

J. H. CONNELLY.
Lamp Wick Machine.

No. 43,097.

Patented June 14, 1864.

Fig. 1,

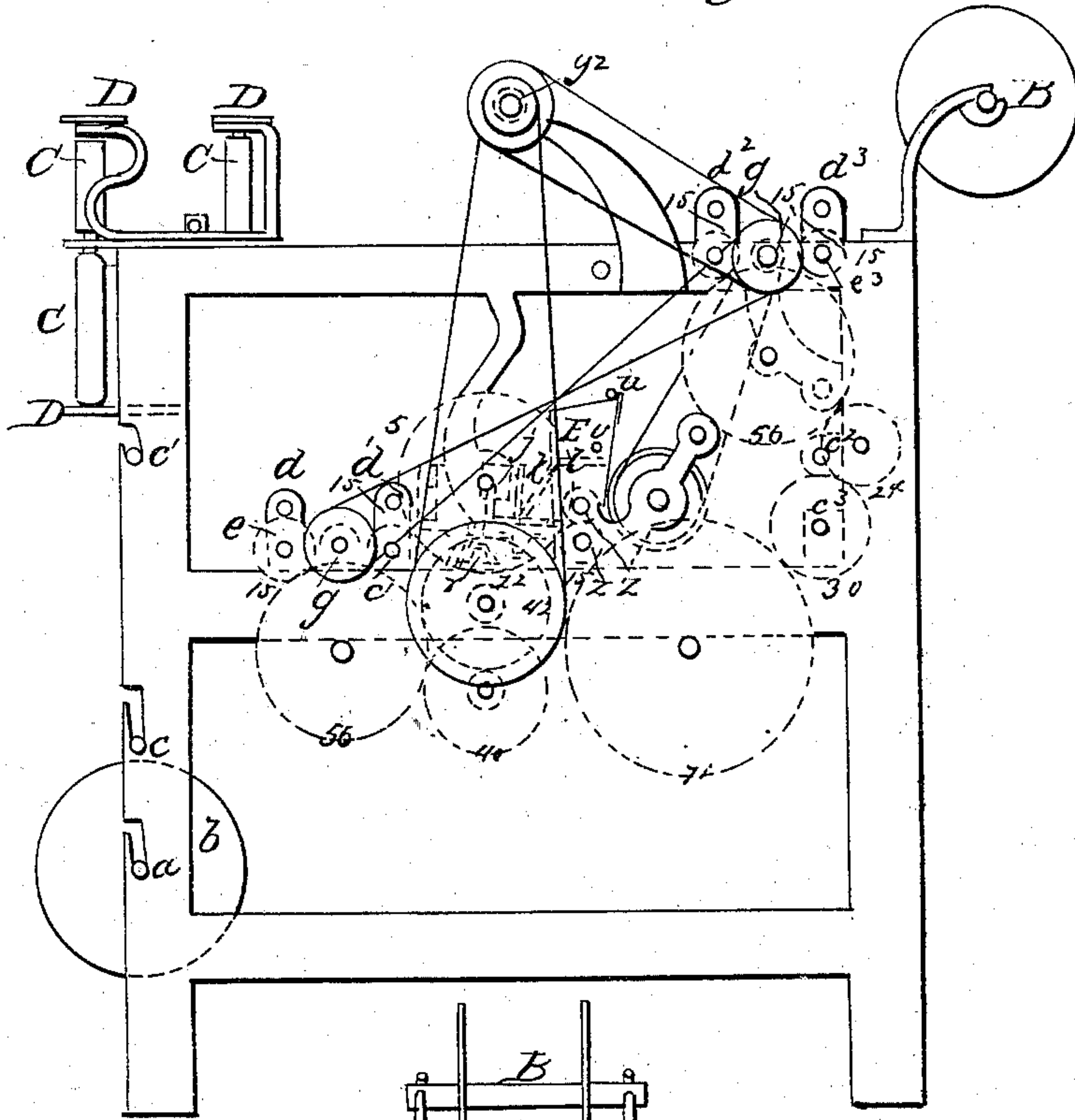
