19,00,000) for Rs. 445,000. It contains 349 looms and 6,568 spindles, and employs 2,572 hands. It has large reserve funds, and has paid very high dividends. The agents are Messrs. Bird and Co.

19. THE HOOGHLY MILLS were floated by Messrs. Gillanders, Arbuthnot and Co. in 1882, and began to work in 1884. The paid-up capital is Rs. 10,50,000. The mill contains 300 looms and 5,916 spindles, and employs 1,816 hands. There are debentures for Rs. 600 000. This concern works full time, and does not belong to the Association.

20. THE KANKNARRAH COMPANY was floated by Messrs. Jardine, Skinner and Co. some time in 1882. The paid-up capital is about Rs. 866,000, and their are debentures for £69.000. The mill contains 310 looms and some 6,000 spindles. The hands are 2,956.

21. THE TITAGHUR COMPANY is an offshoot of the Dundee Samnuggur Company, and was floated in 1882. The agents are Messrs Thomas Duff and Co., Limited. There are 260 looms and 5,000 spindles. The number of hands is 1,904, and the mill is one of the finest in India.

22. THE CHUNDER RAMJEE MILL is owned by a native of that name. It was originally the Rustomjee Twine and Canvas Company, then it failed and in 1880 was turned into the Goosey Jute Company. It came to grief in 1886, and was bought by the present owner. It was burnt down in great part last year, but is now pretty well reconstructed. It then contained 230 looms, but will now total up nearly 400. The purchase money was Rs. 500,000. It works full time.

23. THE VICTORIA JUTE COMPANY is a Dundee Company. The mill contains about 160 looms. Messrs. Thomas Duff and Company are the agents. The hands employed are 1,080 in number.

The foregoing mills are all in Bengal, and, save the Serajgunge, in the immediate vicinity of Calcutta.

In Madras there is a small Gunny Bag Mill.

At Cawnpore there is the North-West Provinces Jute Company, the agents of which are Messrs. Beer Brothers. It has lately been enlarged, and contains about 150 looms. The capital is about Rs. 500,000.

The Government return is not as accurate as it should be; there were the same number of mills in 1886-7 as in 1885-6, but one was silent. The Fort Gloster Mills were not closed on account of the breakdown of the engine, but for want of funds. They were closed the beginning of May, 1886, and re-opened about May, 1887. They have since done well.

We may add that the Hooghly Mills are destined for 400 looms; the Kanknarrah for 320; and the Titaghur for about 750—the buildings being about complete for these numbers.

NEW COMPANIES.

ROSE BRIDGE SPINNING COMPANY LIMITED, INCE.

This company has been registered with a capital of £20,000 in £10 shares. Object, to carry out an agreement dated April 12th, between W. and J. Lee and C. Wall, for the purchase of the Rose Bridge Mill at Ince, and the machinery, stock in trade, plant, &c., belonging thereto. The first subscribers are :—

	Shares.
R. Johnson, Makerfield	1
M. J. Ryan, Ince	1
S. Melling, Wigan	1
E. Bolton, Ince	1
R. Hough, Pemberton	1
J. Marsden, Wigan	1
J. Gregory, Ince	1

Registered without articles of association, and, consequently, the regulations of Table A in the first schedule of the Companies' Act apply.

THE RUBY MILL COMPANY, OLDHAM.

Registered by J. Dawson, 125, Union street, Oldham, with a capital of £100,000 in £50 shares. Object, to carry on business as cotton spinners, doublers, weavers, bleachers, dyers, or in any other way to manipulate cotton, flax, wool, jute, silk, or other fibrous substances, and to trade in the products of the company's mills. The following are the first subscribers :—

	Shares.
A. J. Howarth, Longfield House, Oldham	1
H. Lees, Grafton-street, Oldham	1
A. Mills, 78, Stonelegh-street, Oldham	1
A. Mellalew, Kirkfield House, Oldham	1
J. H. Dunkerley, 2, Herbert-street, Oldham	1
R. Bradbury, 82, Ripponden-road, Oldham	1
J. Dawson, 125, Union-street, Oldham	1

Registered without articles of association, and consequently the regulations of Table A in the first schedule of the Companies' Act, 1862, apply.

STANWAY AND CO., LIMITED.

