

Scientific American.

THE ADVOCATE OF INDUSTRY, AND JOURNAL OF SCIENTIFIC, MECHANICAL, AND OTHER IMPROVEMENTS

VOLUME XII.

NEW-YORK, NOVEMBER 29, 1856.

NUMBER 12.

THE
Scientific American,
PUBLISHED WEEKLY

At 123 Fulton street, N. Y. (Sun Buildings.)
BY MUNN & CO.

O. D. MUNN, S. H. WALES, A. E. BEACH.

Responsible Agents may also be found in all the principal cities and towns in the United States. Single copies of the paper are on sale at the office of publication and at all the periodical stores in this city, Brooklyn, and Jersey City.

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French Society of Acclimation.

This Society offers prizes for the introduction into France of new species or useful varieties of animals or vegetables; improvements of the breeds of animals, and the bettering of agriculture generally. They report that a new kind of silkworm has been introduced into Switzerland, and that in Cevennes a hectare of mulberry trees yields a revenue of from 25,000 to 30,000 francs a-year. The *sorgho sucre* is flourishing in the south of France and Algiers, and fully answers expectation by its produce of sugar, alcohol, and forage. They have also a new yam from New Zealand. We notice with satisfaction that the Society head with 500 francs the subscription list for the widow and children of Joseph Remy, the poor fisherman who introduced the pisciculture which has since been so successfully carried out in France.

Canadian Railroads.

Canada is rapidly progressing in solid prosperity, judging from her railways. Five years ago, there were about 100 miles constructed, now there are nearly 2000 miles. There is one Grand Trunk Line—670 miles—completed; and two weeks ago there was a grand celebration at Montreal of this important event. A system of railroads is laid out for Canada, with the Grand Trunk Line for a heart, and we think this is good policy.

Cast-Iron Sleepers for Railroads.

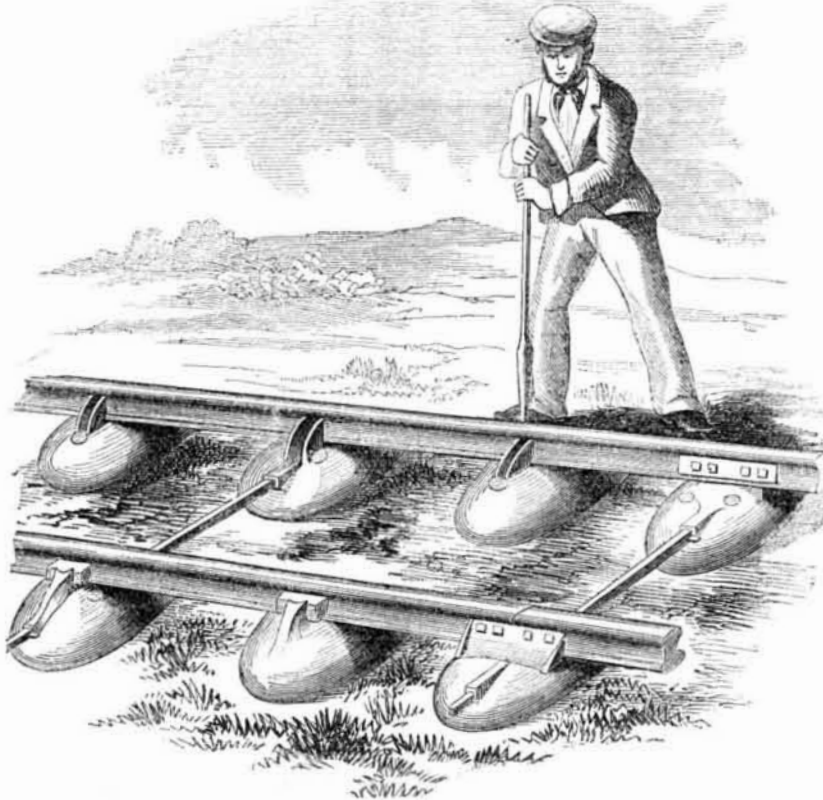
The annexed figure represents the cast-iron sleepers for railroads, invented by H. Greaves, of England. About 400 miles of it have been laid down on various roads in France, Belgium, and England, and the inventor states they have been perfectly successful.

