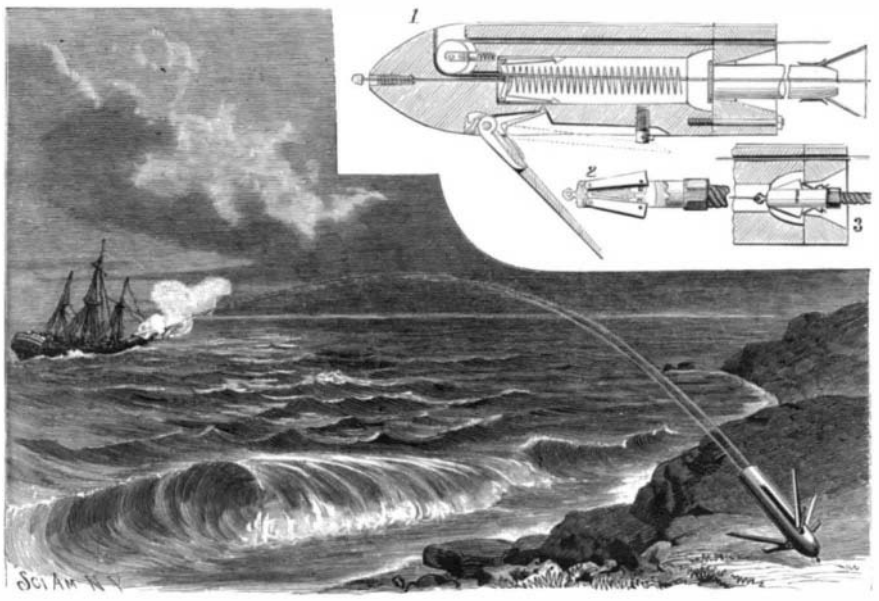
TO THROW LIFE LINES FROM VESSELS.

To facilitate establishing communication from a disabled or drifting ship with the shore, Mr. Anton Schmitt has patented the apparatus shown in the accompanying illustration, the introduction of which is being promoted by the Rev. Albert Stroebele, of Butler, N. J. On the vessel is carried a cannon adapted to fire a projectile in the form of an anchor having grapnel arms, to hold the anchor where it strikes, the anchor carrying a line having one end fastened on the carriage of the cannon while the other end unwinds from a drum on the carriage, the two ends of the line thus remaining on board the vessel. One end of a line thus connected with the shore may then be attached to a heavy chain or cable, and the latter drawn out and fastened in the anchor, affording means, by the aid of a drum or windlass on shipboard, of drawing the vessel toward the shore. Fig. 1 is a sectional side view of the anchor, whose body has a bore registering with a conical bore in the base, through which passes one run of the line, which extends around a pulley in yielding bearings in the head, and through registering apertures in the body and base, to return to the drum on the carriage. A tube loosely held in the bore of the body is adapted to engage a funnel in the base to form a guideway for the head of the heavy chain or cable when the latter is to be connected with the anchor, as shown in Fig. 3. On the front of this tube is a flanged cap, on which presses a spring normally compressed by hooks which engage the flange, the hooks being pivoted at their rear end on links connected with a rod extending to the front end of the body. The head of this rod first strikes the ground when the anchor is fired, disengaging the hooks and permitting the spring to force the tube and funnel outward, as shown in Fig. 1. Pivoted in recesses in the sides of the body are three grapnel arms, each arm being recessed to receive a pivoted arm. Each arm is normally held in closed position by the wall of the barrel, but they are all forced outward by springs when the anchor is fired, the shorter arms being rigidly and the longer arms elastically held open. The head for the chain or cable to be connected with the anchor by means of the lines, after the anchor has been thrown ashore, has pivoted wings normally folded into a recess of the head, as shown in Fig. 2. These wings are spring-pressed, and are closed when drawn through the funnel in the base of the anchor, after which they swing outward and abut against the inner face of the base, whereby the head is securely connected with the anchor, and a strong connection is thus made between the anchor and the vessel.



SCHMITT'S LIFE LINE THROWING APPARATUS.

Aliens May Become Engineers.