Registered by Arnold Williams and Co., The Vestry House, Laurence Pountney-hill, E.C., with a capital of £10,000 in 9,800 shares of £1 each, and 200 founders' shares of £1 each. Object, to acquire the business of army contractors, military, naval, and general uniform and clothing manufacturers, &c., carried on at the Severn Mills, Shrewsbury, under the style of R. Stanway and Co. The first subscribers are :—

	Shares.
J. T. Cahill, 117, Bridport-place, N.	1
J. Jackson, 3, Inglore-place, Middleton-square, N.	1
J. P. Alleyn, 7a, Laurence Pountney-hill	1
W. Rowe, 16, Hazlewood-crescent, W.	1
R. S. Brooklebank, Suffolk House, Cannon-street	1
E. Shand, 30, St. Mary's-road, S.E.	1
H. W. Hillman, 74, Oakley-square, N.W.	1

The number of directors shall not be less than three nor more than seven. Qualification, 500 shares. The first are Colonel George W. A. Fitzgeorge, A.D.C. (chairman), G. B. Lloyd, E. C. Peele, and A. Stanway (managing director). Remuneration, £200 per annum, to be divided as they may determine, and further £50 after 10 per cent. dividend.

THE MANCHESTER COP DYEING COMPANY, LIMITED.

Registered by Waterlow Bros. and Layton, Limited, 24 and 25, Birchin-lane, E.C., with a capital of £30,000 in £10 shares. Objects, to adopt and carry into effect an agreement dated March 21, made between E. A. Leigh and S. Mason, jun., of the one part, and A. M. Blair on behalf of the company of the other part, for the working of certain letters patent, granted to A. Graemiger, dated August 23, 1887, and any improvements which may be made thereon, and to carry on the business of spinners, dyers, and bleachers. The first subscribers are :—

	Shares.
E. T. Broadhurst, 56, Mosley-street, Manchester	1
E. Hoyle, Moorlands, Bacup	1
C. E. Middleton, The Newlands, Adlington	1
L. L. Keymer, Parker-street, Manchester	1
S. S. Hoyle, India Mills, Bacup	1
E. A. Leigh, 37, Cross-street, Manchester	1
S. Mason, jun., 2, St. Ann's-place, Manchester	1

The first directors are E. T. Broadhurst, E. Hoyle, C. E. Middleton and S. L. Keymer. E. A. Leigh and S. Mason, jun., will join the board after allotment. Remuneration, to be determined in general meeting.

ALFRED NEAL, LIMITED.

Registered by C. Robinson and Co., 4, New Inn, W.C., with a capital of £10,000 in £1 shares. Object, to acquire and develope the business of Alfred Neal, of Leicester, hosiery trimmer, shirt finisher, etc. The first subscribers are :—

	Shares.
G. Brown, 58, Southgate-road, N	1
H. Saxty, 5, Hemingford-road, Barnsbury	1
A. Ash, Temple Chambers	1
W. Chapman, 2, Argyle-square, W.C.	1
H. Miller, Hampton Wick	1
L. Bailey, 39, Alderney-street, S.W.	1
W. Fletcher, 58 and 59, Outer Temple Chambers	1

The regulations of Table A in the first schedule of the Companies' Act, 1862, with slight variations apply.

THE BOMBAY COTTON MARKET.

BOMBAY, MAY 2ND.

There is every prospect of the export for the half year reaching 1,100,000 bales.

	1889. Bales.	1888. Bales.	1887. Bales.
Receipts this week	65,000	57,000	70,000
,, since Jan. 1	1,209,000	916,000	1,013,000
Exports Gt. Britain ..			
week	15,000	10,000	18,000
,, since Jan. 1	256,000	130,000	201,000
,, Continent ..			
week	55,000	26,000	42,000
,, since Jan. 1	617,000	384,000	436,000
On shipboard	40,000	29,000	52,000

Freights to Liverpool, steam, 20s.; Havre, 21s. 3d. Exchange: Three months sight credits on London, 1s. $4\frac{5}{16}$d.; three months sight credits on Paris, 1f. 72c.

Gazette News.

RECEIVING ORDERS.

A. W. Cox, Maddox-street, London, gold laceman.
H. and W. Schofield, Wakefield, cotton doublers.

FIRST MEETINGS.

J. Irving, Liverpool, merchant; May 9.

NOTICES OF DIVIDENDS.

J. Blake, Queen's-road, Manchester, and Newton Heath, boiler and safety valve maker; 1s. (fourth).

At a meeting held on Thursday of the creditors of Messrs. John Carr and Sons, yarn agents, of this city, an offer of 10s. in the pound (5s. in 14 days and 5s. in two months) was submitted by the debtors for acceptance.

