

THROUGH NIAGARA WHIRLPOOL RAPIDS IN A BOAT.

On July 9, Peter Nissen, of Chicago, made a successful trip through the Whirlpool Rapids at Niagara, being the first man to go through in an open boat and come out unharmed. He entered the Rapids at 5 P. M., the boat gliding down easily bow first, entering the first wave end on, and going partly over and partly under the water, which drenched completely Nissen, or Bowser, as he prefers to be called. The second wave struck him with terrific force, almost broad side, the boat being partly turned by the first wave, smashing Bowser against the cockpit, knocking off his hat and nearly smothering him. A moment later he entered the frightful mass of warring waters opposite the Whirlpool Rapids Station, and for a few moments it looked as though his end had come, the boat being tossed with terrific force almost out of the water, broadside up, the iron keel, weighing 1,250 pounds, being plainly seen. Boat and occupant then disappeared altogether, not being again seen for several seconds until it was feared that Bowser had met his death. Suddenly both man and boat reappeared farther down stream and the hundreds of onlookers gave vent to their feeling in cheers. Under the waters the hardy navigator again went, receiving a crushing blow as he entered every succeeding wave until the stanch craft and its master finally entered the Whirlpool. But he was not yet safe. Having no means of guiding or propelling the boat, Nissen was compelled to sit in the water in the cockpit for 50 minutes, being carried around the Whirlpool four times. Once the boat approached the vortex and was sucked down about half its length, the other half standing out of the water in an almost vertical position. It was immediately thrown out, however, and resumed its course around the pool. When at the farther end, where the current has the least strength, the boat then being about fifty feet from shore, three young men swam out with a rope and fastened it to the boat, which was then drawn a shore by very willing hands.

Bowser, when questioned, said he was not injured in the least, only feeling cold and weak. He was stripped and given dry clothing, and he then declared he felt all right. In making the trip Bowser wore his usual clothing, putting on an ordinary life preserver to aid him if he should be thrown out. He did not intend to fasten himself in the boat, but at the last moment passed a rope over his shoulders, which undoubtedly saved his life.

The boat, which he named the "Fool Killer," was 20 feet long, 4 feet wide, and 4 feet deep. The deck was slightly raised in the center, gently sloping to the gunwales. In the center of the deck a cockpit 4 feet long and 20 inches wide extended down to the keel, a distance of 4 feet. The side planking of the cockpit was carried above the deck, forming a combing 6 inches in height, 6 water-tight compartments were built in the boat, two at each end, and one each side of the cockpit, 300 pounds of cork were also used, so that the boat was unsinkable. The main feature of the boat was the keel. This was a shaft of round iron, 4 inches in diameter and 20 feet long, hanging 2 feet below the bottom of the boat, and held in position by five 1-inch iron bars.

Our photographs were taken by Mr. G. E. Stonebridge, who also wrote the article.

The new forts at Dover, England, are to have six 9-inch wire-wound guns, having an effective range of eleven miles. They are nearly 40 feet long.

Diffusion of German Capital.

A report has been recently made by the German Government, aided by its foreign consuls, as to the diffusion of German capital in the different countries, with the exclusion of Europe (all but Turkey) and the

Honduras, 63 millions; in the West Indies, 63 millions, including Cuba, with 38 millions. The figure for Venezuela is 50 millions; for Colombia, 25 millions; for Peru and Ecuador, 25 and 30 millions respectively, with 68 to 75 millions for Chili; the Argentine Republic figures for 150 millions; Paraguay and Uruguay, 25 millions. For Brazil the official figures give 150 millions, while the commercial statistics give but 88 millions. Into these figures the railroads enter for a large part; for the whole of South America, on the east coast, the total reaches 250 to 375 millions. The German commercial houses have a capital of 50 millions in Argentine Republic. In the city and province of Buenos Ayres are over 500 German farms, representing over 38 millions of capital. At Buenos Ayres the German industry is represented by 1.6 millions. At Paraguay, in a total of 17,000 foreigners, over 12,500 are Germans. The property possessed in Uruguay and Paraguay is valued at over 3 millions. At Rio de Janeiro, San Paulo, and Rio Grande there are 147 German commercial houses, having a total capital of 38 millions.

Orris Benson's Progress.

