

The Siberian Railway.

The works in connection with this large undertaking are being pushed ahead with the greatest energy, under the auspices of the young Emperor, who intends to retain the presidency of the Siberian Railway Committee. According to Engineering, there is reason to believe that the West and Central Siberian Railway will be ready by the year 1900. What is called the Baikal Ring Line will not be commenced till the other sections are taken in hand, but it is expected to be completed by about 1904. The Baikal Lake will in the meantime be used for the transport of railway material for the Trans-Baikal section, from Myssonskaza to Stretensk. This section has an aggregate length of 680 miles, and on it a great number of engineering difficulties have to be overcome. The district through which the railway is to pass is very thinly populated, there are many mountains and elevated plateaux, and the climate is very severe, the soil being at all times frozen. The highest point which the railway will touch on this section is about 3,200 feet above the level of the sea. On the railway lines referred to, there will have to be built the immense number of 973 bridges. The longest of these is the Selenga Bridge, which will be about 3,000 feet long; for comparison's sake, it may be stated that the large Grunthal Bridge over the North Sea-Baltic Canal is only 620 feet. It was originally under contemplation to use wood as bridge building material in some places, and to use steam ferries at others, but both these plans have been abandoned, although this alteration will entail an additional expense of about 25 per cent upon the originally calculated cost. Stretensk is situated at the Shelka River, which is an auxiliary to the Amur River. The connection between Stretensk and Chabarowka, a distance of some 1,300 miles, will, in the meantime, be carried out by steamers. At Chabarowka, which is situated at the entrance of the Usuri River into the Amur River, a bridge will have to be built of 7,700 feet length, which is more than two and one-half times the length of the Strelenska Bridge on the Central Siberian section.

The last large section of the Siberian Railway will connect Chabarowka with the naval port of Vladivostok. One-half of this section, from Vladivostok to Grosskoia, will be ready in the present year, and the second, from Grosskoia to Chabarowka, a distance of

some 230 miles, has to be ready in the year 1898. The headquarters of the West Siberian Railway are at Tschetjabinsk. The section which comes under this management terminates at the bridge over the River Ob, which bridge has a length of 2,600 feet, and is situated at Kriwoschtokowa. This section should be completed in the year 1896. The headquarters of the Central Siberian Railway are at Tomsk. Each section is divided into sub-sections of about 85 miles length. For about every 20 miles there is an engineer, with assistant engineers. Next year a large number of convicts will be employed in the building of the railway, and so as to remove any inducement to try to escape, they will obtain the same pay as the free laborer, and when the railway is completed half their term will be wiped off. The proper earth and bridge building works can only be carried on during the period from May to about the middle of October.

The Typewriter Ribbon Industry.

The manufacture of ribbons for typewriting machines is an industry which gives employment to a large number of people. On nearly all the first-class typewriters these inked ribbons are used. There are at least forty different styles of American typewriters, and more than 400,000 machines are in actual use. As the average life of a ribbon is from four to six weeks, the number of concerns which seek to supply the market with this article is surprising.

They make ribbons of every conceivable color and variety, from six to ten yards in length, and capable of writing with copying or non-copying ink. Some ribbons are made which print in one color and show an entirely different color when the manuscript is copied by means of the letter press. For instance, a ribbon which writes black may copy blue or green, making the record much more legible on certain qualities of paper. The manager of a concern in New York, says the N. Y. Sun, which turns out several hundred ribbons daily said that, at a low estimate, fifty plants engaged in the manufacture of these ribbons have been established in the United States this year.

Each manufacturer has a secret process for making his particular style of ribbon, and the secret is guarded with the greatest possible care. One maker in this city has each box and jar containing powder or pigment for making the ink distinctly numbered, and

even the employe who mixes it is obliged to follow his printed instructions mechanically, and remains entirely ignorant of the composition he is using. One may witness the whole process and go away as ignorant as before.

