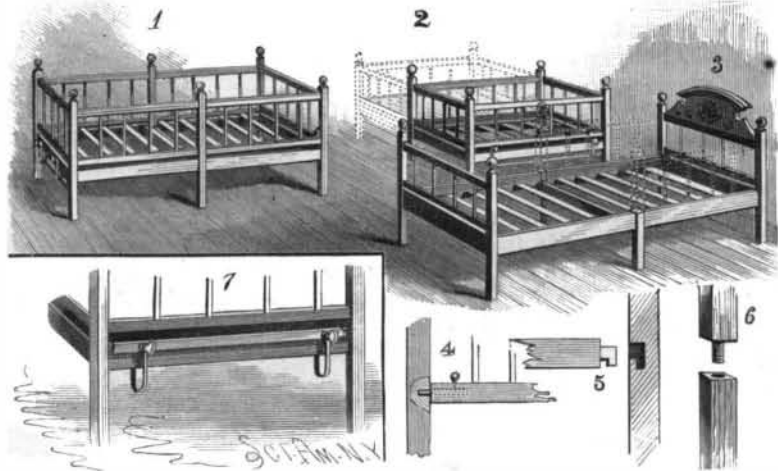


**Grips and Brakes for Brooklyn Bridge.**

The Committee on Mechanical Appliances have reported to the Bridge Trustees that they have now examined 39 grips, 5 cable lifters, and 26 signal, brake, and grip plans. They have given authority to Mr. George Westinghouse, of Pittsburg, to try his compressed air system on the bridge. He is to bear all the expense of getting up a brake and power to work the present grip, except that the Trustees will make the connections with the cars on the bridge. Mr. Westinghouse is now preparing to fit up a train of four cars with reservoirs of compressed air and the necessary

