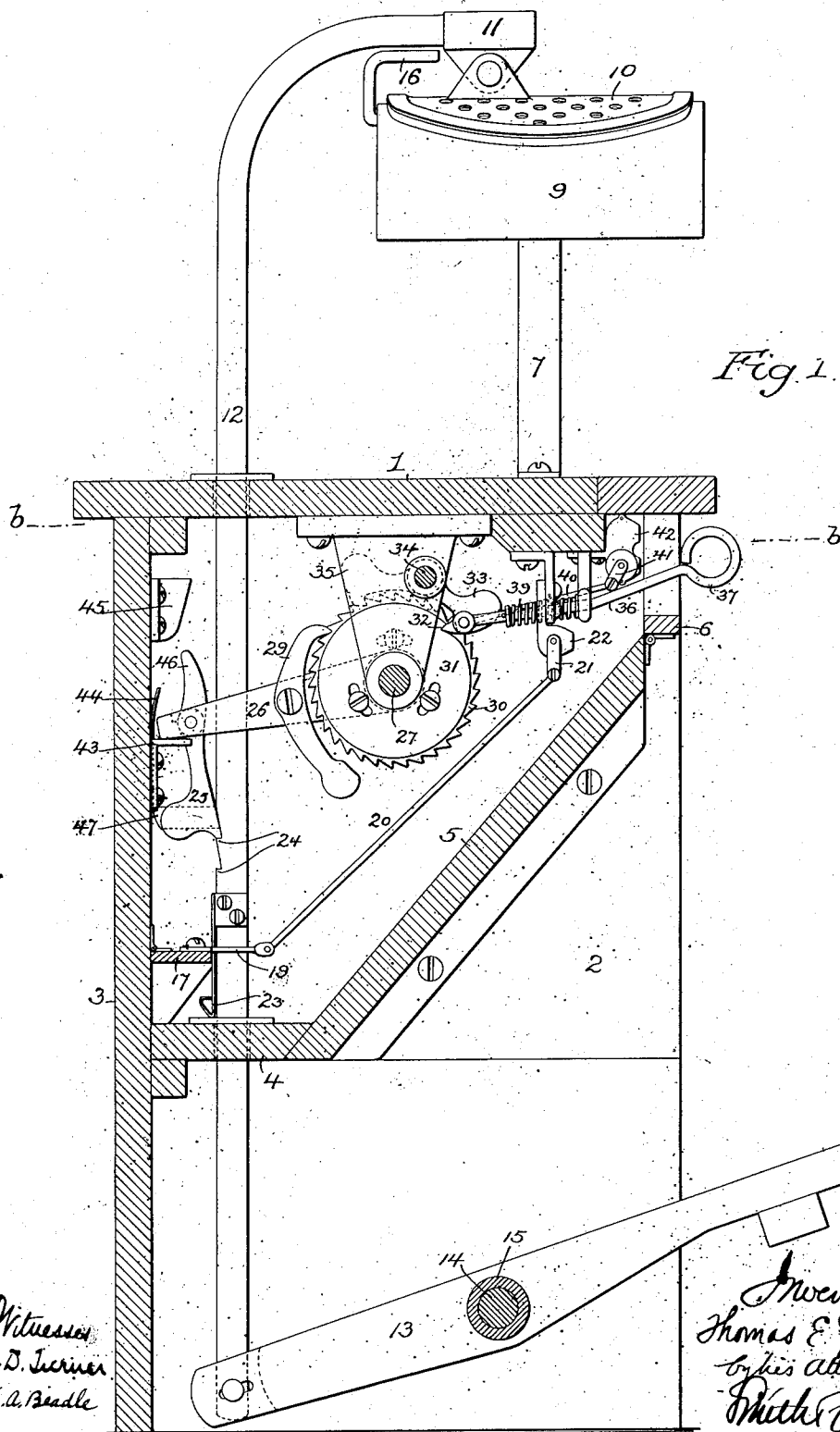


TOBACCO LEAF COUNTING AND GRADING APPARATUS.

