(25) J. W. H. asks: Will a saw that is run by water power run any stronger at night than in the othersask: 1. For a plain description of how to pro-day? A. No. 2. Will pure steam from the upper part ceed in order to charge a straight bar of steel with suffiof a steam boiler when let out scald, if no water comes cient magnetism to give it the power of lifting four times with the steam ? A. If of sufficiently high pressure it its own weight. Also, how to proceed with horse-shoe B will not scald near the outlet.

(26) H. R. asks: How are Bourdon springs for pressure gauges manufactured? A. The tube is, we believe, first drawn with a cylindrical section, like other drawn brass tubes, then given the proper section by either rollers or drawing through another die.

(27) W. S. asks: 1. How can I melt copper. brass, and zinc, and what kind of furnace and heat them centrally in a suitable coil, and then connect the will I need if I melt copper and zinc together to helix with the wires from a dynamo-electric machine BC make brass? How many parts must I have and or powerful battery for a few seconds, remembering to Bo what kind of flux, or is there any need of flux? For break the current before removing the magnet from the Bu melting, will I have to take an iron ladle or crucible? coil. If the source of the current is a dynamo machine, A. You can melt the metals referred to in a common thecoil should be about 2½ inches long and should concoal fire. You will require a crucible for copper and sist of 10 or 12 layers of No. 12 magnet wire. If a batbrass, but zinc may be melted in an iron ladle. Common brass is composed of copper 3 parts, zinc 1 part. | layers of No. 16 magnet wire, will be the best. The in-Fine yellow brass, copper 2 parts, zinc 1 part. Melt the copper, then add the zinc Stir the alloy with a dry wooden rod. A little borax may be used as a ments, each having an effective zinc surface of 30 square Bu flux. 2 On making moulds, what kind of mixture must I take to work nicely and cast well? A. Fine moulding sand is the bestfor general use.

(28) W. T. K. asks (1) how to connect three steam whistles so that they will all go off at once? A. Have one common steam valve to the 3 whistles. 2. What power is in a cylinder 11% inch bore and 134 stroke, at 600 revolutions a minute ? A. For rules for calculating horse power of engines, see SUPPLEMENT, No. 253.

(29) J. K. asks: 1. What will prevent a grindstone wearing off in one place more than in another? I have one about 30 inches in diameter, and adapted to the current to be used, and still another there is one place that is soft in it and I can't keep it round. A. It is an inherent defect in the stone. We know of no remedy. 2. What power am I using. The pulley I get my power from is 14 inches in diameter, and it makes 250 revolutions per minute with a 2-inch belt. A. About 21/4 horse power; possibly 21/2, if the belt is run very tight.

(30) D. C. M. asks: 1. How can I measure the power of a telescope or field glass ? A. The magnifocal length of the objective by the focal length of the evepiece. 2. How should I proceed to make a sunglass for a telescope ? A. Place a piece of very dark glass over the eyepiece. See SUPPLEMENT 252 for directions for making telescopes. 3. Which is the best for an observatory, a mercurial or an aneroid barometer? A. Mercurial. 4. Where can I procure dynamite cartridges for extracting stumps, and what will be the probable cost? A. Address manufacturers who advertise in our columns. 5. Where can I get a copy of the "Nautical Almanac ?" A. From industrial publishers whose ad-vertisements may be found in another column. 6. Who shall I apply to to become a volunteer observer for the U.S. Signal Service ? A. Apply to the chief of the Signal Service Bureau at Washington, D. C.

