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HOLMES' NEW BARREL MACHINERY.

Several months ago we laid before our readers a detailed description of the operations involved in barrel-making by means of a variety of entirely novel machinery. The article referred to will be found on page 191, Vol. XXX., and we took occasion therein to trace the course of the staves, beginning with their preparation in the jointing machine, thence to their being set up in barrel shape, the bending by heat, the leveling of the cask so that it would stand perpendicularly on end, the trussing, and, lastly, the chamfering, howeling, and crozing. We left the barrels entirely complete, with the exception of the heads, the machines for the manufacture of which we failed to describe for the very excellent reason that they were still in the hands of the inventors. We are now, however, enabled to make good the deficiency; and in the following description and accompanying engravings, the reader will learn of the three ingenious devices which produce the above mentioned essential portions of the barrel, and, besides, of a novel machine which combines the powers of both trusser and leveler, and of still another apparatus that bends, punches, and rivets metal hoops.

Every one knows that barrel heads are not usually made of a single piece, and that for ordinary casks they are generally of several portions jointed and doweled together. To make the joints and to prepare the pieces of heading, which have been previously sawn to the proper length, for the dowels, is the object of the machine exhibited in Fig. 1. This consists in a large rotating metal disk, in the face of which are fixed three cutters, equidistant from each other. In front of the disk is a standard and rest. Upon the latter the piece of rough heading is laid, and its edges are pressed against the disk by hand, so that they are thus rendered perfectly smooth and straight. The work is then removed and laid upon another rest on top of the machine, where it encounters two swiftly revolving augers or bits, which are forced against the edge by the foot treadle shown, and which speedily bore the holes for the dowels. There are no shavings visible about this machine, since the disk acts as a fan and blows them away through the shoot shown at the right hand of the engraving. The heads of a large number of barrels can thus be prepared per day by a single man, and the joint

knives are so arranged that either a hollow or straight joint can be made, as desired.

The dowels are next inserted by hand, and the separate pieces put together, forming rough squares, ready for the next process. This consists in leveling, facing, and dressing the material on one side, and it is accomplished by the machine represented in Fig. 2. A prepared head is laid upon the table and in front of a planer cylinder, on which are several blades, and which is swiftly rotated by the driving pulley shown on the left. The pulleys on the right actuate four corrugated feed rolls which are held firmly against the work by weighted levers acting upon the bearings. The revolution of the feed rolls carries the head over the planer knives, which rapidly smooth off the under side at the rate of from fifteen to twenty-five heads a minute. The machine will also dress piece heading, taking off just sufficient material to produce the requisite finish.

