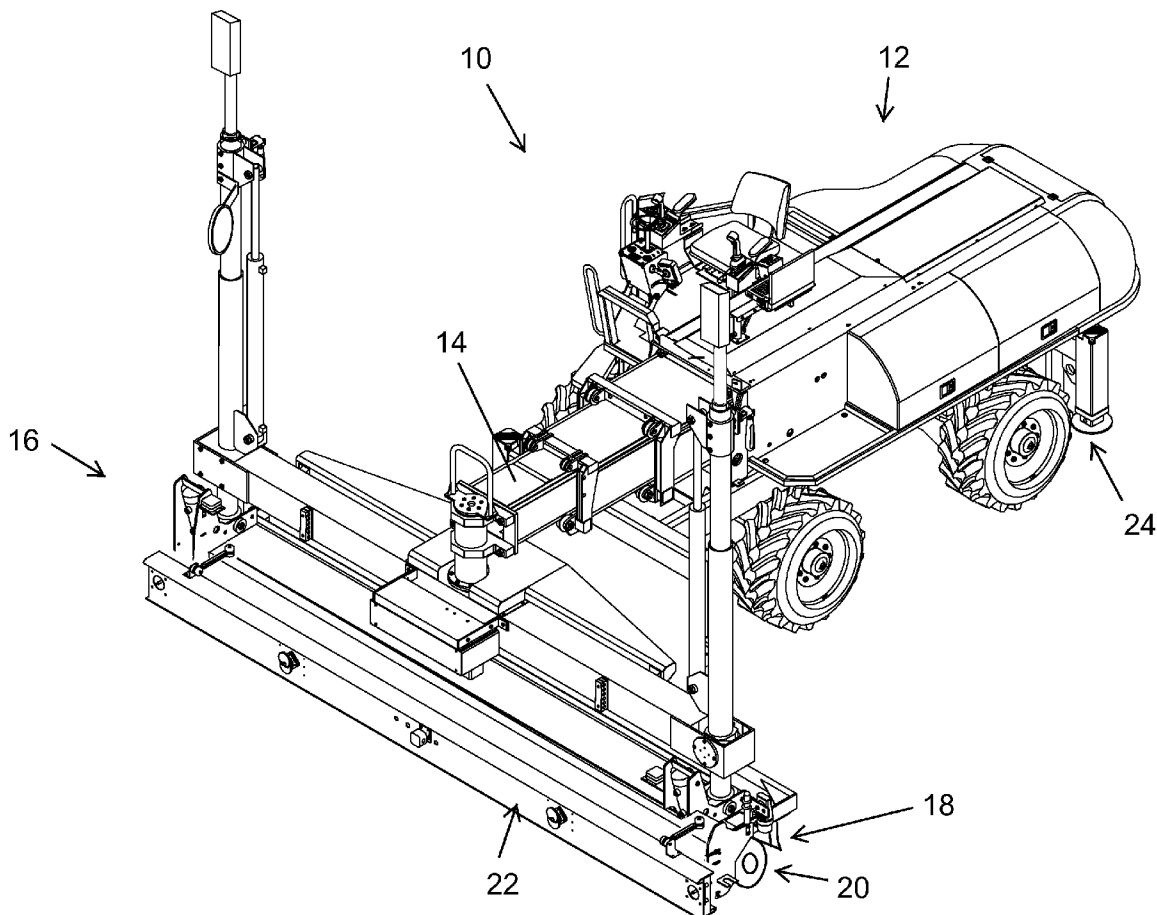


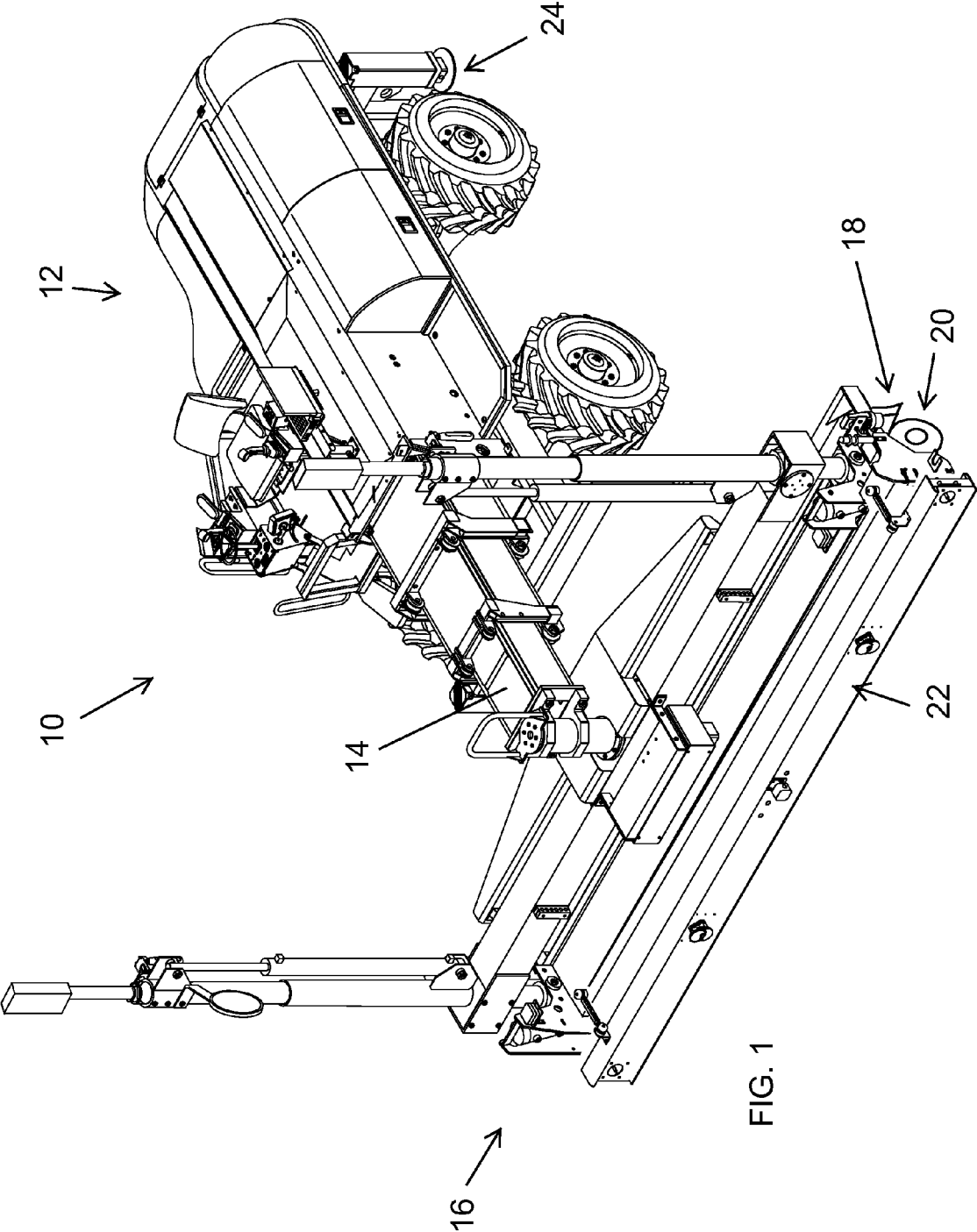


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Kieranen et al.(10) **Pub. No.: US 2014/0294504 A1**(43) **Pub. Date: Oct. 2, 2014**(54) **CONCRETE SCREEDING MACHINE WITH
IMPROVED AUGER****Publication Classification**(71) Applicant: **Somero Enterprises, Inc.**, Fort Myers,
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FL (US)(21) Appl. No.: **14/229,060**(22) Filed: **Mar. 28, 2014****Related U.S. Application Data**(60) Provisional application No. 61/806,672, filed on Mar.
29, 2013.(51) **Int. Cl.**
E01C 19/30 (2006.01)(52) **U.S. Cl.**
CPC **E01C 19/30** (2013.01)
USPC **404/118**(57) **ABSTRACT**

A screeding machine for screeding a concrete surface having a partially cured concrete area and a newly placed concrete area includes a wheeled unit and a screeding head attached at the wheeled unit. The wheeled unit has a plurality of wheels for moving the wheeled unit over a support surface. The screeding head assembly includes a grade setting device and a vibrating member and is movable over the concrete area via the wheeled unit. The grade setting device includes an auger device having a longitudinal body and at least one flighting helically disposed around and along the body. The spacings between respective longitudinally adjacent vane portions of the at least one flighting vary longitudinally along the auger device.





