

Specification of George Thomson and James Elms : machinery for cutting and tying up fuel.

Contributors

Thomson, George.
Elms, James.

Publication/Creation

London : Great Seal Patent Office, 1857 (London : George E. Eyre and William Spottiswoode)

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A.D. 1849 N^o 12,542.

S P E C I F I C A T I O N

OF

GEORGE THOMSON AND JAMES ELMS.

MACHINERY FOR CUTTING AND TYING
UP FUEL.

L O N D O N :

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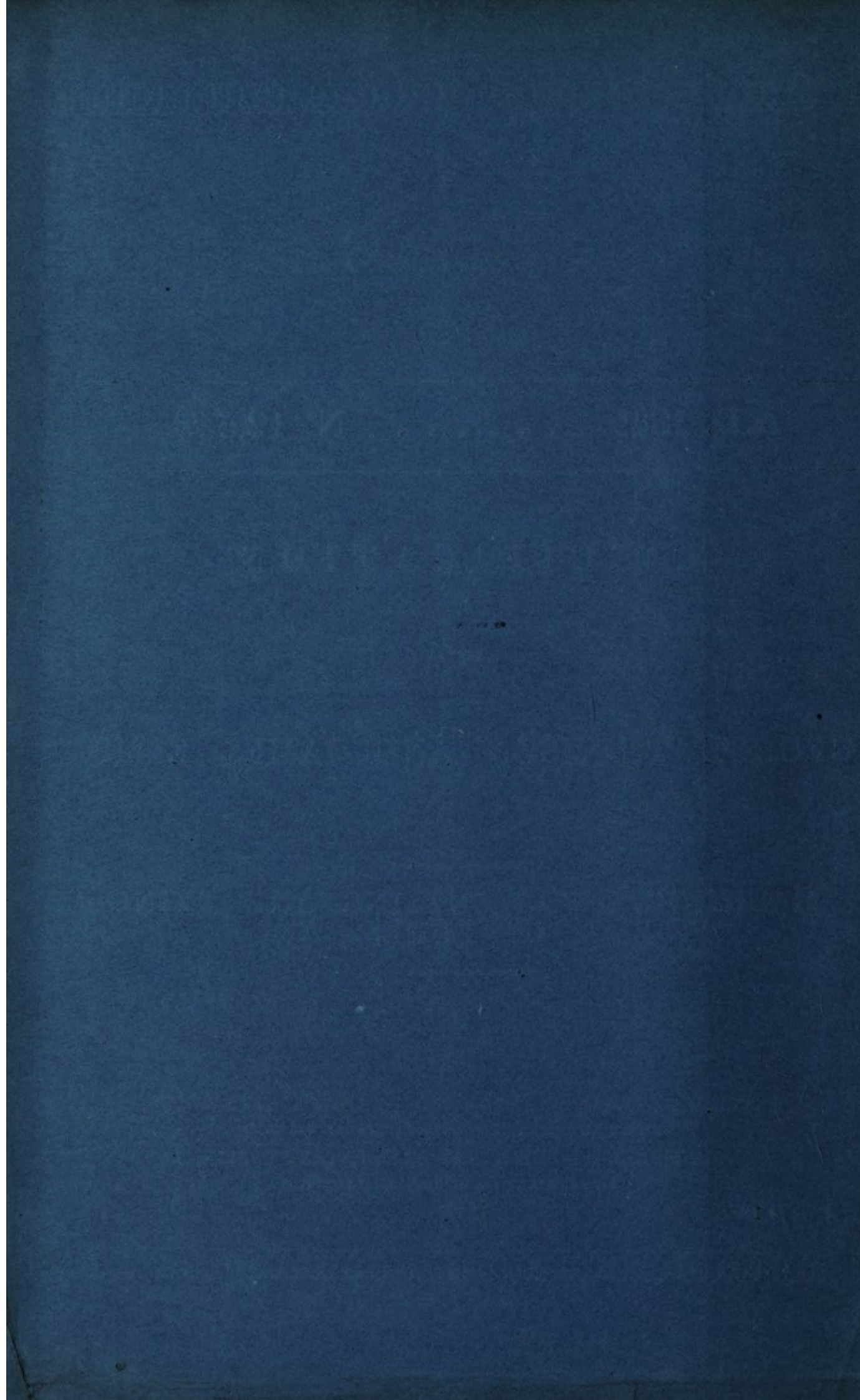
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A.D. 1849 N° 12,542.