A permanent way of cast-iron has been attempted a number of times, and by various persons, always resulting in failure; one, therefore, said to be successful, must be of interest to every railroad company in the world, because the material is almost indestructible, as it does not decay like wood, and therefore does not cost such immense sums for constant repairs.

The form of the sleepers is semi-spherical, which thus admits of the smallest amount of metal for a given strength. Those intended to receive the tie-bars are cast with an opening through them, and the ties have but to be keyed to secure the rails firmly at the proper distance apart. These sleepers, by this method of tying them are suitable for any gauge, and allow of the rails being laid with remarkable facility. The chairs to receive the rails are so formed as to allow of the removal of a defective or worn out rail without disturbing the sleeper. The oscillation of rails causes the wear and tear of locomotives and cars, but these sleepers are stated to preserve the rails perfectly firm, and as not liable to spring like wooden ones. As these sleepers have a broad base, they tend to impart solidity to the whole track. The rails are fastened in the chairs with wooden keys; each sleeper weighs 100 lbs., and is buried a considerable distance in the ground, which, with its great breadth of surface tends to prevent all lateral motion

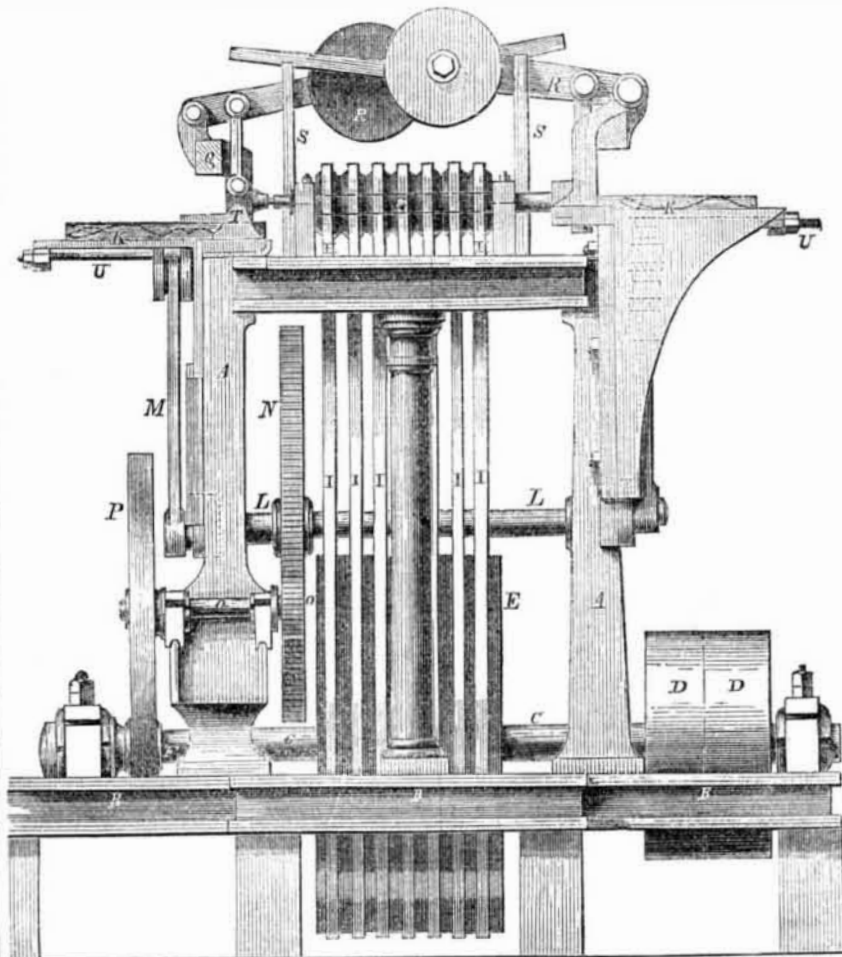
The above figure is copied from the London

RAILROAD CAST-IRON SLEEPERS.



