W. A. HODGKINS.

MACHINES FOR KNITTING FANCY LOOM HARNESS.

No. 179,855. Patented July 18, 1876.

Fig 1.

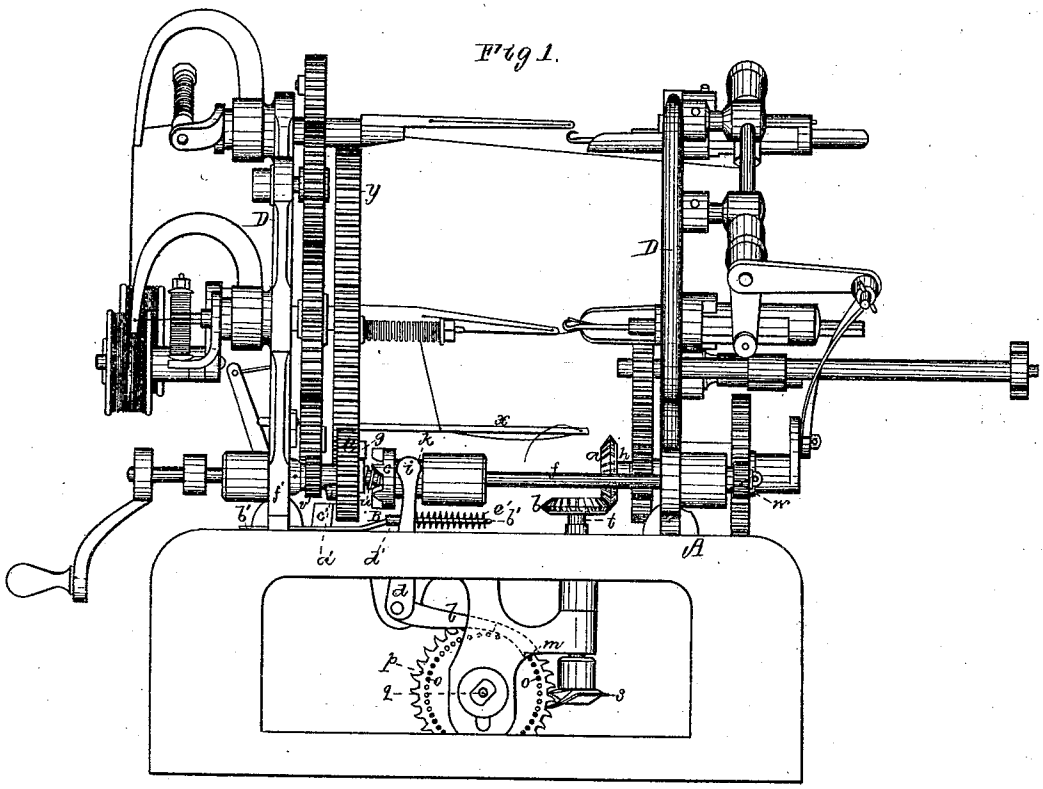
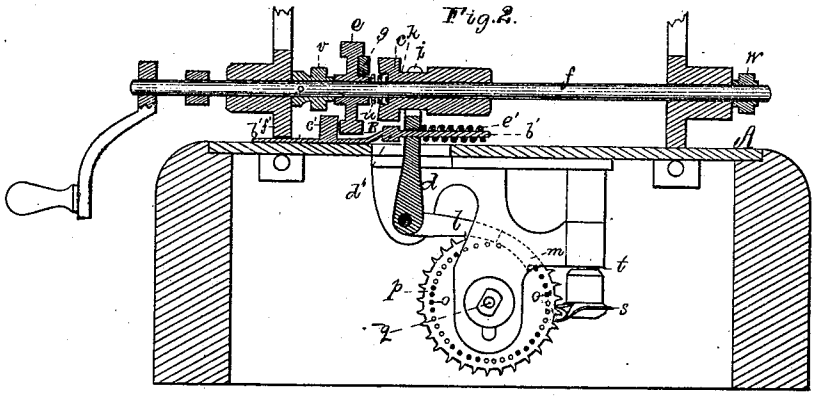


Fig 2.



Witnesses

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WILLIAM A. HODGKINS, OF LAWRENCE, MASSACHUSETTS.

IMPROVEMENT IN MACHINES FOR KNITTING FANCY-LOOM HARNESS.

Specification forming part of Letters Patent No. **179,855**, dated July 18, 1876; application filed May 13, 1876.

To all whom it may concern:

Be it known that I, WILLIAM A. HODGKINS, of Lawrence, of the county of Essex and State of Massachusetts, have invented a new and useful Machine for the Manufacture or Knitting of Fancy-Loom Harness; and do hereby declare the same to be fully described in the following specification, and represented in the accompanying drawings, of which—

Figure 1 is a front elevation of such machine, Fig. 2 being a vertical and longitudinal section of its driving-shaft and the clutch thereof.

