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#### EXPIRING SUBSCRIPTIONS.

The present number closes the volume, and in accordance with our usual custom, we discontinue the in transmission as passengers. The knowledge paper upon expiration of the time for which the subscription was paid. We expect to keep all our old subscribers, and to add largely to our list on the new volume.

## NO. 1 ADVERTISERS.

Parties who intend to advertise on the outside page of the first number of the new volume, should send and laborious sinews. their advertisements without delay. The terms are seventy-five cents per line for each insertion. To remit, we will state that, independent of the head type. It will be safe to estimate but four words for the head line.

at \$1 a line for the back page and 75 cents a line on drawing from magazines filled with the experiences the inside. The rates for ordinary advertisements in the inside, 40 cents a line.

## BRING OUT YOUR INVENTIONS.

The enlargement of the SCIENTIFIC AMERICAN, commencing with the next issue, will enable us to insert in each issue a much larger number of engravings than our limited space has heretofore admitted. We have increased our force of designers on wood, so that orders for engraving of new in shown as they really are. ventions and machines can be filled more promptly than heretofore.

There is no way in which any new invention can be so extensively and advantageously brought to the attention of the public as by having good engravings of it published, with a description, in the SCIENTIFIC the scientific student, the beginner in mechanics, AMERICAN. Thousands who have tried it can testify to this fact.

To patentees, and those who wish to have their inventions illustrated in this Journal, the following  $\boldsymbol{\beta}$ general directions will be their guide :-

photograph, taken from a machine or model, will usually answer the purpose. The Letters Patent should be sent with a statement of the advantages claimed for the invention. After the order is received the engraving will be prepared and published, and the model, patent, and engraving returned by express. For further information address Publishers of this paper.

### IMPORTANT SUGGESTIONS.

The enlargement of the SCIENTIFIC AMERICAN will enable us to publish all the patent claims in each regular issue, and obviate the necessity of the extra claim sheet which we have lately been obliged to

Other important improvements are to be made which will render the paper more attractive than any publication of its class heretofore published. Subscribers, whose time expire with this issue, mercial metropolis like this. Rude, primitive, rotten should renew their subscription at once, so as to be sure of all the numbers.

We shall endeavor to print enough of the few first numbers to supply all demands, but the great rate at which new subscribers are coming in renders it difficult for the Publishers to determine the wharf storage involves a constant waste of time and extent of the edition to print at first.

## JOURNAL,

Before the advent of railroads and the establishment of the telegraph, when travelers went from point to point by the stage-coach or by private conveyance, information was as slow and uncertain gathered by one man, under circumstances and by experiences not common, but liable to all, was his own personal property to be transmitted to his children, or mayhap to die with him. There were secrets in every trade and profession (there are too many now), and he who obtained the lore gained from the niggardly teacher, experience, was compelled to pay a price wrung from his golden years

To a certain extent this is true now, but knowledge is like the water poured into an overflowing bucket. He who has not capacity to hold, or caenable advertisers to calculate how much they must | pability to use, must let it go from him, although when it has only moistened his lips, it fills and line, about seven words will make a line of agate satisfies others. Mystery in mechanics has had its day. The cabalistic formulæ of the chemists have been interpreted, and all who choose, may walk the road of knowledge, gleaning here and gathering Engravings will be inserted with advertisements; there; in fact, stopping at stations by the way, and of ages and enriched with the experiments of those who have but just preceded them.

> These magazines of valuable information for the scientist and mechanic, are the journals devoted to scientific and mechanical subjects. In these the stray and floating particles of knowledge are gath-If some of them are but froth on the sea of knowledge, they are dissipated in the rays of true science; if real and valuable, they are divested of the barnacles of prejudice, egotism, persiflage, and trash, and

> This work of sifting, choosing, and preparing is the proper business of the journalist—the editor of a scientific paper. He saves the seeker after knowledge from the dreary labor of searching records, the impossible task of endless correspondence, and the continual inquiry after "some new thing." To the seeker after the hidden wisdom of nature's laws and the practical worker in accordance with those laws, the scientific and mechanical periodical is an ever-present friend and assistant. It saves him

errors and failures of others, he is enabled to steer clear of obstacles, or by understanding the methods used by others, he is assisted in surmounting them. If a practical man, he is periodically informed of what is being done in his specialty, and thus kept from wasting his energies on labors already accomplished, and is enabled to utilize the brains and labors of others. In short, a "live" mechanic must as certainly keep up with the times as a politician or a statesman. To do this there is but one course, and that is to read a journal which is devoted to the recording and elucidating of the truths necessary for him to know.