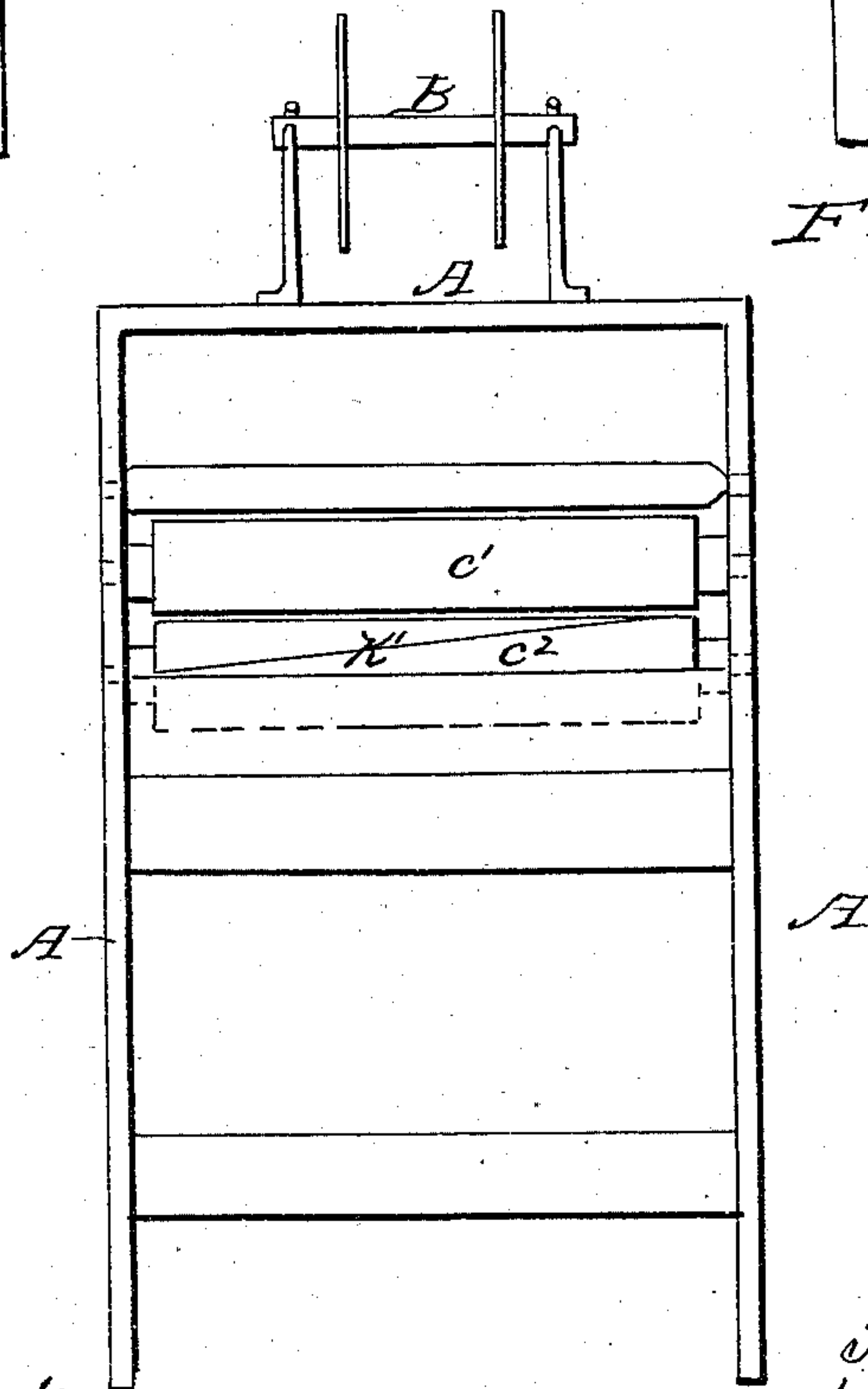


Fig. 2,



Witnesses:

John McMeule
S. H. Gayer

Inventor:

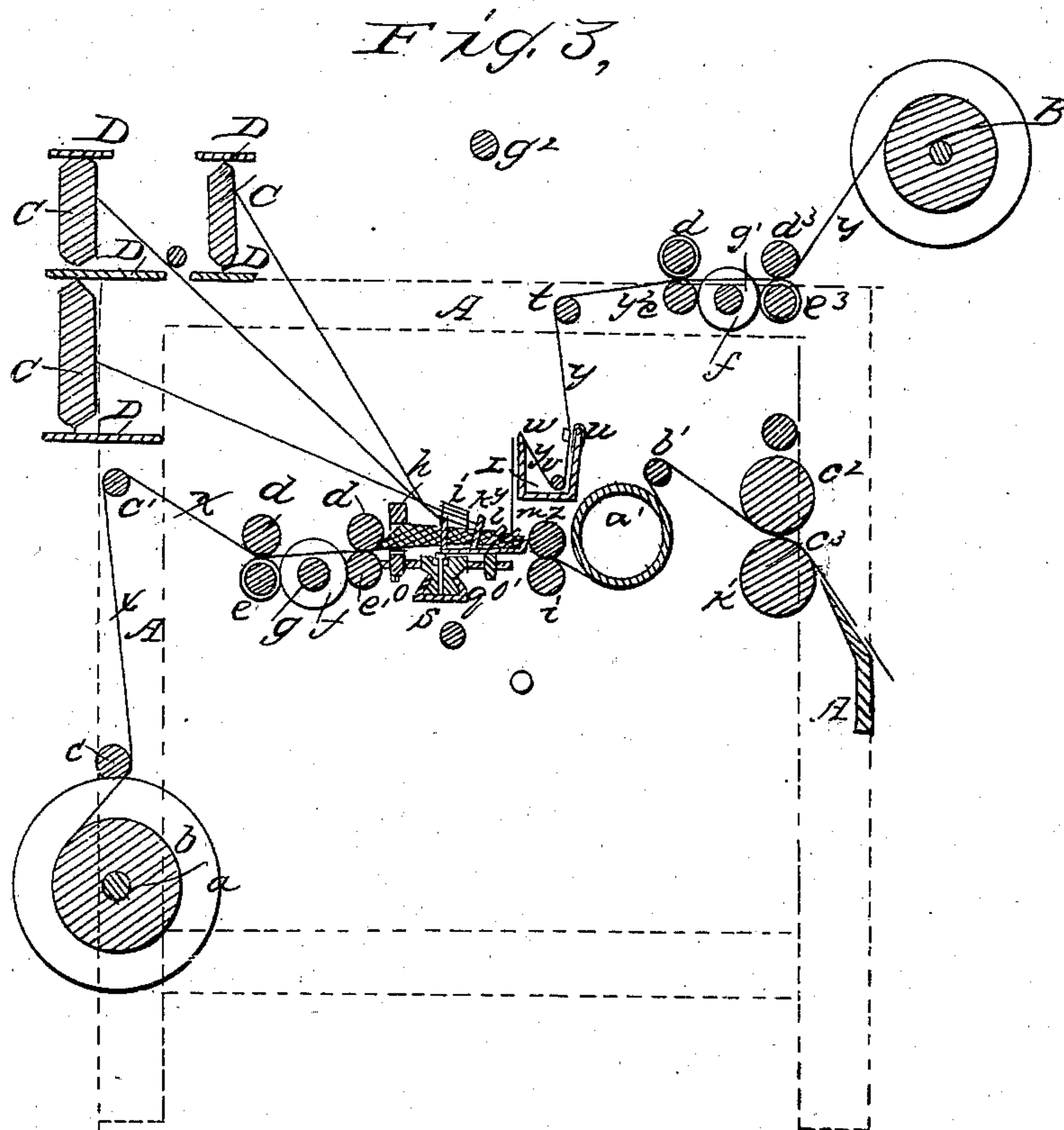
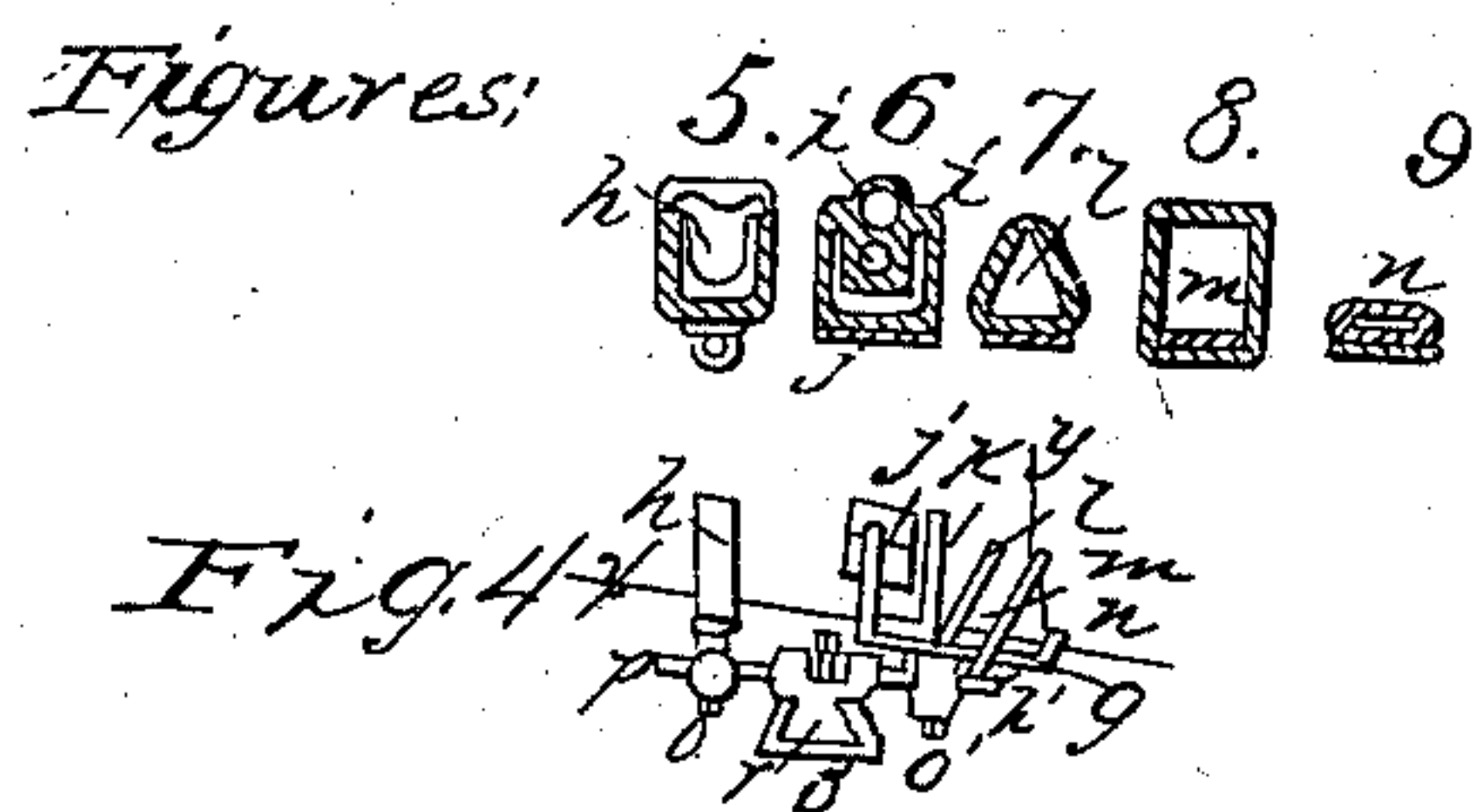
Joseph H. Connelly
by his attys
W. B. Buckwell

