2202MB2K 10, 1002.]	
Doubling. twisting, and winding machines, stop- motion mechanism for, J. & T. A. Boyd 268,170	Lasting and pegging jack, C. W. Hodgdon
Dredging bucket, W. H. Wood 268,349 Drier. See Clothes drier. Dropper. See Seed dropper.	Lead or crayon holder, C. W. Boman
Dry plate holder and envelope, C. H. Schofield 268.297 Egg preserving compound, B. L. Castor 268,189	Lifting jack, H. A. Webber
Electric cable, R. S. Waring	Möller
Electric cables, dividing and branching, R. S.  Waring	Locomotive, J. C. Higdon
Waring         268.15           Electric generator, V. W. Blanchard         268.17	Loom for weaving pile fabrics, J. C. Duckworth 268.202 Loom harness, device for supporting, J. Sladdin . 268,136
Electric machine, dynamo, R. H. Mather 268,25. Electric machine. dynamo, E. Weston 268,33. Electric machine, dynamo or magneto, T. A. Edi-	
son	Measure cases, attachment for tape, J. Avery 268,168
Electric wire conduits, increasing and reducing joint for, C. Linford 268,031	Meat chopping machine, H. R. Shirk
Electrode, vaginal, A. W. Tipton	Metals with metal, apparatus for coating, H. Rob-
Elevator alarm. A. C. Jacobi	Meter. See Gas meter. Milk, preparing substitutes for mothers', O. Lahr-
Embroidering and embroidery, C. Wheeler 268,333 Engine. See Fire engine. Rotary engine.	Mill. See Feed mill. Windmill. Mortising machine, endless chain, T. E. Daniels. 268,003
Evaporator, M. Day. Jr.       268,199         Evaporator, H. P. Stevens       268.310         Excavating dirt, etc., H. A. Carson       268,189	Jr 268,014
Extractor. See Nail extractor. Fan combination stand, automatic, C. H. McKee-	draught of, G. M. Drummond 268.201  Musical box, E. Paillard
han	Net frame, mosquito, F. Reichert 268,283
Feed water heater for steam boilers, W. Dunn 268,205 Felt. manufacture of seamless, R. W. Perkins 268,27 Fence stand of scrap metal, J. C. Milligan 268,26	6 Carter 268,037
Fertilizer compound, W. D. Styron         268,314           Fifth wheel. E. Squires         268,300	fire test of, H. C. Smith
Filter, eccentric-shaped, L. Smith       268,30         Firearm sight, F. W. Freund       268,09         Fire engine, L. H. Zeigler       268,28	Optometer, F. A. Hardy 268,016
Fire escape ladder. W. Bushnell.       268,07         Fire kindler, J. H. French.       268,21         Flour packer, J. B. Martin.       268,25	Ores, etc., concentrator and separator for, E. Warne
Fodder press, J. Lynes	Packing box, knockdown, N. R. Gordon
hill & Lake	
Fork for domestic and other uses, R. W. Turner 268,155 Frame. See Net frame.	Pen, metallic, B. Lawrence
Funnel holder, adjustable, J. R. & J. S. Johnson. 268,233 Furnace. See Boiler furnace. Gas retort furnace. Glass furnace. Hydrocarbon furnace.	Pipe. See Wooden pipe.   Piston, S. Armstrong
Furnace, J. G. McAuley	Planter check rower, corn, J. Harvey
Gauge. See Axle gauge. Game apparatus, B. B. Townsend	Planter, seed, H. Cole
Gas regulator, G. S. Lacey	Flow, J. H. Riggan       268,285         Flow, cultivator, M. Hancock       268,223         Plow, sulky, C. W. Post       268,280
