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Institution of Civil Engineers

1897-98

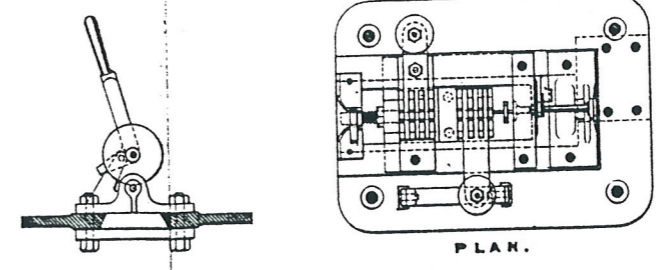
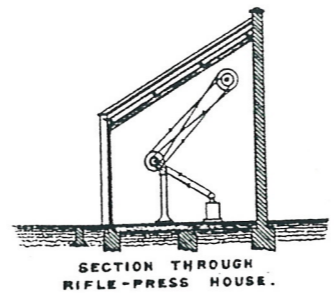
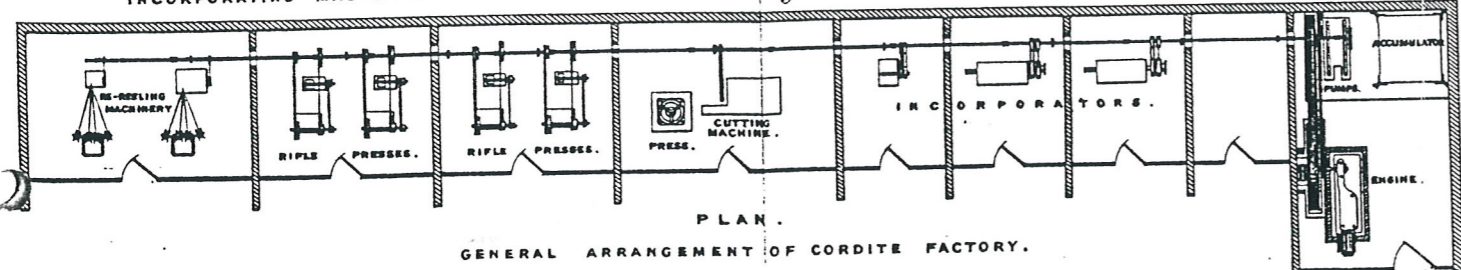
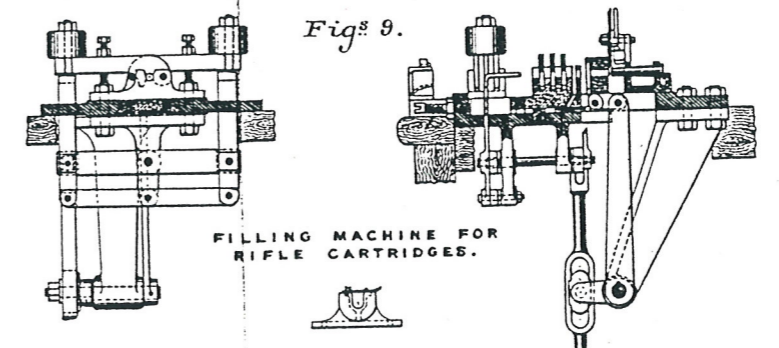
