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### RAPID TRANSIT IN NEW YORK.

We give below engravings illustrative of the elevated and of the underground systems of city travel. The former, under the auspices of the New York Elevated Railway, has lately been extended, and is now running in this city, with a single track, on Greenwich street and Ninth avenue, from the Battery to Central Park, a distance of five miles, being tions designed for this railway. The street pavement is to

transit, and charters therefor were now granted. Among ly being extended, and have been proved, by years of expethese grants was that for an underground railway, directly beneath Broadway, the finest street in the world and (by reason of its large local population, central position, and celebrity) regarded by many as the best of all railway routes. One of our engravings illustrates the character of the sta-

rience, to furnish the only positive means of fast city travel worthy ef the name of rapid transit.

Another of the charters granted was for the existing Fourth Avenue Underground Railway, details of which were fully illustrated in our paper a few months ago. This great work was completed last year at a cost of six millions of

the first considerable portion of any purely local line for rapid transit that has, up to the present time, been constructed in this city. We also present, on other pages, sectional views of this work, together with other drawings pertaining to the above subject matter.

The question of rapid transit in New York has for a long period perplexed our citizens, has had a curious history, and is finally nearing a curious solution. Public opinion as to the particular system or form of transit best suited to meet the wants of our community has, from time to time, greatly varied. Twenty-five years ago the elevated railway plan was chiefly favored. That was a time when money was scarce; people felt poor, and wanted a cheap form of railway,quicklybuilt. Various forms of these structures were engraved and discussed in the SCIENTIFIC AMERI-CAN at that period, but none were adopted.



dollars, of which three millions or more were furnished from the city treasury. The line extends northerly from 42d street to Harlem river, a distance of four miles and a half. Over the four tracks of this underground railway the immense traffic of the New York Central and Hudson River Railway, the New York and Harlem, and the New York, New Haven, and Hartford, and their many branches is now conducted with such regularity, safety, and comparative silence that the fact of the working of these roads within the heart of the city is almost forgotten by the majority of people. When these roads were worked above ground, the columns of our local news papers contained frequent and bitter complaints against them.

The financial revulsion of 1873, the effects of which still prevail, made our citizens again feel poor, and revived the cry for cheaper plans of transit, on the ele-

## GENERAL DESIGN FOR STATIONS-BROADWAY UNDERGROUND RAILWAY.

the underground railway, with its solid tracks, superior speed, and unlimited scope for public accommodation, bestreets with elevated railways was hooted at and set aside.

Underground roads were, by the press and engineers,

As the times improved and money be came more plentiful, be supported upon iron girders and ornamental columns, vated system. Last year the legislature created a board of with masonry arches between the beams. The entire line of five commissioners to determine routes and authorize certain works, from the Battery to Central Park and Grand Central | lines of these bridges, if they thought best. They have recame the favorite, and the bare suggestion of filling our Depot, is designed to be of the most substantial and enduring character. The general plan of the works will be similar to the underground railways of London, which now ramify in case our citizens will probably have an extended experience declared to be the only proper and adequate means for rapid all directions throughout that great metropolis, are constant-

ported in favor of them; their report is now before the courts, and will, it is expected, soon be confirmed ; in which (Continued on page 214.)



#### NEW YORK ELEVATED RAILWAY-SINGLE TRACK -GREENWICH STREET AND NINTH AVENUE, NBW YORK.



### (Continued from front page.)

with the system. The Commissioners' plans, which the court is called upon to confirm, have in view the ultimate erection of over thirty-five miles of iron railway bridges, which are to occupy and cover the central portions of many of our finest streets, including Third avenue and Sixth avenue, the Bowery, Chatham street, Park Row, etc. The property owners along the lines have filed the strongest protests against this occupation of the streets. They allege that the soil and drainage of the city is well suited for the economical construction of underground railways; that the first cost of these roads, if regard is had to relative capaci-