## IMPROVED PIER AND WAREHOUSE SYSTEM FOR NEW YORK.

The pending legislative inquiry into the harbor accommodations of our great seaport cannot be considered premature. The character of its wharfage is a drag and a disgrace to the prosperity of a comstructures of logs, crowded and choked, exposed and insecure, infested with thieves, and more or less embanked with ship-stranding mud, are not the sort of accommodations to which the commerce of the world should be invited. The want of proper space and apparatus prolongs the discharge and taking in of cargoes, often four-fold. The entire absence of expense, and an aggravated obstruction of the streets, in transporting merchandise back and forth between THE VALUE OF A SCIENTIFIC AND MECHANICAL, the shipping and the warehouses. Warehouses scattered all over town, and interspersed among other buildings, hazardous in every degree, involve the frequent destruction of vast amounts of merchandise by fire. The ill-constructed water-front promotes instead of preventing the obstruction of the docks and channels, and the detention of a pestilential sewerage. The whole system, wretched as it is, instead of being a profit, is a constant expense to the city treasury.

It is to be hoped that the labors of the legislative commission will not be completed without the adoption of a mature system of whatfage, uniform, and adequate to meet the wants and remedy the evils now so severely felt, together with a business-like plan for carrying the improvement into effect without creating inordinate monopolies, whether moneyed or municipal.

The comprehensive and convenient plan of wharf structures put forth by the projector of "The New York Pier and Warehouse Company" (Mr. G. Burrows Hyde), seems eminently worthy of consideration. It may be stated in a very few words. A continuous bulkhead of durable stone masonry is to define the water front, and act as a deflector for the discharges and deposits which now accumulate in the slips. Piers are to be built of prescribed dimensions, according to the requirements of the channel and tides, resting upon great hollow pillars of iron, exhausted and driven down by pneumatic pressure, and then filled with masonry or concrete under press ure, so as to form artificial stone. The space between these pillars will allow a free flow of the stray and floating particles of knowledge are gath-tides and deposits, and will be sufficient also to adered, sifted, and presented in their real character. mit of dredging. The pier will support a fire-proof warehouse of iron, five stories high: the first story, on the street level, being open on all sides as a wharf, yet covered from the weather, and capable of being securely closed at night by iron gates or roll ing shutters, and furnished with steam hoisting apparatus for the rapid discharge and loading of ves sels, and dispatch of carts. The second floor may be used, where necessary to avoid obstructing the pier, for the temporary deposit of goods awaiting stowage or removal; and the whole warehouse proper will afford secure storage for merchandise. on the spot, to any required extent, at the least of expense and inconvenience to parties or the public. The steam, always up in these warehouses for hoisting purposes, would also be available in connection with powerful stationary fire engines, for extinguishhours of hard thinking, days of fruitless labor, the ing fires among the shipping, which have been so shame and vexation of unaccomplished endeavor, calamitous in repeated instances. Wharf thieving and periods of weary waiting. It assists him in his and smuggling could also be effectually circumvent-In preparing engravings for publication in the attempts at discovery, unravels hard knots in his ed. It is evident that the profits of warehousing SCIENTIFIC AMERICAN, the use of a model from line of theory, gives him valuable hints in his at- and wharfage on this plan would attract abundant which to make the design, is preferred. If it is incon- tempt to use the forces of nature, shows him his er- capital for the construction of the buildings, in acvenient, however, to send a model, a well-executed ror, and points to the right road. By knowing the cordance with proper legislative regulations, and

under a profitable water rent to the city. Thrown open on safe and liberal terms to the enterprise of all, in lots of some limited extent, and under supervision of government, a perfect system of piers and warehouses may be made a public benefit without becoming a public charge, a center of monopoly, or a source of corruption.