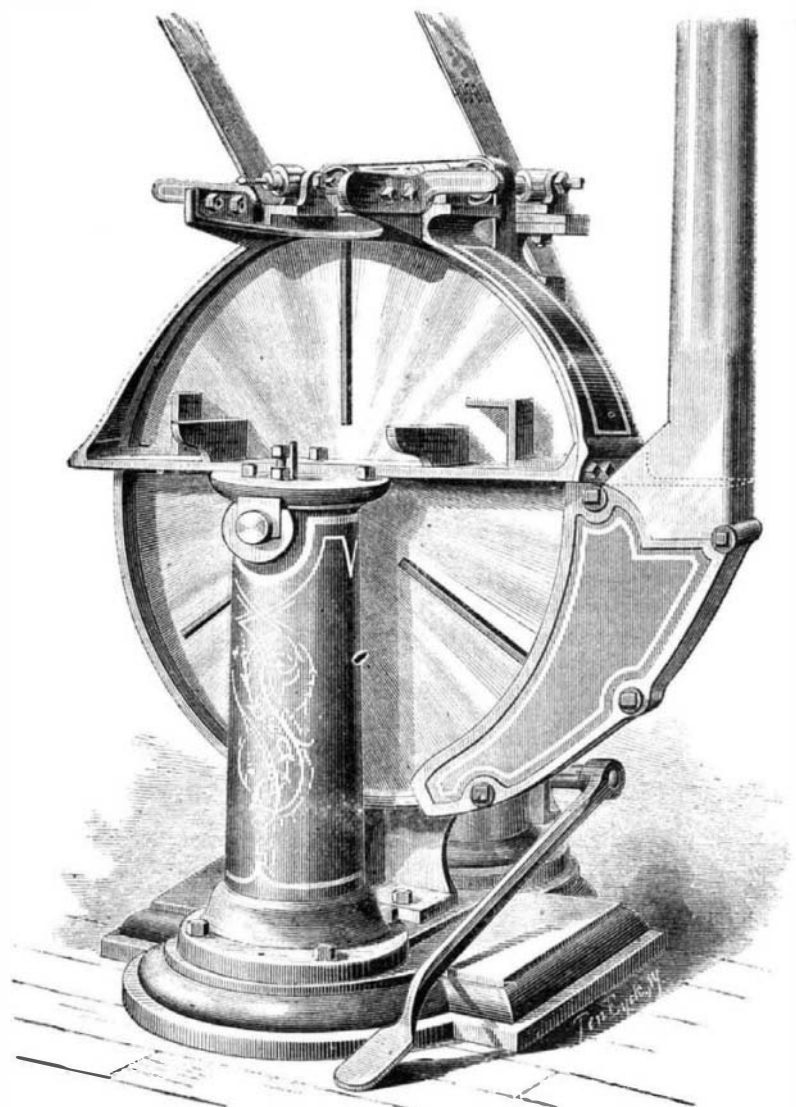


Fig. 1.—BARREL HEAD JOINTING AND BORING MACHINE.

The next operation is turning the heads in circular form and, at the same time, beveling the edge with two bevels, the upper bevel being less than the lower one. The machine employed is represented in Fig. 3, and is a remarkably ingenious contrivance. The head is placed between two disks, one of which, that on the right in the illustration, is provided with a number of spring pins near its periphery, which press the work against the opposite disk. The pin disk is not connected with the driving machinery. Its spindle enters the cylindrical standard on the right, in which is placed apparatus by means of which the disk is thrown forward and locked in that position, firmly holding the work. Through the rotation of the opposite disk, the pin disk is also carried around, but for only one revolution, at the end of which stop mechanism, in rear of the standard and not shown in the engraving, is actuated to unlock the clamp, so that the pin disk springs back and allows the work to fall out. In case it be desired to accomplish this unlocking before a revolution is completed, the handle (shown protruding from the center of the top of the standard) serves to actuate the mechanism necessary therefor. Before the unfinished head is put into the machine to be rounded, its center is found and marked by an apparatus for that purpose.

When the head is put into the machine, the centering pin, which is jointed to the hand lever beside the standard, is pushed forward by the use of the lever, and is brought in contact with the center mark on the head, thus centering it perfectly and saving all the material. The centering apparatus can be used or not, as desired. The disk on the left is rotated by mechanism by the driving pulley, which is thrown into or out of gear by the horizontal handle shown.

[For remainder, see page 86.]