Patents.

APPLICATIONS FOR PATENTS.

The names in italics within parentheses are those of Communicators of Inventions.

Where Complete Specification accompanies Application an asterisk is suffixed.

15TH APRIL.

6434. OLIVER IMRAY, 28, Southampton Buildings, Chancery Lane, London. Production of an imide compound of fluorescein chloride and of colouring matters therefrom. (*The Farbwerke vorm. Meister Lucius and Bruning*, Germany.)

6435. OLIVER IMRAY, 28, Southampton Buildings, Chancery Lane, London. Production of Colouring matters. (*The Farbwerke vorm. Meister Lucius and Bruning*, Germany.)

6443. EUGENE AUGE, 47, Lincoln's Inn Fields. Improvements in the manufacture of soda alum.

6444. HARRY FRANCIS AINLEY, 6, Bream's Buildings. Improvements in button-hole attachments for sewing-machines

16TH APRIL.

6478. HENRY BROOKS BROADHURST, Ten Acres Mill, Newton Heath, Manchester. Improvements in looms for weaving.

6483. THOMAS SHEWARD PERCY, 77, Colmore-street, Birmingham. Improvements in sewing-machines.

6485. EDWARD WRIGHT WRIGLEY and ROBERT PATTERSON, 8, Quality Court, London. Improvements in flats employed in carding engines.

6486. EDWARD WRIGHT WRIGLEY, ROBERT PATTERSON and HENRY TAYLOR, 8, Quality Court, London. Improvements in or applicable to throstles, ring frames and other analogous machinery.

6488. JOHN DAWSON, Kirkheaton, near Huddersfield. Process for the separation of thioparatoluidines (thiodines) by treatment with sulfocarbon.

6491. CHARLES OSCAR ANDREAE, 5 and 6, Hart-street, Mark-lane, London. Process for the purpose of cleansing crystals soluble in water from adhering mother lye. (*August Seyferth*, Germany.)

6519. WILLIAM PHILIPS THOMPSON, 6, Lord-street, Liverpool. Improvements in or relating to rotary shuttles for looms and mechanism for actuating the same. (*T. H. Mahr*, Germany.)

17TH APRIL.

6551. WILLIAM BRIERLEY and ROBERT HOPWOOD, 4, Yorkshire-street, Rochdale. A machine or apparatus for damping or dewing paper, textile fabrics, yarn, or other analogous articles.

6559. ARTHUR ALBERT WEBB, 43, Harding-street, Smethwick. Improvements in sewing or other light machines, which is a balance lever to assist the treadling of sewing machines.

6589. JOHN JAMES HUMMEL, 6, Lord-street, Liverpool. New or improved red dye or pigment, and process for making and applying the same.

18TH APRIL.

6621. JOSEPH JONES, 4, St. Ann's Square, Manchester. Improved apparatus to be employed for grinding the "flats" of carding engines.

6626. JAMES SMITHIES, 160, Oldham-road, Tonge, Middleton, Lancashire. Improvements in shot jack motions for smallware looms.

6630. EDWARD CROWTHER, Market Place, Huddersfield. Improvements in picking arms employed n looms for weaving.

6634. THE NOTTINGHAM MANUFACTURING COMPANY, Ld., JOHN GROVES, and JAMES WHATNALL, 55 and 56, Chancery-lane, London. Improvements in knitting machinery.

6639. EDWIN ROTHWELL and WILLIAM ANDREW ROTHWELL, 17, St. Ann's Square, Manchester. Improvements in sectional warping machines.

6652. CARL OSCAR KRAMER, 41, Eastcheap. An improved contrivance for preventing weaving shuttles from slipping out of their ways.*

6691. JOHN UPSDALE, 24, Southampton Buildings, London. Improvements in the manufacture of glove and other fabrics in traverse warp machines.

20TH APRIL.

6701. FREDERICK WILKINSON, 17, St. Ann's Square, Manchester. Improvements in travelling flat carding engines.

6706. GEORGE MILLIGAN, of the Firm of H. C. MCCREA and Co., and GEORGE HERBERT BRIGGS, Commercial-street, Halifax. Improvements in jacquard looms for weaving tapestry, worsted coatings, and other heavy worsted fabrics.

6715. William Henry Hacking, 1, St. James' Square, Manchester. Improvements in drop box motions for looms.

6717. Robert Moulding, 64, Barton Arcade, Manchester. Improvements in apparatus for transmitting woven piece goods from one operation to another, during the process of finishing, bleaching, or dyeing.