Machinery for Cutting and Tying up Fuel.

THOMSON AND ELMS' SPECIFICATION.

TO ALL TO WHOM THESE PRESENTS SHALL COME, we, GEORGE THOMSON, of Camden Road, Cabinet Maker, and JAMES ELMS, of the New North Road, Gentleman, send greeting.

WHEREAS Her present most Excellent Majesty Queen Victoria, by Her
5 Royal Letters Patent under the Great Seal of the United Kingdom of Great Britain and Ireland, bearing date at Westminster, the Twenty-eighth day of March, One thousand eight hundred and forty-nine, in the twelfth year of Her reign, did, for Herself, Her heirs and successors, give and grant unto us, the said George Thomson and James Elms, our eñors, adñors,
10 and assigns, Her especial licence, full power, sole privilege and authority, that we, the said George Thomson and James Elms, our eñors, adñors, and assigns, and such others as we, the said George Thomson and James Elms, our eñors, adñors, or assigns, should at any time agree with, and no others, from time to time and at all times during the term of years therein ex-
15 pressed, should and lawfully might make, use, exercise, and vend, within England, Wales, and the Town of Berwick-upon-Tweed, our Invention of "IMPROVEMENTS IN MACHINERY FOR CUTTING AND TYING UP FIREWOOD;" in which said Letters Patent is contained a proviso that we, the said George Thomson and James Elms, or one of us, should cause a particular description
20 of the nature of our said Invention, and in what manner the same is to be performed, by an instrument in writing under our hands and seals, or under the hand and seal of one of us, to be inrolled in Her said Majesty's High Court of Chancery within six calendar months next and immediately after

Thomson & Elm's Improvements in Machinery for Cutting and Tying up Fuel.

the date of the said in part recited Letters Patent, as in and by the same, reference being thereunto had, will more fully and at large appear.

NOW KNOW YE, that in compliance with the said proviso, we, the said George Thomson and James Elms, do hereby declare that the nature of our said Invention, and the manner in which the same is to be performed, are 5 fully described and ascertained in and by the following statement thereof, reference being had to the Drawings thereunto annexed, and to the figures and letters marked thereon, that is to say :—

Our Invention consists,—

First, in certain improvements in machinery for cutting wood to a con- 10 venient form and size for the purpose of lighting fires.

Secondly, in the so arranging mechanical parts into a machine, that subsequently to the firewood being cut to the size and form required, it may be more readily tied up into small bundles fit for sale than can be effected by the means hitherto adopted for that purpose. 15

In order that the object of our Invention may be more clearly understood, we consider it necessary here to state that the wood now sold in bundles for the purpose of lighting fires is usually obtained from the timber merchants in the form of billets or blocks about eighteen inches long, the sectional area of the said blocks being either three inches square, or three inches by four inches, 20 or thereabouts. The following process has generally been adopted for chopping or cutting the wood to the required size :—The block is first sawn into three pieces, each six inches long, these reduced blocks are next placed on end on a chopping block, and cut up into small slips by hand, hence the pieces thus cut are very irregular in size, the operation being at the same time exceedingly slow 25 and unsatisfactory, and it has been attempted in various instances to construct machines for like purposes, but we believe with little practical success. The wood obtained from the timber merchant may be sawn into three or more pieces by any of the means now used, but we prefer the use of circular saws, such as are shewn in Figures 12, 13, 14, 15, and 16, of the annexed Drawings, 30 but such machinery forms no part of our Invention, but we shew it as being exceedingly well adapted for preparing the wood for our machinery. The blocks, being thus reduced to the desired length, are placed end up, that is to say, with the grain of the wood standing perpendicularly, upon an endless chain or band passing round rollers, such band having a progressive motion 35 towards the cutters, which consist of plates of iron or steel edged something after the fashion of a broad chisel, secured in sockets or holders firmly fixed to the outer face or periphery of a wheel or drum, as will be hereafter more fully described and explained.

