

S. PEARSON, JR. & W. H. GARDNER.
REGULATING THE SIZE OF ROVING.

Fig. 1.

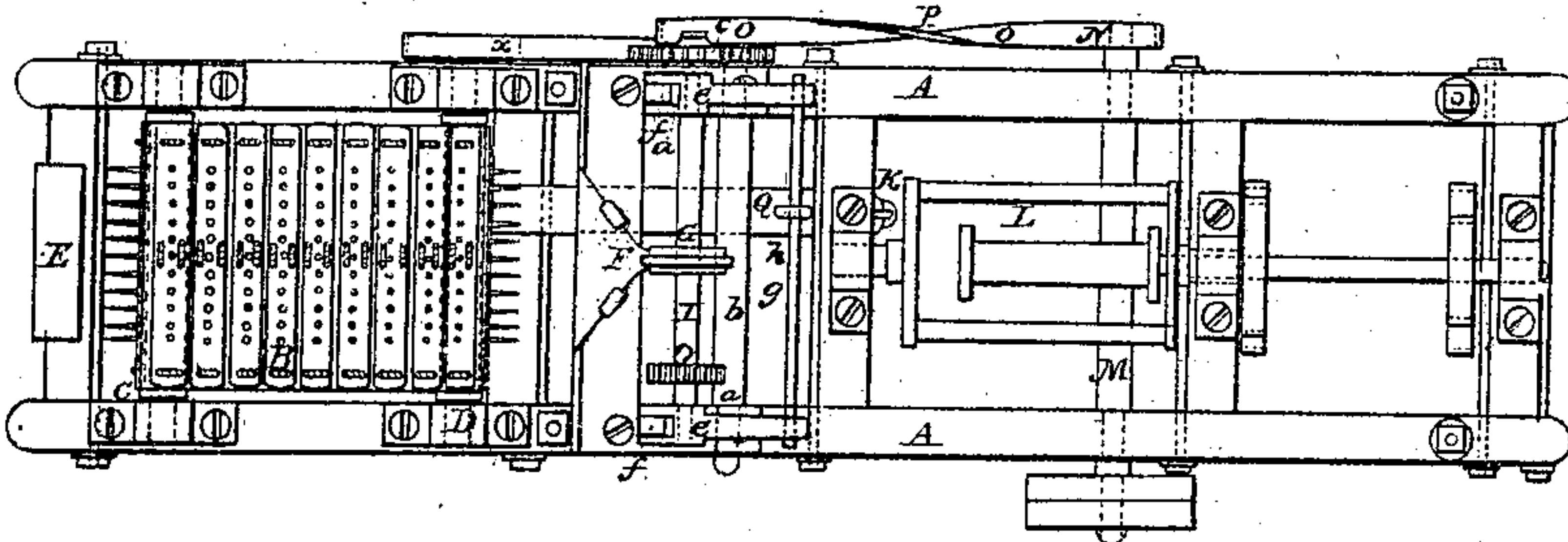


Fig. 2.

