WHITE'S WASHING MACHINE.

The engraving is a perspective view of a machine which combines the operations of washing and wringing clothes, or which can be used for either of these purposes separately. It pliant and true surface is presented to act upon the work was patented through the Scientific American Patent Agency by Cassius A. White, of Fairfield, Vt., Feb. 26, 1867.

The apparatus is a rectangular box raised on legs to a hight convenient for operating, the front legs of which are furnished with castors or trucks by which it can be readily moved from place to place about the house, being wheeled in the manner of a barrow by means of pivoted handles at the rear end-not shown-which may be swung out of the way when the machine is in operation. Between upright standards forward of the center are hung two frames, the outer one, A, being piv-



oted to the uprights by a round bar, B, which serves also as a guide to the lower portion of the inner frame, C, in performing a vertical sliding motion, by means of slots in its side bars. The bar, D, is secured to the frame, C, and its projecting ends traverse in slots in the side bars of the frame, A. Two motions are given to both these frames by means of the crank shaft, E, which passes through a box in the ends of the cross bar near the top of the frame, C, and is driven by the fly wheel and crank, F; one is a reciprocating motion to the frame, C, and the other a swinging motion to both C and A. The lower cross bars, G, of the frames have faces of rubber, between which the clothes pass and by which they are cleansed from dissolved dirt. These faces of rubber are adjusted near together or apart by a screw, H, which depresses or raises the frame, C, on the shaft, E. These constitute the washing arrangements; but the washing frames may be driven by the crank, I, while the wheel, F, may be placed upon the driving shaft, J, of the wringing rollers, as desired.

These wringing rollers are of the ordinary construction, geared in the usual manner, and driven by the pinion attached to the fly wheel, F, through the medium of the large gear, which is attached to the upper roller. There is a device for passing the clothes as they are washed to the wringer by means of belts, K, which traverse through suitable guides over a series of upper and lower rollers, so arranged that the reciprocating motion of the washing frames delivers the clothes to the belts, by which they are passed between the wringing rollers. The motion of the rollers carrying the conveyor belts is assured by gears connected with the prime mover. F.

Although, from the description, the machine may appear complicated, it is in reality very simple, and there can be no straining or pulling of the clothes. When one portion of a piece needs more rubbing than another it can be done by adjusting the pressure on the rubbers or turning the crank, F, back and forth. The compression of the wringing rollers is regulated by the lever, L, which turns a shaft having a cam on each end to raise the boxes of the lower roller.

New Species of Swindling.

A new and successful kind of swindling has lately commenced, and been carried to such a profitable extent that a party of swindlers who have been brought to trial at Middletown, and Minisink, N. Y., had, as it is supposed, realized \$150- the lengths of the sections, thus giving a number of grades 000, twenty-five to thirty wagons, and from sixteen to twen! of hight to the sash. It is so cheaply and easily made and

Scientific American.

ENDLESS RUBBER POLISHING BELT.

The emery or other polishing material is applied to this belt in the usual way. By the use of this belt a perfectly which is so desirable and hard to secure in the use of leather belts. When much worn, it can be placed in water to soak off the old coating without injury, and by simply wiping the belt dry it will be ready to receive a new coating without the llability of the joints coming apart and without waiting for it to dry, as with leather belts. When compared in cost, efficiency, and durability with leather belts, the rubber polishing



belt is found to be far superior. These polishing belts are al ways perfectly flexible, pliant, and free from unevenness of sur face. After repeated coatings of polishing material have been worn down and removed their unyielding property remains perfect, without perceptible change. By their use the work is better performed than by the use of the leather belts. Patented March 26, 1867. All communications should be addressed to Jeremy W. Bliss, No. 240 Main street, Hartford, Conn.

GRISWOLD'S SUPPORT FOR WINDOW SASHES.

