Notes & Queries

E. will find details of the process of transferring engravings to glass on p. 298, vol. 31.—J. R. M. will find a rule for calculating speeds of pulleys on pp. 26, 73, vol. 25.—L. K. Y. can make a copper dip by the process described on p. 90, vol. 31.—G. H. B. will find formulæ for calculating the horse power of an engine on p. 16, vol. 29, and p. 54, vol. 30. For a process for making ether, see p. 34, vol. 31.—T. F. S. can calculate the supply of water through his pipes at any given head by the formulæ given on p. 48, vol. 29.—A. M. can refine rosin oil by the process given on p. 266, vol. 31.—C. H. F. can remove inkstains from woolen fabrics by the method described on p. 139, vol. 29.—A. S. T. can temper tools for cutting granite by the process given on p. 202, vol. 31.—W. H. will find a good recipe for mucilage on p. 202, vol. 31.—A. M. and H. A. do not send sufficient data.—G. H., J. F. S., and many others should refer to p. 48, vol. 29, as to friction of water in pipes.—C. F. S. will find directions for making rubber stamps on p. 156, vol. 31.—G. D. F. will find a method of softening paint brushes on p. 75, vol. 28. The manufacture of plaster of Paris from gypsum is described on p. 399, vol. 29.—C. A. S. will find the details of engineers' pay in the navy on p. 394, vol. 31.—J. W. will find how to ascertain the radius of an arc, when chord and hight are known, by varying the formula given on p. 139, vol. 31.—C. A. H. will find directions for making molds for small castings on p. 266, vol. 24.—J. B. can ascertain the lifting power of hydrogen by referring to p. 74, vol. 31, and can calculate accordingly for other gases.—G. F. L. will find the recipe for a hair stimulant on p. 363, vol. 31.

(1) C. C. S. asks: Which has the most strength, a ¾ inch bar of iron with a ⅜ inch hole in it, or a solid bar of ¾ inch iron? A. The solid bar.

(2) G. H. B. asks: 1. Are cannon ever molded of wrought iron, so as to retain their malleability? A. No. 2. Is wrought iron ever run into molds? A. No.

(3) V. L. W. asks: If an engine will do less work with 40 lbs. of steam, will it be better to carry just 40 lbs., or would it be better to let it go up to about 50 or 55 lbs., in order to have dry steam? A. If the steam of a higher pressure is wire-drawn down to 40 lbs., it is better to carry only the latter pressure; but in an engine with an automatic cut-off, the higher pressure would be the best.

(4) E. C. H. asks: What becomes of the exhaust steam when an engine running at full speed is reversed? Does not the engine pump air into the boiler? A. No.

Is it at all probable that, during the great conflagration of Chicago, providing the wind was favorable, that the smoke or scent of fire would be observed in the vicinity of Philadelphia? A. No.

Is the 1,000 foot tower all a hoax, or is to be erected for the Centennial? A. Address the designers.

What kind of joint should be used to close the blow-off port of a boiler by a cap, so to make the most serviceable and reliable joint? A. It is sufficient to screw on the cap.

(5) Z. says: I read in Ganot's "Physics," p. 390, that "as a gas is increased $\frac{1}{273}$ of its volume for each degree C., it follows that at a temperature of 273° C. the volume of any gas, measured at zero, is doubled. In like manner, if the temperature of a given volume at zero were lowered through 273°, the contraction would be equal to the volume, that is, the volume would not exist." It appears to me that, if the volume is doubled for every 273° of heat, it would be reduced one half for the same number of degrees of cold. Therefore at −273° the volume would be ½ of what it would be measured at zero. At −273°×2 it would be about ¼; at −273°×3 it would be ⅙. If this be correct, there appears to be no more reason for placing the zero of temperature at −273° C. than at any other point in the scale. A. If the gas is heated 1° C., its volume is increased $\frac{1}{273}$. Similarly if it is cooled 1°, its volume is decreased $\frac{1}{273}$; if cooled 2°, the volume is decreased $\frac{2}{273}$, and so on; so that on being cooled 273°, the volume is decreased $\frac{273}{273}$.

