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Krupp's New Cannon for the Paris Exhibition.

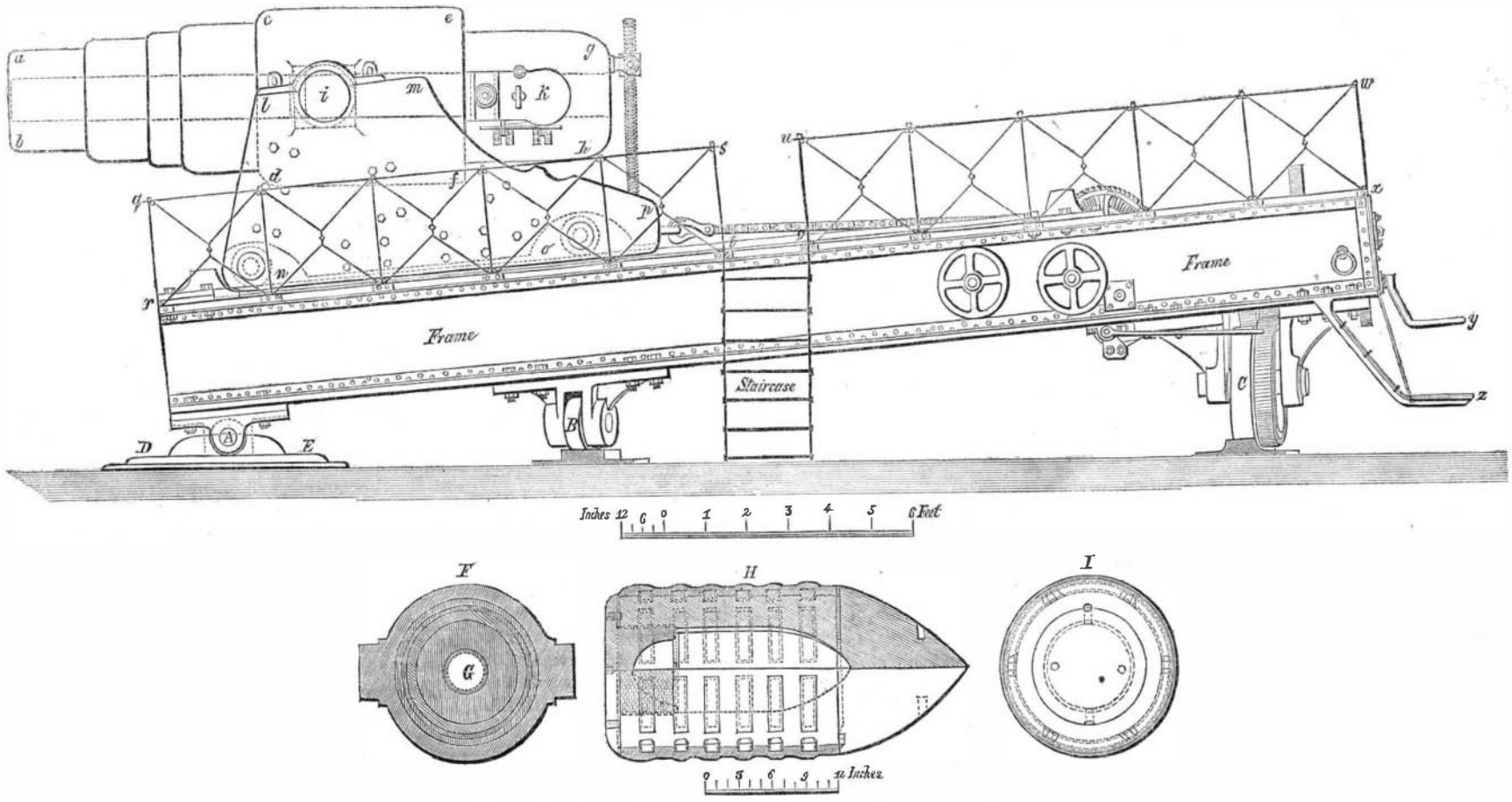
Rhineland and Westphalia are undoubtedly among the most important provinces of Prussia, and one of their most important establishments is that of Mr. Krupp, which from the character of its work must be ranked among the first manufactories on the European continent.

This establishment will be represented at the Paris Exhibition by four or five steel cannon, ranging in size from the smallest field piece to the heaviest caliber, the one represented in the accompanying engraving being without rival the most powerful cannon in existence. This immense gun is a rifled breech-loader of 14 inches bore, constructed wholly of cast steel, and weighs 1,000 cwt., and the cannon (intended for the armament of a coast fortification) consists of an inner barrel having several cast-steel rings or reinforces welded around it while hot.

The inner barrel, the most important part of the whole, weighs 400 cwt. and is wrought from a pig of 850 cwt., under a hammer of 1,000 cwt. The loss of its original weight is caused by the falling off of the head or mold end, by forging, turning and boring. The cast-steel rings weigh all together 600 cwt. The breech stopper is Krupp's own invention. A charge of gunpowder of one hundred pounds is required to project the shot, which weighs eleven hundred pounds. As our readers may imagine, the cost of such an enormous piece is somewhat high, and the gun is now valued at $100,000. Workmen have been engaged in its construction night and day for the past year, and only by the greatest exertion will it be completed in time for the exposition.

The cannon is mounted on a steel carriage forty feet long by nine feet wide, and weighing 500 cwt. The mechanism for maneuvering this enormous mass of metal is so arranged that the proper elevation, declination, etc., can be given by one or two men with the greatest facility, and with such rapidity that a passing vessel can be aimed at with accuracy.