The trouble now-a-days with about every new project of a public character, is, that the promoters start off with a gigantic stock operation; we have heard this objection raised to the New York Pier and Warehouse Company's scheme, which we hope is not true.

#### Volkman's Self-holding Plow.

Our attention has recently been called to a novel self-holding plow which seems to possess much merit. The peculiarity of the plow is such that the share will keep in the furrow without being guided. A boy old enough to drive a team is capable of managing the implement; or rather the plow will take care of itself without the attention of the driver. The share and beam are similar in construction to the ordinary plow. The front end of the beam rests in a light carriage and is so arranged as to turn freely in every direction. When in use, the plow is set so that it points elightly toward the land side, the draft being from the opposite direction, which renders it impossible, with the arrangement for supporting it in position, to be thrown out of the furrow unless it strikes some obstruction, and then as soon as passed it resumes its former position. Any depth may be plowed by setting the implement the desired scale before starting.

If we are not mistaken Mr. Volkman's patent plow will come into quite general use. For further information see advertisement in another column.

LYNN contains 220 manufactories, turning out an aggregate of not far from twelve million dollars worth of boots and shoes, annually.

THE Agricultural College of Massachusetts is to be opened for students on the first of September next. Five buildings are to be creeted, including a chemical laboratory and a model barn, at a cost of \$65,000

THE exhaustion of the British coal-fields proceeds at the rate of nearly one hundred million tons per annum, or five times the present product of the American mines. On the other hand, the extent of the American coal-fields is more than twelve times that of the British.

An extensive system of adult schools has been inaugurated in France, under the auspices of the Minister of Public Instruction. Last winter, nearly 5000 such schools were opened, with 30,000 teachers, and about 600,000 pupils of both sexes; nearly half of whom were unable to read.

PITTSBURGH contains five hundred large manufacturing establishments. It has fifty glass factories and sixteen potteries, forty-six iron founderies, thirty one rolling-mills, thirty-three machinery establish ments, and fifty-eight on refineries; beside miscellaneous works of almost every variety; the whole turning out an annual product worth \$100,000,000.

THE Public School System of Lower Canada, by a recent report, comprises 10 universities and professional institutions, with 818 students; 210 secondary institutions, as classical and industrial colleges and academies, with 28,613 students; 3 normal schools; 4 special schools; and 3,479 primary schools, with 172,733 pupils. The total amount levied for the support of this system, in 1865, was nearly \$600,000.

SUBTERRANEAN PHOTOGRAPHY .- A firm in Cincinnati have obtained the exclusive right of taking views in the Mammoth Cave of Kentucky, for five years. The process successfully used in taking pictures of the interior of the Great Pyramid is adopted, using the magnesium light. The dampness of the cave, the smoke arising in the consumption of large quantities of magnesium, the divergency of the artificial light, and the magnitude and proximity of the objects to be photographed, present a number of serious difficulties. Powerful reflectors are used to throw a flood of light upon the object, and the plate is allowed about twice the exposure required by the light of the sun.



ISSUED FROM THE U.S. PATENT OFFICE

FOR THE WEEK ENDING DEC. 11, 1866.

Reported Officially for the Scientific American.

23 Pamphlets containing the Patent Laws and full particulars of the mode or applying for Letters Patent, specifying size of model required, and much other information useful to inventors, may be had gratis by addressing MUNN & Co., Publishers of the Scientific American, New York.

60,319. — HAME FASTENING. — W. J. Alexander,

60,319.— HAME PANIEMAND.

Manchester, Iowa.

First, I claim the hame fastening consisting of the catch piece, B, and the socket, C, with the spring catch, D, and notches, E, respectively, and united to the loops of the hames, substantially as and for the purpose described.

Second, The are angeniem of the button, F, shaft, G, eccentric, H, and spring, M, operating as described.

Third, The pin, L, as and for the purpose described.

60,320.—Manufacture of Brick or Building Blocks.—Henry W. Angell, Waukesha, Wis. I claim a brick composed of lime, sand, small stones, and gravel, pr. pared and molded in the manner described.