DESCRIPTION OF THE DRAWINGS.

Figure 1 represents a side elevation of the cutting machinery. Figure 2, a longitudinal vertical section taken through about the centre of the machinery. Figure 3, a general plan looking down on the top of the machine. Figure 4 an edge or back view of the wheel, on the rim of which the cutters are secured; this we call the cutter wheel. Figure 5, a horizontal section through the cutter wheel and plummer blocks in which the wheel is suspended. Figure 6, a horizontal section through the front standard or support of the feeder on the line A, B. Figure 7, a similar section through the standards or supports at the opposite end or back of the feeder on the line C, D. Figure 8, a horizontal section of the standard or framing supporting the cutter wheel taken on the line E, F. Figure 9, a front elevational view of the feeder. Figure 10, an elevation of the opposite end or back of the feeder. Figure 11 are enlarged views of one of the cutters and cutter sockets or holders, shewing the manner of fixing them to the rim of the wheel. A is a wheel or drum, upon the outer face or periphery of which are placed a number of the cutters *k, k, k*; these cutters are secured into the holders *i, i, i*, in the manner more clearly shewn in Figure 11, or the cutters may be fixed by any convenient means. D is a standard or framing. B is the front standard of the feeder, which, on account of its receiving the force of the blows from the cutters, we call the chopping block. C, C, standards for supporting the opposite end of the feeder. *e, e*, drums or rollers round which the feeding band *f* passes; *t*, the driving pulley, imparting rotary motion to the rollers or drums *e, e*. *h* is a second endless band passing round the drums *g, g*, for the purpose of carrying away the wood after it is cut. *p, p*, pulleys through which rotary motion is given to the drums *g, g*. Rotary motion is first communicated to the main driving shaft *l*, thence by means of the drums *l'* and *n*, and the band *m*, to the cutter wheel A, and through the bands *o, r*, and pulleys *p, t*, and *q*, to the carrying away band and feeder. On reference to Figure 2 it will be observed that the upper surface of the chopping block is faced with steel, and inclined upwards towards the cutter wheel, this is to counteract any tendency the wood might have to fall out towards the wheel, but this slope being given to the top of the chopping block involves the necessity of raising the cutter wheel to such a position that a line drawn along the top of the wood upon the slope, if extended outwards from the feeder, would pass through the centre of the wheel, in order that the cutters may strike the wood at right angles to their upper surface. A trough of wood or metal is placed on each side and underneath that portion of the endless band *f*, upon

Thomson & Elms' Improvements in Machinery for Cutting and Tying up Fuel.

which the blocks of wood rest, to support and guide them to the top of the chopping block. x, x , are similar guide plates on each side of the carrying away band h . x^1 an inclined trough for the purpose of guiding the wood while falling from the cutters fairly on to the band h . The action of the machine is as follows:—Motion being communicated to the cutter wheel, carrying away 5 band, and feeder, in the manner already described, blocks of wood sawn to the required length are placed upon the feeding band, which carries them up to the cutters, the speed of the feeder being so arranged by varying the diameters of the several pullies. In the machine shewn in the Drawings eight cutters are placed upon the wheel. The speed of the feeder is so arranged that it advances 10 four inches to each revolution of the cutter wheel, so that supposing the blocks to be three inches broad, they will be cut into slips or slabs six inches by three inches, and half an inch thick, to be carried away on the band h to a second machine indetical in construction with that already described. Six of these slabs must then be taken up by the person in attendance and placed 15 edgeways on the feeding band, in the manner shewn in Figure 9; this second operation would reduce the wood to pieces each six inches long by about half an inch square, ready to be tied up into bundles for sale. It will be evident to a mechanic that the machine described may be varied in the details of its construction; and sometimes in combination with the cutters k, k , on a 20 wheel, we employ portions of circular saws to make a cut at right angles with the cuts made by the cutters k , and thus would the use of two machines in succession be avoided. This will readily be understood by reference to Figure 17.