The engraving shows a very simple device for holding the upper sash of a window in any position desired for ventilat ing a room. Springs and catches are more or less liable to become deranged, and weights, without some fastening, are temptations to children. The arrangement is a series of bars of differing lengths, hinged one to the other, and the lower one hinged to the window sill. These bars are of such a length, width, and thickness that when extended they fill the space in the window frame under the sash in which the sash slides. In the engraving the support is drawn out of the re cess to show it, but in use only one or more of the sections are



turned down, while the remainder are in an upright position. When fully extended and in place, these bars are supports to the sash when closed, and when shut down on the sill the sash may be entirely lowered. One of these may be applied to each side of the window, each differing from the other in

that the power to maintain the light to that of a standard candle for one minute is equal to the raising of a weight not exceeding thirteen pounds, one foot high in that time. I have arrived at a similar result from a reduction of recorded experiments made by Müller, Ritchie, myself, and others. I am satisfied that, where an electric light of not less than eight hundred to one thousand candles is produced, under proper management, the power required will not greatly exceed 15 foot-pounds per minute per candle. For smaller amounts of light the power required will be greater.

Now let us inquire what amount of electricity is the equivalent of, or is represented by 15 foot-pounds per minute. If 100 feet of No. 18 pure copper wire be coiled into a helix and immersed in a pound of water, and if the ends of this wire be connected to the poles of one cell of the Grove battery (pint cup size as used in telegraphing), the temperature of the water will begin to rise at the rate of 1° F. in $9\frac{1}{2}$ minutes, or 0.105° per minute. Now if the temperature of one pound of water be raised one degree (Fah.) per minute, this effect will be the thermal equivalent of 772 pounds raised one foot high in space per minute; the heating effect then, of our Grove cell upon the water is the equivalent of $0.105 \times 772 = 81$ (call it 80) foot-pounds per minute.

It is well known that a galvanic battery will perform its maximum work when the external resistance which it encounters is equal to the internal resistance of the battery. I have found the internal resistance of the pint cup Grove cell to be equal, on the average, to that of 100 feet of pure copper wire, No. 18 size. Hence the maximum external effect of the ordinary Grove cell may be set down as the equivalent of 80 foot-pounds per minute, equal to the production of $80 \div 15 = 5\frac{1}{2}$ candle lights. I would not be understood as saying that this amount of light can be produced by a single Grove cell, but that 1,000 cells, if properly arranged, would be capable of evolving somewhat more then 5,000 candle lights from a single lamp.

With sulphuric acid costing 24 cents, nitric acid 10 cents, zinc 8 cents, and mercury 50 cents per pound, the cost of running 1,000 Grove cells one hour, while doing their maximum work, would be \$27.65. This would give for 5,000 candles a cost of about 5½ mills per hour per candle.

The cost of gas light per candle per hour would be about one mill, if gas costs \$3.25 per thousand cubic feet, and if one cubic foot per hour gives the light of three candles.

With the Smee battery, carefully managed, the cost of 5,000 candle lights would be about the same as with gas.

Let us now look at the cost of electricity as developed by the magneto-electric machine. The power expended on the machine is consumed in friction, in heating the wires, magnets, etc. On a well built machine which I examined in 1861. 1,100 foot-pounds per minute were required to keep the macnine in motion when the circuit was open, and the machine doing no work. But when the circuit was closed 3,200 footpounds per minute were required to maintain the same velocity of rotation; nearly all this excess of power (viz., 2,100 foot-pounds) was measured as electricity, about two thirds (say 1,300 foot-pounds) being expended internally, heating the coils and magnets, etc., and the balance, 800 foot-pounds, measured as external useful effect. Had the external resistance been larger, a greater proportion of the expended power would have appeared as useful effect. Suppose, however, that only 800 foot-pounds per minute could be utilized by this machine and used for illuminating purposes. This would be the equivalent of $800 \div 15 = 53.33$ candles, and the total power required (including friction, etc.) would be 3,200÷53·33=60, about sixty foot-pounds per minute per candle.