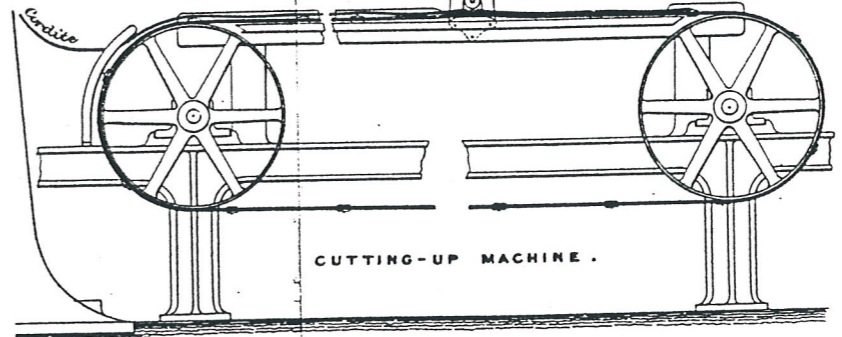
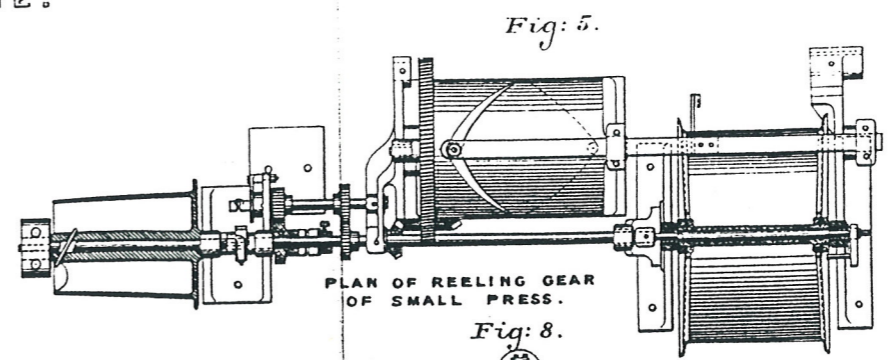
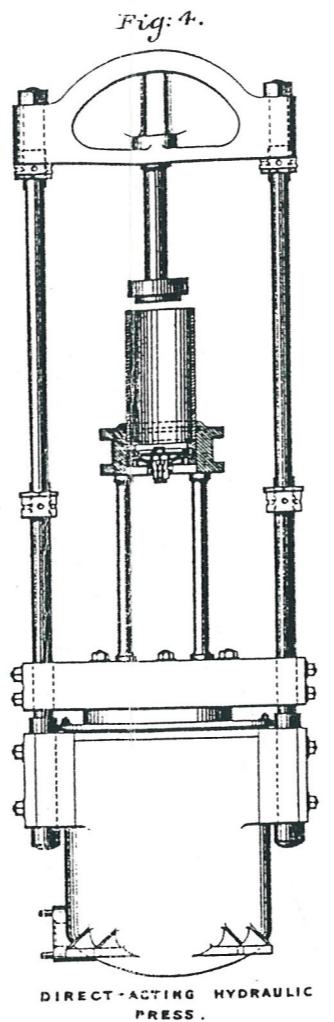
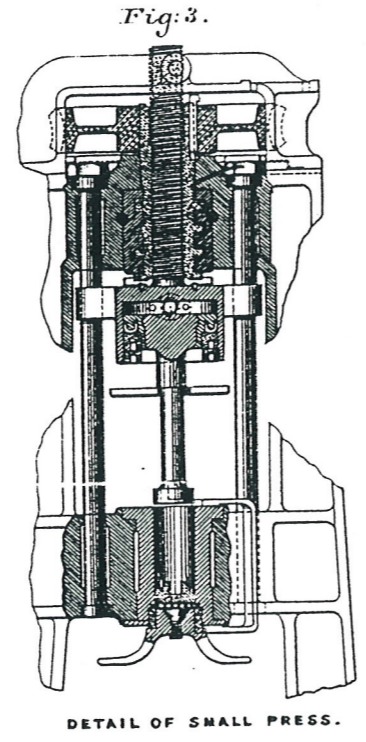
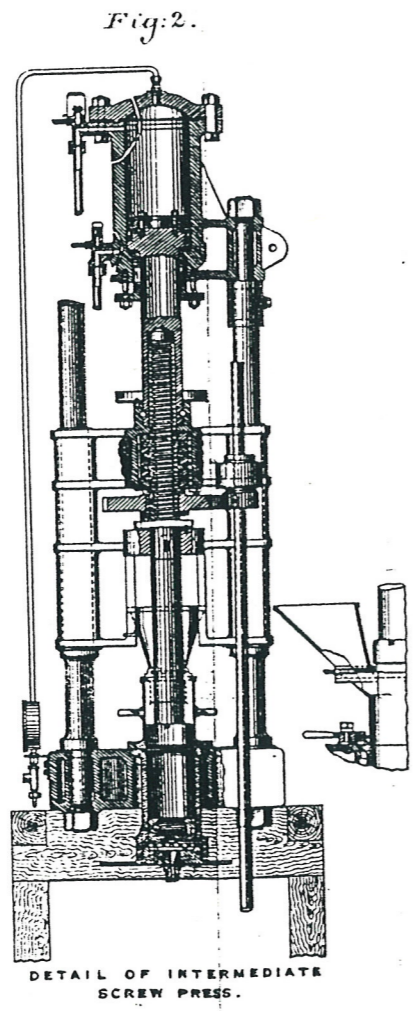
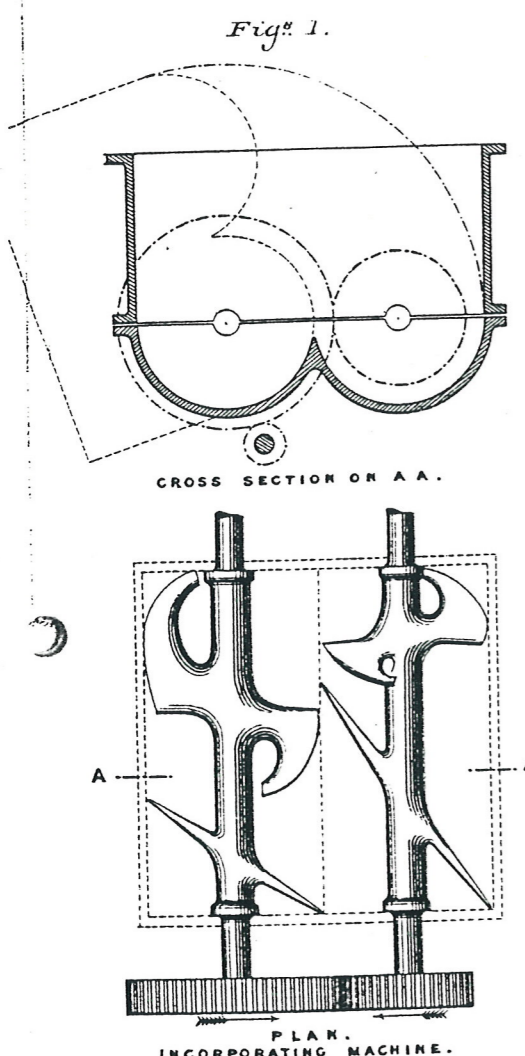
Machinery for the manufacture
of Cordite

