FOWLER'S MACHINERY FOR PLOUGHING LAND.

PATENT DATED 16TH FEBRUARY, 1856.

FIG. 1.

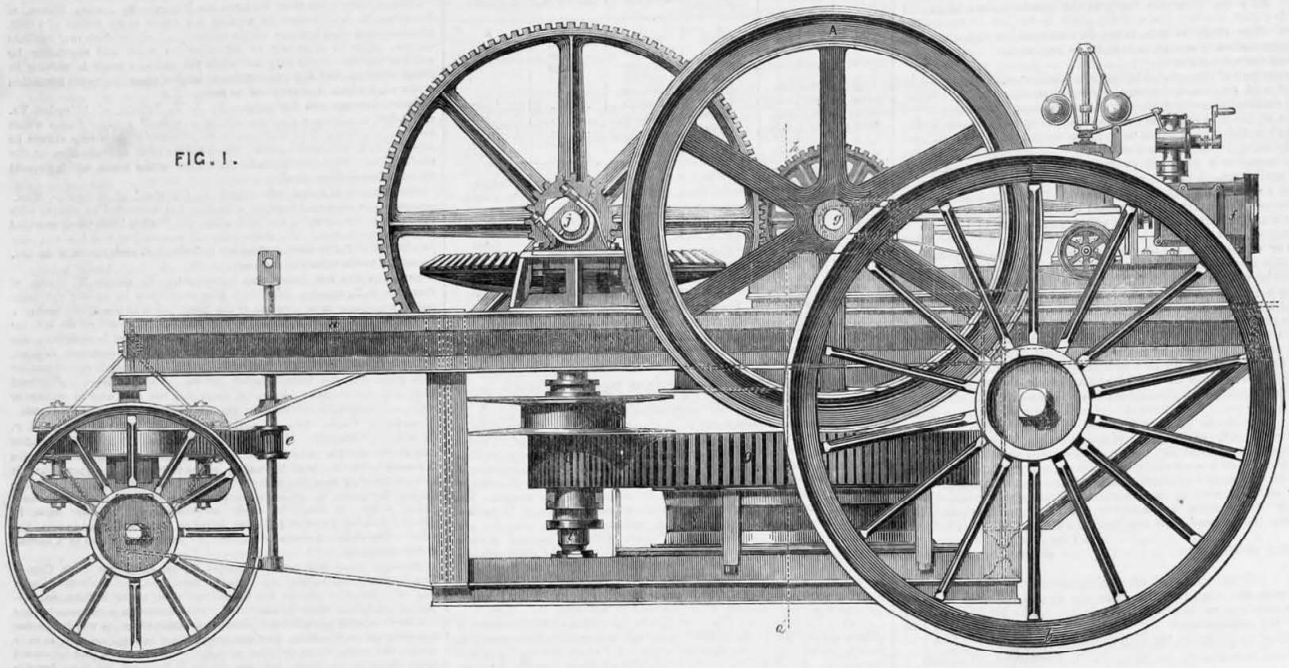
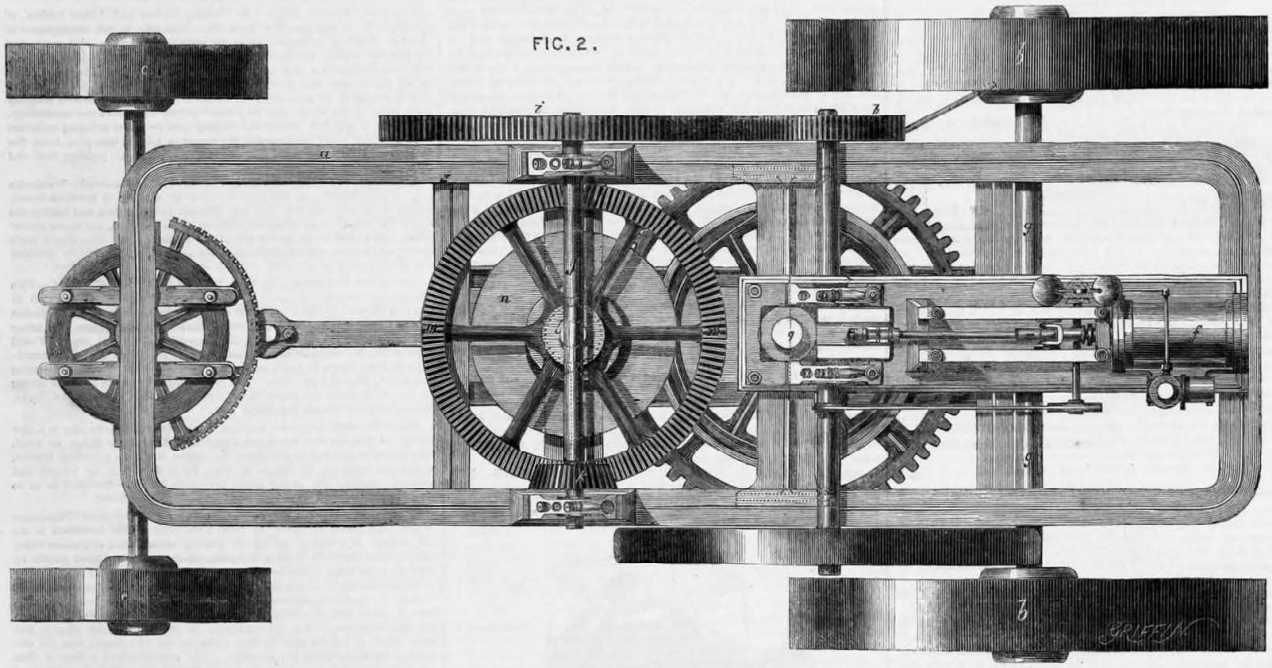


