

United States Centennial Commission.

INTERNATIONAL EXHIBITION,
1876.

REPORTS AND AWARDS

GROUP XIX.

EDITED BY
FRANCIS A. WALKER,
CHIEF OF THE BUREAU OF AWARDS.



PHILADELPHIA:
J. B. LIPPINCOTT & CO.
1877.

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~~Gr. XIX~~

SYSTEM OF AWARDS

[*Extract from Circular of April 8, 1876.*]

Awards shall be based upon written reports attested by the signatures of their authors.

The Judges will be selected for their known qualifications and character, and will be experts in departments to which they will be respectively assigned. The foreign members of this body will be appointed by the Commission of each country and in conformity with the distribution and allotment to each, which will be hereafter announced. The Judges from the United States will be appointed by the Centennial Commission.

* * * * *

Reports and awards shall be based upon inherent and comparative merit. The elements of merit shall be held to include considerations relating to originality, invention, discovery, utility, quality, skill, workmanship, fitness for the purposes intended, adaptation to public wants, economy and cost.

Each report will be delivered to the Centennial Commission as soon as completed, for final award and publication.

Awards will be finally decreed by the United States Centennial Commission, in compliance with the Act of Congress, and will consist of a diploma with a uniform Bronze Medal, and a special report of the Judges on the subject of the Award.

Each exhibitor will have the right to produce and publish the report awarded to him, but the United States Centennial Commission reserves the right to publish and dispose of all reports in the manner it thinks best for public information, and also to embody and distribute the reports as records of the Exhibition.

ORGANIZATION AND DUTIES OF THE JUDGES.

[*Extract from Circular of May 1, 1876.*]

Two hundred and fifty Judges have been appointed to make such reports, one-half of whom are foreigners and one-half citizens of the United States. They have been selected for their known qualifications and character, and are presumed to be experts in the Groups to which they have been respectively assigned. The foreign members of this body have been appointed

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by the Commission of each country, in conformity with the distribution and allotment to each, adopted by the United States Centennial Commission. The Judges from the United States have been appointed by the Centennial Commission.

To facilitate the examination by the Judges of the articles exhibited, they have been classified in Groups. To each of these Groups a competent number of Judges (Foreign and American) has been assigned by the United States Centennial Commission. Besides these, certain objects in the Departments of Agriculture and Horticulture, which will form temporary exhibitions, have been arranged in special Groups, and Judges will be assigned to them hereafter.

The Judges will meet for organization on May 24, at 12 M., at the Judges' Pavilion. They will enter upon the work of examination with as little delay as practicable, and will recommend awards without regard to the nationality of the exhibitor.

The Judges assigned to each Group will choose from among themselves a Chairman and a Secretary. They must keep regular minutes of their proceedings. Reports recommending awards shall be made and signed by a Judge in each Group, stating the grounds of the proposed award, and such reports shall be accepted, and the acceptance signed, by a majority of the Judges in such Group.

The reports of the Judges recommending awards based on the standards of merit referred to in the foregoing System of Awards, must be returned to the Chief of the Bureau of Awards not later than July 31, to be transmitted by him to the Centennial Commission.

Awards will be finally decreed by the United States Centennial Commission, in compliance with the Act of Congress of June 1, 1872, and will consist of a special report of the Judges on the subject of the Award, together with a Diploma and a uniform Bronze Medal.

Upon matters not submitted for competitive trial, and upon such others as may be named by the Commission, the Judges will prepare reports showing the progress made during the past hundred years.

Vacancies in the corps of Judges will be filled by the authority which made the original appointment.

No exhibitor can be a Judge in the Group in which he exhibits.

An exhibitor, who is not the manufacturer or producer of the article exhibited, shall not be entitled to an award.

The Chief of the Bureau of Awards will be the representative of the United States Centennial Commission in its relations to the Judges. Upon request, he will decide all questions which may arise during their proceedings in regard to the interpretation and application of the rules adopted by the Commission relating to awards, subject to an appeal to the Commission.

A. T. GOSHORN,
Director-General.

[*Extract from Director-General's Address to Judges, May 24, 1876.*]

“The method of initiating awards which we have adopted differs in some respects from that pursued in previous exhibitions. In place of the anonymous verdict of a jury, we have substituted the written opinion of a Judge. On this basis awards will carry the weight and guarantees due to individual personal character, ability, and attainments, and to this extent their reliability and value will be increased. It is not expected that you will shower awards indiscriminately upon the products in this vast collection. You may possibly find a large proportion in no way raised above the dead level, nor deserving of particular notice. The standard above which particular merit worthy of distinction begins is for you to determine. In this regard I have only to express the desire of the Centennial Commission, that you should do this with absolute freedom, and when you meet with a product which you consider worthy of an award, we desire you to say, in as few words as you may deem suitable, why you think so.