In the vicinity of Boston, power is furnished, per horsepower, at the rate of \$180 per year of 313 days of 10 hours

each, or at the rate of $\frac{\$180}{313\times10}$ = $\$0.0575(5\frac{5}{4} \text{ cents})$ per hour. If only one fourth of this power could be utilized as light,

 $\frac{33,000}{1000}$ = 550 candles would be the equivalent of one horse-

power, and would cost \$0.0575 + 550=\$0.0001046, about one tenth of a mill per hour per candle, being about one tenth the cost of gas light.

Let us for a moment take another view of the matter. The average hourly consumption of coal by a good steam engine may be set down at four pounds per hour per horse-power,= $(33,000 \times 60) \div 4 = 495,000$ foot-pounds from one pound of coal. Utilizing as electricity, and thence light, one fourth part of this, we get $495,000 \div 4 = 123,750$ foot-pounds, or as light, $\frac{123,750}{123,750} = 137.5$ hour candle lights from one pound of coal, 15×60

ty horses, before their arrest.

Proceeding to the country, the swindlers take different towns, and circulate among the farmers, to whom they offer patent rights of articles of ready sale. They represent the retail prices of such articles to be double or treble their cost to manufacture, and to show their confidence in the large profits that the farmers can make, they agree to sell the patent right for the note of the farmer, payable in one year. and that if he, the farmer, does not make profits, they will take back the right free of charge. If the farmer consents the swindler draws up the note, which the farmer signs, and in some cases, the swindler endorses the condition of payment upon its back.

When the parties separate, the swindler trims off the edges of the note with scissors, when the back separates from the front, the back having been neatly fastened to the front paper by mucilage upon the edges. Having thus rendered the note plainly negotiable, the swindler proceeds to the next farmer or merchant and gets it cashed, or gives it in payment for horses, carriages, wagons or other property, and then passes along to victimize another party. We hope the vagaoonds measure of power, viz., the foot-pound per minute. The exwill get their deserts.

attached that where more elaborate and costly appliances are not readily attainable it will commend itself to all. It was patented by Mrs. Ellen M. Griswold, Hagerstown, Md,, January 22, 1867, who may be addressed for further information relative thereto.

[For the Scientific American.] THE COST OF ELECTRIC LIGHT.

The time appears to be near at hand when the electric light will be used for a variety of purposes. It is worth our while to inquire as to its cost. 'The expense and inconvenience attendant upon the production of electricity upon a large scale has hitherto been an obstacle in the way of using the electric light, except for lecture rooms and a few other purposes. But the recent improvements in the construction of magnetoelectric machines and thermo-electric batteries have put it in our power to command the services of this beautiful illumin ating agent on any desirable scale of magnitude.

In order to examine the question of cost intelligently, let us periments of Mr. Julius Thomson, of Copenhagen. have shown 15×365×24×35 =1 5; 3: one year and five months.

through the agency of the steam engine and the magnetoelectric machine.

With the thermo-electric battery I have been able to develop 130,000 foot-pounds of electricity from one pound of 130,000 =144·4=to about 144 candle lights. coal= 15×60

There is still another point of view worthy our attention. Common gas coal will yield about ten thousand cubic feet of gas per tun. This, at three hour candle lights per cubic foot, would give (3×10,000)÷2,000=15 hour candle lights per pound of coal. About twenty-five cubic feet of illuminating gas weigh one pound. Hence one pound of gas, after it is made from the coal, will yield a light equal to that of a candle for seventy-five hours. One pound of pure carbon, wholly burned to carbonic acid gas, yields 14,500 units of heat, equal to $772 \times 14,500 = 11,200,000$, or $11\frac{1}{5}$ millions of foot-pounds of work: hence, were the total energy of one pound of pure carbon converted into light, refer both electrical and illuminating effects to the common it would be equivalent to one candle light for the time of 11,200,000

Scientific American.

LIFE-SAVING INVENTIONS.

To recapitulate: the gas made from one pound of coal would yield a candle light for fifteen hours; one pound of the gas would yield a light equal to one candle for seventy-five hours; but could all the energy in a pound of carbon be converted into light, it would be equivalent to the burning of a candle for 12,410 hours.

