

## Correspondence.

## The Isthmian Canal Problem.

To the Editor of the SCIENTIFIC AMERICAN:

The editorial in your issue of the 10th inst. seems a little severe on the pending action of Congress upon the Nicaragua Canal problem. If any affront has been given anybody, it was given by Congress at its last session, when, without waiting for a report already being made, by a commission appointed by its authority, it ignored the work of the commission, then two-thirds completed and soon to be reported, and enlarged the commission by adding five members, thereby assuming that the Walker commission was either incompetent, or laggard, or both. This looks like an affront both to the President and the commission. "A decent respect for the opinion of mankind" should have allowed the commission to report before superseding them, and if Congress had been less hasty, the new commission would never have been appointed, for the Walker commission has thoroughly settled the question of the feasibility of the Nicaragua Canal and its extreme cost. No doubt \$100,000,000 will cover the entire cost.

The commission has greatly enlarged on the Menocal plans, by an average prism nearly 75 per cent greater, has located the canal in the coastal plain and San Juan Valley, where it ought to be, puts the San Juan dam above the mouth of San Carlos River, which is the right thing to do, plans to regulate the lake level and locates the west side to the Pacific wisely and well. The great divide cut, the long and high embankments, the great dams and embankments at Desado and La Flor, and the excessively high lift locks of the Menocal plans, are all wisely eliminated. What more can you ask? You say the great problem of regulating the lake level has not been solved. Well, what about the Panama project, where there is not a drop of water at the summit to regulate, and the tremendous freshets of the Chagres River have puzzled the engineers from the beginning, and the problem has not been solved to this day?

It is strange that you doubt the ability of our engineers to regulate the outflow of water from Lake Nicaragua, when the Chicago Drainage Canal is so easily regulated at pleasure by the rise and fall at will of the "bear trap dam," 160 feet in length. So too on the

8d page following your criticism of Congress, you exploit the "balanced cantilever" and show that a single machine handled 900 cubic yards in a day, raised it out of a cut 36 feet deep, and deposited it in a spoil bank 80 feet high. This is just the thing for the 12-mile cut west of the lake, quite similar in width and depth to the rocky portion of the drainage canal, and this is only one of the many ingenious modern appliances for handling material in wide and deep cuts. The commissioners add 50 per cent to drainage prices, for the excavation west of the lake, then add 6 per cent for administration, then add 20 per cent to that to make up their \$118,000,000. Do you doubt that there are plenty of contractors that will be glad to do the work at those prices?

But suppose the canal costs \$135,000,000, the highest that any authority has ever put the cost. Who would grumble? Nobody in this part of the dominion, I assure you. Everybody is unanimous for the Nicaragua Canal, and for its speedy construction, for it is by far our shortest route, and best route. Longer dilly-dallying is nonsense. No doubt that it will be of immense importance to the commerce of the United States and of the world, and as a paying investment it will outclass the Suez Canal. O. B. GUNN.

The Montague, Kansas City, Mo., February 12, 1900.

[We cannot agree with our correspondent in his suggestion that the appointment of the Isthmian Canal Commission before the presentation of the report of the Walker Commission was any reflection upon the latter body. The Walker Commission was concerned with the Nicaragua route and no other; whereas the President decided, wisely, as it seems to us, that before the country was committed to actual construction it would be prudent to determine which of the several possible routes was the best; and to this end the Isthmian Canal Commission was appointed. Such an examination is called for by the dictates of common prudence, and it is indorsed by everyday practice in the construction of our railroad systems, where several "trial lines" are almost invariably run before deciding upon a "final location."

The SCIENTIFIC AMERICAN desires to see the canal built and owned by the United States; but we want that canal to be the very best that can be built. So long as the location decided upon insures, more than any other, the advantages of short length, ease of access,

permanence of structure, and low cost, we care not whether it is located at Panama, Nicaragua, or elsewhere at the Isthmus. That Nicaragua combines all these advantages, or that it combines them in greater degree than any other route, has yet to be proved. If the present Commission says that it does, we shall heartily welcome its immediate construction.—ED.]

## Automobile News.

A new service of automobile cabs will be introduced in Paris.

Very satisfactory results are being obtained in Washington in the collection of mail from street letter boxes by means of automobiles. On one of the longest routes in the city the automobile covered the distance in thirty-two minutes, including twenty-seven stops. The regular collector's time for this trip is one hour and forty-five minutes, and with a horse-drawn vehicle one hour and twenty minutes.