Gate. See Tilting gate. Gate, F. C. Wheeler	Plowing apparatus. steam, N. W. Bradley 267,996
Reeves	Preservative for organic substances and process of making the same, W. F. Grier
Glass and mode of manufacturing the same, tube for blowing, J. B. Wilson	
	Pulley block, T. R. Ferrall
Grain binders, bundle divider for, W. H. Knapp. 268,028 Grain crill, Elam & Boggs	Pulverizing machine, F. W. Krause
Grain elevator, pneumatic, L. Smith	Pumps. exhaust steam condenser for steam, W.
Gun stock, J. N. Squier	Rack. See Hat rack. Hay rack.
Handouff police, E. D. Bean 269,171 Handle. See Brush handle.	Reflector for street lamps or lanterns, etc., W. Wheeler
Hanger. See Door hanger.  Harness rosette, A. McManus	
Harrow, wheel, C. Murray	cooler for, Wood & Richmond
Harv_ster rake. J. D. Tracy	Rein, driving, W. S. Sherd         268,046           Rocking chair, McCaffrey & Leonard         268,036
	Roof or wall covering, D. McLean
Head light, locomotive, J. Kirby, Jr	Ruler, parallel, C. H. Wood       268,342         Saddie. gig, J. B. Gathright       268,008
	Sash holder, W. A. Gay
Holder. See Coin holder. Curtain rod holder.  Dry plate holder. Funnel holder. Lamp	Saw gummer and sharpener, J. H. & S. L. G. Bed- ingfield
holder. Leador crayon holder. Opera glass holder. Sash holder. Sewing machine bodkin	Scarf, neck, J. L. Strauss       268,053         Scraper, wheeled, Stubbs & Jonas.       268,054
holder. Sewing machine thread card holder. Horseshoe machine. A. Andersen	Screen. See Door or window screen. Window screen. Seat. See Folding seat. Seat, H. S. Hale
Horseshoe toe weight, F. A. Clark	Secondary battery, E. T. & E. E. Starr 268,308
Ice creeper, R. Rommelsbacher       268,131         Ice machine, J. T. Davis       268,196	See dropper, J. L. Williams
Indicator. See Speed indicator.  Insulating compounds, manufacture of, M. Mac- kay	Sewing machine, L. E. Higby
Insulator, noise deadening, G. M. Brown 263,075  Jack. See Lasting and pegging jack. Lifting  jack.	·
Journal bearing R. W. & W. Hubbard 268,239  Journal shaft, H. E. Cunningham 268,194	Sewing machine bodkin holder, G. Baum 268,170 Sewing machine buttonhole attachment, S. Cut-
Lamp chimney attachment, J. O. Illingworth	Sewing machine shuttle, J. R. Hebert
Lamp, electric arc, J. McLaughlin 268,03 Lamp, electric arc, R. H. Mather 269,25 Lamp, electric arc, S. F. Van Choate 269,15	Sewing machine thread card holder, G. Wicke 268,335 Sewing machine thread cutter and holder, H. C.
Lamp, electric incandescent, J. V. Nichols268,269, 268,276 Lamp for railway cars and other vehicles, J.	Sewing machine tension device, J. R. Hebert 268,228 Sewing machine tuck maker, H. C. Goodrich 268,013
Schlilke	Hebert
Lamp holder, incandescent electric, E. Weston 268,330 Lamp incandescing electric. T. A. Edison 268,200	Shingle drawing and edging machine, W. L. Roberts
Lamp, self-regulating, V. Di Marzo. 268,11- Lantern, D. C. Baughman. 267,995 Last, G. W. Osgood. 268,271	

