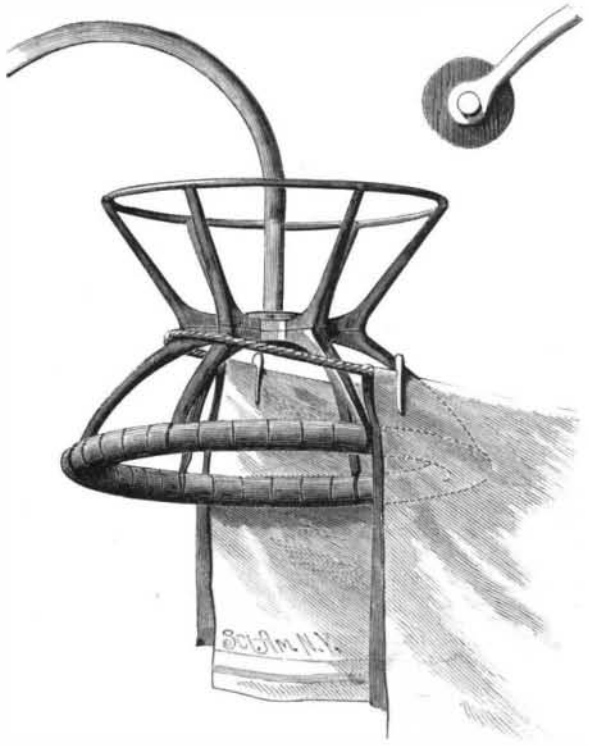
NOVEL CLOTHES LINE PULLEY.

The engraving shows a pulley for supporting a clothes line, which will admit of pulling around the line, together with the clothes supported by it, without injury to the clothes, making it convenient to place the clothes on the line or remove them from it without change of position. This is particularly advantageous when the ground is wet or snow covered, or in cold weather, as it admits of placing the clothes on the line while the person is under shelter and on dry footing. With this pulley one end of the line may be supported in a position ordinarily inaccessible, and the line may be a great distance from the ground, as it must necessarily be in some of our tall flats and tenement houses.

The invention consists of a wheel, from whose hub several curved arms project outward and downward, and several corresponding straight arms project upward, with a ring fixed over and upon the points of each set of arms, the



PAYNE'S CLOTHES LINE PULLEY.

lower ring being completely filled with small rollers, which prevent the chafing of the clothes. This pulley is supported by a curved iron rod, and the clothes line passes around the smaller portion, as shown in the engraving.

This invention was lately patented by Messrs D. H. & J. H. Payne, of Troy, N. Y., who should be addressed for further information.

NEW FOLDING BOAT.

The boat shown in the engraving may be folded into a very small space, and is well adapted to the use of hunting, fishing, and exploring parties. The frame consists of a series of bows, connected by a set of lazy tongs, which are pivoted to all of the bows except the last one at each end. The lazy tongs at the side of the boat are made of flexible material, such as thin tempered steel, but the lazy tongs forming the keelson are much more rigid. They are sufficiently stiff to keep the bow and stern braced apart when the frame is extended. The shell or covering is made of canvas, sewed into suitable shape to be stretched neatly and tightly on the frame when extended. The edges of the covering are provided with eyelets, through which a cord passes for fastening the cover to the frame, a hook being attached to each rib for that purpose.

The boat is provided with one or more seats which fold as the boat frame is folded. Fig. 1 shows the boat extended ready for use, and Fig. 2 represents the frame folded up. This invention was recently patented by Messrs. T. W. B. Murray and C. J. Baker, of Chicago, Ill.

