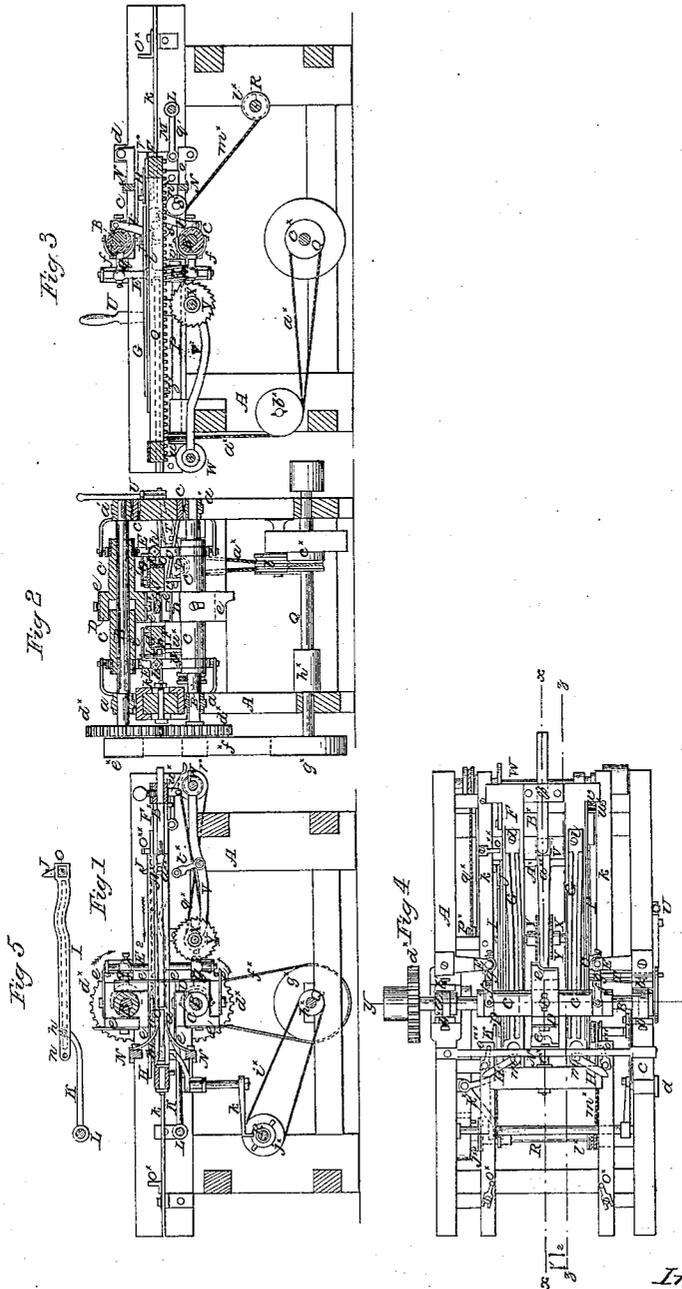


*Olney & Kellogg,
Spoke Machine.*

N^o 22,509.

Patented Jan. 1, 1859.



Witnesses:

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UNITED STATES PATENT OFFICE.

NATHAN OLNEY AND CHAS. H. KELLOGG, OF AMHERST, MASSACHUSETTS.

SPOKE-MACHINE.

Specification of Letters Patent No. 22,509, dated January 4, 1859.

To all whom it may concern:

Be it known that we, NATHAN OLNEY and CHARLES H. KELLOGG, both of Amherst, in the county of Hampshire and State of Massachusetts, have invented a new and Improved Machine for Making Spokes; and we do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the annexed drawings, making a part of this specification, in which—

Figure 1, is a side sectional view of our invention taken in the line *x, x*, Fig. 4, and looking in the direction indicated by arrow 1; Fig. 2, a transverse vertical section of the same, taken in the line *y, y*, Fig. 4; Fig. 3, a side sectional view of the same, taken in the line *z, z*, Fig. 4 and looking in the direction indicated by arrow 2; Fig. 4 a plan or top view of the same. Fig. 5, is a detached side view of the guide or pattern which actuates the cutters in a vertical direction.

Similar letters of reference indicate corresponding parts in the several figures.

This invention consists in the employment or use of expanding cutters in connection with a reciprocating carriage provided with guides or patterns and the "stuff" or stick to be acted upon, the whole being arranged to operate as hereinafter fully shown and described whereby the stick or "stuff" will be cut at one operation into the desired shape to form a perfect spoke.

