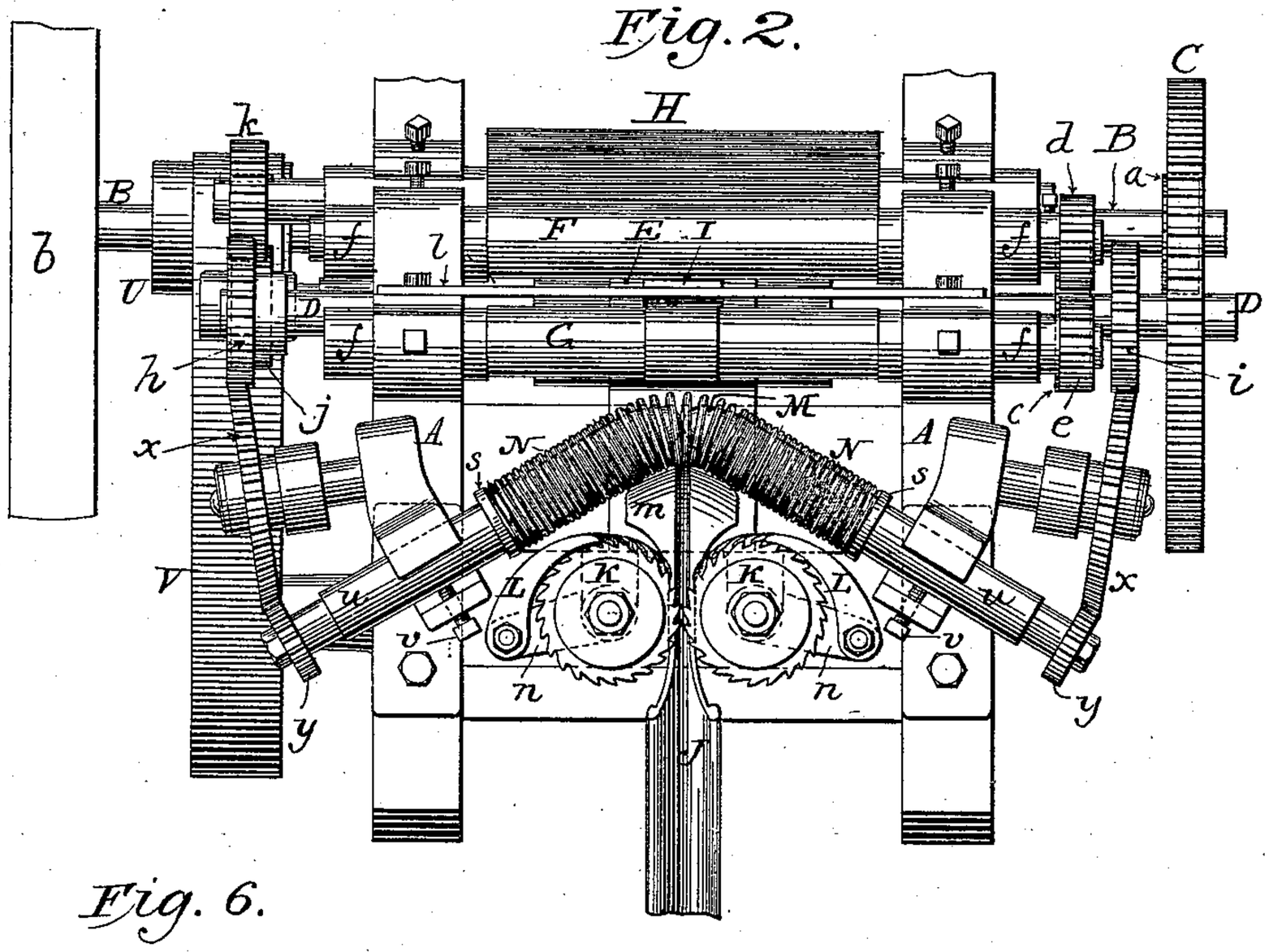


Fig. 6.

