CONVEYING APPARATUS ENTIRELY SUPPORTED BY MOBILE GROUND ENGAGING MEANS

301. Condition responsive control means for vehicle or conveyor
302. Retractable ground wheel
303. Including three relatively movable interconnected wheel or track equipped vehicles
304. Dirigible vehicle
305. Pulling winch on vehicle
306. Ground wheel lockable in transverse or longitudinal position on vehicle
307.1 Bucket conveyor
308.1 Shovel or tine pushable under load
309. Support slidable on ground
310. Conveyor driven by motion of ground-engaging element
311. Including gravity conveyor section or bin with driven conveyor
312. Conveyor shiftably mounted on vehicle
313. Contractible or foldable conveyor section
314. Separate conveyors serially arranged on single vehicle
315. Power means for shifting conveyor
316.1 Fluid-actuated ram
317. Horizontally swingable conveyor
318. Vertically swingable conveyor
319. Means for maintaining conveyor-drive motor support in level position
320. Winch-operated shifting mechanism

CONVEYOR OR ACCESSORY THEREFORE SPECIALIZED TO CONVEY PEOPLE
322. With means to control the operation of the section
323. By means responsive to an unsafe operating characteristic of the system
324. With means to facilitate passenger entry or exit
325. By support having interdigitating members (e.g., comb plate, etc.)
326. By stairway having steps forming an endless member
327. Having hinged plates forming steps
328. Trained about vertical axis or axes
329. With means allowing tensioning of the endless member
330. With drive means
331. With means synchronizing the operation of the steps and a handrail
332. With paired track step levelers
333. With specified step structure
334. By support means having a zone of varying speed
335. Moving hand-support structure
336. With handrail tensioning means
337. Specific handrail configuration
338. Handrail guard
339.1 WITH MEANS TO FACILITATE WORKING, TREATING, OR INSPECTING CONVEYED LOAD AT A STATION
340. Having signalling or load identifying means
341.01 Condition responsive control of conveyor or station apparatus
341.02 Conveyor displacement controls station apparatus
341.03 Station operation responsive to presence or absence of item
341.04 Item size
341.05 Item position relative to station position
341.06 Quantity of items
341.07 Item presence
341.08 Conveyor responsive to station operation
341.09 Speed control
343.1 Load supporting conveyor portion is retarded or stopped with load at station without being disconnected from remainder of continuously moving conveyor
343.2 Load supporting conveyor portion is movably secured to conveyor drive
345.1 Means engaging conveyor or load on a conveyor to align load for working
345.2 Means engages conveyor to fix conveyor position relative to station

December 2000
345.3 ...Means engages a conveyor portion (i.e., pallet) which is separable from the conveyor drive to fix the position of said conveyor portion
346 ...Static means for supporting load or workman adjacent conveyor for operation on load
346.1 ...Means to convey a palleted load back and forth between an initial location and the work station
346.2 ...Means to transfer a load back and forth between the mainline conveyor and the work station
346.3 ...Conveyor(s) lowers the load to at least one of a plurality of fixed work stations
347.1 ...Conveyor system having auxiliary section for storing items moving between source and destination
347.2 ...Auxiliary section has the same entrance and exit
347.3 ...Auxiliary section has a reversibly driven conveyor for bidirectional article movement
347.4 ...Plural laterally spaced, same direction auxiliary paths
348 ...Conveyor arrangement for selecting among plural sources or destinations
349.6 ...Memory stores plural sources or destinations
349.7 ...Inventory also in memory
349.8 ...Material detector indexes code
349.9 ...Plural, longitudinally spaced, material detectors index code
349.95 ...Conveyor detector indexes code
350 ...By magnetic means
351 ...By selectively positioned abutment means
352 ...Having plural abutments arranged in a specific pattern
353 ...Having support means slidably mounting abutment means
354 ...Having an abutment support containing a plurality of abutment receiving means
355 ...By repositionable contact or switch actuator
356 ...With gravity-conveying means
357 ...By movably mounted, load-supporting, gravity section
358 ...By repositionable idler roll or rollway
359 ...By proportioning the feed from multiple sources
360 ...By moving a load directing means along the length of the section
890 ...Plural laterally spaced locations fed to or received from a conveyor having laterally movable article supports or pushers
890.1 ...Laterally moving article supports
367 ...By passive material-diverting means placed across the flow path
367.1 ...Material diverted by plural, successive gates
367.2 ...Plural, manually manipulated gate actuators
368 ...By a selectively movable stop means
369.1 ...One of a plurality of main line conveyors selectively moves to connect with a spaced path
369.2..Endless conveyor or portion thereof pivots about a horizontal axis perpendicular to path
369.3..Endless conveyor or portion thereof pivots about an axis parallel to path
369.4..Roller pivots about a vertical axis
369.5..Endless conveyor or portion thereof pivots about a vertical axis
369.6..Rollers shift the load vertically to a different plane
369.7..Conveyor slides to provide an opening in main path
370.01..By loading or unloading section at selected one of a plurality of pre-established locations along the length thereof
370.02..Conveyor has independent lateral pushers
370.03..Conveyor has independently movable load supporting portions
370.04...Supporting portions tilt about an axis parallel to path of travel
370.05...Supporting portions tilt vertically about an axis perpendicular to path of travel
370.06...Supporting portions are laterally extending belts
370.07..By separate reciprocating or oscillating pusher
370.08..By separate endless or rotary pusher
370.09..By separate supporting rollers
370.1..By separate endless or rotary supporting conveyor
370.11..By separate fluid jet
370.12..By selective application of suction
370.13..By selective application of magnetic field
371.1..By reversibly driving the main line section
371.2..Endless belt or chain
371.3..Rollers