To enable those skilled in the art to fully understand and construct our invention we will proceed to describe it.

A, represents a rectangular frame which may be constructed in any proper manner to support the working parts. B, B', are two shafts which are placed transversely in said frame, one over the other in the same plane. The bearings *a*, of these shafts at one side of the frame A, are fitted between centers *b*, as shown clearly in Fig. 4, to admit of the raising and lowering of the shafts from said bearings as centers. The bearings *a'*, of said shafts at the opposite side of the frame are also fitted between centers *b'*, and said bearings are attached to bars *c, c*, which are connected to the frame A, at one end by joints *d*, as shown clearly in Fig. 3. On each shaft B, B', two collars C, C, are placed loosely and allowed to slide freely on the shafts, and to the inner end of each collar

C, a cutter head D, is attached. These cutter heads may be of rectangular form and each head has two cutters *e, e*, attached, the principal part of the edges of which are of gouge form and correspond with a side and edge of a spoke, see Figs. 2 and 4. The cutter heads D, D, are so arranged that one may slide within the other, and the cutters of one head project over and be within the plane of rotation of the cutters of the adjoining head. The collars C, C, of each shaft B, B', are connected by forks *f*, to rods *g*, said rods *g*, being attached to vertical shafts E, in the frame A. To each shaft E, an arm *h*, is attached, and to the outer end of each arm *h*, a bar *i*, is secured, said bars having each a pin *j*, at its end.

F, is a carriage which is simply a horizontal rectangular frame fitted between guide plates *k, k*, placed longitudinally in the frame A, of the machine, see Fig. 4. To the upper surface of each side piece of the carriage F, a guide or pattern G, is attached. These guides or patterns are formed of grooved bars as shown clearly in Fig. 4, the grooves being slightly curved at one point and having oblique positions corresponding with the opposite sides or edges of a spoke. The pins *j*, of the bars *i*, fit in the grooves of the guide or pattern G, as shown clearly in Fig. 2. Each guide or pattern G, is pivoted at one end of the carriage F, as shown at *l*. The opposite ends of the guides or patterns G, are forked or divaricated, and an eccentric *m*, is fitted in each fork. To each eccentric an arm H, is attached. To one side of the carriage F, a guide or pattern I, is secured at one end by a pivot *n*, the opposite end of this guide or pattern is forked and an eccentric *o*, fitted therein, said eccentric having an arm J, attached, see Fig. 5, and dotted lines Fig. 1. In the guide or pattern G, a pin *p*, is fitted and works. This pin is attached to an arm K, which is connected to a rock shaft L placed transversely in the frame A. To one end of the shaft L, an arm M, is attached, and this arm is connected by a pivot *q*, to a lever *r*, which is attached to a circular plate *s*, see Fig. 3. The plate *s*, has two arms *t, t*, secured to it at opposite points, and these arms *t*, are attached one to the upper and the other to the lower plate *c*, of the bearings *a'*, of the shafts B, B', see Fig. 3.

On the frame A, traverse bars N, N, are

placed and to these bars pendent curved plates *u*, are attached, said plates serving as bearings for the spoke as it passes between them, as shown clearly in Fig. 1.

5 To one side of the carriage F, a rack O, is attached longitudinally, and in the frame A, a shaft P, is placed. This shaft P, has a screw *v*, placed on it, said screw gearing into the rack O. To the outer end of the shaft P, a pulley *w*, is attached, and a belt *a*^x, passes around said pulley underneath pulleys *b*^x, in the lower part of the frame A, and around a pulley *c*^x, on a shaft Q, in the lower part of the frame A.

15 The two shafts B, B', are connected by gear wheels *d*^x, *d*^x, at one end, and a pulley *e*^x, is placed on the outer end of the upper shaft B, around which a belt *f*^x, passes, said belt also passing around a pulley *g*^x, on one end of the shaft Q. On the shaft Q, there is also placed a pulley *h*^x, around which a belt *i*^x, passes. This belt also passes around a pulley *j*^x, on a shaft R, in the frame A, the pulley *j*^x, being placed loosely on the shaft Q, and connected with it when necessary by a clutch *k*^x, see Figs. 1 and 4. On the shaft R, a pulley *l*^x, is placed and a belt *m*^x, passes around said pulley and also around a pulley *n*^x, on a shaft S, in the frame A. The belt *m*^x, is attached to the carriage F.