Engineer; it was accompanied with a communication from the inventor, Mr. Greaves, who, naturally, extols his invention highly. Railroads form a great institution in our country, and we have reason to know that we have presented from time to time much valuable information, which has been acted upon by those who manage them, and which has tended to great improvements, both in their permanent-way, rolling stock and management. The information presented on another page respecting the preserving of railway timbers, and the information here given regarding cast-iron sleepers, will be appreciated by those interested as engineers and managers on all our railroads.

MACHINE FOR CUTTING DOVETAILS AND TENONS.



Cutting Dovetails and Tenons.

This invention relates to a new arrangement of machinery designed to facilitate the cutting of dovetails and tenons, and specially

applicable to the manufacture of packing cases, and other boxes.

The accompanying figure is a side elevation; the machine consists of a series of spin-

dles, fitted at their opposite ends with chisel-edged cutters, and mounted horizontally in a fixed frame. These spindles are each provided with a pulley, which receives a driving band from a common drum, the rotation of which gives a rapid rotary motion to the cutters. The wood to be dovetailed or tenoned is fed up to the two rows of cutters by means of ascending tables, fitted one at each side of the machine, and self-acting nipping apparatus is provided for retaining the wood in position on the tables while the cutting is proceeding. A A is the main framing, and B the bed plate to which it is bolted. This bed plate is fitted with bearings which carry the main driving shaft C. D D are the fast and loose pulleys on the shaft C, and keyed to the same shaft is a large drum, E, and a small pulley, F. The cutter spindles are shown at G G, arranged all in the same plane, and lying parallel with each other in bearings provided for them in the upper part of the framing A. For cutting dovetails, these spindles are provided at their opposite ends with cutters of different forms, which forms bear a certain relation to each other, in order that the dovetails made by the one set of cutters may exactly correspond with the dovetail recesses made by the other set to receive the dovetails. The cutter is formed and operated so as to make a cut corresponding to the segment of a cylinder, the wood not being permitted to pass or come up to the axial line of this cutter. To form a dovetail which shall correspond in figure with this cut, a hollow or concave-faced cutter is employed, and it is operated so that its largest diameter shall act upon and pass through the wood; counterpart recesses are by this means formed in the edges of the wood under operation, so that when put together a firm dovetail joint is produced. The cutters are tapped into the ends of the spindles, G, and they therefore admit of being readily removed to be sharpened or replaced by others of different dimensions as required. As the cutters are attached to opposite ends of the spindle, it will be necessary to tap one set with a right and the other with a left-handed screw, to insure the cutters retaining their places in the spindle ends. Keyed to each spindle, G, is a pulley, H, which receives motion from a strap or band, I, proceeding from the large drum, E. The wood to be dovetailed is placed on the tables, K, at either side of the machine, where it is held fast by an arrangement of nipping apparatus, and presented to the cutters. These tables slide up and down in vertical guides made for them in the main framing. Their vertical motion is obtained by the rotation of a crank shaft, L, which has its bearings in the main framing, A, and is connected to the tables by crank rods, M M. Keyed to the crank shaft is a large spur wheel, N, which gears into a pinion on a stud axle, O, supported in bracket bearings. This stud axle carries a pulley, P, which receives a band or cord from the pulley, F, on the main driving shaft, C. As the shaft, C, revolves, a slow reciprocating motion will be given to the tables the amount of which will be determined by the throw of their respective cranks. Affixed to the upper part of each table is a cross-head, Q, to the middle of which a weighted lever, R, is jointed. This lever rests upon an adjustable plate, S, standing up from the main framing, A, and this lever serves to carry, by means of links, a sliding presser plate, T, which, when in action, holds down the wood firmly on the table, and is capable of moving up and down in guides in the sides of the cross head, Q. The height of each plate, S, (which serves as a fulcrum for the rocking lever,) is so adjusted that, as the table rises to bring the wood up to the cutter, the weighted end of the lever, R, will be depressed, and will carry with it the presser plate, T, and keep it in close con-