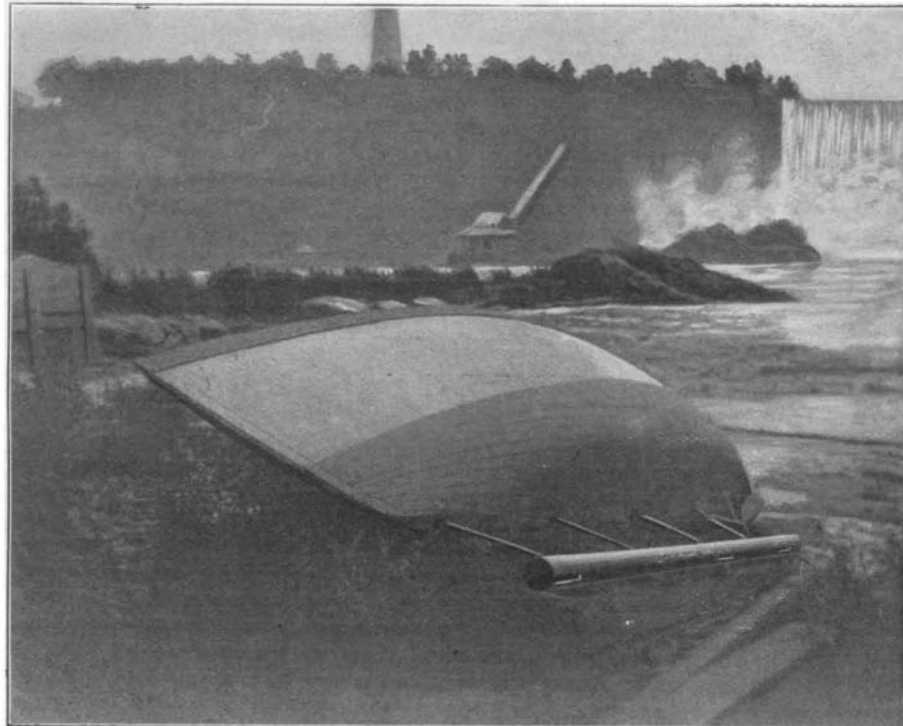
The progress which Orris Benson, the deaf, dumb, and blind boy is making is quite remarkable, and the scientific treatment which he is receiving at the New York Institution of the Deaf and Dumb has made him a cheerful inmate, as he carries on conversation with the use of the sign language by the sense of touch. He can converse also by speech. He has a great fondness for history and geography, and he has also made considerable progress in arithmetic. He can do chair caning, carpentry work, and even manages to earn considerable money during his vacation. He is showing an excellent intellect, and the similarity of his case to that of Helen Keller is attracting wide attention. It will be interesting to see the development of these two minds which, but for the patient and scientific instruction of their teachers, must have passed through life wrapped in Cimmerian darkness.

Foreign Commerce of the United States for 1900.

The total foreign commerce of the United States during the fiscal year, 1900, exceeds by 16 2/3 per cent that of any preceding year, being \$320,000,000 greater than that of 1899, the heaviest year on record preceding the one which has just ended. The total commerce of the year is \$2,244,193,543. The exports are \$1,394,479,214. The imports are also heavy, especially in the class that includes articles in a crude condition which enter into the various processes of domestic industry. The most notable features of the year's commerce are: 1, the increase in imports of all manufacturers' materials not produced at home; 2, the increase in exports of manufactured articles; and 3, the fact that the foreign commerce for the first time in the fiscal year record crossed \$2,000,000,000 line.

The Tropical Army Ration.

Dr. L. L. Seaman offered, through the Military Service Institute, a prize for the best essay on the ration for use of the army in the Tropics. Dr. Munson's essay received the prize. He considers that the present army ration contains too much nitrogenous food and hydrocarbons and not enough carbohydrates; also that the ration is too generous. The sugars and starches should be slightly augmented.



THE "FOOL KILLER," SHOWING CONSTRUCTION OF KEEL.