(6) C. F. O. Jr. says: A boiler whose dimensions are 9 feet long and 2 feet 6 inches diameter, with a steam dome 20 inches in diameter and 24 inches high, the shell being $\frac{5}{16}$ inch thick, and the heads ½ inch thick: made of the very best C. H. No. 1 Pennsylvania iron (except the sheets at the bottom half of the boiler and the back head, which are of Eureka or Sligo fire-box iron) is to be used for supplying a steam heating apparatus with steam at 20 lbs. pressure. It is to be tested to a hydrostatic pressure of 50 lbs. to the square inch. Is not this high pressure injurious, and will it not weaken the boiler materially? A. If the test is properly performed, by filling the boiler with water and heating it, we do not think that any material injury will result.

(7) M. H. K. asks: What is the simplest mechanism which I can use to turn a light machine, very rapidly if possible, using an air pressure from a fan? I would like to have the air enter at the center and discharge at circumference of the motor. A. Something on the plan of the Barker mill would no doubt serve the purpose.

(8) G. C. P. Jr. asks: What is the cause of the thumping noise in engines? A. Probably water in the cylinder and pipe.

(9) W. S. S. says: 1. I want to make a cylinder casting with ports about $\frac{1}{16}$ inch wide. What can I make the cores of so that I can clean the ports out easily? A. Of baked clay and sand. 2. Would it do to make the patterns as for large cylinders? A. Yes. 3. Would ports $\frac{1}{16}$ inch by 1⅝ inches be large enough for a cylinder 1½ inches by 3 inches? A. Yes.

(10) C. S. asks: I want to use 2 horse power; could I not get it from a 10 horse engine as cheaply as I could from a 2 horse engine? A. In some cases, the large engine might be run as economically as the small one, but in general, no.

What pay do locomotive engineers and firemen get? A. Engineers from $80 to $100 a month, firemen from $40 to $60.

How is acid made out of wood, for setting the colors in cloth? A. It may be prepared by treating nutgalls with ether.

(11) G. B. asks: Does it make any difference as to the safety of a bridge whether a train is run over it at the usual or at reduced speed? A. It is safer to cross the bridge at a reduced rate of speed.

(12) C. B. W. asks: 1. What is meant by a sniffing valve? A. A blow-through valve attached to an engine for the purpose of expelling the air. 2. What is an equilibrium valve? A. It is a valve which can be moved without being affected by the pressure of the steam. 3. What is a gridiron valve? A. A cut-off slide valve with several ports. 4. What is multiple gearing? A. A train of gear wheels.

(13) R. O. B. asks: Is the odontograph applicable to internal epicycloids as well as to all other forms? I have tried in vain to adapt it to the above-named gearing; and if it can be applied to wheels gearing internally, I want the process and also the radii of a pair of wheels so gearing, so as to occupy a space 24x16 inches and 1½ pitch. A. The odontograph can be used as you suggest. You will find an explanation of the method and a very good summary of the rules for proportioning wheels in the article on gearing in Appleton's "Dictionary."

(14) G. S. asks: How much will a brass tube expand in length when heated from the temperature of cold water (as it comes from hydrants) to that of boiling hot water, the tube being 1¼ inches in diameter and the bore 1 inch, and the tube being 1 foot long? How long a tube would be required to expand ⅛ inch in length? A. It will expand about $\frac{18}{10000}$ of its original length. From this you can readily calculate the requisite length. 2. What hard metal expands most, and how long a tube of that metal expands ⅛ inch in length? A. Zinc expands $\frac{29}{10000}$ of its original length.

(15) C. F. asks: Is there a rule by which I can ascertain the power exerted by a pump, say with three plungers of ⅞ inch diameter and 4 inches stroke, driven at the rate of 50 strokes per minute by a 6 inch belt? A. It must be determined by experiment.

(16) C. N. says: 1. I am making an engine, to run a jeweler's lathe, of 1 inch bore and 1½ inches stroke. Will such a cylinder be large enough, and will $\frac{1}{16}$ inch be enough cushion? A. The dimensions will answer very well. 2. At what point should steam be cut off? A. Three fourths of the stroke.

(17) N. A. J. asks: How can I ascertain the number of acres in a triangular piece of land? My method is to add the three sides together and take half their sum. From this take the three sides severally, and multiply the half sum and the several remainders together and extract the square root of the product. Am I right? A. This method is correct.

(18) A. G. C. asks: In a plain slide valve engine, is it better to have an extra large steam chest? A. No.