reason or sense in encumbering the streets with the nuisance of bridges and locomo tives, when the tracks might just as well be put beneath the ground surface, where their operation disturbs no one. But the elevated people claim that their structures will not encumber the streets, that the running of locomotives and trains on the bridges will not be a nuisance, will not depreciate property: instead of this, property will rise, the bridges will improve the appearance of the streets, and all will be nice and lovely. Many excellent engineers support this view; our valued cotemporary, the Railroad Gazette, is

an advocate. It says: "The New York Elevated

city, shown on our front page is a single track railway, built | river border, to 12th street, where it enters Ninth aven ue, on iron posts upon the edge of the sidewalk; it has at present a length of about five miles, extending from the southern extremity of the city, at the Battery, to 61st street on the north, near Central Park. The first or experimental section, consisting of a half mile, was put in operation in 1868, under the auspices of Mr. Charles T. Harvey, the original projector of the enterprise, and first engineer of the work. Mr. Harvey foresaw many serious objections to the running of steam engines in the crowded streets of the city, and sought, as a substitute, the employment of wire rope traction. In this he had reached a greater success than had ever before ty, is no greater than the bridge system; and that there is no been achieved; but the unfortunate failure of the company ward into four branches, two of which are for lateral sup-

and continues to 61st street. A further extension of th road is proposed, and legal proceedings to that end are now in progress, to which we have alluded. The running time at present is 5 miles in 34 minutes. For the engravings and following particulars, we are indebted to the Railroad Gazette. The portion of the line illustrated is supported on columns, designed by D. W. Wyman, C. E., formed out of four round, solid, wrought iron bars, 41 inches in diameter, bent into the shape represented. These are attached to a heavy cast iron foundation plate bolted down to a foundation of masonry. At the top the wrought iron bars are bent out-



port, and two for longitudinal stiffness. The four bars are tied together with wrought iron bands at the neck of the columns, or just below the point from which the bars begin to branch outward, and also at the top. These columns are placed from 30 to 60 feet apart, and the roadway between is supported on two wrought iron girders, each formed of two 12 inch channel bars. These are trussed at the street crossings, as shown in the sectional view, but not in the shorter spans. The perspec tive view is from a photograph taken above 34th street, looking southward. On a portion of the line near 34th street, the company adopted a form of posts designed by Mr. Charles Macdonald, C. E. In this the support consists of four posts distributed in a similar manner to the round posts designed by Mr. Wyman. Each of Mr. Macdonald's posts consisted of four 3 inch angle irons, riveted back to back, forming a cruciform

Railroad is located on the street itself, and such a road could be located on the most crowded thoroughfare without obstructing but rather facilitating the traffic and travel on the street itself. That this system of overhead railroads is destined to be very extensively employed,

# ELEVATED RAILWAY PROPOSED FOR OXFORD STREET. LONDON.

there can be little doubt, and we think in it may be dis- removed him and his coadjutors from all connection with the

cerned the remedy which civilization will provide for the evil of crowded populations, which seems to attend its advancement the world over. The effect of this system may be, as we have heretofore pointed out, to change, in a great measure, the whole character of metropolitan life, to concentrate in a small area the places of business, and to scatter the houses of the residents over a larger area, and to cover large sections in the vicinity of cities with suburban residences."

THE NEW YORK ELEVATED RAILWAY.

work, and prevented the consummation of his ingenious and excellent plans. After the expenditure of nearly a million in money towards the extension of the work, the company succumbed, and the property was sold by foreclosure, the original stockholders losing nearly everything. The new purchasers, under the title of the New York Elevated Railway Company, adopted the use of light locomotives, and have from time to time strengthened and extended the track, until it has now reached the length above stated. The line

The stations are usually placed over the street crossings with the stairs leading down the cross street. The equipment of the road consists of six engines and twelve cars. The engines weigh 8,000 lbs. each; the cylinders are 7 by 10 inches, and the four driving wheels 30 inches in diameter. The cars seat 48 passengers and weigh 11,000 lbs. As two cars are usually run to each train, it will be seen that the actual weight of train, including engine, is only 312 lbs. per passenger. The road is laid chiefly with iron rails of 36 The New York Elevated Railway, Ninth avenue, New York runs from the Battery, along Greenwich street, near the lbs. weight per yard, but some new steel rails have been put down. The hight in the clear above the street crossings ing London Bridge of a great part of the omnibus traffic, offered to any effective system of quick conveyance. The is in no case less than 14 feet, but, in order to equalize the grades, is often more. The heaviest grade is  $127\frac{3}{10}$  feet per mile, and the shortest curve of 56 feet radius.

