

SCIENTIFIC AMERICAN

[Entered at the Post Office of New York, N. Y., as Second Class Matter.]

A WEEKLY JOURNAL OF PRACTICAL INFORMATION. ART. SCIENCE. MECHANICS. CHEMISTRY AND MANUFACTURES.

Vol. XLIX.—No. 8.
[NEW SERIES.]

NEW YORK, AUGUST 25, 1883.

[\$3.20 per Annum.
[POSTAGE PREPAID.]

HOOPING BARRELS BY MACHINERY.

Immense quantities of crude petroleum are pumped from the places of production to refineries; large quantities are transported over railroads in tanks; but all the shipped product and all that is sold for consumption reaches the consignee and the consumer in barrels; and the barrel making for petroleum and kerosene alone is enough to revolutionize the cooperage business and to invite the intervention of machinery as a help to hand insufficiency. During the year 1882, 30,053,500 barrels, of 42 gallons each, of crude petroleum were produced, and during the first six months of 1883—January to June inclusive—no less than 11,291,663 barrels were produced in this country. A large proportion of this product was barreled. And the making and keeping in order of these barrels is an important industry, the loosening of hoops by the shrinkage of the staves being no small portion of its demands.

The barreling of whisky and other liquors requires occasional coopering, particularly when the barrels are new and first used, and the materials of which they are made have not been thoroughly seasoned, or, being put to new uses, are overstrained and leak; for with this machine the hoops may be reset while the casks are full. The machine is similarly useful in originally hooping lard, pork, and beef casks, or in tightening the hoops when the staves have yielded. So in the ale and lager beer business the machine will be found similarly useful; and indeed it is intended and adapted to the efficient hooping and re-enforcing by hoops of all iron bound casks, whatever their use or whatever their contents.

The engraving on this page shows in perspective a machine that is constructed specially for driving hoops on new casks, and also for re-driving hoops on casks that have once been used. The patentees sum up its advantages as follows: It will drive the hoops on from 1,200 to 1,500 barrels per day

of ten hours, the barrels being either empty or full, and either new or old. The machine will do better work than can be done by hand and break fewer hoops, and its use will effect a saving of from one and a half to two cents per barrel in expense.

A brief description of the action of the machine may aid to an understanding of its construction, shown in the engraving, and to an appreciation of the claims made by its operators.

It is a solid frame, the uprights connected by timber and iron braces, or built as an entirely iron frame. Between its uprights slides, at each end, an upright frame, supported on longitudinal bars—in the engraving they are shown as round—and each of these frames supports a cylindrical disk head, to the inside faces of which are attached by pivot hinges twelve equidistant projecting jaws having dependent ends, so that they form ordinary bell cranks, held down at the top by flat springs and governed in their reflex action by a sliding double disk on their dependent or lower ends, the action of the disk being produced by a cam connected with a longitudinal rod, operated by a lever shown at the top of the machine. By pulling on this lever the jaws at each end of the machine, twenty-four in number, are simultaneously raised, the limit of this action being sufficient to allow for the bilge of the barrel and for the different sizes of barrels.

The heads themselves, with their twelve jaws each, are intended to slide forward and backward at the will of the operator, by means of a shaft driven by a gear wheel from a pinion on a pulley shaft operated by means of two belts and pulleys and a clutch and reversing bar. The shaft of the gear wheel is a right-hand and a left-hand screw of the same pitch, and while one thread pulls the thither end, or head, the other pushes forward the hither end.