“This, gentlemen, is all we ask of you in the Departments of Awards. Opinions thus expressed will indicate the inherent and comparative merits, qualities, and adaptations of the products,—information which the public most desires.

“Elaborate general reports and voluminous essays, though of great value as sources of general information, give little aid in determining the reliable or intrinsic merits of particular, individual products.

“The regulations which have been published divide the work of awards into three parts:

“1st. The individual work of the Judges.

“2d. The collective work of the groups of Judges.

“3d. The final decisions of the United States Centennial Commission in conformity with the acts of Congress.

“Each award will thus pass three ordeals, which, doubtless, will be ample and satisfactory.”

GROUP XIX.

JUDGES.

AMERICAN.

ISAAC NEWTON, New York City.
J. W. GRIFFITHS, New York City.
H. C. GOODSPEED, Salt Lake City, Utah.

FOREIGN.

F. H. RICH, R.E., Great Britain.

The following named Judge was temporarily assigned from Group XVI. to assist in the examination of the classes attached to his name :

LUIZ DE SALDANHA DA GAMA.—Sailing vessels used in commerce, in war, and for pleasure; and rowing boats of all kinds. Steam capstans, windlass, deck-winches, and steering apparatus. Ropes and cordage. Screw propellers; wheels for the propulsion of vessels, etc.

GROUP XIX.

VESSELS AND APPARATUS OF TRANSPORTATION, NOT INCLUDED IN OTHER GROUPS.

CLASS 590.—Suspended-cable railways.

CLASS 591.—Transporting cables.

CLASS 592.—Balloons, and apparatus, etc.

CLASS 593.—See Group XX.

CLASS 594.—Boats and sailing vessels. Sailing vessels used in commerce. Sailing vessels used in war. Yachts and pleasure boats. Rowing boats of all kinds.

Life boats and salvage apparatus, with life-rafts, belts, etc. Submarine armor, diving bells, etc. Ice boats.

CLASS 595.—Steamships, steamboats, and all vessels propelled by steam.

CLASS 554.—Screw propellers; wheels for the propulsion of vessels, etc.

CLASS 596.—Vessels for carrying telegraph cables and railway trains; also coal barges, water boats, and dredging-machines; screw and floating docks; and for other special purposes.

CLASS 597.—Steam capstans, windlass, deck-winches, and steering apparatus.

CLASS 287.—Ropes, cordage.

GROUP XXV

VEGETABLES AND FRUIT OF THE MOUNTAINS, NOT MENTIONED IN OTHER GROUPS

Group XXV - Mountain vegetables and fruit, not mentioned in other groups. This group includes various species of plants found in mountainous regions, such as certain types of mushrooms, ferns, and small flowering plants. The text describes the characteristics and uses of these plants, often noting their medicinal properties. The list includes several species names, some of which are Latin, and their corresponding descriptions in German. The text is organized into paragraphs, with some sections starting with 'Zu Gruppe XXV' or similar headings. The overall tone is scientific and descriptive, typical of a botanical field guide or a scientific paper from the early 20th century.

GENERAL REPORT
OF THE
JUDGES OF GROUP XIX.

INTERNATIONAL EXHIBITION,
Philadelphia, 1876.

PROF. F. A. WALKER, *Chief of Bureau of Awards* :

SIR,—In accordance with your request, I have the honor to submit a report on the exhibits that appear to me to deserve special notice in Group XIX., of which section I was one of the Judges and Chairman.

I have the honor to be, sir, your obedient servant,

F. H. RICH, *Col. R. E.,*
Chairman of Group XIX.



GROUP XIX.

VESSELS AND APPARATUS OF TRANSPORTATION.

The exhibition in this section of engineering was not large. I take the subjects in the class order in which they are grouped in the official list.

