

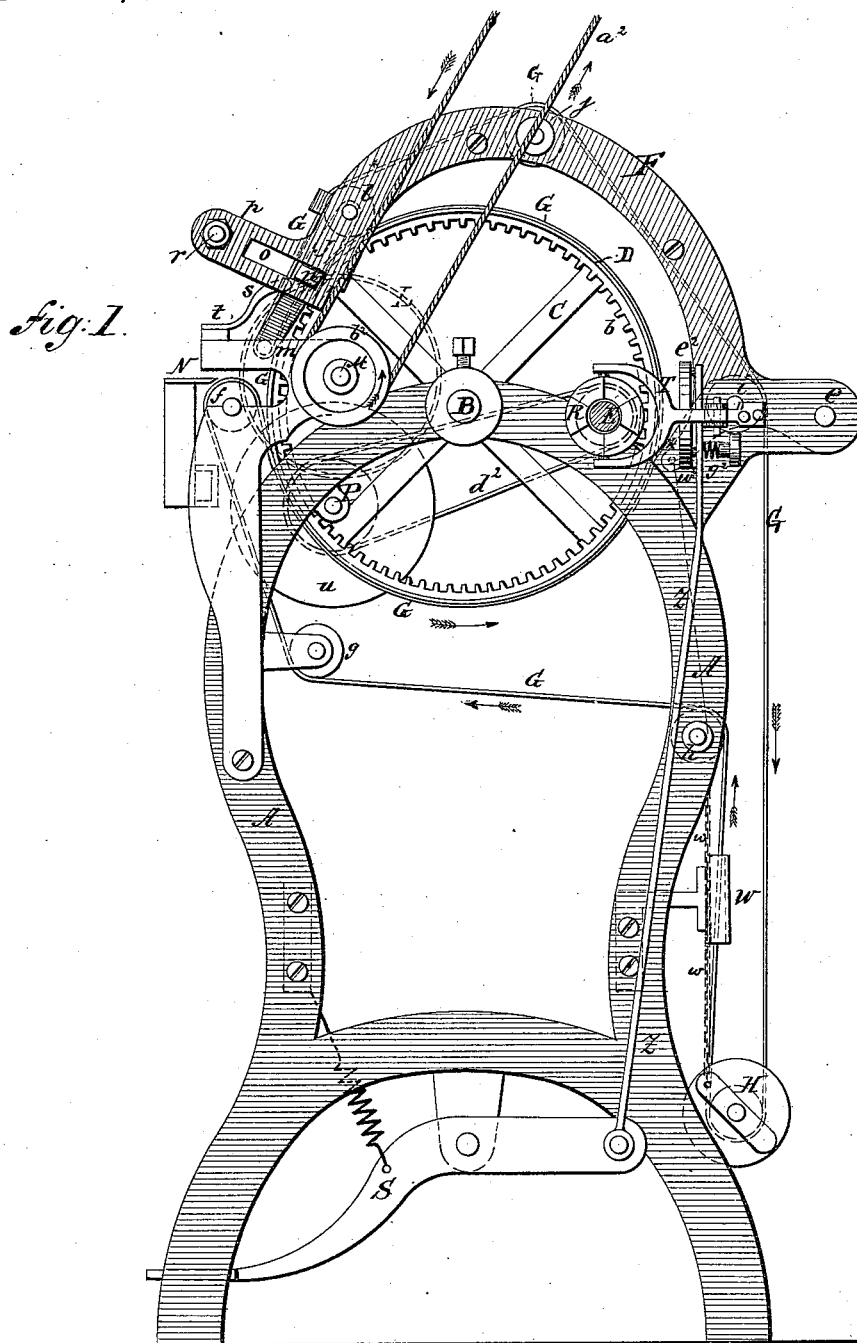
(No Model.)

6 Sheets—Sheet 1.

O. HAMMERSTEIN.  
TOBACCO STRIPPING AND BOOKING MACHINE.

No. 347,794.

Patented Aug. 24, 1886.



WITNESSES:  
*A. Schehl.*  
*Harvey M. Hunt*

INVENTOR  
*Oscar Hammerstein*  
BY *Briesen & Steele*  
ATTORNEYS.

(No Model.)

