

Nov. 6, 1923.

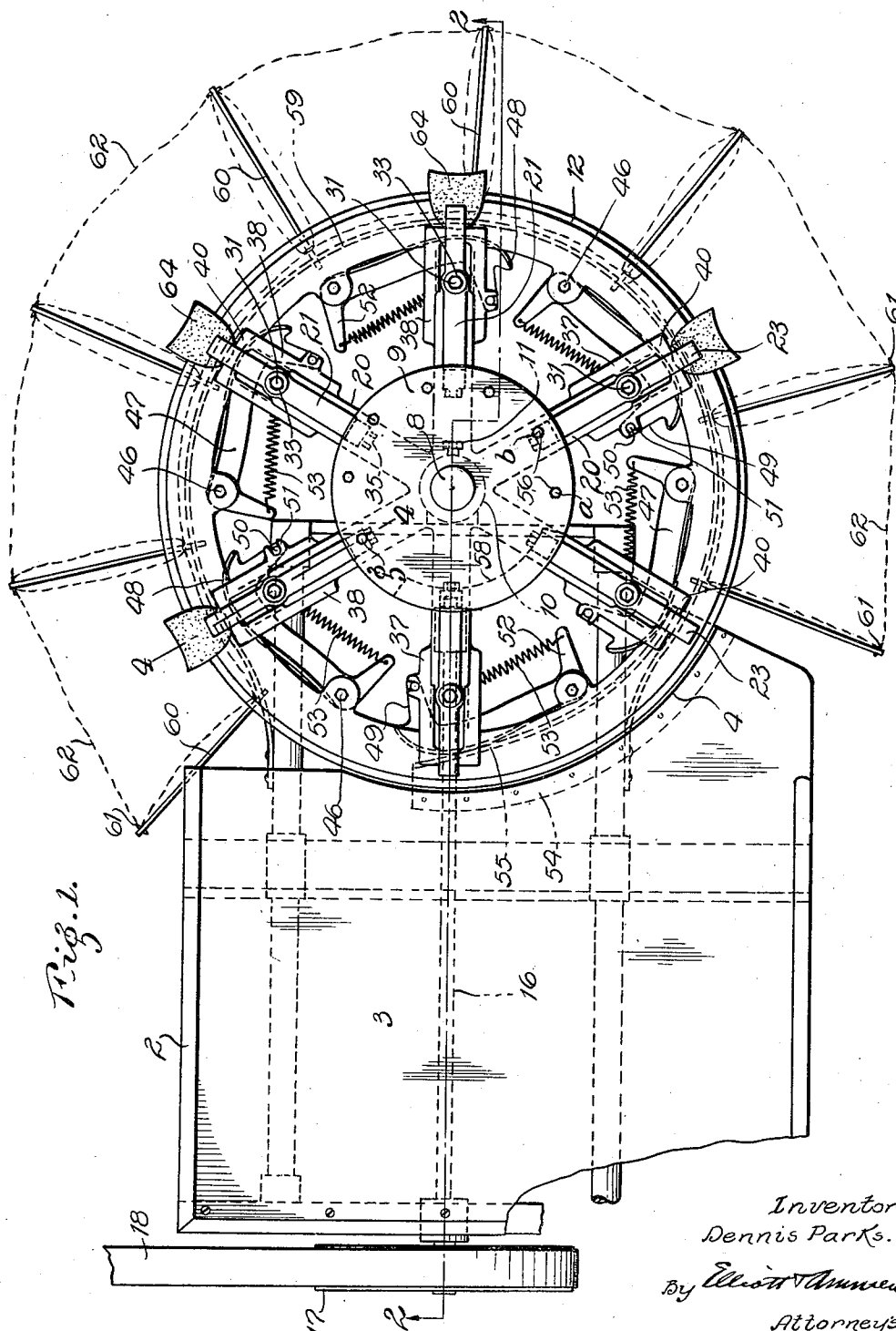
D. PARKS

1,472,989

LEATHER GRADING MACHINE

Filed May 18, 1922

2 Sheets-Sheet 1



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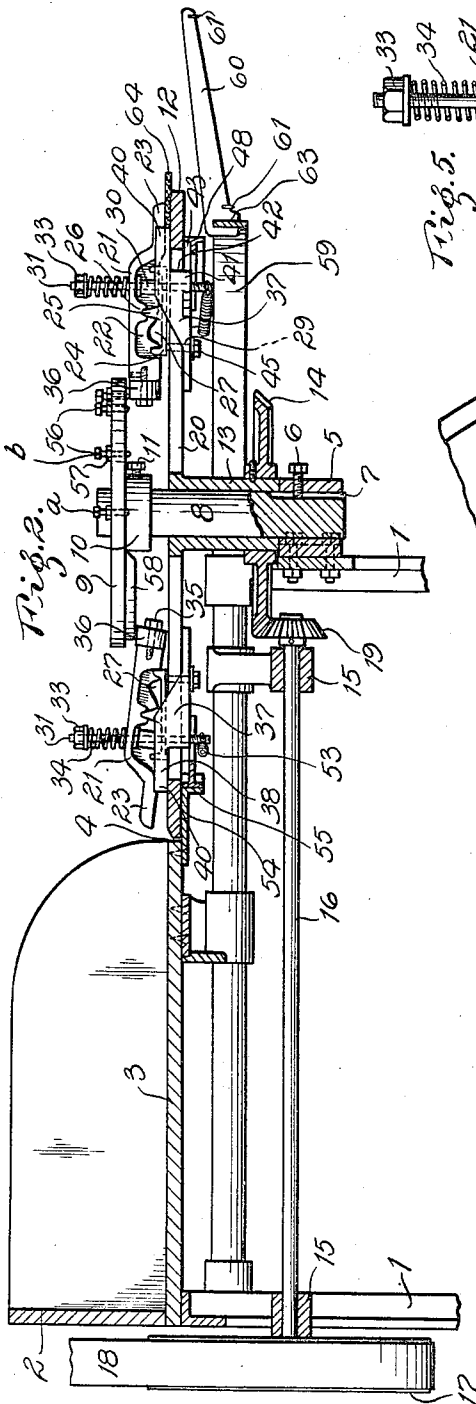