There were 158 exhibits in Group XIX. submitted to the Judges. Of these 7 were in Class 596, which comprised vessels for carrying telegraph-cables and railway-trains, coal-barges, water-boats, and dredging-machines, screw- and floating-docks, and vessels for other special purposes. In Class 594 there were 62 exhibits, which comprised boats and sailing-vessels used in commerce, sailing-vessels used in war, yachts and pleasure-boats, and rowing-boats of all kinds. In Class 595, which comprised steamships, steamboats, and all vessels propelled by steam, there were 15 exhibits. Class 554, which comprised screw-propellers, wheels for the propulsion of vessels, etc., was represented by 12 exhibits. In Class 597, which comprised steam-capstans, windlasses, deck-winches, and steering apparatus, there were 16 exhibits. In Class 287, which comprised ropes and cordage, there were 46 exhibits. There were no exhibits submitted in Classes 590, suspended cable-railways; 591, transporting cables; and 592, balloons, etc.

CLASS 596.—VESSELS FOR SPECIAL PURPOSES.

The dredging-machines of the American Dredging-Machine Company consisted of a large iron bucket fixed at the end of a beam, which is managed and worked by steam machinery. These machines are simple and moderately cheap, but they are only suitable for working in smooth water. They are particularly well adapted for dredging out docks, or lay-bies for vessels on the banks of rivers, as the machines are very efficient in clearing out corners.

There were several models of floating-docks, among which was the Bermuda floating-dock.

The models of a gridiron floating-dock, and staging for dry-dock-

ing vessels, which were exhibited by Messrs. Clark & Standfield, of London, deserve particular mention on account of the novelty and simplicity of construction and the comparative small cost at which a large number of vessels could be dry-docked. The one floating-dock can be used for placing as many vessels on the staging as the staging is constructed to hold.

CLASS 594.—SAILING-VESSELS.

The exhibits in this class consisted of models of vessels, executed with more or less care and accuracy of detail, but in the greater number of cases no data on which to form an opinion of their relative merits were furnished. Among them the models and worked-out drawings of Mr. Arenty, of Norway, appeared to be the only ones in a complete state, and deserving of special notice.

The paper boats exhibited by Messrs. Waters & Sons, of Troy, New York, were a novelty. They were made of coarse paper, put together with shellac, very strong in proportion to their weight, and are likely to be useful for shooting-punts, traveling-canoes, and racing-gigs. These boats are very easily repaired. The paper of which they are made is of two kinds: one made from Manila grass, and the other from Russia duck. It is rolled in sheets eighty inches wide, and of any length required.

The rowing apparatus of Mr. Lyman, of Hamburg, New York, called "bow-facing rowing machinery," is a new invention, and deserving of notice, as likely to be useful for shooting-punts, and all pleasure-boats used by only one person. The oar is cranked, or made in three pieces with two hinge-joints near the rowlock, so that the oarsman, by the same motion of his arms as in ordinary rowing, pulls the boat in the direction that he is facing, instead of backwards as with common oars.

CLASS 595.—STEAMSHIPS.

The exhibits in this class consisted of a large number of models. The model of the ship "Frisia," exhibited by the Hamburg Steamship Company, was a very nice piece of work, and the details appeared to be most accurately carried out.

CLASS 554.—SCREW-PROPELLERS, WHEELS, ETC.

Two full-sized steam-launches or yachts were exhibited in this class. They were open boats for river use, and were well built; one of them was reported to steam twenty miles an hour in smooth water, but

there was no opportunity of testing this, as these boats were placed in Machinery Hall.

Major Mallory, of Bridgeport, Connecticut, exhibited a screw steam-yacht in which the screw not only propelled the vessel, but also acted as a rudder. The screw could be moved to either side, in a half-circle, as the screw-shaft was pivoted near the stern. The yacht was afloat in the Delaware River. It could be turned round (the whole circle) by means of the screw, in a little more than its own length, in one minute and forty-five seconds. This invention may probably be usefully applied to dock-yard launches for intricate river navigation, as the screw forms a most powerful and effective rudder. The length of the yacht was ninety-five feet over all, and the length of keel was eighty-four feet.

The life-raft exhibited by the Monitor Life-Saving Raft Company, of New York, consisted of india-rubber bags inclosed in two strong canvas bags, of the circular tube form, with conical ends. The raft was buoyant, strong, simple in all its parts, and easily put together. It showed good floating properties, and was manageable when placed in the water. It appeared to be a very portable and serviceable machine, well calculated for saving life in cases of emergency, or for pontooning purposes.

The ice-boat or ice-yacht exhibited by Mr. Irving Grinnell, of New Hamburg, New York, is deserving of commendation. It is rigged like a cutter, runs on three skates, and is reported to attain a speed of sixty miles an hour when running with a favorable side wind. This very speedy mode of traveling over the ice must be attended with considerable risk.

CLASS 597.—STEAM-CAPSTANS, WINDLASSES, ETC.

