

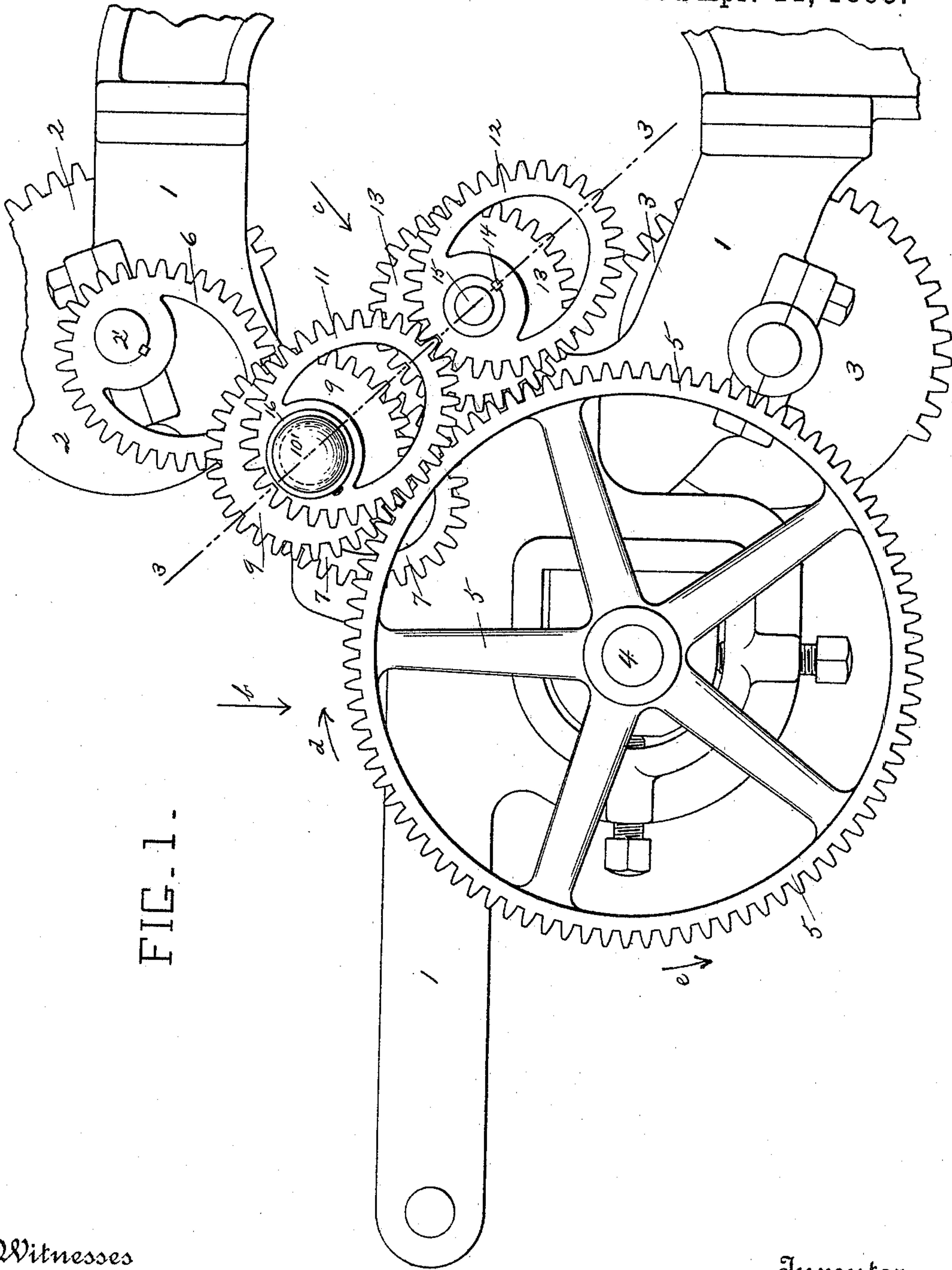
(No Model.)