6 Sheets—Sheet 2.

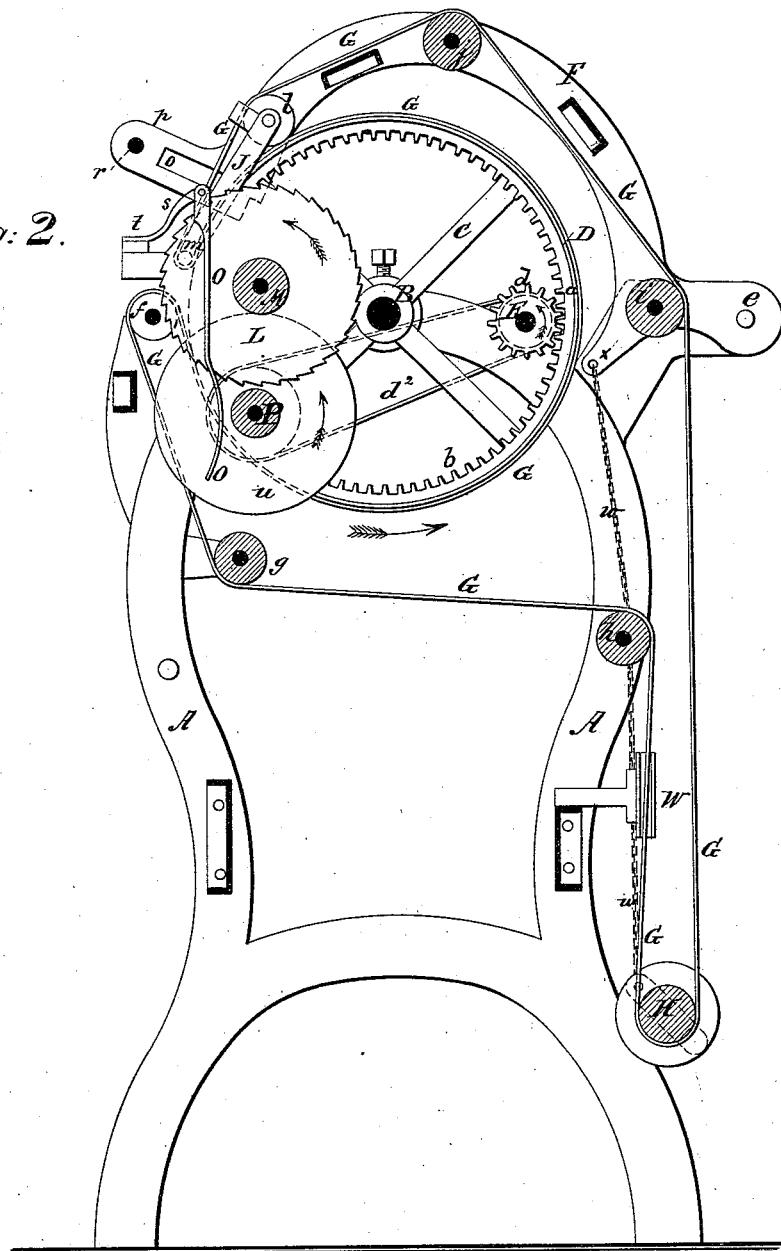
O. HAMMERSTEIN.

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Fig. 2.



WITNESSES:  
*A. Schohl.*  
*Harry M. Burr*

INVENTOR  
*Oscar Hammerstein.*  
BY *Brienen & Steelp*  
ATTORNEYS.

(No Model.)

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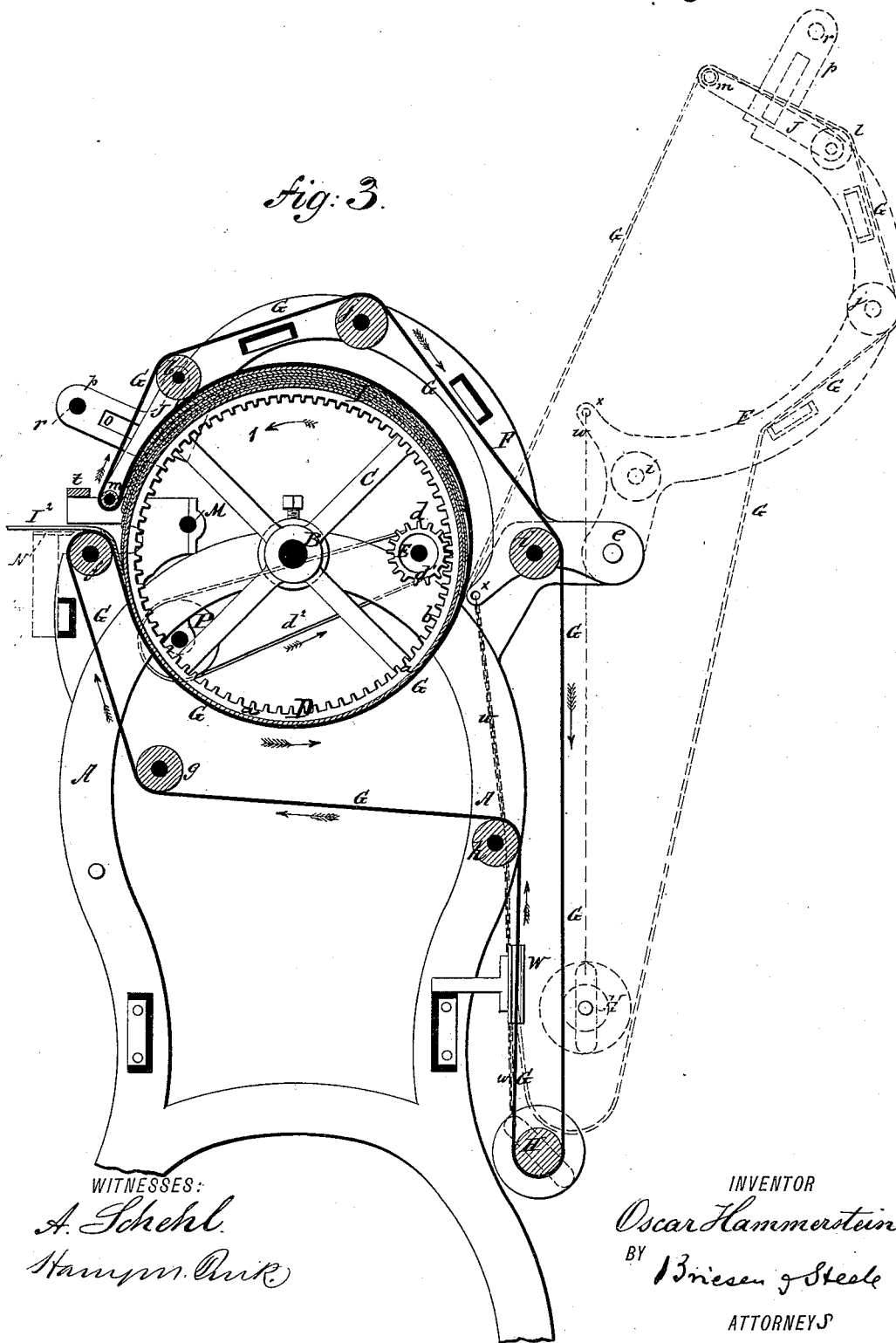
O. HAMMERSTEIN.