CONVEYOR FOR CHANGING ATTITUDE OF ITEM RELATIVE TO CONVEYED DIRECTION

374..By optionally facing successive items according to a predetermined recurring cycle
375..By actuating item-holder relative to holder-carrying conveyor
376..With holder-actuating means responsive to item-sensing means
377.01..Holder carried by orbiting conveyor
377.02...Holder rotates item about axis spaced from the item
377.03....Holder having load gripping element
377.04.....Holder having vacuum or air blast element
377.05......Holder having magnetic or electrostatic element
377.06.....Holder rotation stops at predetermined position
377.07....Holder having load gripping element
377.08.....Holder having vacuum or air blast element
377.09.....Holder having magnetic or electrostatic element
377.1...Holder rotation stops at predetermined position
378...Holder or conveyor moves intermittently (e.g., for "indexing" load)
379..By gripping item and turning item about fixed axis
380..With pressurized fluid causing change in attitude
381..With magnetism causing change in attitude
382..By conveying randomly faced items and turning items to uniform facing
383..Including significantly shaped portion of conveyor cooperating with significantly shaped item to face item
384...Including orbiting progression of item-receiving pockets and means moving item within pocket
385....By roller/finder to move item and/or fit surface indentation on item
386.....Roller/finder rotating about plural axes

December 2000
...Pockets comprise grooved, transversely disposed rollers
...Including protruding portion of conveyor entering end of slotted or hollow item
...For shaped item suspended in or by shaped passageway
...For shaped item fitting outline of shaped passageway
...Via vibrating bowl having shaped passageway
...Via rotating means having shaped passageway or exit
...Including orbiting progression of item-fitting elements passing through supply of scrambled items
...By conveying an item that has a position characteristic and rotating the item until it is positioned
...With control means actuated in response to sensing of improperly faced item
...Including separating item from scrambled supply hopper
...By orbiting progression of item-receiving pockets passing through supply
...Rotary pocketed conveyor
...Horizontal axis of rotation
...Item oriented while on rotary conveyor
...Item oriented while on rotary conveyor
...Item oriented while on endless conveyor
...By distinguishing between alternatively faced items and conveying uniformly faced items
...By turning only improperly faced items to uniform facing
...By partially turning all items to uniform facing and direction
...With control means for attitude-changer responsive to sensing of item
...For inverting successive items
...By means driven for inverting conveyed items
...Orbiting conveyor-inverter means
...Twisted-belt conveyor means

For changing both the elevation and the posture of successive items
...By plural, sequentially acting conveyors
...By an orbitally moving conveyor
...By an oscillating or reciprocating conveyor
...By plural distinct occurrences of turning each successive item
...By conveyor and means driven for turning successive conveyed items
...By means between successive conveyor sections or conveyor elements
...By means which interdigitate with conveyor sections or elements
...By turntable which lifts, turns and lowers item(s)
...By plural, unequal-speed members simultaneously contacting and conveying items
...By member adjacent conveyor for contacting successive conveyed items
...Longitudinally twisted item-bounding passageway

CLASS 198 CONVEYORS: POWER-DRIVEN

CONVEYOR SYSTEM FOR ESTABLISHING AND MOVING A GROUP OF ITEMS

Having items discharged from plural distinct outlets into group
...With outlets longitudinally spaced along path of progressively formed group
...Superposes items within group
...With vertically aligned outlets discharging in the same direction and superposing items
...Having plural successive groups discharged by single conveyor into larger group
...Having conveyor drop grouped items simultaneously onto another conveyor
...Subdivides continuous item stream into longitudinally spaced groups
...By offsetting first or last article

