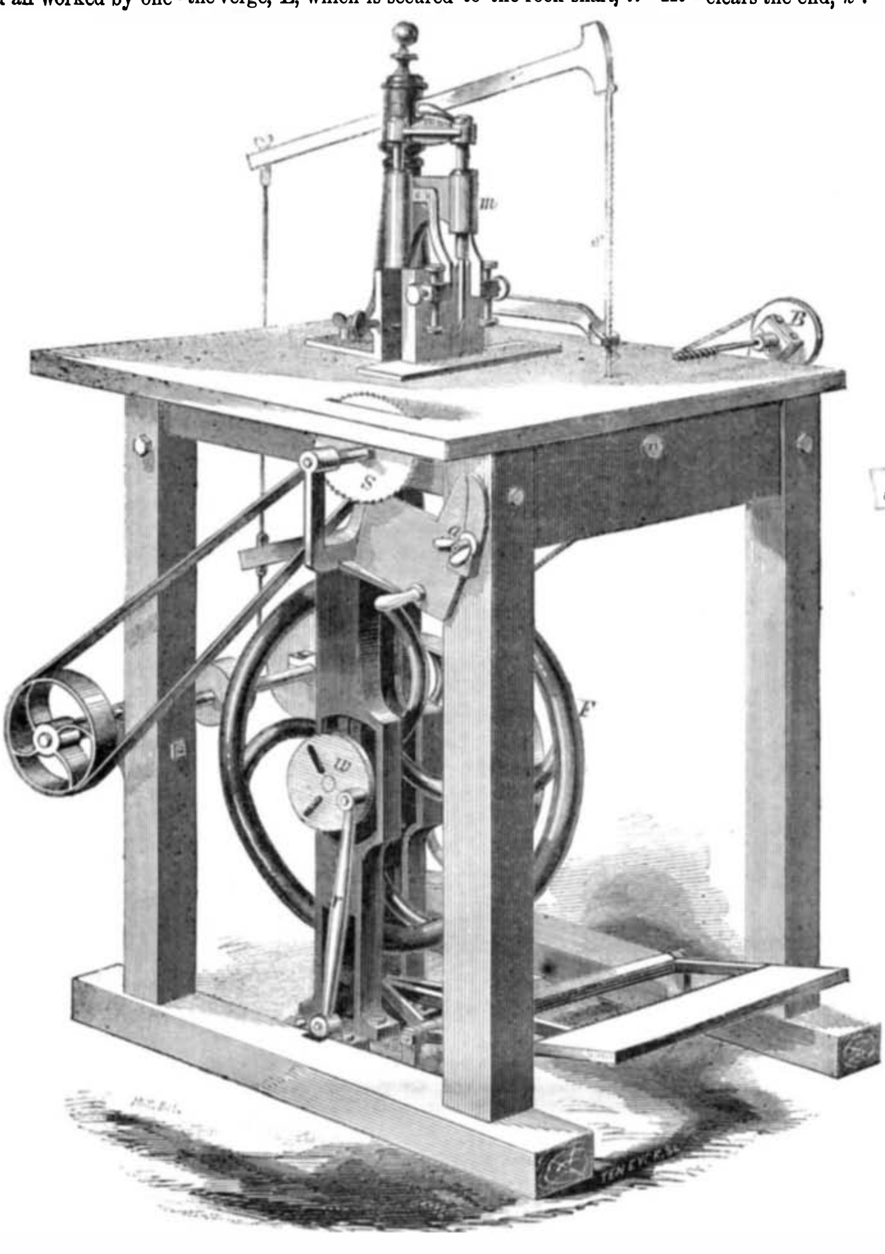
KAEFER'S MODE OF TRANSMITTING MOTION.

The accompanying engraving represents a bench in which are combined a circular saw, a scroll saw, a borer, and a mortising-machine; each arranged so as to be readily removed out of the way, and all worked by one treadle, in combination with a peculiar fly-wheel, for which Letters Patent were granted in the United States to Mathaus Kaefer, of New York City, May 5, 1857, and May 31, 1859. Patents have also been secured in Great Britain.

