Sheet 1. 3 Sheets

E. Lord.

Lapping Mach.

No. 52,008. Patented Jan. 9, 1866.

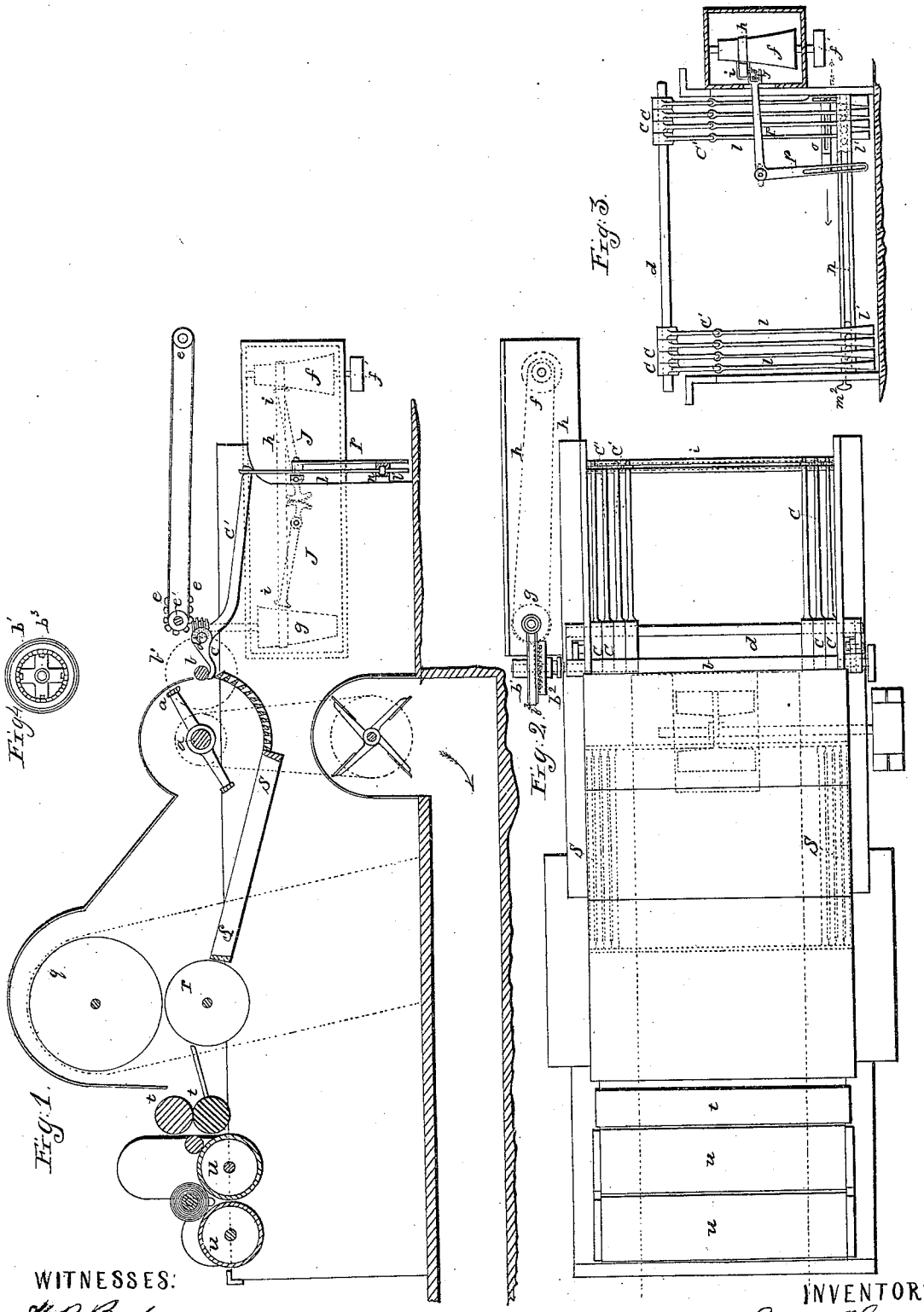

Fig. 1.

Fig. 2.

Fig. 3.

Fig. 4.

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Sheet 2. 3 Sheets.