			ľ
	Shoes, machine for attaching buttons to, P. H. Sweet, Jr.		
	Slate, school, F. W. Mallett	268,25?	Ι,
	Soap cake, A. Van Haagen	268,289	
	Soldering machine, can, J. S. Hull		]
į	Speed indicator, W. Lang.	268.107	]
	Speed indicator and register, D. Young Spool, I. C. Davis	268,197	ľ
į	Spool of thread, I. C. Davis.  Spring. See Carriage spring. Vehicle spring.	268,198	:
	Wagon seat spring.		1
-	Springs, apparatus for making, Woodruff & Barson		
	Stair rod securer, M. L. Woodward Stamp battery, ore. J. M. McFarland		'
	Stamping machine and die, E. Norton Steam trap, G. W. Coffee	268,041	1
	Steam wheel, S. J. Webb	268,327	ŀ
	Steel blooms and billets, manufacture of, W. Hainsworth	268,222	١.
	Stencils, perforating instrument for producing, D. Gestetner		  -
	Stirrer, pot. A. Caufman	268,185	!
	Stirrup hood, A. Ayers		
	Stove, Willi & Linxweiler  Stove and burner and heating drum, gas, E. Det-	268,066	
	wiler	268,083	 
	Stove for burning straw, hay, and cornstalks, N. Compton		
	Stovepipe shelf, J. M. Black	268,072	. 1
	Straw cutter. W. M. Fitzwater	268,212	'
	Sugar. salt, etc., apparatus for the manufacture of, F. P. Taber		
	Tape line case, G. Clark		
ĺ	Telegraph, printing, A. F. & F. B. Johnson	268,237	1
i	Telegraphic circuits, condenserfor, <b>B.</b> Thompson, Telephone exchange system and apparatus, J. H.	268,317	•
	Rogers.	268,294 268,045	1
	Telephone toll apparatus, J. W. See Telephonic apparatus, W. J. Dudley	268,359	
	Thrashing machine band cutter and feeder, M. E. Perring	268,372	
	Tilting gate, automatic, W. S. Castor  Toaster, reversible, R. Sherman	268,080	
	Tobacco, process of and apparatus for moistening		ε
	leaf, G. Robinson		•
	Tool stock, J. D. Richardson		1
	Trace carrier, D. Freer	268.089	. (
	Traction engine wheel, J. Walrath  Transom hanging device, J. Kirby, Jr		1
	Trap. See Steam trap. Treadle. F. H. Burrows	267,998	1
	Tube bending machine, S. Stephens Twine polishing and finishing machine, R. A.	268,050	
I	Kelly	268,242	,
	Urinal, R. E. Day	268,126	i
	Valve, balanced slide, J. E. Sweet	268.055	
	Valve, safety, G. E. Collier	268,082 :	
	Varnish, water lac. G. H. Beck	268,123	ŧ
	Vehicle spring, N. B. Cooper	268.193 : 268.087 ·	I
	Vehicle wheel, Wolff & Miltimore Ventilator, P. Cassner	268,341	ι
i	Vessels, compound for lining, E. G. Frisbie	268,216	ε
!	Washboard and clothes pounder, combined, H.	268,182	I
:	Lake		2
į	Washing out or separating soluble from insolu-	· .	I
i	ble substances. apparatus for, H. Schaede Watch plate. dust proof, A. Bitner	268.354	2
į	Watches, machine for roughing out pinions, arbors, and staffs for, C. V. Woerd		í
į	Water closet, F. W. Kelly	268,025	r
İ	Water elevator, A. J. English	268,086	
į	Water in buildings, apparatus for turning off, J. D. Westgate		8
	Water wheel, turbine, Risdon & Tyler		ì
-	Wheel. See Fifthwheel. Steam wheel. Traction		ı
	engine wheel. Vehicle wheel. Water wheel. Windmill, J. S. Meyer		t
-	Windmill, R. O. Robinson		١
	Window screen, G. L. Reynolds	268,125	Í
١	Wire feeding apparatus, H. Roberts	268.288	t
	Wire pickling apparatus, H. Roberts		ŧ
	Wooden pipe, Johnson & Williams Wrench, L. Wood		ı
		,011 . i	ı
	DESIGNS.		8
	Bridle bit, A. Buermann	. 13,458	t
	Bridle bitpattern, A. Buermann	13,459	6
	Carpet, E. Fajon	13,460	
	Carpet, Hunt & Rollings	13,457	]
	Lamp and reflector, combined street, S. F. Va	n ;	7
	Stove, Bascom & Heister	13,454	ľ
	Stove, cook, Bascom & Heister		1
			t
	TRADE MARKS.	;	1
	Cigars, cigarettes, and smoking and chewing to bacco, H. M. Mason		
1	Pencils, lead, E. Faber		1
į	Soap, laundry, Procter & Gamble. 9.841, 9.842, 9.843, 9.84		I
Į	Stationery, certain articles of, E. Faber	. 9,847	
ĺ	Toilet wash for the complexion, F. A. Jones		