tact with the wood on the table. When the table has risen to its highest position the cut will have been completed, and the table will then immediately (by reason of the continuous motion of the crank by which it is actuated) commence its descent. This downward movement will cause the rise of the weighted end of the lever, and consequently the release of the dovetailed wood from the pressure of the plate, T. The attendant now removes the wood from the table, and replaces it by a fresh piece, which is in like manner operated upon.

As the series of concave cutters pass through the whole thickness of the wood, it is desirable, in order to insure a clean cut, to provide a support for the lower edge of the wood. This is done by shaping an underlying bar (affixed to the edge of the table,) with slots at its edge, corresponding to the form and position of the rotary cutters. As, therefore, the table rises, the cutters will pass through the wood and through the slots in the plate. In preparing wood in great quantities with dovetailed edges, it is proposed to pile up several boards one upon the other, and submit them in a pile to the action of the concave surface cutters. The cutters will then, as the table rises, pass through the mass of boards and form dovetail recesses therein. But as it is impossible to act in like manner on a pile of boards with the other cutters, it may be convenient to fit up machines specially for each operation, one machine being fitted solely with the hollow or concave-faced cutters, and two or more machines being employed to produce the segment cut; the fact of having to present the boards singly to the action of the cutters which produce the segment cut rendering this operation more tedious than the cutting of the dovetails by the hollow-faced cutters. In order to insure the proper depth of segment cut in the boards, the rod which connects the crank shaft with the table that carries the boards up to the segment cutters is made adjustable in its length, as shown by dots, and the exact lift desired is thus obtained.

It will be seen that the screwed end of a forked piece which is jointed to the connecting rod passes through a lug attached to the table, and by means of two nuts, one on either side of the lug, the lift of the table may be adjusted with the greatest nicety. When cutting tenons with this machine, the adjustment of the connecting rod must be such that the table will, in rising, carry the wood past the axial line of the cutter. For adjusting the wood on the tables, shifting stops, U U, are provided, which, by a similar arrangement of double nuts, permit of the wood being set to any required position with respect to the cutters.—[Engineer.]

Coal as a Source of Nitrogen.

It appears that bituminous coal, on an average, contains two per cent. of nitrogen.—Professor Way suggests that, though manufacturers of coke and consumers of coal will do nothing, and manufacturers of gas but little, to save this ammonia, yet that it might be possible, in certain cases, to conduct the distillation of coal profitably, with ammonia as the principal end in view, and coke and gas as subsidiary considerations.

Railways in Texas.

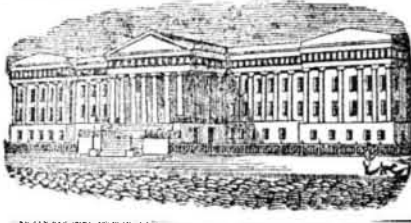
The President of the Houston and Red River Railway informs the Galveston News, that he expects that road to be completed, so as to connect with the Memphis and El Paso Railroad, within three years from the 1st of next January. A portion of the line is already built and in use, and at Houston it connects with a railroad also in use, running to Galveston.

Another American Press for England.

Another of Hoe's Lightning Presses was despatched to London on the 27th ult. in the packet ship Southampton for one of the London weekly papers.

Sulphate of lead, black oxyd of manganese and linseed oil, make an excellent cement for luting the joints of steam apparatus.

The Philadelphia Ledger describes in glowing language a lecture delivered in that city last week by Lieut. Maury on the physics of the sea.



Advice to American Patentes Concerning Foreign Patentes.