2 Sheets—Sheet 1.

T. J. CORCORAN.
PATTERN MECHANISM FOR LOOMS.

No. 495,453.

Patented Apr. 11, 1893.



Witnesses

Chas. F. Fletcher
Herbert Greenwood

Inventor

Thomas J. Corcoran.
By his Attorney
John C. Dewey

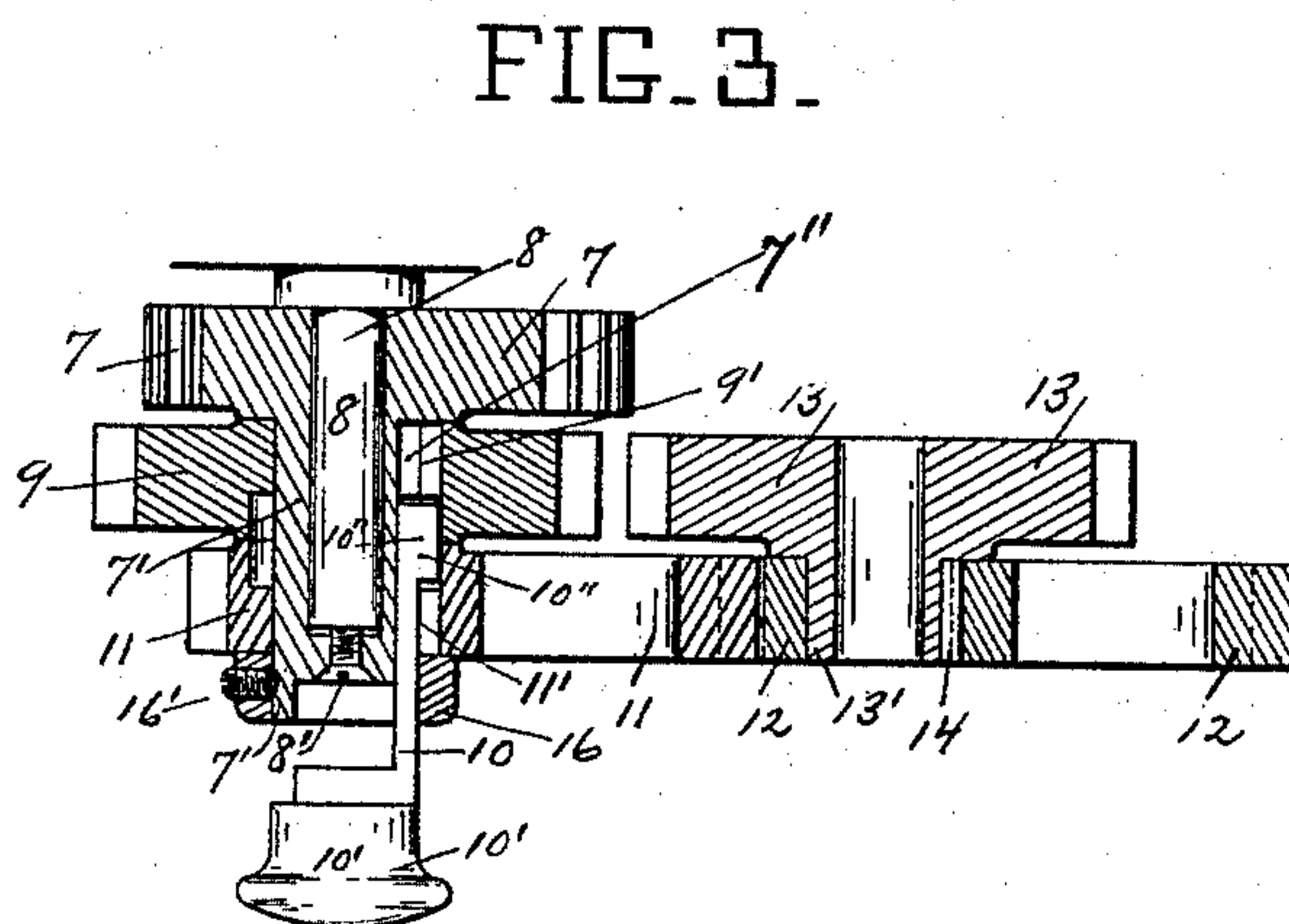
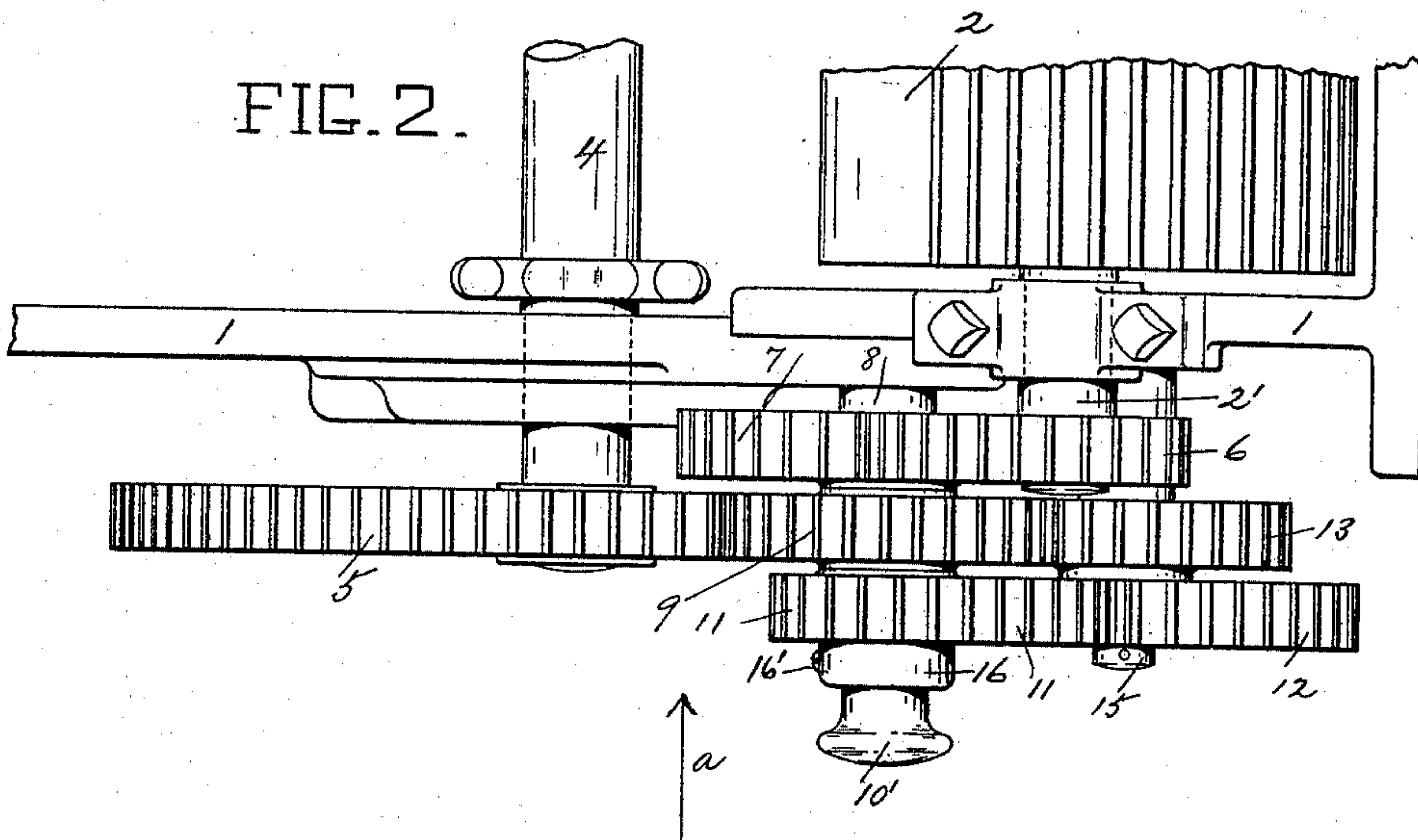
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UNITED STATES PATENT OFFICE.