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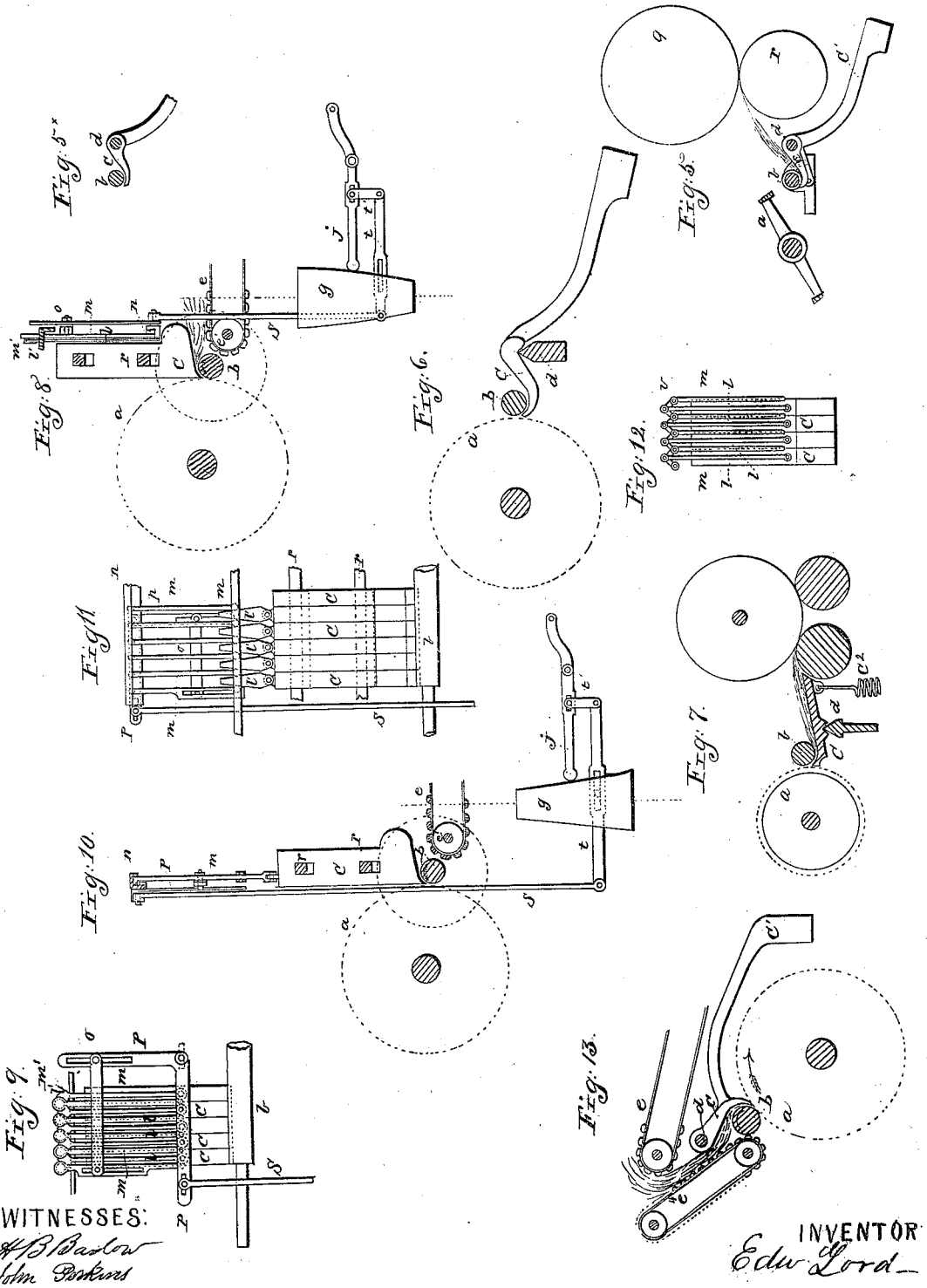

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Sheet 3. 3 Sheets.

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Lapping Mach.