Aliens who have resided in the United States for six months or more, and who have declared their intention to become citizens of the United States, can be licensed as engineers or masters in the American merchant marine. Such was the decision of Attorney-General Olney in the question referred to him by Secretary Carlisle as to the legality of the action of Secretary Foster in granting licenses to the alien engineers who were serving on the American Line steamers New York and Paris at the time they were granted American registry under special act of Congress. General Olney decided that the action of Secretary Foster was valid, and that the act of 1874, under which he acted, was still in force, and unrepealed by the act of 1884, known as the Dingley act, notwithstanding the contention of the National Association of Marine Engineers of the United States that it had been repealed.—American Shipbuilder.

A New Use for the Bicycle.

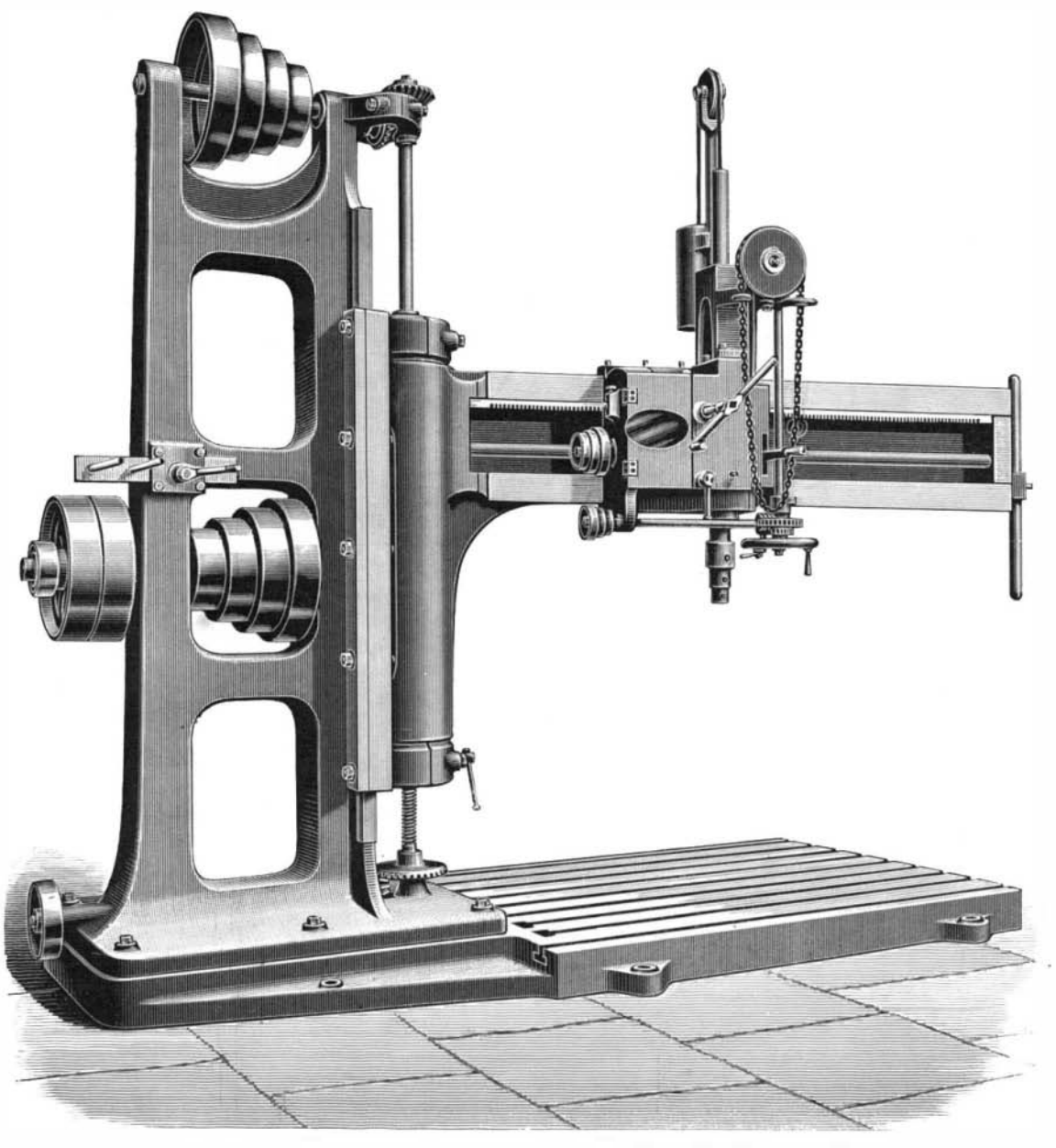
The wheel is in use everywhere and for nearly every purpose. According to the Lancet, London, a new ambulance carriage has been invented by Dr. Honig, of Berlin. It is not drawn by horses or men in the ordinary way, but is propelled by cyclists, and consists of a kind of litter resting on a frame with five wheels, three in front in the form of an ordinary tricycle and two at the back. The drivers, accordingly, sit one at each end of the litter, which is covered by a removable roof with little windows and a pneumatic bell, so that the patient can communicate with the drivers. Beneath the litter are boxes for dressing materials, instruments for first aid, etc. Dr. Honig suggests that his invention would be useful in small towns for which a horse ambulance is too expensive. It brings the surgeon and his assistant very quickly to the scene of an accident and enables them to remove the patient to a hospital.

