

MACHINE FOR SAWING OUT BARREL HEADS.

The time seems to be rapidly approaching when all cutting of wood, whatever may be the form desired, will be done by steam or water power. This is the department of invention in which this country has taken the most decided lead, and, from the great number of new devices which we are continually called on to record, the approach towards perfection appears to be now more rapid than ever before. We illustrate at this time, a machine for sawing out barrel heads.

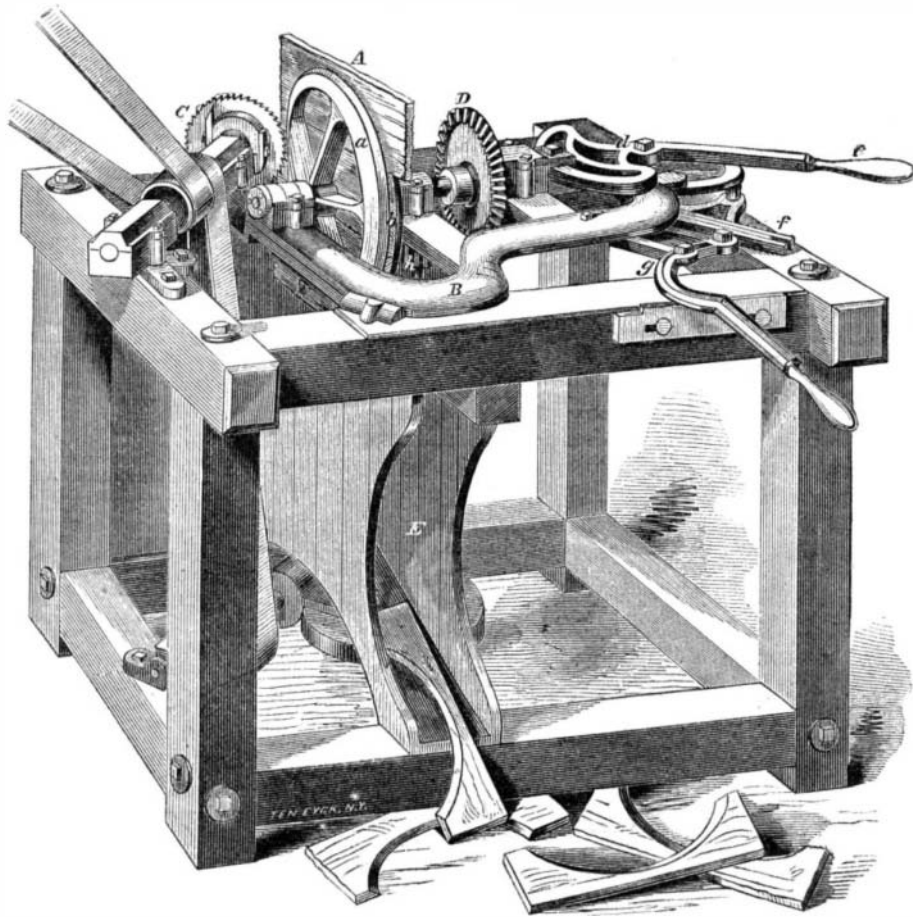
The "stuff," A, of which the barrel head is to be formed is held between two clamps, *a* and *b*, which have independent shafts in the same line. The clamp, *b*, is secured firmly against the end of the shaft, *c*, the other end of which is connected by a sliding box and pin with the groove in the cam, *d*. Thus the clamp, *b*, may be drawn away by means of the lever, *e*, from its fellow, *a*, or pressed toward it, to release or confine the stuff, A, between the two. The frame, B, to which the several parts described above are attached, slides diagonally upon the principal frame of the machine in guides, one of which is shown at *f*. While the stuff is being secured between the clamps, the frame, B, is drawn back away from the circular saw, C; and after the stuff is secured, this frame is pushed along by means of the cam, *g*, so as to bring the stuff in contact with the circular saw. This motion throws the beveled wheel, D, into gear with the beveled pinion, *h*, which produces a slow revolution of the clamps, *a* and *b*, carrying around the stuff in contact with the circular saw, which cuts it out in the form of a barrel head. The plane of the circular saw is placed at an angle with the plane of the clamps, and thus the saw forms one basil of the edge of the head, while the cutters, secured to the side of the saw, form the other basil; the edge coming directly into the angle, where the cutters meet the side of the saw. The concave pieces sawed from the head fall down the chute, E, and the head, when released from the clamps, falls down another chute on the other side of the machine. The circular saw is of course made dish-shaped, in order to cut stuff thus held diagonally with its plane.

The patent for this invention was issued (through the Scientific American Patent Agency) June 21, 1859, to John Greenwood, of Rochester, N. Y., who may be addressed at that place for further information in regard to it, or inquiries may be addressed to Daniel Bowker, New York City.