December 2000
418.9 ..And imbricates items within group
419.1 ..By item engaging stop means
419.2 ..By different speed conveyors
419.3 ...With spaced dividers on conveyor limiting group size
426 ..By shifting group of items simultaneously from stream conveyor to form a group
427 ..And distributing items of group into plural streams
428 ..By air blast or suction
429 ..By reciprocating shifter
430 ...Having oblique or orbital movement
431 .By depositing items successively from one conveyor onto group conveyor
432 ..By shifting group from row conveyor onto row conveyor
433 ..By shifting group from row conveyor onto stream conveyor
434 CONVEYOR SYSTEM FOR ARRANGING OR REARRANGING STREAM(S) OF ITEMS
435 .By distributing items vertically tiered conveyor/receiver
436 .By distributing items from one stream into plural streams
437 ..With control means responsive to sensing means
438 ..By air blast or suction diverter
439 ...By magnetic diverter
440 ..By orbiting progression of item engaging elements
441 ...On rotating carrier (e.g., star wheel, etc.)
442 ...By interposing a guide into path of stream
443 ..By queueing items from quantity source of items into stream(s) of items
444 ..With control means responsive to sensing means
445 ..Forming plural streams
446 ...By jiggling items into streams
447 ...And merging plural streams into one stream
448 ...Merging plural streams (i.e., source) into one stream
449 ...By synchronized orbiting progression of item-engaging elements
450 ....On rotating carrier (e.g., star wheel, etc.)
451 ...By synchronized gate(s) in paths of plural streams
452 ...By guide means in paths of streams
453 ..Via throat for restricting flow of massed items
454 ...With supplementary moving surfaces that form throat
455 ....Including retro-moving surface
456 .By laterally or vertically moving successive items in longitudinally moving stream
457.01 ..To change direction of longitudinally moving stream
457.02 ...Item supporting rollers cause direction change
457.03 ...Item supporting endless belt causes direction change
457.04 ...Item supporting screw causes direction change
457.05 ...Fixed guide causes direction change
457.06 ...Nonsupporting endless belt causes direction change
457.07 ...Nonsupporting rotary member causes direction change
458 ..To respace plural streams laterally
459.1 .By longitudinally respacing successive articles in stream
459.2 ..Rotating star wheel
459.3 ..Rotating screw
459.4 ...Varying pitch
459.5 ..Fixed obstruction and means for moving articles over or around the obstruction
459.6 ...Movable gate
459.7 ...Plural
459.8 ..Endless or rotary conveyor having zone of varying speed
460.1 ..With space-control means responsive to article sensing means
460.2 ...Variable conveying length conveyor
460.3 ...To crowd or imbricate
461.1 ...By successive conveyors having dissimilar speeds
461.2 ...Conveyors having increased speeds only
461.3 ....Belt or chain conveyors only
462.1 ...To crowd or imbricate articles

December 2000
462.2 ....Articles imbricated
462.3 ....Crowding by endless belts or chain conveyors only
463.1 CONVEYOR SYSTEM FOR MOVING A SPECIFIC LOAD AS A SEPARATE UNIT
463.2 .System includes a linear conveyor or portion thereof which bodily shifts transversely to move a load in synchronization with a transverse, continuously operating conveyor section
463.3 .System includes linear conveyor or portion thereof which shifts to lift or lower load before or after linearly conveying load relative to adjacent conveyor section
463.4 .System includes gate means
463.5 ..Load obstructing gate and means for lifting load over the obstruction
463.6 ..Plural successively operated gate means
464.1 .System includes control means responsive to sensing means
464.2 ..Responsive to load presence or absence
464.3 ...Responsive to condition of at least one conveyor
464.4 ..Responsive to undesired condition of load
465.1 .System includes a load supported by a conveyor portion which is separable from the conveyor drive
465.2 ..Wherein the conveyor portion moves in a closed path in the horizontal plane only
465.3 ..Wherein the conveyor portion is supported and driven adjacent its opposite sides by horizontally spaced drives
465.4 ..Wherein the conveyor portion supports the load below the drive
466.1 .System includes a T-shaped or headed load suspended between parallel conveyors directly
466.2 ...Comprising load gripping elements
467.1 ...System includes a rotating screw
468.01 .System includes an oscillating or reciprocating load engaging element
468.2 ...Comprising load gripping elements
468.3 ...Gripping elements movable relative to one another to space articles in the load
468.4 ...Suction gripping elements
468.5 ...Magnetic or electrostatic gripping elements
468.6 ...Engaging element moves load vertically and horizontally
468.7 ...Element pushes load over nonlinear support
468.8 ...Engaging element moves load vertically only
468.9 ...Engaging element moves load horizontally in a straight line
468.11 ...Element pushes load over separate support and has linear path of travel
469.1 .System includes a rotating or endless carrier with a load engaging element
470.1 ...Comprising a load gripping element
471.1 ...Suction gripping element
472.1 ...Magnetic or electrostatic gripping element
473.1 ...Nongripping elements are adjustable or replaceable for different sized loads
474.1 ...With means to move load engaging elements relative to carrier
475.1 ...Whereby the load engaging component moves relative to the carrier to maintain load in a desired position during travel along a curved path
476.1 ...Element is shifted to discharge or receive a load
477.1 ....Element is only shifted with the load during discharge
478.1 ...Carrier rotates about a fixed axis
479.1 ...Elements push the load over a separate support
480.1 ....With a load retaining guard means
481.1 ...With load retaining guard means
482.1 ...Means mounted on the engaging element to forceably eject the load from the element
CLASS 198 CONVEYORS: POWER-DRIVEN