It is generally much better to apply for foreign patents simultaneously with the application here. If this cannot be conveniently done, as little time as possible should be lost after the patent is issued, as the laws in some foreign countries allow patents to any one who first makes the application, and in this way many inventors are deprived of their right to take patents for their own inventions.

Many valuable inventions are yearly introduced into Europe from the United States,—by parties ever on the alert to pick up whatever they can lay their hands upon which may seem useful.

It is a part of our business to secure European patents—in fact three-fourths, and probably more, of all the patents granted in Europe to American citizens, are solicited through this office. We have faithful agents in the chief cities in Great Britain and on the Continent, and through them we can not only solicit patents, but often effect their sale upon advantageous terms. We can give the names of many of our patrons who have realized fortunes out of their European patents through our Agents abroad, if it is desired.

We are prepared at all times to furnish advice in regard to Foreign Patents, and will cheerfully do so on application personally at our office or by letter.

Models are not required in any European country, but the utmost care and experience is necessary in the preparation of the case.

Almost every invention that is of value in this country is of equal value abroad, and we would recommend patentees to pay more attention to securing their inventions in foreign countries than they have heretofore done.

All particulars in regard to the modus operandi of obtaining patents in any country where patent laws exist, may be had by addressing the publishers of this paper.

MUNN & CO.,
128 Fulton street, New York.

[Reported Officially for the Scientific American.]

**LIST OF PATENT CLAIMS
Issued from the United States Patent Office
FOR THE WEEK ENDING NOVEMBER 18, 1856**

SMELTING IRON ORE—Henry Bessemer, of London, Eng. Patented in England Aug. 25, 1856: I am aware that it has been heretofore proposed to force into blast furnaces gaseous or solid carbonaceous substances with the blast, for the purpose of adding to the effect of the fuel otherwise supplied to such furnaces, or for the purpose of assisting in the reduction of ores containing oxyd of iron, and I mention this fact in order that it may be fully understood that I lay no claim thereto. Nor do I confine myself to any particular form of furnace or apparatus for carrying into practical operation my said invention, provided that the peculiar features thereof be retained.

I claim the described new process of obtaining iron from a charge of ore in a furnace, viz. by means of molten iron underlying such charge, and by air, oxygen, steam, or a gas containing oxygen forced into the molten iron to such extent as to effect the reduction of the charge or the oxidation of the metal therefrom, without the employment of ordinary carbonaceous fuel.

ATTACHING CENTER BOARDS TO VESSELS—Geo. S. Burrows, of Mystic River, Conn.: I claim the hanging of the center-board to a movable post, D, or other sliding piece of similar character which admits of its being easily and readily removed from the trunk for repairs, or any other purpose as described.

[The common center boards are so arranged that when attached to a vessel they cannot with facility be taken out for repairs at sea, when there is a full cargo aboard. This improvement allows of the center board being removed from its trunk and brought deck at any time at sea or in port, and is therefore a very useful improvement.]

POLISHING GLASS—Phineas Burgess, of New York City: I do not claim the grooving of the beds for polishing glass.

But I claim an improvement on Alfred Broughton's patent of November 7th, 1854, and issued February 17, 1856, viz. the employment and use of grooves arranged eccentrically upon the polishing bed, B, in combination with the cranes, D, and frames E, as set forth.

[In polishing plate glass by the common method, air is entirely excluded between the glass to be polished and the polishing surface; this causes a pressure of 15 lbs. on the square inch on the back of the polisher, producing so much unnecessary friction. This improvement consists in grooving the polishing bed, whereby the air finds access under the polishing surface, thus counteracting its pressure on one side, as in the balance valves of steam engines. The improvement is sensibly good, scientific, and simple, saving a great amount of power in the act of polishing.]

SAWING MARBLE—William D. Gallaher, of Bensalem Township, Pa.: I claim the frames, H H, and the mechanism connected therewith, when constructed and arranged to operate in relation to each other, in the manner and for the purpose set forth.