## The Current Supplement.

The current SUPPLEMENT, No. 1260, has many interesting articles. "Are Further Experiments Needed for Determining the Atomic Weight of Oxygen?" is by Edward W. Morley. "An American Pacific Cable" is the address delivered before the American Institute of Electrical Engineers by George Owen Squier, and is concluded in this issue. "The Electrical Potentiality of Atmosphere Referred to Other Conditions" is an interesting article by Professor Edwin G. Dexter, Ph.D. "The Man's Knife Among the North American Indians" is by Professor Otis T. Mason, and it is accompanied by seventeen illustrations. "The Cruise of the 'Albatross,'" by A. Agassiz, is concluded.

## Contents.

(Illustrated articles are marked with an asterisk.)

Accumulators, test of.....	117	Liquid raising device.....	122
Aeronautics, practical progress	114	Mail matter, second class.....	114
"  ".....	117	Notes and queries.....	125
Automobile news.....	124	Nicaragua, level of Lake.....	115
Bale, new cotton*.....	120	Photographic paper, preparation	114
Books, new.....	125	of.....	114
Bridge building, record*.....	116	Pig iron castings*.....	113, 118
Buds, tool for transplanting*.....	122	Pipe line, Russian, working.....	114
Canal problem, Isthmian.....	124	Platotype paper, working.....	117
Copper iodide reactions.....	122	Prizes, Nobel.....	116
Dish washing machine*.....	116	Rubber, India, in South America	122
Electrical notes.....	119	San Francisco Bay, problem of.....	114
Engineering notes.....	119	Science notes.....	119
Gold, production of.....	114	Stoker, mechanical.....	116
Inventions, in dex of.....	124	Supplement, current.....	124
Inventions recently patented.....	125	Wastes, power, utilization of.....	114
Lime, action of, on land.....	121	Xiphopages, the*.....	123

## RECENTLY PATENTED INVENTIONS.

## Agricultural Implements.

**CUT-GRAIN CARRIER FOR HARVESTERS.**—HENRY BRYAN, Modesto, Cal. In headers the endless draper or apron runs on a roller arranged directly behind the sickle-bar and at a right angle thereto. The lower end of the roller, being near the ground, accumulates sand which increases the friction. To overcome this objection, the inventor forms the roller with a hollow, cylindrical body. Circular heads have a central interior and concentric interior flange fitted within, with a shoulder abutting the end of the latter. Coincident oil-boles are provided in the body and one of the heads to insure perfect lubrication.

**COTTON-CHOPPER.**—HENRY BARTELS and LOUIS BEENHARD, New Braunfels, Tex. This improved cotton-chopper can be readily attached to a cotton cultivator; the chopping knives can be easily secured at any desired place on the periphery so that adequate spaces are left between sets of knives for the purpose of passing over the stalks at desired intervals. The cotton-chopper comprises a wheel comprising connected disks, formed in their adjacent and inner faces with series of recesses undercut toward their opposite and outer faces. The chopping-knives have their ends fitted in the recesses.

**MOWING-MACHINE ATTACHMENT.**—THOMAS B. FAGAN, Van Wert, Ohio. This attachment is designed to be secured in the rear of the finger-bar of any machine for the purpose of gathering the grass or clover into bunches and discharging the bunches behind the truck of the mower, where they are out of the team's way on the next round. The gatherer consists of parallel slats turned up at their rear ends on a diagonal line. A gate is provided composed of an arm having pendent teeth or tines arranged along the line of draft parallel with the delivery side of the gatherer, the arm being made adjustable to be lifted from the gatherer to discharge the bunch of grass.

## Electrical Apparatus.

**ELECTRIC-LAMP SUPPORT.**—HARRY LONG, Greentown, Ind. This device, composed partly of aluminum, is especially adapted for railway stations, hotel corridors, boulevards, and places where arc-lamp fixtures of tasteful design are required. The inventor has furthermore provided a very simple and ingenious means for supporting a lamp and for raising and lowering it, so arranged that upon lowering the lamp, the electric current is automatically cut off, so that the carbons can be renewed without danger.

## Engineering-Improvements.

**TRACTION-ENGINE.**—AMERSE M. SEARLE, Geneseo, Ill. The construction provides a pivotal connection for attaching one end of an adjustable two-wheel base to a traction-engine, thus making it possible to sustain the weight of that end of the adjustable base and also the weight of the load which may be carried upon that part of the base, at the same time allowing the engine perfect freedom in the movements as regards its steering or guiding apparatus and in the performance of its other operations. The action and position of the boiler of the engine control the guiding device of the two-wheel base. The base is so arranged as to travel in front of,

instead of trailing behind the engine, as a result of the positive operation of the steering devices by the movements of the boiler.

