

(No Model.)

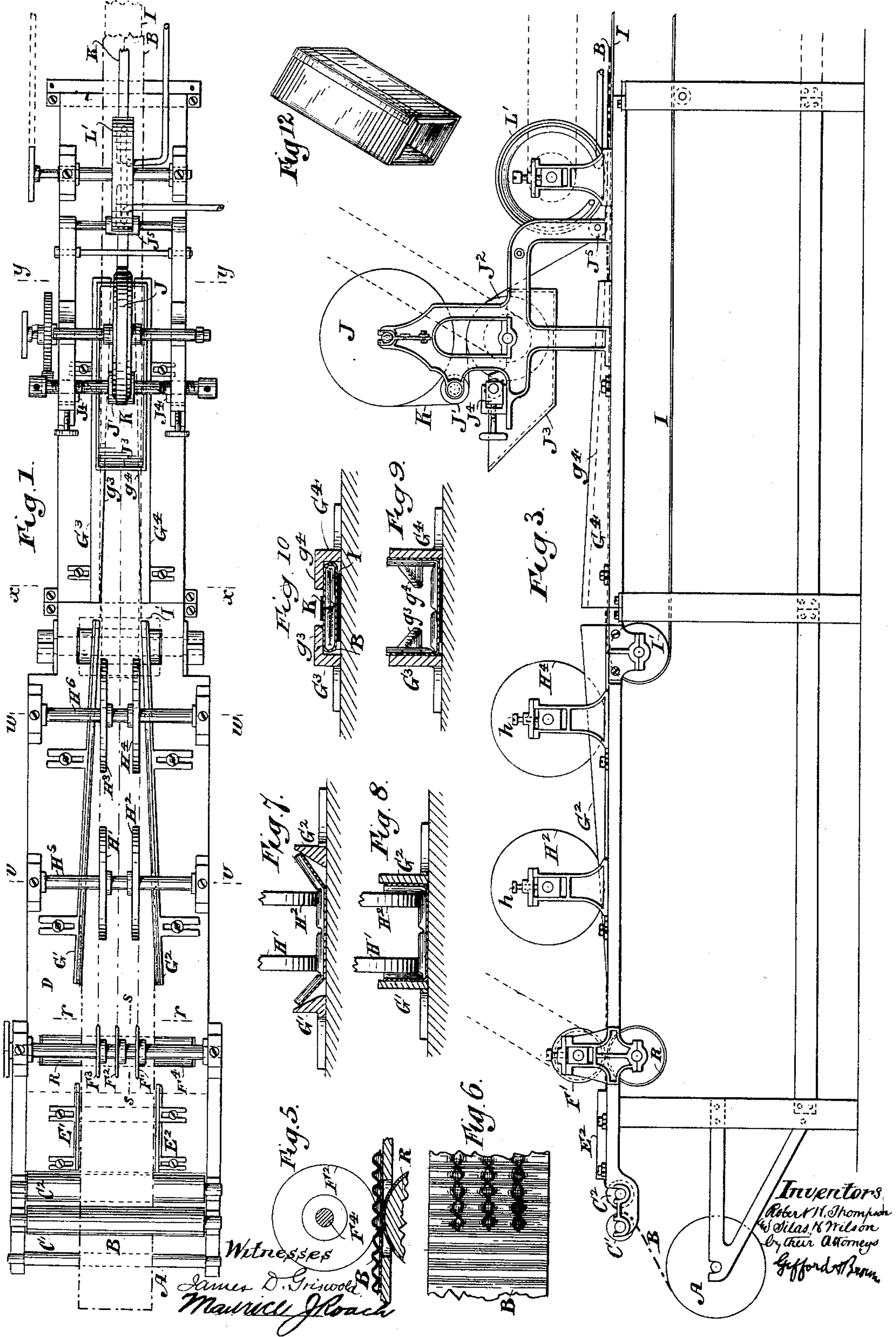
2 Sheets—Sheet 1.

R. H. THOMPSON & S. H. WILSON.

MACHINE FOR MANUFACTURING WRAPPERS FOR BOTTLES, &c.

No. 406,971.

Patented July 16, 1889.