Patented Apr. 22, 1913.

4 SHEETS—SHEET 1.

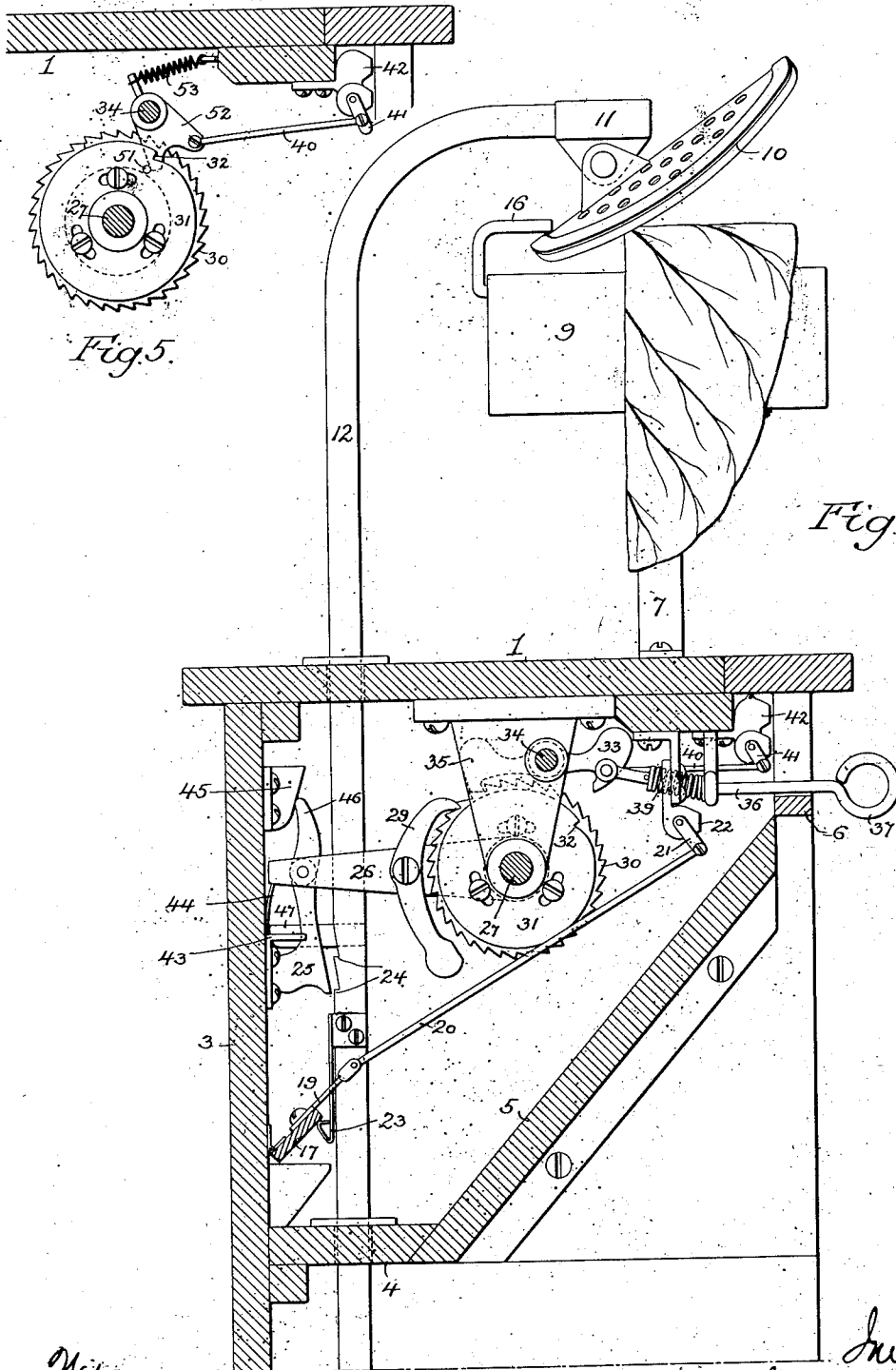
1,059,724.