The second part of our Invention consists of certain improved machinery to 25 facilitate the operation of tying up the bundles of wood for the convenience of sale. Figure 18 represents a side elevation; and Figure 19 a plan or top view of the machine. Figure 20, an end elevation. Figure 21, a horizontal section of a portion of the machine taken through the centre of the cells wherein the wood is placed to be compressed and tied up. Figure 22, a 30 transverse section through the machine at A, B, Figure 18. This view represents the upper compressing frame raised. Figure 23 a transverse section, the same as Figure 22, excepting that the compressing frame c is forced down close on the body of the machine. The action of the machine is as follows:—The end of the cord on the rollers a, a , is passed along the tops of the grooved 35 standards b, b, b , and secured at the opposite end of the machine by the small pins c, c . The machine being in the position shewn at Figure 22, with the upper frame c slightly raised, the boy or person in attendance on the machine then passes his hand into the cell No. 1, and draws down the cord temporally,

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fastening it at the bottom of the cell, if necessary, by the pin *p*, while the cell is filled with wood, as seen in the Drawing; he then withdraws the pin and passes on to the next cell, No. 2, and so on to the end of the machine. The pins *p, p*, for the purpose of temporarily retaining the cord at the bottom of the
5 cells may be dispensed with, if desirable, the cord being held down by the operator with one hand while he partially fills the cell with the other hand. When the cells are all filled the frame *c* is forced down by the screw and lever *s, s*, thus compressing the wood into smaller spaces; the cord is then cut at *b, b, b*, and tied over each bundle; when the pressure of the screw *s* being
10 released the frame *c* will be raised by the springs placed at each corner of the machine, when the bundles may be removed. In the Drawings annexed we have shewn the machine double, so that one or more persons may be working at the same time on each side of the machine; this may be varied; but the rollers *a, a*, may be caused by springs to keep the cord pretty tight during the
15 operation of filling the machine.

Figures 24, 25, 26, and 27 represent another system of compressing and tying up the bundles. This improvement consists in forcing the wood through a conical chamber, and tying them whilst held at their greatest degree of compression. The machinery will be readily understood by reference to the Draw-
20 ings. The wood is supplied to the chamber B through a hopper of any convenient height, when it is forced forward by the plunger *c* through the conical part of the cylinder *f*, the stroke of the plunger being so arranged as to leave a bundle projecting about half its length from the end of the cylinder at each stroke, in the manner shewn in Figure 25, in which position it is tied
25 with string, or otherwise secured by a wire or metallic band, the succeeding stroke of the plunger *c* forcing the bundle clear of the cylinder. *g* is an endless band passing round drums for the purpose of receiving and carrying away the tied bundles as they successively fall from the machine.

Having thus described the nature of our several improvements, and the
30 manner in which the same are to be performed, we wish it to be distinctly understood that we do not confine ourselves to the precise details shewn and described, so long as the peculiar character of any part of our Invention be retained; and what we claim is,—

First, the combining cutters with the periphery of a wheel or drum for the
35 purpose of cutting firewood, together with suitable means for feeding blocks of wood up thereto.

Secondly, the combination of saws and cutters so placed upon the periphery of a wheel or drum as to make a cut at right angles to each other.

Thomson & Elms' Improvements in Machinery for Cutting and Tying up Fuel.

Thirdly, the arrangement of machinery herein described for tying firewood up into bundles for sale.