### PEN SKETCHES OF RAPID TRANSIT.

The plan shown in the upper section of our engraving, at the left, gives an idea of the appearance of the Gilbert Elevated road, the building of which, on Sixth avenue, was lately begun, but has been temporarily suspended.

The Hanna plan is shown in the two lower sketches, at the left.

The saddle railway of General Le Roy Stone is represented in the upper and lower sketches at the right. This plan is claimed by the ingenious inventor and his friends to be the cheapest, best, and least objectionable form of elevated street railway that has ever been devised. We gave an account, on page 294, volume XXXIII., SCIENTIFIC AMERICAN, of the practical and highly successful trial of a section of this railway, at Phœnixville, Pa. There is no accounting for tastes, otherwise it might seem strange that some people should be unable to perceive any lines of grace in this structure, while others regard it as a thing of uncommon beauty. Our English cousins are evidently among the latter category; for they have hastened to adopt General Stone's invention, without credit to him, and have added a few modifications which they consider to be an improvement.

### THE PROPOSED ELEVATED RAILWAY, LONDON.

We give an engraving of the recent British improvement on General Stone's plan, which we copy from our London co temporary, Iron. The editor says:

'Let a single line be built between the Post Office and Piccadilly or Oxford Circus, vid Newgate Street and Holborn, and either Long Acre or Oxford Street, with two intermediate stations. An equally, or even more, favorable route would be that between King William Street and the Elephant and Castle," with one intermediate station. It is remotely possible they might not succeed to the extent anticipated; even then, the money would not have been utterly thrown away. Both lines might be constructed at a cost very much less than that of a single mile of underground railway, and their construction would seem to offer a far more remunerative outlet for our daily accumulating surplus capital than foreign loans or competing lines to Brighton. The present time, when iron and steel are obtainable at moderate prices, and it is barely possible to obtain a return such an enterprise.

"The southern line would have the advantage of reliev. | the remunerative character of the traffic which would be

which tends so materially to the existing block, besides largely diminishing the crowd of foot passengers, and would postpone the necessity of the much debated widening for some years to come. As an auxiliary to such a plan, a line from Aldgate or Bishopsgate by Fenchurch street to King William street, and so to London Bridge, would complete the much needed link between the Metropolitan, Great Eastern, and Blackwall lines, and the eastern tramways, and the systems of the three great southern railways. Let



### PROPOSED ELEVATED RAILWAY, LONDON.

any one stand for an hour and watch the passing stream of of  $4\frac{1}{2}$  per cent on investments, is particularly favorable to hurrying humanity ever pressing over London Bridge and along the Borough, and he will hardly be long in doubt as to

projectors favorite phrase, 'practically inexhaustible,' is here really applicable.

"By adopting a system of air lines, no existing interests, excepting those of the proprietors of inferior conveyances, would be injured' while the proprietors of property adjacent to the routes selected would find the value of their premises largely increased. As to the apparent objections to street railways, it is believed they would be obviated by such a plan as is proposed, and of which we give a sketch outline. rather courting than deprecating criticisms and suggestions, on a subject in which millions are directly interested.

"At intervals of from ten to fifteen yards along the kerbof the selected thoroughfare, wrought iron or steel columns are planted, deep down, into masonry or concrete foundations, but leaving, as we have said, at least 15 feet clear above the pavement level. The construction of these pillars would require great attention, so as to secure a maximum strength with a minimum mass. An elliptical section would proba-

bly offer the greatest resistance to the strains to which they would be subjected. In America such pillars have been constructed so as to secure great stability by bolting together four plates of § inch boiler plate, with the bolted together flanges projecting outwards. Mild steel rolled plates