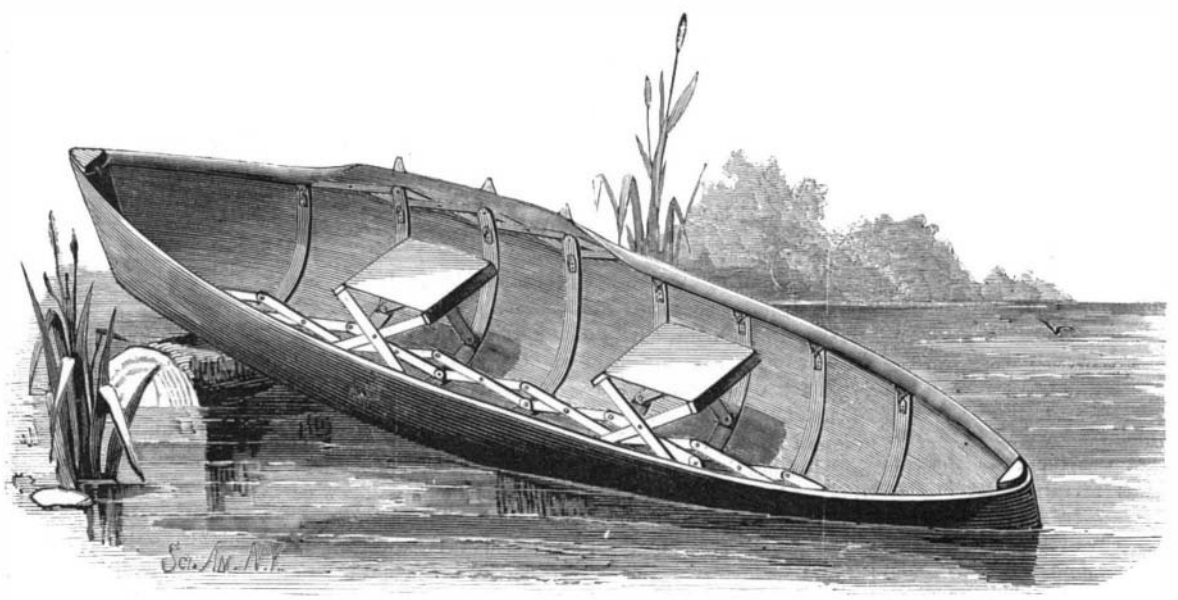


Fig. 1.—NOVEL FOLDING BOAT.

Well Marked for Identification.

The body of an unknown man, elaborately tattooed, was found floating in the Mississippi River, near New Orleans, July 8. On the back was pictured the crucifixion, with the Virgin kneeling at the foot of the cross. This extended from the nape of the neck to the middle of the back. There was a star on each shoulder, with the medallion of a lady in the center; on one shoulder a shield, with a ship in the center, and the name "Independent" on it; on the chest an American eagle, two crossed American flags, surrounded by a wreath of laurels; on the right arm two lovers in the act of kissing, and a sailor boy holding a rudder; on the left arm a tomb, with the inscription, "In memory of my mother," and a bouquet of flowers extending from the elbow to the wrist. On the back of the left hand was the letter H.

A VISIT TO THE TESTING STATION OF THE INDUSTRIAL ACADEMY, BERLIN.

This morning was occupied with another visit to the "Versuchsstation" of the Gewerbeschule, with the intention of noting the progress of certain of the "Dauerversuche." I found, unexpectedly, Prof. Spangenberg and his assistants in the midst of an exhibition of the whole apparatus and specimens of material belonging to the station to a class of twenty or more students, accompanied by the rector, Prof. Geheimrath Wiebe, and Engineer Brauer, of the Royal Polytechnic School, and Captain Nicholas Nevakhovitch, of the Russian Legation. The exhibition lasted about four hours, including the testing of a piece of Krupp's cast steel an inch in diameter.

As soon as possible, however, I got into the rooms where the "continuous experiments" are carried on. There are three rooms, of 20 to 25 feet square, occupied with machinery running during the day; one of these is devoted to the two horse power gas motor which, at an expense of 75 cents per diem, furnishes the power. Add to this the cost of such specimens as are purchased, attendance of two men, interest on machinery and room occupied, and we have the running expenses of the station. No such engine as the "Baxter" or "Diamond" is made in Germany, though gas motors are much used.

In the first room are four compound machines; they are old and dirty; some of them were made more than twenty years ago, but they do the work intended. The first machine twists a piece of iron, ⅞ inch diameter and 15 inches long, first to the right, then to the left, backward and forward, day after day, until it breaks. The amount of strain to which it is subjected is each time the same, being regulated by a heavy steel spring. In the next room are two other machines of the same sort twisting away on steel rods. They are arranged to work in any one of three ways. The rod can be twisted to the right, allowed to come part of the way back, then again twisted, and so on; or it can be allowed to come entirely back to its natural position; or, finally, the machine can be so arranged as to twist first in one direction and then in the reverse.

Next to this machine stand two for experimenting on tension. Each has four heavy compound levers; at each depression these stretch pieces of iron or steel until they finally give way. The number of pounds strain put on the pieces is, in each case, perfectly definite and constant, and is made so by springs which rise when the desired amount is reached. These rods are about ⅜ inch in diameter and 6 or 8 inches long. The pieces gradually elongate, and the springs are screwed up to follow them. At last the weakest point is found, and the elongation becomes more rapid until the breakage occurs. Next to these stands a machine where six bars, some copper, some iron, are continuously bent under the same conditions. Some are allowed to return to their natural straightness between the distortions, others come back only part way. The general size is 30 inches long by 2 wide and ¾ or ½ inch thick. Copper springs back, within certain limits, as well as iron or steel.