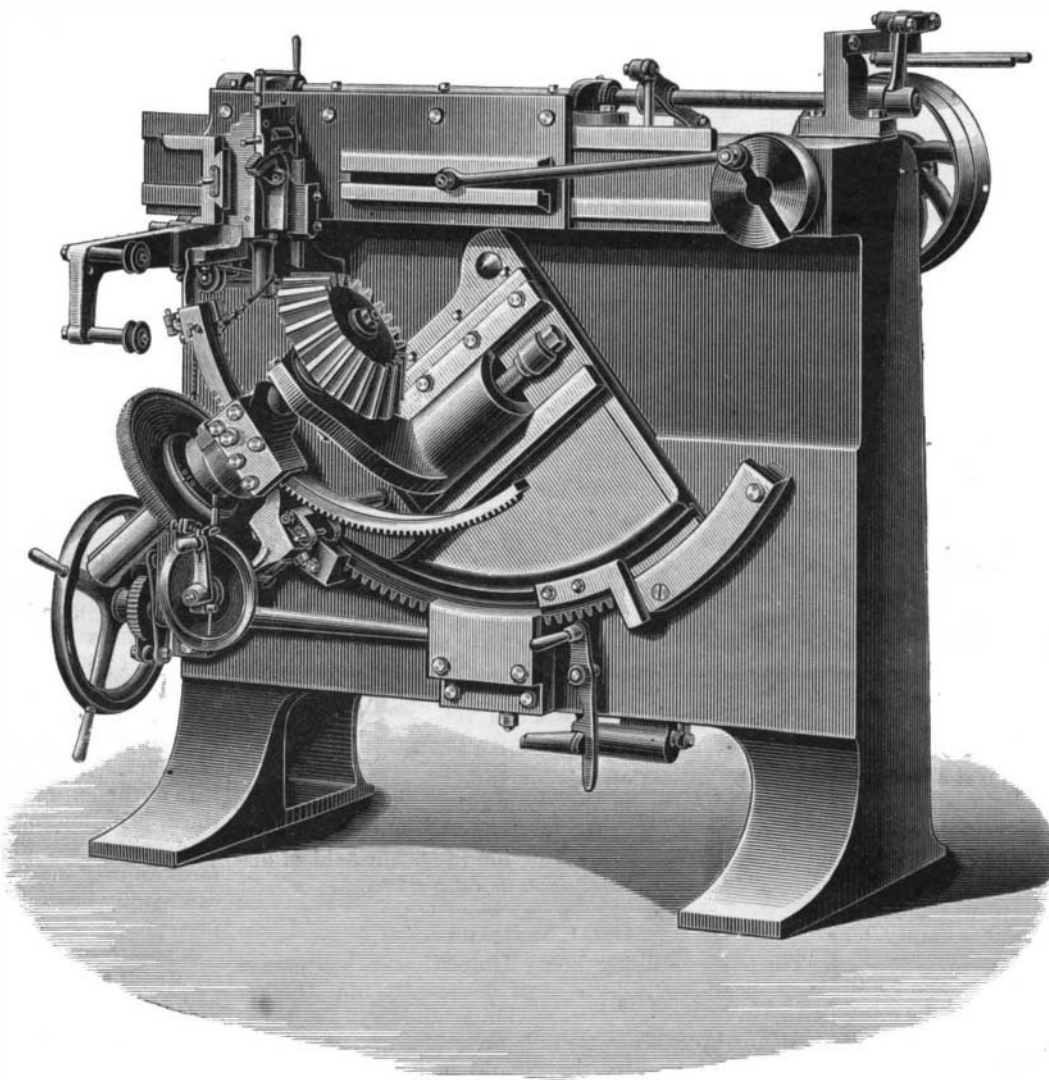


JENKEN'S ADJUSTABLE CRIB AND BEDSTEAD.

machinery to work the present grips and brakes by one person only, in the same manner as locomotive engineers now control the air brakes on railway trains. Having inspected in all about 113 projects and inventions, the committee have ended their examinations.

**BEVEL WHEEL SHAPING AND DIVIDING MACHINE.**

We illustrate a bevel wheel shaping and dividing machine to cut wheels up to 18 inches in diameter, constructed by Greenwood & Batley, of Leeds, and described in *Engineering*. It is designed to shape the teeth under the guidance of a copy or former, four or five times the size of the desired tooth. The tool is held in a box carried by a reciprocating slide, like the slide of a shaping machine, and has a stroke of about 5 inches. The wheel or bank is mounted on a spindle, the nose of which is covered, and fitted with a steel mandrel to receive it. The spindle is carried on two bearings, of which the upper can be moved in a slide by a screw to adjust the wheel. The other bearing is a long socket, and is itself carried by a bearing on a segmental plate capable of rotation about a point toward which the cutting edge of the tool always travels. The spindle can be moved endwise by the upper bearing to set the blank in the first instance, and can be rotated by a worm and wheel on the lower socket. Attached to this same socket is a curved radial lever, carrying at its extreme end the copy or former, which is kept in contact with a steel guide plate by means of a weight having a cord passing over guide pulleys. The spindle and all its adjustments are carried on the segmental plate, and can be moved by means of a worm and toothed sector to feed the blank toward the tool. This latter travels always in the same straight line toward the apex of the imaginary pitch cone of the wheel, and has no feed motion. The blank is moved in two directions; it is raised toward the tool by the rotation of the sector, and at the same time it is rotated on its axis through a very small angle by the "former" sliding over the guide plate. The cutting pressure of the tool tends to hold the "former" and the plate together. When the tool has reached the bottom of the tooth, the catch motion shown at the lower part of the machine comes into play, and throws off the strap. The attendant then winds back the toothed sector, rotates the blank through the required angle, and sets the machine in action again.



BEVEL WHEEL SHAPING AND DIVIDING MACHINE.

**AN ADJUSTABLE CRIB AND BEDSTEAD.**

The invention herewith illustrated covers a form of adjustable bedstead and crib for children which is simple in construction, but admits of being arranged in several different ways to suit the convenience of a family. Figs. 1 and 3 represent the dimensions of a full-size bed, the former without a head piece, and the latter, as well as Fig. 2, showing in dotted lines its modified forms as a simple or double crib. Fig. 4 shows a simple spring catch by which the end pieces are held perpendicularly in the uprights, and Fig. 5 represents the ordinary manner of holding the side and end pieces in the posts. Fig. 6 illustrates the manner of securing the uprights in the center posts for holding the side pieces and cross divisions, and Fig. 7 represents a cover tucking attachment. The latter may be applied to both sides and ends, and is a variety of goose-necked piece of spring metal, screwed to the bottom side of the cross and end pieces in such way that, by means of thumb screws, a horizontal piece of thin slat is made to firmly bind the cover. In fitting the bed for a double crib, only one mattress and the usual blankets, quilts, etc., are needed, the cross piece being easily raised for adjusting the bedding, and then fitting closely over it, tucking in the children. When the children are too large to use the cribs, the cross piece can be removed from the center

part and the bed can be used lengthwise, the sides remaining to form a protection if desired.