BUGLAR-PROOF SAFE—R. G. Holmes & W. H. Butler, of New York City, (assigned to Valentine & Butler): We claim the loose fitting pieces, K, applied substantially as described to be received partly in a rebate in the door, and partly in a groove in the door frame, substantially as a.d. for the purpose set forth.

[This invention consists in a novel mode of constructing the walls and doors of safes; also in a novel method of securing the doors to prevent wedging open. By this improvement the doors are also fitted in a manner which greatly reduces the labor and cost of fitting them, as well as affording greater security against wedging open. The improvement is a good one in every respect for the purposes specified in the claims.]

CLEANING GRAIN—C. B. Horton, of Elmira, N. Y.: I claim, first, the double acting V-shaped distributor, in combination with the concentric ring guard, constructed as described for the purpose of distributing the grain to the periphery of the cylinder while falling, and preventing its return in the blast.

Second, I claim the construction and arrangement of the double blast head E, in the manner and for the purpose described.

Third, I also claim the combination of the spring partition, B, with the spring valve K, so arranged that the expansion of the blast by means of said partition, shall cause the valve, K, to open and thereby admit air above the mouth of the tube.

BEDSTEAD FASTENINGS—Spencer Lewis, of Tiffin, O. I claim the inclined pin passing through the segmental guard, G, and stud B, operating substantially as specified.

SPRING LATCH AND LOCK—Wm. A. Ives, of New Haven, Conn.: I claim the securing the bolt on the inside, when the same key serves to turn back the bolt, and also to hold it back when desired, and when the said key or any additional key used, is so constructed and arranged that it will swing or turn entirely within the tube or cylinder, and be made to operate substantially as described.

LEE-BOARDS FOR VESSELS—Augustus Jouan, of San Francisco Cal.: I claim the elastic metal blade lee-boards, which I call ship fins, to the sides of ships, vessels, and boats, in a position nearly vertical, as described and shown for the purpose set forth.

PROPELLER SHAFTS—Augustus Jouan, of San Francisco, Cal.: I claim a propeller shaft which, in its construction, is circular, conical, and angular, with these three conditions combined, or otherwise, and to be applied vertically, as described and shown, and for the purpose set forth.

COMBINED STEAM BOILERS AND KETTLES—Allen Lapham, of Brooklyn, N. Y., assignor to himself and Stephen Wilkes: I do not claim surrounding the kettle with steam, as that has been done before.

But I claim the use of the kettle, C, surrounded by steam, as set forth, in connection with the boiler, B, the reservoirs, D D, with valves F F and G G, or their equivalents, on the upper and lower sides, and the induction pipe, f, arranged, constructed, and operating in the manner and for the purpose set forth and described.

MELODIONS—La Fayette Louis, of Boston, Mass.: I claim, first, the use of a long valve or valves placed over the reeds and under the swell, and vibrated in such a manner by any proper arrangement of mechanical devices, as to break and vary the force of the air passing through the reeds, thereby producing a sound similar to the tremolo in the voice.

Second, I claim actuating the tremolo valves, so as to impart to them a vibratory movement by means of the fan wheel and crank or their equivalents, made to revolve by a current of air passing through the box, f, to the bellows, as described.

STAVE JOINTER—Barnet McKee, of Accotink, Va.: I claim the device described for automatically jointing staves of different widths to the proper bulge, consisting essentially of the pattern plates, m m m, and the guiding slots, n n p, or their equivalents, respectively set at such different angles as to separate the two ends of said pattern plates unqually and exactly in proportion to the bulge required, arranged and operating substantially as specified.

BINDER FOR GRAIN HARVESTERS—C. A. McPhetridge, of St. Louis, Mo.: I claim the combination of the reciprocating arm, G, with spring pliers, G, attached with stationary arm, M, revolving on a cutting plate, q, friction brake q', spring, u, and movable plate, o, when the same are constructed and arranged to operate in relation to each other, and the main frame and driving wheel, for the purpose of binding grain from a continuous coil of wire, in the manner described and set forth.

