

producer from the phonogram, whereby the reproducer is retracted or set back, substantially as set forth. 2nd. In a phonograph, the combination, with the phonogram-cylinder, the lead-screw and holding arm and guide arms, of a revolving screw-shaft having a screw of greater pitch than the lead-screw, and an arm engaging this screw-shaft when the guide-arm is raised from the lead-screw, substantially as set forth. 3rd. In a phonograph, the combination, with the phonogram-cylinder, the lead-screw and holding and guide arms, of a revolving screw-shaft having a screw composed of a number of threads of greater pitch than the lead-screw, and an arm engaging this screw-shaft when the guide-arm is raised from the lead-screw, substantially as set forth. 4th. In a phonograph, the combination, with the phonogram-cylinder, the lead-screw, the guide sleeve and the holding and guide arms, of the retracting screw-shaft and the arm engaging there-with fixed adjustably upon the guide sleeve, substantially as set forth. 5th. In a phonograph, the combination, with the phonogram-cylinder, the lead-screw, the guide sleeve and the holding and guide arms, of the retracting screw-shaft driven by a belt from the cylinder shaft, and the arm engaging there-with fixed adjustably upon the guide-sleeve, substantially as set forth. 6th. In a phonograph, the combination, with the rocking holding-arm, the lead and retracting screws, and the arms engaging such screws alternately, of a lever connected by an elastic lifting cord with such rocking holding-arm to rock and set back the holding-arm, substantially as set forth. 7th. In a phonograph, the combination, with the rocking holding-arm carrying the reproducer or recorder, of an electro-magnet and armature acting to lift such arm and disengage the reproducer or recorder from the phonogram-surface, substantially as set forth. 8th. In a phonograph, the combination, with the rocking holding arm carrying the reproducer or recorder, and the lead-screw, of an electro-magnet and armature acting to lift such arm disengaging it from the phonogram and from the lead-screw, substantially as set forth. 9th. In a phonograph, the combination, with the rocking holding-arm carrying the reproducer or recorder, and the lead and retracting screws, of an electro-magnet and armature acting to lift such arm disengaging it from the lead-screw and connecting it with the retracting-screw, substantially as set forth.

No. 30,010. Process of Making Phonogram Blanks. (*Procédé pour faire les blancs de phonogrammes*)

Thomas A. Edison, Llewellyn Park, New Jersey, U.S., 19th October, 1888; 5 years.

Claim.—1st. The process of making wax phonogram-blanks, consisting in first moulding the blank from melted wax, and then pressing the blank in a polished die, substantially as set forth. 2nd. The process of making cylindrical wax phonogram-blanks, consisting in first moulding the cylindrical blank from melted wax, and then pressing the blank both externally and internally in a polished die, substantially as set forth.

No. 30,011. Phonogram Blank. (*Blanc de phonogrammes*)

Thomas A. Edison, Llewellyn Park, New Jersey, U.S., 19th October, 1888; 5 years.

Claim.—1st. In a phonogram-blank, or phonogram, having a bore tapered throughout its length, substantially as set forth. 2nd. A phonogram-blank or phonogram having a cylindrical recording-surface and a tapering bore, substantially as set forth. 3rd. A phonogram-blank or phonogram having a cylindrical recording-surface of wax, or wax-like material, and provided with a tapering bore, substantially as set forth.

No. 30,012. Process of Duplicating Phonograms. (*Procédé pour l'impression des phonogrammes en double*)

Thomas A. Edison, Llewellyn Park, New Jersey, U.S., 19th October, 1888; 5 years.

Claim.—1st. The process of duplicating phonograms, consisting in forming a knurl having the original record in relief, by depositing metal upon the original record, removing the original phonogram, and opening the metallic coating, and then impressing duplicate phonogram blanks with the original record by means of such knurl, substantially as set forth. 2nd. The process of duplicating phonograms, consisting in depositing a flexible metallic coating upon an original cylindrical phonogram, removing the original phonogram from the inclosing coating, splitting the inclosing-coating longitudinally, bending the same to form a knurl, and then impressing the duplicate phonogram blanks with the original record by means of this knurl, substantially as set forth.

No. 30,013. Phonogram Blank. (*Blanc de phonogramme*)

Thomas A. Edison, Llewellyn Park, New Jersey, U.S., 19th October, 1888; 5 years.

Claim.—1st. A phonogram-blank or phonogram, constructed wholly of wax, or wax-like materials, and having the same co-efficient of expansion throughout its mass, substantially as set forth. 2nd. A phonogram-blank or phonogram, constructed as a hollow cylinder wholly of wax, or wax-like materials, and having the same co-efficient of expansion throughout its mass, substantially as set forth. 3rd. A phonogram-blank or phonogram, constructed as a hollow cylinder with a tapering bore wholly of wax, or wax-like materials, and having the same co-efficient of expansion throughout its mass, substantially as set forth.

No. 30,014. Phonograph. (*Phonographe*)

Thomas A. Edison, Llewellyn Park, New Jersey, U.S., 19th October, 1888; 5 years.