6718. Thomas Pickles and Joseph Henry Pickles, 64, Barton Arcade, Manchester. Improvements in calendering apparatus.

6722. Spencer Calvert, 58, Low-street, Keighley, Yorkshire. Improvements in, and in means applicable for, the manufacture of cord or twine.

6723. William Hurst, 18, St. Ann's-street, Manchester. Improvements in, and in apparatus for, conditioning, damping, or moistening yarns or threads, and woven or other fabrics.

6762. Frederick John Brougham, 46, Lincoln's Inn Fields, London. Improvements in the manufacture of paper bobbins. (*Messrs. Aat Brothers*, Germany.)

23rd April.

6765. Thomas Hale, Commercial-street, Halifax. Improved apparatus for twisting, doubling, and reeling yarns or threads.

6774. Samuel Green, 12, Cleveland Terrace, Willenhall-road, Wolverhampton. An improved lubricator for automatically applying solid lubricant to machinery.*

6777. James Edward Bedford, 9, Cardigan-road, Leeds. Improvements in the manufacture of colouring matters.

6778. James Edward Bedford, 9, Cardigan-road, Leeds. Improved apparatus for the production of colouring matters.

6779. Emery Haworth, 51, Stanley-street, Nelson, near Burnley. Improvements in weaver's shuttles and shuttle tongues.

6791. Prosper Monnet, 55 and 56, Chancery lane, London. The preparation of thiophtaleines and the new colouring matters which are derived therefrom.

6793. Societe Simonis et Chapuis, 1, Castle-street, Holborn, London. A new or improved machine for drying and carbonizing wool and other textile matters in combination with an elevator and a purifiying and cleaning apparatus.*

6798. John Mortimer, 323, High Holborn, London. Improvements in or relating to shuttles for weaving.

6803. Moses Henry Day, 45, Southampton Buildings, London. Improvements in machinery for forming and reeling ropes or strands.*

24th April.

6827. Henry Ledger, 8, King-street, Leek, Staffordshire. Improvements in the process of obtaining, treating, and bleaching of fibres and fibrous materials from plants, and textile fabrics, and materials of vegetable origin, and the recovery of waste products therefrom.

6835. Henry Isitt, 4, St. Ann's Square, Manchester. Improvements in carding engines.

6868. George William Grosvenor, 24, Southampton Buildings, Chancery Lane. Improvements in looms for weaving pile fabrics.

6876. Victorien D'Aoust, 34, Southampton Buildings, London. Improvements in apparatus for dyeing wool on bobbins and textile fabrics in like form.

25th April.

6890. Richard Hardman, 4, St. Ann's Square, Manchester. Improvements in dressing yarn for weaving, and in apparatus employed therefor.

6892. Charles Johnson Bullock, 1, St. James' Square, Manchester. Improved means for renovating cloth.

6903. Siegmund Loewe, (representing The Sewing Machine Company) and John Fox, 49, Fore St., London. Improvements in shuttle carriers or drivers for sewing machines.

6905. Peter Brimelow, Town Hall Buildings, Halifax. Improvements in apparatus for driving the friction motion and weaver's beam in sizing machines.

6911. Bruno Naumann, 47, Lincoln's Inn Fields, London. An improvement in sewing machines.

6940. Edmund Edwards, 35, Southampton Buildings, Chancery Lane, London. An improved automatic shuttle guard for looms. (*Julius Dannenberg*, Germany.)

26th April.

6969. Benjamin Berry and Daniel Bateman Briggs, 128, College Road, Bradford, Yorkshire. Improvements in rotary (Noble's) combing machines for combing wool, worsted, silk, or any other textile materials.

6978. Ernst Wilhelm Alexander Bar, 142, Fleet-street, London. A new or improved device for obviating the ejection of the shuttles in looms.

27th April.

7021. George Hunter, 153, Crumlin-road, Belfast. A new arrangement for regulating the position of retaining rollers in spinning frames for flax or other fibres.

7024. Henry Isitt, 4, St. Ann's-square, Manchester. Improvements in carding engines.

7031. Arthur Spiegelberg, 87, St. Vincent-street, Glasgow. Improvements in machines for breaking or treating flax and similar textile materials.

7045. Thomas Walter Harding, Tower Works, Leeds. Improvements in the comb cylinders of Heilmann combing machines.

7058. Baldwin Wallace Weatherdon, 11 and 12, Southampton Buildings. An improved combination and mode of treating hemp, flax, jute, and other fibres, and employing the same for roofing purposes. (*Thomas Alfred Compere*, Italy.)