This invention has been patented by Mr. C. A. Jenken, of New Berne, N. C.

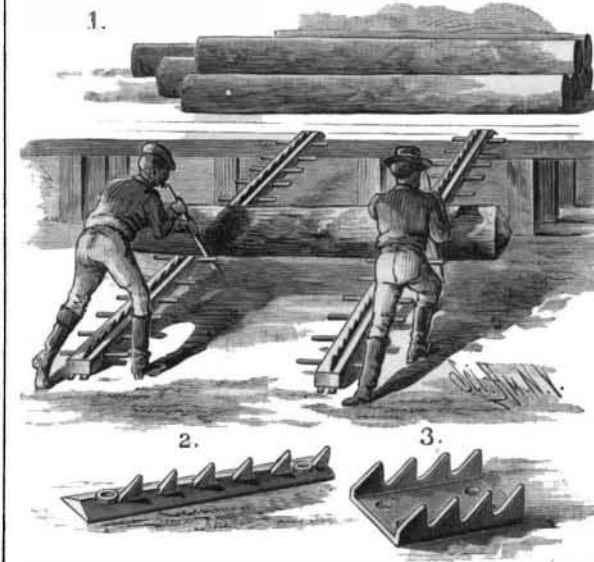
**Progress of the Statue of Liberty.**

The pedestal for Bartholdi's great statue has now been completed. The last piece of stone has been put in place, and the last of the large iron girders to which the statue will be fastened is ready for duty. When completed, the statue will look even grander at night than in the daytime, as its electric illumination will give the figure greater prominence. It is proposed to place four large lights at the base of the statue, one at each corner of the pedestal, and a powerful shaft light on the torch, so arranged that its beams will shoot

high into the heavens. The lights at the base will be so placed as to illuminate the statue and bring the figure into bold relief on the darkest night. The light of the torch will be 300 feet above water, and should be visible for about twenty-five miles at sea.

**SPIKED SKID.**

The accompanying engraving represents a skid used for handling logs and heavy timber. The skid is provided with one or more ridges or rows of saw-tooth-like projections upon its upper surface, and with a series of horizontal pins, which serve as fulcrums for the hand spikes by which the logs are moved. The teeth are formed of iron or steel plates, different forms being shown in Figs. 2 and 3. It is apparent that these teeth prevent the logs from slipping or rolling back-



POLLEYS' SPIKED SKID.

ward. By the use of these skids, heavy logs can be easily moved from one level to a higher. The log cannot slip back, and not only are time and labor thereby economized, but the workman is given a chance to rest whenever necessary.

This invention has been patented by Mr. William H. Polleys, of Neillsville, Wis.

**Long Distance Gas Transportation.**

In a paper upon the long distance transportation of natural gas, Mr. Thos. P. Roberts has expounded, before the members of the Engineers' Society of Western Pennsylvania, certain views which may be briefly summarized as the advocacy of exhaustion instead of forcing as the means of propelling gas through mains. The author depends greatly upon the example of English mine ventilation, by which in some cases a furnace, and in others a fan, draws a current of air through perhaps 40 miles of workings. He refers to the formulæ given in text-books concerning the delivery of air and gases under pressure, to show that friction is always provided for; so that when forcing any expansive fluid has to be resorted to, there is a limit to the length of the circulating system (which may be ascertained by computation) beyond which the fluid will not flow. On the principle of exhaustion, however (which means the progressive reduction of density of the contents of a pipe as it is prolonged from its inlet to the outlet where the exhausting apparatus is situated), Mr. Roberts declares he knows of nothing to stop the onward course of a gas when it has "an inclosed passage continually opening before it." On the other hand, he states that at a certain rolling mill several years ago, the 6 inch gas main proved insufficient for the required supply. Pumping at the supply end was resorted to, and several attempts resulted in failure. Finally, a special Cameron pump made for the purpose was tried. This pump had a 40 inch plunger and 4 feet stroke. It took the gas at the supply end at 30 pounds pressure; and, although in desperation the pump was driven at 250 revolutions per minute, the gas at the delivery end never rose above 15 pounds pressure—thus losing half the pressure in transit, notwithstanding the great compression at the inlet end. Mr. Roberts was unable to say whether the engineers "changed ends" with their pump, and if so, with what results.

To prevent a strong solution of potash from crystallizing, dilute by the addition of water.