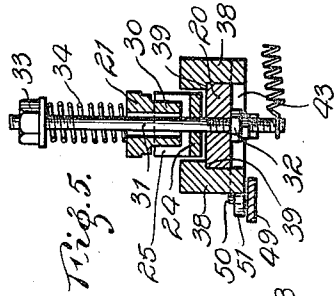
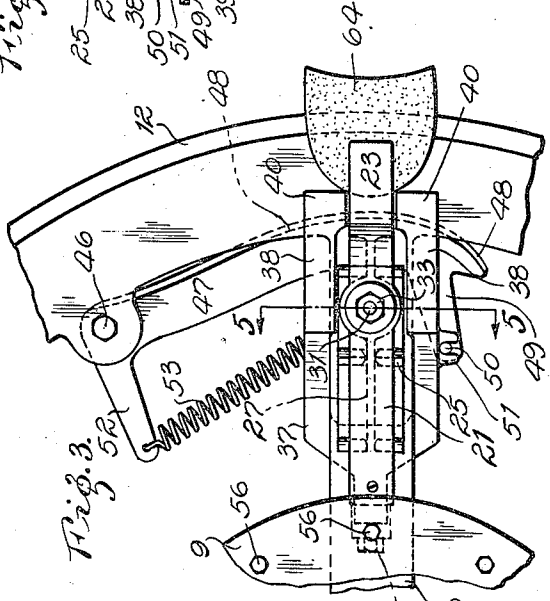
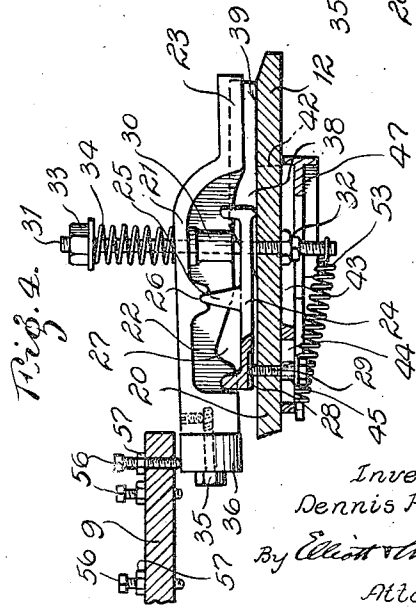
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2 Sheets-Sheet 2



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UNITED STATES PATENT OFFICE.