SPECIFICATIONS PUBLISHED.

1888.

5277 Paget. Warp machines. 2s. 8d.
7330 Thompson. Darning stockings, &c. 8d.
8013 Fontaine. Sewing machines. 8d.
8541 Kiddier. Knitting machines. 1s. 1d.

1888.

4887 Figge. Cleaning vegetable fibres. 8d.
6277 Clarke and Mawdy. Hosiery, &c. 1s. 6d.
6605 Cooper and others. Stockings. 8d.
7552a Willcox (*Willcox and Gibbs Sewing Machine Co.*). Sewing machines. 11d.
7593 Goodbody (*Barber*). Sewing machines. 8d.
8212 Errock and Kenwolthy. Spinning apparatus. 8d.
8231 Newton (*Rieter and Co.*). Embroidery machines. 8d.
8322 Hustler. Working the fallers of fulling stocks of cloth, &c. 11d.

1889.

3264 Koppel & Felber. Imitation furs. 4d.
3538 Haddan. (*Engel*). Sewing machines. 6d.
2381 Rollinson. Weaving shuttles. 6d.
3689 Taylor. Spinning and doubling frames. 6d.
3750 Kohler. Sewing machines. 8d.
3884 Willcox (*Potter*). Cotton openers, &c. 11d.

Amended Specification.

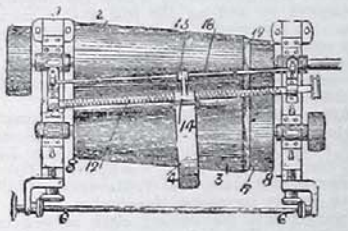
1888.

2532* Singer and Judell. Cleansing wool. 8d.

ABSTRACTS OF SPECIFICATIONS

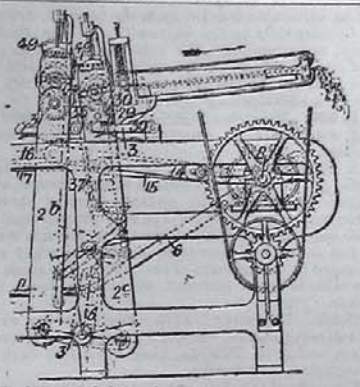
(Selected from the Official Patents Journal).

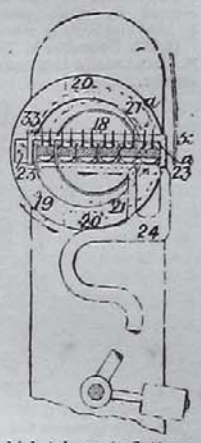
16,813. December 6, 1887. **Friction gearing.** G. F. Evans, Somerville, Massachusetts, U.S.A.



Motion is communicated from one to the other of the conical pulleys 2, 2 by means of an endless belt 4 loosely encircling one of them and gripped between the two. The invention consists:—(1.) In the device for moving the belt along the pulleys in order to vary the speed. A belt fork 14 is formed with a nut embracing the screw 12, which may be rotated by any suitable means. The said fork is kept from rotating on the screw by an arm 15 embracing a rod 16. (2.) In turning down the ends of the pulleys, as at 17, so that the belt, when at that point, will no longer be gripped, and the motion will not be transmitted. (3.) In adjustments for the bearings of the pulley 3, consisting of a lay shaft with a handwheel 7 connected by bevel gear 6 to screw spindles 8 engaging with the bearings. In another modification, a bar, adjustable longitudinally, has inclined surfaces bearing against pins, projecting from the bearings. [8½d.]

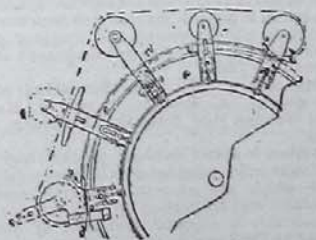
16,818. December 7, 1887. **Opening or preparing Wool, &c.** J. W. Thornton, Cottingley Mill, near Bingley, Yorkshire.