similarly built up, or hollow cast steel pillars, would, however, probably be in the end the most advantageous, considering the necessarily restricted section to which the engineer would be confined. Alternate columns might be strengthened by lateral struts or buttresses of ornamental design, spring ing from the contiguous buildings. A light double truss girder, with a broad bottom flange, strengthened by an arch as shown in the sketch, rests on the columns, and carries on its base flanges the rails on which the cars run. Cars about 5 feet wide and 20 feet long, in which the passengers would sit back to back, would run on these rails. "straddling" the girder, which, with the car wheels, would occupy the vacant space under the seats. As an additional precaution, the car carries, as a prolongation of its central division, a triangular shaped piece, which runs in a correspondingly recessed groove on the top of the girder, along which it can slide freely, but which effectually prevents the car from diverging from the perpendicular. By this, great stability would be obtained, and an upset be rendered impossible. This might even (to make surety doubly sure) be further provided against by the use of guard rails."



No. 1, GILBERT PLAN .-- Nos. 2, 3, HANNA PLAN -- Nos. 4, 5. GENERAL LE ROY STONE'S PLAN.

# Scientific American.

### Remarkable Whirlwind.

A terrible visitation at Hazel Green, Wis., on the 10th of March last, is described in a special despatch to the Chicago Tribune as the result of a collision between two sections of a cloud, which had divided and come together again:

The clouds joined, and a long cylindrical shaft shot down. The cylinder was about 120 feet in circumference and 70 feet in hight. It struck the ground a mile southwest of Hazel Green, and, ploughing a furrow 600 feet long, 4 feet wide, and several feet deep, seemed to absorb the earth and the rocks. As it moved along in a northeasterly direction, it looked like a clay colored column whirling with incredible speed around a central vacunm. It was a solid mass of heavy rubbish. As the cylinder came up the slope, the rush and yell and whirr of the column-sounding like the rush and shricks of the wind on the sea, and like the thunder of guns-attracted the attention of the people of Hazel Green, and they flocked to their doors and windows. Steadily it came on, sometimes bounding fifty feet into the air, then rushing down again. In two minutes it descended on the little hazel grove just southwest of the town. The trees were snatched up by the roots and whirled ninety feet into the air and supported there.

The cap of the column was a stone 8 feet long, 4 feet wide, and 3 feet thick. This stone was held in its position while the column covered a space of three quarters of amile. Just between the grove and the town, 250 feet from either, the column halted and spun around over a small space, and then recommenced its march. The air was filled with the yells and lamentations of the people.

Tearing off a corner of a frame house, the column rose some thirty feet into the air, and then, hovering for an instant, fell perpendicularly upon the roof of the Masonic Hall, a stone building. The structure was mashed flat. This was at half past four, and a meeting had been called for five o'clock. Half an hour later seventy persons would have been assembled in the upper portion of the building. The next house was of frame, and occupied by Mrs. Richards and her family. A daughter in law and her two children were saved by the scantlings above them, while the rest of the family were killed outright. A frying pan containing three cakes was on the stove, and the frying pan, still containing the cakes, was found a mile and a half northeast of the village. Twenty-six houses were carried beyond the ken of mortals. Where they went no one can tell. The track of the column is filled with sawdust and bits of wood, as though a sawmill had belched out a half finished lumber yard. The trees for several miles are filled with chairs, bits of furniture, carpets, clothing, bits of window shades, and household materials. Mrs. Looney was sitting in her kitch en. The house disappeared as if touched by the magician's wand, and the crushed body of Mrs. Looney was found 400 feet off, stripped of clothing and with the skin peeled off her back from her neck down.