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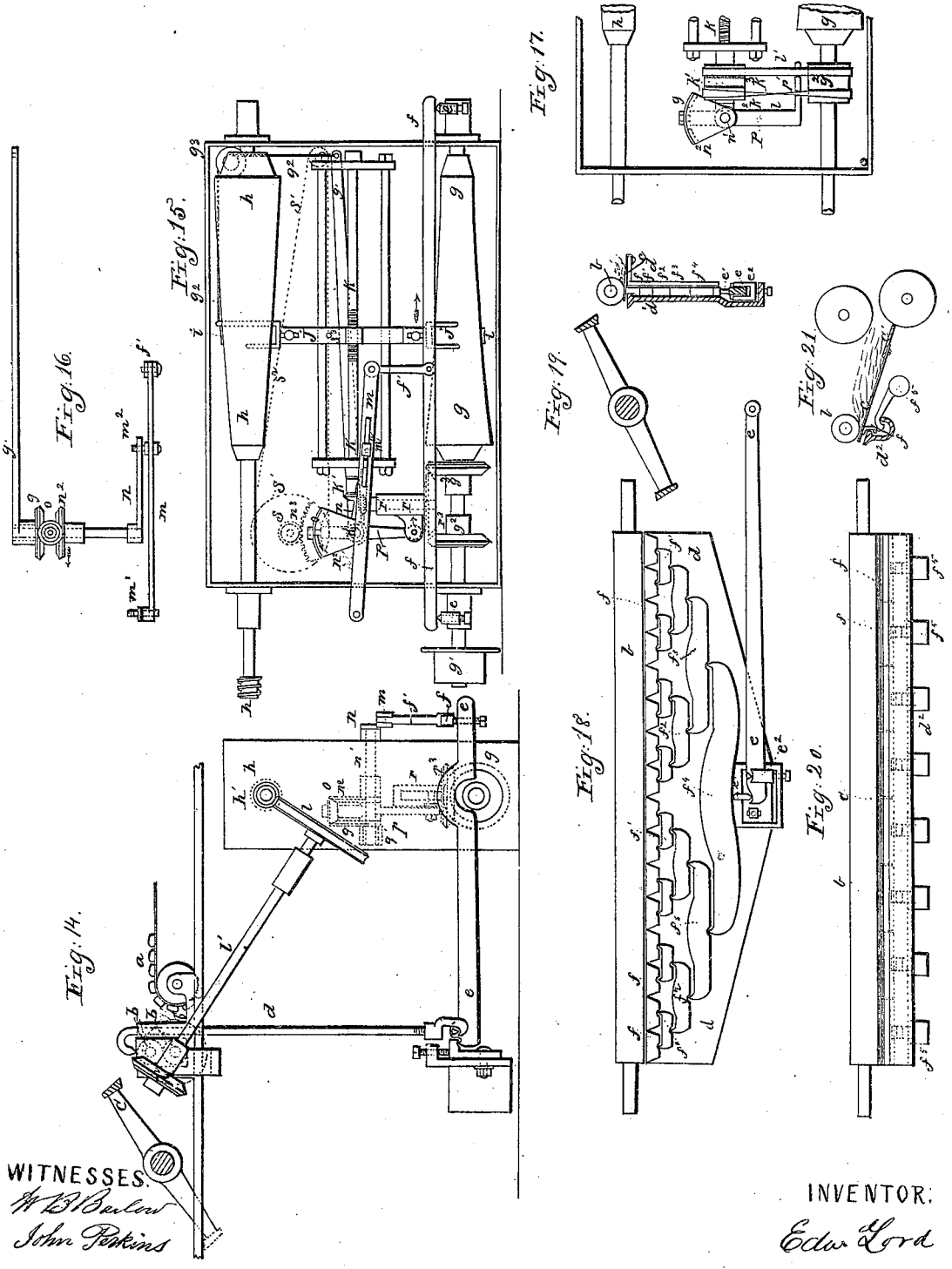

WITNESSES:
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John Perkins

INVENTOR:
Edw. Lord

UNITED STATES PATENT OFFICE.

EDWARD LORD, OF TODMORDEN, GREAT BRITAIN.

IMPROVEMENT IN CLEANING COTTON AND OTHER FIBROUS SUBSTANCES.

Specification forming part of Letters Patent No. **52,008**, dated January 9, 1866.

To all whom it may concern:

Be it known that I, EDWARD LORD, of Todmorden, in the county of York, England, machine maker, have invented certain new and useful Improvements in Machinery for Cleaning and Preparing Cotton and other Fibrous Substances; and I hereby declare the following to be a full, clear, and exact description thereof, reference being had to the annexed sheet of drawings, forming part of this specification.