E. W. Anderson

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MACHINERY FOR THE MANUFACTURE OF CORDITE.

PLATE II.



SCALES.
 Fig. 1, 2, 4, & 8. 1/2 Inch = 3 Feet.
 3 1/2 = 1
 5 and 8. 3/4 = 1
 10 1 = 20

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cordite?

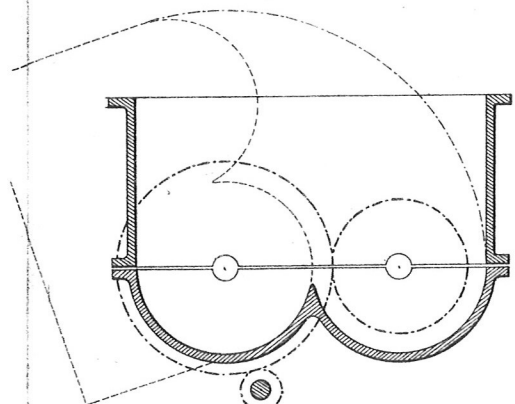
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Anderson - just Civil Eng.
Not a north site building but general arrangement.

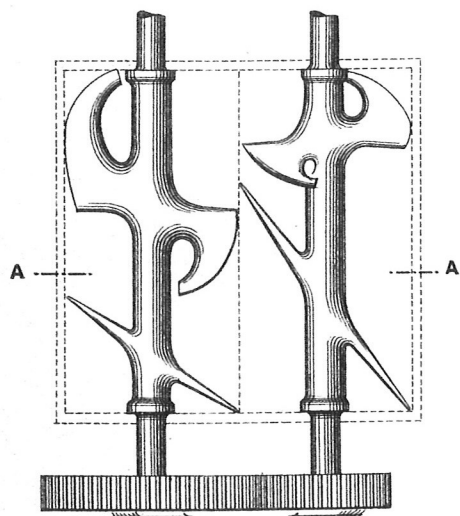
WASC 1800 - add to catalogue and mention in Cordite Mk. 1. phase.

MACHINERY FOR THE MANUFACTURE OF CORDITE.

Fig: 1.

