

No. 700,613.

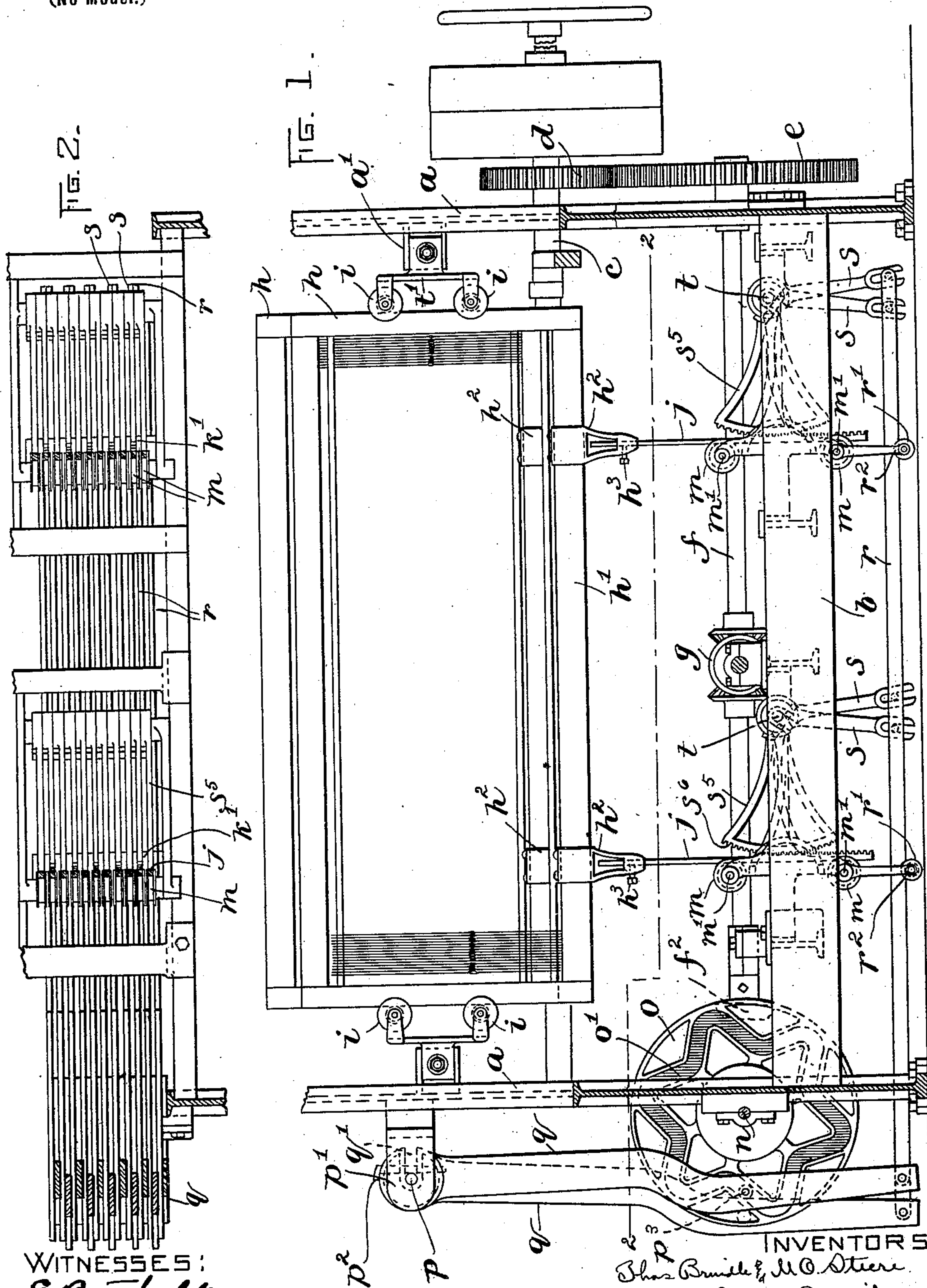
Patented May 20, 1902.

T. BRINDLE & M. O. STEERE.
HARNESS MOTION FOR LOOMS.

(Application filed July 18, 1901.)

2 Sheets—Sheet 1.

(No Model.)



