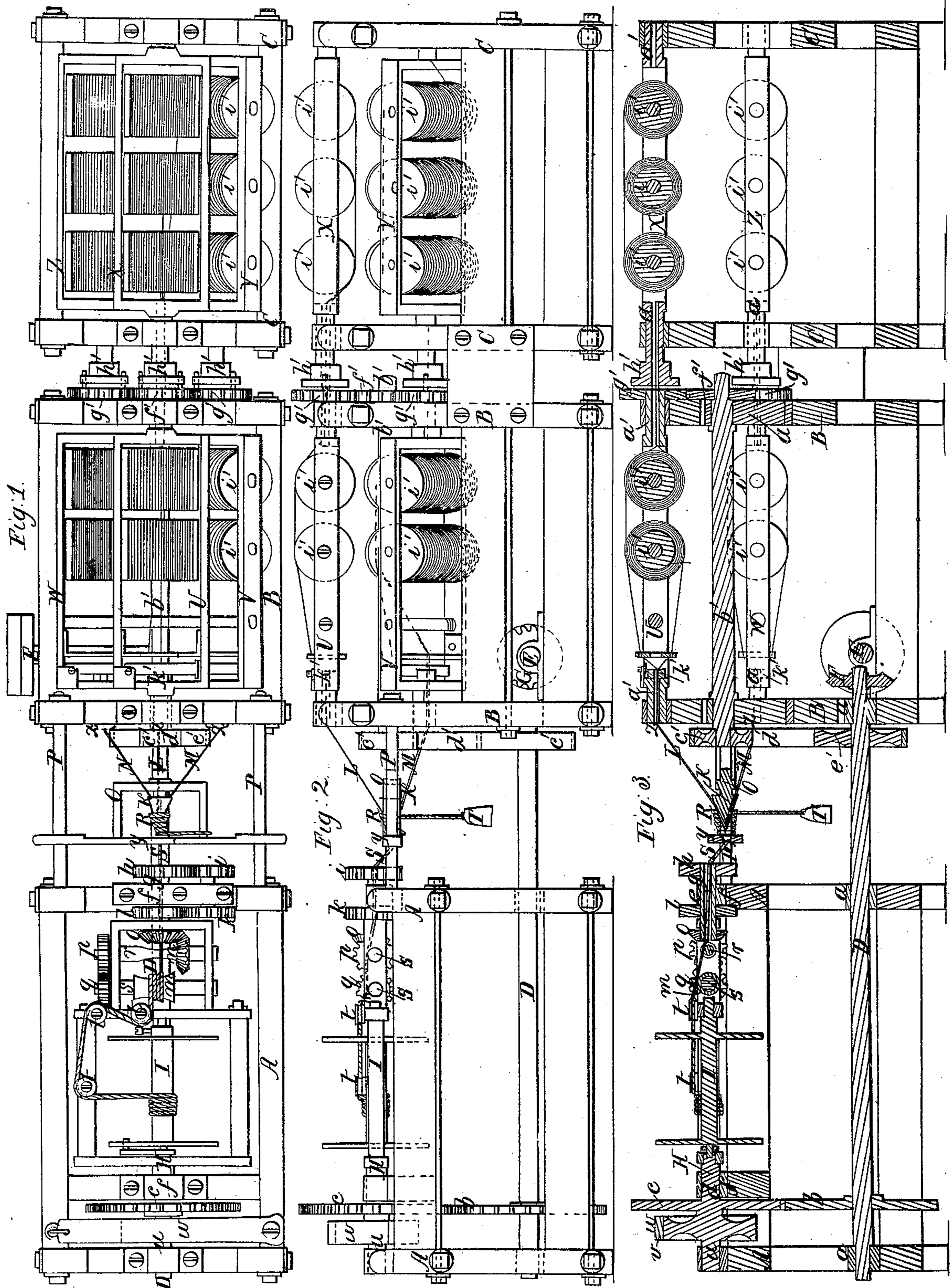


Pearson, Jr. & Gardner.

Cordage Mach.

N^o 13,229.

Patented Jul. 10, 1855.



UNITED STATES PATENT OFFICE.

SAMUEL PEARSON, JR., AND WILLIAM H. GARDNER, OF ROXBURY, MASSACHUSETTS.

IMPROVEMENT IN ROPE AND CORDAGE MACHINES.

Specification forming part of Letters Patent No. 13,229, dated July 10, 1855.

To all whom it may concern:

Be it known that we, SAMUEL PEARSON, Jr., and WILLIAM H. GARDNER, of Roxbury, in the county of Norfolk and State of Massachusetts, have invented new and useful Improvements in Machinery for the Manufacture of Cordage; and we do hereby declare that the same are fully described and represented in the following specification and the accompanying drawings, in which—

Figure 1 denotes a top view of mechanism containing our invention. Fig. 2 is a side elevation, and Fig. 3 a central vertical and longitudinal section, of the same.

In the said figures, three frames A, B, and C are exhibited. The first of these frames—viz., A—may be termed the “laying-frame,” as it contains the flier and bobbin, whose object is to draw and twist or lay into a rope or cord the strands received from the bobbins of the fliers of the other frames B and C. A horizontal shaft D is made to extend from the frame B and throughout the frame A, and to receive motion from a driving-shaft E through connecting bevel-gears F and G, affixed to the two shafts, respectively. The said shaft D rotates in bearings, as seen at *a a a*, and carries a spur-gear *b*, which works into or engages with another gear *c*, fixed on the axle or journal *d* of the laying-flier H. The said flier has its necks or journals *d* and *e* supported in bearings on the top of the frame A, as seen at *f f*. Through its front journal *e* a tubular shaft *g* extends, there being attached to the front end of said shaft a small spur-gear *h*, which engages with a similar gear *i*, fixed upon the same shaft with another gear *k*, which is driven by a gear *l*, fastened on the neck or journal *e* of the flier.