machine five times the size of the cut on first page of G.N. H. Titaniferous iron oxide. SUPPLEMENT, No. 161? Water has good pressure from Worthington engines. A. It depends entirely on the pressure and the size of the pipe leading to the half inchaperture. With a pressure of 40 pounds per square inch you could do it. If you intend making a machine of the size named you should follow Siemens' latestma chine, or imitate some of the more recent machines of prominent makers. 2. How does electricity pass from the cores of the magnets to the wire, the wire being insu lated on an electric machine? A. It does not pass from the cores of the magnets to the wires. It is evident you do not understand the principle upon which the dynamo-electric machine operates. You should consult some elementary work on physics. 3. Why must the machine given in No. 161 SUPPLEMENT be seton a brass plate? I see other machines rest on iron or wood. A. residence r cently erected in Summit, N. J. The work Any non-magnetic material will do. Iron cannot be used, as it would close the poles of the magnet. 4. Suppose an electric machine will run ten lamps, and ${\bf I}$ only use one, will my light be any larger from the one than it would when all ten were in use? A. Yes. I understand that electricity does not burn passing through the carbons of a lamp. If so, why should the number of lamps to a machine have a limit? A. Every lamp adds to the resistance of the circuit, and there is a ings from celebrated paintings, "Wood Carving," "Art limit to the resistance the machine is capable of over coming."

(32) J. N. W. asks: Do any of the stars twinkle except the fixed stars? A. All stars twinkle. This phenomenon is due to the constantly varying den sity of the atmosphere.

(33) R. M. asks how steel watch chains and other small steel articles are polished. A. By tumblin

Scientific American.

Fru

(36) P. C. N., C. G., W. V., C. W. T., and and other forms. 2. The name of the best brand of steel Be to use (Jessup's, chrome, or black diamond), and why it Be is the best. How to temper. 3. Is there any gain in al-Bi lowing the bar to remain under the influence of the current for a long time, or does it receive the full charge in-Bo stantaneously? In fact, we would like some information Bo on this subject that we can rely upon. A. 1. The quickest and best way to magnetize steel bars is to place i Bo tery is used, a coil 11/2 inches long, composed of 14 or 16 Br ternal diameter of the coil should be only large enough B inches connected in series, will do the work very well on Bu C٤ small magnets; such, for instance. as are used in tele-Ca phones. Where a number of magnets are to be made at one time the bars may be passed in a continuous line through the coil, always keeping three bars in contact Ca end to end, adding one above the coil before taking one off below. In this manner sixty bar magnets have been Ca strongly charg d in ten minutes. Horse-shoe magnets Ca cannot be charged so readily. There are two or three ways of charging them. One way is to place them in Ca contact with the poles of a very strong electro-magnet, removing them after breaking the current; another Ca method is to place each limb of the magnet in a coil Ca method is to employ a single coil, inserting one pole of the magnet into the coil in one direction, thus breaking Ca. the current, and inserting the other pole into the coil from Ca the opposite direction. It is well to remember that the Car magnet will be very much impaired if the current is not Car broken before removing it from the coil. The secret of success in charging magnets is to have a strong current. It is impossible to make magnets satisfactorily without Clo Clo this all-important requisite. 2. As to the quality of steel best adapted to this purpose, machinery steel harfying power of a telescope is found by dividing the dened and not tempered answers admirably. Forhorse-Co shoe magnets German spring steel is the best. Tool Co steel answers well if hardened and drawn to a straw Co color. 3. The steel receives its maximum charge al- Col most instantly. It is useless to allow it to remain under ('0 the influence of the magnetizing current more than a few Co seconds. Co

> MINERALS, ETC.-Specimens have been received from the following correspondents, and examined, with the results stated:

A. D. L.—A fair variety of potter's clay.—P. M. C.— Cor An argillaceous lime carbonate.—W. T.—The clay con-Cor tains a large percentage of analysis and a phosphate.-C. McG.-It is tourmaline.-H. S.-Zinc Coll provide C. C. P. A fair quality of potter's clay.- Coll sulphide.-G. C. R -A fair quality of potter's clay.-(31) K. E. B. asks: 1. Could I obtain J. T C.--Carbonate of lime. Some of the stone would power enough from a ½ inch hydrant to run an electric probably make a fair cement.-F. D. H.-Tourmaline.-

> COMMUNICATIONS RECEIVED. On Swift's Comet. By W. R. B. Features of No. 9. By W. B. W. On Scientific Discussion. By C. R.