FIG. 2.



THIS invention has for its object improvements in machinery for ploughing land. For this purpose, when working with a subsoil plough, an upright or horizontal barrel or capstan is combined on the same frame, platform, or base plate, with an engine which gives motion to it, by which capstan or barrel the subsoil plough is moved by a wire rope, and there is a second barrel for moving by another wire rope the engine and capstan from point to point along the head-land. The machinery is arranged to make a direct pull on the plough, and is therefore moved a distance each time equal to that between drain and drain. Another improvement relates to the anchor or instrument used for holding on or resisting the movement of the engine, capstan, or barrel and pulleys when working with drain, subsoil, or other ploughs by power. For this purpose a plate or frame is used, which, when employed, is placed upright in a hole. On this plate or frame is hinged a lever, to the upper end of which a chain or rope is fixed. The lower end of this lever is formed with a broad end or plate, which, when the lever is pulled on, rests against the opposite side of the hole, and very securely anchors the engine and machinery which gives motion to the plough, and when pulleys are used they are similarly anchored.

Figure 1 is a side view; and Figure 2, a plan of a steam engine and an upright barrel or capstan, combined together on the same frame, and suitable for working with a subsoil plough for draining land. *a, a,* is the frame of the machine, mounted on wheels *b, b,* and *c, c.* The fore wheels *c, c,* have a locking motion, to which is attached the toothed arc *d,* working with a pinion *e,* having at its upper end a handle for steering the machine; *f* is a steam cylinder, in which works a piston, from which motion is communicated by a piston rod and connecting rod to the crank shaft *g.* At one end of the crank shaft is a fly wheel, and at the other end there is a pinion *h,* which drives the toothed wheel *i* on the axis *j,* having at its other end a bevelled pinion *k; l* is a vertical axis, having at its upper end a bevelled wheel *m,* which is driven by the pinion *k.* On the axis *l* is a drum *n,* which is used for moving the machine from place to place, for which purpose one end of a rope is made fast to an anchor placed in the direction in which it is desired to move the machine, and the other end of the rope is passed round the drum *n.* On the axis *l* there is also a pinion *o,* which drives the toothed wheel *p* on the upright axis *q;* keyed on to the axis *q* is a barrel or capstan *r,* round which the rope is passed by which the plough is hauled, the rope passing direct from the barrel to the plough. When at work, the machine firmly anchored by a chain which is attached to the frame underneath the axis of the main drum at the point marked a^1, and this attachment is so made that the chain can be easily slipped without taking the strain off it. To supply the machine with steam, a boiler is used, which is mounted on wheels by itself; it is coupled to the machine, and has a flexible steam pipe for conducting the steam to the cylinder *f.*

