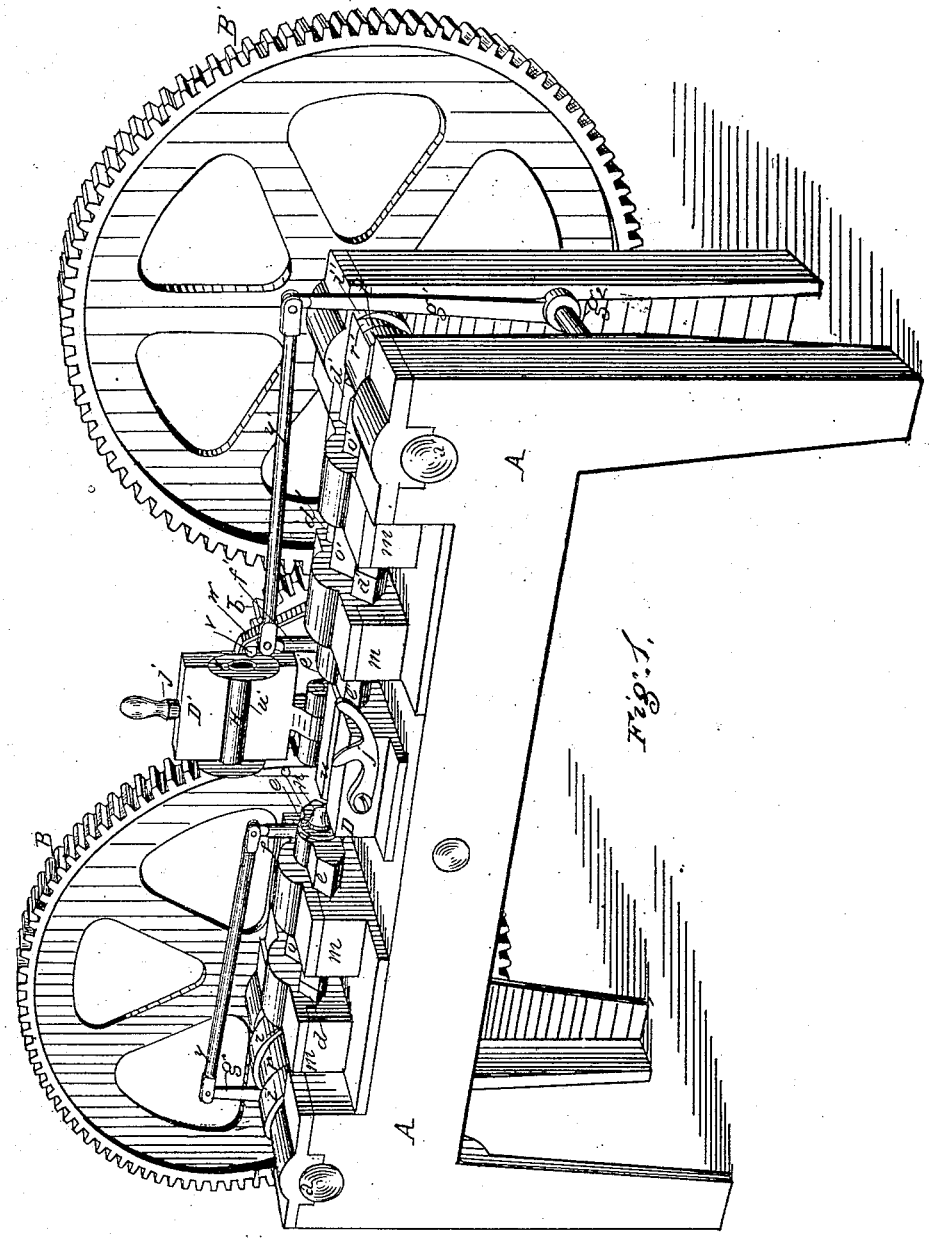
2 Sheets—Sheet 1.

# L. BRIGHTMAN.

## Machine for Making Metallic Spools.

No. 210,088. Patented Nov. 19,.1878.




Witnesses
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E. L. Parker

Inventor Latham Brightman
By Attorney George H. Christy

2 Sheets—Sheet 2

# L. BRIGHTMAN.

## Machine for Making Metallic Spools.

No. 210,088. Patented Nov. 19, 1878.

