

Scientific American

NEW YORK, SEPTEMBER 6, 1851.

Woodworth Planing Machine Extension.

We understand that, at the recent Planing Machine Trial, in Cooperstown, (noticed by us in No. 49) one of the counsel, not particularly noted for his courtesy, after having poured the vials of his wrath upon the unfortunate patentees who have presumed to run their machines, knowing of the existence of the Woodworth Patent, announced that the assignees intended to ask an extension of the patent by an especial act of Congress, based upon the principle of planing by mechanical pressure. The assignees of this patent must have been deeply chagrined at the want of discretion thus manifested, to say nothing of the want of courtesy towards opponents, many of whom, doubtless, are honorable men, and far above the suspicion of piracy. By making such a statement at this early period, the public mind will prepare itself to resist to the last extremity so glaring an act of injustice to their interests. Flushed with the success which has attended their past efforts in obtaining verdicts,—and a re-issue under circumstances which many suppose reflects anything but credit upon the actors in the game, the assignees presume to urge a powerfully vital question upon our Senators and Representatives in Congress; and, as we learn, are now preparing themselves with every means to carry the bill through the next Session of Congress. That it can never be done, we hesitate not to state thus early; and so sure as the sun rises to-morrow, they will only meet disappointment in any such effort to saddle a hideous monopoly upon the American people. We have few legislators who would dare thus to trifle with an intelligent constituency,—trifling it is, because it is in direct contravention of the republican spirit of our patent laws. Such an arbitrary position might be assumed in half-civilized countries, and the writer of this guillotined for expressing his honest conviction, but it will not do here. The American masses are much too intelligent to permit any such encroachment. We are in favor of allowing everything to the Woodworth assignees which justly belongs to them, and that their patent should now exist until the 27th day of December, 1856. We are then in favor of its becoming public property, and shall use our best exertions to accomplish this just end.

Let us briefly examine some points at issue in this question. In the first place, to claim mechanical pressure applied to planing, would interdict the use of any other than such machines as the assignees of Woodworth were willing to allow, as no planing except by hand can be done without mechanical pressure. Mechanics and manufacturers do you know that this claim, once secured, would prevent you the free use of the old Daniel's machine, which has become public property, and is now being generally employed in your shops? Most certainly you would be called upon to pay tribute to an inquisitorial monopoly, with whom the "quality of mercy is not strained." Again, in some instances the owners of this patent have attempted to stop parties from running machines applied to different purposes, which in no way could affect their interests—done for fees, of course. We have no guarantee that this system will not be pursued to an extent not before attempted.

This statement exhibits the tendency of the parties, and it must appeal strongly to the prejudices of our mechanics, whose interests become seriously affected thereby. We call upon the mechanics, manufacturers, and editors, throughout the country, to watch every movement made to further such designs, and be prepared to counteract any influence which may be brought to bear in carrying them forward. We do not mean to be misunderstood in reference to this matter; and, as occasion requires, we shall aim some well-directed efforts at this scheme, and explain the reasons upon which the appeal will doubtless be made to secure the new patent.

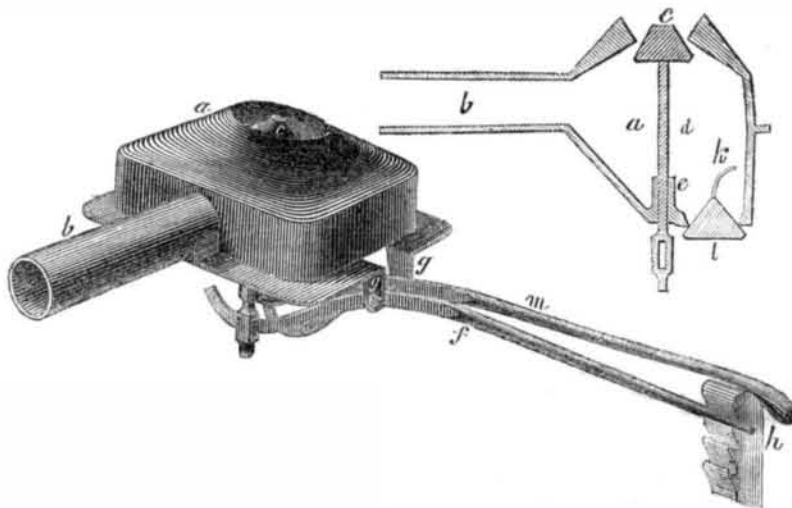
Prudential Policy.

