# FOR A SECTIONAL DOCK

STYLE BEST SUITED TO CONDI-TIONS IN PORTLAND.

Description of a 10,000-Ten Dock Which Has Been Successfully Operated in New York.

It is reasonably certain that the dry-dock which the Port of Portland Com-mission will build will be sectional in pattern, large enough to handle a vessel 60 feet long, and of a lifting capacity of at least 20,000 tons. A general idea of the style of dock which Portland is to have may be had from an article con-tributed to the Engineering News by William T. Donnelly, of the firm of Faber du Fauer & Donnelly, of New York. This firm has recently completed and has in successful operation a drydock capable of handling vessels 600 feet in length, and It is reasonably certain that the drysuccessful operation a drydock capable of handling vessels 500 feet in length, and having a lifting capacity of 10,000 tons. Members of the Port of Portland Com-mission and shippers who have read Mr. Donnelly's paper say the drydock he de-scribes is just about what Portland wants, taking into consideration the great dif-ference between the maximum and mini-mum height of the river, which is 30 feat and the community low cost of mum height of the river, which is so feet, and the comparatively low cost of construction by using wood. The firm of which Mr. Donnelly is a member may be bidders for the contract of building the dypdock. Mr. Donnelly's article follows: "The Lang balanced sectional drydock is composed of five sections, each of the fol-lowing dimensions: 110 feet 19 inches wide and 80 feet iong. When coupled togeth-er, they are separated by 20 inches and they are separated by 20 inches, and e section at each end has an overhang of 30 feet, making an overall length of 865 feet 6 inches. The depth at the cen-ter is 13 feet 6 inches, and all the water-ways 13 feet 6 inches. The height of the wings is 29 feet 9 inches. The draft of the dock light is approximately 4 feet 6 inches, the maximum draft which can be lifted 25 feet, and the maximum lift-ig power 30,000 tons. The available

be lifted 26 feet, and the maximum lift-ig power 10,000 tons. The available width between wings is 92 feet. "The pumping machinery consists of duplicate sets on opposite sides of the dock, each composed of two 125-horse-power vertical bollers operating engines with cylinders 20 inches in diameter and 31 inches stroke, and making 150 revolu-tions are minute. Each engine drives of tions per minute. Each engine drives o line shaft, which runs the entire length of the dock. These operate six pumps on such side of each section, or a total of by 20 inches stroke, and as they are driven by a reduction gear of one to two from the engine shaft, they make 75 strokes per minute. This machinery is designed to pump the full capacity of the dock in 45 minutes.

the dock in 45 minutes. "The sections are coupled together by what are known as locking logs, which connect the sections together through connect the sections together through keepers. The logs are of oak, 40 feet long

as win be readily inderstood from the drawing. The foot valves drop into a taper seat near the bottom of the pump barrel, and the plunger is attached to the lower end of the pump rod. The packing of the plunger is of 4-inch leathand 24 by 25 inches in section. The essential principle embodied in the Lang balanced sectional drydock and that which has made a floating dock of this processing of the plunger is of third leads er belting secured at its lower edge by rivets, and free at its upper edge to press against the pump barrel. These pumps have been found to have exceed-ingly long life, and the parts to be re-placed in case of wear or breakage are very simple and inexpensive. The pump size possible, is the manner in which the ens are divided into water-tight com-tents. The separate sections in the partments. previous sectional drydocks were without transverse buikheads, and any inclina-tion of a section in a longitudinal direc-tion would cause the water to flow toward the lower end and increase the difficulty of the unbalanced condition. In the Lang dock this has been overcome by building two transverse builkheads in each section and providing independent means for pumping each compartment. This results in giving to the sectional drydock the desirable features of the present bal-anced dock, and at the same time retain-ting many desirable features of the eccshaft at the point where the reduction of speed is effected are carried in a com-mon pillow-block, and the bearings for tional dock.