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4 SHEETS—SHEET 2.

1,059,724.



Witnesses
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Kate A. Beadle

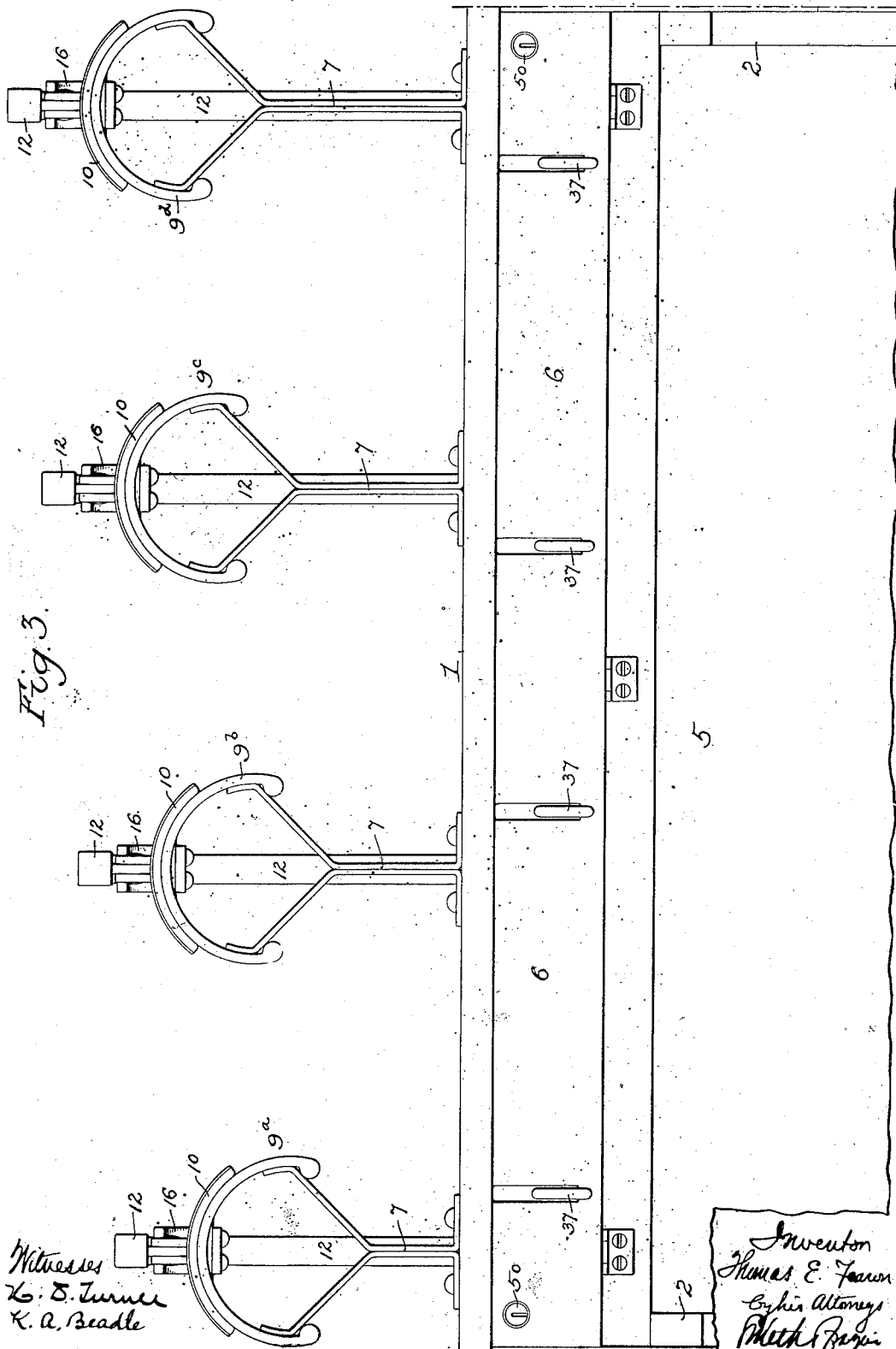
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4 SHEETS—SHEET 3.