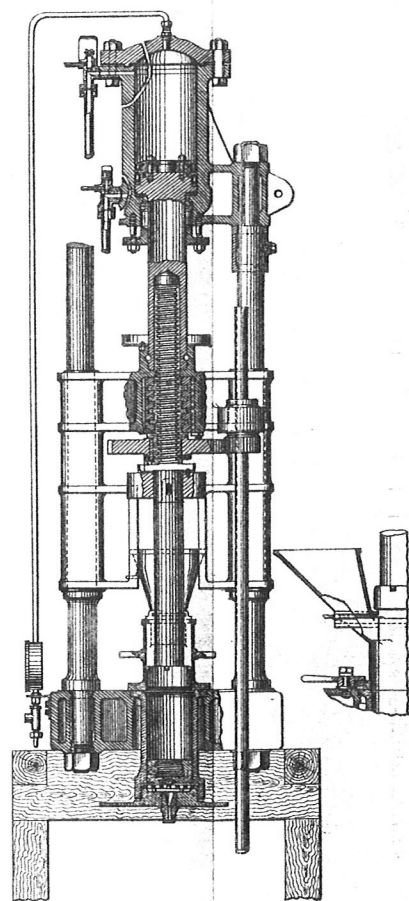


CROSS SECTION ON A A.



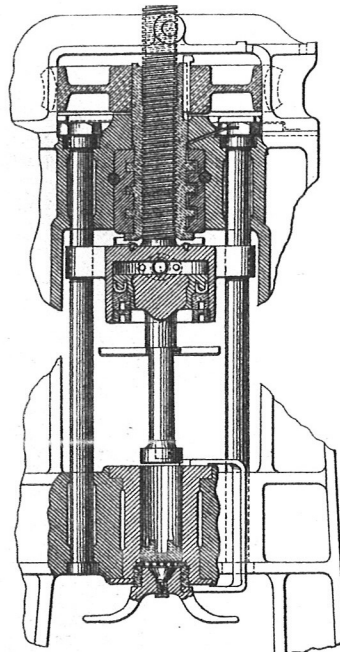
PLAN. INCORPORATING MACHINE.

Fig: 2.



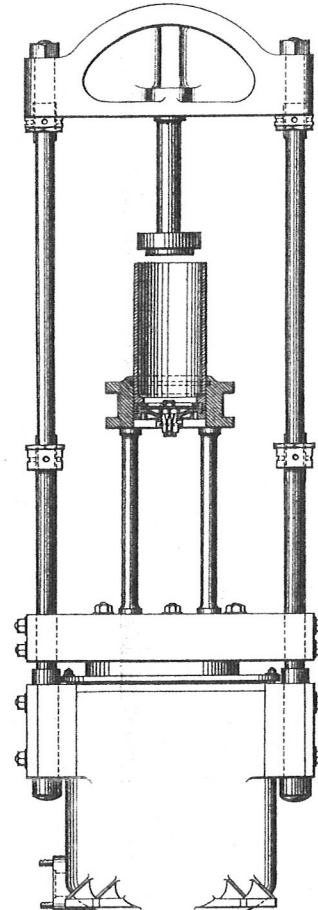
DETAIL OF INTERMEDIATE SCREW PRESS.

Fig: 3.



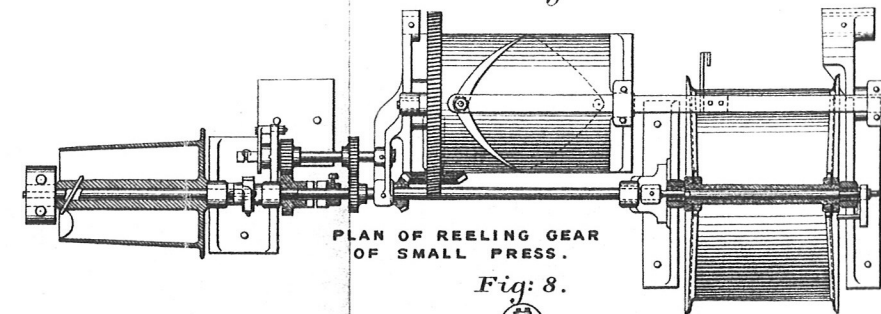
DETAIL OF SMALL PRESS.

Fig: 4.