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*Fig. 3.*



WITNESSES:

*A. Schehl.*  
*Hammerstein.*

INVENTOR

*Oscar Hammerstein.*

BY

*Briesen & Steele*

ATTORNEYS

(No Model.)

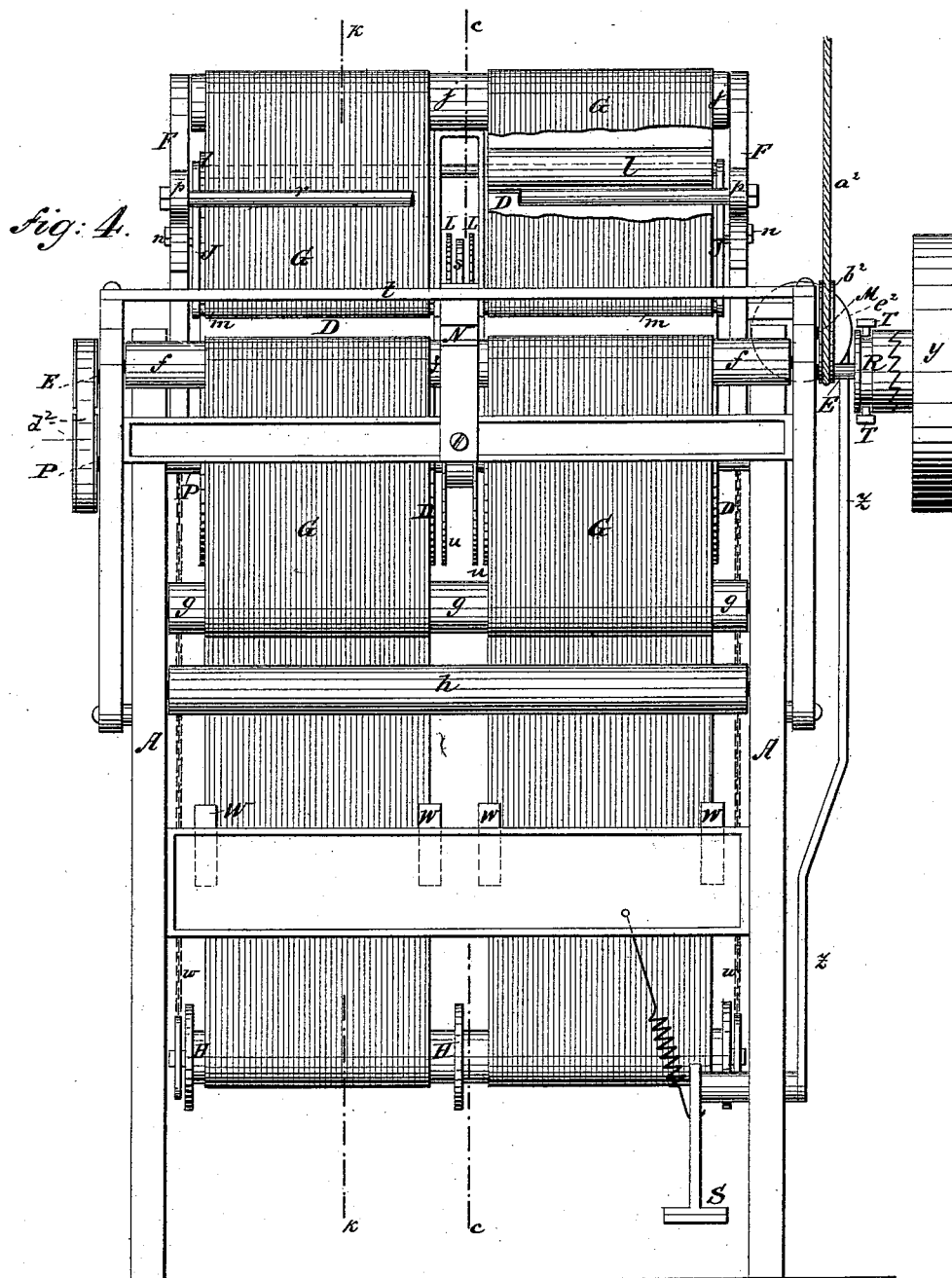
6 Sheets—Sheet 4.