(19) H. M. asks: What is the weight of 1 cubic inch lead, wrought iron, and cast iron, respectively? A. Average: Lead 0·410 lb., wrought iron 0·282 lb., cast iron 0·261 lb.

Can you give me a rule for finding the side of an inscribed hexagon, also of an inscribed octagon? A. Side of hexagon = radius of circumscribing circle. Side of octagon = 0·7654 × radius.

What is meant by squaring the circle? A. Finding a square of the same area.

What is meant by the pitch of a propeller? A. See p. 240, vol. 31.

(20) H. H. asks: In what does indicated horse power of an engine differ from horse power? A. Indicated horse power is that due to the pressure of the steam, and includes the power required to overcome the friction of the engine. Effective horse power is the power available for useful work after deducting that consumed by prejudicial resistances.

(21) A. S. P. asks: 1. Does compressed air press equally in all directions? A. Yes. 2. What is the pressure per square inch of 1, 2, and 3 atmospheres respectively? A.

1 atmosphere, average,	14·685	lbs.	per	square	inch.
2	"	"	29·370	"	"	"	"
3	"	"	43·055	"	"	"	"

What is the weight of a cubic foot of water? A. A cubic foot of distilled water of maximum density weighs 62·425 lbs.

(22) M. E. H. says: I have kept a gun in such good order that I have worn all the varnish off. It is now so bright that, when the sun shines on it, it is almost impossible to shoot well with it. How can I revarnish it? A. Try chloride of antimony, mixed with olive oil, heating the gun barrel slightly.

(23) G. & Co. ask: What is the rule for gaging casks? A. The rule varies considerably, according to the kind of cask. You will find a good summary of rules and methods, in Haswell's "Mensuration." A general method is to ascertain the mean diameter by a number of measurements taken at close intervals, and then treat the cask as if it were a cylinder with this (mean) diameter.

(24) H. M. says: 1. Are half inch oak boards thick enough for the planking of a boat 20 feet long? A. Yes. 2. Would screws do in place of rivets, provided I countersink the head and put-ty them over? A. No. 3. Would an engine with a cylinder of 3 inches bore and 6 inches stroke, under 50 lbs. pressure of steam, be large enough to run the said boat? A. Yes. 4. What power would the above sized engine, running 300 revolutions per minute, give? A. Between 1½ and 2 horse power. 5. What sized screw would it take to run the above boat? A. One of 2 feet diameter and 3 feet pitch.

(25) G. E. P. asks: Who was Euclid? A. A celebrated geometer, who lived in Alexandria, about 300 B. C.

(26) W. M. W. asks: 1. Is the coating on enclosed pills all sugar? A. It is principally sugar. 2. What is mixed with sugar for coating pills? A. M. Garot recommends 10 parts gum tragacanth and 2 parts water. This is screened through fine linen, and mixed with 20 parts of sugar of milk. It is spread out in thin layers, and, when dry, pulverized. The pill is first dipped in water and then powdered over with the above compound. Pure gelatin is sometimes used for this purpose, also mixtures of gum, sugar, and starch. M. Calloud gives the following recipe, and the mixture is claimed by him to be less hydroscopic than any of the foregoing: Boil together 1 part flaxseed, 3 parts white sugar, and water sufficient to make a thick mucilage. Evaporate to dryness, pulverize, and dip the pill in on the point of a pin, to which is to be given a rotary motion.