The exhibits in Class 597 which appeared to be most worthy of notice were as follows: The steam steering apparatus by Mr. Siccles; the capstans, windlasses, and chain-stoppers exhibited by Messrs. Coffin & Woodward, of Boston, Massachusetts, which were simple and effective; the windlass of the American Ship-Windlass Company, of Providence, Rhode Island, in which a tongue, actuated by a cam, is substituted for the ordinary pawl and rack; the chain cables of Messrs. Prodi, of France, which were made without any welds; and the workmanship and material in the chain cables of Messrs. Bradlee & Co., of Philadelphia, appeared to be excellent.

CLASS 287.—ROPES, CORDAGE.

The exhibits of ropes and cordage were very numerous and very

good. Great excellence was apparent in the exhibits of Messrs. Sewell & Day, of Boston, Massachusetts, and the other American manufacturers of these articles. Russia, Italy, and Brazil had numerous exhibits. The Brazilian flax appeared to be very good, but the rope manufactured in that country is rough.

The Brazilian and Russian Governments exhibited numerous models of their ships of war and of their military and dock-yard works.

One building of considerable size was completely taken up with the exhibits of the United States Government works, among which the model of the mining works at Hell Gate for deepening the channel leading to Long Island Sound was most interesting and instructive. Samples of the material used in the United States Government works, and samples of all the animal, vegetable, and mineral products of the country, which were collected in this building, formed a most comprehensive and interesting exhibit of the wealth, industry, and progress of the United States.

ROPES AND CORDAGE.

BY HENRY A. GOODSPEED.

This exhibit comprised ropes and cordage made from hemp, iron, and steel wire.

The countries represented were Russia, Norway, Sweden, Austria, the Netherlands, Hungary, Belgium, Spain, England, Brazil, Chili, New Zealand, Australia, and the United States.

ENGLAND.

From England proper there was only a single exhibit, consisting of three bales of machine-spun oakum of superior quality.

NEW ZEALAND.

A fine display, from a number of exhibitors, of ropes and cordage of various sizes, made from Manila and native hems. The native hemp is called Phormium, and, as it appeared in the manufactured rope, is a poor material for the purposes of rope for ships' use. The fibre seemed to have been injured in its preparation, and the hatching very poorly done. Almost all were poorly prepared, and had been injured by dust and exposure.

AUSTRALIA.

This exhibit consisted of ropes and lines made from European, Manila, and coir hems, in no respect worthy of special mention.

NOVA SCOTIA.

This exhibit consisted of a great variety of large and small ropes of tarred and untarred Russia and Manila hems and oakum. Much of the rigging seemed to have been made for a long time, or it might possibly have been damaged in transportation. It was, however, unworthy of special mention.

AUSTRIA.

This country made only one exhibit, of small sample specimens of small ropes and twines, coarsely made from very good material.

HUNGARY.

Hemp and wire ropes were exhibited in considerable variety, but in very small quantities. The hemp ropes were principally made from Russia hemp; the wire ropes were in different forms, all of fair quality.

BELGIUM.

A single exhibit, of sample specimens of small ropes made from good material, and of quite good manufacture.

NETHERLANDS COLONIES.

The Netherlands Colonies exhibited small quantities of small hawser-laid hemp ropes of inferior make.

SWEDEN.

Only a single exhibit was contributed, which was of iron-wire rope of various sizes, and of fair quality.

NORWAY.

There was only one exhibit, consisting of six coils of Russia hemp rope, the material being good, and the manufacture better than ordinary.

BRAZIL.

The Government was the only exhibitor from Brazil, and its exhibit was not very extensive nor complete. It consisted of small quantities of small-sized ropes, halyards, deep-sea-lines, log-lines, marline, flag-lines, sash-cord, fish-lines, lead-lines, and hide tiller-rope. With the exception of the hide rope, all were made from Brazilian hemp. The manufacture was not the best, but the hemp was of fine quality, and was next to Italian and Russian in fineness and strength.

CHILI.

There were two exhibits of a variety of small specimen samples of rope, made from Manila and native hemps and iron wire. The material was all of good quality, but the manufacture was rough and uneven.

SPAIN.

Represented by a small exhibit, from Barcelona, of small specimens of tarred and untarred ropes and rigging, made from ordinary material, and of ordinary manufacture.

RUSSIA.

This Government exhibited seven coils of galvanized-iron-wire rope of various sizes, two coils of tarred and two of untarred hemp rope, and four short pieces of large-sized hawsers. The wire rope was of ordinary quality; the hemp ropes were made from very fine material, and one of the pieces of hawser, laid up with six strands and a core, was a superb specimen of manufacture, worthy of special mention. The other exhibit from this country consisted of three coils of coarse yarns and small rope, made from excellent material, for agricultural purposes.