O. HAMMERSTEIN.

TOBACCO STRIPPING AND BOOKING MACHINE.

No. 347,794.

Patented Aug. 24, 1886.



WITNESSES:

INVENTOR

*A. Schehl.*  
*Harvey M. Burr*

*Oscar Hammerstein.*  
BY *Brisson & Steele*  
ATTORNEYS.

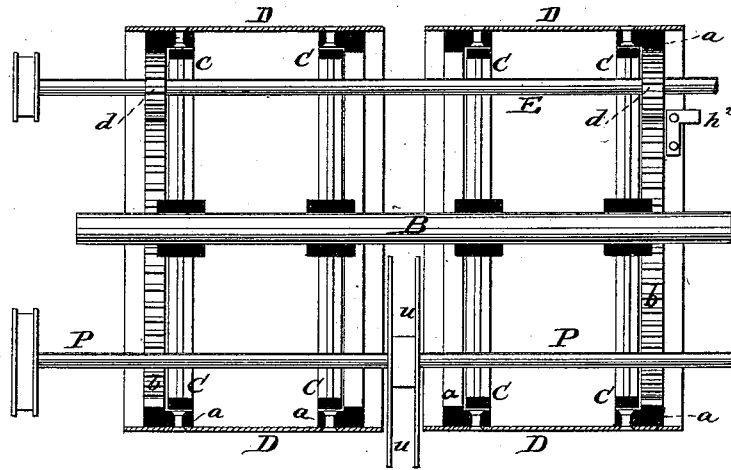
O. HAMMERSTEIN.

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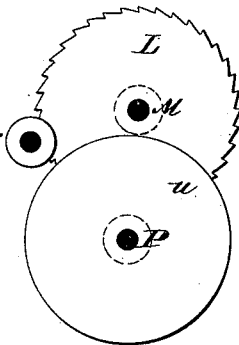
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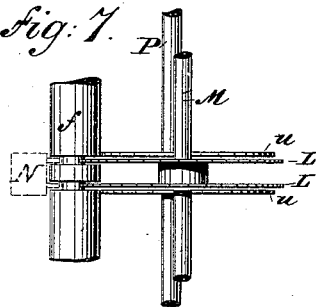
*Fig. 5.*



*Fig. 6.*



*Fig. 7.*



WITNESSES:

*A. Schehl.*

*Harry M. Dink*

INVENTOR

*Oscar Hammerstein*

BY *Briesen & Steele*

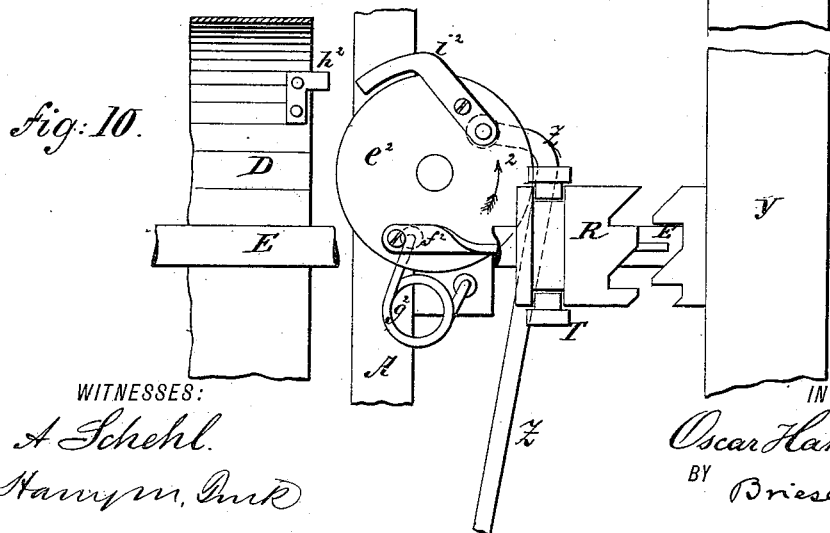
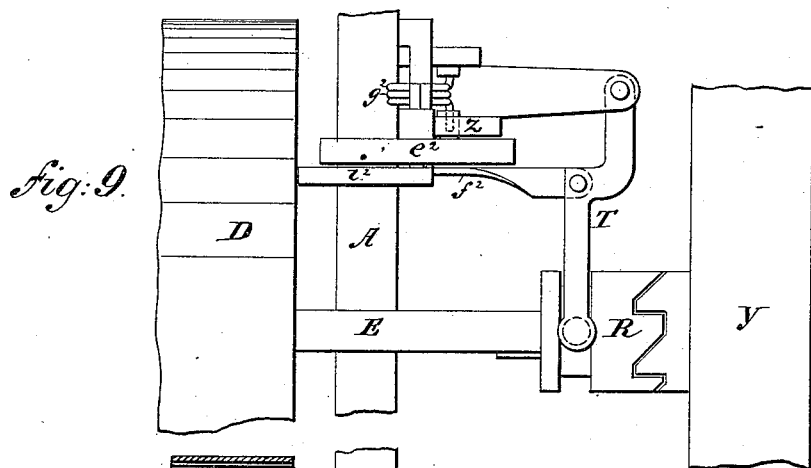
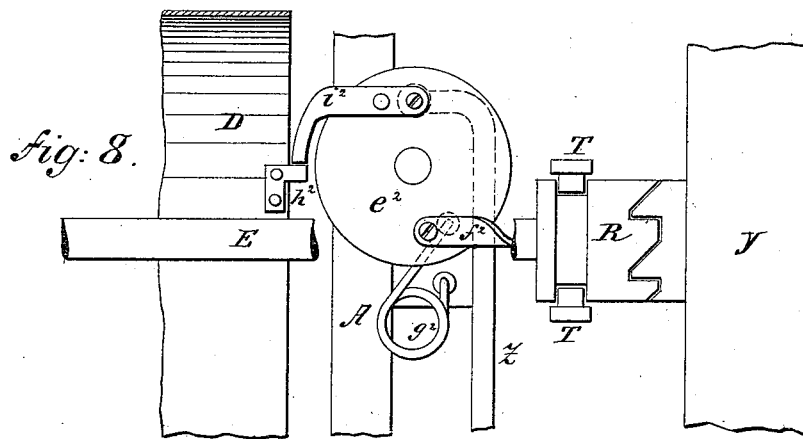
ATTORNEYS.

O. HAMMERSTEIN.

TOBACCO STRIPPING AND BOOKING MACHINE.

No. 347,794.

Patented Aug. 24, 1886.



WITNESSES:

*A. Schehl.*  
*Harry M. Burk*

INVENTOR

*Oscar Hammerstein.*  
BY *Brierson & Steele*

ATTORNEYS.

# UNITED STATES PATENT OFFICE.

OSCAR HAMMERSTEIN, OF NEW YORK, N. Y.

## TOBACCO STRIPPING AND BOOKING MACHINE.

SPECIFICATION forming part of Letters Patent No. 347,794, dated August 24, 1886.

Application filed February 23, 1886. Serial No. 192,958. (No model.)

*To all whom it may concern:*

Be it known that I, OSCAR HAMMERSTEIN, a resident of New York city, in the county and State of New York, have invented an Improved Tobacco Stripping and Booking Machine, of which the following is a full, clear, and exact description, reference being made to the accompanying drawings.

This invention relates to a new machine for stripping tobacco—that is, cutting the central stem out of each leaf of tobacco—and for booking the same.

One object of the invention is that the machine, in addition to cutting out the stems nicely and rapidly, shall also place the stripped leaves one upon another in proper manner. This object I accomplish by means of a rotating drum, which operates in combination with endless bands, that are held under tension, and with the stripping mechanism proper in such manner that the two halves of each leaf, after the stripping has been performed, will be placed upon the outer periphery of the drum beneath the endless band, and that as the machine operates upon the successive leaves their respective halves will be piled one upon another around said drum, all as hereinafter more fully described. The booking contrivance can be used without the stripping mechanism.

The invention consists of the novel combination of parts hereinafter described.

Figure 1 is a side elevation of my improved tobacco stripping and booking machine. Fig. 2 is a vertical cross-section of the machine, taken on the plane of the line *c c*, Fig. 4. Fig. 3 is a similar section on the line *k k*, Fig. 4. Fig. 4 is a front elevation of the machine. Fig. 5 is a longitudinal central section of the two drums that carry the stripped tobacco. Fig. 6 is a sectional view of the shafts that carry the saws, and the flanges near the same. Fig. 7 is a top view of the same. Figs. 8 and 10 are side views of the clutch mechanism used on the machine; and Fig. 9 is a top view of the same.