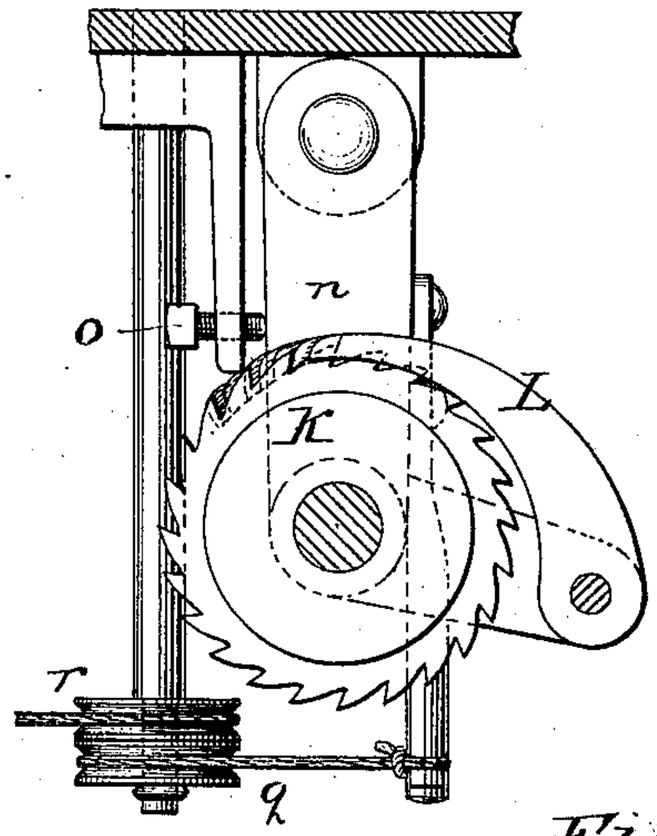


Fig. 3.

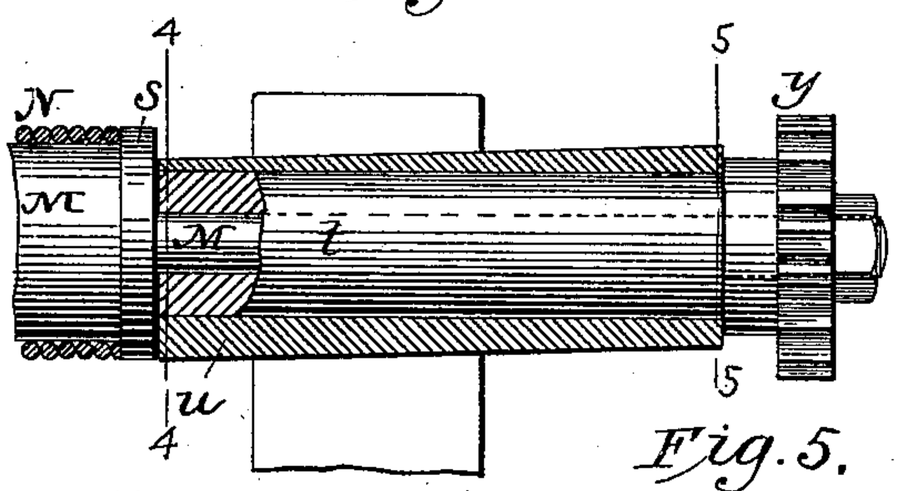


Fig. 4.

Fig. 5.