DENNIS PARKS, OF ST. LOUIS, MISSOURI.

LEATHER-GRADING MACHINE.

Application filed May 18, 1922. Serial No. 561,882.

To all whom it may concern:

Be it known that I, DENNIS PARKS, a citizen of the United States, residing in the city of St. Louis and State of Missouri, have invented new and useful Improvements in Leather-Grading Machines, of which the following is a specification.

This invention has for its general object, to provide a novel grading machine for effectively, accurately, and rapidly grading pieces of leather, either in the form of scrap leather, or of lifts or soles.

The above general object is attained through the medium of a machine having a member movable in a fixed path and provided with one or more leather holding devices, which operates automatically to sort or grade pieces of leather fed into it by an operator, the machine automatically discharging the pieces of leather at various points from the holder or holders determined by the thickness of the leather itself, so that pieces of leather having the same thickness, or substantially so, will be discharged at the same point, or into the same pile or compartment, by the machine.

My invention finds its preferred embodiment in the machine shown in the accompanying drawing which is characterized by a rotatable circular head carrying at intervals around its periphery, a series of radially disposed devices, each of which includes a clamping and an ejecting member, by means for automatically setting and releasing each clamping member in turn, by means for automatically setting or "cocking" each ejecting member in turn, and finally, by a plurality of stationary contact devices arranged in the path of movement of the clamping members and positioned relative thereto according to a predetermined plan or scale of graduation, whereby each clamping member will engage and be released by one or the other of the contact devices to permit its ejector to discharge the piece of leather held by it, according as the thickness of the leather held positions the clamping member to engage the contact device whose relative adjustment or graduation corresponds with the thickness of such piece of leather.

In the drawings—

Figure 1 is a plan view partly broken away, illustrating a grading machine constructed according to my invention;

Figure 2 is a sectional view taken on the line 2—2 of Figure 1;

Figure 3 is a plan view on an enlarged scale of a portion of the machine illustrating one of the combined clamping and ejector members with the parts directly co-operating therewith, and showing a lift engaged by the clamping member;

Figure 4 is a sectional view on an enlarged scale taken on the line 4—4 of Figure 1, showing the position of one of the clamping and ejecting devices after the lift has been released and discharged; and

Figure 5 is a sectional view on the line 5—5 of Figure 3.

Referring now to the drawings, the numerals 1 in Figure 2, indicate a portion of the upright members of a frame of more or less skeleton formation, which supports on its upper side, a trough 2 having a bottom 3 provided with a circularly recessed edge indicated in Figure 1, at 4. Secured on the frame member 1 at the right of the machine, as shown in Figure 2, is a sleeve bearing 5 in which is adjustably secured as by means of a bolt 6 engaging in a slot 7 thereof, a post 8 having adjustably mounted on its upper end a circular plate 9, the plate having a hub 10 on its under side through which passes a set screw 11 to engage the post 8. The post 8 has non-rotatably mounted thereon, a circular head 12 having depending from its under side, a sleeve 13 resting upon the bearing 5. Secured on the sleeve 13 is a large bevel gear 14. Extending transversely of the frame, mounted in suitable bearings 15 thereon, is a cross-shaft 16 provided at one end with a pulley 17 for receiving a driving belt 18 and at its other end with a bevel pinion 19 meshing with the bevel gear 14. By the mechanism described, the circular head 12 may be continuously rotated. This circular head carries a series of combined clamping and ejecting members and the construction and method of operating these latter to grade leather, will now be described.