"The Farmer & Mechanic, American Cabinet, Plow, Loom, Anvil," etc. etc.,—a journal of feeble pretensions, in publishing a letter upon the "static pressure engine," says—"We (meaning four or five Editors), have carefully avoided a single remark on the subject for the present, for reasons not necessary now to state," and winds up the sentence by referring their readers to the "clear and lucid arguments" found in the Scientific American. This is the first time our amalgamating cotemporary has ever given full credit to our abilities. We have every reason to bow in deference to that calm and inadequate philosophy which indites the wise policy of carefully avoiding committal remarks upon such a subject. Fallstaff's opinion about fighting is justly appreciated by our neighbor.

To Subscribers.

The next number will be the last of this Volume. We hope to commence our new volume with a great addition of subscribers. No person, we believe, can invest two dollars in a more suitable manner, both as it respects profit and pleasure, than by subscribing for the Scientific American. Useful and standard information, something suitable for every man and every family, may be found every week in our columns. We have no travelling agents, and have been greatly indebted to our readers for asking their neighbors to subscribe. If every subscriber could get one neighbor to subscribe, we would be enabled to advance the Scientific American as far ahead of what it now is, as it is ahead of its cotemporaries, and as it now is, in appearance and matter, to what it was four years ago.

PORTER'S IMPROVED FORGE TUYERE.



The accompanying engravings represent an improvement made in Forge Tuyere's, by Mr. Robt. D. Porter, which has received a high character for real merit. The shaded engraving is a perspective view, taken from above, as it is fastened in the masonry of the hearth, forming the bottom of the fire. The tuyere is composed of a cast-iron air box of the form better shown in the sectional view, which is taken vertically; b is a tube to the air box, and is attached to the bellows; c is a conical valve for rendering the aperture on the top of the air-box more or less open; d is the stem of this valve, f is the lever to move it. This lever works on a fulcrum pin between the lugs, g g; the longer end of this lever rests in the notched standard, h, by which means the conical valve can be opened as desired and kept so positioned. l is a valve for removing clinkers from the air box; it is worked by the lever, m. By opening the ash-box, k, occasionally, the scoria and ashes will drop from the air-box. The form of the aperture of this tuyere

together with that of the valve, direct the current of air in the most suitable manner. For some kinds of work a contracted current is required, for others an expanded current, such as for a broad fire; this tuyere presents every advantage in respect to such currents. The motion of the air through the aperture prevents the settling of ashes and cinders, and should any scale obstruct the blast, it is easily removed by working the valve, c. Mr. Porter has presented to us numerous testimonials in favor of his tuyere from respectable sources, and those best qualified to judge of its merits, viz., practical men who have used it. It saves a great deal of fuel and labor, as is attested by the said testimonials. The tuyere is durable, and has been used by some for three years, but it never has been, until now, brought prominently into public notice.

The Tuyere is patented, and Mr. Porter is now in this city, and we recommend our friends to give his improvement a candid examination.

Short Conversations on Mechanics---No. 5.

A. Last week you wished to know something about forces being measured according to the square of the velocity.

Q. "Yes."

A. If the resistance to a moving body is always the same at every point, the proper measure of force is $(W \times v)$ the weight multiplied into the velocity, but the whole work which a moving body will perform to bring it to a state of rest, is measured by $(W \times v^2)$ or according to the square of the velocity. This is the vis viva or living force. Bourne says, "of two balls of equal weight, but one moving twice as fast as the other, the faster ball has four times the mechanical force accumulated in it that the slower ball has. If the speed of a fly-wheel is doubled, it has four times the momentum it possessed before—momentum being measurable by a reference to the height through which a body must have fallen to acquire the velocity given." To explain the subject we will take a train of cars upon a level track, and let us suppose the resistance the same, at whatever velocity; then, if we imagine the train to be running 20 miles per hour, and it is desired to bring it to a state of rest at the station-house, the engineers shut off his steam, as he has learned by experience, at one mile distant, and he knows the train will be brought to rest in five minutes, at the end of