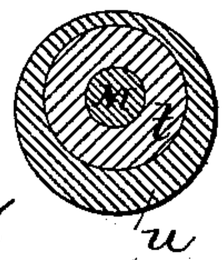
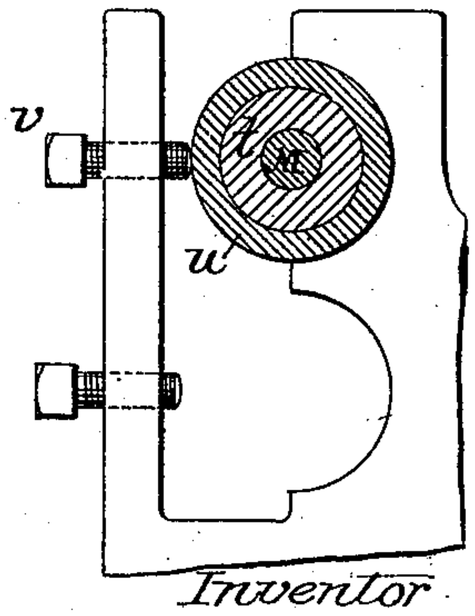
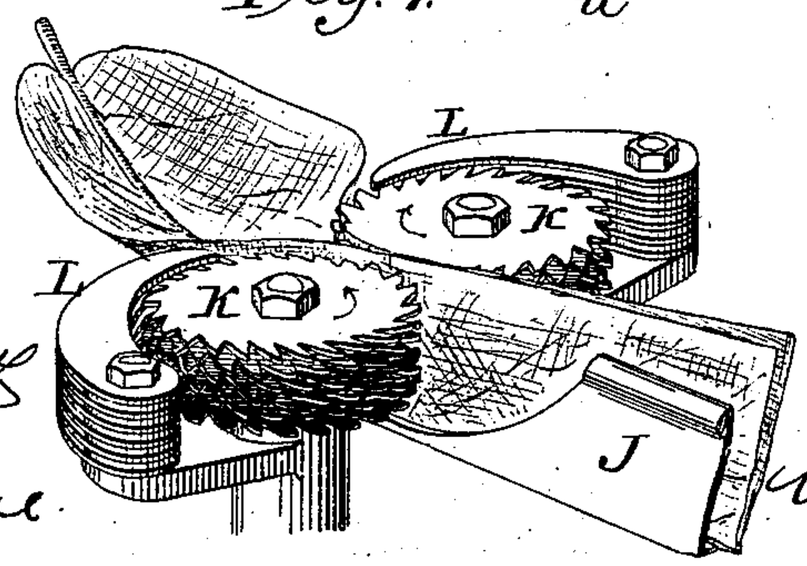


Fig. 7.





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Inventor
John W. Fries
by Dodger Lowe
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UNITED STATES PATENT OFFICE.

JOHN W. FRIES, OF SALEM, NORTH CAROLINA.

MACHINE FOR TREATING TOBACCO-LEAVES.

SPECIFICATION forming part of Letters Patent No. 534,148, dated February 12, 1895.

Application filed September 8, 1894. Serial No. 522,460. (No model.)

To all whom it may concern:

Be it known that I, JOHN W. FRIES, a citizen of the United States, residing at Salem, in the county of Forsyth and State of North Carolina, have invented certain new and useful Improvements in Machines for Treating Tobacco-Leaves, of which the following is a specification.

My invention relates to machinery for treating tobacco leaves, and consists in various features hereinafter set forth and claimed.

In the drawings which represent the preferred form of my machine,—Figure 1 is a vertical central sectional view from front to rear; Fig. 2, a top plan view of the same; Figs. 3, 4 and 5, views illustrating the construction of the journals of the feed rollers; Fig. 6, a plan view of one of the feed-wheels and comb; Fig. 7, a perspective view showing the manner in which the wheels feed the leaf to the feed-rollers; and Figs. 8 and 9, views of the bearing for the main rollers.

The main frame of the machine comprises two side plates or castings A A of most any desired form, suitably connected and braced. Mounted in suitable bearings in the side plates or frames A is a shaft B which carries at one end a small pinion *a*, Figs. 1 and 2, and at the other end a band wheel *b*,—the latter being designed to receive a belt or band through which motion or power from a suitable source is communicated to the said shaft. Pinion *a* meshes with a larger gear C secured upon a shaft D, Figs. 1 and 2, which shaft carries a smooth roller E of cast iron or of wood covered with a shell of cast iron. Secured to this same shaft D is a gear or pinion *c*,—shown in dotted lines in Fig. 2,—which meshes with two pinions *d* and *e*, carried respectively by the shafts of rollers F and G which are located above but parallel with the lower roll E.