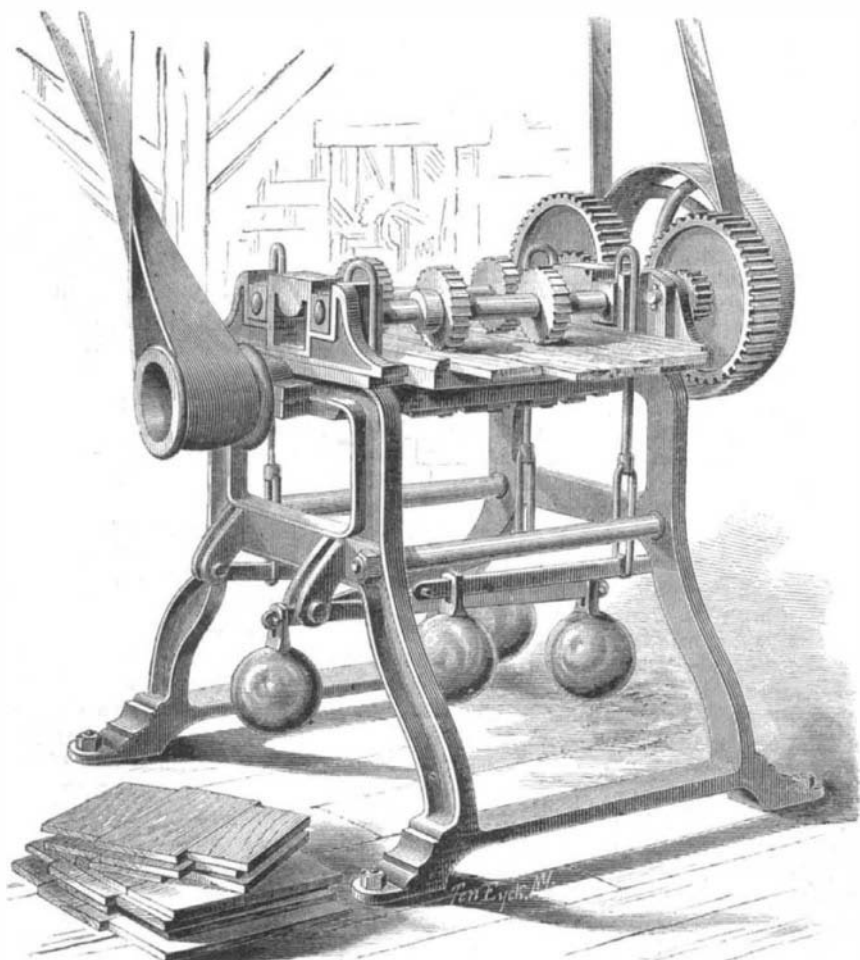


Fig. 2.—MACHINE FOR DRESSING BARREL HEADS.

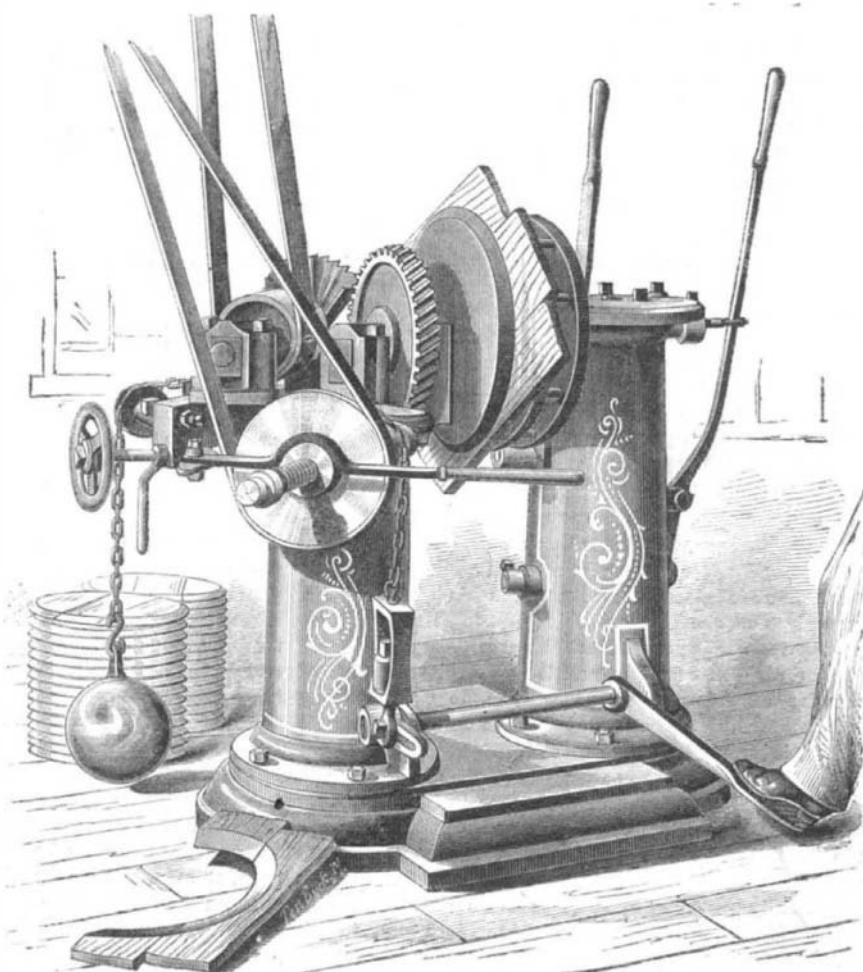


Fig. 3.—MACHINE FOR TURNING HEADS OF DIFFERENT SIZES

[Continued from first page.]