IMPROVED RADIAL DRILLING MACHINE.

A radial drilling machine, by Messrs. Craven Brothers, London, makes short work of drilling, tapping and studding the upper flange of a crank chamber. The Engineer says, "So quickly does it get through its work that, as we look at it, we take a sort of childish pleasure in standing and watching it till the whole set of studs is dispatched—similar to the pleasure, which we all know at some period of our lives, of seeing an express train go by. It has been expressly designed to tap and bore holes up to 1⅛ in. diameter. The radial arm is carried by two trunnions on a vertically adjustable slide, and admits 3 ft. 9 in. up to 6 ft. 3 in. high from the face of bed plate. The radial arm is fitted with a clutch motion actuated by a lever in front of the drill head to rotate the drill spindle in either direction or to stop it instantly. The spindle is balanced and fed down by a steel out rack, and is adjustable to drill from 2 ft. 4 in. to 7 ft. radius.

"Perhaps the speed at which we saw this machine doing the work, i. e., drilling the hole, tapping it, and driving home the stud, as we timed it, in one minute, should be in some measure attributed to the nimbleness of the operator, and again in some measure to small improvements made by Messrs. Willans and Robinson.

"In the first place they make their own taps with a special shoulder, which, on arriving at the surface of the flange, stops all further progress of the tap. Another little feature which, vulgarly speaking, is certainly 'a tip,' is in the section of the drill stock where the drill is held by it—only one half of the inner wall of which is turned true. The remaining semicircle is cut away, so that a drill can be hurriedly inserted without much chance of missing the hole. When once entered, however, it quickly finds its place under the influence of a set screw, which binds it hard to the true surface, as in the accompanying cut."



RADIAL DRILLING, TAPPING, AND STUDDING MACHINE.

The Oleander.

The oleander is surely a thing of great beauty. No plant is easier to manage, the flowers are so pretty in both form and color and possess a fragrance of their own, therefore making it most desirable in every respect.

The plant will thrive and bloom in almost every kind of soil. The best results, however, are obtained by using good, rich leaf mould. While growing it requires an abundance of water, and when about to bloom should be given waterings of liquid manure occasionally. This will insure an abundance of large, perfect and brilliant flowers.

It may be set in the open ground in spring and in the fall dug up, carefully keeping as much dirt as possible about the roots; placed in a tub and then transferred to the cellar for the winter.

This plant is so easily grown that no flower lover should be without it, all they require being good soil and liberal watering when needed.

Grape Fruit as a Tonic.

Grape fruit, plump and juicy, is in market again, a harbinger of spring. This fruit is an admirable tonic, as well as a most appetizing breakfast or luncheon relish. A doctor says that the sharp stimulus of fruit is the best thing to set the digestive organs in order for the day, and the peculiar properties of the grape fruit give it marked medicinal value.

