

EXHIBIT 19

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On the cover: Photomicrograph of crystals of vitamin B₁.
(Dennis Kunkel, University of Hawaii)

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band-rejection filter

band-rejection filter See band-stop filter. { 'bænd rɪ'jek'shən fɪltər }

band saw [MECH ENG] A power-operated woodworking saw consisting basically of a flexible band of steel having teeth on one edge, running over two vertical pulleys, and operated under tension. { 'bænd ,sɔ }

band scheme [SOLID STATE] The identification of energy bands of a solid with the levels of independent atoms from which they arise as the atoms are brought together to form the solid, together with the width and spacing of the bands. { 'bænd ,skēm }

band selector [ELECTR] A switch that selects any of the bands in which a receiver, signal generator, or transmitter is designed to operate and usually has two or more sections to make the required changes in all tuning circuits simultaneously. Also known as band switch. { 'bænd sə'lekt-tər }

B and S gage See American wire gage. { 'bē ən 'ēs ,gāj }

band spectrum [SPECT] A spectrum consisting of groups or bands of closely spaced lines in emission or absorption, characteristic of molecular gases and chemical compounds. Also known as band. { 'bænd ,spek-trəm }

band spreading [COMMUN] Method of double-sideband transmission in which the frequency band of the modulating wave is shifted upward in frequency so that the sidebands produced by modulation are separated in frequency from the carrier by an amount at least equal to the bandwidth of the original modulating wave, and second order distortion products may be filtered from the demodulator output. { 'bænd ,spred-iŋ }

band-spread tuning control [ELECTR] A tuning control provided on some shortwave receivers to spread the stations in a single band of frequencies over an entire tuning dial. { 'bænd ,spred 'tūn-iŋ kən'trəl }

band-stop filter [ELECTR] An electric filter which transmits more or less uniformly at all frequencies of interest except for a band within which frequency components are largely attenuated. Also known as band-elimination filter; band-rejection filter. { 'bænd ,stɒp fɪltər }

band switch See band selector. { 'bænd ,swɪtʃ }

band theory of ferromagnetism [SOLID STATE] A theory according to which ferromagnetism is caused by electrons in the unfilled energy bands of a crystal. { 'bænd ,thē-ərəv 'fēr-ŋ'magne'tiz-əm }

band theory of solids [SOLID STATE] A quantum-mechanical theory of the motion of electrons in solids that predicts certain restricted ranges or bands for the energies of these electrons. Also known as energy-band theory of solids. { 'bænd ,thē-ərəv 'sɔl-ɪdz }

band wheel [MECH ENG] In a drilling operation, a large wheel that transmits power from the engine to the walking beam. { 'bænd ,wēl }

bandwidth [COMMUN] The difference between the frequency limits of a band containing the useful frequency components of a signal. Abbreviated BW. { 'bænd ,wɪðθ }

bandwidth reduction See bit-rate reduction. { 'bænd ,wɪðθ rɪ'dʌk'shən }

bandylite [MINERAL] $Cu_2B_2O_4 \cdot CuCl_2 \cdot 4H_2O$ A tetragonal mineral that is deep blue with greenish lights and consists of a hydrated copper borate-chloride. { 'bænd ,lɪt }

Bangalore torpedo [ORD] A metal tube or pipe packed with a high-explosive charge; chiefly used to clear a path through barbed wire or minefields. { 'bæŋ ,gæl-ŋ 'tɔr-pēd-ŋ }

bang-bang circuit [ELECTR] An operational amplifier with double feedback limiters that drive a high-speed relay (1-2 milliseconds) in an analog computer; involved in signal-controlled programming. { 'bæŋ 'bæŋ ,særkət }

bang-bang control [COMPUT SCI] Control of programming in an analog computer through a bang-bang circuit. [CONT SYS] A type of automatic control system in which the applied control signals assume either their maximum or minimum values. { 'bæŋ 'bæŋ kən'trəl }

bang-bang-off control See bang-zero-bang control. { 'bæŋ 'bæŋ 'ɒf kən'trəl }

bang-bang robot [CONT SYS] A simple robot that can make only two types of motions. { 'bæŋ 'bæŋ 'rɔb-ŋ bɒt }

Bangiophyceae [BOT] A class of red algae in the plant division Rhodophyta. { 'bæŋ-ŋ-ə 'fɪs-ŋ-ē }