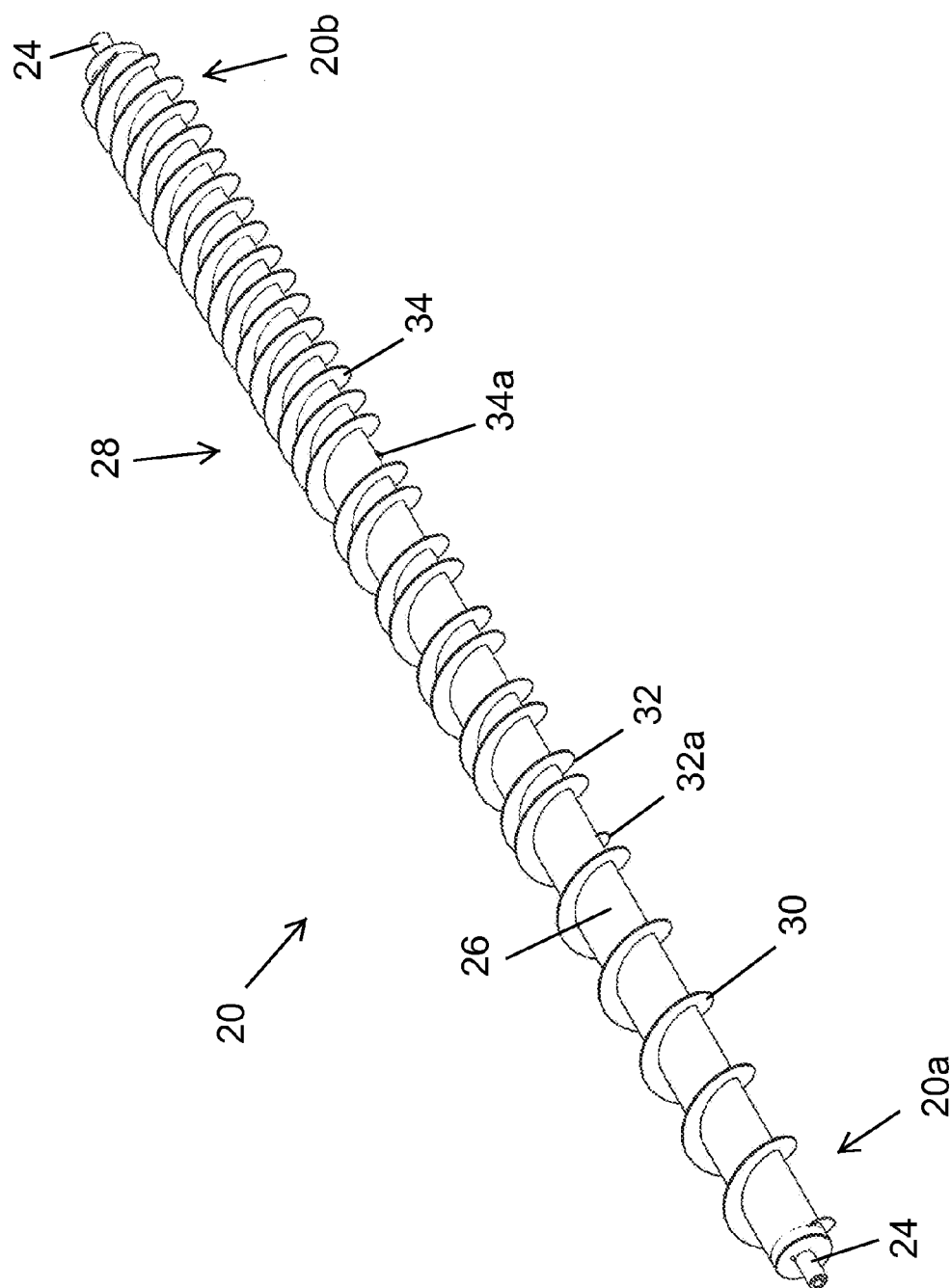


FIG. 2

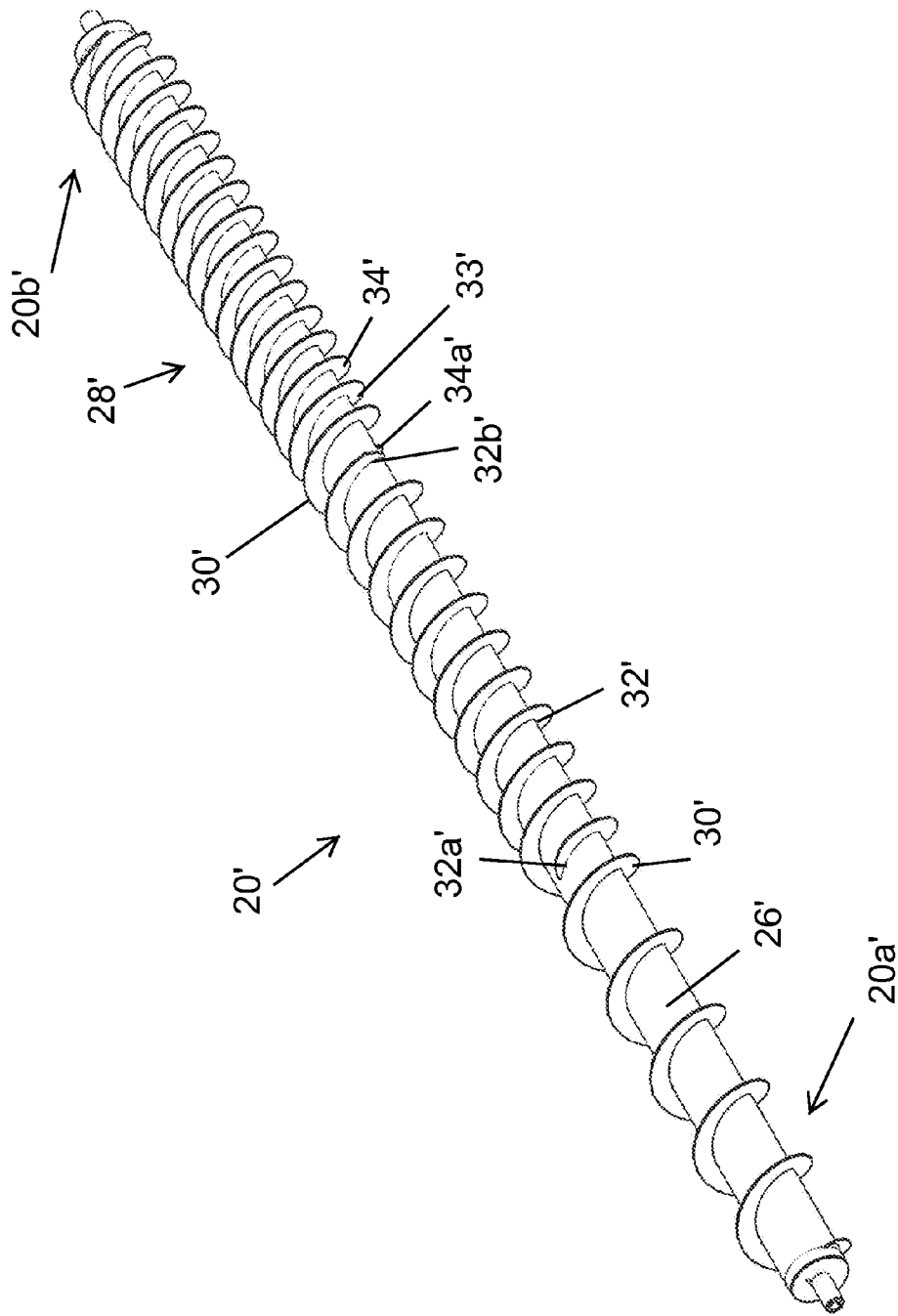


FIG. 3

