NEW INVENTIONS.

VARIABLE CUT-OFF GEAR.—Ambrose Foster and Noah Sutton, of New York, have invented an improvement in variable cut-off gear for steam or other motive engines, which consists principally in the employment, for operating either the main valve or valves of an engine or a separate cut-off valve or valves, of a compound cam of novel construction, applied either upon the main shaft of the engine or upon a counter shaft, and serving to effect the cutting-off of the steam at various points in the stroke of the piston, either under the control of a governor or of any contrivance at the command of the engineer. This device is patented in England.

IMPLEMENT FOR TRIMMING LAMP WICKS.—Halvor Halvorson, of Cambridge, Mass., has invented a device for the above purpose, the object of which is to obtain an implement by which lamp wicks (those termed and generally known as the flat wicks) may be trimmed so as to have their top edges perfectly parallel with the top edges of the wick tubes, or trimmed in convex form so as to ensure an even and well proportioned flame, and thereby obviate the elimination of smoke and unpleasant effluvia attending the uneven trimming of the wick by the ordinary scissors or shears. The invention consists in the employment of gages in connection with a proper cutting device, the gages being so arranged as to retain the wick or hold it in proper position while being acted upon by the cutter or cutters, thereby effecting the desired end.

SEWING-MACHINE SHUTTLE-DRIVER.—Louis Planer, of New York, has invented an improvement in sewing-machines which relates to the driving of the shuttle by means of a driver having but a single horn or finger operating in or near the butt of the shuttle, and consists in an improved construction and arrangement of the notch provided in the butt of the shuttle, and an improved mode of applying the driver whereby the loops of the needle-thread are allowed to slip freely and without obstruction over the heel of the shuttle, and the shuttle is prevented flying up out of the shuttle-race in case of the accidental omission of the covering plates.

IMPROVEMENTS IN OSCILLATING ENGINES.—J. A. Reed, of Jersey City, N. J., has patented two improvements in oscillating engines, the first on July 5, and the other will be found in this week's list of claims. One has special reference to the trunnion boxes, and consists in the employment, in combination with a trunnion having a conical exterior, of a trunnion box lining which enters the box from its exterior and which fits to the exterior of the trunnion like a cap, and which, by being split from the center across the head and along one side, is made in a certain degree elastic, so that it may press equally tight all round the interior of the box and all round the exterior of the trunnion, as it is forced up against the trunnion by pressure upon its outer end to compensate for wear, and hence may always keep the trunnion true. The other consists in a certain arrangement of a reversing valve and steam passages in combination with stationary induction and eduction valves on the inner ends of the trunnion boxes, constituting a very simple means of reversing an oscillating engine.

COTTON-GIN SHARPENER.—This is the third invention and patent which A. H. Burdine, of Chulahoma, Miss., has obtained on this character of cotton-gin sharpeners. The present improvement, like his two former ones, is designed for sharpening the saws while in the cotton-gin and without removing the gin-shaft from its ordinary location. His improvement renders the machinery the perfection of simplicity and utility; it supports itself on the saw, and while it files the teeth in the most accurate manner, feeds the saw regularly as fast as the files have performed two strokes over each tooth. The claims, on another page, define the nature of the invention.

SIPHON WATER-WHEEL.—This invention consists in the arranging of a water-wheel in a vacuum at the top of a siphon or draft-cylinders, in such a manner that power may be obtained at an elevated place from a low stream or current which is not dammed. The principle of this invention is substantially the same as that on which the well-known siphon operates to raise water—*i. e.*, a vacuum is created in the draft-cylinders by filling the same with water and then allowing the water to flow from said cylinder at a point lower than the stream, and as "nature abhors a vacuum," the water of the stream rises to the top of the siphon through a curved pipe, and in descending to fill the vacuum, its weight falls upon the water-wheel and causes it to revolve, This is certainly a novel idea, and one which a great number of inventors have previously sought to bring into practical operation; but, not being satisfied with natural forces as agents to assist them, they have overstepped the mark, and produced "perpetual motion" without wind, water, stream, or any other force. The inventor is Mr. J. Shepard, of Orion, Ill.

FOREIGN SUMMARY—METALS AND MARKETS.