COTTON GINS—C. A. McPhetridge, of St. Louis, Mo.: I claim, first, the friction spools, N, arranged as described, in combination with the saw for the purposes described.

Second, the breast plate, as described, in combination with the spools, N, as set forth.

SOFTENING CORK BY STEAM—Bennet Potter, Jr., of Charlestown, Mass.: I claim subjecting the cork to the action of steam, for the purpose set forth.

LUBRICATING CAR AXLE AND OTHER JOURNALS—Pierre E. Proust, of Orleans, France. Patented in France April 15th, 1853: I do not claim the mere introduction of steam or water into the lubricating chamber.

But I claim the application to greasing or lubricating apparatus of axles, shafts, and other rotating portions of carriages and of machinery of an air tight reservoir containing water, which being heated by the friction of the rotating portion, is caused to pass through a syphon into the box containing the lubricating matter, and there to mix it, for the purpose described, and in the manner exemplified.

BLEACHING PROCESS—Julius A. R. th, of Philadelphia, Pa.: I claim aiding the action of the usual bleaching agents by the application of atmospheric air, in the manner and for the purpose substantially as described.

BORING AND MORTISING MACHINE—G. H. Stevens, of Lowell, Wis.: I am aware that the hollow chisel and bit have been previously used, and I therefore do not claim those parts irrespective of the mode of arranging and operating the same.

But I claim attaching the auger or bit, K, chisel, N, and hammer, H, to the sliding frame, B, and operating the auger or bit, hammer, and frame, as shown and described, for the purpose specified.

[In this mortising machine an auger and a hollow chisel are arranged and operated in such a manner that as the auger bores into the timber the hollow chisel is driven down by a hammer, which makes a square mortise. A hollow chisel and auger combined is not new, but the manner of arranging and operating them in this machine, is an improvement on those in use, very simple, not liable to get out of repair, and capable of being manufactured at a moderate cost.]

TAIL PIECE FOR VIOLINS, &c.—Charles M. Zimmerman, of Philadelphia, Pa.: I claim, first, the tail piece, K, with its recess, f, and loose cover, h, constructed substantially as described and for the purpose specified.

Second, the employment of the pins, M, for securing the strings by a single fold to the tail piece, in the manner set forth.

GRAIN SEPARATORS AND CONVEYORS—Jos. Lyndall, of Santa Clara, Cal., assignor to Cyrus Roberts, of Belleville, Ind.: I claim, first, suspending the conveyor on vertical radius bars or pendulum bars, which swing it forward, first in a nearly horizontal, and next in an upward direction, and then swing it back, first moving it suddenly down wards, and next horizontally or thereabouts, until it reaches the place where it started, substantially as set forth.

Second, swinging and rocking the conveyor, as described, on radius bars of unequal lengths, which raise its rear end somewhat further and faster than its front end, in the manner and with the results set forth.

Third, arranging the head of the vibrating shaking fingers in a recess in the bottom of the conveyer, substantially as described. But I make no claim to the arrangement of the vibrating fingers below the conveyer, so that the straw and grain after leaving the conveyer will pass on to the fingers.

Fourth, the combination of an adjustable bar or guide with an arm projecting from the head of the vibrating fingers, so that the upward throw of the fingers may be varied while the limit of their descent remains unchanged, as set forth.

Fifth, constructing the screening apertures in the bottom of the conveyer, with channels on the front sides of the tops thereof, to facilitate the separation of the grain and chaff from the straw, and the passage of the straw through the conveyer, as set forth.

PARING APPLES—Charles P. Carter, of Ware, Mass., assignor to Leonard Harrington, of Worcester, Mass.: I claim the semi-cylindrical holder, constructed and operating in the manner substantially as described, for the purpose of holding and coring the apples, as set forth.

Second, the peculiar form and arrangement of the spring o, for the purpose of throwing back the carriage and operating with an equable pressure during the whole of the progress of the knife.