Rollers F and G will be made of steel, and the roller E of cast iron, thereby giving the rollers F G a harder and smoother surface than that of the roller E.

The shafts of rollers F and G, are mounted in eccentric sleeves *f*, and these are held in their proper positions in their seats in the main frame, by means of set screws *g*, as shown in Figs. 8 and 9. By turning these sleeves, the rollers F and G may be brought closer to or farther from the lower roll E,—the gears *c*, *d*, and *e* having sufficient play to permit of the necessary adjustments of the rollers without affecting the operation of the gears.

Upon opposite ends of the shaft of roller E are gears *h* and *i*, the former meshing with an idler *j* which in turn gives motion to a gear *k* on the shaft of the stripping roller H. This roller H is located in rear of the roller E, and is preferably grooved longitudinally to more certainly remove the leaf from the roller E and deposit it in the rotary pan or receptacle X, shown in dotted lines in Fig. 1. The shaft of this roller H will be mounted in eccentric sleeves *f*, like those employed with the other rollers.

Depending from a suitable cross-bar or support *l* is a scraper I which extends down between the rollers F and G, close to the roller E, but set closer to roller G than the roller E, so that the leaf is caused to pass from between the rollers G and E, beneath the scraper, and thence between the rollers F and E.

In order to feed the leaf I employ a suitable trough or channel J of V-shape in cross section, terminating at its forward end, where the sides are cut away, in a centrally grooved block *m* which inclines upwardly as shown in Fig. 1. On each side of the trough J and projecting into the latter, is a feed wheel K, which may be made of or armed with card clothing, garnet wire, or other suitable material which will take hold of the leaf and feed it forward; the leaf being set into the trough while folded longitudinally through the middle as in Fig. 7. Each wheel is provided on its outer side with a comb or clearer L which serves to strip or detach the leaf from the teeth of the wheels K, and prevent the latter from spreading the leaf far enough to split or tear it. When these wheels, which turn outwardly, take hold of the leaf and spread or open it, they cause the end of the leaf to rise, and as the leaf goes forward, the front end rides up the inclined block or end of trough J in position to be taken hold of by the feeding rollers, the inclination of the block *m* being such as to facilitate the opening of the leaf by the feed wheels, and the proper entrance of the opened leaf between the feed rollers. Where very large and wide

leaves are used, it will be found advisable to carry the hubs of the wheels K up above the active faces of the wheels, as in Figs. 1 and 2; but where small leaves are being treated, the hubs may be omitted as in Fig. 7. In order to hold the wheels up to work, and at the same time allow them to yield when necessary, the arms or brackets *n* supporting said wheels and their combs, are pivoted to the main frame as shown in Fig. 6, and are held normally against adjustable screws or stops *o* by means of the weight *p*, which latter is suspended by cord or chain *q* passing over pulleys *r* and connected to the arms *n*.

The shafts P of wheels K are stepped at their lower ends upon the main frame, and provided with intermeshing gear Q, as shown in Fig. 1. One of the shafts is provided with a bevel gear R which receives motion from a similar gear S, to which latter is imparted motion by means of band wheels T, U, and belt V.

The feed rollers, which take the leaf from the trough J and deliver it to the main rollers, comprise four shafts M arranged in pairs, one pair directly above the other, and the shafts of each pair being arranged at an angle to each other, and rounded at their inner ends, and two coiled springs N, each of said springs embracing the two shafts which are in the same horizontal plane. The feed rollers thus comprise a rigid core or shaft made in two sections, arranged at an angle to each other, and a flexible covering extending from end to end of said cores, as clearly shown in Figs. 1 and 2. The shafts M are each provided with a collar *s* against which the ends of the springs bear with sufficient force to cause the rotation of the springs or flexible coverings with the cores or shafts. By varying the curvature of the abutting ends of the cores or shafts, the form assumed by the flexible covering may be altered, as the springs or covering will adhere closely to the shafts. The shafts are reduced and carried in a cylindrical sleeve *t*, Figs. 3, 4 and 5, which latter are mounted in the sleeves *u*. Sleeves *u* which are held by screws *v* in suitable seats formed in the main frame, are bored eccentrically at one end only,—the inner end, see Fig. 3,—so that when said sleeves are turned to adjust the rollers, the outer ends of the shafts to which the gears are applied will not be appreciably affected. Motion is imparted to the upper feed roller from the gears *h* and *i* on the shaft of roller E, by means of the idlers *x* which mesh with said gears *h* and *i*, and the gears *w* on the lower feed roll shafts. The gears *w* on the ends of the lower roll shafts mesh with similar gears *y* on the upper roll shafts as shown by dotted lines in Fig. 1.