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2 Sheets—Sheet 2.

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John Mc. Veale
S. H. Geyer

Inventor,

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UNITED STATES PATENT OFFICE.

JOSEPH H. CONNELLY, OF WHEELING, WEST VIRGINIA.

IMPROVEMENT IN MACHINES FOR MAKING LAMP-WICK.

Specification forming part of Letters Patent No. 43,097, dated June 14, 1864.

To all whom it may concern:

Be it known that I, JOSEPH H. CONNELLY, of the city of Wheeling, in the county of Ohio and State of West Virginia, have invented a new and useful Improvement in Machines for Making Lamp-Wicks; and I do hereby declare the following to be a full, clear, and exact description thereof, reference being had to the annexed drawings, forming part of this specification, in which—

Figure 1 is a side elevation of my improved machine. Fig. 2 is a front elevation of the machine. Fig. 3 is a longitudinal section of my machine without the frame-work, designed to exhibit the bearing of the operative parts and illustrate its operation. Fig. 4 is a side view of those parts of the machine by which the casing or wrapper of the wick is folded and a pasted strip laid over the joint of the fold of the wrapper. Figs. 5 to 9 are front views, in detail, of the several parts of the machine represented in Fig. 4.

In the several figures like letters of reference denote similar parts.

My machine is designed for the manufacture of a peculiar kind of wick for lamps, for which Letters Patent of the United States were granted on the 26th day of August, 1862, to John Cook and myself, and certain other Letters Patent of the United States were granted to me on the 6th day of January, A. D. 1863. This wick consists of an outside case or wrapper of linen, muslin, or other suitable substance, folded lengthwise over a filling of loose raw cotton, or cotton yarn, or other substance possessing sufficient capillarity, the joint of the wrapper or outside case being secured by a narrow strip of thin muslin or other material pasted down one side of the wick, where the edges of the wrapper meet.

My machine consists of a suitable frame, A, on the sides of which are placed the bearings of the various shafts and rollers composing the machinery. At the rear end of the machine, near to the ground, is placed a large spool, consisting of a shaft, *a*, furnished with two parallel disks, *b b*, between which is wound a web of muslin, from which the wrapper or casing of the wicks is to be made. The disks *b b* at each end of the roll of muslin serve to guide it straight as it unwinds and passes through the machine. From the spool *a* the

muslin passes under a roller, *c*, of small diameter, placed immediately above and almost touching the periphery of the disks *b b*, and thence over a similar roller, *c'*, of small diameter, placed above the other roller, *c*. These rollers serve to keep the muslin stretched tight and prevent its unwinding too fast off the spool, and also smooth it out sidewise. The muslin thence inclines downward, as seen in Fig. 3, and passes between two rollers, *d* and *e*, the lower one of which, *e*, is roughed, so as to act as a feed-roller and draw the muslin forward, causing it to unwind from the spool *a*. A similar pair of fixed rollers, *d'* and *e'*, are placed a short distance in front of the rollers *d e*, the lower one, *e*, of which is also roughed, for the same reason. The upper rollers, *d d'*, serve to keep down the muslin and prevent it riding on the periphery of the circular cutters *f f*, which are attached to a shaft, *g*, placed horizontally across the machine and between and parallel with the feed-rollers *d e* and *d' e'*. The cutters *f f* have a sharp edge on their periphery, by means of which they cut the muslin into strips of the proper width, which is a little more than twice the width of the finished wick. These cutters are placed at suitable intervals apart on their shaft *g*, and are more or less numerous, according to the capacity of the machine. Each of the strips of muslin thus formed by the cutters *f f* passes through a separate apparatus for folding and pasting, of which as many separate sets are placed in the machine as its width will admit of.