483.1 Means movably mounted inside the path of the element to eject the load
484.1 Elements comprise a nongripping pair of members which self-open as they pass through a curved path
485.1 Nongripping elements support the load below the endless carrier
486.1 Elements are hooks
487.1 Nongripping elements are laterally projecting pins which engage the interior of a hollow load

CONVEYOR HAVING IMPINGING FLUID TO FEED, SHIFT OR DISCHARGE LOAD; OR MEANS TO FACILITATE CLEANING OF CONVEYOR; OR STERILIZING OR LUBRICATING MEANS

493 CONVEYOR HAVING IMPINGING FLUID TO FEED, SHIFT OR DISCHARGE LOAD; OR MEANS TO FACILITATE CLEANING OF CONVEYOR; OR STERILIZING OR LUBRICATING MEANS

494 Having cleaning means
495 By fluid applying means
496 By conveyor contacting brush
497 By conveyor contacting scraper
498 Having a moving scraper
499 With scraper biasing means
500 Having lubricating means
501 For rollers forming belt troughing structure

WITH ALARM OR INDICATOR

502.1 Means for measuring dimensions (height, width, or length) of load on a conveyor
502.2 Means for indicating position of unit load
502.3 Means responsive to conveyor movement to indicate speed or to actuate alarm due to abnormal speed

CONVEYOR HAVING MEANS SPECIALIZED FOR COLLECTING A LOAD FROM A STATIC SUPPORT (E.G., THE GROUND, ETC.)

506 CONVEYOR HAVING MEANS SPECIALIZED FOR COLLECTING A LOAD FROM A STATIC SUPPORT (E.G., THE GROUND, ETC.)

507 Having control means responsive to load condition or unsafe operating condition
508 Having means to form a pile on a static support
509 Having buckets specialized to gather load batches
510.1 Power-driven feed means
511 Having vertically adjustable feeding means
512 Paired feeding means

...Opposite hand screws
...Opposed load engaging pushers
...Orbiting progressions of pusher elements
...Mounted on endless carriers
...Reciprocating pusher feeding means
...Rotating feeding means
.Having means mounting conveyor for pile surface attack
.Self-gathering pusher
.By vibratory trough entrance means
.Having passive material collecting means

CONVEYOR SYSTEM HAVING A GRAVITY CONVEYOR SECTION

524 Condition responsive
525 With means to affect flow
526 Moving flow control means coordinated with power-driven conveyor section
...Successive power-driven conveyor sections
.Power-driven conveyor section operatively engages adjustable gravity section
..Conveying element of power-driven conveyor section manipulated to effect load discharge
...Gate
...Actuated by, or otherwise coordinated with, power-driven conveyor section
...In generally vertical exit path of gravity discharge material holder
..By agitating, stirring, vibrating, etc.
..By retarding velocity or reducing volume
..Adjustably mounted conveyor section
...Section is terminal one of system
..With means to handle portion of load which becomes separated from main flow path
.Conveyor section(s) adjustable for nonoperative purpose (e.g., storage, transport, etc.)
Including a load-supporting bridging element (e.g., horizontal surface) between conveyor sections.

Gravity discharge material holder is source of supply, discharging by gravity to power-driven section.

With at least one more gravity section therebetween.

And having plural, successive power-driven sections.

With at least one more successive power-driven section.

Of the apron belt type.

Of the screw type.