Thus it will appear that by our ordinary methods of gas lighting we utilize much less than one per cent of the energy stored in the coal. I think we may reasonably expect that electricity, as developed by the thermo-electric battery, the magneto-electric machine, or some still more efficient apparatus, will help us in some way to bridge the chasm between fifteen and twelve thousand hour candle lights from a pound Moses G. FARMER. of coal. Salem, Mass.

Correspondence.

The Editors are not responsible for the opinions expressed by their correspondents.

"Wirbel-Bewegung."

26

57

 $\frac{72}{73}$

133

MESSRS. EDITORS :-- Are you aware that smoke rings are frequently produced during the firing of light and heavy ordnance, from smooth bore as well as from rifle cannon, and from 3-inch to 15-inch calibers? Sometimes they proceed from the vent, but I think the more beautiful ones are from the muzzle. They appear of a double character, a ring within a ring, and always remind me of the rings of Saturn. During the firing of the 8-inch rifle in April last at this post, one stormy day I observed a double smoke ring unravel itself from the clouds of smoke. It gradually ascended, moving with considerable velocity against a head wind in line of fire, and continued to rotate distinctly for several minutes, expanding by degrees and throwing off a stream of smoke from the outer edge. The space within the inner ring on this as on all occasions was free of smoke. Meantime the general smoke of discharge was blown quickly to the rear and over the ramparts, being a very unexpected sight. I called the attention of the Captain of Ordnance and of others to the fact, that the smoke rings on occasions moved against a head wind.

Prof. Nichol, author of the "Architecture of the Heavens," puts forth the theory that the gaseous heavenly bodies may throw off rings while in the nebulous state, being a result of the combined actions of contractions and rotations. He thinks the rings may break up and form satellites. He says, "were an elastic belt placed on a wheel and driven with great velocity. the belt would stretch and rotate by itself, and would continue so doing were it not for the earth's gravitations; but it appears now evident that rings of nebulæ may be formed under other conditions. Т. Т.

Fortress Monroe, May 13, 1867.

Russian America.

For a distance of nearly 1,000 miles, says a writer in the New York '*limes*, the whole coast is thickly studded with islands of all sorts and sizes. The inland waters formed by these islands are as calm and unruffled as a mill pond. In the summer season it is a paradise for those who have no other goal in view than to exist in a free, untrammeled atmosphere, skim tranquilly along the quiet waters in light canoes, and at night pitch their tents on the nearest island. There is always plenty of game to be found. Besides water fowl of every description, the larger islands mostly abound with elk, deer, black bear and grouse.

The main land presents a series of inlets and arms of the sea, running far into the heart of the lofty coast range. There is scarcely an acre of decent farming land to be seen; in fact, we may travel a long distance and not discover a spot level enough to build a good sized house on.

The Stiken River is the fourth in volume and size on the west coast of North America, ranking after the Columbia, the Colorado and the Frazer. It empties itself by three channels into the Pacific, 70 miles below Sitka, and in about 57 degrees north latitude. It took us four and a half days to ascend 170 miles, while in descending the same distance the vessel made the journey in less than sixteen hours. For the first hundred miles or so, the river is walled in by huge mountains with peculiarly sharp volcanic cones or peaks, rising one above the other and covered with snow. The scenery is of the grandest and most stupendous nature, and our little steamer, staggering and trembling against the swift current of the river, seemed a very cockle shell in the presence of these vast and silent creations of the Almighty. The most extraordinary natural feature that attracted our attention was a glacier or field of blue ice, about 40 miles up, on the north bank of the river. It is about 150 feet high on the river, and extends along the edge of the stream for eight miles, running back into a valley among the mountains as far as we could see. A cañon was finally reached, which baffled all attempts to pass through or around it although several bold miners lost their lives before their companions gave up the hopeless effort to navigate the canon in their canoes. A land journey of 100 miles failed to find any practicable approach to the river, which was left unexplored farther.