We also claim the system of tying up wood shewn in Figures 24, 25, 26, and 27, whereby the wood is successively forced through a conical chamber, and tied, or otherwise secured, while held at its greatest compression. 5

In witness whereof, we, the said George Thomson and James Elms, have hereunto set our hands and seals, this Twenty-eighth day of September, in the year of our Lord One thousand eight hundred and forty-nine.

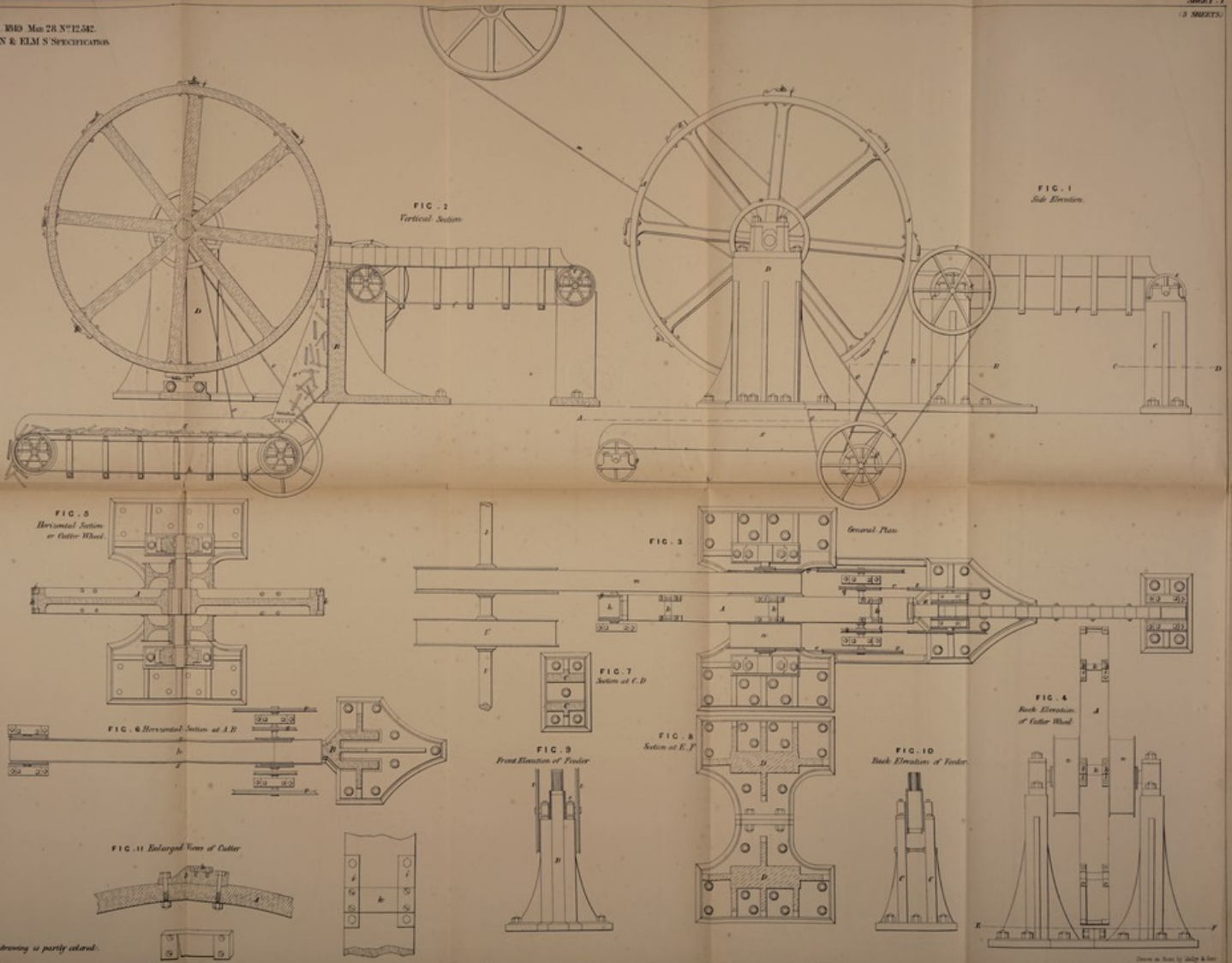
GEORGE (L.S.) THOMSON. JAMES ELMS. (L.S.)