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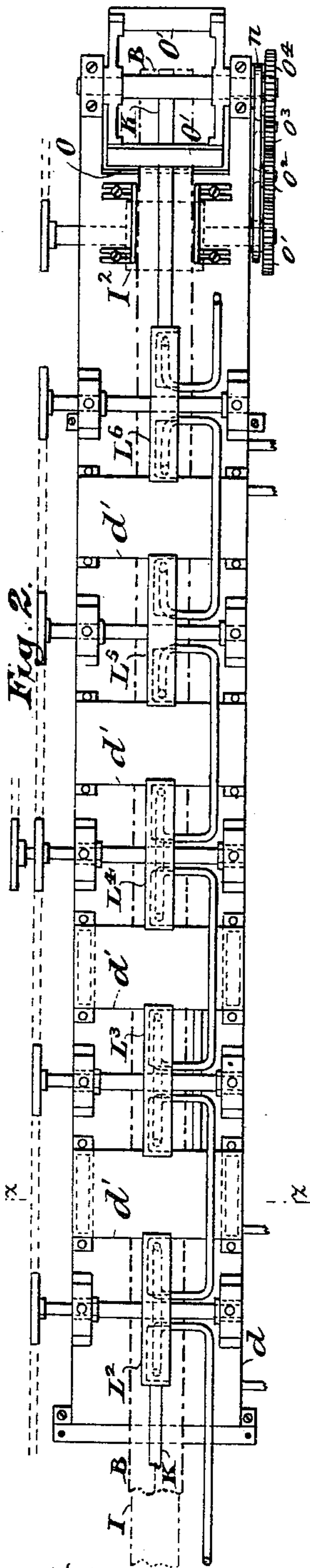


Fig. 2.