WITNESSES:

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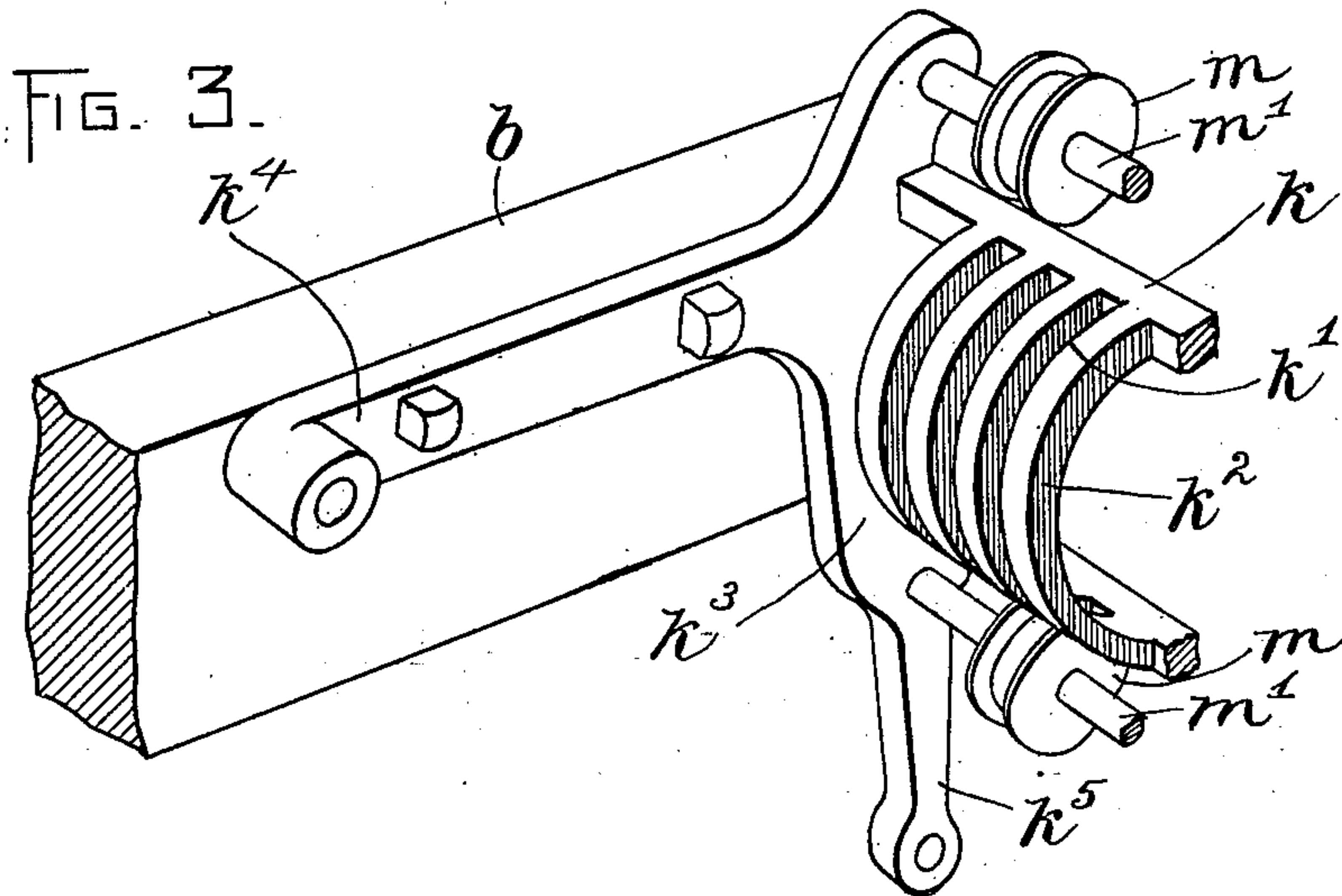


FIG. 6.