Of the rest of those killed nothing can be said, beyond that the bodies were found not less than 200 feet from where they started. A boy and girl were found out on the prairie, wandering about helplessly. They were in a house of which no account has been received. They remembered being lifted into the air, and, when found, were nearly a quarter of a mile from where the house used to be, badly bruised and unable to account for their condition. Probably the most remarkable spectacle was that Dr. Kittoe's horses, which, with barn, buggy, and harness, were lifted 60 feet into the air, and the horses dropped at least 100 rods from the former site of the barn. The column was then a huge mass of débris, and a spectator says that the horses went up through the center of the column, whirling around so swiftly that they looked as if torn in pieces. They were found utterly i little washing soda has been dissolved. Then put a teaunbruised but stone dead, and not more than 10 or 20 feet apart. The whole affair was over in two minutes, but the devastation was most complete,

### Successful Progress of the Galveston Harbor Improvements.

The completion of the survey of Galveston harbor, Texas, by Lieut. Quinn, shows that the western point (where, in June, 1875, there was only five feet of water) has entirely disappeared, and the soundings at that particular spot, in crossing the inner bar, are entirely closed. The deep water of Galveston harbor channel has united with deep water opposite the end of the jetty, and lacks only 750 feet of uniting with the deep water of Bolivia channel. When this connection is made, there will be a depth of over 18 feet on the inner bar. The gabions in the jetty are covered with sand. The old Swash channel is obliterated, and is now connected and forms a continuation of Galveston Island. The depth of water in the shallowest spot at low tide is 14<sup>§</sup> feet; at ordinary high tide, 16 feet. Before the city commenced the pile breakwater, there was only 9 feet of water on the inner bar. The recent work by the government has confined the water to a single channel. The results already obtained are very satisfactory; and there appears no doubt but that the jetty system, as being applied, will terminate in giving Galveston 18 to 20 feet of water over the bar.

they are also used for the manufacture of peckers or hammers, for knocking to and fro the ever-flying shuttle. Ordinary size is made from the flesh refuse of the hide, and is extensively used by paper hangers, cotton spinners (to give firmness to the thread), and carpet manufacturers. As to the hair, there has been little demand for it since speculative builders have discovered a mode by which ceilings can be made to retain their positions for a time without its use. Unhappily the demand for cheapness (says the Journal of the Society of Arts, whence we take the facts here given) has stimulated the makers of inferior clothing and blanketing to mix hair with wool, thus rendering the fabric heavy without in any way adding to its warmth-retaining capacity. Hair is also used in the fabrication of horse cloths and railway rugs, and, strange to add, the cheap (so-called) sealskin jackets largely sold in England are made from the same material.

A profitable use for spent tan, other than as fuel, remains yet to be discovered. Liebig says that it is valuable as a manure when wholly rotten: some have tried to turn it into charcoal, and to light their tanneries with its gas, but the results have not been very satisfactory. A new process for using this refuse instead of charcoal in the manufacture of tin plates has lately been tried in Wales, and seems likely to be advantageous and useful.

The lime grounds or deposit, although not used for the purpose, is an excellent manure. It contains a mixture of salt, blood, lime, and gelatin. Its analysis is as follows: Moisture 54:05, organic matter 6 80, silica 2 55, iron and alumina 0.84, phosphate of lime 1.85, carbonate of lime 12.42, caustic lime 17 44, common salt 4 05; total 100 00.

### A Telegraphic Swindle.

A rather neat swindle was recently perpetrated, on a bank in Dallas, Texas, by three scamps who evidently possessed considerable knowledge of telegraphy and likewise the means of carrying their knowledge into practice. Scamp No. 1, in the character of a wealthy New York cotton buyer, presented himself at the bank with a check for \$10,000 to be cashed. He brought strong letters of endorsement, and the check, which had been drawn by the bank's New York correspondent, appeared all regular. In order the more thoroughly to assure the bank, the stranger requested the officials to telegraph to New York for advice. An answer speedily came back, saying that both check and man were good, and the cash was paid. Meanwhile scamps Nos. 2 and 3 went a few miles out of town, rigged a battery and the necessary instruments, and tapped the wires of the telegraph line. When the bank's message was sent, they received it, and sent back the false answer, thus assuring the bank officers, and of course victimizing the unfortunate institution.

### Useful Recipes for the Shop, the Household. and the Farm.

The Housekeeper gives the following suggestions for utilizing old tin cans. Take off the top of the can, punch holes on opposite sides near the rim, put in a wire bail; and you have a little bucket, which may serve for a paint pot, to keep nails in, or other handy purposes. Take off the top, cut to the proper shape, and fasten on a handle by means of a screw through a hole in the bottom, and a useful scoop may be made. A saucepan for small messes may be made by cut ting down a can, leaving a strip to be bent at right angles, and turned around a stick, to serve as a handle. A coarse grater for crackers, etc., is easily formed from a piece of tin fastened to a board. The holes in the grater should be made with an old three cornered file.