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INDEX OF INVENTIONS FOR WHICH

			3	<u>79</u>
1	Badge, E. R. Smith	24 910	Kettle handle, G. Booth	994 997
	Bark mill, D. O'Brien 234	34,324	Lamp, comb'd stand and bracket, R. Cartwright.	
ł	Bed bottom, spring, E. P. Fowler		Lamp, electric, J. W. Swan	
	Bed, spring, C. A. Libby		Lasting, device for preparing uppers for, Brock & Woodward	
ļ	Bell, electric, C. J. Means		Letter box alarm, electric, C. H. Carter	
	Belt. galvanic, C. N. West 234 Belting, manufacture of machine, F. Walton 234		Letter holder alarm, electric, A. Allison, Jr Lightning or fire, protecting oll tanks from, J. C.	
	Bichromates, manufacture of, H. Pemberton 234	4,145	Chambers	234,173
ī	Binder for sheet music, J. S. Shannon 234 Blind slat adjuster, J. H. Monk 234		Liquid meter, Hancock & Heath Lock cylinder, W. H. Taylor	
	Board fastener, N. A. Hoernes 234	4,370	Lock hub, J. W. Lieb	234,302
	Boiler setting, Maxwell & Silliman		Locking nut, J. B. (alkins	
	Boiler tubes, securing, E. McGovern 234 Boot and shoe crimping machine, J. A. & A. C.	1,012 	Locomotive, narrow gauge, W. P. Henszey Low water indicator, C. F. Kurz	
ł	Ambler		Measure, shoemaker's. C. Schaefer	234 205
	Boots and shoes, manufacture of, H. R. Adams 234 Bottle. nursing, E. A. Barton		Mills, germ detecter for roller, λ . Fredenhagen Mitt shaping machine, W. P. Jennings	
;	Box, T. S. Lambert		Needle, I. Benjamin.	
	Box, J. P. Noyes		Nut lock, M. Haneline	
	Box, etc., A. Hopfen		Nut lock, J. G. Herold Nut lock, J. W. Tombow	
1	Broiler, reversible, B. E. Shattuck 234	4,339	Oil can or keg, W. Wilson, Jr	234 363
I	Broom holder, wh sk. G. Kent		Oil tank, E. E. Hendrick Ore furnace and reducer, J. Bujac	
	Buckwheat hulling apparatus, Beaty & Calkins 234		Ore roasting furnace, J. Winterburn (r)	
	Button, composition, A. H. Noble 234	4,322	Ore washing machine, dry. A. M. Dennen et al	234,255
	Button, sleeve, Caldwell & Winslow (r)	9,449	Packing, metallic. Osgood & Monroe Paper box, C. M. Arthur	
	Canoe, portable folding, W. Armstrong 234	4,164	Paper drying machines. turn round for, J.Woldron	
	Cans, gauging and side seaming, R. Gornall 234 Car brake, A. K. Kline		Paper pulp, apparatus for preparing wood for mak- ing, W. R. Patrick	
1	Car coupling, G. W. Curtis		Paper pulp, preparing wood for making, W. R.	
İ	Car door bolt, J. B. Calkins 234	4,240	Patrick	
	Car starter, B. G. Fitzhugh		Pavement, street, A. Bannister Pen, stylographic, G. F. Hawkes	
	Cars, sound deadening attachment for railway,	· .	Photographic head rest, W. Kenyon (r)	9,45l
		4,265 _¦	Photographic images, producing, D. N. Carvalho. Piston, W. Warner	
ł	Card and collar board, machine for the manufac- ture of, C. M. Gage	4,266	Planer knives, grinding, C. J. Le Roy	234,374 234,299
i	Carding machine, G. Estes (r) 9	9.457	Planter, corn. Caviness & McCormick	234,243
	Carriage boot flat hook, C. F. Littlejohn		Plow jointer, H. A. Currier Plow sulky, Patterson & Abrahams	
	Carriage spring, J. S. Mares		Plow wheel, F. S. Davenport	
	Carriage, two-wheeled, J. Jenkins		Pocketbook fastening, J. Menahan	
	Cart, dumping, B. Tweedle			
	Cartridges, priming metallic, J. F. Cranston (r) 9.	9.453	Pump, N. Holmes	234,189
	Casket or coffin handle, H. W. Morgan 234. Casket trimmings, E. S. Wheeler		Puzze and game apparatus, combination, J. R. Barry	
	Chuck, lathe, J. E. Wilson 234	4.216	Pyrometer, E. Brown	
	Churning apparatus. C. B. Davidson		Railway signal, electric. C. J. Mcans Railway switch, W. Spielman	
	Clock, calendar, F. wagner		Railway switch, automatic, R. P. Garsed	
	Coal breaker tooth. S. Broadbent (r)	9,456	Railway time signal, A. M. Lane	234,296