We recently (on page 27 of this volume) presented some statistics regarding the vessels belonging to the West India Royal Mail Company. Since that period the annual report of the Peninsula and Oriental Steamship Company has been published, and before the fleet of this company that of the former appears insignificant. The capacity of the West India fleet amounts to 44,000 tuns, that of the Peninsular Company to 84,000. The number of vessels which they own is 53 in active employment, and 12 undergoing repairs and building. Nearly all the steamers of this company are propellers.

A correspondent (W. Corbett, of the London *Engineer*) presents the following theory of the cause of steam-boiler explosions when the scale is formed inside and the water suffered to get too low:—"The scurf of boilers contain a portion of phosphate of lime, and should the plates become overheated, the hot iron takes the oxygen from the phosphoric acid and liberates the phosphorus. At the same time it takes oxygen from the steam and sets hydrogen free, so that phosphoretted hydrogen is formed in the boiler. Now, it only wants a little atmospheric air to form a Will-o'-the-wisp; and as all fresh water contains some air in suspension, that which goes into the boiler with the feed water will render the gas instantaneously inflammable and produce an explosion."

The Red Sea Telegraph line, just laid, has a submarine cable 1,370 nautical miles in length; but this is divided into several circuits, the longest of which is 800 statute miles. About 10 words per minute can be sent over the long circuit, and since the 28th of June, it has worked satisfactorily. It is the longest submarine line now in operation in the world. The copper conductors of the cable weigh 166 lbs. to the mile, twice as much as those of the Atlantic cable. The working of this line will be watched with deep interest.

The exports of British copper last year amounted to 24,787 tuns, of which 264 tuns were in coins for the colonies. There were 6,719 tuns of this amount unwrought, one-fourth of which went to India and the remainder mostly to France. The tin exports amounted to 2,327 tuns British and 298 tuns foreign. Of lead there were exported 17,645 tuns of pig and rolled sheets, 1,910 tuns of shot, 490 tuns litharge, 292 tuns red and 2,684 tuns white lead. A considerable amount of this was sent to the United States, but India, Australia and Canada took the most.

In Birmingham the electro-plating business is good, and in the better styles of jewelry there is more than an average amount of trade for the season of the year. The manufacture of fire-arms has been very extensive, as there have been large contracts entered into with the British government for the manufacture of 90,000 common and 240,000 sword bayonets. These arms are all to be finished in 68 weeks.

Several of the English railways are leased out for so much rent per annum, and a considerable improvement in their dividends have been effected by this arrangement. There has been a general improvement in the traffic and receipts of all the English railroads during the past year. 25,002,118 tuns of minerals were carried on all the lines during the six months ending last December, and 13,092,826 tuns of general merchandise. The total receipts on all the lines amounted to £12,825,826 for the six months—an increase of £113,126 over the preceding six months.

PRICES OF FOREIGN METALS, JULY 8.

	£	s.	d.		£	s.	d.
Staff. bar-iron, per tun..	8	00	00	Swedish steel, in faggot	21	00	00
Common English....	7	00	00	Copper in tile.....	107	10	00
Single sheet.....	9	10	00	British pig lead.....	23	15	00
Double sheet.....	11	00	00	Tin, block.....	129	00	00
Round nail rod.....	8	00	00	Bar.....	130	00	00
Square nail rod.....	9	00	00	Banca.....	134	00	00
Hoop iron.....	9	00	00	Plates (per box).....	1	19	00
Welsh iron rails.....	5	15	00	Spelter.....	19	00	00
Staffordshire pig-iron...	3	10	00	Zinc, in sheets.....	28	10	00
Scotch pig-iron.....	2	8	00	Copper sheathing, per lb	00	1	00
Swedish iron.....	13	00	00	Brass sheathing.....	00	00	10
Swedish steel.....	20	10	00				

The prices of the metals are about the same as last week, but there has been considerable excitement in the Stock Exchange owing to the news from Italy of the armistice between the French and Austrians. It has been supposed that this may lead to peace, and as a consequence, a general advance in cotton and yarns of ⅛d. per lb. took place at Manchester. There was also a good demand for American federal and State stocks, and a general improvement in all branches of business was expected.

New York Markets.

COAL.—Foreign cannel, $3; Anthracite, from $4.50, $4.75, to $5 50.