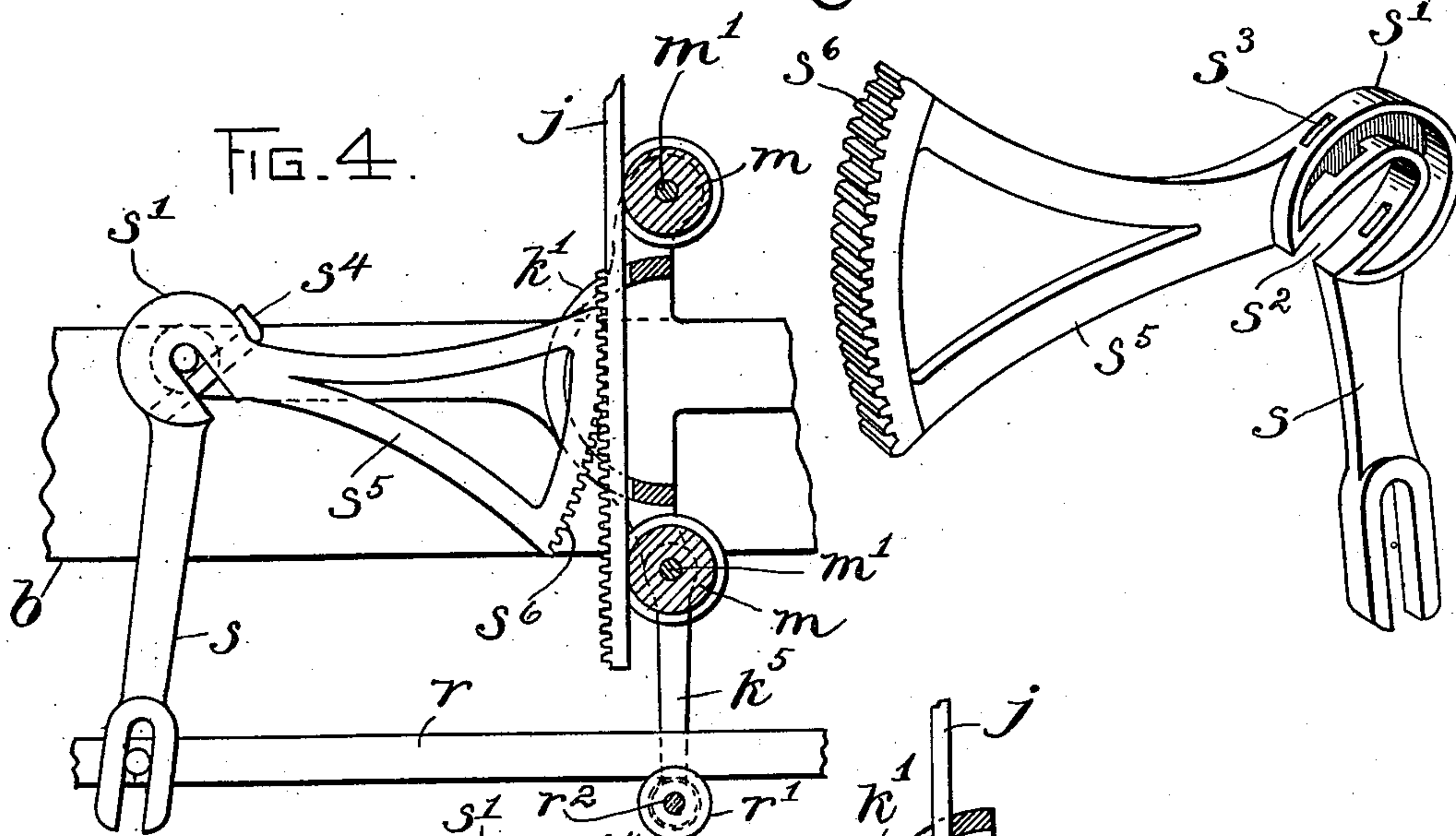


FIG. 5.

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UNITED STATES PATENT OFFICE.

THOMAS BRINDLE AND MERRILL O. STEERE, OF PAWTUCKET, RHODE ISLAND, ASSIGNORS TO BRINDLE-STEERE COMPANY, OF PORTLAND, MAINE, A CORPORATION OF MAINE.

HARNESS-MOTION FOR LOOMS.

SPECIFICATION forming part of Letters Patent No. 700,613, dated May 20, 1902.

Application filed July 18, 1901. Serial No. 68,798. (No model.)

To all whom it may concern:

Be it known that we, THOMAS BRINDLE and MERRILL O. STEERE, of Pawtucket, in the county of Providence and State of Rhode Island, have invented certain new and useful Improvements in Harness-Motions for Looms, of which the following is a specification.

This invention has relation to looms, and more particularly to harness-motions therefor.

The object of the invention is to provide an improved harness-motion which is applicable for use on narrow-ware looms, although, as will be understood from the following description, the mechanism may be adapted for looms of other types.

The invention is designed to provide mechanism of the character referred to by means of which the harnesses will be moved quickly and steadily without jarring or causing dancing of the warp.

On the accompanying drawings, which illustrate one embodiment of the invention, Figure 1 represents a partial section through a portion of a loom equipped with the invention. Fig. 2 represents a section on the line 2 2 of Fig. 1. Fig. 3 represents a perspective view of one of the guides. Figs. 4 and 5 illustrate sections through one of the racks and segments and illustrate different forms of guides. Fig. 6 illustrates one of the gear-segments in detail.

On the drawings the frame is shown as including in part the side standards a a and the cross-bar b . It has the usual crank-shaft c , connected by the gears d and e with the shaft f . The last-mentioned shaft is provided with gearing, (indicated as a whole at g ,) which forms no part of this invention and need not be hereinafter referred to. From the said shaft f , however, motion is imparted to the actuating-cams.