The labors of the Commissioners are at last finished, the Board having adjourned on Friday, May 24. It will necessarily be several weeks, however, before their voluminous report will be ready for publication. Below we give our readers a full list of all the inventions presented for examination, kindly furnished us by the secretary of the board, Mr. W. A. Duphy. This, we may remark, is the only complete list yet published :

Sheet anchor. Water gage. Fire exhibiting fillder. Mater cask and hir toat doublined. Mode of scaling bollers and tubes. Lowering, detaching and davits. Detaching apparatus. Apparatus for unlashing boats. Improvementin steering apparatus. Gage cocks, wa ter gages, etc., comb. Steam whistle. Steam whistle. Starling ape. Shift tubiokupe eye bolt. Stearing age. Shift tubinokupe eye bolt. Method of anchoring vessels. Steam gage. Sheet anchor N. Ulroud. M. V. & S. C. Nobles. John Mitchell Steam gage. Detaching apparatus. Detaching apparatus John Mitchell.
 E. Goulard.
 Smith & Henis...
 Smith & Henis...
 Smith & Henis...
 A. Hicks
 Bisbee & Co...
 R. H. Dale
 S. Barms
 Geo. W. Lamb.
 C. W. Copeland.
 D. P. Bavis
 Javisson E. Cole.
 M. T. Davidson &
 C. G. M cinhardt. Detaching apparatus. Hydrostatic unsubmersible vessel. Magnetic water gage. .lacket for same. Steam steering apparatus. .Anti-incrustator. Regulator for propellers. .Low water detector. Meralle fife budy and life raft. .Jockat 'silve'. .Par suite indiciter. .Character of ocean water. .-team gage. -team gage. Life boat, lowering device, and mod & Co . Life boat, lowering device, i of constructing vessels. .Low water reporter. .Dunler slide valve, .Dunler slide valve, .Dife apparatus. .Depression of water. .Life Barge. .Detaching apparatus. .Safety valve. .Life poat. .Life poat. .Boiler. .Detaching apparatus. ...J. F. Brown E. D. Taylor. ...Wilson & Hauer (Louis Bauhelfer W. C. Marshall C. F. Matorana ...Thomas W. Roys. Thomas W. Roys... N. B. Allen James McMurchy... J. R. Vanghan Charles Rackett. J. Harrison Moore & McFarland Betore of Cornero . Life preserver. . Bile boak. Boiler. . Detaching apparatus. . Detaching spinaratus. . Detaching Sails. . Detaching Sails. . Detaching apparatus. . Fro eller. . Detaching apparatus. . Life boat and trunk combined. . Fro eller. . Beat and arb brake. . Life boat and raft. . Self acting bo at hook. . Life preserver. . Boat lowering and detaching app. . Boat devering and detaching app. . Boat devering and detaching app. . Boat devering and detaching app. . Boat detaching apparatus. . Life saving tackle. . Skith bed. . Life raft. . Self etaching hook. . Water gage and steam alarm. . Steam gage. . Low water signal. . Low water signal. . Antt-incrustator. . Antt-incrustator. . Marine atmospheric alarm signal. . Door for ship's cabin. . Safety valves. . Steam boller. 67. Egbert P. Watson... 68. John Ryder 69. N. Spencer Thomas 70. S. G. Cabbell . .S. G. Cabbell . .S. G. Cabbell . .S. G. Cabbell . Sofety valves. Safety valves. Steam boller. . Anti-incrustator. . Anti-incrustator. . Fatent roelock and thole pin. . Life rat. . Syphon feed regulator. . Automatic Boller Feeder. . Steering apparatus. . Locked safety valve. . Detaching apparatus. . Water gage. . Water gage. . . Anti-incrustator. . Syphon pump. .Fletcher & Harrison. .John Zindorff...... George W. Brown. James Isted John W. Doughty. Boyd Elliott (Well's) James T. Horam E. A. Turner. Carlish, Mason & Co. Carlish, Mason & Co. Carlish, Mason & Co. Carlish, Mason & Co. C. L. Frink. G. L. Frink. M. Winans. Worden, Rensford & Co. S. Bickerstaff. S. Bickerstaff. G. H. Clemens. Sartine condenser. Firsulation Helexpoh. Detaching appartulus. Steering appartatus. Patenti lever for furling salls from deck. Detaching appartatus. Settee boats. Edw. J. Monk. Join W. Hill George Shone. George Shone. Flowers, Fatten & Co. Flowers, Fatten & Co. Benedict, Torry, and Gurwibly. George T. Palmer. Henry Mosley. Henry Mosley. George F. Palmer. Lorenzo Fulton. W. H. Low. James Marks. William Mosee. J. W. Stücs. Sette boäts. Satety valves. Locked valves. Hose coupling. Boat lowering and detaching apparatus Combination hose. Patent floating (apparatus) anchor. Anti-incrustator. Betaching apparatus. Ship's windjass and pump gear. Low water indicator. Safety valve. Low water indicator. Safety valve. Selfriding life boat. Detaching apparatus. Water ejector. Satety valve. Patent felt protector. Wood, etc., preserver. Steering apparatus. Low water detector. Glass for cylinder for use of carbonic acid gas. Amalgamaton of copper and cobalt. William Moses. J. W. Stiles. Farren, Traft, and Knight. John Ashcroft. Thomas Hanyey. William P. Hunt. Lewis Youmans. Henry Mosley. acid gas. .Amalgamation of copper and cobalt. .Detarbling apparatus. ..Lite-preserving berth. 134. Henry Mosley..... 135. Snow and Hurlburt...... 136. F. Fellingham. 137. B. F. Miller...... 138. G. B. Massey Safety