COTTON.—The market has been good, with a rise of one-fourth of a cent over last week's prices. Good ordinary Upland, Florida and Mobile, 10¾c.; Texas, 11c. Middling fair from $12¾c. to 13¼c.

COPPER.—Lake Superior ingots at 21c. per lb. for cash. Copper bolts, 30c. Sheathing, 26c.

FLOUR.—Genesee extra brands, $5.25 a $8.25; Ohio choice, $7.70 a $8; common brands from $5 up to $6.75.

HEMP.—American undressed, $140 a $150; dressed from $190 a $210. Jute, $95 a $90. Italian scarce. Russian clean, $210 a $215. Manilla 6⅝c. a 6¾c. per lb.

IRON.—Anthracite pig, $21, $22 and $23 per tun; Swedish bar, $85 a $86, and English refined, $52.50 a $54.50. Russian sheet, first quality, 11½c. a 12c. per lb.

LEAD.—Galena, $5.80 per 100 lbs.; German and English refined, $5.70.

LEATHER.—Oak slaughter, light, 34c. a 36c. per lb.; Oak, heavy, 33c. a 35c.; Oak, crop, 40c. a 42c.; Hemlock, middle, 25c⅞. a 26½c.; Hemlock, light, 25c. a 25½c.; Hemlock, heavy, 23½c. a 24½c; Patent enameled, 16c. a 17c. per foot, light. Sheep, morocco finish, $7.50 a $8.50 per dozen. But a moderate business in oak and hemlock.

NAILS.—Cut are quiet but steady at 3½c. a 3¾c. per lb. American clinch sell in lots, as wanted, at 5c. a 6c.; wrought foreign, 3c. a 3½c.; American horseshoe, 15c. a 20c.

OILS.—Linseed oil, 61c. a 62c. per gallon; whale, bleached, 55c. a 57c. a 63.; sperm, crude, $1.33, $1.35, and $1.40; lard oil, 93c. a 94c.; refined rosin, 30c. a 40c.; coal, refined, $1.12 a $1.25; camphene, 44c. a 46c.

RESIN.—Common, $1.80¼ per 310 lbs. bbl.; white, $3.50 a $4.50 per 280 lbs.

STEEL.—English cast, 14c. a 16c. per lb.; German, 7c. a 10c; American spring, 5c. a 5½c.; American blister, 4½c. a 5½c.

TIN.—Banca, 32c. per lb. Plates per box, $7.12 a $9, according to quality—a decline from last week.

ZINC.—Sheets, at 7c. a 7¾c. per lb.

The foregoing rates indicate the state of the New York markets up to July 21.

In the Albany lumber market no change has taken place since our list was published on page 27 of the present volume. The *Evening Journal*, of that city, says: "The receipts of lumber have been pretty large, but the bulk coming forward is unseasoned. The assortment in market is good. Dry lumber of all descriptions, to a limited extent, can now be obtained. The shipments of pine are still mainly confined to the eastern States and along the shores of New Jersey. There are some vessels in port loading for Richmond and Petersburg, but they are taking on assorted cargoes and mainly hard woods. The main features of the market have not undergone any important change since our last. The business, as usual in midsummer, is moderate, and scattered over the entire district."

The news from Europe of the armistice between the French and Austrians has had a considerable effect upon our markets, more especially cotton. On the day the news arrived no less than 3,000 bales were sold at an advance of ¼c. per lb. Provisions fell, and sales of saltpeter and lead were somewhat checked. The feeling prevailing in the market is difficult to describe. It is a sort of hopeful uncertainty, which puts a considerable restraint upon sales of all articles not immediately required for consumption.

Flour has fallen a little again. The grain and flour market in England is dull, and prices are low, owing to the prospects of a bountiful harvest. This affects our markets materially.

About $9,000,000 of specie have been shipped for Europe during the month. A similar drain on our precious metals is expected for the next month also.

There has been a decline since our last in most of the railway stocks. This is owing to a decrease of business on the roads.

A vast amount of French and German goods have recently arrived on consignment. It is thought that a great quantity of them must soon be sold at a sacrifice. This makes jobbers afraid to purchase freely in the legitimate way for the Fall trade.

In our next number we shall present some new and very interesting information regarding all the varieties of tin, especially that which is called *Banca*.