The best ribbons have selvaged edges, which prevent their raveling and curling when in use. They are nearly uniform in thickness, though one ribbon is made of very thin texture, to be used when an extra large number of carbon copies are desired, and the imprint of the type must be as clear as possible and free from blurs. The greatest care must be taken in selecting the cloth from which the ribbons are made. If the texture is woven too closely it will not hold sufficient ink, and smirch the paper. Moreover, such a ribbon will fill the type of the machine and greatly annoy the operator. A prime difficulty encountered by manufacturers is how to prevent evaporation of ink from the ribbon when it is in use and exposed to the air. This has been largely overcome in the last two or three years.

The man in charge of a large New York house which makes writing inks and typewriter ribbons said recently that the most noticeable thing in his trade was the great decrease in the sale of ordinary copying ink. It is being almost entirely supplanted by the copying typewriter ribbon, which gives far better results. Despite the great number of ribbons in the market and the constant efforts of expert chemists everywhere to produce one that will satisfy everybody, those giving all-round satisfaction are not easy to find, and dealers in supplies of this nature often have extreme difficulty in furnishing what is wanted. This country furnishes practically all the typewriter ribbons in use both here and abroad.

A Steamer Makes Thirty-three and One-half Miles per Hour.

The Boxer is the last torpedo boat built for the British Admiralty. She is the last of four fast boats. The Boxer is 201½ feet long, 19 feet beam, draught loaded 7 feet 2 inches. On a recent trial the mean speed on six runs over the measured mile was 29.314 knots, or 33½ statute miles, per hour. Her sister boat, the Ardent, made almost the same speed, her engines indicating nearly 5,000 horse power and making 407 revolutions.

RECENTLY PATENTED INVENTIONS.**Railway Appliances.**

CIRCUIT CLOSER FOR RAILS.—Edgar C. Wiley, Bristol, Tenn. This circuit closer is operated by the passage of the train over the rails, thus bending down the rail itself. On the main rail are contacts which are brought together or separated by a friction drag slide, actuated by the bending down and uprising of the rail to both close and open the circuit. Combined with the drag and with the main rail is a supplemental rail, one part of the device being attached to the main rail and the other to the middle of the supplemental rail, the end of the latter rail being anchored to the main rail. In applying the improvement little or no excavation is required, and the devices may readily be placed upon a bridge or other location where there is no foundation of earth.

AUTOMATIC ELECTRIC SAFETY RAILROAD SYSTEM.—Rene R. Snowden and Albert C. Ives, Ocala, Fla. This system is designed to prevent collisions or the running of a train into an open switch; also to prevent more than one train occupying a crossing at a time, and to protect a car left standing on a track from trains approaching in either direction. Each train is provided with a battery and the track forms a conductor laid in insulated sections, while the improvement provides novel trolleys, circuits, switches, and connections with operating parts of the locomotive. The closed circuit is only made when two trains are within a certain distance of each other, and the closing of the circuit is arranged to automatically actuate the steam and air valves of each locomotive to prevent collision.

CAR PLATFORM SUPPORT.—Seth A. Crane, New York City. This is an improved construction by which the car platform is reinforced and strongly supported by braces carried from a point of the car frame in the rear of the end sills. The improvement comprises an angular brace in two independent sections arranged at angles to one another, an abutment supporting the adjacent ends of the sections, and the arrangement being such that a sagging platform can readily be raised and readjusted to its normal position by screwing up nuts.

GARMENT HANGER FOR CAR SEATS.—This is a further invention of the same inventor, providing a device which may be attached to the back of any seat; and capable of receiving a very bulky or a very small garment or other article, the device automatically flattening itself close to the seat back when the article is removed. The body of the device consists of a strap controlled by a spring fastened to a spindle in a suitable casing attached to one end of a seat back, the other end of the strap being attached to the back of the seat near its opposite end. The casing, all but its face plate, may be concealed by the upholstered back of the seat. The strap may also be made wider in certain portions and formed to afford pockets.

Mechanical.