THE GREAT BALLOON.

On the first day of November, Mr. Lowe commenced the inflation of his great balloon (which was fully described on page 202, present volume of the SCIENTIFIC AMERICAN), at Reservoir-square, the site of the Crystal Palace. The gas employed is the same as that which is used for lighting the streets and houses of the city. A ten-inch pipe being laid to one of the mains of the Manhattan Gas Company, the throat of the balloon was tied tightly about its end, and the gas began to flow into the biggest bag which the world has ever seen. The ground has been enclosed with a high board fence, and 25 cents is charged for witnessing the inflation. Within the enclosure is a tent where are exhibited the several portions of the apparatus which is to accompany the balloon. A wood basket, some eight feet in diameter and four feet high, is suspended by numerous small ropes to the netting which covers the balloon. Beneath the basket is one of Francis's life-boats made of corrugated sheet iron; rope-ladders leading from a man-hole in the bottom of the basket down to the boat. In the bow of the boat is a fan, some five or six feet in diameter, to be

driven, it is said, by one of Ericsson's air-engines. The engine is on the ground, in constant operation, driving a fly wheel. The lime stove for cooking, the grappling-iron for stopping the balloon in alighting, the drag for the same purpose in case the descent should be made into the sea, and one of the copper vessels for carrying a supply of gas condensed, are all on hand and exhibited. The

**GREENWOOD'S MACHINE FOR SAWING BARREL HEADS.**

idea of using an Ericsson engine and fan to raise the balloon, is so absurd that we suppose these things will be omitted when the actual ascent takes place. In the middle of the enclosure the great yellow monster was beginning (when we saw it) to swell up its head; already requiring a number of heavy sand-bags, which were hooked upon the netting about it to prevent it from flying upwards. The gas can be furnished by the company only in limited quantities each day, as their regular supply to the city must, of course, be continued. But when his balloon is filled, Mr. Lowe persistently affirms that he shall surely soar away across the Atlantic upon his certainly most desperate and daring of all adventures.

OPENING OF THE COOPER INSTITUTE.

On Wednesday evening Nov. 2d, the "Cooper Institute" was opened with appropriate ceremonies. An address was delivered by Dr. John W. Draper, and the secretary announced the formation of the several free classes, the evenings on which they would meet, and the teachers by whom the instructions will be given. They are as follows:—

Mathematics by Professor Hendrick; Monday, Wednesday and Friday.

Mechanical and Physical Science by Professor Reuben; Monday, Wednesday and Friday.

Chemistry by Professor Draper; Tuesday and Thursday.

Architecture and Free-hand Drawing; Monday, Wednesday and Friday.

Mechanical Drawing; Tuesday and Thursday.

Vocal Music by Dr. Guilmette; Saturday.

All of these lessons commence at half-past seven in the evening, except the lessons in vocal music, which commence at half-past six. Immediately after the hour of beginning, the doors are locked and none admitted afterwards. The educational exercises are all free, and seats are reserved for those who apply beforehand for tickets. There is also in the building a beautiful reading-room, supplied with the best periodical literature of the day, which is open from 8 A.M. to 10 P.M., and is also free to all, male and female.

The Cooper Union is an association formed to administer the large property which has been left by Peter Cooper, one of the mechanics of New York, to this (his native) city, for the intellectual culture of its people. This property consists of a large building situated at the junction of the Bowery and the Third and Fourth-avenues, and extending from Seventh to Eighth-streets. The

ground floor is occupied as stores, the rental of which will furnish a perpetual revenue to the Union, while the remainder of the building is mainly divided into halls, lecture rooms, reading-rooms, school-rooms, picture gallery, library, &c.; the entire building, with all its revenues, being devoted to mental culture. Mr. Cooper has not waited till his death to extract the last particle of selfish enjoyment possible from his wealth before he gave it away, but has bestowed this large property upon his less fortunate fellow-men during his lifetime. So depraved are some natures, that some men have abused Mr. Cooper for his course, even in this matter; and he has been subjected to much unjust criticism, with possibly some little that was just. The opening exercises may have been stupid, as they undoubtedly were, and the architecture of the building may not suggest the genius and taste of skilled architects; but the same may be said of many of our buildings, and these are trifling matters of detail. The donation itself is a most wisely-directed and a most magnificent benevolence. And as the old gentleman stood up at the close of the exercises, and told how, for thirty

long years, he has carried this scheme in his mind, how he has thought about it and toiled for it by night and by day; what king or potentate, what man soever, is there on all the wide earth who is in a position not to envy him in that hour of the crowning of his noble enterprise?

We have received an interesting letter from Gustavus Muller, of this city, in which he pays a well-merited tribute to the large-hearted benevolence of Mr. Cooper in laying this noble foundation. We regret that we have not room for its publication in full, Mr. Cooper deserves the thanks of the whole world for this great gift.

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