We now enter the second room, where two similar machines are engaged upon other bars. One machine is bending three bars 5 feet long and four bars 2½ feet long; the other works on bars of 30 inches. In this latter machine a most interesting experiment is going on. Two pieces of steel, 30 inches long and ⅝ inch diameter, were tested for their coefficients of elasticity by observations made upon the musical tone which they gave when set in longitudinal vibration. One piece was then put in the machine, and after it had been bent a certain number of times the similar piece was put by its side. When the first piece breaks it will then be known about how many bendings remain for the second piece, which, however, will not be broken. This piece will then be tested again and the new coefficient of elasticity determined. At present, while the peculiar changes of structure are going on the bars will give no pure musical tone. The one side of them is crystalline, the other homogeneous, and this latter part is gradually extending over the whole section, so that meanwhile the bar has two coefficients of elasticity, and gives a confused sound. The remaining two machines are of a different kind, and each are at work upon six bars of round iron and steel about 15 inches by 1 inch diameter. These bars are fastened in the ends of horizontal shafts, and have a bending strain applied to their ends by means of heavy steel springs which pull them downward. The shafts revolve about fifty times per minute, and it will thus be seen that at every revolution the rods are bent successively in all directions. The rods are turned cylindrical, so that in common with the prismatic bars, which are being bent, they have their weakest point in a definite place, while in the cases of tension and torsion of cylinders the whole rod is equally strong, disregarding the slight variations in the metal. To all the machines there are counters attached for registering the number of revolutions or vibrations, and on a slate some of the main figures are posted. According to this the whole

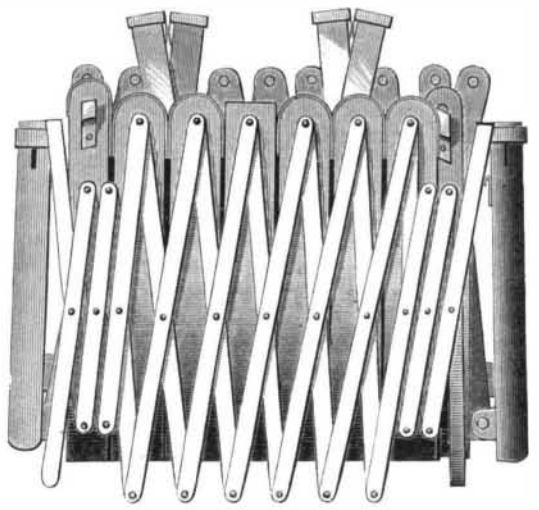


Fig. 2.—NEW FOLDING BOAT.

number of revolutions made by the machinery is over 80,000,000. All the machines run at the rate of 50 or 60 per minute, and when a piece is put in or taken out the position of the counter is simply registered in the proper book, thus giving at once the number of strains and the dates between which it was experimented upon. I understood that two rods of steel had been bent over 20,000,000 times already, and bid fair to stand some millions more. J. BURKITT WEBB.

Berlin, 1880.

ENGINEERING INVENTIONS.

Mr. James Duff, of Peoria, Ill., has patented a process of casting malleable iron and steel, which consists in simultaneously melting and deoxidizing these metals, and then, while in this same molten state, and without access of air, immediately pouring the metals in an atmosphere containing no oxygen.

An improved fire escape ladder has been patented by Mr. John F. H. King, of Port Richmond, N. Y. The invention consists in a mast mounted upon a truck, so as to be raised and supported in a vertical position for sustaining a swinging ladder when the escape is in use, and to be lowered with the ladder into a horizontal position on the truck for transportation.

Mr. Thomas Aveling, of Rochester, England, has patented an improvement in road engines, the object of which is to enable road locomotive engines of six horse power and upward to be used on railways the usual gauge of which is less than the gauge required for the road wheels of engines of such capacity. Hitherto it has been the practice to place the driving gear (or the greater portion thereof) between the boiler and the driving wheels, which necessitated a great width of gauge. To provide for a narrower gauge without altering the dimensions of the boiler, the inventor proposes to rearrange the gearing for working with two speeds, and also to place the gearing within the width of the boiler, and also to key all of the gear wheels firmly on their shafts, and thereby to avoid the inconvenience arising from the use of pinions sliding on feathers.

An improved railway switch has been patented by Mr. James M. Moore, of Canton, Conn. The object of this invention is to arrange the movable switch rails so that they can be operated by the engine as it passes along the track, and so that the moving of the rails and the locking and unlocking of the switch can be entirely under the control of the driver of the engine.