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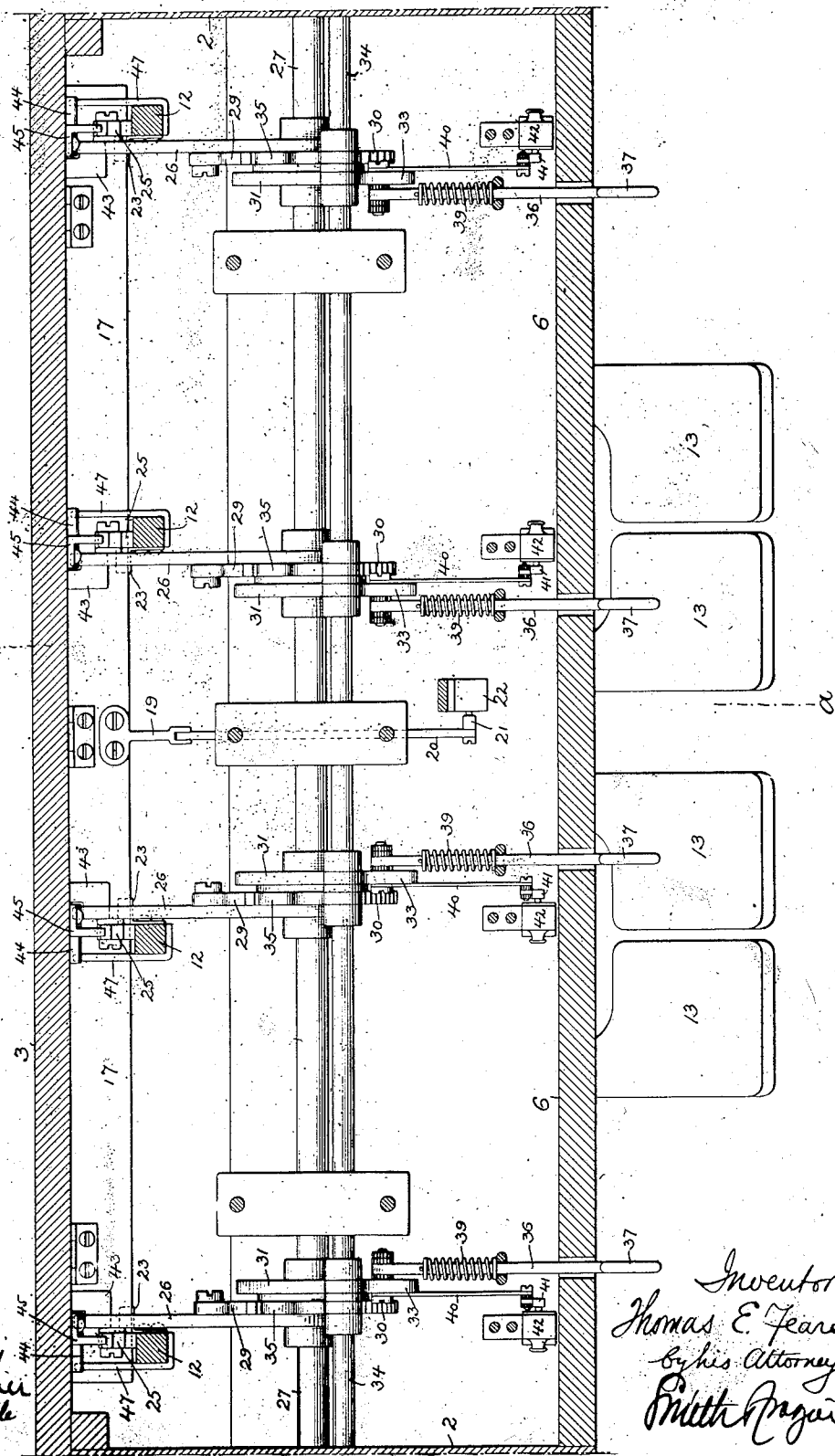
1,059,724.