When eaten at luncheon it is prepared in a different way than for breakfast service. For the second meal the contents of two halves should be scraped out, the seeds and tough cone of dividing skin taken out and the pulp and juice thus obtained used to fill one of the halves, which it will just about do. A tablespoonful of sugar and one of rum or sherry mixed with the juicy pulp adds the perfecting flavor. At breakfast, with the long pointed orange spoon, the meat is eaten out as is that of an orange and very little sugar is used, many persons preferring none, on the ground that its full medicinal value is better obtained.—Popular Science News.

Stained Glass, Ancient and Modern.

The limitations of the early manufacture of glass were an advantage to the early workers. The small size of the first sheets of colored glass made it necessary that the designer should execute his work in small pieces, insuring a juxtaposition of color. Much of the beauty which we now recognize and admire in old work is due to the fact that the artist or artisan was forced to subdivide his design into almost infinitesimal pieces in order to execute the same with economy in reference to material employed. Many happy accidents have thus been handed down to us.

The celebrated windows at Notre Dame owe their great brilliancy and charm of color to the above-mentioned fact. The celebrated glass at Saint Chapelle, so much written about, owes also its effect to this minuteness of detail.

The windows of the Seven Sisters in York Cathedral, England, are said to have been made by apprentices, and also, we are told, were executed from a lot of remnant glass that was supposed to be practically worthless. The result obtained was so successful, and has been so much praised by connoisseurs from that time to the present, that these windows now stand as possibly the best example extant of their peculiar kind of work.

If we look at the early Dutch, Belgian, French, or English specimens, we find practically the same influences at work in all these different schools—a certain simplicity of background with an elaboration of detail in some one central point, in most cases an escutcheon or family coat-of-arms. In the early Swiss glass we find this idea of centralization of ornament carried still further, while the regular escutcheon, family coat-of-arms, etc., were executed as in other cases, and imaginative center pieces were invented by the designer. Great numbers have been handed down to us, filled with all sorts of fantastic castles, knights, etc., just as the mood happened to strike the artist or artisan at work.

More elaborate glass treatment is to be found in the early figure work placed in the large cathedrals and churches throughout Europe. Here the same influence was at work, and in almost all cases secured an excellence of color which could not have been obtained by preconceived design, and that was the necessity of the workman to so subdivide his design as to represent all details by very small pieces of glass. The result in these larger windows was the same as in the smaller lights already mentioned, and beauty and juxtaposition of color was obtained, unsurpassed, unrivaled even at the present day.

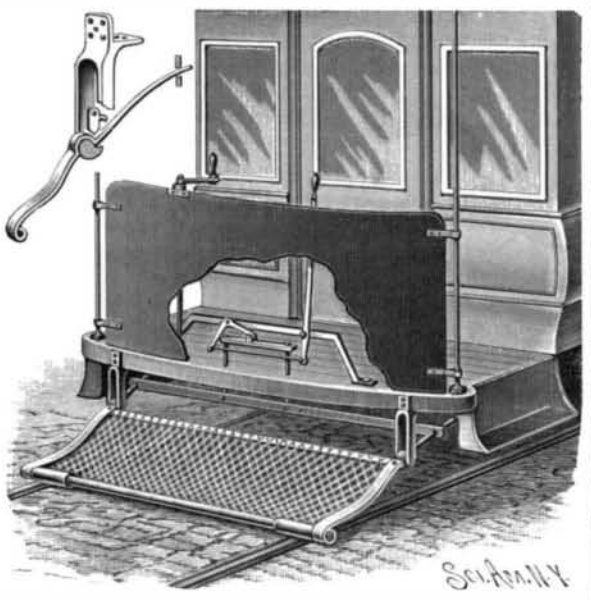
Age has also added to the beauty of cathedral glass. The climate in certain countries, especially in England, has so soiled and dimmed these windows that they now have an artistic quality of color unrivaled by any work produced at first hands. This point was most strikingly exemplified when, a few years ago, an attempt was made in England to cleanse certain of the old cathedral windows, the beauty of which had been famous for many centuries. No sooner had the workmen performed their task than the windows were found to be crude and garish in color, much of the very quality which had caused them to be models for later glass work was destroyed, and the value of the windows completely lost. This is but one of the many instances which could be given to illustrate the statement that the peculiarity of the color of the old windows is produced by age and accident more than by the ability of the glass workers first executing them.