THOMAS J. CORCORAN, OF PERU, INDIANA.

PATTERN MECHANISM FOR LOOMS.

SPECIFICATION forming part of Letters Patent No. 495,453, dated April 11, 1893.

Application filed August 12, 1891. Serial No. 402,452. (No model.)

To all whom it may concern:

Be it known that I, THOMAS J. CORCORAN, a citizen of the United States, residing at Peru, in the county of Miami and State of Indiana, have invented certain new and useful Improvements in Pattern Mechanism for Looms; and I do hereby declare that the following is a full, clear, and exact description thereof, which, in connection with the drawings making a part of this specification, will enable others skilled in the art to which my invention belongs to make and use the same.

My invention relates to looms, and more particularly to the harness and drop box mechanisms of the well known Knowles loom, shown and described in the Reissue Letters Patent No. 7,784, of July 3, 1877.

The object of my invention is to secure a greater range of adjustment in timing the parts of the harness and drop box mechanisms than has heretofore been secured on said Knowles loom, and to use a continuously moving pattern chain, and to retain all the facilities for handling the harness and drop box mechanisms which have heretofore been obtained on said loom.

My invention consists in combining with the gearing for driving the pattern cylinder, elliptical gears, intermediate the upper or lower cylinder gear, and the pattern cylinder gear, by means of which a fast and slow motion of the pattern cylinder is obtained, without interfering with the continuous rotary motion thereof.

In the United States Letters Patent No. 398,328, of February 19, 1889, the pattern cylinder is driven by a pin wheel and star wheel mechanism, and by this construction a greater range of adjustment in timing the parts of the harness and drop box mechanisms is obtained than in the Knowles loom referred to, but in said pin wheel and star wheel mechanism the pattern cylinder does not have a continuous rotary motion, but an intermittent motion, and when a heavy chain is used it causes a racking of the head motion, and the loom does not run as smoothly as it should. By employing elliptical gears, intermediate one of the cylinder gears and the pattern cylinder gear, I accomplish the same result sought for in said Patent No. 398,328, and at the same time retain the feature of the continuously

rotary pattern cylinder shown in the Reissue Patent No. 7,784, above referred to.

The gearing for driving the pattern cylinder has usually been made in such proportions that one revolution of the cylinder gear shaft moves the pattern cylinder one angular space, to present one bar of the pattern chain to the vibrator lever. By means of elliptical gears, as above described, I am enabled to impart a continuous alternate fast and slow motion to the pattern cylinder; the fast motion causing the pattern cylinder to change more quickly, an advantage which is well understood by those skilled in the art. And further, by combining elliptical gears, as above described, with circular gears, made in such proportions that the pattern cylinder will be revolved twice the distance, that is two bars of the chain instead of one bar, so that every other bar of the chain will be presented to act on the vibrator levers of the harness or drop box mechanisms, I am enabled to impart a continuous fast and slow motion to the pattern cylinder, and to carry two separate patterns on said pattern cylinder, one pattern for weaving a portion of the fabric, and the other pattern for weaving the other portion of the fabric. For example, in weaving blankets, one portion of the pattern chain, arranged upon every other bar thereof, will be adapted to weave the body of the blanket, and the other portion of the pattern chain, arranged upon the remaining bars of the chain will be adapted to weave the end borders of the blanket. When the body of the blanket has been woven, the operator will disconnect the driving gearing of the pattern cylinder gear, and move said gear one bar by hand so as to bring into operation the portion of the pattern chain for weaving the border of the blanket; he will then connect the gearing, and the loom will weave the border of the blanket.