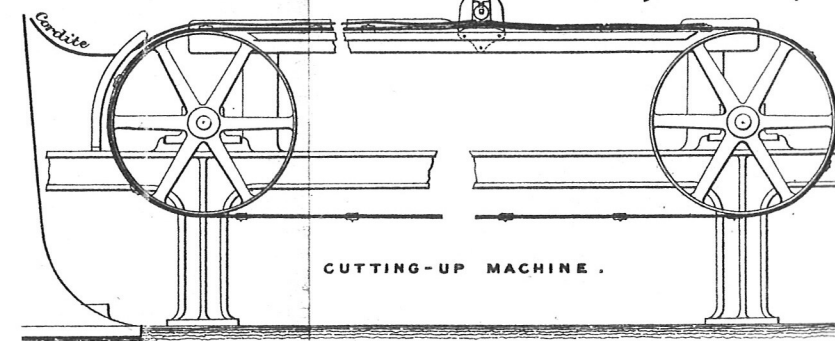
DIRECT-ACTING HYDRAULIC PRESS.

Fig: 5.



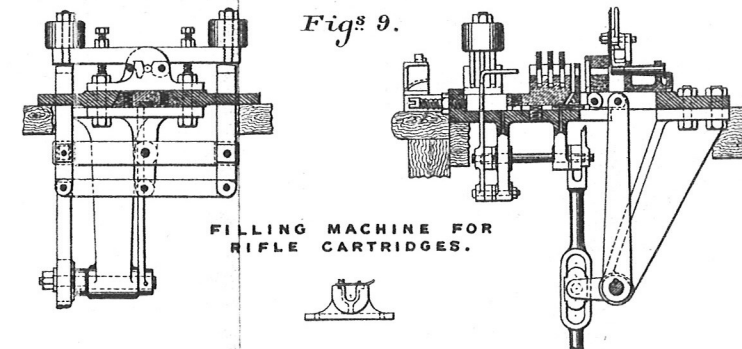
PLAN OF REELING GEAR OF SMALL PRESS.

Fig: 8.



CUTTING-UP MACHINE.

Fig: 9.



FILLING MACHINE FOR RIFLE CARTRIDGES.

SCALES.

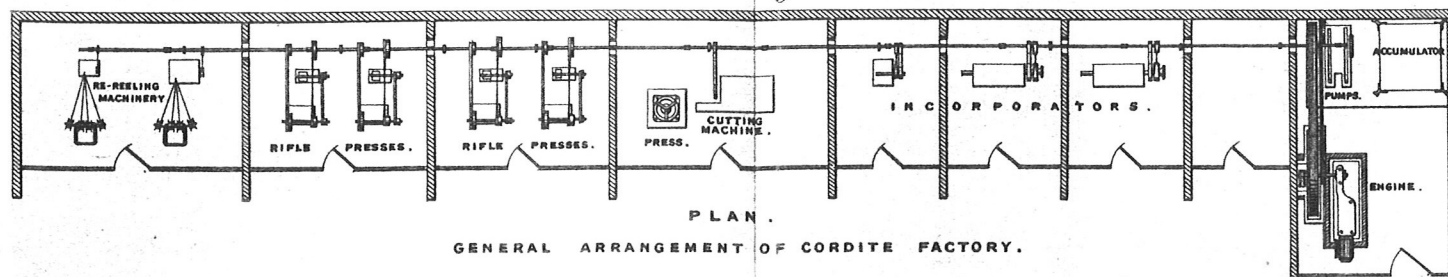
Fig: 1, 2, 4, & 8. 1/2 Inch = 1 Foot.

Fig: 3. 1 Inch = 1 Foot.

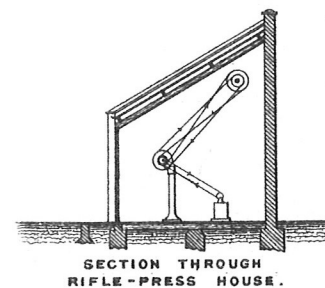
Fig: 5 and 9. 1 1/2 Inch = 1 Foot.

Fig: 10. 1 Inch = 20 Feet.

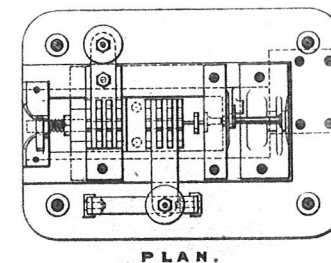
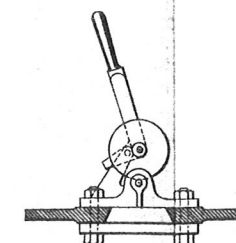
Fig: 10.



PLAN. GENERAL ARRANGEMENT OF CORDITE FACTORY.