As these devices for folding and pasting are similar to each other in construction and operation, I shall describe one set only. The strip of muslin severed by the cutters is passed through the first folder, *h*, a front view of which is seen in Fig. 5. This folder has a narrow aperture shaped like the letter U, with a flat bottom and short sides, by which the muslin strip is turned up at the edges. The second folder, *j*, is placed a little in front of the first, and has a similarly-shaped aperture, as seen in Fig. 6, and is also furnished with two short tubes, *i i'*, or round openings placed between the sides of the U-shaped aperture, through which tubes the cotton yarn is conducted into and laid upon the inside of the muslin casing or folded strip, as hereinafter described. The third and fourth folders, *k l*,

are each in the shape of a triangle, (see Fig. 7,) with its base horizontal, the inclined sides turning over the raised edges of the muslin, which passes through it. The third folder, *k*, is slightly inclined, with its apex leaning forward, and the fourth folder, *l*, is still more inclined in the same direction. In front of the fourth folder, *l*, is placed a small rectangular frame, *m*, (see Fig. 8,) which is still more inclined than the fourth folder, *l*. The upper edge of this frame *m* serves to guide the strip of muslin *y*, which is to be pasted over the fold of the edges of the wrapper or case *x* to its proper position. In front of the frame *m* is placed the last folder, *n*, Fig. 9, which has a narrow horizontal slit just large enough for the wrapper, with the cotton inside, and the pasted strip *y* to pass through it, and which completes the folding process. The first folder, *h*, in each set slides on a rod, *p*, to which it is attached by a set-screw, *o*, and the other folders and the frame *m* are all attached, one in front of the other, to a strip, *q*, which slides on a rod, *p'*, to which it is attached by a set screw, *o'*. The rods *p* and *p'* project horizontally from a sliding block, *r*, which sets in a dovetailed rest, *s*, so that the relative distance of the first folder, *h*, from the other folders may be adjusted with nicety, and the position of the several sets of folding apparatus may be arranged at the proper distance from each other in the machine to cut the width of wick to be made thereon.

Before describing the pasting apparatus, I will explain the mode of supplying the wrapper with its cotton filling and the contrivance for cutting the narrow pasting-strips. At the rear end of the machine, above the level of the folding apparatus, are placed a number of spools of cotton, slightly twisted. These spools *C C* are set vertically in a series of frames, *D D*. There are at least three spools for each set of folding apparatus, and from each of the three spools *C C C* a thread of cotton passes to the second folder, *j*. Two of these threads pass through one of the short tubes, *i*, and one through the other tube, *i'*, by which they are led into the casing or wrapper *x*, and are laid on it, just before the sides are folded over by the third and fourth folders, *k* and *l*. On the top of the frame, at the front end of the machine, is placed a shaft or spool, *B*, on which is wound a web of thin muslin, linen, or other suitable fabric, to be pasted over the edges of the wrapper *x*. From the spool *B* the web passes between two sets of feed-rollers, *d² e²* and *d³ e³*, similar to those used (at the rear end of the machine) for the muslin of which the wrapper is made. Between these feed-rollers is placed a horizontal shaft, *g'*, carrying circular cutters *f' f'* at such distance apart as to cut the web of thin muslin into strips narrower than the finished wick, which are to be pasted over the edges of the wrapper *x*. One of these strips, *y*, is conducted over the roller *t*, and through guides *u*, attached to one edge of the paste-trough *E*, and under a rod, *v*,