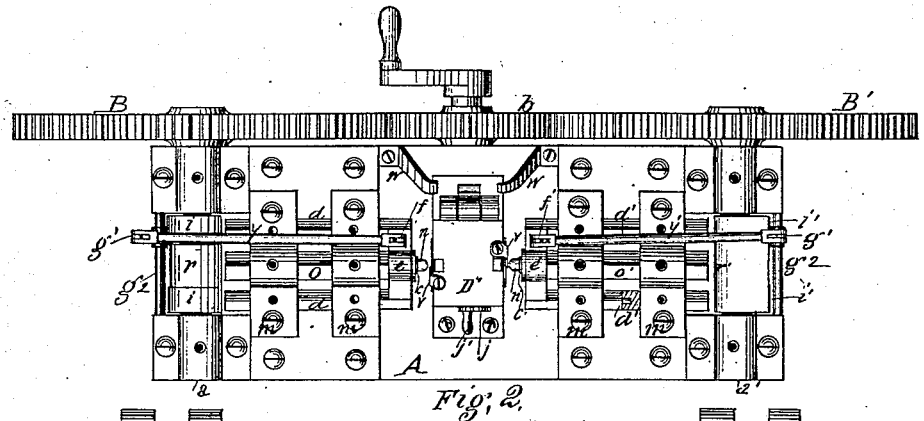

Fig. 2.

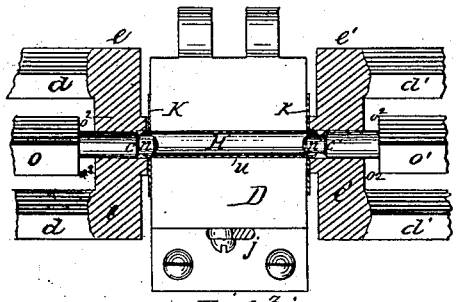

Fig. 3.

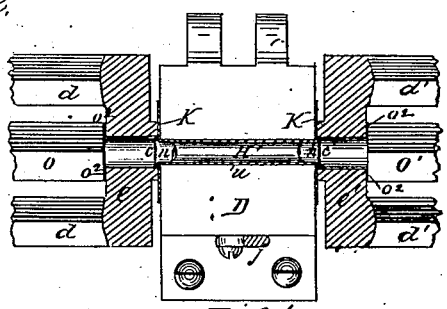

Fig. 4.

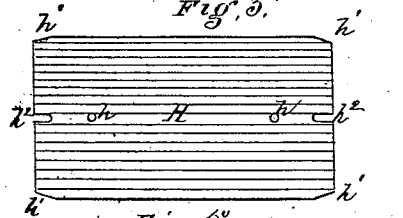

Fig. 5.

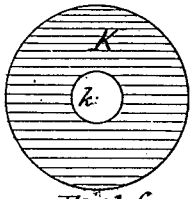

Fig. 6.

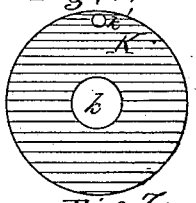

Fig. 7.

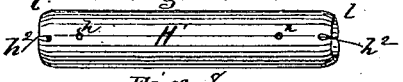

Fig. 8.

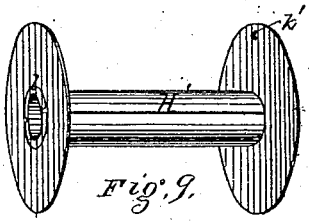

Fig. 9.

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# UNITED STATES PATENT OFFICE.

LATHAM BRIGHTMAN, OF CLEVELAND, OHIO, ASSIGNOR TO CLEVELAND ROLLING MILL COMPANY, OF SAME PLACE.

## IMPROVEMENT IN MACHINES FOR MAKING METALLIC SPOOLS.

Specification forming part of Letters Patent No. **210,088**, dated November 19, 1878; application filed August 26, 1878.