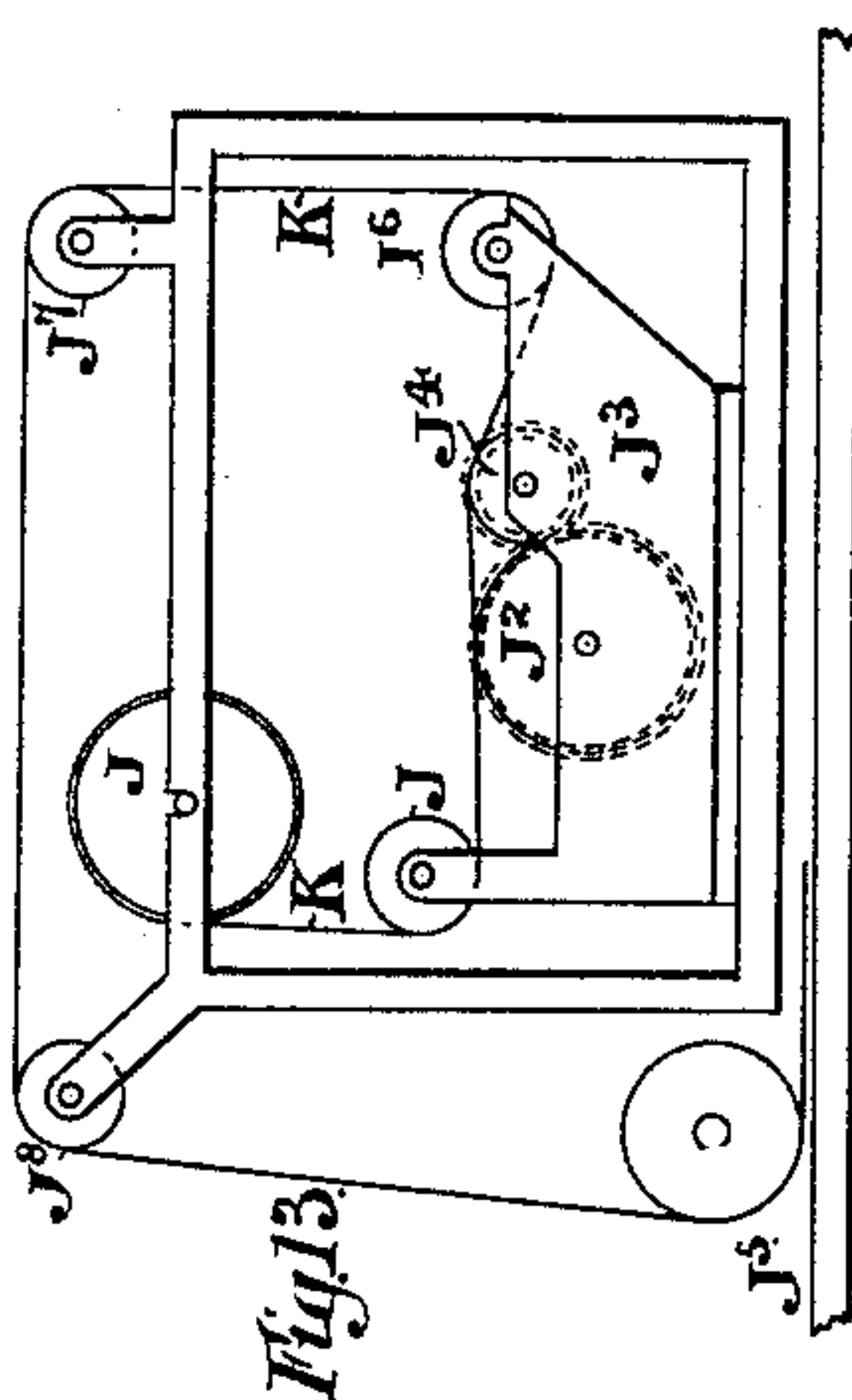


Fig. 13.

Fig. 4.

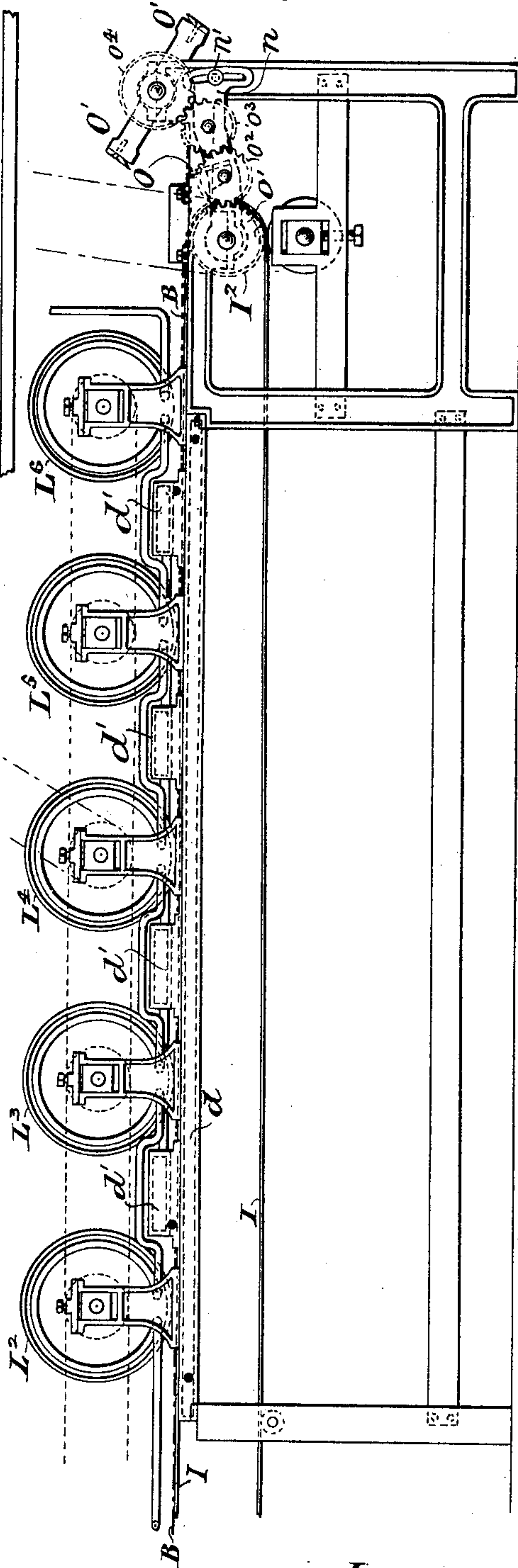
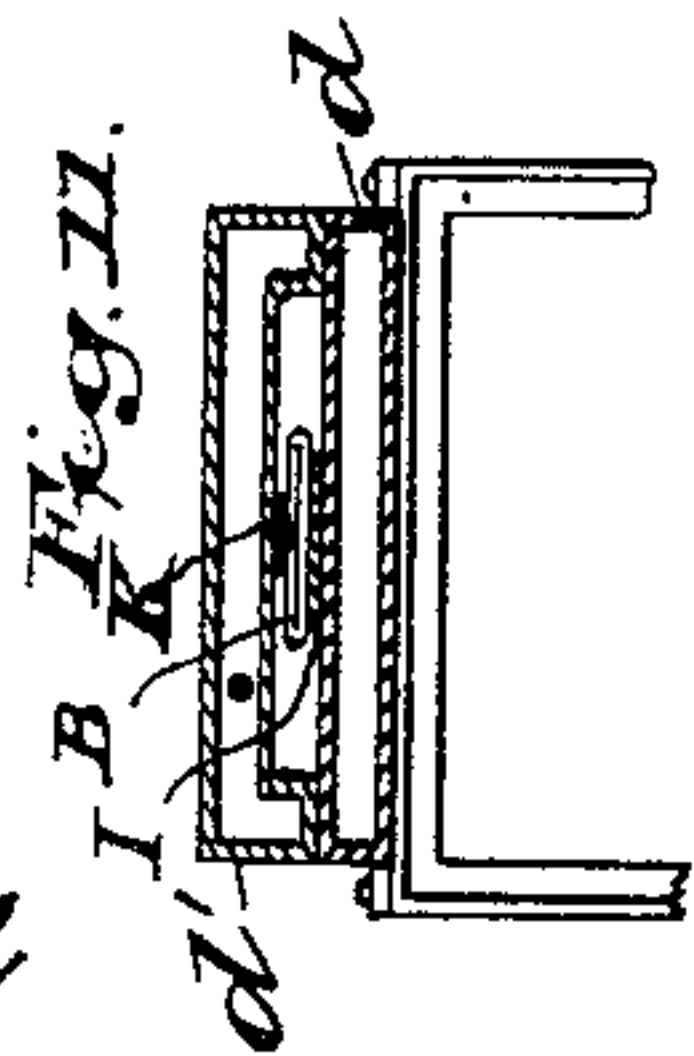