If the globes on a gas fixture are much stained on the outside by smoke, soak them in tolerably hot water in which a spoonful of powdered ammonia in a pan of lukewarm water and with a hard brush scrub the globes until the smoke stains disappears. Rinse in clean cold water. They will as white as if new.

Tasteful ornaments may be made of natural leaves and sprays artificially frosted. This is done by means of powered glass, which can easily be obtained by pounding some bits of glass with a heavy hammer, care being taken to protect the eyes against flying splinters. Dip the object in thin gum water and shake the powdered glass over them. When dry, handsome bouquets can be arranged.

Chloride of calcium is such a deliquescent salt that it attracts enough moisture to prevent glue from cracking. Glue thus prepared will adhere to glass, metal, etc., and can be used for putting on labels with danger of their dropping off.

ous sources: A very simple and most useful ointment, which answers admirably in some affections of the skin, is formed of 1 drachm to a drachm of the acid to 7 drachms of simple ointment. A liniment of salicylic acid and olive oil (2 drachms of the acid to 8 ozs, of oil) will be found of much effacacy in burns. Soak lint in the liniment and apply to the suppurating surface. Professor Will, of Aberdeen, who has tested this in some severe cases of burns, commends it strongly in the Lancet. For cancerous sores. Thiersch recommends dusting with pure acid, or with equal parts of the powder and starch; or powder formed of charcoal and the acid might be employed for the same purpose, or for dusting over poultices applied to sloughing surfaces. Another ointment is made of: Sperm oil, 11 drachms; oil of theobroma,  $2\frac{1}{2}$  drachms; salicylic acid, from  $\frac{1}{2}$  to 1 drachm. This forms a thick paste, which should be thickly spread on lint. The heat of the surface acting on the oil of theobroma, a diffusible ointment is formed, which is a suitable application when it is desired to have the discharge thoroughly saturated with the antiseptic. An ointment less easi ly acted on by the body heat consists of sperm oil and paraffin. of each 14 drachms: oil of theobroma. 2 drachms: oil of almonds, 1 drachm; salicylic acid, from  $\frac{1}{2}$  to 1 drachm.

### DECISIONS OF THE COURTS.

### United States Circuit Court---Eastern District of Missouri.

PAT'ENT SAFE FILLING.--- UNITED STATES AND FOREIGN SALAMANDER FELT-

ING COMPANY 08. NATHANIEL A. HAVEN. [In Equity.-Before Treat. J.:-Decided October 27, 1875.] A composition having been described in a prior patent, one who applies it to a new use cannot claim the composition as his invention. The court cannot take notice of what was not set up in answer against plaintiff's patent. The legal rule is that. prima factor a solution

's patent. cal rule is that, *prima facie*, a reissue is for the same invention as

plaintiff's patent.
The legal rule is that, prima facie, a reissue is for the same invention as that original later the Revised Statutes of the United States prohibits, in a reissue, not only the introduction of new matter, but also the enlargement of the original claim growing out of the subsequent advancement of the art. This rule controls both the Patent office and the courts.
Every patent, as to novely or utility, depends on the state of the art at the time of the chain made or patent issue.
By new matter is not meant merely the introduction of a new ingredient in a patented composition, but any change in the original patent and substantially different composition and results are secured.
Treat, J.:
The size case in equity for an alleged infringement of several patents, of which the Salamander Company is assignee.
The reissued patent, No. 4.134, dated September 27, 1870, is in reissue of each with the other ingredient is non-conducting substance, as a main relation for preventing radiation from heated surfaces, or as an ingredient in a patent, when combined with paper pulp or reventing radiation from heated surfaces, or as an ingredient in an or preventing radiation from heated surfaces, or as an ingredient in any composition.

