tific American Cyclopedia of Receipts, Notes and Queries

(4888) I. W. N. writes: Owing to the severity of our past winter, the subject of how to battle with the elements in keeping out wind and cold from our houses has been discussed a good deal by builders, architects, and others interested. Many are in favor of hollow walls. Others state that if the space between the bricks were filled in with some substance, such as crushed mica (size of fish scales) or dry cinders or sawdust, it would be warmer than hollow wall. Then those in favor of hollow walls ask, if that is the case, why would not a solid twelve inch wall be as warm as two four inch brick with four inch space, which nearly all acknowledge is warmer than solid wall twelve inch. Will you kindly say whether a wall of say four inch brick, four inch space, then four inch brick, is as warm, or warmer, than if the space were filled in with cinders or other material. A. Air is a non-conductor of heat or cold, and when confined in a hollow wall, so as not to become a circulating. Dipping the pipes in hot asphalt and draining is a method medium between distant parts of a house that is unequally heated and closed from roof circulation, becomes one of the best insulators that can be used. For the perfection of air space insulation, the outer wall should be not less wind driving through the brick work, when the air space may be only 2 inches thick, with a four inch inner wall. to thoroughly support the inner wall. Any material put water pipe, if the water that stands in the pipe overnight into an air space only packs hard and becomes in time as much a conductor as the brick.

engine 14×16 center crank, 200 revolutions per minute, with two driving pulleys 48 inches in diameter, and am troubled with the wrist heating, and crank has no counterbalance. Size of crank pin is 434 inches in diameter and 3% inches in length. If two 72-inch pulleys were used instead of the two 48-inch pulleys driven at same rim speed, would they stop the heating, and if not, please give remedies. A. We cannot recommend a change of pulleys, for, although the speed will be lower, the crank pressure will have to be increased in proportion, to develop the same power. We fear that the trouble lies in the quality of the oil that you are using. We recom-mend a trial of the best oil that can be obtained for use on the crank pin. Such oil should contain 50 per cent of pure sweet lard oil. If this fails, consult with the maker of the engine or some experienced ngineer as to the condition of the wrist and boxes.

(4890) B. A. H. asks how to proceed to pull down the standing walls of a large three-story brick building, that has the inside burned out, in a way to save the most brick. We have a building to wreck of that kind in Hampton, and I will be much obliged to you if you will answer this through the Scientific American. A. To pull down the walls of a burned building, pass a laws and practice on both continents, and to possess rope at least 1 inch in diameter over the wall, which can be done by throwing a lanyard over the wall, or, if too synopsis of the patent laws of the United States and all high, start with a strong string tied to a stone, when the lanyard can be drawn over and the rope following. Fasten one end of the rope at the bottom of the wall through a window or by breaking a hole through the wall, then carry out the other end of the rope to a safe distance and as many men as can man the rope commence to rock the wall by all working in unison, when in a few minutes the wall will tumble. This can be repeated on all the walls, outward or inward, as convenient.

(4891) T. A. S. asks for a receipt of process of soldering aluminum to brass or other metals. A For soldering aluminum, the surfaces to be soldered should be scraped clean and covered with paraffin as a flux, then coat the surface with a solder made of zinc 5 parts, tin 2 parts, lead 1 part, using a hot soldering copper charged with the alloy. Then put the parts together that are to be united and flow the above alloy or pure tin through the joint, as in the common method of soldering, using paraffin as a flux.

(4892) J. J. asks the actual height the Lick Observatory is above the surrounding country. A friend of mine had an argument with me about looking through a brick. I claimed it was done by reflection. He said the reason you could see through it was on account of its being porous. He said he saw through the brick by looking into one of those machines they have on the street. A. The Lick Observatory is 4,302 feet above the sea. The surrounding country is of mountain peaks of about the same height. Your friend looked around the brick, as you claimed.

(4893) C. N. H. asks to which class of levers an oar belongs. I hold that it is second class, that the boat is the weight, the water the fulcrum, and that the weight is attached between the fulcrum and power. A. The oar is a lever of the secondorder, as you describe.

(4894) E. T. S. says: I want to finish a guitar, and would like to know of some good polish, that has no oil in it, that I could use for that purpose, and what would be the best way to bend rosewood or mahogany without breaking or splitting? A. For guitars use the same varnish as for violins, made by dissolving 2 ounces sandarac gum, 1 ounce mastic gum, dissolved in 36 gill turpentine and 1 pint 95 per cent alcohol. Steam the wood before bending.