The harnesses include the heddle-frames h h , which are mounted to slide vertically between the rollers i i , arranged in pairs, each pair being journaled upon a support t and adjustably secured to a bracket a' on each of the side standards. To the lower cross-bar

h' of each heddle-frame there are detachably secured rack-bars j , the means of attachment comprising a clip h^2 on the said cross-bar and a set-screw h^3 , by which the rack is clamped. The said racks are arranged to slide vertically in guides, said guides being formed with a curved plate k , which is slotted at k' to provide parallel curved bars k^2 . The racks may, if desired, rest against rollers m m on shafts m' m' , Fig. 3, supported by the end portion k^3 of the guide; but said rollers may be dispensed with, as shown in Fig. 5.

Preferably the curved support and the end portions are formed in one casting and are secured to the cross-bar b by screws, bolts, or other fastening devices. The said end portions are further provided with arms k^4 k^5 , for a purpose to be described.

The shaft f is provided on its end with a bevel-gear f^2 , intermeshing with and driving a bevel-gear on a transversely-arranged shaft n , journaled in bearings on one of the side standards a . Upon this shaft is secured a plurality of cams o , having star-shaped cam-grooves o' , there being as many cams as there are heddle-frames.

Loosely journaled upon a shaft p , secured in the support p' , attached to the said last-mentioned standard, are a plurality of jacks or levers q , each jack being provided with a slot q' to receive the shaft p and being held in place by a wedge p^2 , arranged transversely of said slot. Each jack is provided with a roll or projection p^3 to enter into the cam-groove o' of one of the cams o , so that as the said cams rotate the jack will be oscillated, as will be readily understood. To the lower end of each jack is attached a connecting-rod r , supported upon rollers r' , journaled on shafts r^2 , secured to the arms k^5 . Each rod has a pin-and-slot connection with the lower arms s s of two bell-crank levers, which are fulcrumed upon shafts t t , secured in the ends of arms k^4 of the support previously referred to. The hubs s' of said bell-cranks are slotted, as at s^2 , to permit their lateral removal from the fulcrums and are also apertured, as at s^3 , for the reception of securing-pins s^4 , which hold them in place. The laterally-pro-

jecting arms s^5 of the bell-cranks are segmental at their ends and are provided with teeth s^6 to engage the teeth of the racks j . Inasmuch as each rod r is connected to two bell-cranks, the latter are intermeshed with the racks j of a single heddle-frame h^2 , and consequently the oscillation of a jack q will cause the vertical reciprocation of the heddle-frame through the medium of the connecting rod r and the bell-cranks having the segmental racks.

The mechanism thus described is extremely simple in construction, but highly efficient in operation. The parts are but few, yet positive in their action, and are capable of ready removal and replacement, an important feature in case of breakage.

It is evident that various mechanical equivalents may be substituted for the devices which are herein shown and described and that this invention is therefore not limited to the precise details of construction herein described.

Having thus explained the nature of the invention and described a way of constructing and using the same, although without attempting to set forth all of the forms in which it may be made or all of the modes of its use, it is declared that what is claimed is—

30 1. A harness-motion for looms, comprising a heddle-frame, a cam-actuated jack, and rack and segment mechanism interposed between said jack and said frame for positively actuating the latter.

35 2. A harness-motion for looms, comprising a heddle-frame, one or more depending racks attached to said frame, guides for said frame, one or more toothed segments engaging said rack or racks, a pivoted jack or lever attached to said segment or segments, and a
40 cam for actuating said jack.

3. A harness-motion for looms, comprising a heddle-frame, means engaging the ends of said frame for guiding it vertically, and cam-actuated mechanism connected to said frame 45 for moving it positively first in one direction and then in the other, all of the connections between the cam and the frame being rigid or inflexible.

4. A harness-motion for looms comprising 50 a heddle-frame, guides for said frame, one or more bell-cranks connected to said frame, a cam-actuated jack connected to said bell-crank or bell-cranks to reciprocate said frame.

5. A harness-motion for looms, comprising 55 a heddle-frame, means for guiding said frame, a pivoted jack, means connecting said jack with said heddle-frame, and a cam having a star-shaped cam-groove for actuating said jack, all of the connections between the cam 60 and the frame being rigid or inflexible.

6. A harness-motion for looms comprising a heddle-frame, a cam having a cam-groove, a pivoted jack having a projection entering said groove, one or more bell-cranks located 65 below the said heddle-frame and connected thereto, and a connecting rod connecting said jack with said bell-crank or bell-cranks, substantially as described.

7. A harness-motion for looms comprising 70 a heddle-frame, a rack connected to said heddle-frame, a guide for said rack, a toothed segment engaging said rack and holding it in the said guide, and means for actuating said segment.

In testimony whereof we have affixed our signatures in presence of two witnesses.

THOMAS BRINDLE.
MERRILL O. STEERE.

Witnesses:

THOMAS RILEY, Jr.,
HUGH J. CARROLL.