Referring the Figure 1, I have shown six of the combined clamping and ejecting members mounted on the circular head 12 but any suitable number of these members, greater or less than shown, may be employed.

The circular head 12 comprises a flat peripheral portion which is supported by

six spokes or arms 20 radiating from the top of the sleeve 13. Mounted on each of these arms is one of the combined clamping and ejecting members. All of these members are of the same construction, and a description of one of them with the means for operating it, will now be given, referring particularly to Figures 3, 4 and 5.

Pivotally mounted near the outer end of each of the arms 20 is a clamping member 21 which is in the form of a casting having a hollow body portion 22 projecting from the outer end of which is a tongue 23 which is provided with a flat under side located above the top of the circular head 12, and constituting the clamp proper of the device. Mounted on the upper side of the arm 20 is a fulcrum member 24 having a fulcrum 25 projecting upward therefrom, on which are pivotally mounted socket members 26 formed on the under side of the clamping member on either side of a central longitudinal web 27. On its under side, socket member 24 is provided with a groove 28 which receives the upper end of a screw 29 inserted from the under side of the arm 20. This screw serves as a support for the inner end of the fulcrum member 24 and likewise prevents lateral movement of said member. Located on the under side of the body of the clamping member 21 is a hollow boss 30, and extending through to the top of the clamping member 21, the hollow boss 30, the fulcrum member 24 and arm 20, is a bar 31 screwthreaded at its end portions and having a nut 32 thereon bearing against the under side of the arm 20. Mounted on the upper end of the bar 31 is an adjusting nut 33 and between this adjusting nut and the top of the clamping member 21 is a coil spring 34, the tension of which on the clamping member may be regulated by turning the nut 33 in one direction or the other, as will be understood. The spring 34 normally tends to press the clamp 23 toward the top of the circular head 12 to clamp a piece of leather placed between these two parts. In this movement the clamping member 21 rocks on the fulcrums 25, the aperture in the top of the clamping member and through the boss 30 being large enough to permit of this movement as will be seen from an inspection of Figure 5. In the rear or inner end of the clamping member 21, there is screwed the end of a headed bolt 35 on the shank of which is rotatably mounted a roller 36.

The parts above described constitute the clamping member in its entirety. Co-operating with this clamping member is an ejector which will now be described.

This ejector is designated generally in the various figures by the numeral 37, and comprises an integral casting providing two side bars 38 which extend on either side of

and parallel with the arm 20 and are shouldered, as indicated at 39, Figure 5, to slide upon and be supported by the upper side of said arm. At the front end, the bars 38 project over the circular head 12 and extend inwardly to lie in close proximity to the sides of the clamp 23, such end portions of the bars being indicated at 40 and serving as the contact members for ejecting the leather from under the clamp when the latter is raised, as hereinafter described.

At a suitable distance from the outer ends, the bars 38 extend downwardly at right angles on either side of the arm 20, as indicated at 41, to provide shoulders 42 which engage the inner edge of the circular head 12 to arrest the outward movement of the ejector. At their rear ends, side bars 38 are united by a flange or web 43 located on the under side of the arm 20, and which web is provided with a slot 44 which receives the shank of the screw 29 previously referred to. This screw has an enlarged head 45 which serves to slidably support the rear end of the ejector, as shown more clearly in Figures 2 and 4. The ejector is operated by means which will now be described.

Pivotally mounted on the inner side of the circular head at 46, is an actuator in the form of an arm 47 having a curved forward edge portion 48. At its outer end, that is, at the end remote from the head 46, the arm 47 is provided with an inward projection 49 extending upward from which is a pin 50 which engages in a slotted lug 51 provided on the side of one of the flanged side bars 41 of the ejector. At its inner end the arm 47 is provided with an inwardly extending lever 52 to which is connected one end of a coil spring 53, the other end of which is connected to the lower end of the bar 31, previously referred to, and as indicated more clearly in Figures 4 and 5. Mounted on the under side of the bottom 3 of the trough 2, is a cam plate 54, the outer edge of which is flanged, as indicated at 55, to provide a contact member for engaging the curved edge 48 of the arm 47 in the rotation of the circular head 12. This cam plate is shown by dotted lines in Figure 1 and in section in Figure 2. When the curved edge of arm 47 engages this cam plate, the outer end of the arm is forced inward, thereby moving the ejector 37 inward, that is, toward the sleeve 13 and, at the same time, extending the spring 53. When the arm is released, and the ejector is free to move, it is thrown outward by the pull of spring 53 on lever 52. It now remains to describe the method of operating the clamping members which, with the leather held thereby, operate to hold the ejectors "cocked", and to release them.