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4 SHEETS—SHEET 4.

Fig 4 a

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UNITED STATES PATENT OFFICE.

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TOBACCO-LEAF COUNTING AND GRADING APPARATUS.

1,059,724.

Specification of Letters Patent.

Patented Apr. 22, 1913.

Application filed May 1, 1909. Serial No. 493,302.

To all whom it may concern:

Be it known that I, THOMAS E. FEARON, a citizen of the United States, residing in Philadelphia, Pennsylvania, have invented certain improvements in Tobacco-Leaf Counting and Grading Apparatus, of which the following is a specification.

In the manufacture of cigars the leaves intended for the production of wrappers are first stripped by the removal of the central stem and the opposite halves of the leaves, (technically known as "sides", but which I will, for convenience, refer to as "leaves") are bundled together and then given to an operator known as a "selector" whose duty it is to determine whether each leaf is capable of forming, one, two, three or four wrappers and to properly sort or grade the leaves, the capabilities of each leaf being determined partly by the size of the same and partly by its condition, since a perfect leaf may be capable of furnishing more wrappers than one of the same size which is torn, has holes in it, or is otherwise imperfect.

At present the selector besides sorting and grading the leaves has to count the same into bundles each capable of furnishing a predetermined number of wrappers (usually 100) and these bundles are then given to the operator who cuts the wrappers therefrom.

The object of my invention is to relieve the selector from the duty of counting the leaves and to accurately register the number of each sort or grade of the same, thereby not only providing the cigar manufacturer with reliable information as to the wrapper-producing value of any given lot of tobacco, but also removing a fruitful source of contention between the selector and the operator who cuts the wrappers, because of incorrect counting of the number of leaves in the bundles. This object I attain in the manner hereinafter set forth, reference being had to the accompanying drawings, in which—

Figure 1 is a transverse vertical section, on the line *a-a*, Fig. 4, of a tobacco leaf sorting and counting machine constructed in accordance with my invention; Fig. 2 is a similar view showing some of the parts in a different position from that represented in Fig. 1; Fig. 3 is a front view of part of the machine; Fig. 4 is a sectional plan view on the line *b-b*, Fig. 1, and Fig. 5 is a trans-

verse section illustrating a special construction of certain parts of the machine.

In the drawings, 1 represents a table or bench mounted upon a support comprising opposite ends 2 and a back 3, these parts, in conjunction with a bottom board 4, an inclined front 5 and a hinged and slotted flap 6, inclosing the greater part of the operating mechanism located below the table or bench 1, as shown in Fig. 1, and in order to prevent unauthorized access to said mechanism, the flap 6 may be provided with suitable locks 50, as shown in Fig. 3.

Mounted upon the table or bench 1 are suitable standards 7 supporting a series of saddles 9 of which there may be as many as there are likely to be different sorts or grades in the leaves to be handled, four of these saddles being shown in the present instance, and indicated respectively at 9^a, 9^b, 9^c and 9^d, in Fig. 3, the saddle 9^a receiving those leaves which will furnish but one wrapper, the saddle 9^b receiving those which will furnish two wrappers, the saddle 9^c receiving those which will furnish three wrappers and the saddle 9^d receiving those which will furnish four wrappers. Coöperating with each of these saddles is a clamping plate 10 pivotally mounted upon a head 11 secured to the forwardly bent upper end of a bar 12 which is suitably guided in the table or bench 1 and in the bottom board 4, and is pivotally connected, at its lower end, to a treadle 13, the series of treadles being mounted upon a longitudinal rod 14 extending from one end frame 2 to the other and the various treadles being maintained in their proper relation to one another by means of tube sections 15 or equivalent separators, filling pieces or retainers interposed between the treadles.