The saw is mounted on a separate carriage and has its own belt. Upon one side of the blade are secured two peculiarly arranged knives, so that, when the cutting mechanism is moved up against the edge of the head by the foot treadle, both sides are cut at once; and, at the same time, through its rotating, the work is turned in circular form. The saw carriage is provided with a counterpoise to bring it back into position when the treadle is released. The machine is so constructed that, with one and the same concave saw, all kinds and sizes of heads can be made, and the turning of one hand wheel quickly sets the machine to any size required; and the saw is so presented to the wood that it runs with the same freedom and smoothness, and requires no more power or set than an ordinary circular saw of the same diameter; and its work is done with great celerity and excellent finish. The machine has also an attachment which gives the heads an oval form, to compensate for the shrinkage of material. The attachment can be used or not, as desired; if not used, the heads will be perfectly round. This completes the operation of making the heads, which are then transported to the proper place and inserted in the barrels.

The next machine, to which we shall now call attention, serves to level the barrels and also to truss them. This, in our previous description, we explained as done by two separate devices, the first by a machine which compressed the barrel endwise between two disks, and the other by iron hooks and projections coming up through the floor, which, engaging with the truss hoops, forced them into place.

In the apparatus represented in Fig. 4, the devices are all connected with the leveling disks, and, by means of handles on each of the latter, are all opened at once. The barrel with the truss hoops on is then inserted, and a pressure of the foot treadle closes all simultaneously. By means of the clutch lever the machine is then thrown into action. The pulley shaft actuates (through gearing) a screw shaft, which forces the movable disk toward the stationary one, thus, through the drivers, pushing the truss hoops to their proper places on the barrel, and, at the same time, leveling the ends of the same. This machine, we are informed, will truss and level 2,000 flour, sugar, cement, or any other kind of slack barrels, of various sizes, per day.

Fig. 5 represents the device used for bending and giving to metal hoops the requisite flare, and also for riveting the ends together. The bending and flaring is done by passing the hoop through the rolls shown, which are adjusted by set screws from above. The mode of doing this is clearly represented in the illustration. The ends are pierced by placing them under the punches arranged at the end of a lever actuated by an eccentric cam on the spindle of the lower roll. This done, the ends of the hoop

are brought together, and the holes in each made to coincide by placing them over the two projections at the side of the lower portion of the apparatus. The hoop is then raised and the apertures slipped over the rivets, which are previously placed in the U shaped holders, just above the part last de-

ingenuity and inventive skill displayed in all of the above machines. They are, without doubt, destined literally to revolutionize the entire cooper's trade, since they are the first complete set of substitutes for hand labor in that difficult calling. As we remarked in a previous article, this machinery has been the inciting cause of serious strikes among the coopers. These uprisings, however, like all similar movements based upon the mistaken ideas which regard the continuance of trade monopolies as of more importance than the benefit to be gained by the public through inventive progress, have proved far more damaging to their originators than to those whom they were intended to coerce.

We are indebted to Mr. L. M. Palmer: at whose establishment, in Brooklyn, E.D., the immense number of barrels required

by several great sugar firms are manufactured, some 5,500 per day: for the necessary facilities in obtaining the above interesting facts. The machines were invented and are manufactured by Messrs. E. & B. Holmes, of 59 Chicago street, Buffalo, N. Y.

Reproduction of Old Thoughts.

On the above theme, a writer in *Blackwood* thus discourses: Nothing is more strange than the incessant reproduction of old thoughts under the guise of new and advanced opinions. It would seem as if the human mind, with all its restless activity, were destined to revolve in an endless circle. Its progress is marked by many changes and discoveries; it sees and understands far more clearly the facts that lie along the line of its route, and the modes or laws under which these facts occur; but this route in its higher levels always returns upon itself. Nature and all its secrets become better known, and the powers of Nature are brought more under human control; but the sources of Nature and life and thought—all the ultimate problems of being—never become more clearly intelligible. Not only so, but the last efforts of human reasoning on these subjects are even as the first. Differing in form, and even sometimes not greatly in form, they are in substance the same. Bold as the course of scientific adventure has seemed for a time, it ends very much as it began; and men of the nineteenth century look over the same abysses of speculation as did their forefathers thousands of years before. No philosophy of theism can be said to have advanced beyond the

book of Job; and Professor Tyndall, addressing the world from the throne of modern science—which the chair of the British Association ought to be—repeats the thoughts of Democritus and Epicurus as the last guesses of the modern scientific mind.