Followed by at least one gravity section.

Apron belt type of discharge-receiving, power-driven section.

Screw type of discharge-receiving, power-driven section.

Bucket type of discharge-receiving, power-driven section.

..Bin having a power-driven conveyor section for discharging or feeding discharge to a gravity or power-driven section.

..Having adjustable bin or discharge means.

..Excess material on power-driven discharge means returned to bin.

..Power-driven discharge means feeds to a subsequent gravity section.

..Power-driven discharge means feeds to a subsequent power-driven section.

..Of the screw type.

..Of the bucket type.

..Of the scraper type.

..Of the apron type.

..Screw type power-driven discharge means.

..Bucket type power-driven discharge means.

..Scraper type power-driven discharge means.

..Apron type power-driven discharge means.

Power-driven conveyor section feeding to gravity section (i.e., gravity discharge material holder, or gravity flow path) feeding in turn to another power-driven section.

Gravity conveyor section fed by one run of power-driven section, and feeding in turn to another run of the same section.

..Gravity conveyor section is gravity flow path feeding to power-driven section.

..Followed by gravity section (i.e., gravity discharge material holder, or gravity flow path).

..Thrower type power-driven section.

..Plural gravity sections.

..Plural power-driven sections.

..Serially arranged.

..Plural power-driven conveyor sections feeding to gravity section (i.e., gravity discharge material holder, or gravity flow path).

..Power-driven conveyor section feeding to plural gravity sections (i.e., gravity discharge material holder, or gravity flow path).

CONVEYING SYSTEM HAVING PLURAL POWER-DRIVEN CONVEYING SECTIONS.

With condition responsive control of a section.

..By means responsive to presence or condition of load.

..By overload sensing.

..Conveyor carried by load-engaging conveyor.

..With means controlling the interrelated operation of plural sections.

..With means operating successive sections in timed relation.

..With means for altering the speed (e.g., accelerating, decelerating, stopping, reversing, etc.) of a section.

..Having a cyclically swingable section.

December 2000
With means operating successive sections at different speeds
Recycling load in a closed path
With means allowing a section to fold upon itself
With supply chamber for system
With means connecting sections for quick assembly of disassembly
By means allowing relative movement of joined sections
Including tripper
With relatively adjustable sections
By means mounting a section for lateral swinging movement
...With means to vary the effective length of the system (e.g., telescoping sections)
...With means mounting a section to swing about a generally horizontal axis
...With yieldable side walls
...With a curved guide or support
...By means mounting a section to swing about a generally horizontal axis
...With flexible means and winding drum
...By means to vary the effective length of the system
...By nested trough sections
....Including power-driven means for laterally shifting a conveyor-engaged load
...By a revolving or pivotal member
...Including non-driven means for moving load relative to conveyor
Including rest for transient load
Forming plural conveying paths feeding to single conveying path or vice versa
Forming a single conveying path
...Superposed sections forming an ascending or descending zigzag conveying path
...Load simultaneously engaged between and moved by coacting conveyors
...With load transfer between coacting conveyors
...Plural sections each formed of or including a closed flexible loop
...With elevating or lowering section
...Plural rotating sections
...Plural vibratory sections
...Diverse sections
...Having a rotating section
....With load engaging element carried by the rotating section
.....Element retractable to disengage from load
....And a reciprocating section
CONVERTIBLE PROCESSES
CONVEYOR SECTION
Load propelled as the reactive means in a linear motor or moving magnetic field
Load simultaneously engaged between and moved by a plurality of driven conveyor members
Reciprocating member
...Load support member lifted by inclined or vertical supporting fluid actuator (e.g., piston or air bag)
...Load support member lifted by supporting eccentric cam or rotating crank drive
...Load support member lifted by inclined supporting surface
...Oppositely moving members (e.g., doffing, etc.)
...Wherein the velocities of at least two of the members are not equal
...Rotary members
...Screw type
...Opposed endless belts
...Load is enclosed by belts
....Having means to adjust one belt relative to the opposed belt
.....By biasing means
...Having adjustable belt portion
....By biasing means
...Diverse
...Moving wave type
...Conveyor portion only cyclically rotates, shifts, or oscillates for extra-conveying function
Conveyor section folds to facilitate transportation or storage of section

Movement of load changed relative to conveyor movement on contact of load with passive means

Load responsive means or timing means controls load engaging means

Stripper (e.g., static scraper)

Passive means causes load to move laterally of conveyor...To discharge load from conveyor