The selector, after determining the sort or grade of a particular leaf, depresses the treadle 13 corresponding with the saddle upon which said leaf is to be laid, thereby lifting the clamping plate 10, the leaf being then laid upon the saddle and the pressure upon the treadle removed so as to permit the clamping plate 10 to descend and confine said leaf to the saddle.

In order to facilitate the application of the leaf to the saddle, the latter has, at its rear end, a hooked finger 16, and as the clamp 10 is raised its rear portion comes into contact with this hooked finger which

thereby causes the clamp to tilt so as to raise its forward end and provide, at the front of the saddle, a space greater than the amount of lift imparted to the clamp, the application of the leaf to the saddle or to the leaf already piled thereon being effected conveniently and without risk of contact of the hands with the clamp. (See Fig. 2.)

Hinged to the back of the supporting structure of the machine is a longitudinal bar 17 having a projecting arm 19 which is connected by a rod 20 to the swinging arm 21 of a counting register 22, suitably supported beneath the table or bench 1, and upon each of the bars 12 is a spring catch 23 which, when said bar is lifted, engages the bar 17 and lifts the same so as to cause one operation of the counting register 22.

If the bar 12 has an extreme lift the spring catch 23 may pass beyond the bar 17, and the latter will then fall and on the descent of the bar 12, the spring catch 23 will first be pushed outward by contact with the bar 17 and will then spring in beneath the same so as to be in operative relation thereto on the next lift of the bar 12 or if the rise of the bar 12 is not sufficient to carry said catch 23 free from contact with the bar 17, the latter will drop when the bar 12 is lowered. There will thus be one operation of the register 22 for each lift of either of the bars 12 and its clamp 10 and said register thus becomes a primary register for counting the total number of leaves applied to the various saddles, and in order to keep a register of the number of bundles applied to each of the saddles and thus determine how many of each sort or grade of leaves are contained in a given quantity of tobacco, I provide each of the bars 12 with a series of teeth 24 for engaging a weighted pawl 25 pivotally mounted near the rear end of an arm 26, the latter being free to swing upon a longitudinal shaft 27 and carrying a pivoted and weighted pawl 29 which engages with the teeth of a ratchet wheel 30 free to turn on said shaft 27, the ratchet wheel corresponding to each saddle 9 having teeth whose number is dependent upon the number of leaves necessary to form a bundle on said saddle, that is to say the number of leaves necessary to form one-hundred wrappers, each rotation of each ratchet wheel therefore representing a bundle of leaves of its respective grade.

Secured to one side of each of the ratchet wheels 30 is a disk 31 having, in its periphery, a notch 32 adapted to be engaged by a weighted pawl 33 hung to a longitudinal rod 34 upon which is also pivotally mounted a detent 35 shown by dotted lines in Fig. 1, whereby back movement of the ratchet wheel is prevented. Movement of the disk 31 and of the ratchet wheel 30 to

which it is secured will therefore be prevented after said ratchet wheel has made one complete revolution, and, through the medium of the arm 26 and pawl 25, this will serve to lock against rising movement the bar 12 cooperating with the corresponding saddle and will indicate to the operator that the proper number of leaves have been applied to said saddle.

In order to release the mechanism so that the bar 12 can be raised and the clamp plate 10 lifted to permit of the removal from the saddle of the bundle of leaves applied thereto, the pawl 33 is connected to a rod 36 which projects through one of the slots in the flap 6, and has, at its outer end, a suitable handle 37, whereby the attendant can, by pulling upon the rod, remove the pawl 33 from engagement with the notch 32 of the disk 31 and thereby permit of the necessary lift of the bar 12, the rod being normally retained in its innermost position by means of a coiled spring 39 interposed between a collar on the rod and the hanger by which said rod is guided. Each pawl 33 also has pivotally connected to it the rear end of a rod 40 whose front end is connected to the arm 41 of a counting register 42, which thus constitutes a secondary register for counting the number of bundles of leaves applied to its respective saddle.