By means of the gears *i*, *k*, *l*, and *h*, the tubular shaft *g* obtains rotary motion from the flier and independently thereof, such motion being intended to operate the draw-roller *m* of the flier H, it being communicated to said flier through two beveled gears *n o* and two spur-gears *p q*, arranged and applied to the shafts *g*, *r*, and *s*, as seen in Figs. 1 and 3, the draw-roller being carried by the shaft *s*. From this draw-roller the rope or cord, after having been wound several times about the roller, is led around guide-rollers *t t* and upon the reeling-bobbin I. This bob-

bin is connected with the shaft *u* of a friction-wheel *v*, operated upon by a friction-brake *w*, the object of the friction brake and wheel being to cause the bobbin to take or wind up the rope or cord as fast as it may be formed.

Between the laying-frame A and the frame B there is arranged what is termed the “lay-top” K, which is a cone or conic frustum having its external surface grooved longitudinally for the reception of the strands L, M, and N, extending from the several fliers. (To be hereinafter described.) This laying-top is supported by a frame O, which is sustained upon rods or bars P P, connecting the two frames A B, as seen in the drawings. A hole *x* for the reception of the twisted cord or rope is made through the plate or bar *y* of the frame O, such hole having its axis in range with that of the laying-flier and the laying-top, whose smaller end is placed at a short distance from the bar *y* or one sufficient to permit a rope or strap R to be wound several times around the twisted rope S. The said rope or strap R has one end fastened to the frame O, and is wound about the rope S and the laying-top, and has its other end attached to a weight T or its equivalent. By means of the weight the rope or strap is drawn closely upon the rope S and the strands from the fliers, and forms, as it were, a flexible tube through which said rope is drawn, the same serving to prevent any unevenness of laying or twisting of the rope, and at the same time imparting to said rope a very smooth finish or appearance of great advantage to it. The several strands L, M, and N proceed from the tubular necks *z z z* of three fliers U V W, arranged in the stationary frame B. The frame C contains three other such fliers X, Y, and Z. The several front and rear necks of these fliers are made tubular or with passages through them, as seen at *a'*, and each flier of the frame B has its twisting-axis arranged in line with that of another flier of the frame C.

Extending longitudinally throughout the frame B and between its fliers there is a shaft *b'*, which carries at one end of it a pulley *c'*, that is fixed upon the shaft, and has an endless band or belt *d'* extended around it and another or driving pulley *e'* fastened upon the

shaft D. Thus by means of the said pulleys *b'* and *c'* and their belt *d'* motion is communicated from the shaft D to the shaft *b'*. On the opposite end of the shaft *b'* is a pinion-gear *f'*, it being made to engage with three spur-gears *g' g' g'*, fixed, respectively, on the rear necks of the fliers U V W, the said gears and pinions serving to impart rotary motion from the shaft *b'* to the said fliers. Each front neck of the series of fliers X Y Z of the frame C is provided with a sliding clutch *h'*, so made and applied to it and the next adjacent gear *g'* or its neck as to enable a person to so connect its two fliers in range with one another as to cause that in rear to be put in rotation by that in front whenever the same may be desirable. Each flier of each of the frames B and C is caused to carry one, two, or more bobbins, as seen at *i' i'*, they being extended transversely across it.

Each of the fliers of the frame B is provided with a leading or guide plate *k'*, through which the several yarns from the bobbins are led or carried before passing them into the neck of the flier, those proceeding from the bobbins of the frame C being extended through the front necks of their respective fliers and thence through the rear necks of the fliers of the frame B.

Instead of two frames B and C, there may be three, four, or even a greater number of such frames, which together with their fliers may be arranged and connected together, as are the frames B and C and their fliers.

The object of employing several frames of fliers or series of fliers under an arrangement and mode of connecting them as hereinbefore described is to adapt the machinery to the manufacture of ropes of various sizes, a rope of one size being made by using only the fliers of the frame B in connection with the machinery described as applied to it and the other frame A. If a rope of larger size is to be made, the fliers of the frame C may be jointed, respectively, to those of the frame B, and if a rope of still larger size is to be made fliers of one or more of such frames B may be

employed in a similar manner, the above method of operating, applying, and arranging machinery of the above kind presenting important advantages in the manufacture of ropes, as will be obvious to any skillful rope-maker. The strands proceeding from one series of fliers are supported by the necks of the next series, such mode of sustaining them being of great service in preventing them from injury.

We do not claim the combination of a laying frame or flier and a series of twisting-fliers, each of which is made to carry one or more bobbins; but

What we do claim is—

1. Arranging two or more twisting-fliers or two or more series of the same with the twisting axes of revolution of one of them in line with the others, respectively, and combining with each two fliers in line hollow tubular necks, (for the reception and support of yarn or strands from the bobbin, as described,) and a contrivance or contrivances for either uniting or disconnecting such necks, so that the fliers of the several series thereof may be rotated together or separately, as specified, in order that when small sizes of rope are to be made only one twisting-flier or series may be put in operation, and when larger sizes of rope are to be manufactured two or more twisting-fliers or series thereof may be combined and put in action together and with one laying-flier, as specified.

2. The rope or strap R and its weight T, or the equivalent thereof, in combination with the conical laying top K, and the bearing-plate *y*, the same being made to operate in manner and for the purpose of smoothing and finishing the rope, as hereinbefore described.

In testimony whereof we have hereunto set our signatures this 8th of December, A. D. 1854.

SAML. PEARSON, JR.
WM. H. GARDNER.

Witnesses:

R. H. EDDY,
F. P. HALE, Jr.