AND BE IT REMEMBERED, that on the Twenty-eighth day of September, in the year of our Lord 1849, the aforesaid George Thomson and James Elms came before our said Lady the Queen in Her Chancery, and acknowledged the Specification aforesaid, and all and every thing therein contained and specified, in form above written. And also the Specification aforesaid was stamped according to the tenor of the Statute made for that 15 purpose.

Enrolled the Twenty-eighth day of September, in the year of our Lord One thousand eight hundred and forty-nine.

LONDON:

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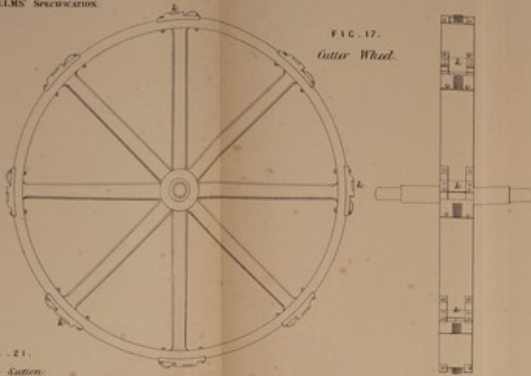


FIG. 17.
Gutter Wheel.



FIG. 21.
Horizontal Section
of Gutter.

FIG. 18.
Front Elevation of Tying-up Machine.

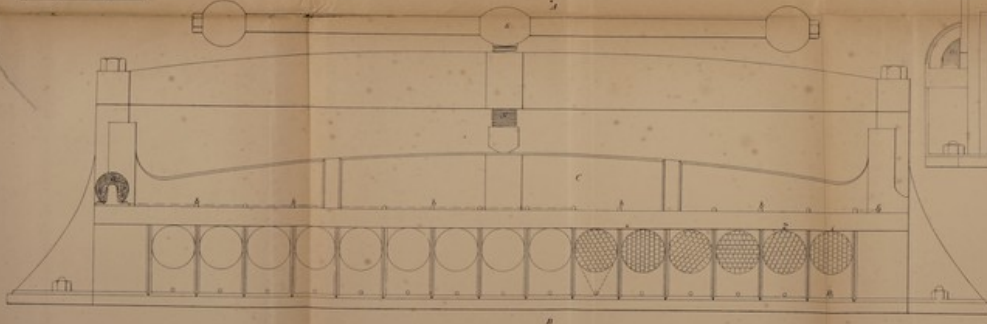
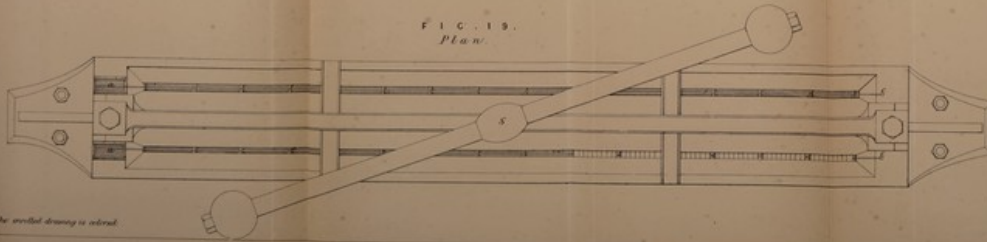


FIG. 19.
Plan.



The dotted drawing is internal.

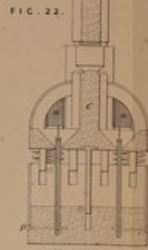


FIG. 22.

Transverse Section of Tying-up Machine
at A.B.



FIG. 23.

FIG. 20.
End Elevation.



FIG. 12.
Side Elevation of Sawing Bench.