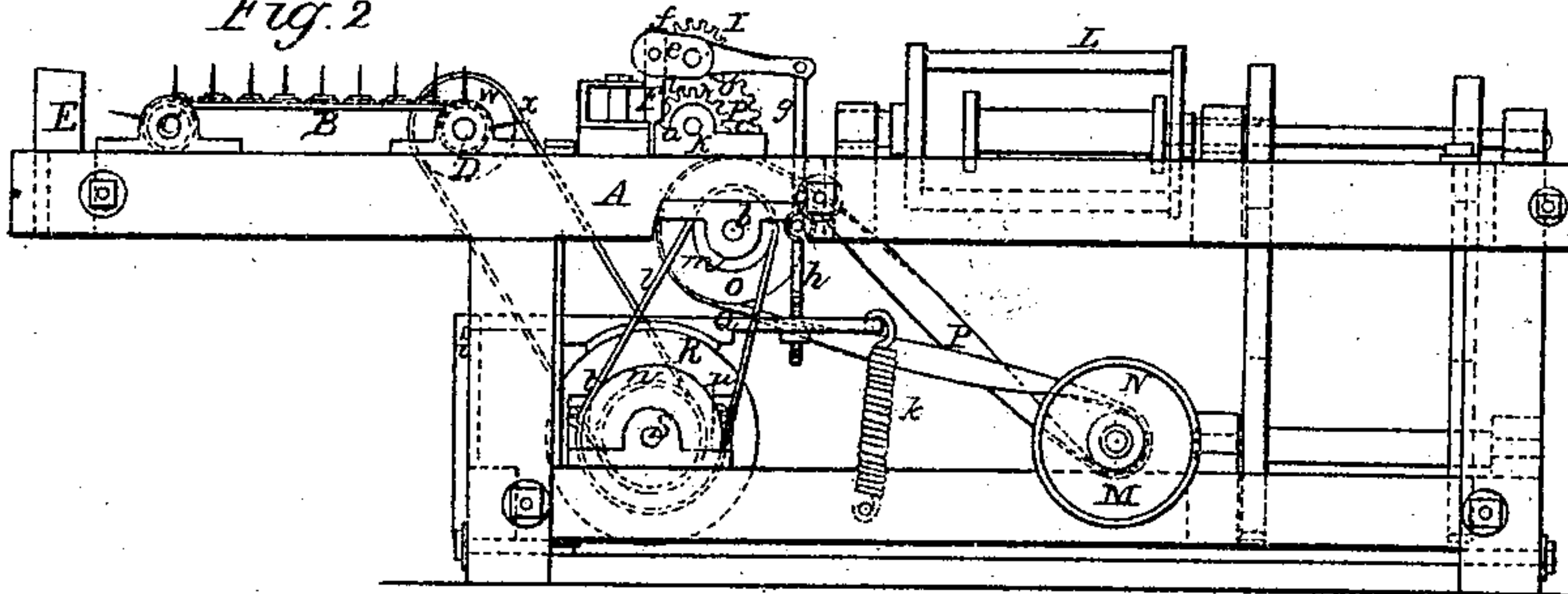


Fig. 3.

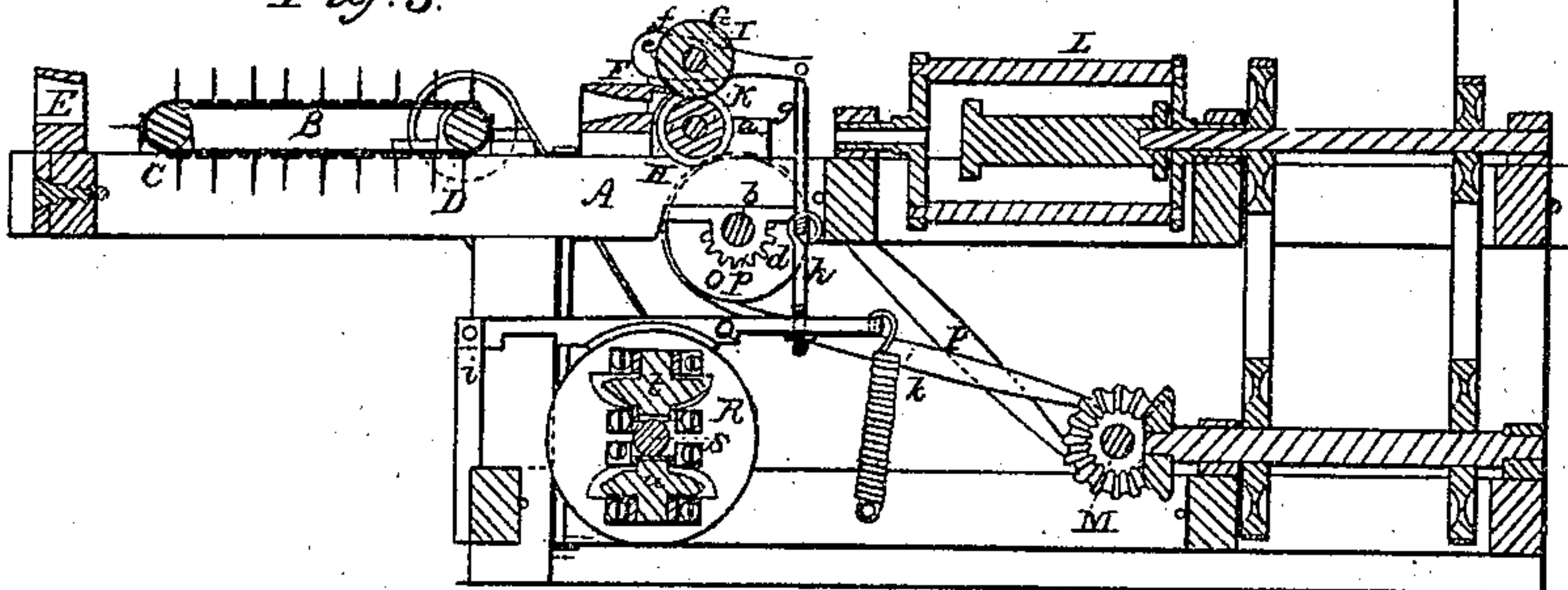


Fig. 5.