THREAD CUTTING BRACE.—Edward L. Barton, Millersburg, Pa. According to this improvement a chuck is adjustably connected with and at right angles to a straight handle, the handle comprising sectional sliding parts engaged by a locking device, and one of the sections being adjustably connected with the crank of the

brace. The improvement provides a tool in which any form of die for thread cutting may be held, and the brace with the die connected used as an ordinary brace. It may also be advantageously employed in cutting threads in places ordinarily inaccessible or reached with difficulty.

MOULD AND FLASK FOR CHILL ROLLS.—Alexander McLennan, New York City. This improvement comprises a frame in which a series of single chills is set loosely to form the mould for the roll, the chills being adapted to be moved inward to follow the contraction of the poured metal, and form a tight band around the casting as the metal contracts, thus preventing cracking and insuring a better chill. A truncated cone-shaped ring engages the outer beveled edges of the chills to uniformly and simultaneously move the chills inward as the metal contracts.

COUCH ROLL FOR PAPER MAKERS.—William J. Hoffman, Anram, New York. In place of the flat covering ordinarily used on the couch rolls of wet machines, this inventor provides a roll covering which consists of strips of felt placed edgewise, and held in place on the periphery of the rolls by binding wires, or the strips may be doubled and inserted in holes in the face of the rolls, as bristles are fastened in a brush back. The spongy surface thus formed does not become hard, is easily applied to the body of the roll, and the rotation of the roll shakes the strips loose, keeping them in good workable order.

SHADE CLOTH PREPARING MACHINE.—William P. Cole, Montreal, Quebec, Canada. This invention provides a mechanism for treating fabrics to be sized or painted, and especially applicable to the making of opaque shades. The fabric is passed from a roll between brushes to sizing and painting tanks, being successively dried, brushed, and trimmed, while held very tightly, so as to take out all the stretch, until it is finally delivered in a compact, finished roll after having been passed through the machine. The brushes smoothly spread the size and paint and remove all surplus material, the entire operation being automatic.

DIGGER.—Albert Roll, South Amboy, N. J. This is a construction which, with an operating engine and elevators, is designed to be carried and operated on a flat car. It comprises a rotary digger with a series of pockets adapted to scoop up dirt or other material, its central hub secured to a driving shaft and provided with circumferential pockets open at their outer ends, so that the material carried to the upper side runs into a spout to be delivered to the elevator or carrier. The digger is particularly adapted to scoop up coal out of a pile and facilitate loading it upon a car.

TIE FOR WIRE STRUCTURES.—Eugene L. Williams, Jerseyville, Ill. This tie is formed from a staple whose two members are differently curved in order that the staple may fit snugly in the dies of a machine for effecting the tie when the staple is bent to a ring-like form, the members being also beveled at their extremities upon opposite faces. The tie thus formed is light and strong and ornamental in appearance.

Miscellaneous.

CALCULATOR.—Charles S. Labofish, Troy, N. Y. This calculator may be made in the form

of a watch, to be carried in the pocket, operates without keys, is not liable to get out of order, and is adapted to perform the various operations of addition, subtraction, multiplication and division. Its case has circumferential sight slots, and around a central driving gear is arranged a series of number wheels, the stem having a revoluble crown head, by turning which the calculator is operated, there being an operative connection between the stem and the gear wheel. The number wheels represent units, tens, hundreds, etc., and the wheels to be moved are pressed inward by pushing a button which projects through the shell of the case.

TELESCOPE, MICROSCOPE, AND CAMERA.—Robert L. Stevens, Ward, Pa. This is a combination instrument, with improvements arranged upon and forming a part of an ordinary pocket telescope, the several telescopic draw members, except the inner or eye section, being arranged and joined in the usual manner. In the inner section may be a single lens or eye piece or a number of microscopic lenses, the inner section being preferably somewhat longer than usual, to be extended outward and provide a supplemental portion in which a slide may be inserted through a slit, thus providing an effective microscope. The slit may also be provided with a pair of apertured diaphragms in which a sensitized plate may be inserted, and the instrument then employed as a camera.