## Structural Features

"In the center of the dock is a bulk-ead built up solid of yellow pine timber I by 12 inches, and each side is divided four panels, by three longitudinal. bulkissads. bulkkends extending from the bottom to the deck, but leaving space at the top and bottom for water communication be-tween the compartments formed by these bulkheads and the transverse bulkheads. The truss proper is composed of a lower chord of 10 by 12-inch yellow pine jum-ber. There are three disgonals or braces of 10 by 10-inch timber, each abutting at its lower end at the lower side of the cor-responding longitudinat bulkhead. The onding longitudinal bulkhead. The wer sets of braces at the center ad abut against oak blocks, which

near the crushing point. The upper set of braces abut at the center against one another, and the center bulkhead is cut to allow this. Above the third brace is a continuous laminated arch, composed of three yellow pine timbers making an aggregate section 10 by 14 inches. This arch passes through each of the bulk-heads, and fits into the lower chord near each end. Above the arch and forming a deck beam is the upper member of the truss, which is a 10 by 12-inch yellow pine timber. This member is given a crown of one foot to facilitate the flow of water from the deck, and from the intersection of this member with the inner side of each wing run diagonals of 10 by 10-inch timbers, to the end of the lower chord. The fitting of the braces and the arch into the jower chord is reinforced by anchor stocks which increase the section of the abers at the point where the strain is smitted and aflow ample section for The arch is fastened by the fastenings. through holfs three-quarters of an inch diameter and one foot center to center, and the fastenings of the brace are of three-quarters and seven-eighths-inch galvanized drift bolts. The center and longitudinal bulkheads are driff-bolted edge. wise through 2%-inch planks. The floor timbers run longitudinally of the dock, and are 8 by 12-inch yellow pine placed on B0-inch centers. The bottom planking is 6 by E1-inch yellow pine, and runs trans-versely or across the dock. The dock planking, which is laid longitudinally of the dock, and directly across the upper member of the truss, is of 4 by 10-inch yellow pine. At the center of the dock fire 8 by 12-inch yellow pine timbers are laid to carry the keel blocks, and these are gained 1 inches over the upper mem-ber of each truss. At each side of the deck at its junction with the sloping side of the wing are two 12 by 12-inch timbers called waterways. Hold stanchions, or uprights are of 6 by 30-inch yellow pine, genings 6 inches over all members where they intersect, and one is placed over each floor timber, alternating on each side of the truss. The trusses are on about 57-inch centers, or 35 trusses to each sec-tion. The design of this truss is entire-ly original with Mr. Lang, and properly proportioned it meets in a very remark-able way the peculiar conditions under which it operates. The maximum load to which this dock can be subjected is 24 tons per running foot or 72 tons per trues. But it is not the amount, but the peculiar manner in which the strains are applied that makes the problem of a suittruss guite exceptional.

which has going over the ground carcillos and by the set hooks at the case of the ship denses. They are statistically again through the set hook and that the counter or the dock, and that the counter or the dock and the dock is the dock

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length and dimensions of each piece were obtained, and it was possible to make a bill of lumber that was accurate and complete for the material of one section, rnd this bill was used in getting out the lumber by the lumber mills in the South in precisely the same way as a bill of material is used by the rolling mills for structural iron."

EAST SIDE NEWS.

Sub-Board of Trade to Be Organized In Northeastern District.

Within a week there will be five Sub-Boards of Trade on the East Side, all working to promote the welfare and growth of their districts. Four are al-ready organized. These are: Peninsula, P. Chappell Brown, president; Tenth Ward, C. W. Miller, president; Montavii-la, Chauncey Ball, president; Sellwood, D. M. Donaugh, president. The North-enstern, which will represent Piedmont, Highland and Woodlawn, will be organ-ized Thursday evening. The boards at ized Thursday evening. The boards at Montavilla, Sellwood and University Park have stimulated activity and confidence At Montavilla the board is making an effort to get free mail delivery, a sideand stockyards. Sellwood has secured a woolen mill and induced the people to track from clear the rubbish from streets and vacant lots. Peninsula has secured a saw mill, and is after better car service and factories. There is a lively rivairy be-tween University Park and Sellwood for the location of the Lewis and Clark Expo sition, and the contest is becoming in-teresting. When the board for Piedmont, Highland and Woodlawn gets in working trim it will make a fight for Bull Ru water, the improvement of Union avenue and free mail delivery. These sub-boards are doing excellent work and making an end of the petty jealousies which in the past prevented united effort in any di-rection.