The fibre, fed into the machine by means of an endless apron and feed rollers, is received by a number of pairs of gill heads in succession, said gill heads being given a rising and falling motion and also a to-and-fro motion towards and from one another. The drawing shows one pair of gill heads carried by arms 2^b, 2^c and operated from cams on the driving shaft 8, in the one direction by the levers 6, 5, 3, and in the other by the levers 14, 15; 11, 16 and 17 are links for connecting together pairs of gill heads. The ends of the fallers 18 are supported upon the face of a disc 21 and surrounded by a ring 19 which, by means of projections 20 thereon which take on to flattene parts in the edge of the disc is carried round with it and is capable of moving slightly from side to side. The disc 21 is rotated intermittently through half a revolution by means of a spring catch 31 and pins 30 upon the face of the wheel 29 and suitable gearing. In the position shown in the drawing the ring 19 has been pressed sideways by the spring 55, and the front faller has entered one of the notches 23, 23^a in the ring. The faller is then carried round to the back of the series by the rotation of the ring; the latter, however, moves eccentrically, a pin 33 projecting from it taking over the curved surface 21^a, thus forcing the series of fallers forward; 24 is a fork upon the end of a weighted lever, which serves to steady the faller as it is transferred from one end of the series to the other. A comb 35 is placed between each pair of gill heads and is reciprocated vertically in one direction by a spring or weight and in the other by a system of levers operated from the arm 5; 49 are dabbing brushes operated in a similar manner. A horizontal bar for cleaning the fallers and lifting up the fibres thereon is reciprocated at each oscillation of the machine by an adjustable arrangement of levers, one of which takes against a stop on the frame. [8½d.]

16,829. December 7, 1887. **Carding engines.** W. H. Richardson, Bank View, Derker, and W. Greaves, 279, Park Road, both in Oldham.



In order to enable the carding-engine to be made of less width in proportion to the width of the card surface the bends are mounted so as to be wholly or partially contained within the cylinder, the rings which secure the cylinder to its axle being for this purpose mounted a sufficient distance inside the ends. An annular plate is secured to the end of the cylinder to protect the edges of the flats, and to prevent dirt and fibre from getting into the space between the end of the cylinder and the bend. The flexible bend *e* is mounted at the centre upon a stud, knife-edge, or other suitable support *n* carried

by an adjustable bracket upon the bend *a*. Instead of forming slots in the extremities of the flexible bend, and studs upon the adjustable brackets *o*, *s*, the studs *c*, c^2 are formed upon the bend and the slots o^3, s^3 in the brackets, in order to facilitate inspection and cleaning. [11½d.]

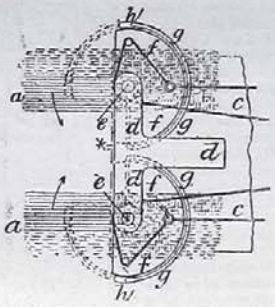
16,836. December 7, 1887. **Ironing or calendering machine.** R. CRAWFORD, 12, Alfred-street, Belfast.

A machine for ironing handkerchiefs, collars, cuffs, &c. One or more heated rollers, formed with grooved or pitted, or like surfaces, revolve above a table moved to and fro by suitable mechanism on slide bars, carried by a frame. The latter is made to rise and fall by eccentrics, coupled together and operated by the traverse of the table. The goods on the table are thus returned without touching the rollers. [8d.]

16,856. December 7, 1887. **Fastener for belts and driving Bands.** P. CALDWELL, Horse Market-street, and J. H. TURNER, Golborne-street both in Warrington, Lancashire.

The ends of the belt are brought together and secured by angle plates, which are tightened by nuts and bolts or other means. [8½d.]

16,883. December 8, 1887. **Weaving cloth.** E. N. MOLESWORTH-HEPWORTH, 29, Cooper-street, Manchester.



The cloth is woven two or more pieces at a time, side by side, the inner selvages being formed by severing the weft threads and tucking or turning the severed ends into the shed. In the loom the warp threads are divided so as to leave the required space between the inner selvages *a*. A plate *c* fixed to the breast-beam carries a bracket *d* with studs *e* and bosses on which are mounted two semi-discs *f* and two bent wires *g* terminating in nippers *h*. The discs are caused, after each beat-up, to turn in the direction of the arrows, so that the nippers enter the shed between the selvage warp and the ordinary warp and seize the weft at the point * and sever it against a fixed knife. The motion of the semi-discs is then reversed, the ends of the severed weft being drawn into the shed, and finally released from the nippers. The severed ends of each pick are thus tucked into the next succeeding shed so as to form perfect selvages. The method of operating the parts is described. [6 d].

16,895. December 8, 1887. **Spinning, &c., machines.** H. WHITWAM and H. TAYLOR, Stanley Mills, Golcar, near Huddersfield.