The modern glass worker is expected to obtain the rare color of the old work with the more perfect design and drawing of modern times. The task is not an easy one. In order to obtain the brilliancy of color of the old cathedral glass, the modern designer must of necessity so subdivide his window as to gain the same juxtaposition of color by the use of very small pieces. As these pieces are of necessity fastened together by the leads, the result is a large mass of black in the completed window. For this reason many of our most prominent designers have lowered the tone of glass so that their windows are almost black; in fact, the color is visible only on a bright, sunshiny day. This depth of color has been called for by the great number of black lines introduced, and by the mechanical necessity of putting the glass together with leads. An effort is being made at the present time to overcome this difficulty. The modern designer is attempting—with what success will soon be shown—to produce a stained glass window which is not only rich in color by the juxtaposition of different tones, but is also light in color. The mechanical difficulties are very great, but the improved leads now used, and the modern stiffening bar, it is hoped, will be able to overcome these.

In household work the modern designers may truthfully be said to have far surpassed the work of their ancient fellow-craftsmen. Outside of the simple, clear leaded lights of the Dutch and Belgian school, and the heraldic light of the middle ages with their coats-of-arms, escutcheons, etc., little household glass can be said to have been executed up to the present time. Now, however, this has been changed. Every building of any importance has some small portion of leaded glass. Every city hall, every State house, every private residence of any importance, has one or more leaded lights, in many cases a great number, and this constant demand for leaded work has created a school of glass in America which is unsurpassed by any other at the present day. The use of the delicate American opal for the accentuation of the ornament against a background either in clear white, white rippled, white Venetian or white cathedral, has opened up a field of design which has never been equaled.—Kate Field's Washington.

A FENDER FOR CABLE OR TROLLEY CARS.

The illustration represents a light and inexpensive device, readily transferable from one end of the car to the other, for picking up and carrying without injury until the car is stopped persons who may be caught in the way of a moving car. It has but few parts, may be readily raised and lowered by the gripman or motorman, and its supports are clear of the tracks, bumpers, and drawheads of the car. It has been patented by Mr. Louis F. Trinchard (address in care of F. Querens, Jr., P. O. box 905, New Orleans, La.) The main frame of the fender consists of two end bars, shown in full in the small figure, and a front bar held at its ends in the eyes of the end bars. A central intermediate semicircular socket section of the end bar rests on a pivot bar of a bifurcated hanger, there being a latch above the pivot bar, and the rear end of each end bar is received in an opening in a transverse suspension bar connected by a yoke with a bridge bar just behind the dashboard, as shown in the broken-away portion of the main view. On this bar is an elbow lever connected with a hand lever, by moving which to the right or left the fender may



TRINCHARD'S CAR FENDER.

be raised or lowered. The front bar of the fender frame has at its ends rollers adapted to travel on the rails when the fender is lowered.

Well Cared For.

This means much in homing pigeon keeping. Your feed must be of the best, and your supply of water the freshest and in plenty; also a pan of grit and ground oyster shells, good small Canadian peas, and some vetches, together with hulled oats, are the correct standard feed for the American racer at this period, with a few handfuls of small corn during an occasional cool spell or after a hard fly, and you must not forget the bathtub on every bright and warm day. The bathtub for the racing homer, I think, is a superb institution and works wonders, despite the fact that very many of the best Belgian fanciers rarely supply them to their birds. It is within the power of any of our young flying fanciers to bring their birds into fit racing condition, if they are patient, attentive, and watch their birds closely, giving them the best quality of feed obtainable, and not try to breed from and race their birds at the same time. All this, coupled with a clean, sweet loft, ample ventilation, and enough exercise without fatiguing them, will certainly have good results; but if they think all this too much trouble and feed and breed indiscriminately, with lots of hemp seed, common and cracked corn, and lazily loaf around in the sunshine and the loft all day, then they will score more misses than hits, and the 200 miles station will settle them sure.—Amer. Fancier.

Honors for Lord Rayleigh.

The fortunate discoverer of argon has been made the recipient of the Faraday medal, which is a gift of the London Chemical Society.