In carrying out my invention, I have combined with a loom-harness knitting-machine, of common construction, mechanism by which the operations of knitting the heddles are produced intermittingly, while those of making the back or braid bands, and the feeding of the work along, are carried on continuously or uninterruptedly, in order to enable the machine to manufacture what is termed a "fancy harness"—that is, a harness having several series of heddles arranged with spaces between them.

In the drawings, all of the mechanism shown above the top of the table A, with the exception of the two bevel-gears *a b*, the sliding clutch *c*, its operative lever *d*, and the heddle mechanism driving-gear stopping mechanism B, constitutes a common and well-known harness knitting-machine for knitting the heddles and their back or braid bands, and consequently need not be further described. This mechanism is marked D. In applying to such machine D mechanism for intermittingly arresting the knitting of the heddles, I have the heddle-knitting mechanism driving-gear *e* of the driving-shaft *f* arranged to run loosely upon such shaft, and apply to such gear, on its side, a tooth, *g*, to engage with a sliding clutch, *c*, arranged on the driving-shaft, and applied thereto so as to revolve therewith and be capable of being moved toward or away from the driving-gear, in order to cause the said gear to be revolved by the clutch and with the shaft at such times as the knitting of the heddles are to be carried on. The furcated arm *i* of a bent lever, *d*, enters a groove, *k*, in the clutch, such lever being arranged as shown, and having its other arm, *l*, provided with a projection or stud, *m*, which is immediately over a series of pins, *o*, inserted in and projecting from one side of a worm pattern-gear, *p*, whose axle is supported by a standard, *q*, all being as shown. This worm-gear *p* has extending through it a series of holes arranged in a circle and adapted to receive pins *o*, which are to project from the gear in sets of four or other suitable number, with a space between each set and that next to it. With the worm or pattern gear a worm, *s*, engages, such worm being constructed to simply turn the pattern-gear suddenly through an arc corresponding to the distance between the centers of two of its next adjacent pin-holes. The said worm is fixed upon a vertical shaft, *t*, on whose upper part is fixed a bevel-gear, *b*, that engages with another bevel-gear, *a*, fastened upon the lower crank-shaft *h* of the knitting-machine D. During the revolution of the last-named shaft *h*, the bevel-gears *a b* will be put in action so as to produce a continuous revolution of the shaft *t*, whereby the pattern-wheel will be intermittingly revolved, and while the tooth or stud *m* may be passing over and upon any of the pins the clutch will be in engagement with the driving-gear, and the knitting of the heddles and back bands will be carried on; but on the stud moving off any set of the pins, a spring, *u*, applied to the driving-shaft and the clutch, will force the latter out of engagement with the driving-gear *e* of the heddle-knitting mechanism, whereby such gear will stop revolving and the driving-shaft will simply revolve the driving-gears *v w* of the mechanism for making the backbands and effecting the feeding of the work. While the stud *m* may be off any set of the pins, the heddle-knitting mechanism will be out of operation. The heddle mechanism driving-gear stopping mechanism, marked B, is for the purpose of causing the twine-carrying arm *x* of the cogged ring *y* of the heddle-knitting mechanism to be arrested at its proper position in front of the machine. This mechanism B consists not only of a stud, *a'*, projecting from the side of the gear, but of a slide-bar, *b'*, provided with a projection, *c'*, a shoulder, *d'*, and a spring, *e'*, all arranged

as represented. The bar b' extends through the furcated arm i, and also through a standard, f', of the knitting-machines.

As the furcated arm moves back to disengage the clutch from the gear, it draws the slide-bar b' with it, until the projection c' is brought up to the gear, such projection acting with the stud a' to stop the gear from revolving, and revolving the cogged ring when the arm x is at its stopping position. On the furcated arm being moved to force the clutch into engagement with the gear, the slide-bar b' will be moved so as to carry the projection c' out of the way of the stud a', just before the engagement of the clutch with the gear is effected.

I claim—

1. In combination with a harness-knitting machine, D, mechanism, substantially as described, for intermittingly arresting the operations of the part of such machine by which the heddles are made, such mechanism, consisting of the bevel-gears a b, shaft t, worm s, pattern-gear p, having holes and pins, as described, furcated lever d, clutch c, tooth g, and spring u, all arranged and applied essentially as specified.

2. The heddle driving-gear stopping mechanism B, substantially as described, in combination with the loom-harness knitting-machine D, and mechanism, essentially as specified, for intermittingly arresting the operations of the part of such machine by which the heddles are made.

3. The heddle driving-gear stopping mechanism B, substantially as described, in combination with mechanism, essentially as specified, for intermittingly arresting the operations of that part of a harness knitting-machine by which the heddles are knit or formed.

WILLIAM A. HODGKINS.

Witnesses:

R. H. EDDY,

J. R. SNOW.