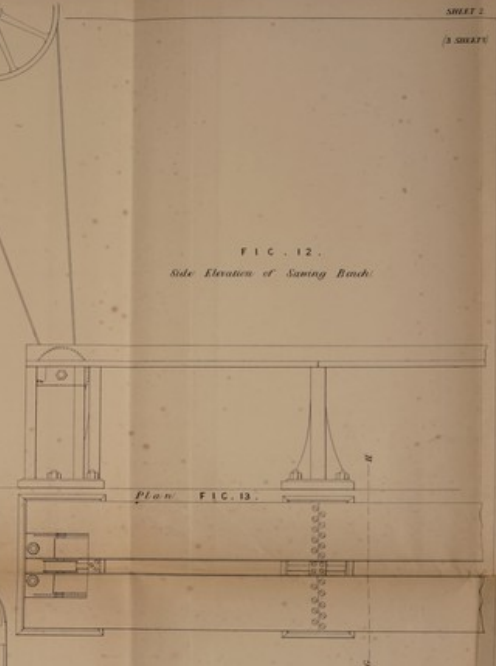


FIG. 14.
Plan, upper Plate away.

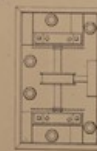


FIG. 15.
End Elevation.

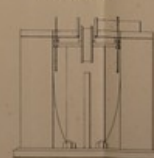
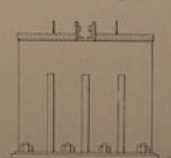
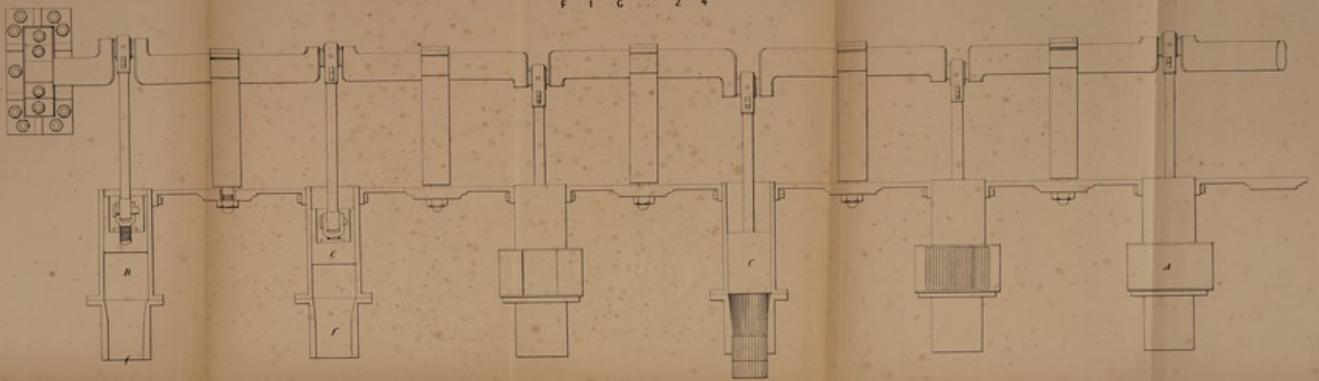


FIG. 16.
Section at G.H.

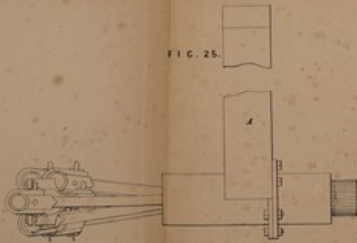




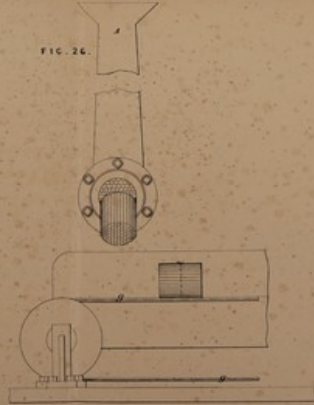
F I G . 2 4



F I G . 25.



F I G . 26.



F I G . 27.