S represents the circular saw; and *s*, the scroll saw, B, the borer, and M, the mortising-machine. By loosening the set-screw, *a*, the circular saw may be let down below the upper surface of the bench, the borer turns down by a similar arrangement, the scroll saw, *s*, may be easily unrigged and removed, and the mortising machine may be thrown out of gear by pressing on the end of the rod, *n*, or it may be entirely removed from the bench by loosening the thumb screws with which it is fastened. The axle on which the fly-wheel, F, runs, passes through journal boxes which slide up and down in the frame, and its end is seen in the center of tnewheel, *w*. The rod, *r*, is connected at one end by a loose pin with one edge of the wheel, *w*, and at the other end to the frame of the machine. Thus, when the journal boxes are pushed up by the treadle, the wheel is both raised and turned, and motion is thence imparted to the machinery. By this arrangement, the fly-wheel has not only a rotary but also a vertical, reciprocating motion, combining the action of the fly-wheel with that of the pile-driver or hammer. If, where the resistance is variable, the parts are so adjusted as that the wheel with its journal boxes, shall be coming down at the time of the greatest resistance, as when the chisel is cutting the wood, for instance, it will concentrate the power more perfectly on the point of resistance than will a fly-wheel of the same weight, running on a stationary axle.

These machines are made by the Kaefer Power-Company, at room 26, in the large building of the Harlem Railroad Company, corner of Franklin and Elm streets, New York. For further particulars address the company as above.

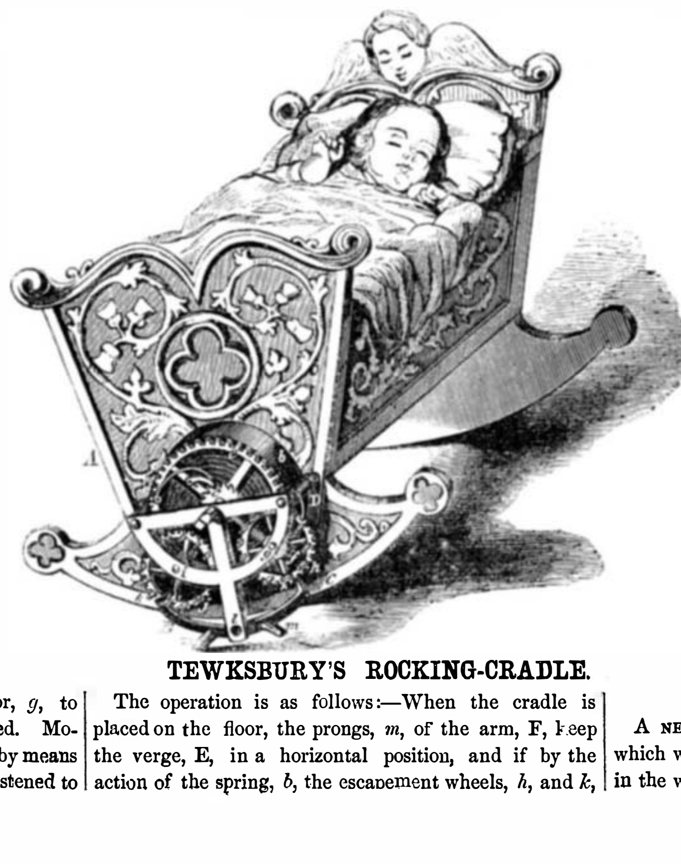


KAEFER'S MODE OF TRANSMITTING MOTION.

TEWKSBURY'S ROCKING-CRADLE.

We live, in this age, by machinery. Our wheat is sown and reaped and threshed and ground by machinery, the bread is mixed by machinery and baked by steam. Our clothes are made, our carriages are drawn, our boats are paddled, all by machinery. It is not strange, then, that infants should be rocked to rest in their cradles by means of machinery. Several patents have been granted for devices for this purpose, the latest of which is illustrated in the annexed cut.