The object is to enable the attendant to stop the machine at whatever part thereof he may happen to be standing in case of any part of the machine breaking or of any accident happening to himself. The invention is described in connection with a mule. Cords arranged lengthwise of the machine, are connected at the ends to a bar through an aperture in which passes a pivoted vertical web which comes into contact with the ground, and roughing pieces may be attached to this web by countersunk screws or otherwise. [8½d].

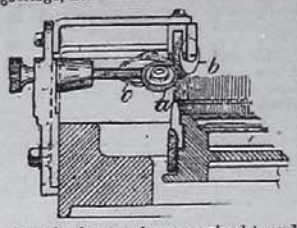
16,911. December 8, 1887. **Stretching woven piece goods.** A. BIRTWISTLE and T. MARTIN, both of Wensley Fold New Mill, Blackburn, Lancashire.

The fabric is passed between parallel bars over one or more rollers, and between other parallel bars, all of which are mounted between uprights. The parallel bars are carried by pins, and are rotated, preferably in opposite directions, by gearing, operated by hand or power. [8½d.]

16,912. December 8, 1887. **Safety door mechanicism for hoist wells.** H. P. LAVENDER, Cleveland-street, Wolverhampton.

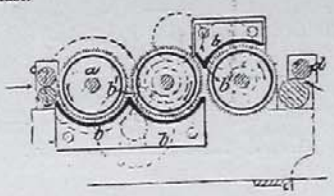
Light gates are formed parallel ruler-wise, so that they can fold up to open access to the cage. The cage carries bow springs, which bring brakes to bear on the rollers to sustain the gates in their open position, but as soon as the gate passes, the gates fall by their own weight, air checks letting them down gradually. [6½d.]

16,942. December 9, 1887. **Stockinette frames.** R. H. LENDRUM and D. DITCH, both of Alma Mills, Thongsbridge, near Huddersfield, Yorkshire.



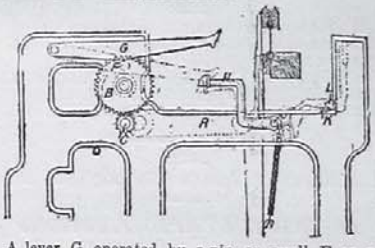
A lifting wheel *a*, turning-over wheel *b*, and clearing wheel *c* are used in addition to the ordinary operating wheels for inserting an intermediate stitching thread, which secures the backing to the fabric. [6½d.]

16,944. December 9, 1887. **Drawing arrangements for flax, &c.** J. BARBOUR, Falls Foundry, Belfast.



The fibre, fed directly or by feed rollers *c*, is drawn by means of two or more cylindrical gills revolving in parallel troughs or shells *b*. The first roller *a*, revolving at a comparatively slow speed, acts as a retaining roller, and the fibre is drawn over the meeting ridges b^1 of the troughs by the remaining rollers. The delivery rollers *d* have about the same surface speed as the final gill cylinder. [8½d.]

16,957 December 9, 1887. **Terry motion for towelling looms.** J. HAYDOCK and W. ROSSETER, Phœnix Iron Works, Blackburn.



A lever G operated by a pin or swell F on a wheel B driven from the crank shaft C operates at intervals on an arm H of the stop rod J. The duck-bill K is thus made to ride above the heater L and the reed is released. The Provisional Specification describes arrangements by which the stop-rod J is operated by shifting the frog at the required times. In fast reed looms the crank arms R may have eccentric connections with the shaft J, so that when the arm H is operated by the lever G the eccentrics are partially turned and the stroke of the lay thus reduced. [8½d.]

16,996. December 10, 1887. **Apparatus for cutting pile fabrics.** J. H. SMITH, 377, Dickenson-road, Longsight, Manchester, A. GODDARD, Livesborg Terrace, Stepping Hill, Stockport, L. HIGGINBOTTOM, 6, Slade-lane, and T. MANNOCK, 17, Albert Grove, both in Longsight, Manchester.

Arrangements for cutting cloth in successive short lengths. The cloth passes from a roller within a drum to another roller within a drum. The lengths to be cut are successively connected to the drums by tightening rollers, and are wound alternately from one drum to the other until the whole width is cut. In a modification of the apparatus, the cloth may be operated from a travelling carriage in such a way as to move at double the rate of such carriage. Arrangements for moving the latter through the exact distance required, and for reversing the motion without shock, are described. To make the "going out" line of the cutting to lie obliquely across the cloth, so as to conceal, as much as possible, the spot where successive cuts join, the cloth is slightly advanced after each cut by coiling it upon one of the tightening rollers. The details of the apparatus may be variously modified. [8½d.]