UNITED STATES.

This country was much the largest contributor in this class. It was apparent that a great and commendable rivalry among the manufacturers to excel in making a superior article resulted in the production of finer ropes, cordage, lines, and twines than were ever before exhibited. In every instance the exhibitors, including the United States Government, were worthy of especial mention, and it was a matter of serious regret that we could not in some way express our appreciation of the great effort made by these contributors to enhance the attractions of the Exhibition.

The iron and steel wire ropes were of superior quality, and were exhibited in a most excellent manner. The oakum was of fine quality, though only moderate in quantity and number of exhibitors. The twines made from American hemp and flax were of most excellent quality, and superior in evenness and finish.

It was something of a disappointment to find that the English manufacturers of ropes and cordage were not at all represented.

The class, taken as a whole, was satisfactory.

CLASS

There were two exhibits of a variety of small specimens... of rope made from bleached and native hemp and from one of the... material was all of good quality, but the manufacturing was... however...

EXHIBIT

Presented by a small exhibit from specimens of small specimens... of lined and unlined ropes and fishing made from ordinary... instead of ordinary hankline.

EXHIBIT

This Government exhibited seven coils of galvanized iron wire rope... of various sizes, two coils of lined and two of unlined... and four short pieces of twisted hawser. The wire rope was of... ordinary quality; the hawser rope were made from very fine... and one of the pieces of hawser laid up with six strands and a core... was a rough specimen of manufacturing worthy of special mention... The other exhibit from this country consisted of three coils of... rope and small rope made from excellent material for... purposes.

EXHIBIT

This country exhibited the largest coil of rope in the class... was apparent that a great and considerable variety among the... hawser to exist in making a rope of which is the... of the rope... lines and lines that were even below... exhibited in their... this... States Government were... and it was... of... that we could not in any way... of... by their... to enhance... of the... and... and... in a... manner. The... of the... in quantity and number of... from... of... in... and...

EXHIBIT

It was... of a... to... the... of... and... was not... The... was... of...

REPORTS ON AWARDS.

GROUP XIX.

1. F. W. Page, New York, N. Y., U. S.

OARS.

Report.—Commended for good material, good shape, and good workmanship.

2. Marcus Ormsbee, Brooklyn, N. Y., U. S.

LIFE-SAVING SUIT.

Report.—Commended as new, simple, and effective.

3. H. Arentz, Christiania, Norway.

MODELS AND DRAWINGS OF VESSELS.

Report.—Commended for excellence of models and plans of commercial vessels.

4. J. Brandi, Christiania, Norway.

MODELS AND DRAWINGS OF VESSELS.

Report.—Commended for excellence of models and drawings of ship, bark, and pilot boat.

5. D. Herald, Gore's Landing, Ontario, Canada.

HUNTING CANOES.

Report.—Commended for novelty of constructing without frames in the patent canoe, and for lightness, strength, and good workmanship of the ordinary hunting canoe.

6. The Rider Life-Raft Co., New York, N. Y., U. S.

TWO (2) LIFE RAFTS.

Report.—Commended for lightness, buoyancy, and efficiency as a life-saving apparatus on the beach or elsewhere.

7. William English, Peterborough, Ontario, Canada.

HUNTING CANOE.

Report.—Commended for strength, lightness, and good workmanship.

8. C. & R. Poillon, New York, N. Y., U. S.

MODEL OF SCHOONER YACHT "SAPPHO."

Report.—Commended as being the model of the fastest-sailing yacht known, as shown by records.

9. E. Waters & Sons, Troy, N. Y., U. S.

PAPER BOATS.

Report.—Commended for new material used in boat-building, strength and stiffness, facility for repairing, and moderate cost.

10. R. T. Dodge, Boston, Mass., U. S.

OARS.

Report.—Commended for good shape, good workmanship, and good material.

11. William Lyman, Middlefield, Conn., U. S.

PATENT BOW-FACING ROWING-GEAR.

Report.—Commended for the advantage obtained for special service of pulling the boat in the direction in which the rower is facing.

12. Irving Grinnell, New Hamburg, N. Y., U. S.

ICE YACHT.

Report.—Commended for good proportion, good material, and good workmanship.

13. Life-Saving Raft Co., New York, N. Y., U. S.

MONITOR LIFE-SAVING RAFT.