(27) S. A. asks: Can a person be cured who is suffering from trichinæ? A. Yes, if discovered in proper time, that is, before the trichinæ have passed from the alimentary canal. 2. What are the symptoms? A. The symptoms are diarrhœa and abdominal pains, followed by muscular pains. "These symptoms occur within a few days after the ingestion of trichinous meat, that is, as soon as the young worms have been produced and become developed sufficiently to begin to migrate towards the muscles. It is not difficult to understand that the aggregated punctures of the mucous membrane by these parasites should occasion notable disturbance, when it is considered that the trichina which have been found to be contained in half a pound of meat may be sufficient to give birth in a few days to a brood numbering 30,000,000. It is stated that peritonitis may be produced by the passage of worms into the peritoneal cavity. The secondary symptoms relate to the muscles. Pains resembling those of muscular rheumatism are occasioned by the entrance of the trichinæ in the muscles. Certain of the muscles become contracted, in some cases, and their extension occasions great suffering. Constitutional disturbance, more or less marked, accompanies both the primary and secondary symptoms. The general symptoms are not unlike those of typhoid fever, for which the disease is liable to be mistaken. Oedema of the face or lower extremities is apt to occur, and sometimes anasarca. Sweating is generally prominent as a symptom. Death takes place in a certain proportion of cases, after a protracted period of suffering and exhaustion, being often preceded by coma. The danger, *cæteris paribus*, is proportionate to the abundance of trichinæ generated within the alimentary canal. If the number be not sufficient to cause death from the amount of local and constitutional disturbance which they occasion, recovery takes place very slowly, the illness lasting for several weeks or months. The trichinæ become encapsulated in the muscles, thereafter remaining quiescent, leaving the muscles more or less impaired. An accumulation of a larger number of cases than is at present practicable is necessary to furnish data for a complete clinical history of the disease, and for determining the relative proportion of deaths and recoveries." 3. Do not trichinæ sometimes infest fowls? A. We do not remember such an occurrence. 4. How long can a person live with them in his body? A. That depends upon the constitution. 5. Can the disease be taken any way but through the stomach? A. Not that we are aware of.

(28) G. R. L. C. asks: 1. What kind of a curve is the tractrix? A. A tractrix is a transcendental curve in which the distance between every point of tangency and a fixed line, measured on the tangent, is the same. 2. Is there an equation for the tractrix? A. If x and y are rectangular coordinates, and h the constant, the equation, referred to the center, is $x = h \times \log.\left(\frac{h+\sqrt{h-y^2}}{y}\right) - \sqrt{h^2-y^2}$

(29) S. and D. ask: Were potatoes first found in Ireland or America? A. The common potato is a native of America, and was introduced into Europe by Sir Walter Raleigh.

(30) R. J. K. asks: I wish to prevent pine logs from fouling the water in wells. Has burning or charring ever been tried for such a purpose? A. Yes. The plan is frequently used, and is often efficaceous.

(31) H. W. J. says: I have the following idea for a planer: On the sides of the lathe bed are bolted two arms, with a cross piece at the top, to which is attached the slide rest in a vertical (as compared with its usual) position, with the upper slide reversed; then a bed is made which moves on the lathe bed and is operated by a toggle arm connected at one end with the lower part of the head stock, the other end being connected with the traversing planer bed. Will this succeed? A. It will work very well. There is a somewhat similar planer in the market, which can be attached to a vise.

1. I wish to build a model engine of 2 inches stroke and 1 inch diameter. How would a boiler 1 foot high by 10 inches diameter, with 1 tube 3 inches in diameter, answer? A. The boiler is rather too small. 2. Of what thickness of metal should the boiler (of iron or copper) be? A. Make it ⅛ of an inch thick.

What is the plane line of a governor? A. The line joining the centers of the balls.

What books can you recommend on turning? A.

See "The Lathe and its Uses," and Knight's "Mechanism and Construction."

(32) N. N. B. asks: Does the north pole rise and the south pole sink from December 21 to June 21 (thus giving us the seasons), and *vice versa* from June 21 to December 21? Cannot it be properly said that the earth has three motions, namely, its diurnal rotation, its annual revolution, and its polar inclination? A. The earth's equator is always inclined 23° 17′ to the plane of its path round the sun. To illustrate this, make two balls of wood or cork representing earth and sun. Put a wire axis through the earth at an angle of 23½° into the pivot of a hanging weight, fastened to a stick which turns in a vertical plane around the sun. The action of gravity will then keep the cork earth's axis continually pointing in the same direction.

(33) F. G. S. asks: How can I make a white paint that cannot be softened by alcohol? A. Mix any powdered white pigment with water glass.

Is there an optical instrument in use by which I can measure distances at a glance? A. Take a spy glass, a wooden rod, and a fat spider. Toss the spider from hand to hand to make him spin. Wind the thread spirally on a forked stick or wire. Gum two parallel spider lines on a ring of metal or card board, and place this ring in the focus of the terrestrial eyepiece. Mark the space included between the spider lines on the rod, 100 feet distant. Then as the space on rod included between the spider lines at 100 feet is to the space included at an unknown distance, so is 100 feet to the distance required. Simpler methods are described in Wingate's "Manual of Rifle Practice."

(34) A. F.—The sun's amplitude at summer solstice depends upon the obliquity of the ecliptic, and not upon his distance, as you suppose.