*To all whom it may concern:*

Be it known that I, LATHAM BRIGHTMAN, of Cleveland, county of Cuyahoga, State of Ohio, have invented or discovered a new and useful Improvement in Metallic Spools and their Manufacture; and I do hereby declare the following to be a full, clear, concise, and exact description thereof, reference being had to the accompanying drawing, making a part of this specification, in which—like letters indicating like parts—

Figure 1 is a perspective view of my improved machine for making metallic spools. Fig. 2 is a top-plan view of the same drawn to a reduced scale. Figs. 3 and 4 are detached plan views, drawn to a scale larger than Fig. 1, showing more fully the operation of the machine upon the spool. Figs. 5, 6, 7, and 8 are enlarged detached views of parts of the spool, illustrative of steps in its manufacture; and Fig. 9 is a perspective view of a spool as made on my improved machine.

In preparing wire for use on self-binding harvesters it has been found convenient to wind such wires in continuous lines upon spools of suitable construction, such spools being arranged on the binding device of the harvester in such way that the wire may be unwound therefrom as required.

My present improvement relates to the machine for the manufacture of metallic spools suitable for this purpose.

In the drawings, H, Fig. 5, represents a sheet-metal plate or blank sheared or stamped to the proper form and size for forming the shaft or barrel H′ of the spool. I prefer to punch one or more small holes, *h*, in this blank H, in which the end of the wire may be fastened preparatory to winding the spool. I also clip the corners $h^1$ a little, and, if desired, notches $h^2$ may be cut from the edges forming the ends of the barrel H′, so that the blank being bent to cylindrical form, as in Fig. 8, the ends of such cylinder or barrel may be tapered somewhat, as at *l*.

The disks or heads of the spool K are cut circular, by preference, and one or more small holes, *k*′, made in one or both disks for fastening the end of the wire. Central holes *k* are also made, having, by preference, a diameter a little less than the full diameter of the barrel H′, but large enough to allow the disks K to be slipped onto the tapered ends of the barrel, with the ends of the tapers *l* protruding somewhat. The holes *k* may, however, be made large enough to allow the disks to move onto the full size of the barrel; but I prefer to have them fit tightly thereon, so as to keep their places. These disks K are secured on the barrel H′ by bending or flanging the protruding ends *l* of the barrel against the outer faces of the disks, as seen in Fig. 9.

I make use of the following-described apparatus for performing this last-mentioned flanging operation:

In the drawing, A represents the main frame or bed-plate, which may be supported in any suitable way. On the opposite ends of this frame are mounted, in suitable bearings, shafts *a a*′, which are driven by the spur-gear wheels B B′ and crank-pinion *b*. Other suitable driving mechanism may, however, be employed for this purpose.

Two pressure-blocks, *e e*′, are arranged to operate toward and from each other, their function being to crowd or press the disks K onto the ends of the barrel H′ and hold them there, while sets or punches *n n*′, arranged in a similar manner, advance through central openings in the blocks, and, entering the tapered ends *l* of the barrel, open them out and bend or flange them against the outer faces of the disks. This operation is illustrated in Figs. 3 and 4. These pressure-blocks *e e*′ and sets or punches are actuated by the shafts *a a*′ on their respective sides as follows: From each of the blocks *e e*′ two guide or slide bars, *d d d*′ *d*′, extend back to or against wipers or eccentrics *i i i*′ *i*′ on their respective shafts *a a*′. In thus extending back these guides or bars *d d*′ pass through suitably-shaped boxes or bearings in the cross blocks or beams *m*, so that while the bars *d d*′ and blocks *e e*′ are kept in place, they are yet free to move longitudinally in such bearings, and when the wipers *i i*′ press against the adjacent ends of the guide-bars *d d*′ the blocks *e e*′ will be carried forward or toward each other. In order to carry these blocks backward again, I arrange levers or swinging bars *g g*′ outside of the shafts *a a*′, and adjacent to or so as to be operated by the wipers *i i*′. These levers

 

are pivoted at their lower ends to cross-rods $g^2$, and at their upper ends they are connected by rods $y$ $y'$ to posts $f$ $f'$, which extend up from the blocks $e$ $e'$. As the wipers $i$ $i'$ are turned to the outside of their respective shafts they will press respectively against the levers $g$ $g^1$, moving or swinging them outward, and thereby drawing the blocks $e$ $e'$ back or away from each other.