A recent issue of the SCIENTIFIC AMERICAN (May 11, 1895) in a review of the late meeting of the National Academy of Sciences, held in Washington, also calls attention to the fact that the Barnard medal was this year given to Lord Rayleigh for his discovery of argon in the atmosphere.

Correspondence.

Repairing Commutators.

To the Editor of the SCIENTIFIC AMERICAN:

In your issue of April 27, G. H. G. asks for some composition for filling cracks in a commutator. You reply that the only way to repair will be to take the commutator apart and replace the mica. But if he happens to have no appliances for this work, a temporary repair can be made of thick shellac solution and dry plaster of Paris. Fill the crack with the shellac, then put on the plaster, kneading with a knife blade until it is stiff and smooth. Let it dry five or six hours or longer before scraping off the top even with the surface. It should be thoroughly dry before the armature is used.

I have used this method for repairing street railway motor armatures for more than a year, and no armatures have come back in that time for a fault due to this filling. A. A.

Covington, Ky.

A New Italian Lake.

To go to bed in a plain and to get up on the banks of a lake, to lie down an agricultural laborer and to wake a fisherman, is not a common experience, says the Florentine correspondent of the Scotsman, even in these days of telluric storm and seismic convulsion. Such, however, is precisely what has just happened, and not many miles from Rome. Alighting at the station of Monte Rotondo, famous for a Garibaldian victory, which preceded by a few days the Garibaldian defeat at Mentana on November 2, 1867, you proceed to Leprignano, not far from Castelnuovo di Porto. This is a hamlet numbering about one thousand souls, chiefly agricultural in their calling. It stands some 600 feet above the sea level, on a plateau to the right of the Tiber, near the valley watered by the Gramicia torrent. Few visitors but those interested in Etruscan antiquities are ever seen at Leprignano, quite unattractive as it is, except for the ruins of Capena, that ancient Etruscan city whose importance may even now be gaged by the number and quality of its tombs. On the morning of the 8th instant, however, the little hamlet was conscious of a profound rumbling, the preliminary to further sounds of similar import, announcing the noise it is now making in the world. On the 12th and 13th the rumbling was repeated, and on the latter date it was found that the soil occupying a space of six hectares had collapsed, and that the vacuum had been filled with water, forming quite a respectable lake. Sulphurous gases bubbled up to the surface, disclosing the springs from which the lake is fed, while from its raw margin emanated similar exhalations, finding their vent through the numerous cracks that run their eccentric course around it. All the countryside turned out to witness the improvised sheet of water, and some young peasants, more adventurous than their fellows, advanced toward the brink, only to feel the earth giving way beneath them and to get a good ducking. The extreme unsteadiness of the surrounding soil, indeed, favors the view that the lake will gradually widen in circumference, for already there have been landslips at various points of its margin, followed immediately by a rise of the water.

Fires Caused by Incandescent Lamps.

An investigation into the cause of a fire in a Winter Street dry goods store, in Boston, recently, resulted in demonstrating that an incandescent electric lamp will generate sufficient heat to set inflammable material into a blaze. The fire in question, for which a still alarm was given, was caused by allowing an incandescent lamp to remain for a few moments on a pile of cotton cloth in the packing room. The person in charge left the room for a few moments, not dreaming but that it was safe to leave the lamp on the cloth. When he returned the cloth was blazing. The fire was soon put out, and not much damage was done.

This case recalls one reported from Louisville, Ky., a few months ago, the Boston Journal of Common adds, which demonstrates the same thing. The fire started, says the Insurance Herald, while the window dresser was preparing a Christmas snow scene. The window was lighted with incandescent lights, which it appears had not been changed for a year, except when made necessary by accidental breakage. The carbon in an incandescent globe has a life of 600 hours, and as it wears out the carbon loop offers increasingly less resistance to the current, and, therefore, increasingly more heat is thrown off upon the glass bulb and even upon the metal stems to which the globes are affixed. When a new light is attached the globe becomes only warm under continuous use, but after it gets old the globes are hot and the stems attain burning heat. The dresser was filling the floor of the window with loose cotton upon cheesecloth, to represent snow. This was packed closely around the stems and globes of the electric lights, and there is no doubt that the inflammable cotton, touching the burning hot stems and globes, caused the fire.