**MACHINE FOR MEASURING OR LAYING OUT SLIDE-VALVES.**—PETER ELLIS and ARCHIBALD A. WHITELAW, Wellington, New Zealand. This improved device enables anyone readily to find, without further calculation, the angle of cut-off, the lead, and the linear dimensions of ports, the lap, and the angle of advance of the eccentric.

**COMBUSTION-ENGINE.**—JAMES L. BAILLIE and PERLEY B. VERTY, Shawnee, Ohio. This combustion-engine employs a driving-wheel of the turbine type and uses gas, oil, air, or steam as a motive agent. The gas, oil, or other element is used expansively, being ignited or exploded in a separate vessel, the resulting gases being conducted to the driving-wheel of the engine, thus providing a more steady and uniform pressure than when the elements are exploded directly within the engine.

## Mechanical Devices.

**SHEET-FEEDING MACHINE.**—LEWIS E. MORRISON, Kensington, Conn. The invention provides a simple form of suction separating mechanism adapted to carry paper to the separating mechanism and the feed of the machine to which the attachment is applied. The mechanism automatically contracts and separates the lowermost sheet from a pile of paper and directs the selected sheet to any machine, device, or receptacle adapted to receive it and also effects such separation and delivery so that the paper is not buckled or subjected to undue strain or pressure.

**FEED-ATTACHMENT FOR WOOD-PULP CHIPPERS.**—SAMUEL W. BUTTERFIELD, Three Rivers, Quebec, Canada. The invention is a machine for reducing timber to chips, before transforming them by the aid of chemicals into wood-pulp. The invention provides a new and improved feed attachment for pulp-wood chippers for feeding timber to a revolving knife-wheel, for the knives to cut chips of uniform thickness, which is essential to a proper disintegration when the chips are subjected to the action of the chemicals to insure the production of a high grade wood-pulp.

**FENCE-WIRE FASTENING DEVICE.**—OSCAR D. WOODBURY, Rochester, N. Y. The inventor has devised an apparatus for fastening stays to the running-wires of wire fences. The fastening is effected by clenching a staple around the wires at their juncture and by slightly crimping the wires, so that the staple can more effectively engage and hold them in the proper relative position.

**POWER-TRANSMITTER FOR WINDMILLS.**—FRED C. THOMPSON, Burton, Wash. The power-transmitter comprises a wind-wheel loosely turning on a shaft. Independent ratchet-wheels are mounted to rotate loosely. A centrifugal governor is mounted on the wind-wheel and controls pawls adapted to engage either of the ratchet-wheels. Planetary gearing is driven from the ratchet-wheels and connected with and controlled by the governor. The power given to the shaft is transmitted by oppositely-arranged crank-arms to pump-rods to move the latter alternately in opposite directions, so as to insure continuous pumping. The operator can conveniently throw the wind-wheel out of the wind whenever desired.

**CURRENT-MOTOR.**—ROBERT S. THEALL, Fort Pierre, S. D. The current-motor is designed for the utilization of the power of a flowing stream, ocean-tides, etc., and comprises a float having a post at one edge, with a mast mounted to turn upon the post. A series of sweeps or rotating-arms extend from the mast over the float and water. Stays extend from the upper part of the mast to the outer end of the sweeps. Levers pivoted upon the sweeps carry buckets or vanes adapted to drop into the water. The levers extend above the sweeps to engage the stays as stops. An incline extends down from the float into the water and engages the vanes to raise them out of the water. The lower edges of the vanes have rollers engaging the platform and float and supporting the vanes during one-half of their revolution.

**REVERSIBLE CLUTCH-MECHANISM.**—FRANZ SCHNEIDER, Lawrence, Mass. The main object of the invention is to provide a device for connecting the axles and wheels of motor-vehicles so that the wheel can turn faster than the axle, nevertheless enabling the axle to engage the wheel to turn it positively when the speed of the axle is equal to that of the wheel. The device is made so that it can connect the axle with the wheel to turn the wheel either forward or backward, and that it can be set so as to be disengaged entirely from the wheel, enabling the wheel to turn in either direction.