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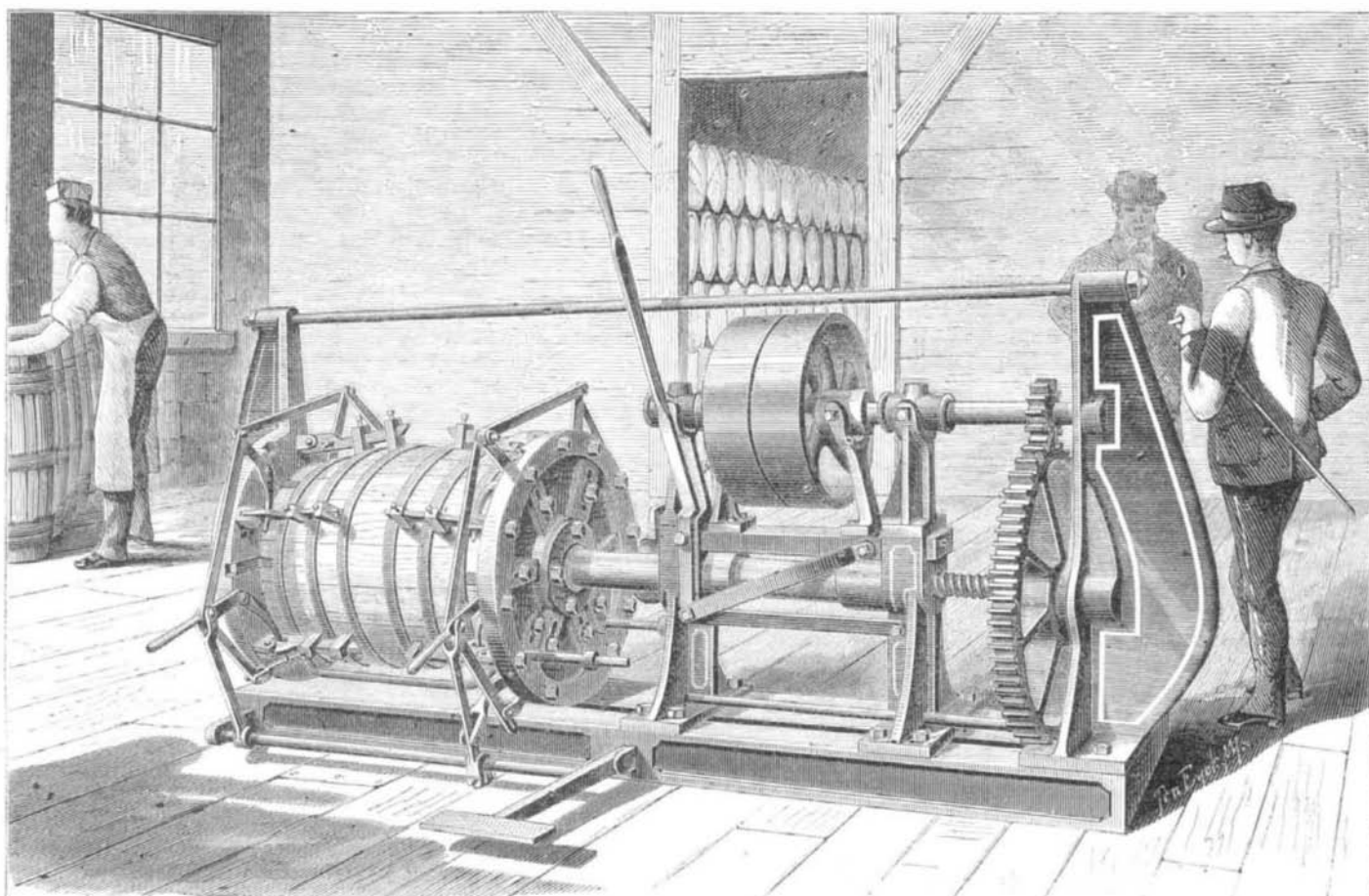


Fig. 4.—BARREL LEVELING, TRUSSING, AND HOOPING MACHINE.