Bang's disease See contagious abortion. { 'bæŋz dɪz'ēz }

bang-zero-bang control [CONT SYS] A type of control in which the control values are at their maximum, zero, or mini-

mum. Also known as bang-bang-off control. { 'bæŋ ,zɪr-ŋ 'bæŋ kən'trəl }

banister [BUILD] A handrail for a staircase. { 'bæn-ŋ-stər }

bank [AERO ENG] The lateral inward inclination of an airplane when it rounds a curve. [CIV ENG] See embankment. [ELEC] 1. A number of similar electrical devices, such as resistors, connected together for use as a single device. 2. An assemblage of fixed contacts over which one or more wipers or brushes move in order to establish electrical connections in automatic switching. [ENG] A pipework installation in which the pipes are set parallel to each other in proximity. [GEOL] 1. The edge of a waterway. 2. The rising ground bordering a body of water. 3. A steep slope or face, generally consisting of unconsolidated material. [IND ENG] The amount of material allowed to accumulate at a point on a production line where it is not employed or worked upon, to permit reasonable fluctuations in line speed before and after the point. Also known as float. [MIN ENG] 1. The top of the shaft. 2. The surface around the mouth of a shaft. 3. The whole, or sometimes only one side or one end, of a working place underground. 4. To manipulate materials such as coal, gravel, or sand on a bank. 5. A terracelike bench in open-pit mining. [OCEANOGR] A relatively flat-topped raised portion of the sea floor occurring at shallow depth and characteristically on the continental shelf or near an island. { 'bæŋk }

bank-and-turnindicator [AERO ENG] A device used to advise the pilot that the aircraft is turning at a certain rate, and that the wings are properly banked to preclude slipping or sliding of the aircraft as it continues in flight. Also known as bank indicator. { 'bæŋk ən 'tɔrn 'ɪnd-ŋ ,kæd-ŋ-ər }

bank-and-wiper switch [ELEC] Switch in which electromagnetic ratchets or other mechanisms are used, first, to move the wipers to a desired group of terminals, and second, to move the wipers over the terminals of the group to the desired bank contacts. { 'bæŋk ən 'wɪp-ŋ ,swɪtʃ }

bank cushion [NAV] In nautical navigation, a force acting on the bow of a ship in a manner which forces the ship away from the bank in a restricted channel, especially where the banks are steep; it is a force which opposes bank suction. { 'bæŋk ,kʊʃ-ŋ-ən }

bank deposit [GEOL] Mounds, ridges, and terraces of sediment rising above and about the surrounding sea bottom. { 'bæŋk dɪ'pɒz-ɪt }

banked winding [ELECTR] A radio-frequency coil winding which proceeds from one end of the coil to the other without return by having, side by side, many flat spirals formed by winding single turns one over the other, thereby reducing the distributed capacitance of the coil. { 'bæŋkt 'wɪnd-iŋ }

banker [ENG] The bench or table upon which bricklayers and stonemasons prepare and shape their material. { 'bæŋ-kər }

banket [GEOL] A conglomerate containing valuable metal to be exploited. { 'bæŋ'ket }

bankfull stage [HYD] The flow stage of a river in which the stream completely fills its channel and the elevation of the water surface coincides with the bank margins. { 'bæŋk 'fʊl ,stæj }

bank gravel See bank-run gravel. { 'bæŋk ,græv-əl }

bank height [MIN ENG] The vertical height of a bank as measured between its highest point or crest and its toe at the digging level or bench. Also known as bench height; digging height. { 'bæŋk ,hɪt }

bank indicator See bank-and-turn-indicator. { 'bæŋk 'ɪnd-ŋ ,kæd-ŋ-ər }

banking pin [HOROL] One of the erect pins in the bottom plate of a watch that restrict the movement of the lever. { 'bæŋk-iŋ ,pɪn }

bank-inset reef [GEOL] A coral reef situated on island or continental shelves well inside the outer edges. { 'bæŋk 'ɪn ,set ,rēf }

bank material [CIV ENG] Soil or rock in place before excavation or blasting. { 'bæŋk mə'tɪr-ē-əl }

bank measure [CIV ENG] The volume of a given portion of soil or rock as measured in its original position before excavation. { 'bæŋk ,mez-ŋ-ər }

bank reef [GEOL] A reef which rises at a distance back from the outer margin of rimless shoals. { 'bæŋk ,rēf }

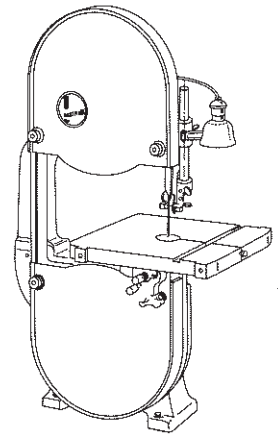
bank-run gravel [GEOL] A natural deposit comprising gravel or sand. [MATER] Aggregate taken directly from natural deposits; contains both large and small stones. Also known as bank gravel; run-of-bank gravel. { 'bæŋk ,rən 'græv-əl }

bank sand [GEOL] Deposits occurring in banks or pits and

bank sand

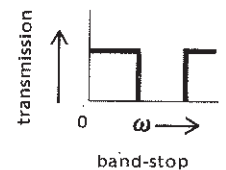
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BAND SAW