GOVERNING THE PARALLEL YIELDING OF LUMBER FEEDING ROLLERS—Josiah B. Pomroy, of Chicago, Ill.: I do not claim in general causing the feeding rollers to yield and adapt themselves to the shape of the board so as to remain always in parallel positions.

But I claim the arrangement and combination of the parallel arm, S S, central guiding rod, T, and spring, u, in connection with the yielding feeding rollers, mounted on sliding carriages, substantially in the manner and for the purposes specified.

TAILOR'S PRESSING MACHINES—C. W. Williams, of Boston, Mass.: I claim suspending the iron or goose from a convex disk, which turns free y upon a ball and socket joint, or its equivalent, and which forms a bearing for the lever to act against, as set forth.

Signals of Vessels.—Collisions at Sea.

Collisions between vessels have become frequent, and, next to fires at sea, they are the most appalling and heart-rending. The new French steamer *Lyonnais*, noticed by us last week, was run into on the night after she left this port by the bark *Adriatic*, of Maine, which cut her through the middle, and it is believed that all on board—one hundred and fifty persons—with the exception of sixteen who escaped in a boat, have perished. The Captain of the *Adriatic* reports that he saw the steamer twenty minutes before his vessel struck her and that the collision was caused by the steamer suddenly altering her course. He also states that there was a slight haze in the atmosphere, but it was not foggy. Those who escaped from the steamer report the weather as being foggy, and that the *Adriatic* was unseen by those on board the *Lyonnais*. Those in the bark might well have seen the light of a steamer through a slight fog, while the *Adriatic* without lights could not be seen by the watch on the steamer.

Whoever is or was to blame for this accident we do not know, but it is our deliberate opinion that such accidents can be prevented. The collision which sent the *Arctic* to the bottom of the ocean occurred in a fog, and the late one while the weather was confessedly hazy. It appears, from all the evidence gathered, that each of the vessels in both cases was driving on its course with inexcusable speed, under the circumstances, and that common sense precautions were not made use of. By the use of light signals for visual observations, and sounding signals for hearing, the position of vessels at sea and their courses in darkness and fogs could be made known to one another with accuracy. All vessels—steamers and sail ships—navigating the ocean should be compelled to carry colored signals at night. The ocean has now become like a great highway, by the astonishing increase of commerce, and as it was long ago found necessary for all our river steamers to carry signal night lights for safety, it has now become imperative that all vessels navigating the ocean should carry light signals also. In dark nights but clear weather such signals would prevent collisions at sea.

On the Mississippi river, since all steamboats have been compelled to use steam whistles, collisions have become less frequent, and so it would be with all steamships navigating the ocean. If they would use them in fogs, and run at a low speed, we would expect that collisions between them would be prevented. It may be said that a steam whistle could not have prevented the collision between the *Adriatic* and *Lyonnais*, because it was the former which ran into the latter. This is true in this sense, but if the *Adriatic* had been carrying light signals, the case would have been different, and, besides, we see no reason why powerful auricular signals could not be employed on sailing vessels as well as steamships. They employ bells now, but they are so small that they can be heard only at a short distance, whereas a small steam whistle can be heard at thrice the distance of these bells. An air whistle operated by hand like a pump, could be used on sailing vessels, and it could be constructed to send forth its screams to a distance of some miles. We are therefore of opinion, that if all vessels were compelled to carry and use visual and auricular signals, at night and in fogs, that collisions at sea might be completely prevented.

Vermont Gold Again.

The Rutland (Vt.) *Herald* again calls attention to a piece of gold found somewhere among the Green Mountains about the size of a dollar. It states that there are plenty more specimens where this one was found. Some of our Vermont contemporaries have talked of the golden treasures of that State for the last three years, but nobody seems to believe a word of what they have said.

85 parts of lead and 15 of antimony, make good bearings for axles and shafts when enclosed in an iron shell.

No less than seven large steamships have been lost on the Pacific coast in six years.