United States. It thus appears that the capital engaged in foreign countries reaches a total of nearly 2 billions, in which its employment in commerce enters for a large figure. It is especially in America, without counting the United States, that German capital is

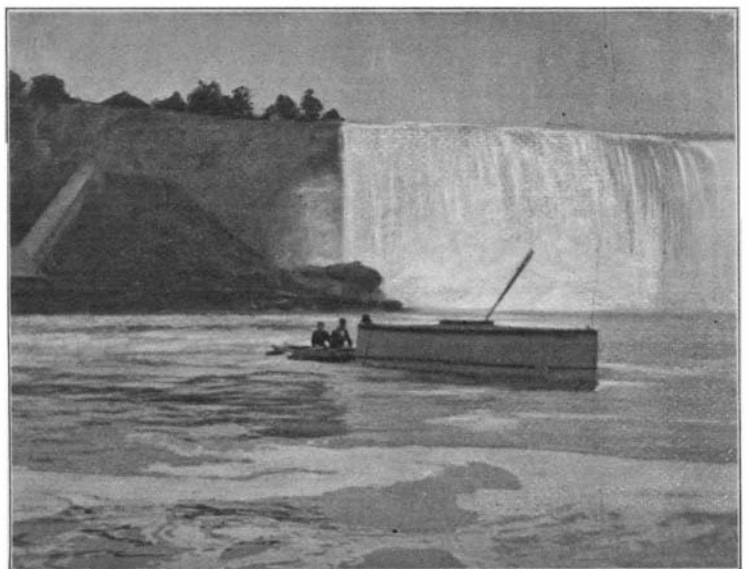


THE BOAT PASSING THROUGH THE WHIRLPOOL RAPIDS.

largely distributed, the total reaching one billion and a quarter. In Canada 6 1/4 millions are employed; in Mexico, 50 millions; in Central America, including Guatemala, Costa Rica, Nicaragua, San Salvador, and



THE RESCUE OF MR. NISSEN AFTER HIS ADVENTUROUS TRIP.



TOWING THE "FOOL KILLER" TO THE AMERICAN SIDE.

Report of Commissioner of Patents Duell.

The following report of the business of the United States Patent Office for the fiscal year ending June 30, 1900, has been made by Commissioner of Patents Duell:

APPLICATIONS AND CAVEATS RECEIVED

Applications for letters patent.....	39,815
Applications for design patents.....	2,263
Applications for reissue patents.....	90
Applications for registration of trade marks.....	2,103
Applications for registration of labels.....	872
Applications for registration of prints.....	127
Caveats.....	1,739
Total.....	47,009

APPLICATIONS AWAITING ACTION.

Number of applications awaiting action on the part of the office on July 1, 1900.....	3,564
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APPLICATIONS FOR PATENTS, INCLUDING REISSUES, DESIGNS, TRADE MARKS, LABELS, AND PRINTS.

June 30, 1891.....	43,616
June 30, 1892.....	43,514
June 30, 1893.....	43,489
June 30, 1894.....	39,206
June 30, 1895.....	41,014
June 30, 1896.....	45,645
June 30, 1897.....	47,747
June 30, 1898.....	44,216
June 30, 1899.....	40,330
June 30, 1900.....	45,270

PATENTS GRANTED, AND TRADE MARKS, LABELS, AND PRINTS REGISTERED.

Letters patent granted (including reissues and designs).....	26,540
Trade marks registered.....	1,660
Labels registered.....	682
Prints registered.....	93
Total.....	28,975

Summarizing these tables there were received during the year 39,815 applications for mechanical patents, 2,263 applications for designs, 90 applications for reissue, 1,739 caveats and 127 applications for prints. There were 26,540 patents granted, including reissues and designs; 1,660 trade marks, 682 labels and 93 prints were registered. The number of patents that expired was 19,988. The total receipts of the office were \$1,358,228.35, the total expenditures were \$1,247,827.58, and the surplus of receipts over expenditures, being the amount turned into the Treasury, was \$110,400.77.

The examination work of the office is in about the same relative condition that it was at the close of the fiscal year ending June 30, 1899. At that time every examiner had his new work within one month from date of filing and his amended work within fifteen days of date. At the close of the present fiscal year thirty out of the thirty-six examiners had their new work within one month from the date of filing. Of the remaining six, three overran that time by but one day. The amended work in nearly all of the divisions was being acted upon within fifteen days after filing. The number of applications awaiting action on the part of the office on July 1, 1900, was between five and

six hundred more than on the 1st of July, 1899, but the number of applications for patents, etc., received during the last fiscal year was 5,000 greater than during the preceding year, and the number of amendments acted upon was also correspondingly greater.