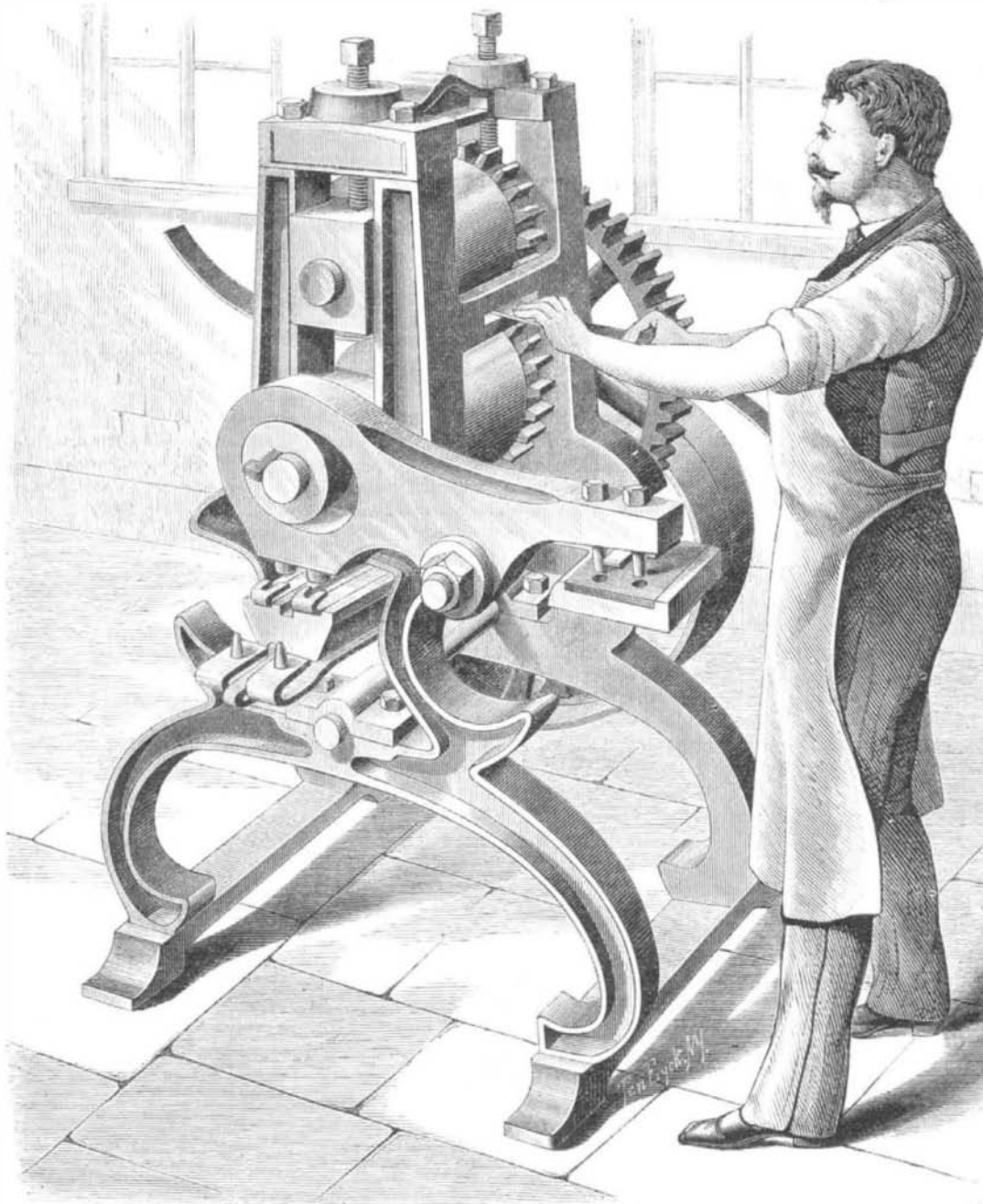


Fig. 5.—MACHINE FOR BENDING THE BARREL HOOPS.

scribed. The side lever below the cam slot is square, and two lugs are formed thereon. Under these the hoop, with the rivets now inserted through its holes, is pushed; and in their descent the lugs strike the rivets and close them, completing the operation and leaving the hoop ready for placing upon the barrel.

We need hardly point out to our readers the remarkable