the mile: now, if the same train is made to move with a velocity of 40 miles per hour, he will have to shut off his steam at four miles distant from the station, and the time occupied in bringing the train to rest, will be ten minutes. The force of a moving body—that is, its whole accumulated force, or the total amount it will perform, no matter in what time, in being brought to a state of rest—varies as the square of its velocity multiplied by its weight. This question agitated the philosophers of Europe during the days of Leibnitz and Newton, and the controversy, to the no small credit of mathematics, was rather dropped than ended. Leibnitz asserted the principle that a body projected upwards against gravity, was always as the square of the velocity; in other words, if one velocity would shoot a cannon ball upwards one mile, two velocities would project it upwards four miles; and three velocities, nine miles. The old opinion was, that force was always proportional to the velocity. The world of science was divided upon the subject: Germany and Italy adopted the opinion of Leibnitz, and Britain and a number of the French mathematicians opposed it, and stood fast by the old system. It is singular, indeed, that both parties adopted different measures of force. And when any mechanical problem was proposed concerning the action of bodies,

whether at rest or in motion, they resolved it in the same manner, and came to the same conclusions, in a certain sense. Their ideas were, therefore, not inconsistent with each other, and both were therefore true. In measuring the force of one moving body by its effect upon another, there is no doubt but the forces of such bodies are as the quantities of matter multiplied into the velocities; because the forces of bodies of equal products, if opposed, destroy each other. In this way of measuring them, it is evident that the forces vary, not as the squares, but simply as the velocities. There are two ways of computing the amount of retarding forces; they both lead to different results, but both are just, and the one ought not to exclude the other. Thus, if a cannon ball be projected upwards opposite to the centre of gravity; we may inquire how long the motion will continue, or how far it will carry the ball; in other words, the retardation of gravity during a certain time, or while the body is moving over a certain space. If we use the first inquiry as a measure of force, that force will be proportional to the velocity; but if we employ the second as a measure, viz., the length of the line, or distance which the moving body describes, then it will be found that this measure is as the square of the velocity; because to that quantity the length of the line is known to be proportional. Thus, then, are two values of forces directed in this manner, the one proportional to the velocity, the other to the square of it; the one measure is time, the other, distance. Both methods of measurement are perfectly correct and consistent when understood.

Q. "I must say that this is a somewhat abstruse subject to me, but has it anything to do with measuring the power of working machinery, such as the horse-power of an engine?"

A. It has not, and when you hear people estimating the force of a machine, and setting it up as increasing in force according to the square of the velocity, then set them down as not being acquainted with the dynamical unit introduced by James Watt, long after the above controversy ceased. In estimating the value of his engines, he assumed as a dynamical unit of a horse-power, 33,000 lbs. lifted one foot high in one minute; this definition is founded on the assumption that the resistance remains the same at every new point of space, and pressure must be exerted afresh at every point through which resistance has to be overcome. The unit of measure of the steam engine is $(W \times v)$; the unit of measure for falling bodies is $(W \times v^2)$.

Q. "This is very plain to me now, viz., that the power of machines (that which I wish to know about) is measured simply by the pressure multiplied into the velocity."

A. Exactly; but remember that you cannot propel a steamship nor a locomotive with a double speed by using simply the double amount of fuel. In experiments made with steamships belonging to the British Mail Line running between Ireland and England, so late as 1849-50, it was found that, all things being equal, the speed was doubled by using about four times the amount of fuel; this was according to the square of the velocity, and accords with the known laws of resistance, which are parallel to gravity.

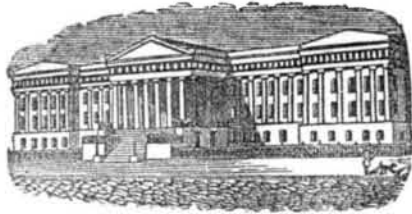
Q. "In moving machinery of any kind, is there any independent force generated, which is plus of the prime mover? There are centripetal and centrifugal forces, and it has been asserted that the latter is plus the prime mover, and increases with the square of the velocity. Is this so?"

A. It is not, and I should like to hear some of your reasons for making the assertion.

Q. "I forget them all at present, but will try and collect them by next week, and as this is the only information that I wished to have fully elucidated, I hope you will explain it all and I will not give you any more trouble—at least for some time."

A. I will do so.

By the very latest news from Europe we learn that the Great Exhibition is to close on the 15th of Oct. next. The prizes are not to be awarded for some days afterwards.



Reported expressly for the Scientific American, from the Patent Office Records. Patentees will find it for their interest to have their inventions illustrated in the Scientific American, as it has by far a larger circulation than any other journal of its class in America, and is the only source to which the public are accustomed to refer for the latest improvements. No charge is made except for the execution of the engravings, which belong to the patentee after publication.