This is considered an excellent showing, Commissioner Duell says, and reflects credit upon the examining corps when it is borne in mind that a greater number of examiners were detailed for classification work than during the preceding fiscal year.

The work of the clerical divisions has been kept well up to date, and there is no reason why, he says, with the small increase of clerical force given by Congress at the last session, the work of the clerical divisions should not be promptly and carefully done.

During the last month of the fiscal year it was found possible to give to this division much needed room. This will enable a larger force to economically perform the valuable work now being done by the chief of the classification division and his carefully selected corps. The work of this division during the past fiscal year has continued, and, while the amount accomplished is not perhaps as great as was hoped for, yet it is but fair to say that with the additional room and force much of the incompleting work of the past year will be finished.

Commissioner Duell says:

"As yet this bureau has derived little or no advantage from the removal of the General Land Office. The additional room which has been assigned, under your direction, to this office is, I regret to say, inadequate for its needs. It demonstrates that the Patent Office building is too small to meet the needs of the Interior Department proper and this office. As the building was originally planned and designed for the Patent Office, and very largely paid for by money paid into the Treasury by the inventors of the country, it would seem as though the entire building should be applied to the uses of the Patent Office. This, however, does not seem to be feasible, and I therefore express the hope that at an early day a new building may be erected for the sole use of the Patent Office, and I bespeak your powerful influence with Congress to aid the passage of Senate Bill No. 1,159, which provides for the construction of a fireproof building for the use and accommodation of the Patent Office, including a hall of inventions.

"Legislation in this direction is favored by many societies and associations interested in the subject of invention, and by hundreds of progressive manufacturers and inventors who have addressed petitions to Congress in the matter. The surplus receipts of the United States Patent Office for the past ten fiscal years amount to more than \$2,000,000, while the total excess of such receipts turned into the Treasury amounts to over \$5,000,000. Aside from this, the United States

owes a debt to inventors which it can never repay. A slight recognition of this debt, however, would be the erection of a building such as referred to, which might be considered in the nature of a monument. The necessity for some action on the part of Congress is pressing and should not be longer delayed.

THE SCIENTIFIC LIBRARY.

"This library," says the report, "consists of over 70,000 bound volumes, and a conservative estimate of its value is \$200,000. It would, however, be impossible even with this amount, or with any sum, to replace the library should it be destroyed by fire. Many of the most valuable works are out of print. Our books are not now safely stored, and while in this building it is impossible to wholly protect them from fire, yet much might be done in this line by the use of steel stacks, which are now in common use in every modern library building.

LEGISLATION.

"In submitting my estimates for the present fiscal year my suggestions in the main were approved by you, with the result that many of them so approved were favorably acted upon by Congress. Your action in this matter was appreciated by the inventors and manufacturers of the country.

"Something more in the line of readjustment of salaries and a reclassification of the clerical force of this office is needed, and in submitting my estimates for the next fiscal year your attention will be called in detail to such matters."

The Current Supplement.

The current SUPPLEMENT, No. 1282, has many articles of unusual interest. "The Burial Grounds of the Ming Dynasty" illustrates the colossal statues of men and animals which grace this very curious cemetery. "Russian Central Asia, Countries and Peoples," by Archibald R. Colquhoun, is a particularly timely article, accompanied by an excellent map. "Some Twentieth Century Problems" is a vice-presidential address of the Section of Botany of the American Association for the Advancement of Science. The second of the remarkable series of papers on "American Competition" is given in this issue.

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RECENTLY PATENTED INVENTIONS.**Agricultural Implements.**

COTTON-DISTRIBUTER.—JOSEPH A. PARKER, Dripping Springs, Tex. The invention provides a means for equalizing the distribution of cotton to a series of connected receptacles, and for retaining the cotton in the receptacles until it is desirable to deliver it to the hoppers or feed devices for cotton-gins. The current of air employed to deliver cotton to the receptacles, can be so regulated that it can be made either to draw or retard. A storage-receptacle is provided for each gin. The controlling devices for the receptacles are so constructed that either the right-hand one or the header can be cut out without interfering with any of the others.

Bicycle-Appliances.