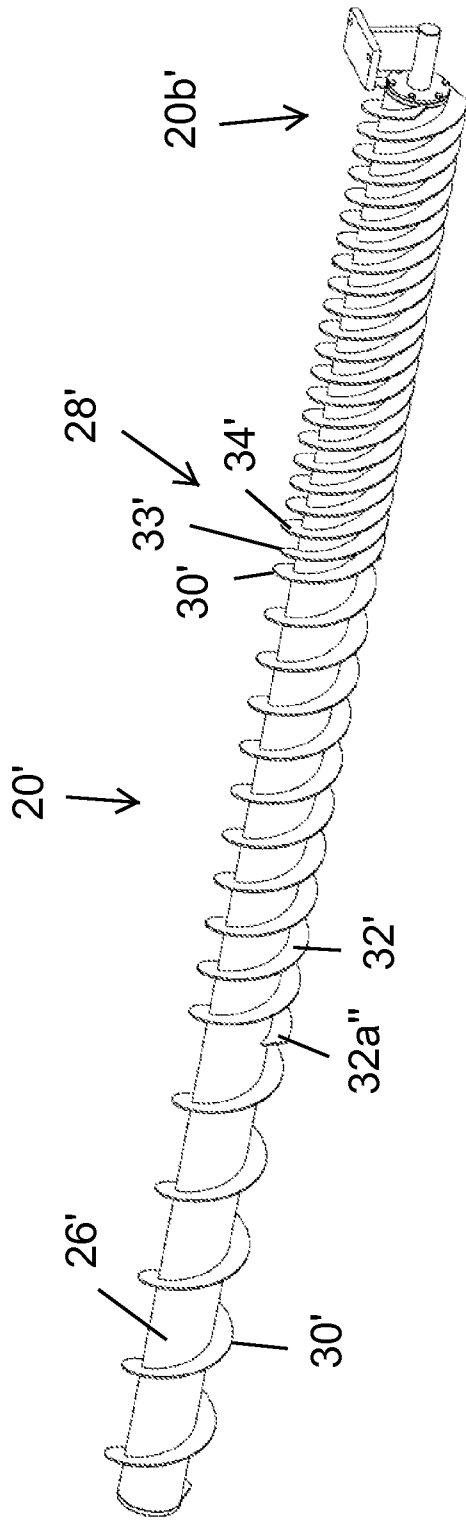
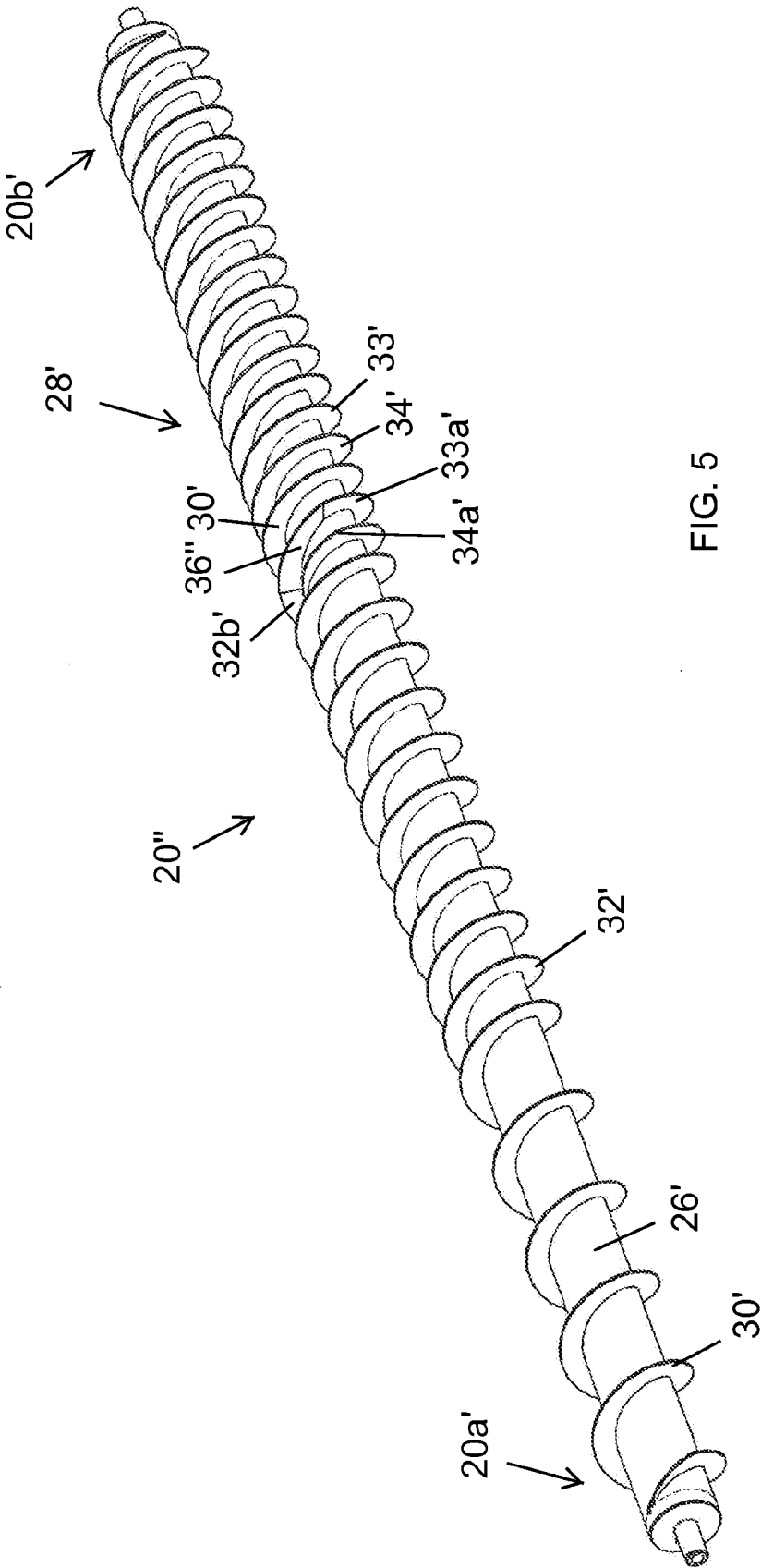
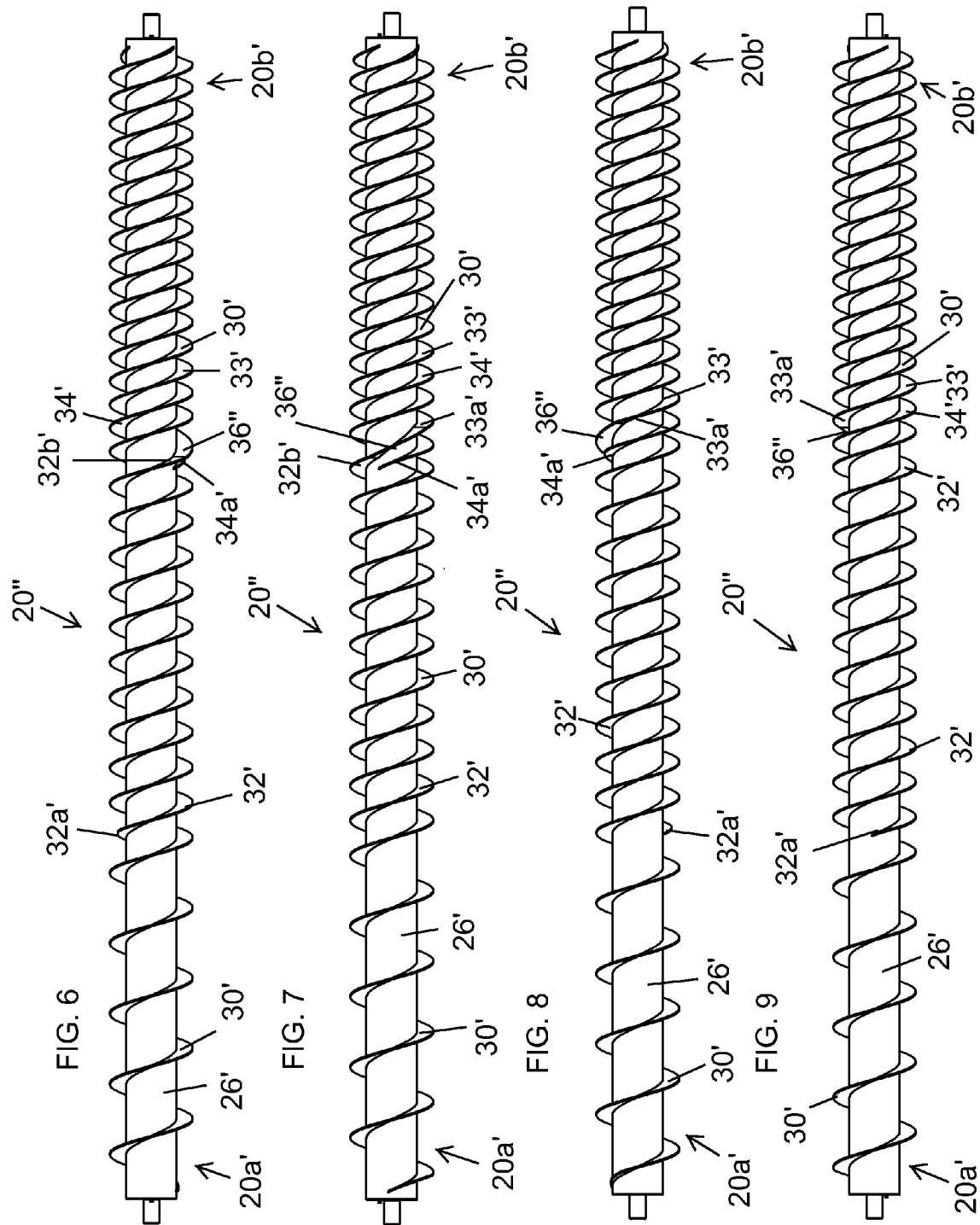