60,321.—SAW.—James E. Atwood, Trenton, N. J. I claim the teeth, H. H., when inserted and secured in the manner herein described and for the purposes set forth.

60,322.—Machine for Rolling Metal.—Hugh

Dajozz.—MACHINE: FOR ROLLING METAL.—Hugh Baines, Manchester, England.
First, I claim the combination of the hollow per orated rollers, ct. with the reversible gearing, H. 17, when constructed, arranged, and connected together so as to operate substantially in the manner described and for the purposes set fort.

Second, Incombination with the above, the movable table, 7, arranged and operating substantially as and for the purpose specified.

stranged and operating substantially as and for the purpose specified.

60,323. — BRICK MACHINE. — William C. Bartol, Huntingdon, Pa.

First, I cl. im operating the machinery for molding brick from the drive or supporting wheel or wheels of the machine, substantially in the mainer herein shown and described.

Seco d, The combination of the slides, H, racas, C', cog wheels, G, and shaft, D, with each other, sub tantially as herein shown and described, for the purpose of raising and lowering the shelves and molds, as set forth.

Third, The combination of the catches, E', spring, G', and arms, H' I', with each other and with the racks, C', and wheels, I, with each other and with the molds, J, and shaft, D, substantially as herein shown and described and for the purpose set forth.

Fourth, The combination of the plans, B', connecting rods, M', pivoted levers, K', and springs, I', with each other and with the projections, J', of the racks, C', a betantially as herein shown and described and for the purpose set forth.

60.324.—Batting and Waddings—Samuel Baxen-

60,324.—Batting and Wadding.—Samuel Baxen dale, Boston, Mass.

I claim the batting or wadding composed of a layer of fibrou naturial attached by any adhesive subscauch to opposite sides o sheet of paper, as herein described, the same being a new article finanufacture.

of manufacture.; 60,325.—Road Scraper.—J. B. Beall and B. F. Grime, Westerville, Ohio.

First, I claim, in a reversible road scraper, constructing the latch, c, to a loosely-turning handle piece, b', by means which will allow of the m venent of said katch by turning the handle piece without removing the handle piece without removing the handle piece without removing the hands from either of the handles, substantially as described,

Second, The combination of a vibrating latch, c, a sliding spring latch, d, au 1 a movable hand piece, b', substantially as described, with a reversible scraper.

60,996 Westury Machines — E. Beckwith South

60,326.—Washing Machine.—E. Beckwith, South

Pass, Ill.
The combination of the pendulum, J, with the bar, K, counterpolse, L, uprights, G, and rubber, E, substantially as and for the
purpose herein shown and described.
Second, I lam the levers, C, in combination with the board, B,
and rubber, E, all constructed and operating substantially as
herein shown and described.

herein shown and described.

60,327.—APPARATUS FOR DISTILLING GRAIN.—J.

B. Beebe and T. F. Lloyd, Albany, N. Y.

First, We claim the generator, C, constructed with two or more chain crs, C. "C.", for the purpose set forth substantially as described.

Second, We claim the drop pipe, 1, in combination with the encast ng pipe, h, for the purpose set for the substantially as described. Third, We claim the indicator, E, combinations the pipes, n n and q, together with the permanent hydrometer, and thermometer, t, the bell glass or dome, o, and the cock, r, for the purpose set forth substantially as described.

Fourth, We claim the combination of the registering meter, s, or its equivalent, win the indicator, for the purpose set forth substantially as described.

60, 282 — Soap — S. J. Beeler Wales III

60,328.—Soar.—S. J. Beeler, Wales, Ill.
I claim the use of the ingredients herein named in the proportious and manner substantially as set forth, for the manufacture 60.329.—Cast-iron Chain Pulley.—James Bird.

New York City.
I claim, in cast-metal chain pulleys, making their projections, which hold the jukes of the chain, with a "chill," substantially as and for the purpose above described.

60,330.—MASH MACHINE.—M. Brand and C. P. Hoffmann, Chicago, Ill.

First, We claim the adjustable scraper on bottom of tub.
Second, The vertical propeller-shaped wings in combination with the machine.