(35) A. S. asks: Is there any means by which I can render canvas or heavy muslin airtight, so as to make a pair of bellows? A. Yes. See p. 379, vol. 30. In the end, leather would be much the cheapest.

(36) J. F. and others ask, in reference to S. E. S.'s query as to where he would arrive if he took a northeasterly course: Will you please explain how a man would arrive at the pole by traveling this course? It is our opinion that he would not, but would travel in a spiral direction, approaching nearer and nearer, but never reaching the pole. A. S. E. S. would come nearer to the pole than any of the north pole expeditions, because if he kept sailing he would be nearer than any conceivable distance; and unless we suppose his ship to be an inconceivably small one, some part of it would eventually reach the pole.

(37) P. M. C.—The moon's axis, during the eclipse, was very much inclined to the horizon, the latter being inclined to the equator, besides the inclination caused by the obliquity of the ecliptic and the inclination of the moon's orbit. These three causes, with the moon's motion from west to east, account for all correct observations.

(38) F. A. W. says, in reply to S. C. H., who asks us to the philosophical reason that a circular saw cuts better at a certain speed than it does if run faster: Circular saws of over 40 or 50 inches in diameter are or should be hammered to run at a certain speed. This is more important when the speed is as high as from 700 or 900 revolutions per minute. If a saw is so hammered as to do good work at 300 or 400 revolutions per minute, it will not do as good work at 900, for the reason that the high speed expands the outside or rim, causing it to dish, or "flop around," as sawyers sometimes express it. In such cases, and when it is inconvenient to reduce the speed, it will be necessary to guide the saw out of the log so as to cause the central part to rub against the log enough to heat it slightly, thus expanding the portion that needs hammering. An expert sawyer can in this way manage indifferently well, though at an expense of considerably more power. A largesaw, to run well at high speed, should be hammered in the center part until it is slightly dishing, or, as it is variously expressed, "loose at the eye," or "rim-bound." It may be loose at the eye when it is the reverse of rim-bound, namely, too open at the rim, which is the most frequent trouble with such saws, and they all become so eventually from use, and then they should be re-hammered. I would not advise any one that has not had previous experience to undertake to hammer one, for the operation is a very delicate one, and requires considerable skill. A. We have known of several cases in which large saws seemed to do equally well under considerable changes of velocity, and we imagine that saws are quite as often run at different speeds as at those recommended by the makers. Within limits, however, our correspondent's views are quite correct.

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

A. J. R.—It is impossible to say whether a stone is lithographic, or suitable for printing from, from a small fragment.—H. C. T.—We have examined your queer specimen, but must request, before answering your questions, to know whether it is a manufactured or a natural product. How and where was it found? Is it genuine? If natural, has anything been done to alter it?—J. H. A.—The specimens contain iron pyrites in quartz.—We have received two specimens in an envelope, without any letter. No. 1 is magnetic pyrites or pyrrhotine, containing 40 per cent of sulphur and 60 per cent of iron. No. 2 is a mixture of small scales of black mica, carbonate of lime, and a rock composed of silex, iron, and magnesia.

J. C. C. asks: If it is high water at the Battery, New York city, at noon, how high will the tide be at Albany?—A. B. asks: What is the source of the disagreeable odor of corduroy, when that fabric becomes wet from any cause?—J. H. M. asks: How is the oil finish put upon melodeons and sewing machines, and what kind of oil is used?

COMMUNICATIONS RECEIVED.

The Editor of the SCIENTIFIC AMERICAN acknowledges, with much pleasure, the receipt of original papers and contributions upon the following subjects:

On the Crystallization of Carbon. By C. T.
On Hydrophobia. By C. R.
On a Suicidal Scorpion. By J. B. T.
On the National Currency. By ——.
On Fruits and Electricity. By N. B.
On a Withdrawn Charge. By C. G. F.
On Gas Machines. By W. H. E.
On Smoke Consumption. By O. F. M.

Also enquiries and answers from the following:
S.—L. W.—J. B.—M.—H. V. M.—T. A. J.—A. J. N.—W. H. N.—H. T.—J. T. N.

HINTS TO CORRESPONDENTS.

Correspondents whose inquiries fail to appear should repeat them. If not then published, they may conclude that, for good reasons, the Editor declines them. The address of the writer should always be given.