FIG. 4





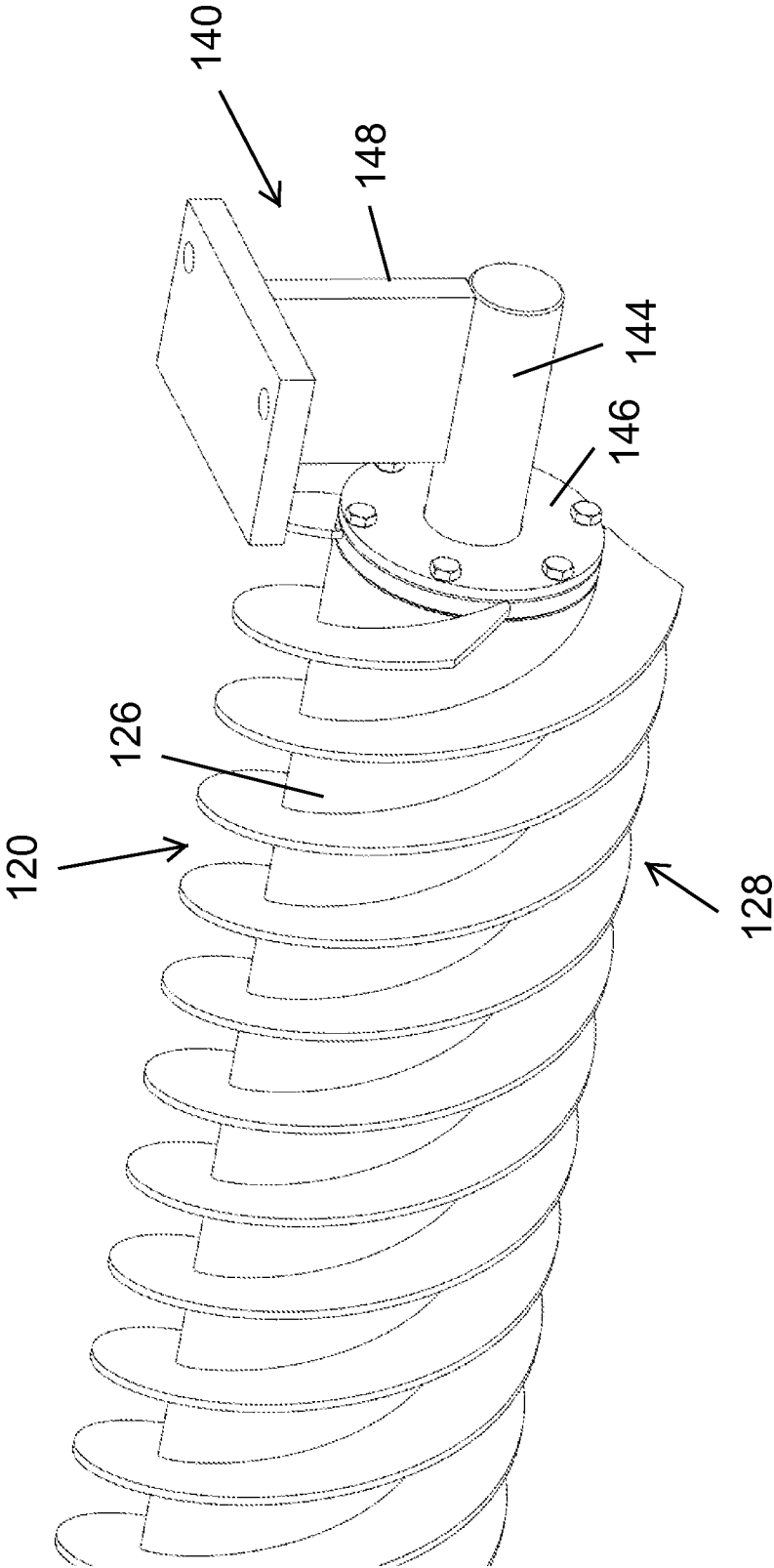


FIG.10

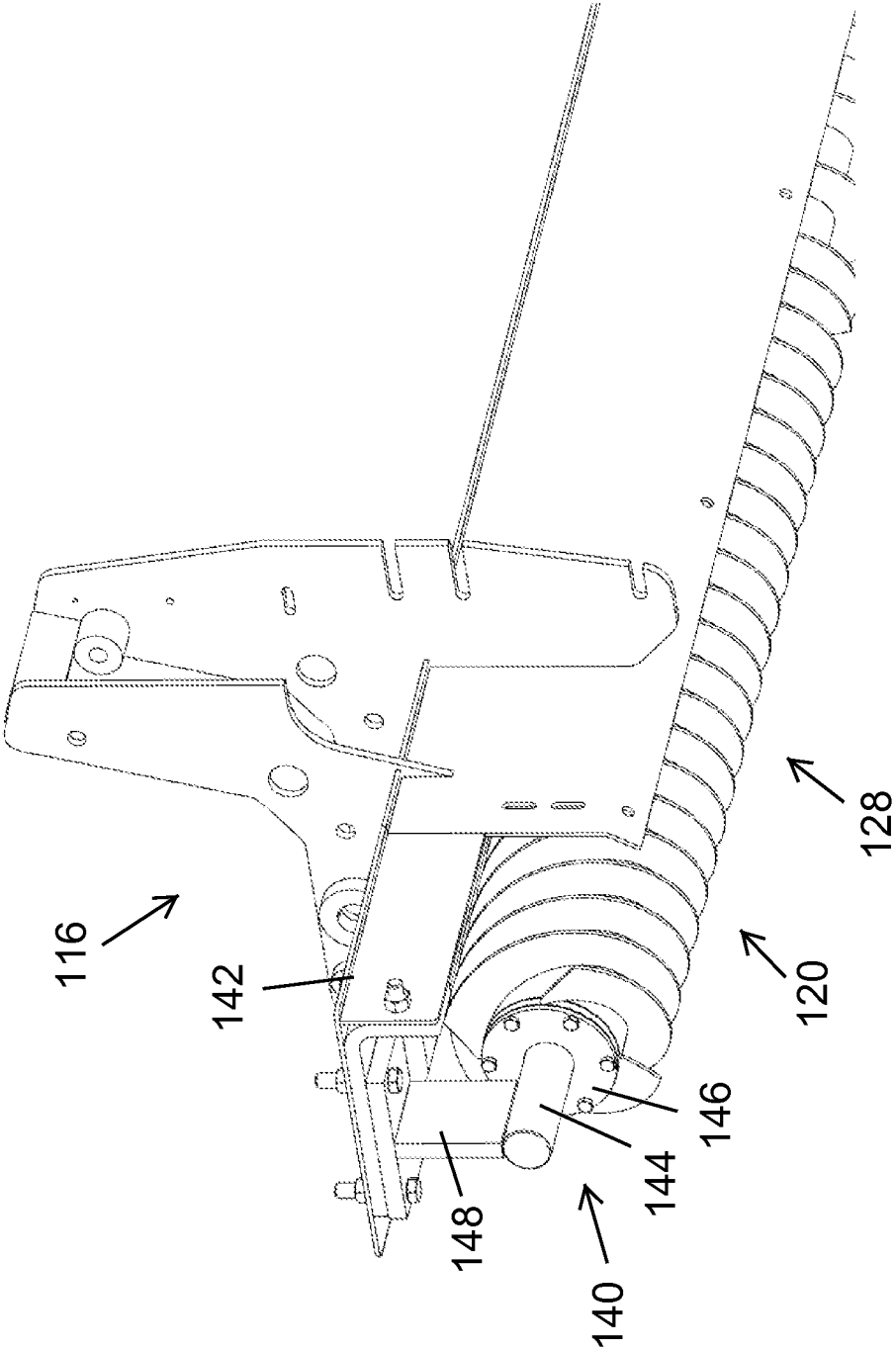


FIG. 11