Thrower

Condition responsive control

Adjustable means to control trajectory distance or direction

Rotary

Endless belt strand or chain-like member to lift viscous fluid

Conveyor for signatures

Screw

Including rotating load confining means (e.g., tumbler)

Including a deformable element

Including an axially adjustable helical surface formation

Having axially varying capacity

Plural helical surface formations

...Separate, parallel formations supporting same load

...Transversing less than 360 degrees

...And reversible

Coupled end-to-end

...With intermediate drive

Pivotably

...Of opposite hand

...With means for controlling flow or to assist conveying

...With means to assist in discharging from or feeding to the housing of the helical surface information

Including bearing means

Bearing means directly engages periphery of the helical surface formation

Including drive means

...Having reversible or variable speed

Helical surface formation structure

...With means for securing helical surface formation to driving member

Endless conveyor having means for suspending load

Means engagable with hanger to change hanger position relative to drive means or to release load

Load directly suspended from means spanning between parallel drive means

Having lock connection between hanger and load engaging means

Articulated drive means provided with non-load supporting guide means

Having means interengaging articulated drive and drive means therefor

Elongated drive means and hanger interengaging means

...Strand or cable drive means connected to hanger below hanger support means

...Chain or pivotally connected members drive means connected to hanger below hanger support means

Separable conveyor portion

Having means to enhance the friction or adherence between the conveyor and load at random locations on conveyor

Suction

Magnetic

...Transversely extending elongated ridge means formed on or attached by nonmechanical means to the conveyor

Electrostatic

Impaling

Having impaled load removal assisting means

December 2000
697 ..Load-engaging belt having separate load-impelling, projecting member swingably mounted thereon
698 ..Load-engaging belt having load-impelling, projecting cross members (e.g., slat, etc.) joined thereto by mechanical fastening means
699 ...Belt formed of a continuous member of flexible sheet-type material (e.g., canvas, etc.)
699.1 ..By a plurality of laterally spaced, projecting members on the conveyor
700 .Single suspended loop
701 .Bucket
702 ..To convey liquid
703 ..Having means to facilitate loading or discharging load from bucket
704 ...Bucket has door means to release load
705 ..Having means to engage and move load from bucket
706 ...Having means to pivot bucket relative to endless drive means
707 ..Interconnected buckets form chain
708 ..Having means to close gap between buckets
709 ..Having means to adjust tension on endless bucket carrier
710 ..Slide and guide or wheel and track means to movably support bucket
711 ..Bucket with connection to endless band or strand-type carrier
712 ..Bucket with connection to endless chain or link-type carrier
713 ..Bucket structure
714 ...Composite
715 .Flexible pocket
716 .Flight means in conduit for lifting flowable solid material
717 .Pusher conveyor and separate load support surface
718 ..Condition responsive control
719 ..Having means to prevent damage to conveyor
720 ..Having means to recycle conveyed load
721 ..With antifriction or movable supporting surface
722 ..Rotating pusher
723 ...To move load in an arcuate path
724 ....Wherein path is helical
725 ..Endless-orbiting pusher or its load support
726 ...Coacting plural pushers in plural orbits
727 ...Pusher edge configured to load-support surface
728 ...Pusher connected to endless pusher-carrier
729 ....With carrier drive or guide means configured to pusher
730 ....Integral element forming pusher, connection and carried link
731 ....By detachable or adjustable connection
732 ....By pivot between pusher and carrier
733 ....By connection to single carrier
734 ...Pusher-surface configuration
735.1 ...Load support, casing, shield or auxiliary attachment
735.2 ....Modules connectable end to end with no relative movement
735.3 ....Door, casing, cover, or load supporting surface
735.4 .....Casing or load supporting floor with door
735.5 .....Removable cover overlying the conveyor
735.6 ....Modules connected end to end permitting relative angular positioning (e.g., due to uneven ground)
736 ..Reciprocating pusher
737 ....Plural laterally spaced alternately acting
738 ....Mounted on a carrier
739 ....Carrier has a swinging path of movement
740 ....Carrier has an orbital path of movement
741 ....Plural pushers
742 ......Oscillating about axis or axes
743 ......Axis or axes transverse to path of travel