(4895) D. S. N. asks : At what speed can a fly wheel 3 feet in diameter, 6 inches wide on face, and rim 1 inch thick, be run with safety? Will the strain be less on a larger wheel, provided the speed of the rim is the same? A. Your 3 feet fly wheel, if properly made, can run 600 revolutions per minute with safety. The strain is equal with equal rim velocities for any size. See SCIENTIFIC AMERICAN SUPPLEMENT, No. 891, on centrifugal force in fly wheels, 10 cents mailed

(4896) C. M.—The phenomena that you describe is a halo, corona, and sun dogs, familiar to observers in Europe and America. 'The principles apper taining to the reflection and refraction of sunlight during certain conditions of the air as to moisture is well known and described in works on meteorology.

(4897) C. T. asks how to take out scratches on a plate glass. The glass is used for blue printing and has been scratched by a diamond. A. A. diamond scratch cannot be taken out by the ordinary polishing process. You might try rubbing the scratches With a piece of soft cork and ronge wet with water.

(4898) J. B. U. asks how many cubic inches there are in a bushel heaped measure? struck bushel is 2150'42 cubic inches. A heaped bushe has no meaning without full dimensions

(4699) I. M. A. asks: How can plaster of Paris be prepared so that a quantity can be mixed and not set quickly? A. Mix the plaster with fine cream lime, such as used for hard finished walls. Equal parts or variable, according to the time required for setting. Whiting and white chalk also make a good mixture to

(4900) A. B. writes: The iron gas pipes that we use here to deliver the water from the city water works reservoir (200 feet head) rust very much. Is there any thing that can be painted on or the pipes dipped in that will make them last longer and not hurt the water? There used to be advertisement in your paper of rustless pipe, but don't see it of late. Was it a success or failure? largely used to prevent rusting. There is still one or two companies treating iron pipe with the Bower Barf process, one of which is called the Bower Barf Rustless Iron Co., 31 Nassau Street, New York. Of all the methods, than 8 inches thick, well made to prevent the strong cold there is probably none so largely in use as the galvanizing of iron pipe for water service. Galvanized iron pipe is on the market everywhere, and is the most convenient with headers lapping on the outer wall at short intervals to procure and use. It is perfectly safe as a sanitary is not used for drinking.

(4901) A. A. asks if there is a rule of (4889) F. H. writes: I am running an some kind and what it is to find the output in volts of an armature of a dynamo of under 1 horse power, or 746 watts, when you know the length of each coil of wire on the armature. A. For a drum armature allow 2 feet per volt and for ring armatures allow 3 feet per volt.

Replies to Enquiries.

The following replies relate to enquiries published in the Scientific American, and to the numbers therein

(4055) X. Y. in query 4655 asks for some thing to soften glass so as to bore holes in it with an awl. I would recommend his trying the following: Make a solution of camphor in turpentine, using all the camphor which the turpentine will dissolve. With this I have bored holes with a common rat tail file. Roll the file be tween the hands and be sure that the glass lies on a per fectly level surface. A. F. Kingsley, Leonidas, Mich.