Nobert H. Griffe Daniel Barnum... N. H. Marston... W. C Thompson... John B. Holmes... F. E. Sickles..... John Golding.... 202. 203. 204. 205. 205. 206. 207. 208. 208. 208. Sickles. Golding annus Prister 220 221 222 G. H. Wilson, Armstrung and Brown, W. C. Dudge, John Phys. 226 James Coontane.
 James Coontane.
 James Coontane.
 James Charles Dion.
 J. N. McIntyre.
 J. N. McIntyre.
 Charles F. Ruset.
 Charles F. Ruset.
 Charles F. Ruset.
 Charles T. Ruset.
 Charles T. Ruset.
 Charles T. Ruset.
 Standard R. Brown & Co
 J. R. N. Owen.
 Standard R. Brown & Co G. Symmes..... John A. Schule. John McKenzie. John A. Rollins.
 John A. Rollins.
 John A. Rollins.
 Stanever & Co.
 Fanever & Co.
 <l eres and Overton. Asahel Abbott John T. Ashley John T. Ashley F. E. Stekles John T. Ashley Charles K. Parshall. D. F. Morseman Philip Hoelzel A. F. Crossman 280 281 282 285 286 287 288 288 . A. F. Crossman. 3. C. Williams..... 3. I. W. Ketds. . Alvin Walker... . R. Fletcher.... . Charles Hopkins. 8. R. Waddell . Charles Hopkins. . R. Waddell. . W. Fitz James Thiers. . A. Arnold. . John Sloan. . C. H. Grithn. Charles M. Cresson, M. D. Bond, Turnbull & Co. . Edward Bradly. . Morgan Bhepard. . Henry T. Brown. Dr. J. Bryant. 293. 294. 295 296 297 302 Henry T. Brown. Dr. J. Bryant. William D. Andrews and Bro. John Golding. Edward Snell. Springer and Bartram. Charles Wing. Charles Winz and Silver.
 Thomas Silver.
 Thomas Silver.
 Charles W. Copeland.
 R. H. Andrews.
 A. R. H. Andrews.
 Charles W. Copeland.
 B. Charles W. Copeland.
 B. Charles W. Copeland.
 F. Brown.
 J. F. Brown.
 J. F. Brown.
 J. G. Humphries.
 Wullams & Gee.
 Williams & Gee.
 Williams & Gee.
 A. Kaufman.
 J. Janes Marks.
 James Marks.
 James Louence F Frazee.
 Lueronce F Frazee. 328. Laurence F. Frazee.
329. L. Frazee.
330. Esau Rowing.
331. A. C. Crondal.
332. J. R. Taylor & Co.