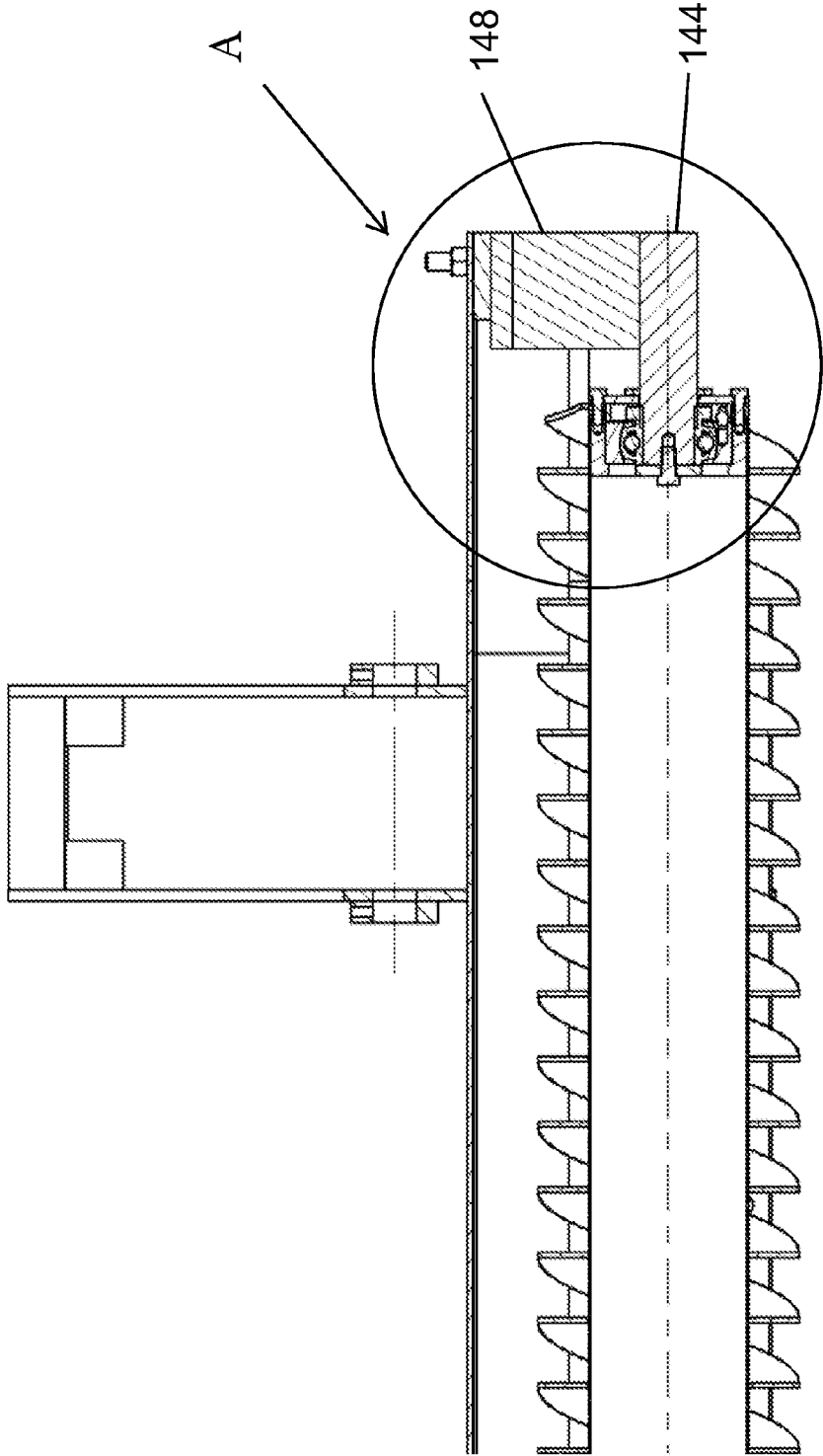


FIG. 12

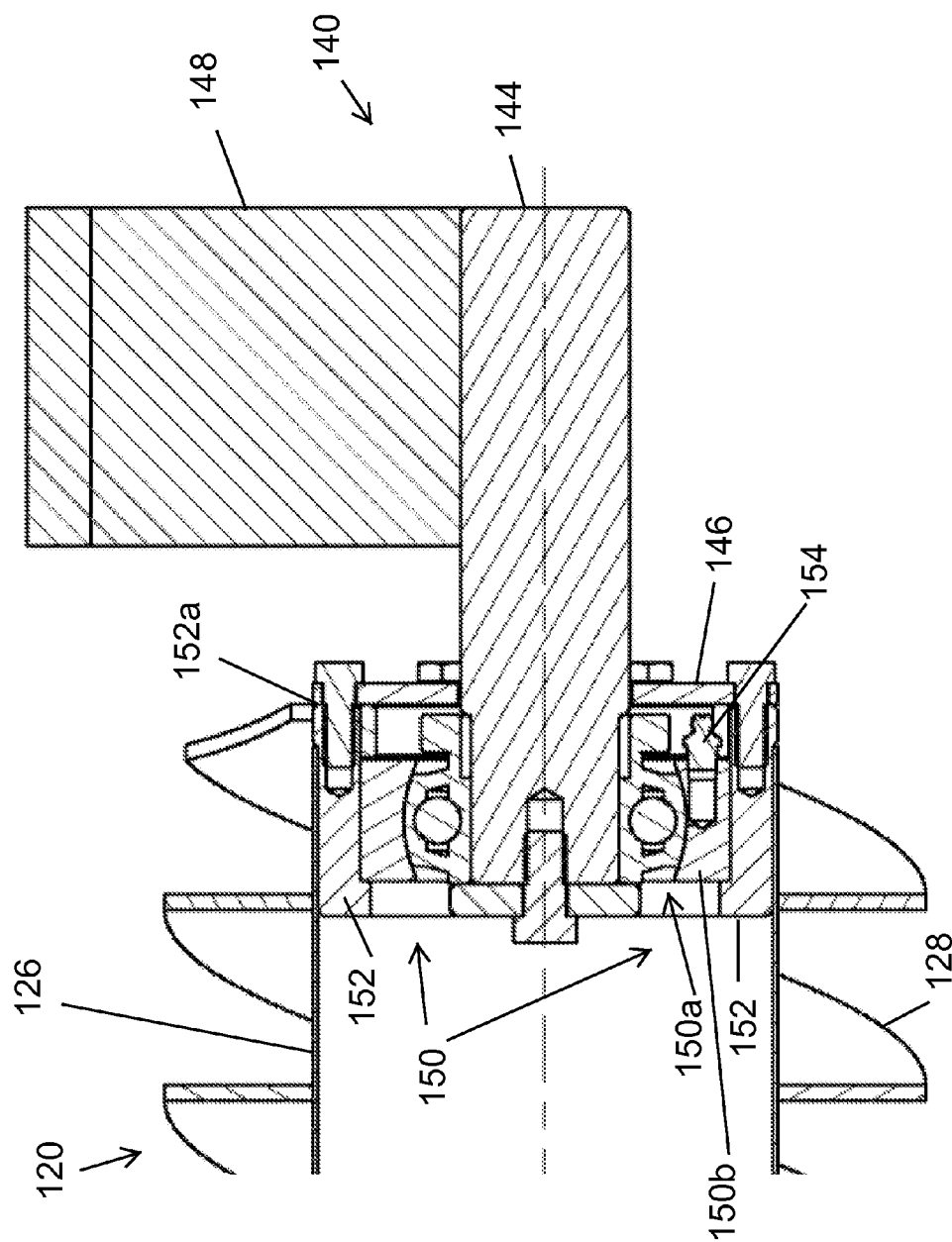
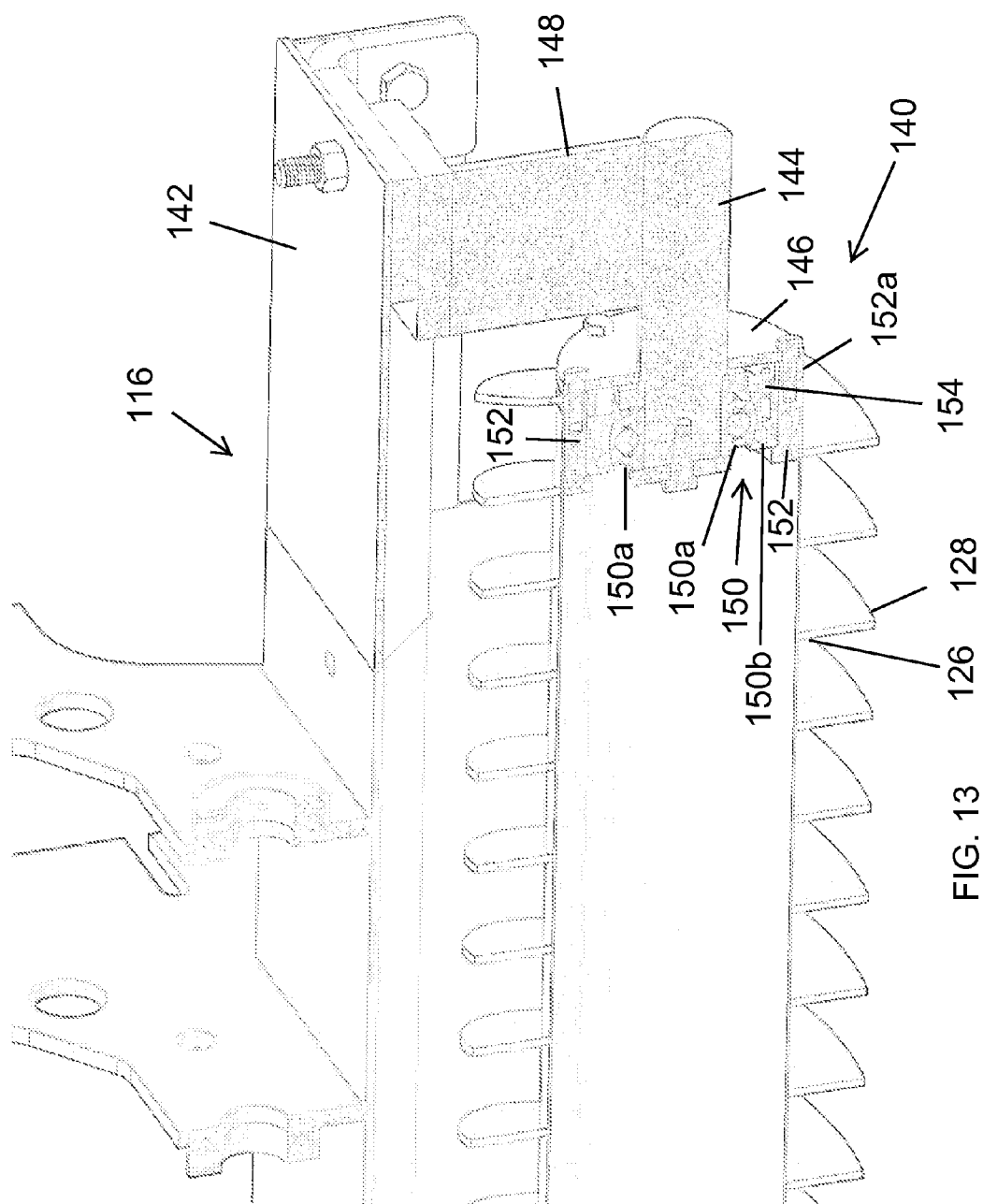