The first part of my invention is applicable to the feeding apparatus of openers, blowers, scutchers, carding-engines, and other machines employed in cleaning or otherwise preparing cotton and other fibrous substances that are supplied with a fleece or web of fibrous substances; and it consists in supporting the feeding-trough or concave plate over which the fleece of fibers passes on a center. This trough or plate is either made in one piece, as heretofore customary, or it is divided lengthwise into any convenient number of parts, and the entire trough or each separate part is acted upon by a weight or spring, the object of these weights or springs being to press the fibers between the trough or plate and the feed-roller, so as to prevent the fibers being drawn forward unevenly by the beater or licker-in or other revolving drum or roller acting upon them. The feeding trough or plate, or the divisions of which it is composed, may also be pressed against the feed-roller by weights or springs without vibrating on a center. The variations in the quantity of fibrous substances fed to the machine produce a variation in the distance between the trough or plate, or of the various divisions forming the trough or plate and the feed-roller, and these changes in the position of the trough or plate, acting on levers, produce the variations in the position of the cone-strap on the regulating-cones, and thus increase or diminish the quantity of fibrous substances supplied to the machine.

The second part of my invention, also applicable to blowers and other machines of the like nature, consists in making the grating between the beater and wire-cage with longitudinal instead of transverse bars.

In the drawings, on Sheet 1, Figure 1, is a section through a blower or scutcher of the ordinary construction, to which my improvements are applied. Fig. 2 is a plan, and Fig. 3 an end view, of the same.

a is the beater, and *b* is the feed-roller, the surface of which is made, by preference, rough by turning annular or spiral grooves on its circumference, which grooves are intersected by longitudinal grooves, or the rough surface may be produced in any other manner. This roller revolves in stationary bearings, and is not weighted, as now customary.

c is the feeding-trough or concave plate, which is divided lengthwise into any convenient number of parts. I have found, in practice, that by making each part one inch and a half wide a good result is obtained. All the parts of the trough are mounted loose on the cross-shaft *d*, the ends of which are supported in pedestals on the frame sides, and the weighted ends *c* of the parts of the trough are sufficiently heavy to compress the cotton or other fibrous substance between the trough and feed-roller. By this means the fibers, when delivered by the feed-roller to the beater, are drawn forward evenly, whereas when the feeding-trough is made in one piece, as heretofore customary, any lump or uneven part in the width of the fleece, by preventing an equal pressure throughout, allowed portions of the fleece to be drawn through unevenly.

e is the feeding-apron for supplying the fibrous substances to the machine, passing, as usual, over the rollers e' and e^2.

f is a cone-drum, to which a uniform rotary motion is given by a strap passing round the pulley f'. The cone-drum *f* gives motion to the cone-drum *g* by means of the strap *h*, which is guided by the forks *i* fixed to the levers *j*, vibrating on fulcrum-studs. On the shaft of the cone-drum *g* is fixed a worm gearing into the worm-wheel b'. This wheel (shown detached in Fig. 4) revolves loose on on the axle of the feed-roller *b*, but it is connected to it, when required, by the sliding clutch-box b^2, on the face of which are four projections, taking into recesses in the cross-piece b^3, which is keyed on the axle of the feed-roller *b*. The sliding clutch-box is moved to and fro by a lever which is connected to the usual knocking-off

lever. When the lap is full the clutch-box b^2 is drawn out to gear with the clutches on the face of the worm-wheel b', thereby instantly stopping the feed-roller b when the knocking-off lever comes into operation.

The ends c' of the parts forming the trough c terminate in a hook, to each of which is suspended a rod, l. The lower ends, l', of these rods are wedge-shaped, with the broad part downward. Between the wedges l' are placed little rollers, which are held in grooves in the rails n. The last of the rods l, at the left-hand side of Fig. 3, is held in position by the tail of the set-screw m^2 passing through the frame side, and the last rod at the other side of the machine is provided with a slot in which is a stud for the link o, the other end of which is jointed to a stud passing through the slot in the vertical arm of the elbow-lever p. The horizontal arm of this elbow-lever is provided with a fork taking on the cone strap-lever j. The fulcrum-stud of the elbow-lever p is adjustable in a slot, as shown by dotted lines, and the link o and the horizontal arm of the lever p are made in two parts, connected by bolts to compensate for the requisite adjustment of the parts.