The anchor consists of a strong wooden frame, having wheels at one end to facilitate its removal from place to place, and having planks of wood bolted across it at its other end. An illustration of the anchor, but without wheels, was given in an early number of the ENGINEER. The mode of using it is by digging a trench in the ground, in which it is firmly held. As the work proceeds the anchor is moved along the field, successive trenches being dug to receive it.

FROM the Progress Reports of the East India Railway, for the month of March last, we learn that the earthwork in the Benares District was then nearly three fourths finished, but the brick work and masonry had not been commenced. The stock of materials on the ground was scanty in the extreme, but the daily average of labourers employed amounted to about 1,900. The engineer's estimate for this portion of the line was, in round numbers, 950,000 rupees, the total payment yet made being about 150,000, leaving still to be expended 800,000. It is impossible to form an opinion, from the report furnished by the engineer of the Mirzapore District, as to the quantity of work that still remains to be executed, as the original estimate is not given; but the chief engineer reports in his letter that the progress of the masonry work is still very slow. In the Futtehpore District all descriptions of work were steadily though not rapidly advancing; and Mr. Purser expresses an opinion that the work could not well be carried on quicker, in consequence of a want of labour and materials. The works in the Cawnpore District are at a stand-still, and have been so for some months; and in the Ettawah District the work appears to be progressing but slowly. In his letter forwarding these reports, Mr. Purser informs the deputy consulting engineer to Government that he does not believe the section of the line between Allahabad and Cawnpore will be ready for opening before the 1st November, 1857, which would be two and a half years from the date that the land was taken possession of. But Lieutenant Greathed does not concur in opinion with Mr. Purser, and thinks that if proper energy were shown, the works could be completed sufficiently to admit of the opening of that section in February, 1857. It is admitted that some delay may occur by reason of the tardy arrival of permanent way materials; but he nevertheless recommends that the agents of the Company should be directed to enjoin energy and diligence, so as to ensure that the engineering portion of the works should be ready by the time specified.

TIMBER BENDING PATENT COMPANY.—On Thursday week a large body of scientific gentlemen assembled at the foundry of Messrs. Collinge and Co., in the Westminster-road, Lambeth, for the purpose of witnessing some experiments on a gigantic scale, which showed how easily timber, no matter how large, whether English or foreign, cross-grained or knotty, could be bent into any form required. The principal experiment consisted of an immense piece of oak, almost as thick as a man's body, and certainly twice as long, which, upon being taken out of the preparing-room, was hauled, by means of heavy tackling, into the machine, and in a very brief space of time was bent to such perfection as to resemble the knee of a ship for any vessel in her Majesty's service. The benefits of the invention cannot but prove of great importance—such as strength and durability of the timber, together with economy of material, labour, and capital, which must in time ensure the adoption of the process for ship timbers, futtocks, &c. The invention will also prove invaluable to carriage builders, wheelwrights, house builders, manufacturers of agricultural implements, furniture makers, coopers, modellers, and will be of great use in the construction of private houses and ecclesiastical edifices, facilitating, as it unquestionably must, the formation of domes and arched roofs. The frames for pictures, looking-glasses, and coach-wheels, will be turned out at an actual saving of from one to three-fourths of the material.