FIG. 12A



CONCRETE SCREEDING MACHINE WITH IMPROVED AUGER

CROSS REFERENCE TO RELATED APPLICATION

[0001] The present application claims the filing benefits of U.S. provisional application Ser. No. 61/806,672, filed Mar. 29, 2013, which is hereby incorporated herein by reference in its entirety.

FIELD OF THE INVENTION

[0002] The present invention relates generally to an apparatus and method for improving the control and productivity of a concrete screeding machine during the leveling and smoothing of freshly poured concrete that has been placed over a surface.

BACKGROUND OF THE INVENTION

[0003] Screeding devices or machines are used to level and smooth uncured concrete to a desired grade. Known screeding machines typically include a screed head, which includes a vibrating member and a grade setting device, such as a plow or auger device. The screed head is vertically adjustable, such as in response to a laser leveling system, to establish the desired grade at the vibrating member. Examples of such screeding machines are described in U.S. Pat. Nos. 4,655,633; 4,930,935; 6,227,761; 7,044,681; 7,175,363; and 7,396,186, which are hereby incorporated herein by reference in their entireties.

SUMMARY OF THE INVENTION

[0004] The present invention provides a screeding machine that comprises a screed head having a vibrating member and a grade setting device. The grade setting device comprises an auger device that has at least two separate spiral or helical flightings disposed on and around and at least partially along a rotatable shaft or body of the auger. The helical flightings are staged or configured or arranged so that at least a portion of the auger has a first flighting portion or region having a first longitudinal spacing between adjacent fins or vanes of the helical flighting or flightings and a second flighting portion or region having a second longitudinal spacing between adjacent fins or vanes of the helical flighting or flightings.

[0005] According to an aspect of the present invention, an auger may have three separate and distinct flightings or vanes that are helically disposed along a rotatable shaft or body of the auger. A first one of the flightings may be helically disposed substantially along the entire length of the body, while a second one of the flightings may be helically disposed along a shorter length of the body, such as, for example, along about two-thirds of the length of the body that is encompassed by the first flighting, with the second flighting being spaced from the first flighting. Optionally, a third flighting may be helically disposed along a shorter length of the body, such as, for example, along about one-third of the length of the body that is encompassed by the first flighting (and thus, for example, about half of the length of the body that is encompassed by the second flighting), with the second flighting being spaced from the first and second flightings. In such a configuration, the spacing between the first, second and third flightings may be substantially uniform (i.e., the longitudinal spacing between the first flighting and second flighting is the same as the longitudinal spacing between the second flighting and the

third flighting, and is the same as the longitudinal spacing between the third flighting and the first flighting.

[0006] Optionally, the longitudinal spacing along the body between adjacent portions of the flightings may be uniform along the body. Thus, the second flighting may only extend partially along a middle region (such as, for example, a middle third) of the body and may be disposed mid-way between the adjacent flighting portions of the first flighting. At a third portion of the body, the second flighting may terminate and a third and fourth flighting may be disposed equally spaced from one another and from the first flighting to provide three flightings at the third portion of the body.

[0007] Thus, the present invention provides a staged flighting auger device that has different flighting configurations along its length. For example, at one end or portion of the auger (such as a downstream portion or region or discharge end of the auger), the auger may have a tighter or closer configuration of flightings or vanes, and at another end or portion of the auger (such as an upstream portion or region or end of the auger), the auger may have a more spaced apart configuration of flightings or vanes. The denser configuration is at the downstream end of the auger with the more spaced flighting configuration being at the upstream end of the auger, such that, as more concrete is moved by the auger and the concrete starts to build up as it is moved by the auger, the denser spacing flighting configuration enhances movement of the larger volume of concrete.

[0008] These and other objects, advantages, purposes and features of the present invention will become apparent upon review of the following specification in conjunction with the drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

[0009] FIG. 1 is a perspective view of a concrete leveling and screeding machine that incorporates the improved operator controls and control systems and screed head apparatus design improvements and features of the present invention;

[0010] FIG. 2 is a perspective view of an auger having staged flighting in accordance with the present invention;

[0011] FIG. 3 is a perspective view of another auger having staged flighting in accordance with the present invention;

[0012] FIG. 4 is another perspective view of the auger of FIG. 3;

[0013] FIG. 5 is a perspective view of another auger having staged flighting in accordance with the present invention;

[0014] FIGS. 6-9 are plan views of the auger of FIG. 5;

[0015] FIG. 10 is a perspective view of an end region of an auger of the present invention, showing an internal bearing mount for mounting the auger at the screed head in accordance with the present invention;

[0016] FIG. 11 is another perspective view of the auger of FIG. 10, showing the auger mounted at an auger support beam of the screed head;

[0017] FIG. 12 is a sectional view of the end region of the auger of FIG. 10;

[0018] FIG. 12A is an enlarged sectional view of the area A in FIG. 12; and

[0019] FIG. 13 is a perspective view and partial sectional view of the auger and internal bearing mount of FIGS. 10 and 11, shown with the auger mounted at the auger support beam.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

[0020] Referring now to the drawings and the illustrative embodiments depicted therein, a screeding machine **10** includes a wheeled unit **12** with a boom **14** extending therefrom and supporting a screeding head or assembly **16** at an outer end thereof (FIG. 1). The wheeled unit **12** is drivable to a targeted area at a support surface with uncured concrete placed thereat, and the wheeled unit may rotate about a base portion to swing the boom and screeding head to a targeted location. The boom **14** is extendable and retractable to move the screeding head **16** over the placed concrete, while the screeding head **16** is operable to establish a desired grade of the concrete surface and smooth or finish or screed the concrete. In the illustrated embodiment, the screeding head includes a plow **18**, a grade setting device or auger **20** and a vibrating member **22** (FIG. 3). The screeding machine includes a plurality of stabilizers **24** that are extendable and retractable to support and stabilize the machine on the support surface during the screeding operation. The auger **20** of screeding head **16** comprises a staged fighting or vane configuration with multiple spiral or helical flightings or vanes staged along the auger, such that the auger has a coarser or less dense or more spaced distribution at or near the upstream end of the auger and a denser distribution or configuration of vanes at the downstream or discharge end or region of the auger, so that the auger of the present invention has improved or enhanced efficiency and provides enhanced movement of concrete to the discharge end of the auger, as discussed below.

[0021] Screeding machine **10** and the screeding head or assembly **16** may be similar in construction and/or operation as the screeding machines and screeding heads described in U.S. Pat. Nos. 4,655,633; 4,930,935; 6,227,761; 7,044,681; 7,175,363; and/or 7,396,186, and/or U.S. Publication Nos. US-2007-0116520 and/or US-2010-0196096, which are all hereby incorporated herein by reference in their entireties, such that a detailed discussion of the overall construction and operation of the screeding machines and screeding heads need not be repeated herein. For example, the screeding machine may comprise or may utilize aspects of a Somero SXP-D LASER SCREED™ screeding machine. However, clearly this example is not intended to limit the scope of the present application and clearly aspects of the present invention are suitable for use on other types of screeding machines. For example, the screeding head and auger device of the present invention may be suitable for use on a smaller screeding machine, such as a machine of the types described in U.S. Pat. Nos. 6,976,805; 7,121,762; and/or 7,850,396, which are hereby incorporated herein by reference in their entireties. Optionally, although shown in FIG. 1 as having a plow **18**, the screed head may not include a plow, whereby the auger establishes the desired grade of concrete ahead of the vibrating member.