	Coal tipple, M. Q. Curry		Ram and water wheel, hydraulic, G. Yellott Reverberatory furnace, J. G. McCormick	
l	Collar fastening, horse, S. J. Bowers (r)	,4 48	Rock and coal drilling machine, J. Ross	234,147
	Collars, machine for moistening the fold lines of, T. S. Wiles		Roll, corrugating, W. Wilson, Jr Roll for troops, C. Blattner	234,365 234,225
	Commode, folding, G. C. Bovey		Rotary engine, W. Scott	
	Compass box. T. F. Randolph 234,		Saw filing machine, P. Bossert	
:	Compasses, telescope attachment to surveyor's, T.F. Randolph		Scarf, neck. A. E. Convers	
	Condenser, P. Murray 234	4,140	Seeding machine force feed, J. L. Riter	234,335
	Confection. hygienic oatmeal, Lambert & Huyler 234. Copper ores, treating, C. T. Du Motay		Service box, J. E. Boyle	
			Sewing machine guide, J. F. J. Gunning	
	Corn husking roller, T. C. Elliott		Sewing machine ruffling and puffing attachment,	
	Corn shellers. etc., feeder for, M. Kidnocker 234, Cornice. adjustable, Stratton & Steuerwald 234,		C. H. Carter Sewing machine shuttle carrier, Austin & Nichols	
	Corset clasp, J. J. Mahoney 234,		Shafcoupling, N. Stedman	
	Cotton chopper. B. S. Allen		Shearing machine, sheep, H. A. Reid (r) Sheet metal can, C. Green	9.455
	Grane, center, T. Wrightson		Shingle shaving machine, J. L. & W. E. Alexander	
	Cuff. S. W. Wilson		Shoe, A. P. Holman	
	Curtain fixture, J. Darling 234. Damper, stovepipe, U. B. Winchell		Shoe nail, L. J. Atwood	
	Derrick, J. McMyler 234,	,313	Shutter fastener, R. Hayden	234.126
	Dies, manufacture of, M. R. Hanley 284.3 Ditching machine, G. W. Veil 234,		Sifter, ash, Morse & McIntosh Sled brake, I. E. Davenport	
	Draw bench and carriage, A. Stewart et al		Sole channeling machine, M. Griffin	
	Drawer pull, J. E. Merriman 234,	,139	Soles, machine for attaching out, Brock & Wood-	004 107
	Drawing and cutting ovals, machine for, E. L. Gaylord	,268	ward Spark arrester, D. J. Timlin	
	Electric lighting apparatus, J. R. Finney 234,	,261	Spark extinguisher, locomotive, Gunther & Kow-	
	Electricmachine, dynamo, S. D. Field (r) 9, Electric machine, dynamo, F. Von Hefner-Alte-	,458	alski Sponge holder, G. Goetting	234,274 234 1-14
	neck 234,	,353	Square, dressmaker's, C. H. Griffin	234,273
	End gate, wagon, S. D. Shafer		Starching machine, J. P. Ellacott.	
	Eyeglasses, J. Schaffer (r)		Steam boiler feeding device, H.& O.Am(indsen (r) Steam boiler indicator, T'. B. Rider.	
			Steam generator and furnace, J. Göhring	
	Fan, automatic, J. W. Scott		Steamer and drier, grain, F. A. Hoffmann Steering apparatus, vessel, J. Gorman	
1	Feed cutter, D. S., I. D., & W. D. Heebner 234,	183 1	Stopper, W. W. Stewart	234,342
	Fence, metallic, B. G. Devoe		Storage tank, E. E. Heµdrick Storage tank for petroleum, G. W. King	
1	Firearm, magazine, J. M. Marlin 234,	,309 8	Stove, base burning, E. C. Smith	234,340
J	Firearm, magazine, H. F. Wheeler (r) 9,4	461	Stove, lamp, G. W. Walterhouse, Sr	234,158
	Flood gate. C. L. Shaw		Stovepipe elbow flanging machine, J. P. Ioor Stud and clasp. M. B. Scott	
	oil, process and tool for uniting sheets of, E. E.		Stuffing box, Osgood & Monroe	234,326
7	Hendrick 234, Fruit and egg carrier, L. H. Page		Stump puller. W. J. Watson	234,357
ł	Fruit drier. R. E. Burns 234,1	,115	tion of. J. Hollway	234,129
	Fruit drier, T. L. & D. L. Riggs		Surveying instrument, T. M. Jackson	
	Furnace for burning chaff. etc., A. Moore		Γap, barrel, Fetterly & Dutton։ Γeu and coffee pot, Manning & Seips։	
	Allen 234,1	162 7	Fea pot, I. T. Rue	234,148
	Fasapparatus, Noonan & Young		Feaching arithmetic. apparatus for, A. Classen 5	234.247