In the accompanying drawings, the letter A represents the frame of my improved machine, which frame is by preference of the form outlined in Figs. 1, 2, and 3. In this frame are the bearings of a horizontal shaft,

B, which shaft is immovable, and which carries four (more or less) stationary rings, C, around which are placed two drums, D D, as appears more clearly from Fig. 5 of the drawings. The rings C being stationary, the drums D are intended to rotate around said rings; and these drums have on their inner peripheries suitable annular rails, *a*, that fit around the peripheries of the rings C, and that are flanged to prevent longitudinal displacement of each drum on its supporting set of rings C. Each drum D contains in its interior a toothed ring, *b*—that is, a ring which has its teeth cut on the inner periphery. The teeth may be on one of the annular rails *a*, as in Fig. 5. Into these two toothed rings *b b* mesh the teeth of pinions *d d*, that are mounted upon a driving-shaft, E, which driving-shaft has its bearings likewise in the frame A of the machine, and causes the drums to rotate whenever such rotation is desired, and to stop whenever its own motion is arrested.

To the upper part of the frame A is hinged at *e* an upper frame or lid, F, which can be let down into the position shown by full lines in Figs. 1, 2, and 3, or turned up into the position shown by dotted lines in Fig. 3.

G is an endless belt or band, made of india-rubber or of any other suitable analogous substance, there being one such band for each of the drums D, each band being about as wide as the drum is long, and adapted to encircle the drum in the manner shown in Fig. 3, and as hereinafter more fully stated—that is to say, the endless band passes over rollers *f*, *g*, and *h*, that have their bearings in the frame A, and over rollers *i* and *j*, that are supported by the lid F, and over rollers *l* and *m*, that are hung in a movable frame, J, all as shown in Fig. 3. The rollers *f* and *m* are, when the lid is down, rather near together on the same side of the drum D, and the band G, which is represented by a heavy black line in Fig. 3, passes around the drum D, excepting that portion thereof which is between the rollers *f* and *m*. Around *m* the band G passes and extends upward to the roller *l*, thence to *j*, thence to *i*, and from there down. The band, after passing around the roller *f*, passes downward around *g*, thence around *h*, and then down, it forming a loop in its lowermost part, in which a

weighted roller, H, is hung. This weighted roller has for its object to keep the band G tight, and at the same time to allow it to yield to the leaves of tobacco that accumulate between the drum D and the band G. Thus in Fig. 3 a great many leaves of tobacco are shown at I, to be interposed between the drum and the band, while in Fig. 2 no leaf of tobacco is shown between the drum and the band. It follows, therefore, that in Fig. 3 the weighted roller H is raised higher than it is in Fig. 2.

So far as the booking of the tobacco in the machine is concerned, the intention is to place leaf upon leaf on each drum D, and to keep the pile of leaves compressed by the outer band, G. How this can readily be accomplished will be understood by reference to Fig. 3. In this figure the drum D is not represented in the position of rest, but in the position in which it is after having been turned in the direction of the arrow 1, a short distance from the position of rest. Several leaves of tobacco are already held on the drum beneath the band G, as represented at I in Fig. 3. A new leaf (shown at I<sup>2</sup>) is being taken along by the drum as the same revolves in the direction of the arrow 1, the drum crowding the point of the new leaf I<sup>2</sup> against the point of a leaf, I, already booked, the ends of both leaves being between the drum and the band—that is, that portion which extends from the roller *f* around the drum. It will be readily seen that as the drum continues to revolve in the direction of the arrow 1 the new leaf I<sup>2</sup> will be taken along and placed upon the pile of leaves I, and introduced at the same time between the drum and the outer band, G, the weight H holding the band tight against the tobacco; hence this machine does not coil the leaves of tobacco in a continuous convolution around the drum or roller, as has been done in previous machines; but it books the tobacco by placing leaf upon leaf on the drum and holding the whole pile of leaves under pressure of the band G. The register of the leaves is obtained by the automatic stopping of the rotation of the drum at the end of each revolution or other unit of motion. After the proper number of leaves of tobacco have been piled upon the drum, as in Fig. 3, they can be readily removed by simply turning up the hinged lid F into the position shown by dotted lines, thereby lifting the upper part of the band G off the leaves and disclosing them ready for convenient removal. Of course it is perfectly evident that as the drum is revolved in the direction of the arrow 1 the endless band G, which partly embraces such drum, will, by frictional contact therewith, be carried around at the same rate of speed, the sundry arrows in Fig. 3 of the drawings showing the direction in which the band rotates whenever the drum is turned in the direction of the arrow 1. The rollers *l* and *m*, which, as has been stated, are in part embraced by the band G, have their bearings not directly in the cover

F, but in a frame, J, which is movable on the cover F, so that both rollers *l* and *m* may be crowded away from the drum D. Thus in Fig. 3 of the drawings it is shown that said rollers are crowded off the drum D by the six thicknesses of leaf I, which lie on said drum. The more tobacco there is booked upon said drum the farther will the rollers *l* and *m* be crowded away from the drum, the movable frame J permitting this motion. Meanwhile the weight H, by holding the band G under tension, serves to crowd the rollers *l* *m* as near to the drum as possible—that is to say, as near as the intermediate leaves of tobacco will permit; hence the leaves of tobacco are always held on the drum under pressure of the band, and yet the machine is, by virtue of these movable rollers *l* *m*, sufficiently flexible to be adapted to receive a suitable number of leaves between the drum and the band.