REPAIR-JACK.—MARSHALL A. MASTERS, Montrose, Colo. In repairing and assembling bicycles, it is convenient to have some means for holding the bicycle, by which it may be adjusted to any desired position. Such an appliance the inventor has devised. His jack comprises a standard to which an arm is swiveled, projecting horizontally. A cross-bar is secured to the outer end of the arm by a fixed and by a swinging pivot at right angles to each other. Bicycle-holding clamps are provided upon the cross-bar. By means of this jack, the bicycle can be raised or lowered, turned or adjusted in every conceivable position.

Electrical Apparatus.

ELECTROLYTIC APPARATUS.—NATHANIEL L. TURNER, Salmon City, Idaho. This apparatus for the electrolytic separation of gold, silver, and the like in solution, prepared pulp, and slimes comprises a tank; a carrier provided with depending arms; an electrode supported by the arms; turn-buttons secured to the arms; and an electrode of opposite polarity to that first mentioned. The solution is placed in the tank and agitated while the current is turned on, so that dissolution and precipitation proceed simultaneously. The larger the number of anodes and cathodes, the quicker will be the precipitation. All gold, silver, or other metal is quickly deposited on the plates of the cathodes. When the proper amount of metal has been deposited, the carrier is raised with the cathodes and anodes.

Mechanical Devices.

HOOP-RACKING MACHINE.—CHARLES REED, Portland, Ind. In making hoops from lumber, it is customary to split the wood into bars which are of a thickness corresponding with the width of the hoop and of such width as to make a number of hoops. These are then checked at one end and split into separate hoops. Mr. Reed's machine takes bars which are thus prepared by

being checked at the ends, and splits them up into hoops by passing them through the machine.

Railway Contrivances.

RAIL-JOINT FASTENING.—ANNIE B. SCHIMMEL, Portland, Ore. The fastening comprises an angle-bar having two sets of teeth, and a locking-plate having means for engaging bolts and also having two sets of teeth. The teeth of the plate are so related to the teeth of the bar that, when adjacent sets of teeth of the plate and bar are in mesh, the other sets of teeth will be out of mesh. By reason of this construction, the use of a nut and nut-lock is rendered unnecessary; and the angle-bars at the points of the rail-sections are effectually and positively tied in place. The locking-plate cannot be loosened by any vibration in the rails and can be detached only by violently and repeatedly striking one of its ends.

Musical Instruments.

MUSICAL INSTRUMENT.—MANUEL MONTOYA, Bogota, Colombia. The instrument is of the mandolin type and has a hollow body comprising a top and bottom connected by a peripheral wall. This wall consists of an outer layer of celluloid and an inner layer of wood glued together. A tail-piece is also provided having at its front end a series of notches for the passage of strings and at the rear of the notches a series of apertures with notches and projections between them. The invention provides a very strong construction of the body without interfering with its resonance, as well as a tail-piece or tuning the strings perfectly.

STRINGED MUSICAL INSTRUMENT.—ERNST EULEBT and ADOLF WALLENSTEIN, Manhattan, New York city. The purpose of this invention is to provide a new cithern-like instrument arranged to enable the performer to play the desired accompaniment to the melody and to play the melody on either of the usual leading cithern strings, or on an open scale of strings. The accompaniment-strings extend over frets; and a number of independent, movable pitch-changing bars extend transversely over the accompaniment-strings and are arranged between adjacent frets. Individual buttons press and move each of the bars in engagement with the accompaniment-strings to press them upon the corresponding fret.

Vehicles and Accessories.

VEHICLE.—CLARK C. HYATT, HARRY W. WATSON, WILLIAM WILDANGER, and CYRUS B. SANDERSON, Flint, Mich. The invention provides a body for cutters and sleds, which body is arranged to permit one conveniently and quickly to change the vehicle from a single-seated one to a double-seated one, or vice versa. The rear portion of the body is protected from dust when only a single seat is used.

HAME-TUG.—JAMES T. DEDMAN, Sullivan, Ill. This coupling for a trace and hame-tug is so constructed that much less leather is required in the making of the tug. The sections can be rendered adjustable and can be securely locked in adjusted position by means of a very simple locking device. The coupling tends to strengthen the parts and dispenses with the necessity of loops.

SINGLE TREE-COUPLING.—AMOS M. BARKER, Bloomington, Neb. Mr. Barker has devised an improved means for attaching singletrees to a doubletree, which means permit a more extended range of movement of the singletrees than is at present attainable. The pivotal connection between the singletrees and doubletrees is, moreover, rendered more durable. The singletrees can be raised and lowered relatively to the doubletrees, if desired.