Fig. 11.



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# UNITED STATES PATENT OFFICE.

ROBERT H. THOMPSON AND SILAS H. WILSON, OF BROOKLYN, NEW YORK;  
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## MACHINE FOR MANUFACTURING WRAPPERS FOR BOTTLES, &c.

SPECIFICATION forming part of Letters Patent No. 406,971, dated July 16, 1889.

Application filed February 26, 1887. Serial No. 229,069. (No model.)

*To all whom it may concern:*

Be it known that we, ROBERT H. THOMPSON and SILAS H. WILSON, of Brooklyn, in the State of New York, have invented a certain  
5 new and useful Improvement in Machines for Manufacturing Wrappers for Bottles, &c., of which the following is a specification.

We will describe a machine embodying our improvement, and then point out the various  
10 novel features in the claims.

In the accompanying drawings, Figure 1 is a plan or top view of a part of a machine embodying our improvement. Fig. 2 is a plan or top view of the other part of such machine.  
15 Fig. 3 is a side elevation of the part of said machine which is illustrated in Fig. 1. Fig. 4 is a side elevation of that part of the machine which is illustrated in Fig. 2. Fig. 5 is a vertical section taken longitudinally of the machine at the plane of the dotted line *s s*,  
20 Fig. 1. Fig. 6 is a plan or top view of a portion of material treated in the machine as the same appears on arriving at the point indicated by the line *r r*. Fig. 7 is a transverse  
25 vertical section taken at the plane of the dotted line *v v*, Fig. 1. Fig. 8 is a transverse vertical section of the machine, taken at the plane of the line *w w*, Fig. 1. Fig. 9 is a transverse vertical section taken at the plane  
30 of the line *x x*, Fig. 1. Fig. 10 is a transverse vertical section taken at the plane of the dotted line *y y*, Fig. 1. Fig. 11 is a transverse vertical section taken at the plane of the line *z z*, Fig. 2. Fig. 12 is a perspective view of a  
35 wrapper such as may be made by the machine. Fig. 13 is a side elevation illustrating a modification of a portion of the machine. Figs. 1, 2, 3, 4, 11, and 12 are drawn to a scale one-half of that of the other figures.

40 Similar letters of reference designate corresponding parts in all the figures.

The framing of the machine may be of any suitable character and made of any appropriate material. It will consist, essentially,  
45 of side frames and intermediate connecting stretchers. The frame of the machine may of course be made in sections lengthwise of the machine, and these sections may be bolted together and separated at pleasure. This will  
50 be advantageous in reference to setting up or removing the machine.