## New Church Site.

It is settled that the new Third Pres byterfan Church will build on a new site. The old building stands on the corner of East Ninth and East Oak streets, and the first plan was to rebuild on modern lines. It is now proposed to get new ground farther east and put up a church ct a cost of \$5000. The new Mirgah Pres-byterian Church, on East Thirteenth and Powell streets, will probably be built on the site of the present building. It will

# Sumuer Post Memorial Services,

Summer Post, G. A. R., and the other East Side posts and Relief Corps will hold memorial exercises in Lone Fir cemetery May 30. Rev. Robert McLean will deliver an address. East Side organiza-tions will join with their comrades in the Armory in the afternoon in a general pro gramme. Next Sunday evening Sumner Post and Sumner Beilet Corps will at-tend services at the Third Presbyterian Church

### Hardwood Factory.

Machinery for the hardwood factory is being placed in position in the building near the foot of East Market street. The south half of the old barrel factory will be used for the boller and engine-room, while the saw mill and factory will be on the north side. The foundation timbers have been placed. Wagon spokes, felloes, single and double trees and other articles will be manufactured.

# Pleasant Home Telephone.

SECTIONAL FLOATING DRYDOCK IN USE. as will be readily understood from the drawing. The foot valves drop into a taper seat near the bottom of the pump barrel, and the plunger is attached to of the dock, it is necessary to load it with stone ballast, which is placed in the ballast less the buoyancy of the sub-

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the wings, amounting to three tons per running foot, or 400 tons per section, in the dock now under consideration. With these points in mind and by the aid of the plans, we believe the real con-

speed is effected are carried in a com-mon pillow-block, and the bearings for from the shaft and countershaft are made from the same pattern. By this means the distance between centers of the great are accurately maintailied. The object of going into these details is to show the study that was made to effect the greatest possible duplication of parts. In proportioning the machinery of safety was used, as a break in any of the machinery during the lifting of a vessel might involve a loss of much time, which is very valuable in the case of parts makes it possible to effect any re-pairs quickly, and with very few parts on hand.

were found necessary to distribute the strain to which they are subjected with out raising the compression per unit of area of the center bulkhead dangerously mare the crushing point. The upper set this movement may be in any direction, it will be apparent that the connection must be both a universal joint and a slip coupling: a universal joint, so that the shaft may turn when out of alinement, and a slip joint so that the sections at this point may come together and separate without interfering with the transmission of power. As the slip coupling must opto the maximum capacity, the back of the dock will be just clear of the water, and the load upon R will correspond to the amount of displacement pumped out between the interior and exterior levels of the water at this time, less that necessary to float the dock at this

merged wood. "We find the difference in interior and

tam, due to the difference of interior and exterior levels of water, an additional up-ward thrust of eight tons distributed over the part containing no ballast and a weight or downward thrust on the wings

To state this plainly and in its lowest terms, there is at this time, a force tending to break the truss in the reverse direction to that hitherto considered. This strain amounts to 60 tons tensile force at the center of the continuous arched member, and this is the condition which the latter is designed to meet.

"Besides these conditions there is the" important fact that the whole structure must be made and maintained water-



Downing, Hopkins & Co. ESTABLISHED 1803.