## Railway-Apparatus.

**CAR-BRAKE.**—CHARLES E. SEARLESS, Dubois, Penn. This brake is especially adapted for mine cars, but is also applicable to other vehicles. It is so constructed that it is capable of automatic adjustment or compensation for any unequal wear on the brake-shoes or blocks, thus obtaining equal pressure of the shoes or blocks at both sides of the car. The inventor claims that there is no friction between the brake-blocks and car-wheels when the brake is not in use, so that great pressure may be applied to the brake-blocks with but a slight expenditure of power on the operating lever.

## Miscellaneous Inventions.

**SKIRT AND WAIST-FASTENER.**—WILLS J. GALLUP, New Richmond, Wis. The invention provides a device for conveniently and securely fastening together around the waist the two sides of a placket of a lady's skirt and also for holding the dress-waist at the back. Thus the two parts of the dress are so connected as to prevent all unsightly gaping.

**CHAIN-LINK.**—WILLIAM H. GRIFFITH, Baltimore, Md. This wire chain-link is of that form in which there is a loop forming one end of the link, the other end being formed by two terminal eyes brought to lie side by side to receive through them both the loop of the next adjacent link in forming the chain. The present invention consists chiefly in locking the ends of the terminal eyes in convolutions coiled in the shanks at a point near the terminal eyes and at one end of the open portion of the link.

**HORSE-DETACHER.**—HENRY H. and GEORGE P. THOMPSON, Wakarusa, Kans. The purpose of the invention is to provide a horse-detacher applicable to single or double rigs and arranged to permit the driver or other person almost instantly to detach a horse or team from a vehicle. The singletree is mounted so that it can be

given a quarter-turn. Trace-pins are pivoted on the ends of the singletree and adapted to engage apertures in the trace. Keepers are carried by the singletree, each for normally holding a pin in position and allowing the pin to swing out of the keeper to release the trace upon giving a quarter-turn to the singletree. The pin is normally spring-pressed into engagement with the keeper.

**HANGING CLOTHES-RACK.**—LOUIS G. HORTON, Blossburg, Penn. When set up, this clothes-rack will accommodate a number of plain pieces, as well as skirts, shirts and the like, the latter named garments being suspended from the lower portion of the device. The clothes-rack is so constructed that the articles upon one tier will not interfere with the articles upon an upper or lower tier, the rack-bars or rods upon which the clothes are hung being arranged in graduated series.

**LATHE-DOG.**—WILLIAM B. HANKINS, Mount Vernon, Ohio. The inventor has devised an ingenious lathe-dog which can be readily fitted to all kinds of work, obviating, therefore, the necessity of changing the dog to suit the work. The dog consists of two jaws, which can be moved toward or from each other to engage and disengage the work. The saving effected by this device is obvious.

**TOBACCO-PIPE.**—EMIL P. DATOW, New Orleans, La. To prevent nicotine from passing to the mouth of the smoker, the inventor forms the bowl of the pipe with a smoke outlet in its side above the bottom of the bowl. Into a cooling and draft chamber surrounding the bowl a smoke-outlet opens. A settling-chamber communicates with the bottom of the bowl, but is distinct from the cooling-chamber. An air-circulating chamber circulates air around the cooling and draft chamber. Saliva besides being prevented from passing to the cooling-chamber, repels the oil of nicotine.

**BOOT OR SHOE HEEL.**—JAMES J. NAUGHTON, Manhattan, New York city. One object of the invention is to provide an attachment for boot and shoe heels whereby the wearing-surface of a heel may be removed at will and another substituted whenever desired. The invention also provides for the attachment of a tread-lift of any desired character to a heel and supplies means whereby the lift may be detached from and secured to the shoe.

**APPARATUS FOR DISTRIBUTING AIR.**—JAMES CURLEY, Macoupin, Ill. This apparatus is adapted for application to vehicles, and is so constructed that air may be drawn and delivered directly to various points where it is required. When the vehicle is occupied, currents of fresh air will be supplied not only to the occupants of the vehicle, but also to the animals drawing the vehicle, the bodies of the animals being simultaneously protected from the irritation of insects.

**SAFETY-LOCK.**—JOSEPH M. ROBINSON, Manhattan, New York city. The lock is designed for attaching a window-cleaning device or belt to a window-frame or to another nearby support. The contrivance can also be profitably employed as a safety-lock. The device is constructed in two parts, one being designed for attachment to the support, and the other for connection with the cleaning-device. No springs are used in the construction. When once in position the lock cannot be released accidentally.

**AUXILIARY GENERATOR FOR OIL-GAS LAMPS.**—ALEXIS F. GILLET, Kearney, Neb. In using oil-gas lamps which have a generator heated by the