60,331.—FENCE GATE.—W. W. Bratt, Ottawa, First, I claim the two rollers, G G, on which the gate si First, I claim the two rollers, G G, on which the gave sidewise.
Second, The guide board, K, fitting in the circular grooves of the rollers, G G.
Third, The guide, I, at the lower end of the swinging post, B. Fourth, The part, L, of the gate, H, back of the rollers, G G, lying against the fence when closed, substantially as and for the purpose described in the foregoing specification.

Magnitude —Otis Bridgeman, Ad-

60,332.—Planing Machine.—Otis Bridgeman, Ad-

dison, N. Y.
First, I claim the arrangement of the cutter head, K. adjustable rollers, AS, saw, N. feed table, U. cutter head, S and T. frame, L2, and its flange, SS, strip, F2, screw shatt. O2, arms, AS, and head rollers, V2, substantially as desc thed for the purpose set forth. Second, Thearrangement of the frame, L2, carrying the circusterous for the flame, L2, carrying the circusterous flames and the strangement of the frame, L2, carrying the circusterous flames and the strangement of the frame, L2, carrying the circusterous flames and the strangement of the frame, L2, carrying the circusterous flames and the strangement of the frame, L2, carrying the circusterous flames are strangement of the frame, L2, carrying the circusterous flames are strangement of the flames and the strangement of the content of the content

lar saw blade, N, and revolving cutter head, sultable either for tonguing or grooving, substantially as described and for the purpose specified.

0.333.—Tweer.—T. E. Brinley, Louisville, Ky. Iclaim the cap, E. provided with a flange, a, and hooks, e e e, body, A, with the raised center forming a fanular air chamber, C, and ears, n n n, when arranged as herein set forth, and operating as and for the purpose specified.

60,334.—Grate for Stove.—Albert Brown, Troy

OU, 334.—Grate for Stove.—Albert Brown, Troy N. Y.
First, I claim the permanent bar, G, in combination with the frame, F, and convex center, E, or equivalents, as and for the purposes specified.

Second, I claim the cavity, C, in combination with the cross pin. I, and the convex center, E, as and for the purpose set forth. Third, I claim the grate, B, working upon the center, E, so arranged as to dump on a line with the shank, J, at any point within the sphere of its movement, as and for the purpose set forth.

60,335.--Properling Horse.-John H. Brown,

New York City.

I claim the combination and arrangement of the wheel, B, axle, c, horse, A, wheels, D, shatt, E, and levers, F, F, as herein set forth. oper.ting in the manner and for the purpose specified. 60,336.—Spring Toy.—John H. Brown, New York

City.

First, I claim the lever, C, spring, D, and regulating drum, b, in combination with the toy, A, constructed and operating substantially as and for the purpose set forth.

Second, Graduating the lever, C, so that the leverage of the spring can be accommodated to the weight of the child occupying the toy.

Thir, Supporting the toy on a fulcrum, a, at its back end, substantially as and for the purpose described.

60,337.—Mode of Attaching Handles to Boil-ers and other Vessels.—John H. Brown,

New York City.

I claim the pear-shaped slots in the ears, a, in combination with the flattened ends of the ball or handle of the kettle, A, os ruct d and operating substantially as and for the purpose scribed.

-FEEDING DEVICE FOR CARDING ENGINES.

—George Bruce, Corydon, Ind.

First, I claim the pitman, G, pawl, L, ratchet wheel, M, toothed wheels, O P, and pin ons, Q and R, in combination with the aperious B and B', for the purposes and substantially as herein described.

serised.

Third, I claim the manner of accelerating or reducing the feed by lengthening or shortening the stroke of the pawl, L, by means of the lever, G, and cord, J, substantially as herein set forth.

forth.

60,339.—Combined Table and Bedstead.—Sanford S. Burr, Dedham, Mass.

1 claim the combination of the table top, I, and its connections, with the slat frame, H, and box, A B C DE F and G for the purpose and operating substantially as above described.