LIST OF PATENT CLAIMS

Issued from the United States Patent Office. FOR THE WEEK ENDING AUGUST 26, 1851.

To David Allan, of St. Louis, Mo., for improvement in Washing Machines.

I claim the chamber or tub, with its narrowed neck and otherwise constructed, substantially as described, in combination with the plunger, which latter, with the clothes wrapped round it, passes through the narrowed neck of the chamber, and pressing forcibly on the water confined within the body of the chamber, drives it violently in the direction of the arrow, and through the body of the clothes, carrying the dirt with it.

To Hiram Carver, of Edinburgh, Va., for improvement in Cabbage Cutters.

I claim the two vertical bars confined to the sides of the feeding box, so as to rise and fall with the movement of the feeder, said vertical bars having handles by which the operator actuates the feeding box, and by the same exertion of his arms, renders the material self-feeding, simultaneously with the reciprocating motion of the feed box.

To B. Gillet & L. Allis, of Hartford, Conn., for improvement in Self Acting Cheese presses.

We claim the combination of the falling frame with the toggle joint levers and the fixed eccentric wedge, acting together and making the upward movement and pressure substantially as set forth and described.

To James Harrison, of Jamestown, N. Y., for improvement in Dental Hydraulic Cups.

I claim the construction of said machine of two or more plates, with vacancies between the same, and with pipes connected thereto.

I also claim the application of water, or any suitable liquid, to the space or vacancy between the plates, for the purpose of hardening and rendering more firm the contents of the cup while on the jaw.

I claim nothing for the outward form of the said plates, nor for the application of the same to the mouth, merely to take impressions.

I also claim the method of using the gate, as described.

To Jonathan F. Ostrander (assignor to A. B. & C. E. Hutchinson), of New York, N. Y., for improvement in Rotary Harrows.

I claim the use of the combination of the spur-wheel, with the hollow axis, for the purposes and in mode of construction substantially as set forth, and their combination with the circular frame, having the face, cog-wheel, and arms attached, for the purpose of producing a rotating harrow, substantially in principle of construction as set forth.

To Geo. McGregor, Robt. Lee, and Thos. G. Clinton, of Cincinnati, O., for improved Padlock.

We claim the combination of the bolt and cavity on the rotating end of the hasp, with the tumblers (two), having the characteristics described, or their equivalents, the tumblers, hasp, and bolt constituting a system of fastenings within and without the casing of the lock, the whole being arranged and operated substantially as described.

To P. H. Niles, of Boston, Mass., for improved Adjustable Tool Haft.

I do not claim the gripe as any novelty, but I claim the mechanism by which its jaws are closed, the same consisting of the eccentric groove, the pin, and the revolving tube, as described.

To G. W. Otis, of Lynn, Mass., for improvement in Insulators for Lightning Rods.

I claim the insulated support and point for lightning rods, consisting of the insulated point and opening in its shank, the insulating

cylinder of glass, with its lip or flange, and the wooden collar for securing the whole to the building, all as described.

To Horace Smith, of Norwich, Ct., (assignor to C. Palmer, of New York, N. Y., for improvements in Breech-loading Fire-Arms.

I claim operating the breech-pin directly by the finger lever, as described, in combination with the breech-pin and abutting lever, formed and operating substantially as described and for the purpose specified.

I also claim elevating the charge lifter by the direct contact of the breech-pin carrier, with an arm of the lifter lever, and depressing it by the direct contact of the finger lever, with the other arm of the said lifter lever, as described.

To David Tilton, of Stoneham, Mass., (assignor to himself and Samuel Sweetzer, of Boston, Mass.), for improvement in Padlocks.

I claim the combination of the turning hasp or contrivance, the tumbler and the slide, and its projection, or any mechanical equivalents, the whole being made to operate together, substantially as described.

To Samuel Brown, of Berwick, Pa., for improvement in Lime Kilns.

I claim, first, so forming the fire space in lime kilns, which are fixed at both ends so as to rise gradually from the centre of the kiln, to points above the eyes in each end thereof, substantially as described, for the purpose of so distributing the draft and heat as to secure the ever burning of the stone.

Second, I claim dividing the fire space by a partition wall in the centre into two chambers for the purpose of shifting and regulating the heat required in either end of the kiln, substantially as described, for the more evenly burning of the stone.