WHEAT AND STOCK BROKERS

**Chamber of Commerce** 

No additional Preferred Stock can be issued at less than par in cash, of the property at such cash value. The certificate of incorporation confers authority upon the Board of Direc-tors, in their discretion, to declare and pay dividends on the Common Stock con-currently with the Preferred Stock, when earned and applicable thereto. The fiscal year of the company commences May ist. The Preferred Stock divi-dends are payable quarterly, commencing August 1st, 1901, Application will be duly made to list the Preferred and Common Stocks on the New York Stock Ex-change. The Allis-Chalmers Company represents the consolidation of the property and business of the following builders of heavy machinery:

The Edward P. Allis Co., of Milwaukee, Wis. Fraser & Chalmers, Incorporated, of Chicago, III.

# Gates Iron Works, of Chicago, III.

Dickson Mfg. Co., of Scranton, Pa. (exclusive of Locomotive Works).

All property acquired is to be conveyed in fee and free from mortgage or other

All property acquired is to be conveyed in fee and rice from forming age of the files. No mortgage can be placed upon the property without the assent of seventy-five per cent of the amount of Preferred Stock outstanding. The expert engineer, Mr. Julian Kennedy, reports, after several personal ex-aminations of the properties, that he estimates "the value of the plants, taking into account the real estate, buildings, machinery, tools, patterns, drawings and patents, together with the cost of organizing and getting into full operation, but not estimating anything for good will, at \$9,355,000." He further reports, under date of April 5th, 160, as follows: "I find the plants all running at their fullest capacity. The great bulk of the tools in all of these are comparatively new, having been put in within the last seven or eight years, and all the works are in good condition and running smoothly."

smoothly." The security of the Preferred Stock, without any consideration for the ad-vantages accruing from the consolidation, for the valuable good will of the several companies, so long and favorably known all over the world, or for the earning capacity of the united companies, will be substantially as follows:

- .....\$10.000.000 Cash Capital ..... of which sum \$2,500,000 will be expended in the erection of an additional plant to double the present capacity of the Allis Works.
- Valuation as above of existing plants owned in fee and

free of lien..... 9,935,000

he total issue of Preferred Stock against this property

18 ..... 16,250,000 all of which is issued for cash at par, or, in lieu of cash, for the plants at less than their valuation as above stated, and of which total issue there will be more than 6 per cent in cash, and the balance will be in property that produces much more than the cumulative dividend to which the Preferred Stock is entitled. Of the total Preferred Stock, \$7.58,000 has been accepted by the original Com-panies in lieu of each in part payment for their properties to be conveyed to this Company. The remaining \$8,60,000 is now offered for alle to provide for the discharge of existing mortgages and for part of the above-mentioned Cash Capital, the remainder thereof being provided by the sale of Common Stock already con-summated.

the remainder thereof being provided by the sale of Common Stock already con-summatd. The accounts of the several concerns have been examined by Messers Jones, Caesar & Co., chartered accountants, who certify "that the combined profiles of these Companies, in each of the last two fiscal years, after making full pro-visions for depreciation and bad debts, but without charging interest and manage-ment salaries, exceeded the amount required to pay seven per cent. dividends upon MASS and the several depreciation and bad debts, but without charging interest and manage-ment salaries, exceeded the amount required to pay seven per cent. dividends upon MASS and the several depreciation and bad debts, but without charging interest and manage-defined, considerably exceeded such amount." It was not until the last year that the new works of Fraser & Chalmers came into full operation. The net profile for the fiscal year onding May 1, 1967, are estimated by the manufacturing capacity, or for the economies of consolidation, or increase of prices, at sufficient to pay dividends at the rate of seven per cent, on the Stock. Including the economies from consolidation confidently antilupated by these authorities, the net profits for the same period should exceed the amount required to pay seven per cent, dividends on bout charges of stock. The same officials similarly estimate that upon the completion of the additional Altis Works, now in process of construction, the profits will be equivalent to eight per cent, on Max 20,000,000 of Preferred Stock and ten per cent, on X0,000,000 of common Stock, with a material addition to the Surplus Account.