December 2000
744 .......Axis or axes below load support surface
745 .......Axis or axes perpendicular to load support surface
746 .......Pivotaly mounted pusher
747 .......Pusher having linear path of movement
748 .......Moved by endless actuator
749 .......Pusher configuration
750.1 ..Reciprocating conveying surface
750.11 ..Reciprocating gripper
750.12 ...Suction gripper
750.13 ...Magnetic or electrostatic gripper
750.14 ..Reciprocating surface carries load horizontally and vertically for one cycle only
750.2 ..Surface formed by plural parallel elongated sections reciprocating horizontally
750.3 ...Seals
750.4 ...With specified bearing
750.5 ...Piston drive
750.6 .......Detachable drive
750.7 ...Piston drive
750.8 ..Eccentric cam or rotating crank drive
751 .......With control means responsive to sensor means
752.1 ..Vibratory conveying member
753 .......Selectively operated to reverse direction of movement
754 .......With flexible-belt extension
755 .......With retrograde-movement preventer
756 .......Having helical path
757 .......Confined within a bowl
758 .......Coupled parts from single vibratory trough
759 .......Conveying member having support or drive
760 .......With damper for conveying member or support
761 .......With means to control load speed
762 .......By control of motor speed
763 .......Support for conveying member
764 .......Pivotal link support
765 .......Rolling contact support
766 .......With drive causing conveying member vibration
767 .......With damper for drive
768 .......By fluid means
769 .......By electromagnetic means
770 .......By unbalanced weights
771 .......Conveying member configuration
772 .......With retrograde movement preventer
773 .......Including set of alternately-acting load-support members
774.1 .......Longitudinally extending interdigitated sets (lifted by oscillating arms, etc.)
774.2 .......Load support member lifted by inclined supporting fluid actuators
774.3 .......Load support members lifted by supporting, eccentric cam or rotating crank drive
774.4 .......Load support members lifted by inclined supporting surface
777 .......Including transverse pivoted sets of alternately acting load-support members
778 .Spiral
779 .Load-supporting rolls moved about endless path
780 .Live roll
781.01 ..Live roll drive engages, disengages, or slips responsive to load position or blockage
781.02 .......Friction drive slips or disengages
781.03 .......Belt drive
781.04 .......Friction wheel drive
781.05 .......Live roll is driven by load sensor (e.g., trigger roller)
781.06 .......Sensor and drive interconnected by fluid or electric means
781.07 .......Positive gear drive
781.08 .......Friction wheel drive
781.09 .......Flat belt drive
781.1 .......O-Ring drive
781.11 .......Chain drive
782 .......Having means to adjust position of roll relative to load (i.e., vertically, horizontally, angularly, etc.)
783 .......Having intermittent, periodic, timed or programmed drive for rolls
784 .......Arranged or having means to change load speed

December 2000
Roll (s) center load on conveyor
Load moves axially of roll
Rolls causes load to travel curved path
With motor means for roll
Roll drive means
Belt drive
Gear drive
Conveyor having a zone of varying speed
Unit load conveying surface means moved about an endless or rotating path
With manual, position or condition responsive drive control
Unit load conveying means maintained in uniform orientation while transiting from one direction to another
By coacting with guide only while transiting from one direction to another
Plural endless means support and maintain conveying surface horizontally orientated while moving around associated but axially displaced sprockets power-driven section
By constant engagement with guide means throughout conveying course of travel
Conveying surface elevates load and has cantilever-type connection with endless means
Conveying surface movable relative to path
Holder is removable or replaceable relative to drive
Holder grips load
Suction gripper
Magnetic or electrostatic gripper
Gripper portion biased to load engaging position
Gripper portion made of resilient material which is self-biased into engaging position
Cam means moves at least one portion of the gripper to a load engaging position
Gripping portions self-open as they pass through a curved path
Nongripping holder is adjustable for different sized loads
Holder for hollow load contacts interiorly
Holder formed of nongripping elements which separate from each other as they pass through a curved path
Holder means forms recess to receive or seat load
Holder means forms an aperture for receiving load
Holder has frictional engagement with drive
Holder has positive engagement with drive
Holder is attached by a detachable connector to the drive
Holder supported and driven by horizontally spaced drive
Each conveying surface means abbutted and pushed by succeeding conveying surface means
Holder grips load
Relatively adjustable grippers space portion of load
Suction gripper
Magnetic or electrostatic gripper
Gripper portion biased to load engaging position
Gripper portion made of resilient material which is self-biased into engaging position
Cam means moves at least one portion of the gripper to a load engaging position
Gripping portions self-open as they pass through a curved path
Nongripping holder is adjustable for different sized loads
Holder for hollow load contacts interiorly
Holder formed of nongripping elements which self-open as they pass through a curved path
Holder means forms recess to receive or seat load
Holder means forms an aperture for receiving load