### English Patents Issued to Americans.

Watch cases and movements, Vacheron & Constan-

From October 31 to November 3, 1882, inclusive. Bathing apparatus, W. W. Rosenfield, New York city, Boat lowering apparatus. M. Bourke, Youngstown, O. Cable traction railway, C. F. Findlay, Chicago, Ill. Compound for preventing the passage of heat, R. J. Elbert et al., New York city. Door check, The Elliott Pneumatic Door Cha

pany, Boston, Mass.

Door fastening, J. W. Krepps, New York city. Electric time ball apparatus, Standard Time Ball Company, New Haven, Conn.

Flax breaker, J. Shinn, Philadelphia, Pa. Gas stove, W. W. Goodwin, Philadelphia, Pa Machinery, apparatus for starting, J. A. Horton, Read-

Motor, W. S. Colwell, Pittsburg, Pa. Printing machine, Cornell & Shelton, Birmingham,

Reaping machine, W. A. Wood Mowing and Reaping Machine Company, Hoosick Falls, N. Y. Stone crusher, S. L. Marsden, New Haven, Conn. Stovepipe attachment, C. Lovell, Massachusetts.

Table. F. F. Atkinson, New York city. Telegraph printing apparatus, A. A. Knudson, Brooklyn, N. Y.

Time detecter, G. F. Ransom, Cleveland, O. Water closet, J. Cooper, Boston, Mass.

Weighing and package filling apparatus, C. C. Clawson, Raleigh, N. C. Umbrella spring, W. H. Belknap, New York city.



HINTS TO CORRESPONDENTS.

No attention will be paid to communications unless accompanied with the full name and address of the

Names and addresses of correspondents will not be given to inquirers.

We renew our request that correspondents, in referring to former answers or articles, will be kind enough to name the date of the paper and the page, or the number of the question.

Correspondents whose inquiries do not appear after a reasonable timeshould repeat them. If not then published, they may conclude that, for good reasons, the Editor declines them.

Persons desiring special information which is purely of a personal character, and not of general interest, should remit from \$1 to \$5, according to the subject, s we cannot be expected to spend time and labor to obtain such information without remuneration.

Any numbers of the Scientific American Supple-MENT referred to in these columns may be had at this office. Price 10 cents each.

Correspondents sending samples of minerals, etc. for examination, should be careful to distinctly mark or label their specimens so as to avoid error in their identi-

(1) W. H. D. asks how the polish on bright wire screw eye hooks is put on, and what is used to prevent their rusting readily (they appear to be rust resist-ing); at what part of the process of manufacture is it done? A. Screw eye hooks receive their bright polish before the thread is cut, by tumbling in sand, gravel, or any mixture that will produce a clean surface. They are then threaded, and receive a final tumbling with leather skivings and any cheap polishing powder with an admixture of lime. Some boil them in lime water, and use sawdust for finishing.

(2) G. M. asks: 1. What book would you advise me to get concerning steam engines and how to make them, for amateur? A. "Goodeve on the Steam Engine" and "Roper on Land and Marine Engines." 2. Is working a lathe in a machine shop a good branch of mechanics? A. It is only a part of a machinist's trade, and should be learned as such. 3. How long does it generally take a person to learn lathe work? A. It depends much upon the person; some two years, others five years, and others never can learn so as to become ready and quick workmen.

(3) R. S. T. writes: I have just been reading an article in your last issue entitled "How a Fire sweeps a Wooden House." Thinking it would do no harm, even if it does no good, I will tell you how I fixed house as a protection againt mice, and I think it must be of service in case of fire, although that was not thought of at the time. After the house was up and closed in and the under floors laid, I took any pieces of waste boards, cut them to the right length and width to fit the spaces between studding, and nailed them in flush with the bottom of the ledger board between that and the outside boarding, and by so doing I had a box be-tween each pair of studs that would hold about six or eight quarts, which I filled with cheap mortar made by using a very little lime and the coarse sand and gravel that the masons could not use in their mortar. I also let the under floors run to the outside boarding, and pread the mortar on them about one inchdeep between the base boards and outside boarding in each story This was done only to stop rats and mice, and was a perfect

(4) H. K. asks (1) how many cubic feet of air it takes to burn a cord of soft wood per hour. A. In practice, 70 to 80 cubic feet per 1 pound of wood. Theoretically, only about half this quantity. 2. Also what per cent of heat is put into steam where ordinary return flue boilers are used? In other words, what part of the heat goes up the smoke stack? A This cannot be determined, and it depends much on the setting and proportions of the boiler and the temperature maintained in the furnace. The temperature of the gases in chimney usually varies from 400° to 600° Fahr. 3. How many cubic feet of air will a three pound pressure force through an eight inch pipe a hundred and fifty feet long? A. About 62 feet per second, depending upon the character of the pipe and number and shortness of bends.