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April 4, 1893,

AND EACH BEARING THAT DATE

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49 61 74	Ironing table, M. M. Smith. Jack. See Builder's Jack. Wagon Jack. Jail lattice or opening, W. S. Hull. Jewelry pins, etc., fastening for, A. Luthy. Joint. See Boardsiding joint. Rail joint. Union joint.	494,924 494,583
00 73 10	joint. Joint for bar structures, J. W. Campbell	494,7 33
94 70 17	Journal bearing, T. A. Richards	494,671 494,594 494,555
9 5	Label cutting and nacking machine W. L. Zim-	494,554
83 19 22 77	mer. Lace fastening hook, Moschel & Koch. Lader or scaffold support, swinging step, T. Kally	494,616 494,766 494,821
25 08	Ladder or scaffold support, swinging step, T. Kelly Lamp, central draught, W. C. Homan	494,868 494,862
04 : 62 80 :	Kelly. Lamp, central draught, W. C. Homan. Lamp extinguisher, automatic, J. T. & J. Paul. Lamp, vapor burning, F. Rhind. Lamps, cut-out for Brush, Adair & Klewer. Lamps, draught tube for central draught, W. C.	491,935 494,938 494,935
77 73 31	Homan, magic, C. Goodyear, Jr. Lantern lens, magic, C. Goodyear, Jr. Lantern, magic, C. Goodyear, Jr. Lanterns, lime jet and hood for magic, C. Good-	494 ,863 494,855 464 ,854
44 32 19	Lanterns, lime jet and hood for magic, C. Good- year, Jr	494, 853
48 00	Lasts, machine for manufacturing boot of snoe, W. H. Austim. Lawn sprinkler, R. P. Creed. Lead packer, C. E. Dawson. Ledger or similar account book, J. W. Horne. Letter box, Cherot & Clouse, Leveling apparatus, B. G. Merrill.	494,771 494,847 494,979
08	Ledger or similar account book, J. W. Horne Letter box, Cherot & Clouse Leveling apparatus, B. G. Merrill	494,717 494, 9 76 494,876
22 29 66 32	Lithographic drawings producing k' k' Uaggan-	494,756 494,859
33 14	muller Loading or unloading machine, G. W. King. Lock. See Combination lock. Permutation lock. Lock, A. O'Keefę.	104 065
69 ' 07 31	Locomotive regulation, electric, R. M. Hunter Loom shuttle binder, R. Lund. Loom shuttle, self-threading, J. H. Nason Looms, take-up mechanism for narrow ware, E.	494,705 494,719 494,879
)5 29 01	Looms, take-up mechanism for narrow ware, E. Burgess Lubricator, N. & A. Drucbert	494,755 494,738 494,788 494,937
55 59	. Matte from slag, apparatus for separating, M. W.	
41 99 02	Iles. Matte from slag, process of and apparatus for the separation of, M. W. Iles. Measuring instrument, electrical, A. Koepoel. Measuring instrument, electrical, E. Weston. Metal articles, coating, F. J. Clamer. Metal articles, producing coated, F. J. Clamer. Metal articles, producing coated, F. J. Clamer. Net S. Very. Metal cutting machine, C. J. Huston.	494,571 494,570
رم ا	Measuring instrument, electrical, E. Weston	494,828 494,668 494,667
86 85	Metal bars or rods, means for manufacturing, T. S. Very Metal cutting machine, C. L. Huston	494, 6 59 494,864
85 93 4 9	Metal cutting machine, C. L. Huston. Metal show and cappling therefor, C. W. Dwelle. Metal shows E. T. Huston. Metal shows E. T. Huston. Metal shows E. T. Huston. Metal San Electrometar.	494,997 194,566 494, 9 75
86 76 86	Mica sheets, machine for making, E. Gengenbach Milk bat, D. W. Curtis.	494,714 494,916
87	Mill. See Cider mill. Mining machinery, electric coal, E. C. Morgan Motor. See Electric motor. Weight motor. Mowing machine, J. Sindelar Music leaf turner, K. B. Pierce Musical instrument, mechanical, T. Zollner Wittoglycerine shell. C. P. Winslow.	494,587 494. 9 00
24 49	Music leaf turner, K. B. Pierce Musical instrument, mechanical, T. Zollner Nitroglycerine shell, C. P. Winslow	494,690 494,664 494,686
50 23 40	Oil burner, H. Stacey.	494,707 494.992
19 . 44 :	Organ, church, R. E. Pilcher, up, E. B. Olmsted. Packages, machine for putting up, E. B. Olmsted. Packages, machine for putting up, E. B. Olmsted. Packing, gletallier ord, S. F. Long. Packing, piston rod, C. S. Dean. Packing, piston rod, C. S. Dean. Packing, piston rod, Dunshee & Chandler. Padlock, p. B. Anwake. Padlock, permutation J. Baron.	494,593 494,688 494,716
73 39	Packing, piston rod, C. S. Dean	194,818 194,980 194,703
13 69	Padlock, permutation, J. Baron. Pail attachment, J. Thomas. Pen. fountain, J. B. Woolfolk. 494.769.	494,541 494,826 494,77
63 38 58	Padlock, J. B. Amwake. Padlock, permutation, J. Baron. Pail attachment, Ø. J. Thomas. Pen, fountain, L. B. Woolfolk	494,8 6 7 494,8 0 7