Detactors: apparatus. Lite-preserving seat. Apparatus for asympto in a gale. Locked valve. Locked valve. Dotaching apparatus. Patent anchor. Folding water anchor or drag. Electric annunciator. .Electric annunesses. Steam gage. Improvement in constructing vessels. Patent Arauniated cork bedding. Double leak-up safety valves. Saten floiber, Double leak-up safety valves. Anti-ficture stater. Hon "Incarding the approximation of the approxim Air-pump attachment. Airpunp attachment. Gage cock. Life saving raft. Mise and low pressure boiler. Steath steering apparatus. Life saving matrass. Propeller steering apparatus(withd'n). Safety hook. Lopt in steam chimneys of boilers. Detaching apparatus. Steam generating apparatus. Temporary rudder. Detaching hook. Detaching hook. Barety valve. Fusible alloyplug. .f using anoyong. Andi-incrustator. Low water alarm. Low water alarm detector. To prevent collision of locomotives. Lock-up de acling apparatus. Saterlee's natent davit block. Atent anchor. Detaching apparatus. Ingine piston. Jow water detector a: Engine picton. Low water detector and alerm. Signal lights, rockets, and like to kets. Steering apparatus. Steering apparatus. Anti-incrusiator. Detaching davit and cat block. Safety valve. Life preserving spar. Steam gare. Life preserving spar. Steam gage. Life preserver. Monitor and armor plated vessels. Jupprovement in hanging rudder. Detaching apparatus. Hose coupling. Low water detector. Covington's steering apparatus. Surf Boat Leak sig ral. Pilots listening trumpet for fogs. Fire alarm. Pilots listening trumpet for fogs. Pilots listening trumpet for fogs. Pire alarm. Ad justable gage lock. Life raft. Pog signal. Improve, in steam and other engines. Gage cock whistle. Sjeer. and draw'g elliptic rotary pump Teentralize exp. and to generate steam. Improved motive power. Self-acting pump. Rartlett's expelling pump. Rartlett's expelling pump. Improved steam boiler. Store lights. Surge reliever. Steamboat wheel. Ice navigator. It as coupling. Ice newligator. Icea coupling. Ships hed. Juice ratt. Patent anchor. Feathering paddle wheel. Patent anchor. Feathering paddle wheel. Patent steering indicator. Joat propellor. Vertical cut-off steam safety valve. Geometrical steam mercury gage. Exhaust for sanitary ventilating ships. App. for gen's steam without a boller. Apr. tor gen's steam steam and a boller. Float is berth. Boat-lewering and hosting apparatus. Ling buey. Lingreved tubular boiler. Infe buoy. Improved tubular boiler. Amarican submargad shi Improved tubular boller. American submerged ship pump. Tidal alarm apparatus. Larsdelle's double-suc'n steam siphon. Hydraule unarine governor. Hydro'e ventilator & auto'c ship pump. Anti-incrustator: Danger indicator Self-projelling life boat. Automatic water inspector. Anti merustator Steam-boller feeder. New mode of applying safety valves. Lock attrestive valve. New mode of applying safety valves. Loss at estic valve. Falsant valves. Andrews' stein pump. Neell's patent anchor. Boller water gage. Signal lang. Merle's deter anchor. Signal lang. Merle's deter gage. Wheele's bole. Prazee's life boat. Single acting force pump. Fusible plags. Yendlator & marine fire protect'n app. Life preserving rat. Detaching apparatus. Floating anchor and life preserver. Life rat. Comb. matt. and life-preserving float. Floating anchor and life preserver. Life raft. Comb. matt. and life-preserving float. Detaching block. Antt-hermistator. Water indicator. Hulmes esf. rijkting life boat. Plan to prevent incrustation. Boat-lowering apparatus. Boat-lowering apparatus. High-pressure boiler. Cork matt. cushlon, and life preserver. Bignat light.

A GRINDSTONE should not be exposed to the weather, as it not only injures the woodwork, but the sun's rays harden the stone so much as, in time, to render it useless. Neither should it stand in the water in which it runs, as the part remaining in water softens so much that it wears unequally, and this is a very common cause of grindstones becoming "out of true."