17,044. December 10, 1887. **Carpets and other pile fabrics.** H. B. HARRIS, 10, Colville Gardens, Bayswater, Middlesex.

Carpets of the Turkish or Indian style and other long pile fabrics are made by inserting woollen tuft yarn in a previously woven webbing which is preferably shrinkable. The ground web is drawn over a bar by means of an ordinary sewing machine feed motion or of endless feed bands operated by adjustable ratchet mechanism, etc. The edge of the bar is rounded and formed with cross-cuts corresponding to the graver pointed oblique eyed needles, which are worked up and down by another bar. The tufting threads are parti-dyed or drum printed and pass from a beam or bobbins through tension and take-up apparatus and through eyes in the bar last-named to the needles. As the latter rise they insert a line of tuft yarns through the webbing and hold it while a series of hook knives advance; the needles then retire, leaving a loop on each hook. A presser bar formed with hooks, etc., then holds the yarn clear of the needle points while the webbing advances and the series of motions is repeated. The loops accumulate on the knives and are cut to produce tufts by the sloping portions which are formed with keen edges. The Provisional Specification describes a different feed motion for the webbing, and also a "clearer" bar for forcing the loops on to the knife edges. [11½d.]

17,102. December 12, 1887. **Dyeing, bleaching, washing, &c., fabrics.** G. A. SCHLEBER, Greiz, i/v, Germany.

Relates to a method of, and apparatus for, uniformly impregnating cloth or other fabrics, by carrying them through the vats while being stretched in the direction of their width and length. Two endless chains, provided with needles, pincers, or tongs, which seize the fabric by its edges, pass over pulleys, the shafts of which pass through two frames, continued into the furthermost vat from the external frame. These frames are supported by rollers running in transverse rails, and are movable towards or away from each other by screw shafts, with right and left hand threads, operated by a hand wheel through various shafts and bevel wheels connected with the frames, and with movable bearings. In the shafts are guide bars for directing the chains to and from the pulleys. The fabric is fed in, seized by the chains, carried thereby in a stretched condition through the vat, and delivered to a folder. [8½d].

17,106. December 12, 1887. **Dyeing aniline black.** J. GRUNHUT, South Shields, Durham.

Relates to improvements in the processes for dyeing in aniline black, cotton, jute, and other vegetable fibres or fibrous materials, described in Specification No. 1,512, A.D. 1887. The materials, whether in the raw, spun, or woven state, are (1) mordanted with solutions of azo colouring matters; (2) dyed with aniline oil, bichromate of potash and hydrochloric acid; (3) impregnated with dilute sulphuric or other mineral or organic acid; or with soap or soda, or soap and soda and azo colouring matters; and (4) treated with solutions of carbonate of soda or potash, or other alkali, or phosphate of soda, and azo colouring matters. [4½d.]

17,126. December 13, 1887. **Screw gill boxes.** J. STAKE, Oxford Road, Siddall, Halifax.

The fallers, on reaching the ends of the upper screw screw shafts are received by a T-headed vertically sliding bar, and by lugs on endless chains or bolts, and are gently lowered, without noise or concussion, into a position to be received by the lower screws. The T-head of the bar may be covered with leather or other suitable material to further deaden the sound. The vertical part of the bar slides in guides in a case, and is pressed upon laterally by bars, operated by springs, the pressure of which is such as to retain the bar in any desired position and to allow it, when loaded with a faller, to descend slowly. It is raised to its highest position by a cam. [8½d.].

17,143. December 13, 1887. **Raising pile and other fabrics.** J. WORRALL, Ordsall, Salford, and J. KERSHAW, Hebden Bridge.

The fabric is fed in from the side of the machine over guide-bars and a roller, and is acted upon by a rotary brush or card roller, as it is drawn over a diagonal bar. A short smoothing roller underneath the bar is driven by a band from a cross-shaft, operated by worm gearing from the shaft of the brush, and the latter is driven by a band from the main shaft. [11½d.]

17,146. December 13, 1887. **Needle for leather, &c.** O. HEYNOLD, Lucka, Germany.

The head is split longitudinally, the sides being sprung apart slightly. The thread, etc., is inserted in this slit, and retained, when the needle is passing through the leather, by a projection, which is placed opposite a corresponding recess. Or the thread may be knotted and the knot held in a recess formed in the sides of the head. [6½d.]

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