A designates a roll, upon which a strip of corrugated paper or like material is wound. This roller is supported in bearings, from which it may be removed to permit of the  
55 substitution for it of another, as occasion may require. Preferably the strip of corrugated paper will have secured to one side of it a strip of plain paper, so that it will be in fact a combined strip made up of a strip of corru-  
60 gated paper and a strip of plain paper. It is thus represented in the drawings. It is marked B in the drawings.

The strip of material B passes from the roll A between two guide-rollers C' C<sup>2</sup>, and thence  
65 over a bed D, which is supported by the frame of the machine. The corrugated strip is uppermost. After leaving the rollers C' C<sup>2</sup> it passes between guides E' E<sup>2</sup>, which are secured to the bed D adjustably—in the pres-  
70 ent instance by means of screws passing through slots that extend widthwise of the machine—thus providing for the adjustment of the guides at different distances from the longitudinal center of the bed. Thus provis-  
75 ion is afforded for different widths of material. These guides E' E<sup>2</sup> direct the material to creasing-wheels F' F<sup>2</sup> F<sup>3</sup>, which are arranged upon a shaft F<sup>4</sup>, which may be driven  
80 by a belt on a pulley with which it is provided. These creasing-wheels crease or score the material longitudinally upon lines along which it is to be folded. These wheels are provided with hubs fitting the shaft F<sup>4</sup>, and secured thereto by means of set-screws pass-  
85 ing through them and impinging against the shaft. The wheels are therefore adjustable lengthwise of the shaft, so as to afford provision for creasing material at different points. This adjustment is necessary for operating  
90 upon materials of different widths. If desirable for any reason, a greater or less number of such wheels may be used.

Beneath the creasing-wheels is arranged a roller R, which is covered with india-rubber or  
95 analogous material. The creasing-wheels, in conjunction with this roller R, control the speed at which the material B travels, and cause it to travel at a uniform speed. For this purpose the creasing-wheels and the roller R  
100 may be regarded as a pair of rollers. After leaving the creasing-wheels the material passes



between two folders  $G' G^2$ . These folders converge from the ends which are the nearer to the creasing-wheels toward the other ends. Their adjacent sides at the ends which are the nearer to the creasing-wheels are flaring or wider at the upper edge than the bottom edge, as may be clearly understood by reference to Fig. 7. This flare gradually decreases toward the ends which are distant from the creasing-wheels, and entirely disappears at these ends last named. Therefore as the material passes over the bed D, between the folders  $G' G^2$ , its portions which are laterally beyond the creases produced by the outer creasing-wheels  $F' F^3$  will be gradually folded upward, until at the time of passing beyond these folders they will occupy a position at right angles to the intermediate or central portion of the material. This may be clearly understood by reference to Fig. 8. During the passage of the material between the folders  $G' G^2$  its central portion, which remains unaffected by the folders, is held down upon the bed by holding-wheels  $H' H^2 H^3 H^4$ .

The holding-wheels  $H' H^2$  are affixed to a rotary shaft  $H^5$  and the holding-wheels  $H^3 H^4$  are mounted upon a rotary shaft  $H^6$ . These wheels are adjustably secured upon their shafts by means of set-screws or otherwise, so that their positions may be varied for materials of different widths. Obviously any number of these wheels may be employed, as circumstances may render necessary. The shafts of these holding-wheels are supported in bearing-blocks, which may be adjusted, to cause the wheels to act with different pressures, through the agency of set-screws  $h h$  or other suitable means. These holding-wheels may rotate as the material passes beneath them.

The folders  $G' G^2$  are secured to the bed D, so that they may be adjusted widthwise of the machine. As shown, they are provided with slots extending widthwise of the machine and are secured in place by screws passing through such slots. The adjustability of the folders adapts them for use with materials of different widths.