Mounted in the circular plate 9 at equal distances apart around the peripheral por-

tion thereof, are a series of contact devices 56, Figures 2 and 4, which are in the form of set screws passing through and having screwthreaded engagement with said circular plate and held to any adjusted position by means of clamping nuts 57. The lower ends of these screws project below the under side of the circular plate at varying distances and in the circular path of movement followed by the roller 36 of each clamping member. These adjusting screws extend around only a portion of the circular plate 9 and in the portion of this plate not occupied by these screws, there is provided on its under side, an arcuate cam projection 58 which extends a suitable distance below the under side of the plate and also in the path of movement of the rollers 36. The cam projection 58 is located opposite the cam plate 54 and the latter is secured about the curved edge 4 of the bottom 3 of the trough 2. The purpose of this arrangement will appear from the description of the operation to be given later.

The final feature of the invention relates to the arrangement of receptacles for receiving the pieces of leather, or lifts, which are discharging at various points around the periphery of the circular head 12. To this end there is secured on the frame of the machine beneath the circular head 12, as shown more particularly in Figure 2, a flat metal ring 59, arranged with its periphery vertically disposed, and adjustably mounted on this ring are a series of arms 60 which are provided with suitable devices, such as hooks 61, for supporting the upper edges of sacks 62. The inner ends of the arms 60 are slotted on their under sides as indicated, as to one of these arms, at 63 in Figure 2, these slots being adapted to be inserted over the upper portion of the ring 59 so that the arms are slidably mounted thereon and may be moved to any desired position on the ring. As shown in Figure 2, seven sacks are thus supported around the circular head to accommodate a corresponding number of grades of leather and ordinarily this will be the maximum number of grades that will be required to be made.

The operation of the machine is as follows:

The shaft 16 being driven from the pulley 17, the circular head 12 will be rotated, carrying the combined clamping and ejecting members with it. As each of the arms 47 engages the flange 55 of cam plate 54, it will be pressed inward, extending spring 53, and will be held in this position until the arm moves off of the cam plate. Coincident with this operation, the roller 36 of the clamping member will ride under the cam projection or rail 58, depressing the inner end of the clamping member and rais-

ing the outer end or clamp 23 thereof. Both of the operations last described, occur, as will be seen from an inspection of Figure 1, as the clamping member is moving past the curved edge 4 of the trough 2. The operator places a piece of leather from the trough 2 under the clamp 23 at any period of the movement of the circular head prior to the time the clamping member passes beyond the forward edge of the bottom 3 of the trough. Immediately thereafter, in the continued movement of the circular head, the roller 36 passes from under the cam rail 58 allowing spring 34 to force the clamp 23 downward to engage the piece of leather between it and the top of the circular head 12. This position is shown as to several of the clamping members in Figure 1, and in Figures 2 and 3, in each instance, a lift 64 being shown as clamped in the manner described. Immediately after this clamping action, the outer end of the arm 47 will pass off of the flange 55 of cam plate 54, releasing said arm which, however, is prevented from moving the ejector 37 outward by reason of the fact that the latter is held against movement by engagement with the rear side of the lift held by the clamp 23. The clamping member continues to carry the lift around until the roller 36 engages the bottom of the adjusting screw 56 which has been previously set to be engaged by the roller at the elevation of the latter determined by the thickness of the piece of leather held by the clamping member. As the roller passes under this adjusting screw, the inner end of the clamping member will be lowered, thereby raising the clamp 23, whereupon the ejector 37 will be projected outward to discharge the lift 64 through the medium of spring 53 acting on arm 52 to turn arm 47 on its pivot 46 and the pin 50 on the projection 49 engaging the lug 51 of the ejector. The position of the parts immediately after this operation, is shown at the upper left hand side of Figure 1 where the lift is shown discharged and as falling into a sack 62.