In the drawings I have represented the movable frame J to be provided with projecting end lugs, *n*, which are guided in slots *o*, that are formed in ears *p* of the cover F, so that the outward motion of the rollers *l* *m* and their frame J will be in the direction permitted and to the extent allowed by the said slots *o*.

Whenever the cover is to be lifted into the dotted position shown in Fig. 3, it is grasped by means of a rod, *r*, which connects with the ears *p*, and serves as a handle for moving said cover.

Having now described the general principles of the booking mechanism of my improved machine, I will proceed to describe the means of feeding the leaves of tobacco into the machine and of stripping the same; but I desire it to be understood that although this machine is represented as a stripping-machine and a booking-machine combined, nevertheless the features of the booking mechanism may be employed independently of the stripping mechanism. This stripping mechanism consists of two rotary saws, L L, which are mounted upon a shaft, M, that has its bearings in the frame A. Rotary motion is imparted to the shaft M by a separate belt, *a*<sup>2</sup>, and pulley *b*<sup>2</sup>, or other suitable mechanism. The two saws L L are placed, as shown in Fig. 4, between the two drums D D, and as far apart from one another as is necessary for the portion that is to be cut out of the leaf. The leaf I<sup>2</sup> may be fed to the machine over a small platform, N, (shown by dotted lines in Fig. 3,) which is affixed to the front portion of the frame A, slightly above the level of the roller *f* and directly in front of said roller. The motion of the band G when the machine is in operation, together with the motion of the drum D, will, after the point or end of the leaf shall have been introduced properly between said drum and band, cause the leaf to be grasped by them and moved along in the direction of the arrow 1, which is represented in Fig. 3.

From an arm, *s*, which is attached to a cross-bar, *t*, of the frame A, is suspended, as appears from Fig. 2, a rod, O, which is be-



tween the two saws L L, in front of their shaft M, and which reaches down below said saws, all as shown in Fig. 2. The object of this rod is to prevent the vein of tobacco which is cut out of the leaf by the two saws from becoming entangled with the shaft M, the said rod O guiding the vein downwardly and causing it to be discharged at the lower front portion of the machine. By "front portion" I mean that part of the machine in which are contained the rollers *f* and *m*. Instead of this rod O, a loose ring on the shaft M, between the saws, may be used. For the purpose of preventing this vein from being displaced laterally, I place the two saws L L between two disks, *u*, which are mounted upon a shaft, P, that is hung in the frame A beneath the shaft M. The shaft P is revolved by a band, *u*<sup>2</sup>, which connects it with the shaft E. The disks *u*, which straddle the saws L, as is more clearly shown in Figs. 2, 6, and 7, guide the sides of the cut out vein, so as to prevent the latter from being displaced laterally, and, together with the suspended rod O, force the vein that is cut from the leaf to drop downwardly. The saws L L enter with their front portions into grooves that are formed in the roller *f*, as shown in Fig. 7, so that the leaf *l*<sup>2</sup>, as it feeds over the roller *f*, will meet the saws while it is still on the roller. The weighted roller H is connected by a chain, *w*, with an arm, *x*, on the cover F, so that whenever said cover F is swung back on its pivot *e*, as by dotted lines in Fig. 3, the roller H will be lifted and the band G made slack to a sufficient extent to prevent it from interfering with the raising of the cover.

It remains to show how the intermittent rotary motion of the drums D is insured. I have already stated that these drums are revolved by the toothed connection with the driving-shaft E. This driving-shaft carries a driving pulley, *y*, with which connects a belt or other mechanism for turning it; but this driving pulley is loose on the shaft E, and is connected therewith, only so as to impart rotary motion, by means of a clutch, R. When this clutch is off the pulley, as in Fig. 10, the shaft E will not be revolved. When it is on the pulley, as in Figs. 8 and 9, the shaft E will be revolved.