exterior levels to be three feet, which corresponds to an upward thrust of 32 tons, evenly distributed over the entire pumps have been found to have exceed-ingly long life, and the parts to be re-placed in case of wear or breakage are very simple and inexpensive. The pump rods are connected to a rocker arm is attached a connecting rod operated by a crank on the end of the shaft driven from the main line shaft. The pump rods are 4 inch I-beam section. The boxes at the upper end of the pump rod and each end of the connecting rod are of broffse and on the terrife in a com-sponding to the amount of water pumped out, but as the area of a vessel, corresponding to the midship area of a vessel, corresponding to the water area of the water, an additiongal up-

to counteract this. "To state this plainly and in its lowest

# Timber and Fastening.

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## Machinery.

"The choice of machinery for this class of drydock involved the consideration of a great many questions, and results were only arrived at by a series of eliminaonly arrived at by a series of elimina-tions. We were fortunate in this in-stance in having the guidance of all that had been done in and about these waters, and the requirements or conditions that the side of the wing, and the gate is raised and lowered by a wheel operating a hronze mut on the upper end of the gate to the side of the set. The operating rod runs up through the side of the wing, and the gate is raised and lowered by a wheel operating a hronze mut on the upper end of the gate and the requirements or conditions that the machinery must must have been pretty will threaked out. Simplicity are of first importance, and ecasis of the desired lift to correspond to the maximum first for the adok is obtained by a greater of the flood gate correspond in the 2.4 and more often only one finite and threak will the advance the simple, direct-acting vertical engine time all those who has cocasion to design trueses for in selecting the type of engine, we chose in the simple, direct-acting vertical engine of ample power and of great strength and to be borne by the truss was that in amount of buoyancy corresponding to this must be deducted from is must

without interfering with the transmission of power. As the silp coupling must op-crate under the strains of power transmission, it is necessary to provide a thrust bearing to each section. This was accomplished by securing a flanged hub to the shaft and bolting securely to the to the shaft and bolting securely to the top of the dock a cast-iron plate or shoe which engages the flange of the hub and prevents longitudinal movement of the shaft. The slip joint was made of a square shaft, and all the parts of this joint and the universal joint are of cast steel. "The floodgates have an opening 12 inches square, and the closing slide is made with a taper at each side of the back, so that when forced down by a

level.

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press the seams, and that there is no tendency to open the bottom seams, as there would be if the planking, as herequired

they were based on the material in the truss

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says the subsidy asked for the extension of the telephone line from Portland to that district has been raised. A certain number of telephones had to be taken by the farmers, and \$125 in cash was re St. David's New Church Building

Plans are being prepared for the com pletion of St. David's stone church or East Twelfth and Belmont streets. When they are approved work will be com menced. The intention is to follow gen erally the original plans, making only such modifications as are suggested by economy. It will be the hands copal church in this diocese. omest Epis

## Adventist Camp Meeting,

The Seventh Day Adventists' conference and camp meeting will open in the Lado grove, north of the Base Line road, Wednesday, President H. W. Decker, of the

The Allia, Fraser & Chalmers and Gates iron Works plants have been operated night and day during the past few years, and have, from lack of capacity, declined in that period as much business as they have been able to accept.

The business of these concerns, with more than fifty per cent, increase capacity and ample cash capital, will be conducted by the Mesars. Allia Reynolds, of E. P. Allis Company; W. J. Chalmers, of Fraser & Chalmers, of Gates & Holt, of Gates Iron Works, who have successfully managed their spective works for many years. The Board of Directors has been constituted as follows: their re-

ł	EDWARD D. ADAMS, New York.	CHARLES ALLIS, Milwaukee.
	MARK T. COX, Orange, N. J.	WILLIAM W. ALLIS, Milwankee.
1	WM. L. ELKINS, Jr., Philadelphia,	FRANK G. BIGELOW, Milwaukee.
1	ELBERT H. GARY, New York.	W. J. CHALMERS, Chicago.
1	HENRY W. HOYT, Chicago.	JAMES H. ECKELS, Chicago.
1	WILLIAM A. READ, New York.	MAX PAM, Chicago.
Į	JAMES STILLMAN, New York.	EDWIN REYNOLDS, Milwaukee.
Į	CORNELIUS VAN	DERBILT, New York.