In order to prevent the leaf from rising too high, and out of the bite of the feeding rollers, I employ a guide O, which extends from the cross bar *l* forwardly over the upper feed roller, as shown in Fig. 1, (but omitted from Fig. 2).

The operation is as follows:—The leaf folded longitudinally is placed within the trough or channel J, where it is caught hold of by the feed wheels K which open up the leaf in the manner represented in Fig. 7, and present it to the flexible feeding rollers. These rollers being angular relatively to the line of feed, take the leaf and not only draw it forward, but spread and smooth it out,—the angular portions of the rollers working the web or body of the leaf away from the stem as the leaf is carried forward. After leaving these rollers, the leaf passes between the rollers G and E, having preferably slightly different peripheral speeds,—where, by means of said rollers, the stem is merely flattened or given a preliminary crushing. Being prevented by scraper I from rising after leaving the rollers G E, the leaf with the stem, passes between the rollers F and E (which are set closer together than the rollers G and E) where the stem is completely crushed and disintegrated.

Owing to the nature of the stem, it adheres to the cast-iron roller E from which it is removed by means of a scraper W, Fig. 1,—the leaf, having the stem removed, being caught by the stripping roller H and deposited in the can or vessel X. The stem is thus wholly removed without tearing or injuring the leaf.

It is obvious that instead of using the coiled springs N to form the flexible covering of the feed rollers, a rubber tube or equivalent device may be used.

I do not claim herein the combination of two rollers arranged to revolve at different peripheral speeds and formed of materials of different relative superficial hardness, as this broad combination is embraced in my pending application, Serial No. 506,749, filed April 7, 1894.

What I claim is—

1. In combination with the roller E and the rollers F and G co-acting therewith; the guard I located between the rollers F and G, and close to the roller E to form a throat for the leaf.

2. In combination with a cast iron roller E, the harder smooth rollers F and G co-acting therewith, whereby to mash and subsequently disintegrate the stem.

3. In combination with a trough J having the inclined block *m*, the feed wheels K projecting into the trough.

4. In combination with a trough J having the inclined block *m;* the feed wheels K projecting into the trough; and the combs L for clearing the leaf from the wheels.

5. In combination with a trough or channel and the feed wheels at the sides thereof; the shafts for said wheels; the pivoted arms or

brackets in which said shafts are mounted; the stops; and the weight connected with the arms.

6. A feed roller comprising two shafts or cores arranged at an angle to each other, and an encircling spring.

7. A pair of feed rollers, located one above the other, and each comprising a pair of shafts arranged at an angle to each other and encircled by a coiled spring.

8. A feed roller comprising two shafts or cores arranged at an angle to each other and rounded at their inner ends, and a coiled spring covering.

9. In combination with the main frame provided with a suitable socket and set screw; of a sleeve *u* bored eccentrically at one end only; a cylindrical sleeve fitting within the eccentric sleeve; and a roll-shaft carried by the cylindrical sleeve.

10. In combination with rollers for disintegrating the stem; a pair of flexible angular feed rollers; and leaf-opening feed wheels.

11. In combination with the rollers F and E; the flexible feed rollers.

In witness whereof I hereunto set my hand in the presence of two witnesses.

JOHN W. FRIES.

Witnesses:
B. J. PFOHL,
JAS. E. REICH.