Miscellaneous Inventions.

SPARK-ARRESTER.—MARTIN BROTHERS, Evergreen, Colo. The spark-arrester can be readily attached to the top of any smoke-stack, pipe, flue, or chimney. The arresting, collecting and escaping screen is constantly rotated by the natural or forced draft through the chimney, so that sparks, cinders, and escaping coal are caused to be conveyed to a receptacle in which the coal is collected and from which it is conducted back to the firebox. We have been assured that the device is very efficient in its operation.

LIFE-PRESERVER.—ZENUS C. ANGEVINE, Brooklyn, New York city. The inventor has devised a new life-preserver or jacket, having not only means for keeping a person afloat in the water, but also receptacles for holding food and drink, signaling devices, and instruments.

SHOE-LAST.—CHARLES C. TANNERT, Brooklyn, New York city. This shoe-last has hingedly-connected heel and toe sections. The toe is formed with a cavity in its rear face; and in the cavity a push-plate is mounted, engaged by a spring so that it tends to move rearward. A dog is mounted on a constant pivot in the cavity of the toe-section and has a pointed free end engaged by the push-plate, such point being situated above the pin, whereby to throw the free end of the dog downward into engagement with the heel. Thus a ready means is provided for removably holding the heel and toe-sections of a shoe-last extended.

HAT-FASTENER.—ELIZABETH S. SWANK, Wolcottville, Ind. The hat-holder comprises a frame designed to be attached to the inside of the crown of a lady's hat. The frame has guideways through which an elastic loosely extends. Looped hair-pins are secured at the ends of the elastic outside of the guideways. A hook on the frame is adapted to be engaged by the middle portion of the elastic. The device is always in proper condition for conveniently securing the hat in place, by simply

taking hold of the loops of the hair-pins, drawing them outward, and finally passing the hair-pins into the hair to allow the elastic to draw the hair-pins firmly in position on the hair, releasing the hold on the loops.

KINETOSCOPE ATTACHMENT FOR STEREO-SCOPES.—FRANK MONIOT and LOUIS GARCIN, Manhattan, New York city. The object of the invention is to provide a stereoscope so arranged that it may be used for viewing pictures in the usual manner and also for viewing "animated pictures"—that is, having an attachment by the operation of which the figures of a picture under view will have the appearance of moving. This attachment consists of a novel shutter which, when rapidly operated, causes the viewed figure apparently to move.

STEAM-JET TUBE OR FLUE-CLEANER.—WORTHINGTON H. INGERSOLL, Hamburg, N. J. At the larger end of a conical blower-head a steam-supply pipe is secured. On the exterior of the blower-head are spaced flanges. On the small end of the blower-head is a nozzle with a spiral rib formation extending along its inner side. The twists of the ribs give the steam-jet a spiral turn, so that the induced hot current of air will also assume a spiral twist and coat with the spiral steam-jet in order forcibly to loosen clogging soot.

DEVICE FOR MAKING LOOPS IN WIRE.—CHARLES R. HARTMANN, Manhattan, New York city. The purpose of the invention is to provide a device which can be carried in the pocket and which is especially adapted for forming eyes or loops at the ends of wire strings for musical instruments, but which can be employed with equally good results where an eye is required at the end of any piece or strand of wire. The device consists of a tubular body carrying a clamp and a forming-arm mounted to turn. This forming-arm is provided with a retaining section for forming a loop of wire, which loop is continued into the body for an engagement with the clamp.

INVALID-BED ATTACHMENT.—MRS. ANNA E. COUNTRYMAN, Marcus, Iowa. The invention provides a simple device by means of which a person can be lifted and removed from the bed when it is desired to rearrange the bedding. An arrangement is also furnished for supporting a person in a sitting position in the bed. At the head and foot of the bed horizontal tracks or rails are supported, on which standards are movable. A sling or hammock is placed under the invalid, and raised up by means of the standards, after which the hammock can be moved rapidly to one side on the rails, so that the bedding can be rearranged. The invalid can also be given a sponge bath without danger of soaking the bedding.

SIGN.—OTTO CAESAR, Manhattan, New York city. The invention relates to letters and designs which are attached to windows to form signs; and its object is to provide a sign that is adapted for attachment to