The regularity of the incorporation of the Allis-Chalmers Company and the validity of the issue of its securities are certified to by Messrs. Strong & Cud-walader, of New York, and Messrs. Pam, Calhoun & Glennon, of Chicago. The accounts of the Company will be regularly audited by Chartered Accountants.

SUBSCRIPTIONS FOR THE ABOVE-DESCRIBED PREFERRED STOCK WILL BE RECEIVED AT THE OFFICES OF THE UNDERSIGNED UNTIL THE CLOSE OF BUSINESS ON TUESDAY, THE 21ST DAY OF MAY, SUB-JECT TO THE RIGHT RESERVED TO REJECT ANY OR ALL SUBSCRIP-TIONS, AND TO CLOSE THE SUBSCRIPTION AT ANY TIME WITHOUT NO-TICE. TEMPORARY RECEIPTS WILL BE ISSUED PENDING THE PREP-ARATION OF ENGRAVED CERTIFICATES.

The entire amount of this issue has been underwritten.

The entire annulation is and seen underwrites. AFTER PERSONAL INVESTIGATION WITH THE ASSISTANCE OF EX-PERTS IN THEIR RESPECTIVE LINES OF THE PROPERTIES BUSINESS AND EXECUTIVE ADMINISTRATION TO BE REPRESENTED BY THE AL-LIS-CHALMERS COMPANY, WE RECOMMEND ITS PREFERENT STOCK AS A MANUFACTURING INVESTMENT, IN THE SECURITY EARNINGS AND MANAGEMENT OF WHICH WE HAVE ENTIRE CONFIDENCE.

# Vermilye & Company,

# New York and Boston.

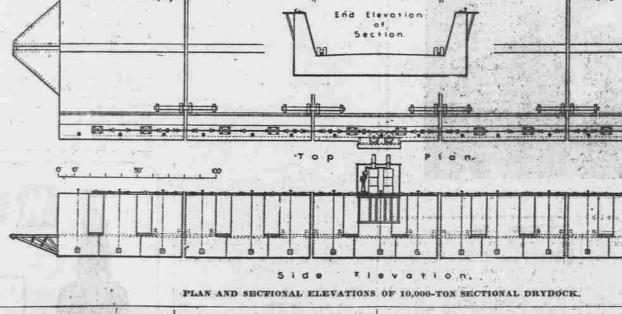
# May 17, 1901.

enough, their heat would never suffice enough, their heat would never summo to broll a steak or roast a chicken. And in the production of electric heat no de-vice is one whit more effective than the incandescent lamp. What, then, is the secret of this costliness, prohibitive as it is for all but minor and casual uses? It as as allower to a control lighting and Let us adjourn to a central lighting and power station, and all will become clear. The boilers and engines, although the best to be had, are wasting nine-tenths of the heat purveyed to them. Part of this wasted heat is thrown out into the boiler-house and engine-room, a much

pairs, and other expenses, the heat producible from its electric current would still be much dearer than the heat to be had from a good, well-stoked furnage or stove.

# CHANGELESS, MATCHLESS.

There is only one way to go to Chicago without change of cars-the O. R. & N. "Chicago-Portland Special." Three days to Chicago, with no annoyance in chang-ing, and no missing of concections. Call at Third and Washington for lowest rates



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rod it will be wedged tightly against its

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signed the following structural weights to the dock for the length corresponding to each truss: For the body of the dock

outer side of the bilge log and through-bolted to the 8 by 13-linch capping log, which is securely cross-bolted down through the end of each lower truss mem-Dr. Wise has removed to rooms 211, 212 and 213, The Falling, cor. 3d and Wash.

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to the dock for the length corresponding to each truss: For the body of the dock out to the commencement of the wings, 16 tons, and the weight for the wings