Enquiries relating to patents, or to the patentability of inventions, assignments, etc., will not be published here. All such questions, when initials only are given, are thrown into the wastebasket, as it would fill half of our paper to print them all; but we generally take pleasure in answering briefly by mail, if the writer's address is given.

Hundreds of enquiries analogous to the following are sent: "Who sells the best garden seeds? Where can tobacco paper for fumigating greenhouses be obtained? Are there any agencies for imported raw silk in New York city? Who publishes the best work on electroplating? Whese book on mechanical drawing is considered the best?" All such personal enquiries are printed, as will be observed, in the column of "Business and Personal," which is specially set apart for that purpose, subject to the charge mentioned at the head of that column. Almost any desired information can in this way be expeditiously obtained.

[OFFICIAL.]

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Granted in the Week ending

December 22, 1874,

AND EACH BEARING THAT DATE.

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Harvester finger bar, R. Dutton 158,051
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Lock for furniture, etc., H. Willard 158,160
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Mat wooden, W. Groat (r) 6,186
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Organ treadle, W. Murphy 158,000
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Roofing compound, H. W. Johns (r) 6,190, 6,191
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Saw mill, A. R. Ehlers (r) 6,185
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Scissors, sewing machine, S. L. Fawcett 158,054
Seeder and cultivator, W. A. VanBrunt 158,152
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Separator, grain, W. F. Pumphrey 158,122
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Sewing cabinet, S. R. Ruckel 157,932
Sewing machine treadle, E. Pairo 158,11
Sewing machine tuck creaser, Sampson & Muther 157,9335
Shingle machine, W. A. Durrin 158,050
Shingling bracket, J. M. and C. T. Schramm 158,131
Shoal indicator, W. R. Rightor 157,930
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Shoe knife, M. A. Tyler 157,948
Shot, machine for roiling, W. A. L. Kirk 157,995
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Spinning frame, J. M. Stone 158,143
Stamp, rotary chromatic band, C. E. Baldwin 158,014
Starch polish for linen, M. A. Marney 158,104
Steering wheels, brake for, P. M. Kinsella 158,091
Stills, manufacture of oil, C. Cunningham 158,042
Stove, G. W. Walker 157,950
Stove, cooking, E. O. Brinckerhoff 158,023
Stovepipe elbow, S. Smith 158,005
Stove-lining composition, L. R. Witherell 157,955
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Stud for wearing apparel, D. Heaton 157,914
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Telegraph wire, pipe-encased, S. R. Honey 158,086
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Telegraph transmitter, automatic, C. Wheatstone 158,157
Thill coupling, O. E. Mallory 158,102
Thill coupling, C. J. Sanford 157,974
Tobacco, treating, J. Barton, Jr 158,015
Toy puzzle box, P. McGurk 158,106
Trap, animal, G. Richardson 157,973
Trunk fastener, J. J. Cowell 158,041
Trunk, portable, M. Fletcher 158,056
Tumbling rod covers, J. Heuermann 158,080
Type writer, H. R. M. J. Hansen 158,071
Umbrella runner, J. J. Higgins 157,915
Vacuum pan, J. Colwell 157,987
Valve, check and throttle, Smith & Osborn 157,941
Vehicle axle box, P. B. Cunningham 158,043
Vehicle lubricating axle, G. H. Rugg 158,003
Vehicle spring, W. B. Whitney 157,952
Ventilator, car, F. N. Clark 158,034
Violin, J. H. Payne 158,116
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Wagon running gear, J. Skeen 158,139
Wagon top, adjustable, E. M. Saunders 157,975
Washing machine, T. E. McDonald 157,922
Watch case lifting spring, C. L. Thiery 157,914
Watch center pinion, D. Gruen 157,919
Water wheel, turbine, O. N. and A. J. Angell (r) 6,178
Water wheel, turbine, S. T. Teachout 157,147
Welt trimmer, M. A. Tyler 157,947
Window screen, L. S. Thompson (r) 6,179
Wrench, D. McFarland 157,968
Yokes, tongue ring for neck, S. D. Bingham 158,018

EXTENSIONS GRANTED.

30,910.—PAPER FOLDER.—C. Chambers.
30,925.—BUTTON HOLE CUTTER.—F. C. Leypoldt.
30,929.—TOBACCO CUTTER.—W. H. Pease.
30,931.—SPINNING FRAME CYLINDER.—R. Plews.
30,961.—MOWING MACHINE.—J. Ten Brook. Two patents.
30,971.—WATER WHEEL.—N. Johnson.
30,993.—WOOD PLANING MACHINE.—H. D. Stover.
30,001.—STRAW CUTTER.—W. Gale.