To get the clutch on the pulley and start the rotation of the drums, the machine is provided with a treadle, S, that connects by a rod, *z*, with a disk, *e*<sup>2</sup>, which disk is hung in the frame A, and which connects by an arm, *f*<sup>2</sup>, with a forked lever, T, that straddles the clutch R, engaging therewith where said clutch is grooved for the purpose. When the treadle is depressed, the rod *z* is raised and the disk *e*<sup>2</sup> turned from the position which is shown in Fig. 10 in the direction of the arrow 2 into the position which is shown in Fig. 8. By this motion of the disk the arm *f*<sup>2</sup> is pushed along, so as to move the forked lever T and carry the clutch against the pulley, the contact-faces of clutch and pulley being toothed in the ordinary

manner. A spring, *g*<sup>2</sup>, connects the frame A with the disk *e*<sup>2</sup>, its point of connection with the disk being such that in order to carry the disk from the position shown in Fig. 10 to the position shown in Fig. 8 this point must pass vertically below the center of the disk, in which position the spring will be most compressed; hence when the treadle has succeeded in turning the disk *e*<sup>2</sup> so far as to bring the point of connection of disk and spring beneath the center of the disk, the spring will take up the rest of the work, and in expanding carry the disk farther into the position shown in Fig. 8. When, after this, the shaft E is turned, and with it the drums D, to the proper extent, the clutch is again moved out of gear, and thereby the farther motion of the shaft E arrested by a projection, *h*<sup>2</sup>, which is formed on one of the drums D, as shown in Figs. 5 and 8. This projection at the proper time will strike an ear, *i*<sup>2</sup>, which is formed on the disk *e*<sup>2</sup>, and lifting this ear will turn the disk back into the position shown in Fig. 10, the spring *g*<sup>2</sup> again assisting in completing the last part of this backward movement of the disk. Thus the rotation of the drum is automatically arrested at the very point where the leaves of tobacco already booked will be ready to receive in proper position a new leaf of tobacco to be booked.

I have represented in the drawings only one projection or stop, *h*<sup>2</sup>, on the drum D; but it is clear that instead of making a complete revolution of the drum and then stopping the machine, the mechanism can also be proportioned so that the machine can be stopped after every half-revolution or third of a revolution of said drum, in which case a corresponding number of projections, *h*<sup>2</sup>, will be provided.

In order to prevent the bands G from becoming displaced laterally as the leaves I accumulate on the drums D, I affix grooved guides W to the frame A, as shown. There are at least two such guides to each band G—one for each edge of such band. Instead of saws L L, other cutters of well-known description may be used.

I claim—

1. The combination, in a machine for booking tobacco, of the drum D, endless band G, cover F, weight H, frame A, and series of rollers supported by said frame, around which the band G is laid, substantially as specified.
2. The combination of the frame A, carrying the rollers *f* *g*, with the hinged cover F, carrying roller *i*, yielding frame J, carrying the roller *m*, drum D and band G, and weight H, and mechanism for operating the parts, as specified.
3. The combination of the frame A with the hinged cover F, having arm *x*, chain *w*, weight H, drum D, and endless band G, and series of rollers *f*, *g*, *i*, and *m*, around which said band is placed, substantially as and for the purpose specified.
4. The combination of the two drums D D and cover F, with the saws L L placed between

them, and with the weighted endless band G put around them, rollers *f*, *g*, *i*, and *m*, which also carry said band, and mechanism for operating the parts, substantially as herein shown and described.

5 5. The combination of the saws L L with the drums D D, cover F, endless bands G G, and disks *u*, between which said saws are placed, and with the rollers *f*, *g*, *i*, and *m*, as set forth.

10 6. The combination of the saws L L with and between the disks *u* *u*, and with the roller *f* and rod O, substantially as and for the purpose herein shown and described.

15 7. The combination of the saws L L, disk *u*, between which the saws are placed, rod O, cover F, drum D, rollers *f g i m*, and endless band G, substantially as and for the purpose specified.

20 8. The yielding frame J, carrying the rollers *l m*, in combination with the cover F, endless band G, and drum D, as specified.

25 9. The combination of the intermittingly-rotating drum D, having projection *h*<sup>2</sup>, with the rocking disk *e*<sup>3</sup>, having ear *i*<sup>2</sup> and arm *f*<sup>2</sup>, spring *g*<sup>2</sup>, clutch-lever T, and clutch R, substantially as and for the purpose herein shown and described.

10. In a machine for booking tobacco, the combination of the drum D with the cover F, 30 endless band G, yielding support for said band, tension device H, shaft E, and wheel *d*, and mechanism, substantially as described, for moving said drum and said band simultaneously, and in the same direction and to the 35 same extent, as specified.

11. The grooved guides W W, combined with the frame A, cover F, endless elastic band G, drum D, rollers *f g i m*, and weight H, 40 substantially as herein shown and described.

12. The combination of the saws or cutters L L, with the drum D, endless band G, weight H, shaft E, and wheel *d*, as set forth.

13. In a machine for booking tobacco, the drum D, having stop device, and the band G, 45 combined with the mechanism for automatically imparting and arresting the movement of said drum, substantially as herein shown and described.

OSCAR HAMMERSTEIN.

Witnesses:

CHARLES G. M. THOMAS,  
HARRY M. TURK.