[0022] As shown in FIG. 2, auger **20** comprises a mounting shaft **24**, which protrudes from a generally cylindrical body or shaft **26**, which has flightings or vanes **28** spirally or helically disposed therearound and therealong. The auger has an upstream end or region **20a**, where the flightings may be more coarsely or less densely distributed or spaced, and a downstream end or region **20b**, where the fighting or flightings may be more densely distributed or spaced. In the illustrated embodiment of FIG. 2, flightings **28** comprise a first helical fighting or vane **30** that is disposed helically around the body **26** and along a first portion of the body **26** (such as substan-

tially the entire length of the body). A second helical fighting or vane **32** is disposed helically around the body **26** and along a second portion of the body (such as, for example, about two-thirds of the length of the body), with the second portion being a reduced amount of the first portion. A third helical fighting or vane **34** is disposed helically around the body **26** and along a third portion of the body (such as, for example, about one-third of the length of the body), with the third portion being a reduced amount of the second portion.

[0023] Thus, the first portion of the body **26** has a coarse or spaced apart distribution of the fighting therealong, while the second portion of the body has a reduced spacing or distribution of the fighting therealong and the third portion of the body has a further reduced spacing of the fighting therealong. In the illustrated embodiment of FIG. 2, at the second body portion (such as a middle third of the body), the second fighting is spaced from the first fighting at about one-third of the way between the corresponding portions of the first fighting (so that the second fighting is not centered between the first fighting portions). The third fighting is then disposed at a middle region between the second and first fighting so that, at the third portion of the body, the three flightings **30**, **32**, **34** are spaced equidistantly along the body.

[0024] In the illustrated embodiment of FIG. 2, the flightings **30**, **32**, **34** have the same pitch and thus are disposed generally parallel to one another along the respective portions of the body **26**. For example, the auger may comprise a nine inch diameter auger with the fighting having a pitch of about nine inches per revolution. The first fighting **30** extends continuously and helically around and along the body, while the second fighting **32** starts at a start portion **32a** (that may be about one-third of the length of the body from the upstream end **20a** of the auger) and extends continuously and helically around and along the body from its start portion **32a** to the downstream or discharge end **20b** of the auger, and the third fighting **34** starts at a start portion **34a** (that may be about two-thirds of the length of the body from the upstream end **20a** of the auger) and extends continuously and helically around and along the body from its start portion **34a** to the downstream or discharge end **20b** of the auger. The auger thus provides a finer or reduced spacing distribution of flightings or vanes at the downstream or discharge end of the auger as compared to a middle region of the auger, which provides a finer or reduced spacing distribution of flightings or vanes at the middle region of the auger as compared to the upstream region of the auger (where a coarser or greater spacing between the fighting is provided).

[0025] Optionally, the auger of the present invention may have discontinuous flightings or fighting portions therealong, so that the flightings are spaced equidistant apart along each portion or region of the auger or body. For example, and with reference to FIGS. 3 and 4, an auger **20'** comprises a body **26'** with staged flightings **28'** disposed therealong. In the illustrated embodiment, the first helical fighting or vane **30'** is disposed helically around the body **26** and along a first portion of the body **26** (such as substantially the entire length of the body), while a second helical fighting or vane **32'** is disposed helically around the body **26** and along a second portion of the body (such as, for example, about a middle one-third portion of the body), with the second fighting **32'** starting at an end **32a'** (that is about one-third of the length of the body from the upstream end **20a'** of the auger) and ending at an end **32b'** (that is about two-thirds of the length of the body from the upstream end **20a'** of the auger). At the third portion or region

(the downstream region) of the body and auger, a third flighting 34' and a fourth flighting 33' are disposed helically around the body 26' and along the third portion of the body (such as, for example, about one-third of the length of the body at the downstream or discharge end of the auger). As shown in FIG. 3, the second flighting 32' is disposed midway between the first flighting 30' so that the vanes or flightings have equidistant spacing or uniform spacing along the second or middle region of the auger, while the third and fourth flightings 34', 33' are disposed equidistant from one another and from the first flighting 30' at the third or downstream portion or region of the auger, so the flightings have equidistant spacing or uniform spacing along the third or downstream region of the auger. The ends of the respective flightings 30', 32', 33', 34' may comprise angled or tapered ends (such as end 32a' in FIG. 3) or may be squared or sharp cut ends (such as the end 32a'' in FIG. 4), without affecting the scope of the present invention.

[0026] Optionally, and with reference to FIGS. 5-9, an auger 20'' may have flightings 28' along the body 26' similar to auger 20', discussed above, with a transitional flighting or vane element 36'' established between the end 32b' of the second flighting 32' and the start or end 33a' of the fourth flighting 33'. As can also be seen in FIGS. 5-9, the third flighting 34' starts at 34a' at or near where the transitional element 36'' is disposed. In the illustrated embodiment, for example, the auger 20'' comprises a nine inch diameter auger and all four flightings 30', 32', 34', 33' have a pitch or lead of nine inches per revolution, with the exception of the transitional section or element 36''. The transitional section or element 36'' in this example has a pitch of about 15 inches per revolution and is only about one quarter of a revolution in effective length, thus smoothly and continuously joining the second flighting 32' with the fourth flighting 33' to provide a continuous flighting over the upstream two-thirds of the auger. The transitional section or element 36'' thus allows for an auger with equal spacing of the flightings along the auger (such as about nine inches between the flights of the first flighting, and about 4.5 inches between the flights of the first and second flightings, and about three inches between the flights of the first and fourth flightings and the fourth and third flightings and third and first flightings).

[0027] Thus, the staged flighting or variable flighting arrangement or configuration of the auger of the present invention provides a coarser or larger spacing of flights or vanes at or near an upstream end of the auger and a finer or closer spacing of flights or vanes at or near a downstream or discharge end of the auger. Thus, during operation of the auger, as the auger is rotated while engaging the concrete surface and excess concrete at the desired grade (with the auger being rotatably driven, such as via a hydraulic motor or the like at an end of the auger, in a direction opposite to the direction of travel of the screed head assembly), the coarser spacing of the upstream end flightings may start to move concrete along the auger and towards the discharge end of the auger. As the concrete accumulates as it moves along the auger, the spacing between the flightings decreases to enhance movement of the additional concrete moved along the auger from the upstream end, and the spacing between the flightings decreases more at or near the discharge end of the auger to further accommodate accumulated concrete and enhance movement of the concrete at or near the discharge end of the auger.

[0028] Although shown and described as an auger having three distinct portions or regions with different flighting spacings or gaps, clearly more or less portions may be provided along the auger while remaining within the spirit and scope of the present invention. For example, an auger may only have two flighting sections, with an upstream half of the auger (or other portion or fraction of the auger) having a single flighting arrangement and the downstream half of the auger (or other portion or fraction of the auger) having a dual flighting arrangement. Optionally, for example, an auger may have four or more flighting sections, such as with a single flighting extending the full length of the auger, a second flighting extending about three quarters of the length of the auger, a third flighting extending about half of the length of the auger and a fourth flighting extending about one quarter of the length of the auger. The flightings may be uniformly spaced or the spacing may only be uniform at the first and fourth quarters, and the auger may include transitional sections to join different flighting sections together, such as discussed above, while remaining within the spirit and scope of the present invention. Optionally, the auger may have one or more flightings extending substantially along the length of the auger, with the pitch of the flightings varying from a coarser or larger pitch at or near the upstream end of the auger to a finer or smaller pitch at or near the downstream or discharge end of the auger.

[0029] Thus, the present invention provides a staged or varying flighting auger, which provides an increased concrete carrying capacity as excess concrete increasingly accumulates toward the discharge end of the auger. The auger of the present invention may also provide a reduced auger weight from "all full length flights", because the flights or flightings are added along the direction of concrete flow and movement where they are most needed. The weight of extra flighting is eliminated at the upstream end (in other words, at the starting end of the auger, where overlap normally occurs over the previous pass).

[0030] The present invention may also provide for reduced auger flighting wear at the discharge end of the auger. Current augers typically need to be flipped end-to-end to maximize useful life due to uneven wear. The present invention avoids this and thus provides a machine-operator maintenance benefit.

[0031] The preferred multiple, staged flighting configuration of the present invention provides a uniform and substantially constant pitch (such as about 9 inches or thereabouts) along the auger. Optionally, the auger of the present invention may provide one or more flightings with a varying pitch of the flighting or flightings along the auger. However, a varying pitch (having a smaller or reduced pitch at or near the discharge end of the auger to provide a denser or closer spacing arrangement of the flighting at or near the discharge end of the auger) may slow down the lateral velocity of the concrete as the flights or vanes get closer together and the concrete moves towards and reaches the end of the auger. The multi-flight staged configurations of the present invention preferably provide equal pitch flighting that provides enhanced concrete movement.

[0032] The auger may be mounted at the screed head via any suitable mounting means. Optionally, the auger may be mounted at the screed head via an internal bearing mounting assembly, which rotatably mounts the auger body to a fixed shaft via an internal bearing that is received in the end of the hollow auger body. For example, and with reference to FIGS.