Report.—Commended for simplicity, efficiency, lightness, and facility for bringing into use in time of need.

14. New York Safety Steam-Power Co., New York, N. Y., U. S.

STEAM YACHT.

Report.—Commended for fitness for general purposes.

15. Doughty & Kappella, Philadelphia, Pa., U. S.

STEAM YACHT.

Report.—Commended for fitness for general purposes.

16. Trajano A. de Carvalho, Rio de Janeiro, Brazil.

MODELS OF TWO (2) CORVETTES AND ONE (1) STEAM LAUNCH.

Report.—Commended for new lines of vessels applicable to war and merchant ships, as shown by trials made both in Brazil and England and applied to vessels already built.

17. The William Cramp & Sons Ship and Engine Building Co., Philadelphia, Pa., U. S.

STEAMSHIP MODELS.

Report.—Commended for steamship models and elements of stability shown in the calculations and records of Atlantic steamers furnished.

18. Motala Iron and Steel Works, Motala, Sweden.

STEEL STEAM-PROPELLER BOAT.

Report.—Commended for excellence of material and superior workmanship, being the representative of a class of boats used around Stockholm, Sweden, and adjacent waters.

19. John Englis & Son, Brooklyn, N. Y., U. S.

MODELS AND CALCULATIONS OF STEAMSHIPS "CITY OF NEW YORK" AND "CITY OF VERA CRUZ."

Report.—Models of successful steamships, as shown by records.

20. Jno. B. Roach, Chester, Pa., U. S.

MODELS OF STEAMSHIPS.

Report.—Models of successful steamships, as shown by records.

21. Hamburg-American Steam Packet Co., Hamburg, Germany.

MINIATURE MODEL OF HAMBURG-AMERICAN PACKET SHIP "FRISIA."

Report.—A well-finished piece of work; pretty miniature representation of the interior fittings of the vessel.

22. Frank G. Fowler, Bridgeport, Conn., U. S.

STEAM-STEERING PROPELLER.

Report.—It is well adapted to light-draught vessels, steering without a rudder, and working readily in all directions.

23. William H. Mallory, Bridgeport, Conn., U. S.

STEERING SCREW PROPELLER.

Report.—Commended for a device applied to the screw propeller, whereby the vessel may be steered without a rudder, and propelled backwards without reversing the engines. Adapted to light-draught vessels.

24. Clark, Standfield, & Co., London, England.

MODEL OF GRIDIRON FLOATING DOCK.

Report.—Commended for novelty of plan and design, and apparent commercial utility.

25. American Dredging Co., Philadelphia, Pa., U. S.

DREDGING MACHINES.

Report.—Two well-planned machines of general excellence and utility.

26. The Government of Bermuda.

FLOATING DOCK.

Report.—Commended for design, workmanship, and success in accomplishing the purpose for which it was intended.

27. American Ship-Windlass Co., Providence, R. I., U. S.

WINDLASS AND CAPSTAN MODELS.

Report.—Commended for excellence of mechanism.

28. F. E. Sickels, Providence, R. I., U. S.

APPLICATION OF STEAM TO STEERING SHIPS.

Report.—Commended for the method of applying steam power to steering vessels.

29. Nozikoff, St. Petersburg, Russia.

STEAM STEERING APPARATUS.

Report.—Commended for device in taking the power of steering the vessel from the shaft of the screw.

30. Fred. L. Stacy, Gloucester, Mass., U. S.

STEERING WHEEL.

Report.—Commended for utility and excellence of mechanism.

31. The John A. Roebling's Sons Co., Trenton, N. J., U. S.

WIRE ROPES.

Report.—Commended for superior make and material.

32. Dunckley & McBride, Melbourne, Victoria, Australia.

SASH AND LATHE LINES.

Report.—Superior articles, and almost of indefinite endurance, made from sheep intestines.

33. William Wall's Sons, New York, N. Y., U. S.

AMERICAN AND RUSSIAN HEMP STANDING RIGGING AND SMALL TARRED LINES.

Report.—Commended for superior manufacture and material.

34. B. Mill's Sons, Jersey City, N. J., U. S.

OAKUM.

Report.—Commended for superior quality, well tarred, and evenly picked.

35. Lawrence, Waterbury, & Co., New York, N. Y., U. S.

MANILA ROPE.

Report.—Manila ropes; a hawser of extraordinary size and superior manufacture.

36. Liverpool Spun Oakum Co., Liverpool, England.

MACHINE-SPUN OAKUM.

Report.—Commended for superior material and manufacture.