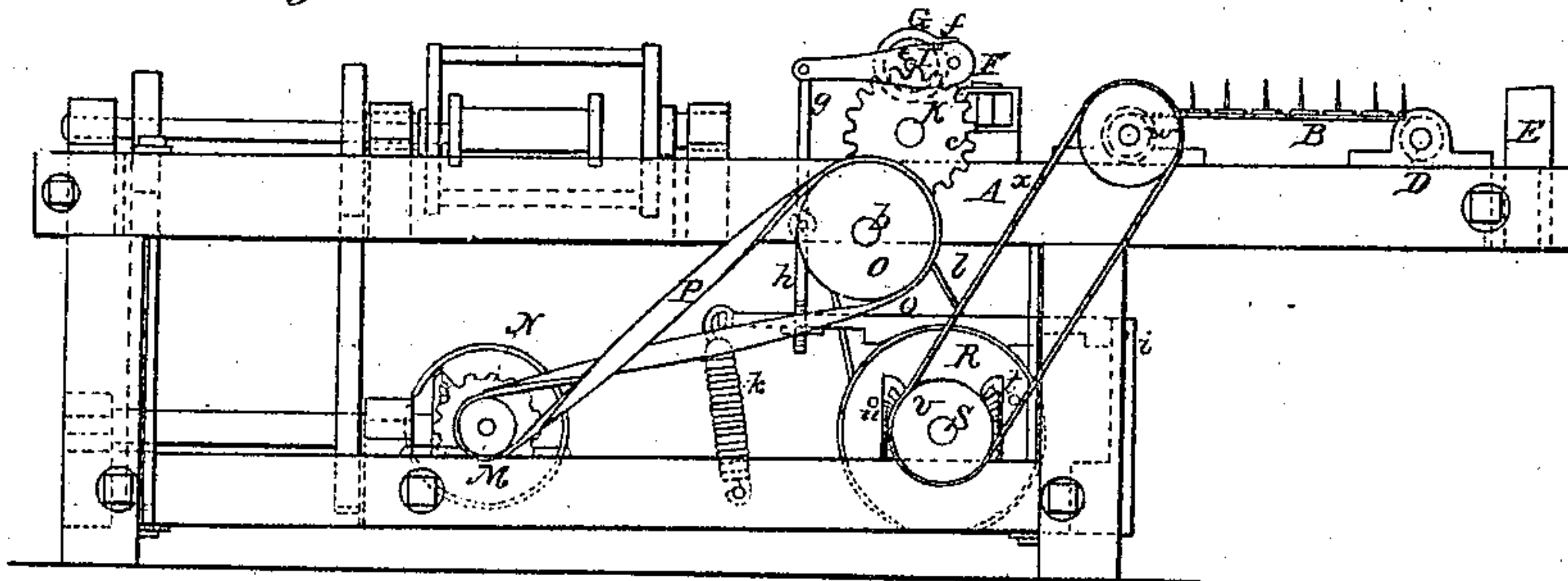
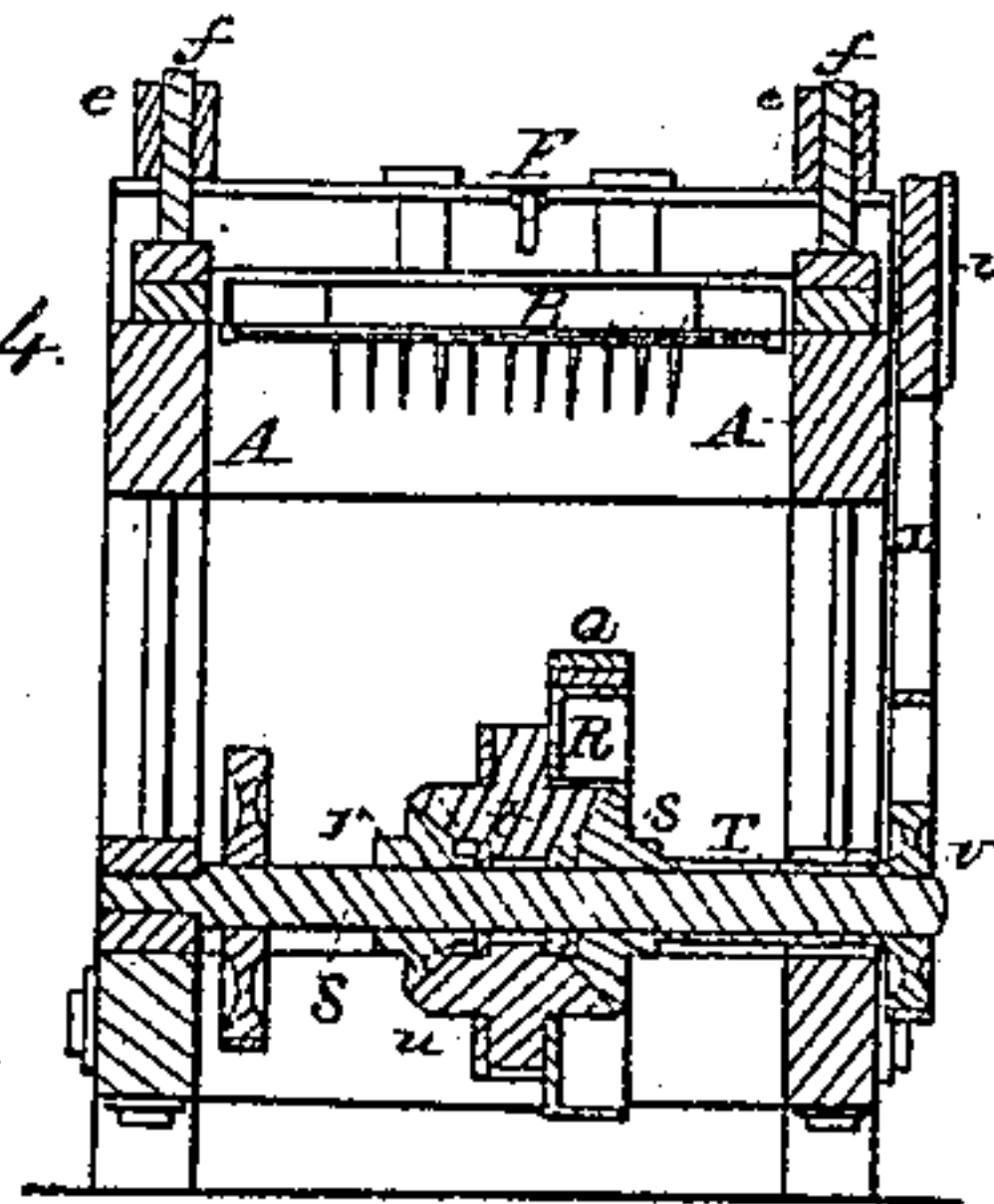