Between the grid partly surrounding the beater a and the perforated or wire-gauze cylinders q and r, is the grid s, the bars of which are at right angles to the axis of the beater, and consequently afford greater facility for the escape of dirt and other foreign matters mixed with the cotton than when they are parallel to the axis of the beater. After the cotton has passed between the cylinders q and r it is taken between the calender-rollers t, and thence it is formed into a lap by the lap-rollers w in the ordinary manner.

The mode of operation is as follows: The various parts of the machine are shown in the positions they occupy when about the requisite quantity of fibrous substances is being supplied to the feed-roller b by the feeding-apron e. In order to retain the cone-strap k in this position it is not essential that the feed should be uniform throughout the width of the machine, for it is evident, if some of the parts of the trough c are depressed by an excess of fibers, and a corresponding number of others rise, owing to the feed being too thin in other parts, then the rising of some of the wedges l' will be compensated for by the depression of the others; but if the aggregate amount of fibers supplied to the feed-roller be too great it becomes necessary to reduce the speed of the said feed-roller, and to accomplish this the cone-strap has to be raised up the cones. This is accomplished in the following manner: As soon as any number of the parts of the trough c have been depressed, owing to the excess of feed, the wedges l', in rising, act on the small rollers in the rails n, and cause the rods l to incline slightly toward the right-hand side of Fig. 3. These rods cannot incline in the contrary direction, being held by the set-screw m^2. The combined action of all the wedges l' acting on the last rod l causes it to draw the link o and elbow-lever p in the direction of the dotted arrow, thus raising the horizontal arm of the elbow-lever and moving the strap h up the cones f and g until the speed of the feed-roller is reduced, so as to correspond with the feed. The contrary action takes place when, the feed being too light, the speed of the feeding-roller b requires to be increased. In this case the parts of the feeding-trough c, on approaching the feed-roller, cause the wedges l' to lower and allow the rods l to incline in the contrary direction, thus moving the elbow-lever in the direction of the full arrow and lowering the strap on the cones.

Fig. 5 represents part of a blower or other machine of the like nature, which is supposed to have two or more beaters. q and r represent the perforated cylinders. a is the second beater; b, the feed-roller; c, the feeding trough or plate, formed of any convenient number of parts, mounted on the shaft d, as above described, in reference to Fig. 1. The bearing of the shaft d should in all cases be adjustable, so as to be able to vary the distance between the nip of the roller and the edge of the trough or plate, over which the fibers are struck. In this view the bearing of the shaft d is cast with a plate, which is jointed to the bearing of the feed-roller and secured to it by a bolt passing through a segmental slot. The weighted ends c' are sufficiently heavy to compress the cotton or other fibers against the roller b.

Fig. $5^{\times}$ shows the trough or plate C with a straight portion between the nip of the feed-roller and the point over which the fibers are struck.

I wish to remark that my improvements in the construction of the feeding-trough are equally applicable to carding-engines and to other machines employed in cleaning or preparing cotton and other fibrous substances, in which a fleece or web of fibrous substances is supplied to a licker-in or other roller or beater.

Having thus stated the nature of my invention and described the manner of performing the same, I declare that what I claim as my invention, and desire to secure by Letters Patent of the United States of America, is—

1. The longitudinal grate-bars (marked s in Figs. 1 and 2) forming the grid between the beater and the perforated cylinders of a blower or scutcher for cleaning cotton and other fibrous substances.

2. Dividing the feeding-trough or concaved plate, over which the fleece of fibers passes to the beater, licker-in, or other revolving drum or roller of machines used in preparing cotton and other fibrous substances, into two or more parts, as described.

3. Supporting the feeding-trough or concave plate, over which the fleece of fibers passes to the beater, licker-in, or other revolving drum or roller on a fulcrum or center and weighting it, whether such feeding-trough or concave plate be made in one piece or divided into two or more parts, as described.

In testimony whereof I have hereunto set my hand, before two subscribing witnesses, this 26th day of September, in the year of our Lord, 1865.

EDW. LORD.

Witnesses:

H. B. BARLOW,
Patent Agent, Manchester.

JOHN PERKINS,
Draftsman, Manchester.