37. Robert H. Vyse, Brooklyn, N. Y., U. S.

RAW-HIDE ROPE.

Report.—Commended for good quality and good manufacture.

38. Tiburcio Villamarze, Tayabos, Spain.

HAWSER AND SMALL LINES OF PALM-TREE FIBRE.

Report.—Commended for anchorage purposes and novelty of material.

39. John T. Bailey & Co., Philadelphia, Pa., U. S.

AMERICAN HEMP TWINE SASH AND BELL CORDS.

Report.—Commended for good quality and, being machine made, the consequent reduction in price.

40. Francisco Casado & Febrero, Seville, Spain.

SMALL CORDS AND LINES OF SPANISH HEMP.

Report.—Commended for good material and good manufacture.

41. Peele, Hubell, & Co., Santa Mesa, Manila, Philippine Islands.

MANILA ROPES.

Report.—Commended for good material.

42. Luis Garriga, Barcelona, Spain.

TARRED AND UNTARRED RIGGING, SPANISH AND MANILA HEMP, LARGE AND SMALL LINES.

Report.—Commended for superior quality and good manufacture.

43. Fernandez Brothers & Co., Aguilas, Murcia, Spain.

ROPE MADE FROM ESPARTO GRASS.

Report.—A cheap article of rope made from native grass for domestic purposes.

44. The Imperial Government of Brazil.

NAVAL EXHIBITS.

Report.—Commended for the quality of the exhibits.

45. The Imperial Government of Russia.

NAVAL EXHIBITS.

Report.—Commended for the quality of the exhibits.

46. Spanish Commission for Canary and Philippine Islands.

MODELS OF SHIPS AND BOATS.

Report.—Representatives of vessels used in the Philippine Islands.

47. Royal Swedish Commission, Stockholm, Sweden.

EXHIBIT OF COMMERCIAL AND FISHING BOATS USED IN SWEDEN.

Report.—An excellent exhibit of an important national industry.

48. David Damoizeau & Co., Paris, France.

CHAIN CABLE WITHOUT WELD.

Report.—Commended for novelty of design and advantage of getting rid of the weld, which is a weak point in chain cables.

49. Bradlee & Co., Philadelphia, Pa., U. S.

CHAIN CABLE, CRANE CHAINS, SHACKLES AND SWIVELS FOR ANCHOR CHAINS.

Report.—Commended for excellence of material and workmanship.

50. Coldbrook Rolling-Mills Co., St. John, New Brunswick.

IRON SHIP KNEES.

Report.—Commended for good proportions and workmanship.

51. Thomas F. Rowland, Green Point, Long Island, N. Y., U. S.

IRON BUOY.

Report.—Commended for a new and useful mode of manufacturing wrought-iron or steel buoys or similar hollow vessels.

52. A. H. Hart & Co., New York, N. Y., U. S.

FLAX TWINES.

Report.—Commended for superior finish, evenness, strength, and pliability.

53. Eduardo Jackson, Manila, Philippine Islands.

MODEL AND PLAN OF A YACHT.

Report.—Commended for superior sea qualities, as shown by cylindroid, and well adapted to yachting requirements.

54. Coffin & Woodward, Boston, Mass., U. S.

CAPSTAN AND WINDLASS.

Report.—Commended for excellence of design and construction in their union power capstan and windlass.

55. United States Navy Department, Washington, D. C., U. S.

NAVAL EXHIBITS.

Report.—Commended for the quality of the exhibits.

SIGNING JUDGES OF GROUP XIX.

The figures annexed to the names of the Judges indicate the reports written by them respectively.

ISAAC NEWTON, 18, 29, 51.

JOHN W. GRIFFITHS, 1, 2, 3, 4, 5, 7, 8, 9, 10, 11, 15, 16, 17, 19, 20, 21, 22, 46, 47, 50, 53.

H. C. GOODSPEED, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 52.

F. H. RICH, 24, 25, 26, 44, 45, 48, 49, 55.

LUIZ DE SALDANHA, 6, 12, 13, 14, 23, 27, 28, 30, 54.

SUPPLEMENT TO GROUP XIX.

REPORTS
OF
JUDGES ON APPEALS.

JUDGES.

JOHN FRITZ, Bethlehem, Pa.
EDWARD CONLEY, Cincinnati, Ohio.
CHARLES STAPLES, JR., Portland, Me.
BENJ. F. BRITTON, New York City.
H. H. SMITH, Philadelphia, Pa.