DISCLAIMERS FILED.

30,925.—BUTTON HOLE CUTTER.—F. C. Leypoldt.
30,961.—MOWING MACHINE.—J. G. Dunbam.
30,993.—WOOD PLANING MACHINE.—H. D. Stover.

DESIGNS PATENTED.

7,937.—CARPET.—R. Allan, Yonkers, N. Y.
7,938 and 7,939.—CARPETS.—J. Barrett, New York city.
7,940.—WALLPAPER.—J. O. Craig, Philadelphia, Pa.
7,941.—VASE.—W. G. Fletcher, Boston, Mass.
7,942.—SARDINE BOX.—A. Godillot, New York city.
7,943.—PICTURE BORDER.—W. T. Murphy, Brooklyn, N. Y.
7,944.—COFFIN HANDLE.—W. M. Smith, W. Meriden, Conn.
7,945 to 7,947.—CARPETS.—T. J. Stearns, Boston, Mass.
7,948.—GLASSWARE.—J. Bryce, Pittsburgh, Pa.
7,949.—SMOKING PIPE.—A. L. Dickinson, Englewood, N. J.
7,950 to 7,953.—OILCLOTHS.—C. T. Meyer *et al.*, Bergen, N. J.
7,954 and 7,955.—STOVES.—N. S. Vedder *et al.*, Troy, N. Y.
7,956.—PIPE STEM.—J. W. Fielschmann, W'msburgh, N. Y.

TRADE MARKS REGISTERED.

2,128.—FEATHER TICKING.—Bliss *et al.*, New York city.
2,129.—METALLIC POLISH.—D. D. Cornell, Hyde Park, Ill.
2,130.—DRAWERS.—J. J. Fitz Patrick, Philadelphia, Pa.
2,131.—FLOUR.—Lyon & Co., Boston, Mass.
2,132.—STREET LAMPS.—J. W. Bartlett, New York city.
2,133 to 2,135.—SPICES.—E. R. Durkee & Co., N. Y. city.
2,136.—SAUCES.—Johnson *et al.*, New Haven, Conn.
2,137.—BOOTS.—S. W. Rosenstock & Co., S. Francisco, Cal.
2,138.—BAKING POWDER.—D. S. Thompson, Chicago, Ill.
2,289.—GAUNTLETS.—Wade & Shults, Johnstown, N. Y.
30,961.—MOWING MACHINE.—J. Ten Brook.

SCHEDULE OF PATENT FEES.

On each Caveat $10
On each Trade mark $25
On filing each application for a Patent (17 years) $15
On issuing each original Patent $20
On appeal to Examiners-in-Chief $10
On appeal to Commissioner of Patents $20
On application for Reissue $30
On filing a Disclaimer $10
On an application for Design (3½ years) $10
On application for Design (7 years) $15
On application for Design (14 years) $30

CANADIAN PATENTS.

LIST OF PATENTS GRANTED IN CANADA, DECEMBER 11 to DECEMBER 23, 1874.

4,187.—W. M. Conger, Newark, Essex county, N. J., U.S. Improvements in metallic shields and supports for use under stoves and analogous articles of metal, and in machines for producing such metal work by spinning, called "Improvements in Metallic Shields and Supports for Use under Stoves and Analogous Articles of Metal, and in Machines for Producing such Metal Work by Spinning." Dec. 17, 1874.

4,188.—S. G. Smith, Hollis, York county, Me., U.S. Improvements in machines for removing snow from railroads, called "Smith's Improved Machine for Removing Snow from Railroads." Dec. 18, 1874.

4,189.—A. Webber, Detroit, Mich., U. S., and A. McCormick, London, Ont. Improvement in carriage springs, called "Michell's Carriage Spring." Dec. 18, 1874.

4,190.—W. Irvine, Rochester, Monroe county, N. Y., U. S., and S. Trees, Toronto, Ont. Improvements on horsecollars, called "Irvine's Adjustable Horse Collar." Dec. 18, 1874.

4,191.—G. D. Chisholm and S. Douglass, East Flamboro, Wentworth county, Ont. Useful device for preventing