Third, I claim, in combination with the fire chambers and partition wall, the ash pits at each end of the kiln, connected by a narrow flue, so that when the eye at either end may be closed, for shifting the heat, sufficient draft will be kept up from the opposite end of the flue, to allow the fire to burn moderately without being entirely extinguished, as set forth.

To Geo. Bacon & R. J. Raven, of New York, N. Y., for improvement in Horizontal Square Pianofortes.

We claim connecting and combining, in the horizontal square pianoforte in one piece of cast-iron, or other metal or metals, the bridge, the brackets, the upper bearing by the flanges, the reverse bearing on the buttons, the application of the long bridge of the horizontal square pianoforte, of the method of firmly securing the whole to the rest plank by means of the screws and the application of the diagonal position of the flange, so as to make both strings of each note of equal length, to metal bridges, on horizontal square pianofortes, in the manner and for the purpose intended, as described.

To C. S. Bulkley, of Macon, Ga., for improvement in means of obviating difficulties arising from defective insulation of Telegraphs.

I claim reversing the connection of the main wire with the poles of the battery, so that the battery acts in opposition to the battery at the other end of the line, in the intervals between the contacts made by the key in writing (in place of merely breaking the circuit), by means of the apparatus and arrangement of wires, batteries, &c., substantially as described, for the purpose of counteracting the effects of imperfect insulation, as set forth.

To Henry Carter & James Rees, of Pittsburg, Pa., for improved Nut and Washer Machine.

We claim the two punches moved at the same time, with different velocities, and in the same direction, in combination with a die box, within which the nut is formed, substantially as set forth.

To J. P. Colrie, of New York, N. Y., for improvement in Machinery for Cutting Glass.

I claim, first, the combination and arrangement of the several parts for giving the reciprocating and circular movement herein described; that is to say, the combination of the bed plate and revolving plate, with the carriage, consisting of three pieces.

Second, the method of guiding the movements and adjusting the several parts of the machine, for the purpose of directing the course of the object to be shaped or figured, in passing the edge of the cutting wheel, by means of movable lettered or named stops and gauges,

prepared for particular patterns, and applied to the machine as required, the whole being constructed and operating substantially as set forth.

To D. W. C. McCloskey, of New York, N. Y., for improvement in Self-acting Blow-pipe Lamps.

I claim the use of the safety-valve and escape-pipe and stop-cock, in combination with the blow-pipe of a self-acting blow-pipe lamp, substantially as herein set forth.

To W. T. Richards, of New Haven, Ct., for improvement in machinery for forming joints of Elliptical Springs.

I claim the combination of the hollow die, with the lower die and half circular shears, actuated in the manner substantially as described and for the purpose set forth.

To J. P. Sherwood, of Fort Edward, N. Y., for improvement in Cut-Nail Machines.

I claim, first, in combination with knives, or the equivalent thereof, for cutting blanks sidewise from nail plates, a travelling, gripping, and heading tongs or jaws opening and closing in a direction perpendicular to the face of the nail plate, and constructed and actuated substantially as herein set forth, to gripe the blank on its flat sides without the necessity of turning it upon edge, as is customary with nail machines heretofore constructed to draw it from beneath the knives, and to hold it while being headed.

Second, I claim the direct acting knife stock, with knives secured to its opposite sides, in such positions, with respect to the stationary knives or to each other, that the knife upon the opposite side, in combination with a double graded cam, or other equivalent actuating mechanism, which shall cause the cutter bar to descend with two impulses, at each of which one knife acts to cut a nail blank.

Third, I claim the relative arrangement of the travelling gripping jaws and heading tool, the latter being actuated within the former, and travelling with it.

Fourth, in combination with two sets of knives, acting alternately, to sever nail plates, I claim a reciprocating gripping and heading carriage, which, travelling to and fro between the two sets of knives, gripes, heads, and delivers a nail at each single stroke, in alternate succession, at its opposite extremities, whereby much time and labor are saved, and the machinery to cut a given number of nails is condensed into a less space.

To J. H. Swett, of Concord, N. H., for improvement in Spike Machinery.

I claim the method of delivering the spike from the die, by means of the tilting rod and movable nippers, so as to allow the nippers to draw in the succeeding blank underneath the spike, and tip or tilt it out of the die, which prevents the possibility of a spike and blank being in the die at the same time, and the consequent breaking of the machine.

For the Scientific American.

Salivary Calculus, or Tartar of the Teeth.