THE income of McCormick, the noted patentee of the reaping machine, was last year, \$169,760

138G. B. Massey	Detached apparatus.
139. G. B. Massey 40. Osborn and Massey	Leakage alarm gage.
40. Osborn and Massey	Hose coupling.
41. John J. Clyde	Movable nile projeti vina berun.
49 M W Brown	Fire-Drool Dallil.
43 John Suttor.	Direct-acting sufery valve.
43 John Suttor. 44. H. J. Brevoor.	Leakage indicator.
45. E. H. Covel	Combination pump.
146 W. M. Arnold	Steering gear.
147. A. L. Shears	Self-baling life boat.
148 . Wiiliam Porter	Self-acting pump.
49, .O. Warden	Signal light.
150. J. D. Mason	Detaching apparatus.
51J. D. Mason	Life boat.
52 J. D. Mason	Patent an chor.
53. L. D. Ingoldsby	Mode of picking up boats at sea.
154L. D. Ingoldsby	Mode of picking up boats at sea. Steering and manœuvring sail & steam
	vessels.
155B. Smith	Surf boat.
156. B. Smith	Life boat.
157. B. Smith	Ventilator.
58B. Smith	Steering apparatus.
159. J. N. B. Bond	Steering apparatus. Steam boiler feeder and low water
	detector.
160J. N. B. Bond	Steam generator.
161. Henry Dirkes	Improved life boat.
161. Henry Dirkes 162. Henry Dirkes	Method of anchoring.
163. D. Regester 164H. D. Teuksburry	Self-adjusting hook.
164H. D. Teuksburry	Hose coupling and pipe.
165Abraham Inslee	Safely valve.
166. Marine Signal Company	Fog frumpet.
167. Benjamin Sneden	Life boat, surf boat detaching apparatus Boat detached apparatus.
168Walter P. Burroughs	Boat detached apparatus.
169. Bright O. Kirk. 170. E. H. Ashcroft. 171. G. A. Lillienthall.	Blower.
170. E. H. Ashcroft	Low water detector.
[71G. A. Lillienthall	Telegraphic night signal.
73. John Wright 174. James McDonough	Life raft.
174. James McDonough	Self-inflating raft
175. James McDonough	Life boat.

Onder this heading we shall publish weekly notes of some of the more promi- nent home and foreign patients.							
Recent	American	and	Foreign	Latents			
· · · · · · · · · · · · · · · · · · ·							
354. R. F. Cra 355 A C Boo	ed y me	N. W. Wing	. Mfg Co's l ew wa lite_boat	ter indicator.			
353. P. Kenne	d y	Engin	eer's signal bell.				
352. L. Ravm	ond	Rowl	ock				
350. John Mo	ody mond	Light	ship. Simming patents	rindeail			
349John Mo	odv	Lite t	oat.				
348. W. D. An	drews & Bro	Steam steering apparatus, Steering indicator. Super-heating steam boiler.					
346. Kenyon d	5 CO	Steam	Steam steering apparatus, Steering indicator				
345. Brown &	Newman	Water	Wappich's rudder braces. Method of constructing ships. Water expeller.				
344. 'i'homas	A. Devyr	Method of constructing ships.					
343. Mr. Rva	Lenzie	Wappich's rudder braces					
341J. A. Lib	bertz	Detac	Detaching apparatus. Water tank.				
340. Americai	n steam-gage Co	Stean	igage.				
339. Keen Br	others	Steam gage.					
337Proi. (1g) 338 John M	Sturgeon	Extin	Exting'ng fire by liquid carbonic acid Non-inflammable fluid.				
3% A. Gilma	n	Shipp	Shipping rudders at sea.				
335Jno. H. I	darr	Anti i	Anti incrustator. Shipping rudders at sea.				
				Signal light. Ship drag.			

beam withsliding carriages and hooks attached, upon polygons or triangles, so that the powershall be transmitted to a shaft in a continuous rotary motion.