POCKET MAP.—A further invention of the same inventor provides a combined microscopic and photograph map holder for travelers, bicyclists, etc., to be carried in the pocket as an ordinary watch, the maps being interchangeably held, and the vision or focal point being moved over the map to any desired point. The casing has a series of lenses, disconnected at their focal points but joined to form a consecutive whole at the opposite end, there being provision for holding a translucent map on the joined end of the lenses, while in connection therewith is arranged a map-holding casing.

SEWING MACHINE.—Walter G. Tillou and John W. Clapp, New Haven, Conn. This improvement relates especially to leather-sewing machines, and provides means whereby the stud moving in the feed bar operating lever to communicate laterally reciprocating movement will work within the bar without creating inconvenience in its slideway. The driving cam of the feed bar operating lever is also so constructed that its race will be wider at one point than another, enabling the feed bar operating lever to be carried a certain distance to one side by the haft of the needle when fine stitching is being done.

SEWING MACHINE SHUTTLE.—Walter G. Tillou, New Haven, Conn. This improvement is also especially applicable to machines for sewing leather, the beak of the shuttle being so constructed that it will draw down less thread than the old form of shuttle, and will require a loop of less size through which to pass. It is designed also to so shape the forward bottom portion of the bobbin chamber of the shuttle, near which the loop drawing hook of the machine has play, that the hook may travel very close to the shuttle without touching it, and so that, in the event of any accident to the hook, no damage will be done to the shuttle.

PREPARING GLUE STOCK FOR BOILING.—Edward R. Hewitt, New York City. Instead of follow-

ing the old and common method of neutralizing lime in glue stock by the action of carbonic acid by drying in air or hanging in baskets in a running stream, whereby some alkali is generally left in the stock, which consists in treating the limed stock first with carbonic acid, and then completing the neutralization of the lime with sulphurous acid, the latter acid preventing decomposition of the stock, while stock so treated renders into glue more quickly than in the presence of carbonic acid.

KNOCKDOWN FURNITURE.—Herman A. J. Rieckert, New York City. This is an improvement on a patent formerly granted to the same inventor, and provides a counter more especially designed for temporary use in stores, on sidewalks, etc., and which may be conveniently folded for storage or removal. The counter has a top made in sections hinged together, a support being connected by hinges with one end of the top sections, and the support being provided with foldable hinged back and sides.

SASH FASTENER.—William F. Sinley, Dingman's Ferry, Pa. This is a lock and support attachment which may be used with either the upper or lower sash of any window and is applicable to all railway car windows. In a recess in a side edge of the sash is a rack whose teeth are adapted for engagement by the spring-pressed bolt of a lock in the sashway or groove in the window frame jamb. The bolt is adapted to be operated by a key always in engagement with the lock, but which may be turned to prevent the sliding back of the bolt when it is desired to hold the sash from any movement up or down, in any position in which it may be placed, the bolt normally slipping by the teeth of the rack as the window is raised.

REIN HOLDER.—David H. Blasgow, New York City. This is a simple device which may be placed horizontally or vertically over the dashboard, whether the latter be curved or straight, and may be attached to the board without the use of bolts or otherwise marring it. It has adjustable jaws, and a whip holder may constitute an integral part of the device, and, when in position, it is impossible for the horse, or anyone in front of the holder, to draw or disengage the reins from it.

MANHOLE COVER FOR CISTERNS OR WELLS.—James Fowley, Cobden, Ill. This invention provides an inexpensive cover plate which will also serve as the base or curb member to which the pump casing or stock may be secured. It is made in half sections, having each a pendant lock portion, the sections being adapted to readily fit down over the curbstone opening or other top member of the well mouth.

Designs.

BRACKET.—John J. Hoffman, Denison, Iowa. This bracket has on its face central transverse flutings, at each side of which is a non-fluted surface.

PIN HOLDER.—Edward H. Ellis, Pasadena, Cal. In a saucer-shaped tray is fixed a cup-like cushion holder in which is held a convex cushion, surrounded at its base by an ornamental band.

NOTE.—Copies of any of the above patents will be furnished by Munn & Co., for 25 cents each. Please send name of the patentee, title of invention, and date of this paper.