The sets or punches $n$ $n'$ are made slightly tapering toward the point, and with shoulders $c$ $c'$ at or near the base of each, so that the points of the punches may enter the tapered ends of the barrel H′ and open them out, while the shoulders $c$ $c'$ will flange or bend such ends against the outside of the disks K. These punches or sets are arranged to operate through openings in the blocks $e$ $e'$. They are carried by stems or guide-bars $o$ $o^1$, which extend back through suitable bearings in the beams $m$ to or against eccentrics or wipers $r$ $r'$ on the shafts $a$ $a'$. As these wipers press against the adjacent ends of the stems $o$ $o^1$ the punches or sets will be carried forward or toward each other.

I prefer to arrange the wipers $r$ $r'$ in such relation to the wipers $i$ $i'$ that the blocks $e$ $e'$ shall be caused to advance before the sets $n$ $n'$. In this way the disks K will be forced upon the barrel before the sets or punches enter and open out the tapered ends $l$. The punches or sets $n$ $n'$ are drawn back along with the blocks $e$ $e'$, the blocks engaging shoulders $o^2$ on the stems $o$ $o^1$.

An anvil-block, D D′, for holding the spool to be operated on, is arranged in line between the blocks $e$ $e'$ and sets $n$ $n'$. It is made in two parts, as shown, and the parts hinged together in any suitable way. In each of these parts D D′, and in line with the punches or sets $n$ $n'$, is a concave or half-cylindrical groove, $u$ $u'$, in which the barrel H′ of the spool rests. The length of this block D D′ is equal to the desired length of the spool between the disks K.

A hook, $j$, is pivoted to the part D, and arranged to hook onto a stud or pin, $j'$, on the other part, D′, and thus hold the two parts together. Springs or clips $v$ $v$ are arranged one on each end of the part D′, so that the disks K may be slipped between them and the ends of the block, and thus held in place upon the tapered ends $l$ of the barrel until the blocks $e$ $e'$ advance and force them on tight, and the fastening operation is completed.

Prongs or forks $w$ $w$ are secured to the base A or other convenient part of the device, and they are so adjusted as to engage the disks K when the part D′ is raised or opened up, (see Fig. 1,) and push the spool out of its seat. This operation may, however, be performed by hand or in any convenient way.

If spools of different lengths are required, the holding-block D D′ may be removed along with its attached devices, and another substituted having a length equal to the desired length of spool; and in order then to secure the proper adjustment of pressure-blocks $e$ $e'$ and sets $n$ $n'$, the bars $d$ $d'$ and $o$ $o'$ may be replaced with others of the requisite length; or they may be lengthened or shortened, as required, by means of packers or linings and suitable extension-joints, as at $d'$, Fig. 2.

The operation of this device is as follows: The disks K and barrel H′ being prepared as before described, the barrel H′ is laid in the groove $u$, the part D′ closed down and secured, while the disks are so held on the tapered ends $l$ as to be clasped between the clips or springs $v$ $v$ and the ends of the block. The device is then put in motion. The blocks $e$ $e'$ are first crowded against the disks K by the wipers $i$ $i'$, thus forcing the disks tight upon the ends of the barrel. The sets or punches $n$ $n'$ then advance, and, entering the ends of the barrel, they flange or bend such ends against the outer faces of the disks and fasten them in place. The blocks $e$ $e'$ and punches $n$ $n'$ are then carried back, as before described, the upper part, D′, of the anvil or holding-block is opened up, and the finished spool removed either by the prongs $w$ $w$ or in other convenient way.

I claim herein as my invention—

1. In a machine for making metallic spools, the combination of a holding-block for holding the barrel while operated on, pressure-blocks for forcing the heads or disks of the spool upon the barrel, and sets or punches for flanging the ends of the barrel against the disks, substantially as described.

2. In a machine for making metallic spools, a holding-block made in two parts, adapted to hold the spool between such parts, in combination with clips or springs $v$, arranged for holding the disks of the spool, substantially as set forth.

In testimony whereof I have hereunto set my hand.

LATHAM BRIGHTMAN.

Witnesses:
C. H. PALMER,
W. J. HAYES.