The narrow band saw, a flexible band of steel, can make curved as well as straight cuts even in thick pieces. (Delta)

BAND-STOP FILTER



Transmission function of a band-stop filter. Frequency (ω) components are largely attenuated at the stop band.

a singularity, undergoes another big bang to begin a new cycle, and thenceforth oscillates between successive expansions and contractions, each contraction followed by a new big bang. { 'äs-ə-lä-d'ij 'yü-nə,vərs }

oscillation [CONT SYS] See cycling. [MATH] 1. The oscillation of a real-valued function on an interval is the difference between its least upper bound and greatest lower bound there. 2. The oscillation of a real-valued function at a point x is the limit of the oscillation of the function on the interval $[x - e, x + e]$ as e approaches 0. Also known as saltus. [PHYS] Any effect that varies periodically back and forth between two values. { 'äs-ə-lä-shən }

oscillation photography [SOLID STATE] A method of x-ray diffraction analysis in which a single crystal is made to oscillate through a small angle about an axis perpendicular to a beam of monochromatic x-rays or particles. { 'äs-ə-lä-shən fə'täg-rə-fē }

oscillation ripple See oscillation ripple mark. { 'äs-ə-lä-shən 'rip-əl }

oscillation ripple mark [GEOL] A symmetric ripple mark having a sharp, narrow, and relatively straight crest between broadly rounded troughs, formed by the motion of water agitated by oscillatory waves on a sandy base at a depth shallower than wave base. Also known as oscillation ripple; oscillatory ripple mark; wave ripple mark. { 'äs-ə-lä-shən 'rip-əl 'märk }

oscillator [ELECTR] 1. An electronic circuit that converts energy from a direct-current source to a periodically varying electric output. 2. The stage of a superheterodyne receiver that generates a radio-frequency signal of the correct frequency to mix with the incoming signal and produce the intermediate-frequency value of the receiver. 3. The stage of a transmitter that generates the carrier frequency of the station or some fraction of the carrier frequency. [PHYS] Any device (mechanical or electrical) which, in the absence of external forces, can have a periodic back-and-forth motion, the frequency determined by the properties of the oscillator. { 'äs-ə-lä-d'ər }

oscillator harmonic interference [ELECTR] Interference occurring in a superheterodyne receiver due to the interaction of incoming signals with harmonics (usually the second harmonic) of the local oscillator. { 'äs-ə-lä-d'ər här'män'ik ,in-tər'fir-əns }

Oscillatoriales [BOT] An order of blue-green algae (Cyanophyceae) which are filamentous and truly multicellular. { 'äs-ə-lä,tör-ē'ä-lēz }

oscillator-mixer-first detector See converter. { 'äs-ə-lä-d'ər 'mik-sər ,fərst di'tektər }

oscillator strength [ATOM PHYS] A quantum-mechanical analog of the number of dispersion electrons having a given natural frequency in an atom, used in an equation for the absorption coefficient of a spectral line; it need not be a whole number. Also known as f value; Ladenburg f value. { 'äs-ə-lä-d'ər ,streŋkθ }

oscillatory circuit [ELEC] Circuit containing inductance or capacitance, or both, and resistance, connected so that a voltage impulse will produce an output current which periodically reverses or oscillates. { 'äs-ə-lä,tör-ē 'sər-kət }

oscillatory discharge [ELEC] Alternating current of gradually decreasing amplitude which, under certain conditions, flows through a circuit containing inductance, capacitance, and resistance when a voltage is applied. { 'äs-ə-lä,tör-ē 'dis,čärj }

oscillatory extinction See undulatory extinction. { 'äs-ə-lä,tör-ē ik'stiŋk-shən }

oscillatory reaction [CHEM] A chemical reaction in which a variable of a chemical system exhibits regular periodic changes in time or in space. { 'äs-ə-lä,tör-ē rē'ak-shən }

oscillatory ripple mark See oscillation ripple mark. { 'äs-ə-lä,tör-ē 'rip-əl 'märk }

oscillatory shear [FL MECH] Application of small-amplitude oscillations to produce shear in viscoelastic fluids for the study of dynamic viscosity. { 'äs-ə-lä,tör-ē 'šir }

oscillatory surge [ELEC] Surge which includes both positive and negative polarity values. { 'äs-ə-lä,tör-ē 'sərj }

oscillatory twinning [CRYSTAL] Repeated, parallel twinning. { 'äs-ə-lä,tör-ē 'twi-niŋ }