As the bar 12 is raised, so as to cause the lifting of its clamp 10 to permit removal of the bundle of leaves from any one of the saddles, the notch 32 of the corresponding disk 31 is carried forwardly and if the rod 36 is then released and moved inwardly by means of its spring 39, the pawl 33 will contact with the periphery of the disk 31 and will be in position to again engage with the notch 32 when said disk has completed another revolution.

The extent of lifting movement of each bar 12 decreases as the leaves are successively deposited upon the saddles 9 and arrest the descending movement of the clamp 10 at progressively higher points, and the spring catch 23 is so disposed in respect to the bar 17 that it will engage with the latter when the descending movement of the bar 12 is shortest. To reduce the amount of lost motion in connection with the operation of the pawl 25, however, the bar 12 is provided with a plurality of teeth 24 and in order that the pawl carrying arm 26 may have a definite and predetermined movement irrespective of the variation in the extent of movement of the bar 12, provision is made for releasing the pawl 25 from the control of said bar after such predetermined movement has been imparted to the arm 26. When the arm 26 is in its lowermost position its outer arm rests upon a bracket 43 mounted upon the back board 3 of the supporting structure and upon the latter are

also mounted a spring catch 44 and a cam 45 above the bracket. When the pawl 25 and its carrying arm 26 have been raised with the bar 12 to a certain extent a tail 46 on the pawl 25 comes into contact with the cam 45, the pawl is thereby moved outwardly from engagement with the toothed portion of the bar 12, and the pawl and its carrying arm fall until the end of the arm is caught and retained by the spring catch 44, the pawl being thereby held out of engaging position until the toothed portion of the bar 12 has passed the same, whereupon a projecting finger 47 on the bar depresses the spring catch 44 and permits the pawl-carrying arm 26 to drop to its normal position of rest upon the bracket 43.

When the clamp 10 is raised in order to permit of the removal of a bundle of leaves from any one of the saddles 9, it may be held in the elevated position until said bundle has been removed and the first leaf of the next bundle has been applied to the saddle or, if this mode of operation is not desirable, the clamp may be permitted to descend after the bundle has been removed and may be again raised for the insertion of the first leaf of the next bundle, in which case, the indication of the primary register 22 will represent the actual number of leaves plus the number of bundles, and each ratchet wheel 30 should have one more tooth than the actual number of leaves constituting a bundle for its respective saddle, in order to prevent the locking of the bar 12 before the proper number of leaves has been applied to said saddle.

By relieving the selector from the duty of counting the leaves, time is saved and the selector's attention is not distracted from the main work in hand, which is, of course, the sorting and grading of the leaves.

Pressure of the clamp 10 upon the top-most leaf of the pile retains the same in the relatively smooth condition imparted to it by the action of the hands in laying it in position on the top of the pile, consequently the bundle of leaves when removed from the saddle is in good condition for subsequent handling or use.

In some cases, I prefer to operate the secondary register 22 directly from the ratchet wheel 30, or equivalent member of the counting mechanism, in order that such operation may not be dependent upon or under control of the selector. Fig. 5 illustrates one method of accomplishing this result, a pin 51 on the disk 31 actuating a lever 52 connected to the register operating rod 40 and hung to the longitudinal rod 34, a spring 53 serving to return the lever to its normal position when it is free from the control of the pin 51. If desired, the secondary registers 22 may alone be used, so as to indicate only the number of bundles of the respective

grades of leaves, but I prefer to use the primary register as well.