December 2000
CLASS 198 CONVEYORS: POWER-DRIVEN

803.16 .Rotary conveyor without specific locations for supporting randomly placed articles or bulk material
804 .Endless conveyor
805 ..Magnetically guided, supported or driven
806 ..Revolvable means engaging carrier belt face automatically skews to correct belt training deviation
807 ...With power drive (e.g., pressure cylinder or electric motor, etc.) for skewing revolvable means
808 ...With revolvable means supporting belt in transversely troughed form
809 ..Vertically shiftable belt situated between auxiliary load supports
810.01 ..Condition responsive
810.02 ...Belt damage sensor
810.03 ...Belt tracking sensor
810.04 ...Belt tension sensor
811 ..Pressurized fluid or suction applied to carrier belt to modify its reaction with support
812 ..Having variable conveying length
813 ..Device for tensioning belt
814 ...With spring biasing means
815 ...With counterweight
816 ...With screw adjusting means
817 ..Separate, parallel conveying reaches supporting same load
818 ..Having upwardly facing trough configuration in transverse direction on conveying reach
819 ...Edges movable together to enclose load
820 ...Having preformed trough shape
821 ....Formed of or including a continuous member of sheet-like material (e.g., canvas, etc.)
822 ....Formed or including transverse plates tandemly disposed lengthwise of carrier belt
823 ...Supported in trough form by separate, unattached means engaging carrier belt face
824 ....Roller or roller assembly
825 ......Independently rotatable rollers canted relative to each other
826 ......Means for selectively adjusting angle between rollers to vary carrier belt shape
827 ......Pivotally linked rollers form chain supported only at its ends
828 ......Roller-supporting transverse frame connected to side-frame stand
829 ......Individually cantilevered roller
830 ......Transverse frame carrying at least three transversely spaced roller supports
831 ..Upper and lower runs of same belt travel vertically aligned, laterally bending paths
832 ..Carrier belt drive means
832.1 ...Indexed or intermittent drive
832.2 ...Brake means to slow, stop or hold carrier belt
832.3 ....Brake means directly engages carrier belt
833 ...Carrier belt driven by contact with separate drive belt, or connected thereto by quick-release clamp
834 ....Wheel with radial teeth-engaging carrier belt or means connected therewith
835 ...Roller, wheel, or drum-engaging belt
836.1 ..Having load retainer or guide separate from carrier belt
836.2 ....Load retainer biases load transversely against carrier belt
836.3 ...Laterally adjustable or yieldable guides contact load
836.4 ....Replaceable modular guides for changing the conveying path cross-section
837 ..Support, guide, or hold-down means for carrier belt
838 ...Track which supports rollers attached to belt
839 ...Means twists carrier belt or guides it between angularly oriented horizontal reaches

December 2000
840 ...Guide exerting lateral force on nonload-supporting belt surface
841 ...Means slidably supporting belt
842 ...Rotatable support or hold-down engaging non-load-carrying face of belt
843 ....Resilient
844.1 ..Carrier belt structure
844.2 ...Connection means joins ends of sheet-like belt
845 ...Carrier belt supported or guided by rotatable means attached thereto
846 ...Formed of or including a continuous member of sheet-like material (e.g., canvas, etc.)
847 ....Including separate reinforcing elements or plural sheet-formed plies
848 ...Formed of or including wire mesh, or rods hooked together at belt edges
849 ....Link belt attached to carrier belt
850 ...Formed of or including pivotally interconnected rigid links
851 ....Separate pins interconnect links
852 .....Links pivot about mutually perpendicular axes
853 .....Links having interfitted ends
860.1 CONVEYOR FRAME OR CASING
860.2 .Modules connectable end-to-end with no relative movement
860.3 .Casing, cover, shield or load supporting surface
860.4 ..Casing with door
860.5 ..Removable cover overlying the conveyor
861.1 .Adjustable conveyor frame or casing
861.2 ..Conveyor frame or casing flexes or pivots intermediate its ends to move one end relative to the other
861.3 ...Single horizontal pivot axis only
861.4 ..Entire conveyor pivots about horizontal and vertical axes
861.5 ..Entire conveyor pivots about horizontal axis
861.6 ..Entire conveyor pivots about vertical axis
866 MISCELLANEOUS

CROSS-REFERENCE ART COLLECTIONS
950 CONVEYOR TRANSVERSES WALL APERTURE
951 TURNING CIGARETTES END-FOR-END
952 HEATING OR COOLING
953 COIL SPRING UNTANGLING APPARATUS
954 OVERFLOW
955 AIR MANIFOLD
956 IMPACT PLATES
957 CONVEYOR MATERIAL
958 LOAD UNITS COUNTER
959 WEIGHING

FOREIGN ART COLLECTIONS
FOR CLASS-RELATED FOREIGN DOCUMENTS

December 2000