To the end of an ordinary cradle, A, is attached the clock-work, D. The spring, *b*, is secured to a shaft, *c*, and is wound up by a suitable key. Attached to the same shaft, *c*, is a spur wheel, *e*, which gears into a pinion, *f*, and this pinion is secured to an arbor, *g*, to which an escapement wheel, *h*, is rigidly fastened. Motion is imparted from this arbor to an arbor, *i*, by means of two cog wheels, *j j'*; the wheel, *j*, being fastened to the arbor, *g*, and the wheel, *j'*, to the arbor, *i*. Secured to this latter arbor is the second escapement wheel, *k*, both of these escapement wheels, *h*, and *k*, striking with their outer teeth against the hooked ends, *h'*, and *k'*, of the verge, E, which is secured to the rock-shaft, *l*. Attached to the inner side of this verge is an arm, F, the ends of which are bent down so as to form two prongs, *m*, which reach down to the floor, and rest upon it.



TEWKSBURY'S ROCKING-CRADLE.

The operation is as follows:—When the cradle is placed on the floor, the prongs, *m*, of the arm, F, keep the verge, E, in a horizontal position, and if by the action of the spring, *b*, the escapement wheels, *h*, and *k*, begin to rotate, one of the teeth of the wheel, *k*, will strike the hooked end, *k'*, of the verge with its rounded side, and that side of the cradle to which the escapement wheel, *k*, is secured will rise until the tooth clears the end, *k'*. One of the teeth of the wheel, *h*, will then come in contact with the hooked end, h', of the verge, and the cradle will be thrown the other way; thus, by an alternate action, rocking the cradle. A lock or pawl may be dropped into one of the gears to stop the motion when desired.

The patent for this invention was granted to W. D. Tewksbury, of Cuylerville, N. Y., June 7, 1859.

AMERICAN AND ENGLISH LOCOMOTIVES.

The following are some further details of the trial of American and English locomotives noticed by us in our last issue. This trial of two English against two American locomotives (built at Rogers' Works, Paterson, N. J.) took place on the Sorthern Railway of Chili, S. A., and resulted in a complete victory for the latter The English engines were built by R. & N. Hawthorne, Newcastle, and were each 27.61 tuns. Prior to the trial an English engineer, by the usual formula, calculated the traction of his engines as exceeding that of the American by 12 per cent, but practice dissipated all confidence in such calculations. The "San Bernardo" locomotive (American), on the 1st of last July, took a train of 35 eight-wheeled cars, weight 587 tuns, from Santiago to the summit of the incline in the railroad, 11 2-3 miles, in 41 minutes. The English engine "Varas" tried to take the same train up the same route, on the subsequent day, and failed to do so, not being able to raise sufficient steam. On the 3d of July the English passenger-engine "Montt" started from the Santiago station with a train of 15 loaded eight-wheeled cars, gross weight of train, 288 tuns, and run to the summit of the incline in 37 5-6 minutes, including one stop of 3 1-4 minutes. The whole length of the route is 17 miles, which was run in 49 minutes.

The American engine "Santiago," on the next day, took a similar train of 290 tuns to the summit in 26 1-10 minutes, making a stop of one minute, and it run to the end of the route in 34 1-2 minutes. The fire and heating surface of the Hawthorne engines were as follows. Fire surface, 1,123 square feet, tube surface, 1,123 square feet, and 2,927.16 cubic feet of steam were used per mile. The American engines had 783 square feet of fire surface, 706 of tube surface, and used 2,613.23 cubic feet of steam per mile. We have not been informed of the causes of superiority in the successful engines, but there was a distinctive difference in the size and stroke of the cylinders, the English being 15 by 22 inches, the American, 14 by 24 inches. The results of this trial have created lively satisfaction among the American engineers in Chili, and at home. The judge of the occasion was an English practical engineer named Bailey, who presided and judged very fairly.

A NEW chimney is about to be erected in Glasgow, which will be about 460 feet high—the tallest chimney in the world.