The inner end of the shaft P, has its bearing in a lever T, which passes through the side of the frame A, and has a bent handle or lever U, attached to it.

35 On the guide plates *k*, *k*, uprights *o*^x, are attached, the use of which will be hereinafter fully described, and V, is a frame which is fitted in the frame A, and allowed to swing on a shaft W. In the inner end of the frame V, an arbor or shaft X, is placed, and Y, Y, are two saws which are placed on said arbor or shaft directly in line with the cutters *e*. On one end of the arbor or shaft X, a pulley *p*^x, is placed and a belt *q*^x, passes around said pulley and around a pulley *r*^x, on the shaft W, said shaft W, being driven by a belt from the shaft Q. To the frame V, an inclined arm *t*^x, is attached, and to the under side of the carriage F, a drop-arm *u*^x, is attached. To the frame A, a spring *v*^x, is attached, said spring catching below the bearing of the lever T, and keeping the screw *v*, in gear with the rack O.

55 The operation of the machine is as follows:—The "stuff" or sticks shown in red, and designated by A^x, are placed longitudinally in the carriage F, one at a time, the sticks having tenons cut on them at one end. The tenons are fitted in a slotted bar B^x, in the carriage F, and the opposite ends are fitted in a center C^x. The stick it will be seen is prevented from rotating in the carriage. Power is applied to the shaft Q, in any proper way, and the cutter heads D, on

the shafts B, B', are rotated in the direction indicated by the arrows 1. The carriage with the stick A', fitted within it is fed along by the screw *v*, in the direction indicated by arrow 2, the cutter heads rotat- 70 ing quite rapidly compared with the movement of the carriage and the cutter heads D, are moved laterally outward from each other as the carriage is fed along in consequence of the connection formed as described 75 between the guides or patterns G, and the collars C, on the shafts B, B'. The stick A', therefore will be cut in taper form in one direction, or at the opposite sides and when the cutters E, commence upon the stick near 80 its tenon, the guide or pattern I, through the medium of the arm K, shaft L, arm M, lever *r*, and plate *s*, with the arms *t*, *t*, attached, actuate the bars *c*, and consequently the two shafts B, B', so that the upper and 85 lower shafts will approach each other and cut or gouge the stick so as to form the usual hollow *a*^x, adjoining the tenon, see more particularly Fig. 1. When the carriage F, reaches the end of its forward stroke or 90 movement the arms H, H, come in contact with the upright *o*^x, and the eccentrics *m*, will throw out or distend the guides or patterns G, G, and consequently the cutter heads D, D, on each shaft B, B', so that the 95 spoke will not be marred by the cutters *e*, as the carriage F, is "gigged" back, the guides being thrown back to their original position by uprights *o*^x, when the carriage 100 nearly reaches the termination of its backward movement. The cutter heads D, D, are also forced apart in a vertical direction at the proper time and for the same purpose in consequence of the arm J, striking against a projection *o*^x. At the termination of the 105 forward stroke or movement of the carriage F, the clutch *k*^x, is actuated and the pulley *j*^x, is thrown in gear with the shaft R, and the belt *m*^x, will gig back the carriage F, the screw *v*, being thrown out of gear with the 110 rack O, in consequence of a pin *e*^x, striking the spring *v*^x. Just after the commencement of the backward movement of the carriage F, the frame V, is raised in consequence of the drop-arm *u*^x, passing under- 115 neath a pin on the arm *t*^x, of the frame V, and the saws Y, Y, rise and saw or trim off the butts of the spokes adjoining the tenons. The finished spoke is then removed from the carriage F, and another stick fitted within it. The operator shoves forward 120 the upper end of the handle or lever U, so that the screw *v*, will gear into the rack O. The carriage F, then again moves forward and the operation as above described is re- 125 peated.

We are aware that expanding cutter heads have been previously used and we therefore do not claim broadly such device, but

Having thus described our invention, what 130

we claim as new and desire to secure by Letters Patent, is,

1. The expanding cutter heads D, in connection with the guides or patterns G, G, I, attached to the reciprocating carriage F, in which the stick A', to be operated upon is placed the guides or patterns G, G, I, actuating the cutter heads respectively by means of the mechanism, substantially as shown and described for the purpose set forth.

2. We further claim in combination with

the expanding cutter heads D, and the guides or patterns G, G, I, on the carriage F, the circular saws Y, Y, fitted in the frame V, operated automatically by the carriage F, substantially as set forth.

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