1 also claim a combination of the sides of the table, L M and b, with the top, I, and the leaf, N, so constructed and arranged by means of the pin sliding in the groove, E, that the same cau at will be transformed into the bottom end and surport of the bed, in the manner and for the purposes substantially as herein described.

scr.bed.

I also claim the combination of a table with a bedstead, in one piece of furnitute, adjustable at the will of the operator by means of the pur sliding in the groove, E, constructed and operating substantially as herein described.

60,340.—Mode of Fastening and Unfastening Drop Doors in Coal Cars.—William Burt,

UNDATE OF DOORS IN COAL CARS.—William Burt,
Marquette, Mich.
I claim the combination of the lever, B, shaft, L, cams, C, attached to the said shafts, L, pins, P, with drop doors, a, when the same are constructed and arranged in the manner and for the parpose set forth.

60,341.—ROTARY CUTTING MACHINE.—James J.

Butler, Cincinnati, Ohio.

Iclaim, First, The rotary knife or cutter, M, and arm, L, in comoination with the mandrels, C and G, for the purposes and substantial y as described.

Second, I claim the bevel gearing attached to a crank for driving the mandrels, to which the cutter or knife is attached, substantially and for the purpos set forth.

Third, I claim the upright screw, D, in connection with the mandrel pressing on the disk, i, or material, substant ally as herein shown and described.

60,342.—TAP BORER.—Silas S. Crocker (assignor to himself and D. R. Crocker), Maquoketa, Iowa.

I claim the volute shaped tool with a sharpened, salient, spiral edge, with the giml t point, substantially as described.

60,343.—TOOL FOR SETTING JEWELS IN WATCHES.

—A. C. Crosby, Union, Pa.

1 claim the securing or setting jewels in watch plates by means of a dee or tool constructed in the manner substantially as shown and described.

60,344.—Measuring Liquids.—George W. Devoe,

New York, city.

New York, city.

I claim, First. The suspension and arrangement of the weighted funnels, M, in relation with the series of measuring vessels, E, and with the cans, C, as they are pushed un er the said funnels, substantially as herein set forth for the purpose speci. ed.

Sec nd, A measuring apparatus consisting of one or more measuring vessels, E, arranged in relation with a reservoir, B, and furnished with iniet and outlet valves or stop cocks, FK, and with a suspended funnel or funnels, M, and a whistle or whistles, e, substantially as herein set forth.

60,345.—FEATHERING PADDLE WHEEL.-

60,345.—FEATHERING PADDLE WHEEL.—John V. Dinsmore (assignor to himself and M. Harris), Milford, Mass.

I claim the combination for operating each of the paddles while the wheel is revolving, the same consisting of the cam, G. the sliding and rotary shaft, F. its bering, b, sud, g. notef, shoulders, d., arm, m. cams, n and g. and the arm, p. and the roller, o, or the equivalent thereof, the paddle being applied eccentrically upon the shaft, and the whole eing in other respect, substantially as hereinbefore described.

I also claim the cam, C, as made in two parts hinged together, and applied to the edge of the words one of them may be stationary thereon, and the oher movable, as and to produce with the wheel, results as above set forth.

60,346.—Grading Instrument.—Samuel L. Don-

60,346.—Grading Instrument.—Samuel L. Donnell, Spring Creek, Tenn.

I claim the bubble block, D., mounted upon a collar, G. swiveled upon the stand. A. or its equivalent, in combination with the salcace ball or weight. H, suspended from the said block, and about and around the stand, A, substantially as herein described and for the purpose specified.

Second, In combination with the above, arringing enter one or both of the legs, J J2, in the bubble block, D, from which the baiance ball, H, is suspended in such a m nner as to be susceptible of being adjusted therein, substantially as and for the purpose degribed.

algoribed.
Third, The combination with the sights of the bubble block of the thumb or setscrews, R, and fixed pointer, U, arranged substantially as described and for the purpose set forth.
Fourth, The use of a transverse swiveled block, V, for the purpose described.

60,347.—POTATO DIGGER.—M. T. Drake, Pleasant

Ridge, Ohio.

claim, First, The main frame, A, vibrating inner frame, A'
ing frame, A'', and axle, B, constructed substantially as above
iribed and for the purpose specified.