etter bolder alarm, electric, A. Allison, Jr. ghtning or fire, protecting oll tanks from, J. C. . 234,218 ut lock, M. Haneline...... 234,277 lishing wheel. X. Yahle...... 234,367 ... 234.189 mp, N. Holmes..... zzle and game apparatus, combination, J. R.

 willing machine, W. Scott.
 234,206

 willing machine, P. Bossert.
 234,228

 arf, neck. A. E. Convers.
 234,174

 ving machine ruffling and puffing attachment, es, machine for attaching out, Brock & Wood-

 les, machine for attaching out, Brock & Woodward

 ward
 234,167

 ark arrester, D. J. Timlin
 234,349

 ark extinguisher, locomotive, Gunther & Kowalski
 234,274

 oorge holder, G. Goetting
 234,274

 uare, dressmaker's, C. H. Griffin
 234,273

 arching machine, J. P. Ellacott
 234,119

 eam boiler feeding device, H.& O.Amtindsen (r)
 9,459

 aam boiler findicator, T. B. Rider,
 234,146

ling in a wooden cylinder containing leather scraps and	Letters Patent of the United States were	Grain binder, B. Chamberlain	
crocus.	Granted in the Week Ending	Grain binder. W. P. Payne 234,372	& W. H. Jones
(34) C. A.C. asks: 1. How many feet of No.	-	Grinding mill, T. J. Obenchain 234,199 Hams and shoulders, preparation of boned,	Thrashers, fan blower for, H. L. Warren
16 and No. 36 copper wire are required to produce one	November 9, 1880,	Maisel & Fisher	, , , , , , , , , , , , , , , , , , , ,
	AND EACH BEARING THAT DATE.	Handle. bail, and strap holder for cans, etc., com-	Time by gas pressure, indicating, G. G. Wagner 234,358
232 feet. Of No. 36, about 25 feet. 2. What weight		bined, W. Wilson, Jr	Tobacco, apparatus for curing and sweating, C. S.
ought an electro-magnetto lift if composed of two spools	[Those marked (r) are reissued patents.]	Harness gag runner, W. H. Chapman 234,246	
with cores 1 x 3 inches, wrapped with twelve layers of	A printed copy of the specification and drawing of any		Tongs, pipe, C. H. Lovrien 234,304
No. 16 cotton-covered copper wire, with ten cells of	• • • • • • • •	harrows and cultivators, spring tooth for, A. J.	Cool, combination, G. H. Pierce 234.378
gravity battery? A. It ought to lift 50 pounds or more.	patent in the annexed list, also of any patent issued		Toy mortar, Kyser & Rex 234.132
You would geta better effect by making the coresmuch	since 1866, will be furnished from this office for one dol-	Harvester, S. D. Madin	
	lar. In ordering please state the number and date of the		Truck. stove, M. B. Schenck 234,336
longer, say 8 inches, and winding the same amount of	patent desired and remit to Munn & Co., 37 Park Row,		Truss pad, A. Read 234,333