Beyond the folders  $G' G^2$  are other folders  $G^3 G^4$ . These folders are supported upon the bed D. The folders  $G^3 G^4$  have inwardly-extending flanges  $g^3 g^4$  at the upper edges of their inner or opposite sides. At the ends of these folders  $G^3 G^4$  which are the nearer to the folders  $G' G^2$  these flanges  $g^3 g^4$  have but a slight projection and are quite high up; but said flanges increase in projection toward the other end of said folders  $G^3 G^4$  and extend downwardly close to the bed D. The construction of the flanges may be clearly understood by reference to Figs. 9 and 10. In passing between the folders  $G^3 G^4$  the portions of the material which were beyond the outer creases and which were turned into upright positions by the folders  $G' G^2$  are folded downwardly against the intermediate or cen-

tral portion of the material, as shown in Fig. 10.

The folders  $G^3 G^4$  are secured to the bed in the same manner as the folders  $G' G^2$  and have a like purpose.

The material B operated upon is not in contact with the bed while passing between the folders  $G^3 G^4$ , although the bed sustains it. Meanwhile above the bed, between these folders  $G^3 G^4$ , an endless belt or carrier I passes. It is supported and driven by rollers  $I' I^2$ , which may have motion imparted to them by a belt or other means. The upper portion of this belt travels along the bed in a direction away from the folders  $G' G^2$  and returns under the bed in the reverse direction. The material B is in contact with this belt during its passage between the folders  $G^3 G^4$ , and is carried forward by the belt.

J designates a roller mounted removably in bearings at a considerable distance above the bed D. On this roller a strip K of plain comparatively thin paper is wound. This strip is intended to unite the meeting lateral edges of the strip of material folded as aforesaid. One of a number of rollers J may be substituted for another, as occasion may require. The strip K, after leaving the roller J, passes around the guide-roller  $J'$  and thence over a roller  $J^2$ . The roller  $J^2$  rotates in a tank  $J^3$  of paste or other adhesive material, and has combined with it a doctor-roller  $J^4$  for removing superfluous adhesive material from the roller  $J^2$ . The roller  $J^2$  applies the adhesive substance to that side of the strip K which is to be secured to the material B. After leaving the roller  $J^2$  the strip K passes around the guide-roller  $J^5$ , and is thereby forced against the meeting edges of the folded material B. Thence the material B, with the strip K applied to it, is moved along by the endless belt or carrier I, over the bed D, and beneath a series of drying-rollers  $L' L^2 L^3 L^4 L^5 L^6$ , which are preferably heated by steam-pipes and driven by belts or other means. There may be any desirable number of drying-rollers, according to the speed at which the material B with the applied strip K is moved along.

The drying-rollers  $L' L^2 L^3 L^4 L^5 L^6$  are journaled in adjustable bearings, so that they may act upon the material passing under them with any desirable pressure.

The portion of the bed which is beneath the drying-rollers  $L^2 L^3 L^4 L^5 L^6$  is made in the form of a hollow chest  $d$ . At intervals between the rollers  $L^2 L^3 L^4 L^5 L^6$  hollow bridges  $d'$  extend above the path traveled by the material. Steam circulated through the chest  $d$  and hollow bridges  $d'$  aids in drying the adhesive material, whereby the strip K is secured to the material B.

It is not absolutely essential for us to use the steam-chest  $d$  in the bed D in connection with the other parts of the machine. We may also omit the steam-bridges  $d'$ . Indeed, the rollers  $L' L^2 L^3 L^4 L^5 L^6$  may be omitted, if



desirable. In such case we shall prefer to substitute for them rotary brushes, journaled and arranged in the same manner as the rollers, but rotating at an increased speed. Of course we may rotate the said rollers when we use them at any speed which may be found desirable. If caused to rotate at such speed that their circumferences will travel faster than the material B with the applied strip K, they will operate with an ironing or rubbing and smoothing action.

Just beyond the roller  $L^6$  are arranged knives  $O O'$ . The knife  $O$  is stationary; but the knives  $O'$  are fixed to a revolving head or support, one being arranged on each end of the latter. As the knives  $O'$  revolve, they periodically move into proximity with the stationary knife  $O$ , and in conjunction therewith cut the finished material transversely, thereby severing it into short pieces suitable for wrappers of the kind illustrated in Fig. 12. The head which carries the knives  $O'$  is rotated by a train of gear-wheels  $o' o^2 o^3 o^4$ . The gear-wheel  $o^4$  is affixed to one of the journals of the revolving head and the gear-wheel  $o'$  to one of the journals of the pulley  $I^2$ , around which the belt  $I$  passes, and the gear-wheels  $o^2 o^3$  are intermediate and supported by studs on a swinging frame  $n$ . The frame  $n$  is hung at one end on the shaft which carries the pulley  $I^2$ , and at the other end is supported by a bolt or screw  $n'$ , which passes through a slot in said frame and enters one of the side pieces of the main frame of the machine. Provision is afforded for adjusting this frame, in order that gear-wheels of different sizes may be employed for the purpose of varying the number of revolutions at which the knives  $O'$  will be revolved in a given time, and, hence, the periods at which the finished material will be subjected to the operation of the knives, the latter being caused to travel at a uniform speed by the creasing-wheels and the roller  $R$ . Thus wrappers of greater or less length may be produced.