Fig. 4.



UNITED STATES PATENT OFFICE.

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

REGULATING THE SIZE OF ROVING.

Specification of Letters Patent No. 12,138, dated January 2, 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 a new and useful Mechanism for Regulating the Size of Roving in a Machine for Spinning Hemp or other Fibrous Material; and we do hereby declare that the same is fully described and represented in the following specification and the accompanying drawings, letters, figures, and references thereof.

Of the said drawings, Figure 1, represents a top view of a machine for preparing and spinning hemp or other fibrous material, said machine being fitted with our invention: Fig. 2, is a side elevation of the same: Fig. 3, is a vertical, central and longitudinal section of it: Fig. 4, is a transverse section of it taken through the shaft of the regulator: Fig. 5, is another side elevation.

In the said drawings A, denotes the main frame of the machine.

B, is an endless band of heckle pins made to work around two rollers C, D, as seen in Fig. 3. Back of this belt is a slotted guide E, through which the hemp or fibrous material is introduced to the heckling belt. In rear of the heckling belt, there is a guide or contracted mouth, F, by which the fibrous material from the heckling belt is directed to and between two drawing rollers, G, H, supported respectively on shafts I, K. In advance of the drawing rollers is the flier, L, and the mechanism by which it is operated; such flier receiving its motion from the driving shaft, M, by mechanism as shown in the drawings, or by any other such as usually employed for such purpose.