Claim.—1st. In a phonograph, the combination, with the revolving

phonogram-carrying shaft, and phonogram-cylinder adapted to carry a removable phonogram-blank, of an electric motor having a heavy fly-wheel, armatures carried by such fly-wheel, electro-magnets attracting such armatures, and commutator, substantially as set forth. 2nd. In a phonograph, the combination, with the horizontal shaft carrying the phonogram of a vertical shaft, and a bevelled friction-gearing transmitting the motion from the vertical shaft to the horizontal shaft, substantially as set forth. 3rd. In a phonograph, the combination, with the vertical shaft carrying the balance wheel, electro-magnetic motor and stepped in a jewel bearing, of the horizontal phonogram-carrying shaft and the bevelled friction-gearing having one wheel of soft material, substantially as set forth. 4th. In a phonograph, the combination of the electro-magnetic motor consisting of a heavy fly-wheel carrying armatures on its periphery, magnets attracting such armatures, and a commutator with a centrifugal governor controlling the electric circuit of the motor, and maintaining a uniform speed of such motor, and a phonogram-carrying shaft connected with the motor by friction gearing, substantially as set forth. 5th. The combination, with the vertical motor shaft, of the horizontal phonogram-shaft carrying a bevelled friction wheel, and a bevelled friction-pinion of soft material mounted on the motor-shaft and pressed against the wheel on the phonogram-shaft by a spring, substantially as set forth. 6th. In a phonograph, the combination, with a phonogram-cylinder and advancing screw-thread, of a swinging frame carrying together the separate recorder and reproducer, and adapted to bring either into position for operation by the swinging of the frame, substantially as set forth. 7th. In a phonograph, the combination, with the revolving recording-surface, of a swinging spectacle-frame carrying the recorder and reproducer, and adapted to be swung so as to bring either into operative relation with the surface, substantially as set forth. 8th. In a phonograph, the combination, with a revolving recording-surface, of a swinging frame carrying the recorder and reproducer, and a stationary plate carrying the single speaking or listening tube, the swinging of the frame bringing either the recorder or reproducer into operative relation with the surface and with the speaking or listening tube, substantially as set forth. 9th. In a phonograph, the combination, with a revolving phonogram-cylinder, an arm having a movement parallel with the axis of said cylinder, and the reproducer carried by a frame mounted on such arm and adjustable laterally thereon, whereby the reproducer can be readily adjusted to the record, substantially as set forth. 10th. In a phonograph, the reproducer carried by a pivoted frame swinging across the lines of record, and an adjusting screw for determining the lateral position of the reproducer, substantially as set forth. 11th. In a phonograph, the combination, with the revolving phonogram-cylinder, of the holding-arm mounted to swing toward, and away, from the surface of said cylinder, and the reproducer mounted on such arm and laterally adjustable thereon, substantially as set forth. 12th. In a phonograph, the combination, with the revolving phonogram-cylinder, of the holding-arm mounted to swing toward, and away, from the surface of such cylinder, the reproducer mounted on such arm and laterally adjustable thereon, an adjusting-screw for determining the position of the holding-arm relative to the phonogram-cylinder, and an adjusting-screw for determining the lateral position of the reproducer, substantially as set forth. 13th. In a phonograph, the combination, with the revolving phonogram-cylinder, of the advancing holding-arm carrying the recorder or reproducer, and a stationary guide-rest for supporting the holding-arm in proper relation with the phonogram cylinder, substantially as set forth. 14th. In a phonograph, the combination, with the revolving phonogram-cylinder, of the advancing holding-arm carrying the recorder or reproducer, a stationary guide-rest for supporting the holding-arm in proper relation with the phonogram cylinder, and an adjusting-screw for adjusting the height of the holding-arm above the guide-rest, substantially as set forth. 15th. In a phonograph, the combination, with the phonogram-cylinder, and the lead-screw, an arm carrying the recorder or reproducer, a guide-arm connected with the carrying arm, a yielding guide-block engaging with the lead-screw, a guide-rest and an adjusting-screw for adjusting the height of the carrying-arm upon the guide-rest, substantially as set forth. 16th. In a phonograph, the combination, with the swinging-arm and the recorder or reproducer carried thereby, of the springy back-rest upon which such carrying-arm is thrown, substantially as set forth. 17th. In a phonograph, the combination, with the revolving phonogram-cylinder, of the advancing recorder or reproducer, and the seal for determining the position of the recording or reproducing point upon the phonogram or blank, substantially as set forth. 18th. In a phonograph, the combination, with the revolving phonogram-cylinder and recorder and reproducer mounted upon an advancing holding-arm and adjustable toward and away from the phonogram-cylinder, of a cutting tool movable with such holding-arm, and independently adjustable toward, and away, from the phonogram-cylinder, whereby the recorder and reproducer can be adjusted out of operative engagement with the phonogram-blank, and the cutting-tool can be adjusted forward into engagement with such blank, substantially as set forth. 19th. In a phonograph, the combination, with the revolving phonogram-cylinder, and the lead-screw, of the arm carrying the recorder or reproducer, a cutting-tool on such arm for reducing the surface of the phonogram or blank, and a guide-arm engaging the lead-screw, and advancing the carrying arm, substantially as set forth. 20th. In a phonograph, the combination, with the revolving phonogram-cylinder, of the swinging arm carrying the recorder or reproducer, a cutting-tool also carried by said arm, a guide-rest, a screw for adjusting the position of the recorder or reproducer, and said cutting-tool with relation to the phonogram or blank surface, and a yielding guide-block engaging with the lead-screw and advancing said carrying arm, substantially as set forth. 21st. In a phonograph, the combination, with the cylinder-shaft having a fine screw-thread, the phonogram-cylinder mounted on such shaft, a stationary guide-rod, a sleeve mounted on such guide-rod, and capable of sliding and turning movements thereon, a guide-arm secured to said sleeve, and having a screw-threaded guide-block engaging the screw-thread, and the holding-arm for the recorder or reproducer also secured to said sleeve, substantially as set forth. 22nd. In a phonograph, the combination, with the cylinder-shaft having a fine screw-thread, the phonogram-cylinder mounted on such shaft, a sta-