As on the railroads no car could be found strong enough for transporting this cannon, Krupp was obliged to build an iron car for this especial purpose, which rests upon eight wheels, and which will take the monster to Paris and from thence to its final destination. The lightest cannon to be exhibited in Paris will be still heavier than the first cast steel one with which in 1849 Krupp first brought his invention of cast steel arms before the public. In order to test the various improvements constantly being introduced respecting the material as well as the construction of these guns, trials are continually made in Krupp's establishment which are witnessed by army officers of all nationalities, sent especially by their respective governments to Essen. About 30 or 40 cwt. of gunpowder are used every month for these trials.



KRUPP'S BIG GUN FOR THE PARIS EXHIBITION.

REFERENCES TO THE ENGRAVING.—A B C, rollers; D E, pivot plate; F, cross section of barrel through trunnion, *i*; G, bore; H, longitudinal section of cast steel shot with leaden coating; I, cross section of same; *a b g h*, barrel; *c d e f*, reinforce; *i*, trunnion; *k*, breech stopper; *l m n o p*, carriage; *q r s t u v w x*, railing; *y*, crank communicating with mechanism by which the gunner moves the cannon, carriage, and frame, his position being upon the step, *z*.—*Leipzig Allgem. Illustr. Zeitung*.

A NOVEL COMBINATION.—An interesting suggestion is made in the St Louis *Republican* by Wm. H. Githens, for improving the Des Moines rapids (Mississippi river) and obtaining at the same time a railroad tunnel, a dam, and large waterpower, by one and the same structure. That is: to build a dam at the foot of the rapids, in the form of an arch, the hollow of which would form a tunnel, the hight of which would be sufficient to set back the rapids to the upper level and make smooth navigation, and the top of which would be crossed by a lock or locks for raising and lowering vessels. The water power obtained would be sufficient to found a manufacturing city.

IMPROVED ADJUSTABLE MITERING APPARATUS.

The accompanying engravings represent a mitering machine for which letters patent were granted through the Scientific American Patent Agency Aug 21, 1866. It is a semi-

Fig. 1.

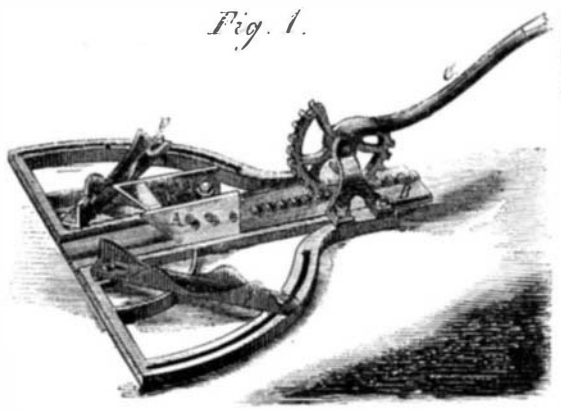
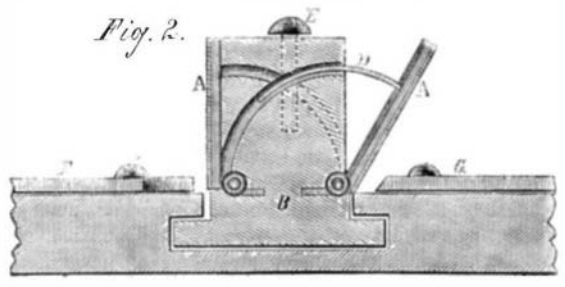


Fig. 2.



circular bed of iron, eighteen by twenty-eight inches, upon which are mounted hinged and sliding knives and movable guides, with a lever, segment, and rack. Fig. 1 is a perspective view and Fig. 2 a front, longitudinal, vertical section. A are knives are adjusted in the position seen at F, A, in both figures, and by adjusting the rest the end or edge can be cut to any angle desired. For mitering flatwise the position of knives and rests is as at G, A, Fig. 2, the rest being secured at an angle of 90° with the cutter head and the knife, A, being brought and secured in the desired position.

The machine will miter a molding six inches wide, the great power of the lever being directly applied. The form of the knife edge makes a drawing cut insuring perfectly smooth work. The machine appears to be well adapted to the purposes of the picture frame maker and cabinet worker and will prove useful in the joiner's shop. For further particulars address Howard, Thorndike, & Co. Belfast, Me.

THE PARIS EXPOSITION.

Our engraving (page 316) gives a view of the French Industrial Palace, situated in the Champ (field) de Mars, at Paris. This is a locality about one and a half miles from the central portion of the city, and, before the enterprise, was a large, flat, sandy, and naked plain, with its surface lower than the surrounding neighborhood, but which has now been transformed to a spacious and pleasant park. Its surface has been raised, hillocks and little valleys created, streams and rivulets, leading to little waterfalls and lakes, introduced in every direction, and the grounds diversified with buildings which are made the complete copies, in inward and outward fittings, of the structures of almost all the nations of the globe. In the grounds, also, are groups of sculpture, ornamental fountains, lawns, groves of trees, parterres of flowers and shrubbery, a garden with almost every known plant and shrub, horticultural establishments, marine and fresh-water aquaria, model cottages for the working people, infant nurseries, and almost every conceivable structure of interest.

The exhibition building is elliptical in form, and consists of a series of eight concentric halls, of oval shape upon the ground, each one outside of the other, which surround a neatly arranged garden in the centre. From this garden numerous covered streets or passages, each one bearing the name of a different nation, penetrate outward, and cross the halls in manner resembling the spokes of a wagon wheel, which radiate from the hub in every direction. Another separate building in the park, contains the surplus goods of various nations. The two structures cover about 185,000