In the parlance of the trade, the thickness of leather is referred to in terms of "irons", which are flat metal strips of a given thickness, and hence a lift will be designated as having a thickness of a certain number of irons. In adjusting the contact devices or screws 56, one iron, say, will be placed under the clamp 23 and the first adjusting screw 56, indicated by "a" in Figures 1 and 2, will be screwed downward until it will be engaged by the roller of the clamping member having the single iron under its clamp. Then two irons will be placed under a clamp and the next adjusting screw, indicated by "b" in Figures 1 and 2, will be screwed down until the roller of the clamping member hav-

ing the two irons under it, will engage and be depressed by it; and so on with the remaining adjusting screws. The final adjusting screw, indicated by "g" in Figure 1, will be set for the greatest thickness of leather to be dealt with; and as this adjusting screw will obviously extend a less distance below the under surface of the circular plate 9 than any of the others, it naturally follows that when a piece of leather of this thickness is engaged by a clamping member, the roller 36 of that clamping member will not engage any of the adjusting screws until the adjusting screw "g" is reached, as the roller 36 will be lowered by the thickness of the leather clamped below the planes occupied by the lower ends of all of the other adjusting screws except the screw "g". On the other hand, if the thinnest piece of leather to be dealt with is placed in the clamping member, it will be discharged from the machine as soon as the roller 36 of said clamping member passes under the first adjusting screw "a".

It will be understood that the operator does not have to select pieces of leather of any required thickness, but simply inserts each piece of leather as he picks it up, under the clamping member passing by the table. In other words, the operator simply feeds pieces of leather to the machine, the machine itself operating automatically to separate the pieces into different grades and to discharge them into the appropriate sacks for such grades.

It will furthermore be understood, that as each piece of leather is inserted under a clamp, its rear edge will be placed against the front end of the ejector 37 so that when the arm 47 passes off of the cam plate 54, outward movement of the ejector is prevented by the leather until the clamp is released by the roller 36 passing under one or the other of the adjusting screws "a", "b", etc.

For the sake of brevity, I have limited the description to the construction as shown, and I have not referred to, nor illustrated alternative or modified constructions. I wish it understood, however, that I do not thereby mean to confine myself to the structural details thus described, as it is obvious that various changes in details of construction could be made in the machine I have illustrated as representing the best known embodiment of my invention without departing from the broad idea of the invention as defined in the claims. It seems desirable to state, however, that the multiplication of the clamping members is in the interest of speed in grading, as it will be obvious that one clamping member only could be used and all of the results herein referred to obtained although, of course, at the cost of a great expenditure of time.

It may finally be stated that while I have

referred only to grading leather, the machine would be equally adapted to grading other materials of a relatively flat character, and such use of the machine is contemplated.

I claim:

1. A grading machine comprising a clamping device movable in a fixed horizontal path and adapted to temporarily retain a piece of leather inserted therein and to be functionally positioned by the thickness of the leather, and a plurality of stationary members positioned in the line of movement of said clamping device at different distances above said device, one or the other of which is adapted to be engaged thereby to release the clamp according to the position of the latter as determined by the thickness of the leather clamped by it.

2. A grading machine comprising a member movable in a fixed horizontal path and having mounted thereon a series of clamping devices, each of which is adapted to temporarily retain a piece of leather inserted therein and to be functionally positioned by the thickness of the leather, and a plurality of stationary members positioned in the line of movement of said clamping devices at different distances above the same, one or the other of which is adapted to be engaged by the various clamping devices to release the clamp thereof according to the position of the latter as determined by the thickness of the leather clamped by it.