COLEMAN SELLERS, Philadelphia, Pa.
JAMES L. CLAGHORN, Philadelphia, Pa.
HENRY K. OLIVER, Salem, Mass.
M. WILKINS, Harrisburg, Oregon.
S. F. BAIRD, Washington, D. C.

1. Thomas Shaw, Philadelphia, Pa., U. S.

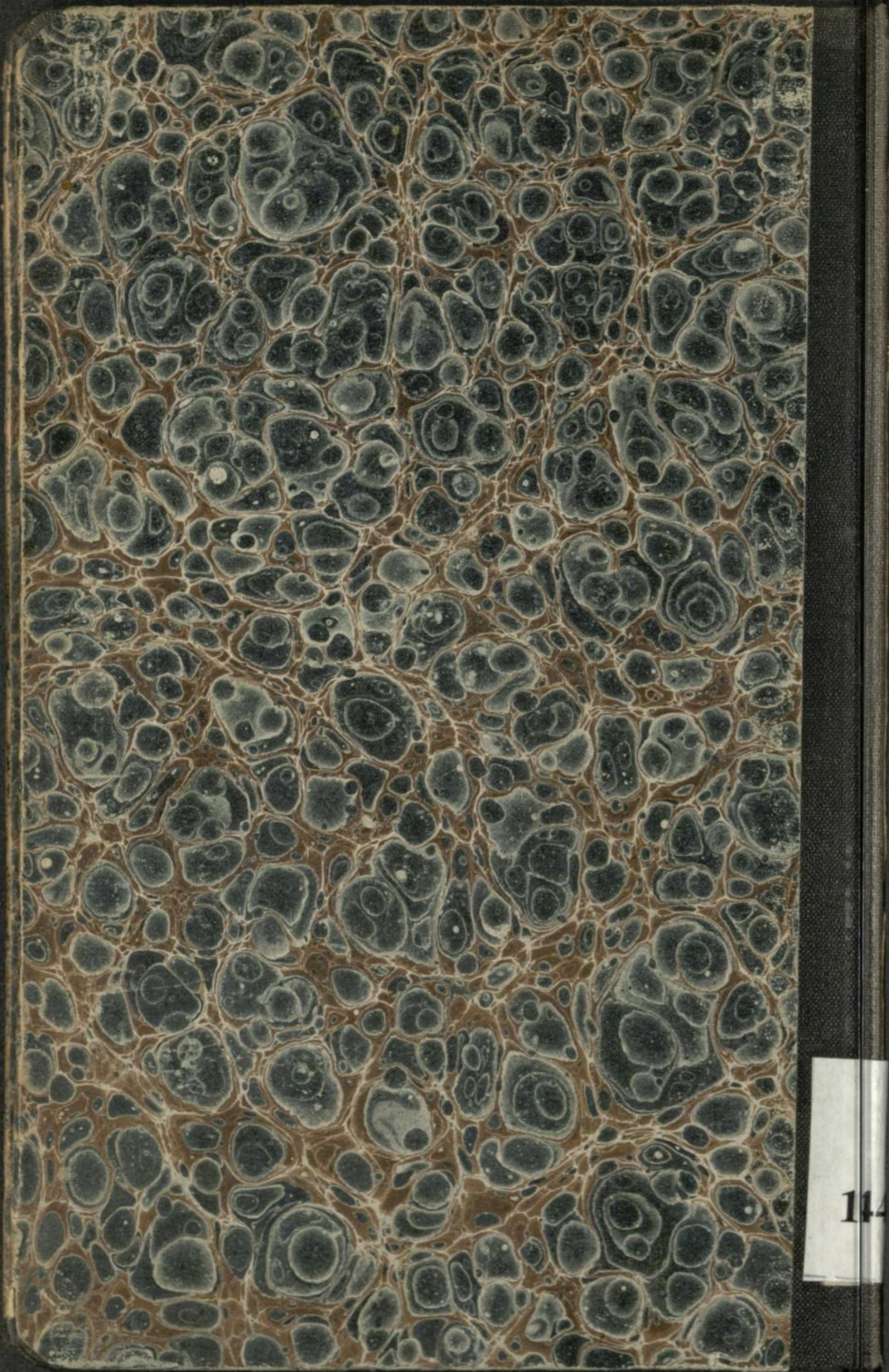
BOAT-LOWERING DEVICE.

Report.—Commended for its simplicity and the certainty with which it performs its function.

SIGNING JUDGE OF SUPPLEMENT TO GROUP XIX.

The figure annexed to the name of the Judge indicates the report written by him.

CHAS. STAPLES, JR., 1.



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