(5) J. R. W. writes: In your November 4 number of the Scientific American, on page 299. simple test for detecting sewer gas in a room or apartment. I wish to know whether the same method or some other will determine the existence of coal gas in distinction from other gases, when they cannot be determined by the odor? A. The test there noted is for sulphureted hydrogen, and would also show coal gas, or any gas containing sulphureted hydrogen.

> (6) E. H. asks how much water is used to the pound of lime in preparing lime water. A. Twenty gallons.

(7) E. N. P. asks: Will you give me formula for calculating the horse power when the fall of water is 16 feet, and volume or flow 450 cubic feet per second? I find a rule thus, but I don't exactly understand it: "To the actual head or depth of fall, add the height due to the velocity of the water in the head race. Multiply the sum by the volume of the flow of water per second, and by the gross power in foot pounds (62.4) per second; this divided by 550 gives the gross horse power." Please give me explanation of what constitues "the height due to the velocity." A. "The height due to the velocity" is the additional power given by the velocity of the current, and is obtained by dividing the square of the velocity of the current in feet per second by twice the distance that a body falls in one second. This quotient multiplied by the constant one and one-tenth (11) gives the height due to the velocity cubic feet of flow divided by the area of the sluice in Gould & Eberhardt's Machinists' Tools. See adv., p. 382

square feet. The formula as given is  $\frac{V^2}{2g} \times 1.1$ , where V =velocity; 2g=64333=twice the height a body falls in one second. The rest of your rule is correct.

(8) H. N. asks: 1. What is the proper size of smoke stack for a horizontal boiler 3 feet6inches by 9 feet, forty 214-inch tubes? A. At least 20 inches diameter. Your draught cannot be strong, as it will be cramped in the tubes. 2. The distance the brick wall should be from rear end of boiler? Is there a rule for either or both of the above questions? A. 18 inches; there is no rule. 18 inches is more than necessary for draught, but there should be room for a man to work.

(9) P. R. C. asks: What acid is commonly used for cleaning mortar, etc., from brick work before penciling, and should it be used full strength? A. Use diluted muriatic acid, one part of acid to three of water.

(10) G. A. H. writes: 1. I have some samples: of pig iron which I wish to coat with some anti-rust preparation that will not deaden the luster or rub off when the samples are handled. Can you tell me of such a preparation? A. Try a solution of gum arabic or a thin mastic varnish. 2. A friend has a very old and choice piece of Japanese carved landscape in ivory. which has grown yellow. Is there any way to cleanse the same and whiten the ivory without injury to the delicacy of the carving? A. Benzine carefully used will

(11) J. W asks: How far can the best known fire engine throw water horizontally, when it has to pump the water out of a reservoir? A. 210 to 215 feet; it is claimed that 240 to 250 feet has been accomplished on test trials.

(12) A. C. asks if there is more strain on one part of the main rod of a locomotive than another. If so, what part, and why? A. No; not from the direct action of the steam, but there may be lateral strains more at one point than another.

MINERALS, ETC.—Specimens have been received from the following correspondents, and to M. C. Bullock Mfg. Co., 80 to 88 Market St., Chicago, III. examined, with the results stated:

F. H .- It is a very impure but finely divided kaolin or china clay, and could be used for making pottery or in the present condition as a soft polishing compound. -S. L. M.-It is carbonate of lime colored with sesqui-

### COMMUNICATIONS RECEIVED

On Electric Storms. By J. A On the Aurora Borealis. By E. E. M

# Business and Versonal.

The Charge for Insertion under this head is One Dollar a line for each insertion; about eight words to a line. Advertisements must be received at publication office asearly as Thursday morning to appear in next issue.