08 30 65	Ding on gutton forming machine Wetness 6	194,626
56 36	Riley Planter, corn, L. J. Linsey Planter, seed, R. M. Phillips Planting and se eding machine, N. Raez Plaster, wall, J. Dim berger Poke, animal, J. E. Brown Police patrol system, J. H. Ring	194.936 194,926 194,592
39 57 78	Plaster, wall, J. Dirn berger. Poke, animal, J. E. Brown.	194,754 194,754 194,596
81 85 !	Pot. See Coffee or tea pot. Potate digger, T. N. Nichelsen Power. See Baling press power. Herse Pewer.	194,684
10 : 50 : 58 :	Prescious stones, dévice for polishing, 1. Grasset. 4 Press. See Bale press. Baling press. Pressure gauge, R. Kohlhepp	194,715 194, 6 78
33 10 44	Poke, animal, J. E. Brown. Police patrol system, J. H. Ring. Pot. See Coffee or tea pot. Potate digger, T. N. Nichelsen. Power. See Baling press power. Herse Power. Precious stones, device for polishing, I. Grasset. Press. See Bale press. Baling press. Pressure gauge, R. Kohlhepp. Prime mover, W. M. Jewell. Printer's galley, Near & Deeg an Printing attachment, paper roll, J. M. Frey. Printing press gauge, plate, C. A. Huston. Protector. See Face protector. Shrt bosom protector.	194,782 194,644 194,675
77 [†] 17	Protector. See Face protector. Shirt bosom protector. Pulp moulding machine. C. D. Ormiston.	194,789
12 59 75	Pulp moulding machine, C. D. Ormiston	194,970 194,956 194,927
87 77 84	Pump or ventilator, centrifugal, A. Kateau 4 Pump valve mechanism, steam, H. H. Westing.	194,89
59 53 39	bouse Pyroxyline compound, L. Paget. 494,322, Pyroxyline compounds and their products, mak- ing, L. Paget. 4 Pyroxyline solvents, making, L. Paget. 4	194,791
51 37	Pyroxyline solvents, making, L. Paget. **Rack. See Hay rack. Radi stor, G. W. R. Pollock. Rail clamp, F. H. Heath. Rail joint, F. H. Heath. Rail joint, A. Lawes. Railway curve, cable, E. S. Hildebrandt. Railway freg, J. Wood. Railway freg, J. Wood. Railway gravity, W. R. Rightor. Railway tie plates, making, B. Reece. Railway track, C. Kopcke. Railway track sleeper, C. J. Oliver. Railway track sleeper, C. J. Oliver. Railway track sleeper, C. J. Oliver. Railway track sleeper, C. J. Railway trolley, electric, E. Martyn.	194,888 195,001
04 30 80	Rail joint, F. H. Heath	195,002 194,680 194,635
15 24 75	Railway frog, J. Wood	194,768 194,595 194,692
50 31	Railway track, C. Kopesse Railway track sleeper, C. J. Oliver	195,004 195,721 194,897
52 54	Rake, R. J. Schneider	101,001
99	rogulator	194,909 194,567
50 41 99	Road machine, J. E. Wallis Rolling machine, metal, E. T. Horner Rolling machinery, metal, E. H. Stery Rolling mills, tool for manipulating the overfeed of, W. Wallace Room for use in symbolic exercises, portable, J.	194,945
36 98	A. Gorman. Rowing gear, W. Boardman. Rubber boots, machine for finishing boot-tree legs for, W. H. Austin	194,857 194,948
00 51 21 53	legs for, W. H. Austin	194,834 194,934 194,598
53 54 52 94	Safety switch J. W. Mundy Sandal, G. H. Russell. Sash balance, F. N. Kimball. Sash fastener, J. H. Chamberlin. Sash fastener, S. A. Crawford Sausage casings, preparing and holding, P. F. Turner	194,959 194,625 194,734
16 05 89 :		194,907 194,887
94 65 93 12	ning bam	194,735 194,552 194,685
12 89 :	Screw, drive, R. Linkletter 4	194,683 194,681
27 14 85	Seeds, apparatus for treating oleagmous or other, A. Paget	194.883
10	Compromeding hamming attachment M. M. fr	
99 [†] 95 95	L. E. Webber. Sewing machine, shoe, G. A. Stiles. Shaft hanger, A. H. Wagner. Sbears. See Metal shears. Shoet delivery and folding apparatus C. P. Cot.	194, 9 69 194,767
12	Sheet delivery and folding apparatus, C. B. Cottell	194,846 194.835
88 49	Sheet delivery and folding apparatus, C. B. Cottrell. Shelving, system of, C. Baum. Shingle educing machine, H. A. & B. U. Hills. Shirt tosom: protector, J. Teel. Shoe, Jonas & Braendly. Shoe fastening, E. F. Spicer. Shoe shank stiffeners, making metal. E. J. Watson.	94,656 194,812 194,825
15	Shoe shank stiffeners, making metal. E. J. Wat- son	194,609 194,601
14 · 23	son Shoe turning apparatus, L. C. Shaw Sifter, combined flour and meal, A. Brooks 4 Skiving machine, J. R. Scott 4 Shap book, barness, P. J. Miller 4	94,753 94,898 194,890
18 16 76	Socket wrench, H. P. Tyron. Sole cutting machine, Knight & Steele	194,994 194 ,784
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