wire so as to form a coil 5 inches long on the outer end	-		Twine finishing machine, S. Ludlow 234,305
of each core.	New York city. We also furnish copies of patents	Hinge for folding bedsteads. H. A. J. Rieckert 234.334	
(95) T. A. aska, 1. Will you please anomaria	granted prior to 1866; but at increased cost, as the speci-		Umbrella and cane, combined, Boles & Hall 234,165
(35) J. A. asks: 1. Will you please answer in	fications not being printed. must be copied by hand.	Honeycomb foundations, making, A. F. Bonham. 234,236	
your next issue of the SCIENTIFIC AMERICAN how can		Horseshoe machine. G. C. Pyle	
water backs which are full of lime be cleared out ? A.		Horseshoe punching machine, G. C. Pyle 234,201	
There is no practical means, except mechanical means,		Hot air furnace O. Bryan 234,232	
chipping or the like, that can be of any service. 2. Is any		Hot air register, G. W. Bucher 234,369	
essential part of the locomotive patented? A. Many of		Hydrocarbon burner, J. S. Hull 234282	
the modern appliances to locomotives are patented, but		Indicator lock, F. W. Mix (r) 9,462	
		Injector, E. Wohlers	
the main parts of the locomotive are old, and may be		Inkstand, H. Hofmann 234,128	
made without infringing patents.	Axle lubricator, L. S. Enos 234,258	Jewelry, manufacture of, Vose & Southwick 234,152	Watch, stem winding, D. A. A. Buck

Scientific American.

Water closet, G. & G. Jennings, Jr. . 264.288 Water closets, waste water guard for, G. & G.

380

Jennings, Jr	404,60
Watering stock, L. T. Slye	234,20
Well, D. H. Tichenor	234,214
Wells. apparatus for boring, W. W. Vaughn	234,151
Wells, drilling machine for artesian and other,	
P. Sweeney	234,346
Wheat heater, H. C. Johnson	234,130
Windmill, N. Holmes	234,18
Windmill, E. J. Marsters.	234,13
Windmill, B. M. Rolph	234.204

DESIGNS

	•
Buckle, W. B. North	12,031
Carpet, C. Magee 12,027,	12,028
Coffin handle, W. R. McComas	12.018
Funeral ornament, J. B. Sargent	12.032
Game board, Mann & Lee.	12,029
Harness trimming, W. B. North	12,030
Neckwear, ladies', A. Back	12,015 :
Newel post, H. Textor	
Ten pin, W. E. Crandall	
Type, font of border printing, W. H. Page	12,022
Type, font of printing, W. H. Page	
12,019 to 12,021, 12,023,	12,024

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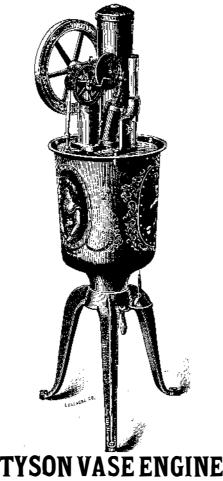
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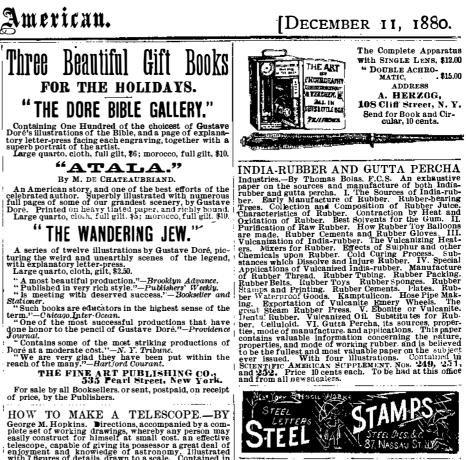
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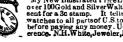
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