I am pleased to see by a communication from a correspondent, in your paper of August 23, that the subject of concretions upon the teeth is attracting some attention: in this manner knowledge for good is often disseminated. It is possible that the articles in your valuable journal may be the means of calling the attention of some among your sixteen thousand subscribers (who might otherwise neglect it) to the importance of a proper care and cleanliness to the organs of the teeth, a healthy condition of which is so essential to the well-being of the whole human economy.

Your correspondent inquires, "Is that substance usually called tartar, found on the teeth, really so?" in answer, I would say that it is generally called so, but it is more properly *salivary calculus*, a name given to it by dental writers. There is considerable difference between the substance found on and around the teeth, called tartar, and that substance called by the same name generated by the fermentation of wine in casks; the one is an earthy and animal deposit from the saliva and mucous secretions of the mouth, the other an acid concrete.

Salivary calculus, or tartar of the mouth, is found more or less in its different stages on and around the teeth of every individual, whether they are accustomed to the use of wine or not; even the animal creation are not exempt,

Not long since I saw a clearly defined case of it in the mouth of a dog. The earthy matter entering into the composition of tartar of the teeth, is mostly phosphate of lime; the animal matter is made up of infusoria and the remains of minute animalculæ, the presence of which has been clearly detected by the microscope.

Tartar, or salivary calculus, differs in its relative proportions, as it is soft or hard; at first it is soft and light-colored, but by accumulation and exposure it becomes dark and hard. The analysis of Berzelius gives—phosphate of lime, 79; salivary mucous and saliva, 13.50; animal matter, 7.50—100. Dr. Dwinell gives—phosphate of lime, 60; carbonate of lime, 14; animal matter and mucous, 16; water and loss, 10—100.

Hard and dry tartar has more earthy and less animal matter than soft; American and English authors attribute it principally to one source—the saliva; the French authors to several. The fact that it is found in greater quantities on the outside of the upper molars, or double teeth, and inside of the lower incisors, or front teeth, which are opposite the mouth of the ducts, from whence the saliva issues, goes to prove its paternity. Tartar itself does not directly act upon the teeth, still its effects upon the mouth, in general, is extremely deleterious, vitiating as it always does its secretions, causing inflammation, abscess, and fungus growth of the gums, and destroying the alveoli, or sockets that contain the teeth—causes them, when perfectly sound, to loosen and fall out; it also, by eating away the gums, gives the teeth that long, dark, and unsightly appearance, and by admitting the air and acrid food to their bony structures, hastens decay, causing toothache and its accompanying evils: it not infrequently is one great cause of dyspepsia and derangement of the whole digestive apparatus; it also, if allowed to accumulate for any length of time, prevents, by irritation, a proper cleanliness of teeth—the brush cannot be used without pain, as the gums bleed at the slightest touch, hence many suffer their teeth to go to ruin for want of proper cleanliness.

There are many who, from ignorance of the effects of salivary calculus, appear to have a great affection for it, and are extremely loth to part with it, fearing its removal may injure the enamel. When persons, on examining their mouths, find an accumulation of this substance on and around their teeth, I would advise them to have it removed as soon as possible—not by using acids for the purpose, for, as I remarked in a former communication, any acid, no matter whether vegetable or mineral, that will dissolve tartar, will assuredly dissolve the teeth,—but by instruments constructed for that purpose in the hands of the dentist, after which, by using the tooth-brush twice a-day—in the morning when rising (for tartar accumulates freely during the night), and in the evening when retiring—with some simple alkaline dentrifice, will in almost every instance prevent an accumulation of this injurious substance. G. F. J. COLBURN, Dentist. Newark, N. J., 1851.

Patent Cases—Cultivators.

There were two cases decided before Judge Nelson, at Cooperstown, on the 12th ult., which, to our farmers, are of no small importance. They were motions for preliminary injunctions, 1st by S. R. Tracy, against R. S. Torrey and H. Torrey, for infringing the patent of N. Ide, of Shelby, Orleans Co., N. Y., in cultivators, the plaintiff being the assignee for three counties. The defendants were selling cultivators within the county lines owned by Tracy, viz., Yates, Seneca, and Ontario. The defendants were selling cultivators owned by the plaintiff.

2nd, motion for injunction by E. Chamberlain and others, against J. F. P. Root, and others, for infringing the same patent, the plaintiffs being owners of the patent for the town of Sweden, Brockport, in Monroe Co. Injunctions were granted. We shall notice these cases more at length next week, for the result verifies the advice given by us to certain parties in relation to this affair some time ago.