10-13, an auger **120** (such as any of the staged fighting augers discussed above or a conventional single fighting auger or the like) includes a cylindrical body portion **126** with fighting **128** helically disposed therealong. At an end of the auger, such as at the downstream or discharge end of the auger in FIGS. **10-13**, an auger mounting assembly **140** is disposed to rotatably mount the respective end of the auger at an auger support beam or element **142** of the screed head **116**. The auger mounting assembly comprises a stationary or fixed shaft **144** that protrudes from a bolt on end cap or attachment plate **146**, with a mounting bracket or structural support **148** attached to and extending radially outwardly and upwardly from the fixed shaft **144** for attaching at the auger support beam **142** (as shown in FIGS. **11** and **13**).

[0033] As best shown in FIGS. **12** and **13**, auger mounting assembly **140** includes an internal bearing **150**, with a race **150a** fixedly attached or locked to the fixed shaft **144**, and with an outer bearing surface rotatably engaged with an inner sleeve **152** that is inserted into or received in the hollow end of the body **126**, such as via an outer race **150b** of the bearing assembly **150**. In the illustrated embodiment, a lubrication port or grease fitting **154** is provided at the bearing assembly **150** and inside the body and inboard of the end cap **146**, which is bolted or fastened or attached to the inner sleeve **152** to attach the end cap **146** at the body **126** and seal or enclose the bearings within the auger body. The end cap may be removed to access the grease fitting **154** as desired.

[0034] Thus, the mounting assembly **140** of the present invention provides a sealed bearing within the auger body. The sleeve **152** is inserted into the auger body and may be press fit or welded thereto to fixedly attach the sleeve to the body. In the illustrated embodiment, the sleeve includes a raised shoulder **152a** at its outboard end to limit insertion of the sleeve into the body, and the raised shoulder portion may have an outer surface that is generally flush with the outer surface of the body, whereby the fighting **128** may extend over the outer surface of the raised shoulder portion of the sleeve (such as shown in FIGS. **10-13**). The bearing assembly (with the fixed shaft attached thereto) is inserted into the sleeve and the end cap **146** is attached or fastened to the sleeve to retain and seal the bearing within the sleeve **152** and auger body **126**.

[0035] The potential benefits of the internal bearing mount of the present invention include that the relatively thin vertical structural support and relatively reduced diameter of the stationary shaft at the discharge end of the auger offers less resistance to the movement of concrete away from the end of the auger. Known current pillow-block type bearings are mounted externally at the rotating shafts of current augers and tend to have a higher cross-sectional area than what is provided by the internal bearing mount of the present invention. Also, with the bearing mounted internally inside the auger body or tube, there is reduced exposure to concrete and stone aggregate at the bearings. Current designs typically require a plastic collar on the shaft between the bearing and the end of the auger to help prevent stones from jamming between the rotating parts and destroying the grease seals of the bearings. The internal bearing mount of the present invention may also allow a shaft seal to be included between the stationary shaft and rotating end cap of the auger (not currently shown), further protecting the actual grease seals of the bearing itself. Also, exposure to pressure washing of the screed head at the end of the day by machine operators tends to reduce the life of bearings whenever water gets inside the bearings. The bear-

ings need to be greased to help force out any water after pressure washing is complete. However, the internal bearing mount of the present invention may help reduce the likelihood of failures from water contamination. Optionally, the internal bearing mount of the present invention may include a type of access port with a sealed, yet removable, access cover at the grease fitting to ease the greasing when greasing may be desired or necessary.

[0036] The opposite end of the auger (such as the upstream end of the auger) may be mounted via any known mounting means and may be rotatably driven via a hydraulic motor and known pillow-block bearing supporting the auger (not shown). However, optionally, the auger motor may be mounted internally inside the auger itself. In such a configuration, the shaft of the auger motor may remain stationary with the flow of pressurized hydraulic fluid traveling through ports and internal passageways of the stationary motor shaft.

[0037] Changes and modifications to the specifically described embodiments can be carried out without departing from the principles of the present invention, which is intended to be limited only by the scope of the appended claims as interpreted according to the principles of patent law.

1. A screeding machine for screeding a concrete surface having a partially cured concrete area and a newly placed concrete area, said screeding machine comprising:

a wheeled unit having a plurality of wheels for moving said wheeled unit over a support surface;

a screeding head assembly having a grade setting device and a vibrating member, wherein said screeding head assembly is movable over the concrete area via said wheeled unit;

wherein said grade setting device comprises an auger device having a longitudinal body and at least one fighting helically disposed around and along said body; and wherein the spacings between respective longitudinally adjacent vane portions of said at least one fighting vary longitudinally along said auger device.

2. The screeding machine of claim **1**, wherein said at least one fighting comprises first and second flightings.

3. The screeding machine of claim **2**, wherein said first fighting is helically disposed along a first portion of said body and said second fighting is helically disposed along a second portion of said body, and wherein said second portion of said body is a smaller portion of said first portion and wherein said first portion of said body encompasses said second portion of said body.

4. The screeding machine of claim **3**, wherein said second fighting is centrally disposed between vane portions of said first fighting so that said first and second flightings are uniformly spaced apart along said second portion of said body.

5. The screeding machine of claim **3**, wherein said second fighting is disposed between vane portions of said first fighting so that said first and second flightings are non-uniformly spaced apart along said second portion of said body.

6. The screeding machine of claim **3**, wherein said at least one fighting comprises a third fighting helically disposed along a third portion of said body, and wherein said third portion of said body is a smaller portion of said second portion and wherein said second portion of said body encompasses said third portion of said body.

7. The screeding machine of claim **6**, wherein said first, second and third flightings are uniformly spaced apart along said third portion of said body.

8. The screeding machine of claim 7, wherein said second fighting comprises a continuous fighting having a constant pitch along said second portion of said body.

9. The screeding machine of claim 7, wherein said second fighting comprises a central fighting portion at a central portion of said body and an end fighting portion at said third portion of said body, and wherein said central fighting portion of said second fighting and said first fighting are uniformly spaced apart along said central portion of said body, and wherein said end fighting portion of said second fighting, said third fighting and said first fighting are uniformly spaced apart along said third portion of said body.

10. The screeding machine of claim 9, comprising a transition fighting element disposed between said central fighting portion of said second fighting and said end fighting portion of said second fighting, wherein said transition fighting element has a different pitch than said central fighting portion and said end fighting portion and joins said central fighting portion to said end fighting portion to provide a substantially continuous second fighting along said second body portion.

11. The screeding machine of claim 1, wherein said at least one fighting comprises a continuous fighting having a varying pitch, with a greater pitch at an upstream region of said auger device and a reduced pitch at a downstream region of said auger device.

12. The screeding machine of claim 1, wherein said auger device is mounted at said screeding head via an internal bearing mounting assembly.

13. The screeding machine of claim 1, wherein said screeding head assembly is movable over the concrete area via an extendable and retractable boom assembly extending from said wheeled unit.

14. The screeding machine of claim 1, wherein said screeding head assembly is movable via a wheeled unit that moves through the uncured concrete with said screeding head assembly following said wheeled unit.

15. A screeding head assembly for a screeding machine for screeding a concrete surface having a partially cured concrete area and a newly placed concrete area, said screeding head assembly comprising:

a grade setting device;

a vibrating member;

wherein said screeding head assembly is configured to be movable over the concrete area via said screeding machine to establish the grade and screed uncured concrete at the concrete area;

wherein said grade setting device comprises an auger device having a longitudinal body and at least one fighting helically disposed around and along said body; and wherein the spacings between respective longitudinally adjacent vane portions of said at least one fighting vary longitudinally along said auger device.

16. The screeding head assembly of claim 15, wherein said at least one fighting comprises a first fighting and a second fighting helically disposed around and along said body, and wherein said first fighting is helically disposed along a first portion of said body and said second fighting is helically disposed along a second portion of said body, and wherein said second portion of said body is a smaller portion of said first portion and wherein said first portion of said body encompasses said second portion of said body.

17. The screeding head assembly of claim 16, wherein said second fighting is centrally disposed between vane portions of said first fighting so that said first and second fightings are uniformly spaced apart along said second portion of said body.

18. The screeding head assembly of claim 16, wherein said second fighting is disposed between vane portions of said first fighting so that said first and second fightings are non-uniformly spaced apart along said second portion of said body.

19. The screeding head assembly of claim 16, comprising a third fighting helically disposed along a third portion of said body, and wherein said third portion of said body is a smaller portion of said second portion and wherein said second portion of said body encompasses said third portion of said body.

20. The screeding head assembly of claim 15, wherein said at least one fighting comprises a continuous fighting having a varying pitch, with a greater pitch at an upstream region of said auger device and a reduced pitch at a downstream region of said auger device.

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