3. A grading machine comprising a member continuously movable in a fixed horizontal path in the same direction, a clamping device pivotally mounted on said member, adapted to temporarily retain a piece of leather inserted between one end thereof and said member and to be functionally positioned by the thickness of the leather, and a plurality of stationary members positioned in the line of movement of said clamping device at different distances above the same, one or the other of which is adapted to be engaged by the other end of said device to release the clamp thereof according to the position of the end as determined by the thickness of the leather clamped.

4. A grading machine comprising a continuously rotatable member, a series of clamping devices pivotally mounted thereon, each of which is adapted to temporarily retain a piece of leather inserted between one end thereof and said member and to be functionally positioned by the thickness of the leather, and a plurality of means stationed in the line of movement of said clamping devices and successively varying in height in regular gradation with respect to the normal position of the clamping devices, one or the other of which means is adapted to be engaged by the other end of the various clamping devices to release the clamp

thereof according to the position of the latter end as determined by the thickness of the leather clamped.

5 5. A grading machine comprising a support rotatable in a fixed path, a clamping device pivotally mounted thereon and adapted to temporarily retain a piece of leather inserted between one end thereof and said support and to be functionally positioned by the thickness of the leather, a plurality of means stationed in the line of movement of said clamping device, one or the other of which is adapted to be engaged by the other end thereof to release the clamp according to the position of the latter end as determined by the thickness of the leather clamped, and automatic means associated with the clamping device for ejecting the piece of leather when the clamp is released.

6. A grading machine comprising a support rotatable in a fixed path, a clamping device pivotally mounted thereon and adapted to temporarily retain a piece of leather inserted between one end thereof and said support and to be functionally positioned by the thickness of the leather, a plurality of means stationed in the line of movement of said clamping device, one or the other of which is adapted to be engaged by the other end thereof to release the clamp according to the position of the latter end as determined by the thickness of the leather clamped, and a spring-actuated ejector associated with the clamping device operating automatically to eject the piece of leather when the clamp is released.

7. A grading machine comprising a member movable in a fixed path, a clamping device mounted thereon adapted to temporarily retain a piece of leather inserted therein and to be functionally positioned by the thickness of the leather, a plurality of means stationed in the line of movement of said clamping device, one or the other of which is adapted to be engaged thereby to release the clamp according to the position of the latter as determined by the thickness of the leather clamped by it, a spring-controlled ejector associated with said clamping device, and means for automatically setting the ejector during the movement of said member whereby, when the clamp is released, the ejector will operate to discharge the piece of leather held by the clamping device.

8. A grading machine comprising a support movable in a fixed path, a clamping device mounted thereon having a movable member adapted to engage a piece of leather inserted under it, and to be functionally positioned by the thickness of the leather, a plurality of means stationed in the line of movement of said clamping device, one or the other of which is adapted to be engaged by the movable member thereof to release

the clamp according to the position of said movable member as determined by the thickness of the leather engaged by it, and means operating automatically in the movement of said support to raise said movable member to permit a piece of leather to be inserted thereunder, and then to release the same.

9. A grading machine comprising a support movable in a fixed path, a clamping device mounted thereon having a movable member adapted to engage a piece of leather inserted under it, and to be functionally positioned by the thickness of the leather, a plurality of means stationed in the line of movement of said clamping device, one or the other of which is adapted to be engaged by the movable member thereof to release the clamp according to the position of said movable member as determined by the thickness of the leather engaged by it, means operating automatically in the movement of said support to raise said movable member to permit a piece of leather to be inserted thereunder, and then to release the same, an ejector associated with said clamping device, and means for automatically operating said ejector when the clamp is released to cause a discharge of the leather held thereby.

10. A grading machine comprising a support movable in a fixed path and having mounted thereon a series of pivoted spring-pressed clamping members, each of which has an outer end formed as a clamp for engaging a piece of leather inserted between it and said support and an inner end adapted to be functionally positioned by the thickness of the leather, a plurality of means stationed in the line of movement of the inner ends of said clamping members, one or the other of which means is adapted to be engaged by the inner ends of the respective pivoted members to release the clamp thereof according to the position of the particular inner end as determined by the thickness of the leather clamped, a cam adapted to be engaged by the inner ends of said pivoted members to raise the clamping ends of the latter in the movement of said support to permit the insertion under each of the piece of leather to be clamped, and automatic means associated with each clamping member for ejecting the piece of leather when the clamp is released.