Motion may be imparted to the revolving head carrying the knives  $O'$  by means of a belt applied to a pulley arranged upon one end of the journals of the roller  $I^2$ . Through the train of gears just described motion will be imparted to the belt  $I$ .

Where we have spoken of belts and pulleys for driving different parts of the machine we desire to have it understood that these belts may be of any desirable material, even chain, and that when made of chain the pulleys with which they work will be made in the shape of sprocket-wheels.

Instead of the mechanism shown in Fig. 3 for pasting the strip  $K$  and directing it to the meeting edges of the folded material  $B$  we make this mechanism such as is shown in Fig. 13. In this figure  $J$  designates a roll, around which the strip  $K$  is wound. This roller is mounted in bearings, so as to be removable at will, in order that another similar roller may be substi-

tuted for it. From the roller  $J$  a strip  $K$  passes around a roller  $J'$  and thence over a roller  $J^2$ , which rotates in a tank  $J^3$ , containing paste or other adhesive material. A doctor-roller  $J^4$  removes superfluous paste from the roller  $J^2$ , and also distributes the paste upon the strip  $K$ . Beyond the roller  $J^4$  the strip  $K$  passes around a roller  $J^6$ , thence around a roller  $J^7$ , thence around a roller  $J^8$ , and finally around a roller  $J^5$ . The roller  $J^5$  directs this strip to the meeting edges of the material  $B$ . The advantage of this particular mechanism over that shown in Fig. 3 consists in the provision which it affords for the setting or partial drying of the paste before the strip  $K$  reaches the material  $B$ .

What we claim as our invention, and desire to secure by Letters Patent, is—

1. In a machine for folding paper or like material, the combination of a bed, a carrying-belt traveling over a portion of said bed, holding-wheels for maintaining the material to be folded in contact with the bed before reaching said belt, folders having their opposite sides flared decreasingly from one end toward the other, and other folders having flanges of increasing projection from one end to the other, substantially as specified.

2. In a machine for folding paper and like material, the combination of a bed, a carrying-belt traveling over a portion of the bed, adjustable holding-wheels for maintaining the material to be folded in contact with the bed before reaching the belt, folders having their opposite sides flared decreasingly from one end toward the other, and other folders having flanges of increasing projection from one end to the other, substantially as specified.

3. In a machine for folding paper and like material, the combination of a bed, converging folders having their opposite sides flared decreasingly from one end toward the other, other folders which have on their opposite sides flanges which increase in projection and extend progressively nearer the bed from one end toward the other, and means, substantially such as described, for adjusting the two sets of folders independently of each other, substantially as specified.

4. In a machine for folding paper and like material, the combination of a bed, a pair of folders having their opposite sides converging and flared decreasingly from one end toward the other, holding-wheels above the bed between these folders, another pair of folders having on their opposite sides flanges which increase in projection and extend progressively near the bed from one end toward the other, and a belt traveling over the bed between the last-mentioned pair of folders, substantially as specified.

5. In a machine for folding paper and like material, the combination of folders, substantially such as described, and mechanism, substantially such as described, for applying



paste or other adhesive substance to a strip and directing said strip to material folded by said folders at the meeting edges of said material, and drying-rollers, substantially as specified.

5 6. In a machine for folding paper or like material, the combination of folders, substantially such as described, mechanism, substantially such as described, for applying adhesive  
10 material to a strip and directing said strip to the folded material, and a steam-chest and rollers for holding the folded material in proximity thereto, substantially as specified.

7. In a machine for folding paper and like material, the combination of folders, substan- 15  
tially such as described, mechanism, substantially such as described, for applying adhesive material to a strip for uniting the meeting edges of the folded material, a steam-chest, and steam-bridges for drying the material, 20  
substantially as specified.

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