oscillatory wave [PHYS] A wave composed of individual particles, each of which oscillates about a point with little, if any, permanent change in position. { 'äs-ə-lä,tör-ē 'wāv }

oscillistor [ELECTR] A bar of semiconductor material, such

it is placed in a magnetic field and is carrying direct current that flows parallel to the magnetic field. { 'äs-ə-lä'stər }

oscillogram [ENG] The permanent record produced by an oscillograph, or a photograph of the trace produced by an oscilloscope. { 'ə'sil-ə,grəm }

oscillograph [ENG] A measurement device for determining waveform by recording the instantaneous values of a quantity such as voltage as a function of time. { 'ə'sil-ə,graf }

oscillographic polarography [PHYS CHEM] A type of voltammetry using a dropping mercury electrode with oscillographic scanning of the applied potential; used to measure the concentration of electroactive species in solutions. { 'äs-ə-lä,graf'ik ,pö-lä'räg-rə-fē }

oscillograph tube [ELECTR] Cathode-ray tube used to produce a visible pattern, which is the graphical representation of electric signals, by variations of the position of the focused spot or spots according to these signals. { 'ə'sil-ə,graf,tüb }

oscillometric titration [PHYS CHEM] Radio-frequency technique used for conductometric and dielectrometric titrations; the changes in conductance or dielectric properties changes the solution capacity and thus the frequency of the connected oscillator circuit. { 'äs-ə-lä,'me'trik tī'trā-shən }

oscillometry [PHYS CHEM] Electrode measurement of oscillation-frequency changes to detect the progress of a titration of electrolytic solutions. { 'äs-ə-läm-ə-tre }

oscilloscope See cathode-ray oscilloscope. { 'ə'sil-ə,sköp }

Oscillospiraceae [MICROBIO] Formerly a family of large, gram-negative, motile bacteria of the order Caryophanales which lose motility on exposure to oxygen. { 'äs-ə-lä'spə-räs-ē,ē }

oscine See scopoline. { 'ä,sin }

Oscines [VERT ZOO] The songbirds, a suborder of the order Passeriformes. { 'äs-ə,nēz }

O scope [ELECTR] An A scope modified by the inclusion of an adjustable notch for measuring range. Also known as O indicator; O scan. { 'ö ,sköp }

osculating circle [MATH] For a plane curve C at a point p , the limiting circle obtained by taking the circle that is tangent to C at p and passes through a variable point q on C , and then letting q approach p . { 'äs-kyə,lä-d'ij 'sər-kəl }

osculating orbit [ASTRON] The orbit which would be followed by a body such as an asteroid or comet if, at a given time, all the planets suddenly disappeared, and it then moved under the gravitational force of the sun alone. { 'äs-kyə,lä-d'ij 'ör bət }

osculating plane [MATH] For a curve C at some point p , this is the limiting plane obtained from taking planes through the tangent to C at p and containing some variable point p' and then letting p' approach p along C . { 'äs-kyə,lä-d'ij 'plän }

osculating sphere [MATH] For a curve C at a point p , the limiting sphere obtained by taking the sphere that passes through p and three other points on C and then letting these three points approach p independently along C . { 'äs-kyə,lä-d'ij 'sfir }

osculum [INV ZOO] An excurrent orifice in Porifera. { 'äs-kyə-ləm }

Oseen's flow [FL MECH] Fluid flow in which the velocity of flow is very small but the Reynolds number is greater than 1. { 'ü'sänz ,flö }

Osgood-Schlatter disease See osteochondrosis. { 'äg,gud 'shlad-ər di,zēz }

O shell [ATOM PHYS] The fifth layer of electrons about the nucleus of an atom, having electrons characterized by the principal quantum number 5. { 'ö ,šel }

Osler-Rendu-Weber disease See hereditary hemorrhagic telangiectasia. { 'ös-lər 'rän-dü 'web-ər di,zēz }

osmate [INORG CHEM] A salt or ester of osmic acid, containing the osmate radical, OsO_4^{2-} ; for example, potassium osmate (K_2OsO_4). { 'öz-mət }

osmic acid anhydride [INORG CHEM] OsO_3 , poisonous yellow crystals with disagreeable odor; mclis at 40°C; soluble in water, alcohol, and ether; used in medicine, photography, and catalysis. Also known as osmium oxide; osmium tetroxide. { 'öz-mik 'as-əd an'hī,drid }

osmium [CHEM] A chemical element, symbol Os, atomic number 76, atomic weight 190.2. [MET] A hard white metal of rare natural occurrence. { 'öz-mē-əm }

osmium oxide See osmic acid anhydride. { 'öz-mē-əm 'äk,sid }

osmium tetroxide See osmic acid anhydride. { 'öz-mē-əm 'töt-əksid }

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