11. A grading machine comprising a continuously rotatable support having mounted thereon a series of pivoted spring-pressed clamping members, each of which has an outer end formed as a clamp for engaging a piece of leather inserted between it and said support, and an inner end adapted to be functionally positioned by the thickness of the leather, a fixed member located above the inner ends of said clamping members and having a series of adjustable contact devices mounted therein in the path of movement of

said inner ends and successively varying in height in regular gradation with respect to the normal position of said inner ends, one or the other of which contact devices is adapted to be engaged by the inner ends of the respective pivoted members to release the clamp thereof according to the position of the particular inner end as determined by the thickness of the leather clamped, a cam adapted to be engaged by the inner ends of said pivoted members to raise the clamping ends of the latter in the movement of said support to permit the insertion under each of the piece of leather to be clamped, and automatic means associated with each clamping member for ejecting the piece of leather when the clamp is released.

12. A grading machine comprising a support movable in a fixed path, a clamping device mounted thereon having a movable member adapted to engage a piece of leather inserted under it and to be functionally positioned by the thickness of the leather, a plurality of means stationed in the line of movement of said clamping device, one of the other of which is adapted to be engaged by the movable member thereof to release the clamp according to the position of said movable member as determined by the thickness of the leather engaged by it, means operated automatically in the movement of said support to raise said movable member to permit a piece of leather to be inserted thereunder, and then to release the same, a spring-controlled ejector associated with said clamping device, and means for automatically retracting the ejector during the movement of said member while the clamp is raised whereby, when a piece of leather is inserted under the clamp and the clamping member is released, the ejector will be held in its retracted position by the leather and whereby, when the clamp is raised from the leather, the ejector will operate to discharge the piece of leather.

13. A grading machine comprising a member movable in a fixed path, a clamping device mounted thereon adapted to temporarily retain a piece of leather inserted therein and to be functionally positioned by the thickness of the leather, a plurality of means stationed in the line of movement of said clamping device, one or the other of which is adapted to be engaged thereby to release the clamp according to the position of the latter as determined by the thickness of the leather clamped by it, a slidably mounted ejector associated with said clamp-

ing device, a spring-controlled arm pivotally mounted on said member at one end and engaging at its other end the said ejector, and a cam plate adapted to be engaged by said arm in the movement of said member to retract the ejector against the resistance of said spring, the outer end of said ejector forming a stop for the leather inserted under the clamp whereby, when the clamp is released and said arm passes off of said cam, the ejector will be thrown outward under the action of said spring to discharge the piece of leather.

14. In a machine for grading leather, in combination with a post mounted on the frame of the machine, a circular head rotatably mounted on said post, means for rotating said head, a circular plate mounted on the upper end of said post, a series of spring-pressed pivoted clamping members mounted on said head, each of which has an outer end formed as a clamp for engaging a piece of leather inserted between it and said support, and an inner end extending beneath said circular plate and adapted to be functionally positioned by the thickness of the leather engaged by its outer end, a circular series of contact devices mounted in said circular plate and successively varying in height in regular gradation with respect to the normal position of the inner ends of said clamping members, one or the other of which devices is adapted to be engaged by the inner ends of the respective pivoted members to release the clamp thereof according to the position of the particular inner end as determined by the thickness of the leather clamped, a cam located on the under side of said circular plate and adapted to be engaged by the inner ends of said pivoted members to raise the clamping ends of the latter in the movement of said head to permit the insertion under each, of the piece of leather to be clamped, a slidable ejector associated with each clamping member, a spring-controlled arm for operating said ejector, and a cam plate located in the path of movement of said arms and adapted to be engaged thereby to retract the ejector, the latter serving as a stop for the piece of leather inserted under the clamp whereby, when each arm passes off of the cam and when the clamp is released, the ejector will act to automatically discharge the piece of leather held by said clamping member.

In testimony whereof, I have hereunto set my hand.

DENNIS PARKS.