As the mechanism for rotating the flier constitutes no part of our invention it will be unnecessary to herein describe the same. The shaft of the lower draw roller, H, is made to revolve in stationary boxes, *a, a*, and it receives motion from another shaft, *b*, (placed below it,) by means of two gears, *c, d*, fixed respectively on said shaft. On one end of the driving shaft, M, there is a pulley N, around which and another pulley, O, fixed upon the shaft, *b*, an endless cross belt, P, is made to travel and to communicate motion to the shaft, *b*. The shaft of the upper draw roller, G, is supported in two levers *e, e* arranged as seen in Figs. 1, 2, and 3, and supported on fulcra extending through two posts, *f, f*. The tail ends of

these two levers are united by a curved yoke or bar, *g*, which by means of a bar or link, *h*, is connected to a brake, Q, (see Fig. 3). This brake turns at one end on a fulcrum in a post, *i*, and is borne downward against the perimeter of the wheel R, by means of a spring *k*, (see Fig. 3). The said wheel, R, turns freely upon a horizontal shaft S, upon which is placed a tubular shaft, T, (see Fig. 4,) the said tubular shaft being made to freely rotate on the shaft, S.

By means of an endless band, *l*, made to work around two pulleys, *m, n*, situated respectively upon the shafts, *b*, and S, motion is communicated from the shaft *b*, to the shaft, S. The two shafts I, K, of the draw rollers have gears, *o, p*, fixed respectively upon them and for the purpose of enabling the lower of said shafts to put the upper one in rotation. Each of the shafts, S, and T, is made to carry a beveled gear, *r*, or, *s*, (see Fig. 4,) while the brake wheel, R, is provided with one or two beveled gears, *t, u*, arranged between two gears, *r*, and, *s*, and made to engage with them. The tubular shaft, T, carries a pulley, *v*, around which and a pulley, *w*, fixed upon the shaft of the roller, D, an endless belt, *x*, is made to travel and to communicate motion from one shaft to the other so as to put the heckle belt or gill in movement. The hemp, flax, wool or other fibrous substance to be prepared and spun by the machine is to be passed into and through the guide, E, and carried forward by the endless chain of heckle pins, from thence it is made to enter the contracting guide, F, and to pass between the drawing rollers and to the flier or bobbin or to the receiving cam of a drawing frame as the case may be.

It will be perceived that the size of the thread or roving must be governed by the speed of the heckle belt, the drawing rollers being always driven at a regular velocity. Under these circumstances if the motion of the heckle chain be retarded it must of necessity cause the roving or thread to become smaller; so if such motion be accelerated it must also cause the roving or thread to become larger, for the reason that in the one case, the heckle belt would deliver the fibrous material to the drawing rollers in a smaller quantity or slower, while in the other case, it would be the reverse, for the delivery would be faster; now as there is much inequality in the thickness

or size of the sliver as it is passed over the heckle chain or belt, in order to produce an even thread or roving, there must be in every change of the thickness of the sliver a corresponding movement of the heckle chain, for should the sliver in passing to the drawing rollers become too large it will while it enters the bite of them force upward the upper roller and thereby elevate the brake lever, Q, that bears upon the brake wheel or pulley, R, thereby causing such pulley to slip over the brake; now, just in proportion as the pulley is allowed to so slip, the motion of the gill or heckle chain will be retarded and should the sliver of fibrous material while passing between the drawing rollers become so thick as to cause the brake to be elevated entirely clear from the wheel or pulley R, the gill will stop and remain stationary until the sliver is drawn down to the proper size which having taken place, the brake bearing upon the pulley will again give a forward motion to the gill chain.

It will thus be seen that by means of our invention the gill chain is not only stopped and started, but it has imparted to it a different degree of motion corresponding with every difference in the thickness of the sliver—such means of regulating the action of the gill being made to produce an even and uniform thread or roving. When the brake is lifted entirely off its wheel, R,

such wheel is left free to rotate upon the shaft, T, and it will so revolve, or be made to revolve by the action of the beveled gear, *r*, in its gears, *t*, *u*, such gears traveling around in the gear, *s*, without revolving it or producing any motion of the shaft, T. The moment however that the brake wheel is retarded or has its motion arrested, the gear, *u*, will be stopped from their rotations around the shaft, S, and will put the gear, *s*, and shaft, T, in rotation.

From the above it will be readily understood how that the motions of the gill are regulated and how said gill is stopped in its motion and subsequently put in movement as circumstances may require.

We claim—

The combination of the brake, Q, (forced downward by a spring of its equivalent) the brake wheel, R, the shafts, S, and T, and the connecting gearing of such shafts as applied to the draw-rollers and the gill or heckle belt and made to operate and produce effects substantially as herein before stated.

In testimony whereof we have hereunto set our signatures this fifth day of October A. D. 1854.

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

Witnesses:

CALEB EDDY,
F. P. HULE, Jr.