The operation of hooping barrels with this machine is

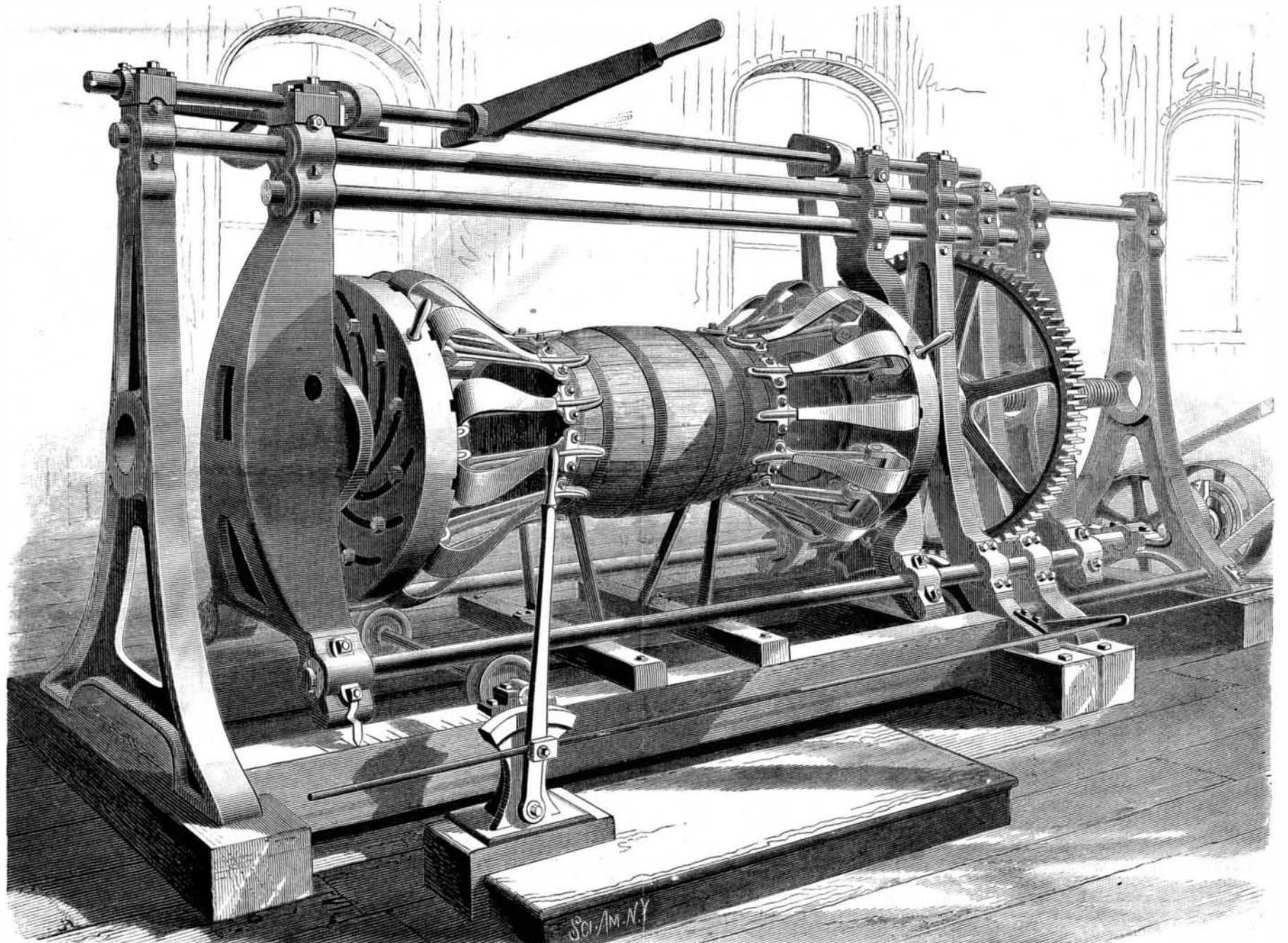
simple. The barrel, with its hoops loosely in place, is placed on a cradle that may be made adjustable as to height and transverse position. The jaws embracing the barrel engage with the first or end hoops simultaneously at each end by means of a lug projection on their under face; the machine is started and the hoops are pressed forward toward the center simultaneously and at all points in the circumference alike—a very different process from the hand coopering of one blow at a time in one single spot. The result is a gradual and synchronous pressing forward of the hoops and the consequent gradual and even compression of the staves. When the first hoops are driven, the jaws are raised sufficiently to clear the hoops and the increasing bilge of the cask, and they attack the next hoop. The operation is very rapid, two barrels per minute, of six hoops each, being a low rate.

One machine may be adapted to barrels of forty-five gallons to kegs, if required; the heads, as seen in the engraving, being provided with spirally radial slots to allow the jaws to be moved from center to circumference, and they are held in place by nuts.

Further information, if desired, can be obtained by addressing the American Hoop Driving Machine Company, J. Wood, Jr., Secretary, 242 South Third Street, Philadelphia, Pa.

Covering Metal with Glass.

An exchange gives the following process for applying a glaze or enamel to metals: A mixture of 20 parts of carbonate of soda, 11 of boracic acid, and 125 of broken (flint) glass is melted and the mass poured out on a stone or plate of metal. When cold it is pulverized and mixed with a silicate of soda (water glass) solution of 50° B. The metal is covered with this paste and then heated in a muffle until it melts. This enamel is said to adhere well to iron and steel.



THE AMERICAN HOOP DRIVING MACHINE.