COLLEGE OF ST FRANCIS XAVIER, 39 TO 49 W. 15TH ST., NEW YORK, Nov. 1, 1882. 5 To H. W. Johns Manufacturing Company.

GENTLEMEN: Your Asbestos Coverings are in use in our church and college, and give us great satisfaction. Yours truly, S. H. FRISBEE, S. J., Rector.

St. Francis Xavier College, 39 W. 15th St., New York, Nov. 15, 1882. H. W. Johns M'fg Co., 87 Maiden Lane, New York.

GENTLEMEN: Before using your air chamber cover iugs on our pipes we were losing, actual test by steam auges, eight (8) pounds pressure between boiler and trap or receiver: now the loss is so slight that we can

scarcely distinguish it. Our saving of coal by its use is at least thirty (30) per cent. BROTHER MCCLOSKEY, Engineer.

For a bad cold every good housekeeper has a cure, but for a bad pen the remedy is to get one of Ester-

or. \$250 to \$550. Satisfaction guaranteed. More than Morris (Drawer 127), Baldwinsville, N. Y.

Brass Finishers' Turret Lathes, 131/2 x 4, \$165. Lodge, Barker & Co., 189 Pearl St., Cincinnati, O.

Inventors' wants supplied. Models, patterns, experimental work. Morse's Novelty Works, 43 Duane St., N.Y. Parties having New or Second-hand Tripod Rock Drills to sell cheap, address V. Castner, Changewater,

Important to Inventors.—The Anglo-American Patent Development Company, Limited, 28 Southampton Buildings, London, England, Authorized Capital \$250000, is prepared to receive applications from American Inventors to develop (by manufacturing or otherwise) their inventions in Europe. Full particulars addressed as above by Registered Letter to be forwarded, with \$5.00 U. S. Currency, to cover expense of investigation, otherwise applications cannot be considered. Inclose stamp for Prospectus of Company to Messrs. Knauth. Nachod &

Kuhne. Bankers, New York. Manufacturers of hydraulic or steam presses for extracting oil of castor beans, cotton seed, or tallow may find it to their advantage to send illustrated catalogues and price lists, with export discounts to W. C., P. O. Box 3.184. New York.

Thomas Camp, of Covington, Georgia, General Agent for the sale of Portable Steam Engines, has a trade of \$250,000 per annum in that State. Manufacturers will find this the best medium in the South through which to sell such goods. None but first-class engines sold Best of reference given and required.

Curtis Regulator, Float, and Expansion Trap. See p.364

A Portable Electric Lighter for \$5 00 is being extensively sold by the Portable Electric Light Co.. of 79 Water Street, Boston. It is an economical and safe apparatus for lighting for home and business purposes. Their illustrated circular is sent free.

Woodworking M'ch'y. Bentel, Margedant & Co., p.382. Steam Hammers, Improved Hydraulic Jacks. and Tube Expanders. R. Dudgeon 24 Columbia St., New York.

Machine Diamonds. J. Dickinson, 64 Nassau St., N.Y. 50,000 Emerson's Hand Book of Saws. New Edition. of the water in the head race; the velocity being the Free. Address Emerson, Smith & Co., Beaver Falls, Pa.

> Walrus Leather. An extra fine lot of heavy trimmed walrus for polishing metals. Greene, Tweed & Co., N. Y. For Heavy Punches, etc., see illustrated advertise ment of Hilles & Jones, on page 382.

Barrel, Key, Hogshead, Stave Mach'y. See adv. p.382. Magic Lanterns and Stereopticons of all kinds and prices. Views illustrating every subject for public exhibitions, Sunday schools, colleges, and home entertain ment. 116 page illustrated catalogue free. McAllister Manufacturing Optician, 49 Nassau St., New York

Renshaw's Ratchet for Square and Taper Shank Drills. The Pratt & Whitney Co., Hartford, Conn.

Woodwork'g Mach'y. Rollstone Mach. Co. Adv., p. 382. For best low price Planer and Matcher, and latest improved Sash, Door, and Blin 1 Machinery, Send for catalogue to Rowley & Hermance, Williamsport, Pa.