I claim:

1. In a machine of the character described, the combination of a saddle for receiving the leaves, a clamp for pressing upon the leaves, means for raising and lowering the clamp, and means for tipping the clamp as it rises. 70

2. In a machine of the character described, the combination of a saddle for receiving the leaves, a clamp for pressing upon the leaves, a movable carrier upon which said clamp is pivotally mounted, and means for tipping the clamp as it rises. 75

3. In a machine of the character described, the combination of a plurality of saddles for receiving different sorts or grades of leaves, a plurality of clamps for pressing upon the leaves, a movable operating device for each clamp, a registering device, a bar for operating the same, and means whereby the movement of any one of the clamp operating devices is caused to operate said bar. 80

4. In a machine of the character described, the combination of a plurality of saddles for receiving different sorts or grades of leaves, a plurality of clamps for pressing upon the leaves, a movable operating device for each clamp, a primary registering device common to all of said operating devices, and a plurality of secondary registering devices each operating in connection with one of the operating devices. 85

5. In a machine of the character described, the combination of a saddle for receiving the leaves, a clamp for pressing upon the leaves, a movable operating device for said clamp, and means for locking said operating device when a predetermined number of leaves have been deposited upon the saddle. 90

6. In a machine of the character described, the combination of a saddle for receiving the leaves, a clamp for pressing upon the leaves, a movable operating device for said clamp, means for locking said operating device when a predetermined number of leaves have been deposited upon the saddle, and means for releasing said locking device. 95

7. In a machine of the character described, the combination of a saddle for receiving the leaves, a clamp for pressing upon the leaves, a movable operating device for said clamp, means for locking said operating device when a predetermined number of leaves have been deposited upon the saddle, means for releasing said locking device, and means for registering the number of such locking and releasing operations. 100

8. In a machine of the character described, the combination of a saddle for receiving the leaves, means for counting the number of leaves applied to the saddle, means for locking said counting device when a predetermined number of leaves have been applied 105

to the saddle, and means for releasing said counting device.

9. In a machine of the character described, the combination of a plurality of saddles
5 for receiving different sorts or grades of leaves, and a counting device common to all of the saddles.

10. In a machine of the character described, the combination of a plurality of
10 saddles for receiving different sorts or grades of leaves, a plurality of counting devices each operating in connection with its respective saddle, and a counting device operable in connection with any one of the
15 saddles.

11. In a machine of the character described, the combination of a plurality of
20 saddles for receiving different sorts or grades of leaves, a clamp operable in connection with each saddle for pressing upon the leaves, means for independently operating said clamps, and a counting device common to all of the clamp operating devices.

12. In a machine of the character described, the combination of a plurality of
25 saddles for receiving different sorts or grades of leaves, a clamp operable in connection with each saddle for pressing upon the leaves, means for independently operating said clamps, a plurality of counting devices, each operable in connection with its
30 respective clamp operating device, and a counting device operable in connection with any one of the clamp operating devices.

35 13. In a machine of the character described, the combination of a saddle for re-

ceiving the leaves, means for counting the number of leaves applied to the saddle, means for locking said counting device after a predetermined number of leaves have been
40 applied to the saddle, means for releasing said locking device, and a register operated on each release of the same.

14. In a machine of the character described, the combination of a saddle for re-
45 ceiving the leaves, a clamp pressing upon the leaves, a movable operating device for said clamp, a counting device having a pawl engaging said operating device, and means for releasing the pawl from engagement
50 with the operating device before the latter has completed its movement.

15. In a machine of the character described, the combination of a saddle for re-
55 ceiving the leaves, a clamp pressing upon the leaves, a movable operating device for said clamp, a counting device having a pawl engaging said operating device, means for releasing the pawl from engagement with the
60 operating device before the latter has completed its movement, means for retaining the pawl in its position of release during further movement of the operating device, and means for then releasing the pawl from
65 such restraint.

In testimony whereof, I have signed my name to this specification, in the presence of two subscribing witnesses.

THOMAS E. FEARON.

Witnesses:

HAMILTON D. TURNER,
KATE A. BEADLE.