venting radiation from neared surfaces, or as an ingredient in any compo-sition used for such purposes. It is alleged that this patent was anticipated by French's patents, Sep-tember 14, 1859, which were for the same purposes as the foregoing. Fatent A (44,832) was for a composition of crushed asbestos mixed with sn alkaline silicate, and B (94,853) an ingrovement on A, by adding to the mixture a vegetable substance, as as woust and other woody matter, to make a lighter and cheaper coating. The reissue to Johns, No. 5,951, dated June 30, 1574, of original patent dated April 14, 1855, is for crushed asbestos and lime mixed with water to be applied.

vegetable substance, as an other and other woody matter, to make a lighter and cheaper coating.
The release to Johns, No. 5, 951, dated June 30, 1574, of original patent dated April 14, 1555, is for crushed asbestos and lime mixed with water to be applied.
The defence is mainly for want of novelty -that the inventions claimed by plaintiffs were anticipated, etc. Whateverthere is in plaintiff patents for which defendant is to be held as an intringer consists of intro putty mixed with non-conducting fibrons material. The subsequent patents on which they rest are for lime putty and crushed asbestos.
Tiseems, from the evidence, that juantiffs are assignees of the French patent also, but it is not set up in the bill, though mentioned in the amended answer as anticipating the Bissell and itley and also the Riley patents.
While some of the Johns patents are set out, the relssue above is not mentioned in the answer.
Tiseems, from a cursory examination of the case, that, if the Johns reissue (not mentioned in the answer), No. 5, 951, of June 30, 1574, relates back to April 14, 1868, the plaintiffs patents as to asbestos and lime putty were anticipated. So, if plaintiffs claim is too broad.
Tf each reissue relates to the date of the original patents, then the Johns patent anticipated those held by plaintiffs; and, altonugh, Johns did not specifically state the use for non-radiation, etc., the plaintiffs cannot, because of the new use to which they apply the composition.
The court, however, cannot take notice of what was not set up against plaintiffs 'patent.
We may an an is a court previously, it was suggested, that if the reissue dohns patent was also called to the fact that the reissues to Johns had not been set up.
By spreement of Counsel, those reissues are now before the court, as if made before this suit was brought, and as if fully set up in defence.
The only additional point, therefore, is as to the validity of the

subsequent meets makes the new to and untilough of by him offi-nally. This rule controls both the Patent Office and the courts. New matter must not be introduced. By new matter is not meant merely the introduc-tion of a new ingredient in a patented composition, but any change in the original specification and claim, whereby a new and substantially different composition and results are secured. Such is the reissue in question. It is not only for a composition essen-tially different, but for one not within the purpose for which the original invention was designed.

### The Utilization of Tannery Refuse.

pieces, fieshings, hair, lime deposit, and spent tan. The glue pieces are used for two purposes, the principal of which is the manufacture of gelatin and isinglass. For this indus-try thousands of tuns of the scraps are sold, and few would imagine that the delicately tinted and flavored molds of jelly sold by skillful confectioners ever had their origin in the foul-smelling waste heap of the tan yards. The dry untanned portions find their second utilization in papermaking, and a variety of new recipes for its employment, taken from vari Tannery refuse consist of untanned dried pelt or glue

A correspondent of the English Mechanic gives the following directions for fixing pencil drawings: "Lay the drawing on a sloping board, and pour boiling water gently over it; this will remove all superfluous particles of lead, and will bring some of the size in the paper to the surface; boil some isinglass or gum arabic in water to make a very thin size; pour it out on a flat dish to cool; run the drawing through the size, taking care that every part is well wetted; then lay it on a board to dry. The size should be so thin as to feel just a little sticky between the finger and thumb when cool. If too thick, it will be seen on the drawing after it is dry. I have tried many ways of fixing drawings, but have never found any to equal this." Another writer says: "The best

Such is the relastic model of the part of the accomposition of the second case of the sec

### United States Circuit Court---District of Massachusetts.

COPYRIGHT CASE.-BAMUEL E. LAWRENCE VS. JOSEPH E. CUPPLES et al.

[In equity.-Before SHEPLEY, J.-Decided October, 1875.]