The Porter-Allen High Speed Steam Engine. South work Foundry & Mach. Co.,430 Washington Ave., Phil.Pa The Sweetland Chuck. See illus. adv., p. 382.

Knives for Woodworking Machinery. Bookbinders, and Paper Mills. Taylor, Stiles & Co., Riegelsville, N. J.

Permanent Exposition.—Inventors' Institute, Cooper Union, N.Y. City Every facility forex hibition of machinery, merchandise, and inventions. Send for particulars Drop Presses, Bending Machines, the Justice Hammer, tools for plow and agricultural implement makers Williams, White & Co., Moline, 111.

Cope & Maxwell M'f'g Co.'s Pump adv., page 366. For Mill Mach'y & Mill Furnishing, see illus. adv. p.364.

Red Jacket Acjustable Force Pump. See adv., p. 366. Common Sense Dry Kiln. Adapted to drying of all materialwhere kiln, etc., drying houses are used. See p.366. Bonhack's Match Splint Setting Machine. Best and quickest in the market. Recipes and advice gratis. Address C. F. Bonhack, patentee, 527 W. 43d St., New York.

Wanted.-Patented articles or machinery to make and introduce. Gaynor & Fitzgerald, New Haven, Conn. To stop leaks in Boiler Tubes use Quinn's Patent Ferrules. Address S. M. Co., So. Newmarket, N. H.

Latest Improved Diamond Drills. Send for circular The Berryman Feed Water Heater and Purifier and Feed Pump. I. B. Davis' Patent. See illus. adv., p. 350 For Pat. Safety Elevators, Hoisting Engines. Friction Clutch Pulleys, Cut-off Coupling, see Frisbie's ad. p. 349. Mineral Lands Prospected, Artesian Wells Bored, by Pa. Diamond Drill Co. Box 423. Pottsville, Pa. See p. 350 C. B. Rogers & Co., Norwich, Conn., Wood Working

Machinery of every kind. See adv., page 350. 4 to 40 H. P. Steam Engines. See adv. p. 350.

To make Violins, write James Roblee, Syracuse, N. Y.

Water purified for all purposes, from household supplies to those of largest cities, by the improved filters manufactured by the Newark Filtering Co., 177 Commerce St.. Newark, N. J.

Drop Forgings. Billings & Spencer Co. See adv., p. 333.

Assays and Analyses of ores and all commercial products. Advice given and investigations made in all branches of chemical industry. Send for circular N. Y. Assay Laboratory, 40 Broadway, New York.

Guild & Garrison's Steam Pump Works, Brooklyn, N. Y. Steam Pumping Machinery of every descrip-

Solid Cotton Belting all widths, in lengths to suit Greene, Tweed & Co., 118 Chambers St., New York.

Sheet and cast brass goods, experimental tools, and fine machinery. Estimates given when models are furnished. H. C. Goodrich, 66 to 72 Ogden Place, Chicago. Improved Skinner Portable Engines. Erie, Pa

25" Lathes of the best design. G. A. Oil & Co., East Newark, N. J.

Combination Roll and Rubber Co., 68 Warren street. N.Y. Wringer Rolls and Moulded Goods Specialties. First Class Engine Lathes, 20 inch swing, 8 foot bed, now ready. F. C. & A. E. Rowland, New Haven, Conn.

Ice Making Machines and Machines for Cooling Breweries, etc. Pictet Artificial Ice Co. (Limited), 142 Engines, 10 to 50 horse power, complete, with govern-Greenwich Street. 1. O. Box 3083, New York city.

Jas. F. Hotchkiss, 84 John St., N. Y.: Send me your free book entitled "How to Keep Boilers Clean," containing useful information for steam users & engineers. (Forward above by postal or letter; mention this paper.)

Steel Stamps and Pattern Letters. The best made. J. F.W.Dorman, 21 German St., Baltimore. Catalogue free. For Power & Economy, Alcott's Turbine, Mt. Holly, N. J.

Presses, Dies, 'Tools for working Sheet Metals, etc. Fruitand other Can Tools. E. W. Bliss, Brooklyn. N. Y

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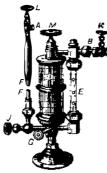
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