near the bottom of the trough, and thence over a scraper, *w*, at the other end of the trough, by which the paste is scraped off that side of the muslin strip *y* which will be uppermost on the wick. The trough *E* is filled with flour-paste, or other suitable paste or gum. The narrow muslin strip *y*, with one side pasted, is then passed through the rectangular frame *m*, with its pasted side downward next to the folded wick, and it is immediately drawn through the last folder, *n*, by which it is brought in contact with and laid smoothly on the wick, over its folded edges. The wick thence passes between two pressure-rollers, *z z*, by which the pasted strip is pressed down on the wick, and the wick is flattened. The wick passes immediately under a revolving hollow copper cylinder, *a'*, which is heated by the passage through it of steam. A small roller, *b'*, is placed above and a little in front of the axis of the steam-cylinder *a'*, and the wick being passed over the roller *b'* is caused to press closely against the steam-cylinder *a'*, by which it is ironed and the paste is dried. This ironing of the wick by means of the steam-cylinder gives it a smooth finish, and causes it to retain its flattened shape. The wick is then finished, but is in one long piece, and must be cut into suitable lengths for use in lamps. This is effected by means of a pair of cutting-rolls, *c² c³*, placed at the front end of the machine, to each of which a positive motion on its axis is communicated, the upper roller, *c²*, revolving a little faster than the other. The lower cutting-cylinder, *c³*, has a knife, *k'*, set in it, with the edge projecting slightly from its surface. The cutter-knife *k'* is not set parallel to the axis of the roll, but a little inclined, so that it may cut the wick more readily. The upper cutter-roller, *c²*, may be made or covered with rawhide, to allow the knife to enter its surface slightly, and make a clean cut. The diameter of the lower cutter-roller, *c³*, is such that its circumference is equal to the required length of wick to be cut, or, in large machines, its diameter may be greater, and two or more knives or cutters inserted. As the knife *k'* will sever the wicks at the point of contact of the two cutter-rollers *c² c³*, it may be found necessary to insert a third or feed roller, (not shown in the drawings,) placed where the upper roller, *c²*, is in the drawings, and to place the upper cutter-roller, *c²*, a little in front of the feed-roller, with its periphery in contact with the lower cutter-roller, *c³*. This will effectually prevent the strip of wick behind the cutter-rollers from falling away from them when the wicks are severed by the cutters.

The motion of the several rollers, spools, and shafts in my machine may be communicated from a single driving-shaft *g²*, which is driven by steam or other power, the requisite relative speed and motion of the parts being effected by toothed gearing or pulleys and belts in the usual way.

In Fig. 1 the gearing is represented by red-

circles, and the number of teeth or cogs in each wheel and pinion being marked in red-ink figures on the red circles, in order to enable any one skilled in mechanics to construct my machine; but I do not, therefore, desire to confine myself to the exact relative motion of the different parts thereby indicated, nor to the mode of communicating motion described. The shafts g and g' , which carry the circular cutters $f f'$ for cutting the muslin for the wrappers and pasting-strips, revolve very rapidly, so as to cut more easily, and the feed-rollers, by which the muslin is fed through the machine, revolve with any degree of rapidity at which it may be found desirable to work the machine. If found necessary to the efficient working of the feed, the upper feed-rollers, $d d' d^2 d^3$, may be covered with india-rubber or other substance, to secure a firm hold on the fabric passing between these feed-rollers.

By multiplying the folding apparatus, circular cutters, and cotton spools, as many strips of wick may be made at one time on my machine as its width will permit. The width of the wick made is regulated by the distance apart of the circular cutters $f f'$, &c., and the folding apparatus for each strip of wick is set in proper position by moving the sliding block r along the dovetailed rest s , and clamping it in position by a set-screw.

It will be found convenient to have the circular cutters $f f'$ on the cutter-shafts $g g'$ so placed as to make wicks of various widths on the machine at the same time.

Having thus described my wick-machine, what I claim as my invention, and desire to secure by Letters Patent, is—

1. The machine, constructed substantially as above described, for making tubular wicks with cotton or other filling, consisting of cutters for cutting the muslin or other fabric into strips of suitable width, the folding apparatus and contrivance for inserting the cotton or other filling, the ironing-cylinder, and the cutting-rollers for severing from the wicking thus made pieces of proper length for wicks.

2. The mode of folding the wrapper, by means of a series of folders through which the muslin or other fabric passes, having apertures so shaped as to turn up the edges and fold them over, making wrappers of uniform width, substantially as hereinbefore described.

3. The mode, hereinbefore described, of inserting the cotton or other filling in the wick as the wrapper is being folded.

4. The pasting apparatus, consisting of a paste-trough, E , guides u , rod v , and scrapers w , for the pasting-strip, constructed and arranged in relation to the folding apparatus substantially as described.

5. The use of a heated cylinder for ironing and drying the wick and giving it a flattened shape.

In testimony whereof I, the said JOSEPH H. CONNELLY, have hereunto set my hand.

JOSEPH H. CONNELLY.

In presence of—

F. M. MAGEE,

A. S. NICHOLSON.