SECTION THROUGH RIFLE-PRESS HOUSE.



PLAN.

E.W.ANDERSON.

Minutes of Proceedings of The Institution of Civil Engineers. Vol: CXXXII. Session 1897-98, Part II.

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cartridge-cases by a simple apparatus calling for no special description. Accuracy is of course of no great importance for blank charges.

GENERAL ARRANGEMENT OF THE MACHINERY IN A CORDITE FACTORY.

A convenient arrangement of the machinery in a moderate-sized factory is given in Fig. 10, Plate 2. It consists simply of a long brick wall not less than 14 inches thick, with a series of partition walls of 9-inch brickwork running out from it, dividing it into a number of cells. Each cell has a wooden lean-to roof and front with a door and windows, as light as possible, attached to, but not built into, the walls, in such a way that the brickwork projects well above and beyond the woodwork. In the event, therefore, of an explosion occurring in any cell, the front and roof could be blown out without doing much damage, and the walls would most likely remain sound and prevent any spread of the explosion. The floor may be made of wood covered with linoleum, and most of the machines may be simply bolted down to it, few requiring any regular foundations. Outside the cell doors there is a clean wooden platform joining them, and raised above the ground. No person is allowed on this unless provided with suitable clean leather shoes, in order to avoid bringing any grit into the place, or walking about there in nailed boots. A place (not shown on the drawing) must therefore be provided where the shoes can be put on, and where the workmen can change their clothes. The reason for this precaution is obvious; for although the manufacture is very safe, it is possible to explode the material by impact; and it is therefore important, not only to keep the whole place scrupulously clean and free from pieces of explosive lying about, but also to prevent any chance of such pieces being trodden on by boots with nails in them, which might possibly cause an explosion. It is true experiments have shown that when such an explosion does take place, it is invariably a local one, and does not spread beyond the point immediately affected; but even so, it might be sufficiently unpleasant. One reason why the cordite manufacture is so safe is, that there is no dust, which forms such a terrible source of danger in black powder making. The end compartment on the right, Fig. 10, is the engine-room, containing a suitable engine for driving a line of shafting running overhead through all the cells. It also drives a small set of three-throw pumps supplying an accumulator, which provides the necessary high-pressure water for the larger press, as

well as the charging rammers. The wall-boxes in the partition walls through which the shafting passes are provided with diaphragm plates of iron closely fitting the shafting, so as not to leave open communication between the cells which might assist the spread of fire. The compartment next the engine-room acts as a service store for paste, mineral jelly and acetone. Then come three cells, each with an incorporating machine; two being of the 150-lb. size, and the third a small one capable of being used for re-incorporating the waste material or "heels," that is, the dough that remains in the bottom of the cylinders after each charge. Next, there is a cell containing either a direct-acting hydraulic press, or else an intermediate screw-press, in either case provided with a belt cutting-machine and a set of apparatus for hand reeling and cutting such sizes as 0.05 inch. After this two compartments, each large enough to accommodate two rifle-presses and their accessories; and, if charging rammers are used, one is placed in each compartment to serve the two presses contained therein. Finally there is a cell containing one ten-strand and one sixty-strand re-reeling machine with their stands, which will probably prove sufficient in practice to deal with all the rifle cordite produced; though, as will be seen by figures already given, if all four presses are continuously worked on rifle cordite to their full capacity, the ten-strand machine will hardly be able to keep pace with them, and a second one would be required. There is plenty of margin in the sixty-strand machine, its output being nearly 50 per cent. greater than that of ten-strand. If an extension of the factory is required, a similar set of cells may be built on the other side of the main wall, with a second line of shafting through them.

Besides the machinery-house, several other buildings are required for drying, blending, &c., but these do not properly enter into the scope of the Paper. The boilers are placed separately at a proper distance from the danger buildings, and steam for driving the engine and for warming is conveyed to the several houses by long pipes. The machinery-house may be warmed by the exhaust from the engine.

Electric lighting is the most convenient to adopt, and must in England be installed in accordance with the Home Office regulations. The electric lighting arrangements of the Waltham factory have been described¹ by Mr. C. F. Jenkin; but it should be remembered that they do not necessarily comply with the Home Office rules,

¹ Minutes of Proceedings Inst. C.E., vol. cx. p. 367.

WASC 1800

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Proceedings of The Institution of Civil
Engineers. Vol. CXXII Senior
1897-98. Part II.

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