I have shown in the drawings a detached portion of the head of the Knowles loom, above referred to, sufficient to illustrate the nature of my improvements applied thereto.

Referring to the drawings:—Figure 1 is a front side elevation of a portion of the head of the Knowles loom referred to, with my improvements applied thereto, looking in the direction of arrow *a*, Fig. 2, with some of the parts left off for the sake of clearness. Fig.

2 is a plan view, looking in the direction of arrow *b*, Fig. 1, and, Fig. 3 is a sectional detail on line 3, 3, Fig. 1, looking in the direction of arrow *c*, same figure.

5 In the accompanying drawings, 1 is the head frame, in the upper portion of which is journaled the upper cylinder gear 2, and in the lower portion the lower cylinder gear 3.

4 is the pattern cylinder shaft, journaled in 10 the frame 1, having the driving gear 5 fast on one end thereof, in the usual way. Intermediate the upper or lower cylinder gear, in this instance the upper cylinder gear 2, and the pattern cylinder gear 5, is arranged a system 15 of gears for driving the pattern cylinder gear 5 from the upper cylinder gear, said system of gears consist of two elliptical gears, and a circular gear which meshes with the pattern cylinder gear. One of the elliptical gears 6, 20 is in this instance fast on the shaft 2' of the top cylinder gear 2. The other gear 7 of the pair of elliptical gears, is mounted loosely on a stud 8 secured to the frame 1, and is provided with an outwardly extending hub 7', 25 preferably made integral with the gear 7, as shown in Fig. 3, which is retained in place on the stud 8 by a screw 8' secured in the end of said stud.

Mounted loosely on the hub 7' of the gear 30 7, is a circular gear 9, which meshes with the pattern cylinder gear 5. The circular gear 9 and the elliptical gear 11 are slotted to receive the projecting end 10'' of the key 10, which is supported and adapted to slide freely in a 35 longitudinal groove 7'' in the hub 7' of the elliptical gear 7, (see Fig. 3.) The sliding key 10 is provided with a head 10', by which it may be moved into engagement with the key seat 9' in the circular gear 9, to couple the 40 circular gear 9 to the elliptical gear 7, or out of engagement with said key seat 9' to uncouple said gear from the elliptical gear 7.

When the circular gear 9 is coupled to the elliptical gear 7, the pattern cylinder gear 5, 45 and the pattern cylinder shaft 4, will revolve in the direction indicated by arrow *d*, Fig. 1, through the pair of elliptical gears 6 and 7, and the circular gear 9, and by means of the elliptical gears, intermediate the cylinder 50 gear and the pattern cylinder gear, a continuous fast and slow motion is communicated to the pattern cylinder.

I have shown in the drawings a second pair of elliptical gears, (of the same size as the 55 first mentioned pair of elliptical gears,) combined with a second circular gear, which gears cause the pattern cylinder gear to be moved in the reverse direction, that indicated by the arrow *e*, Fig. 1. The reverse motion 60 of the pattern cylinder is controlled by the sliding key 10, in the same manner as set forth in said Patent No. 398,328.

The elliptical gear 11 of the second pair of elliptical gears is loosely mounted on the hub 65 7' of the elliptical gear 7, and is coupled with said hub by means of the end 10'' of the slid-

ing key 10, registering with the key seat 11' in said gear, see Fig. 3. A collar 16 is secured on the end of the hub 7' by a set screw 16', and holds the gears 9 and 11 on said hub, and 70 also prevents the withdrawal of the sliding key 10.

The elliptical gear 12 of the second pair of elliptical gears, is secured upon the hub 13' 75 of the circular gear 13 by a pin 14, and the circular gear 13 is mounted loosely on a stud 15 secured in the head of the frame. The circular gear 13 is in mesh with the pattern cylinder gear 5.

When the circular gear 9 is coupled to the 80 elliptical gear 7, the pattern cylinder 5 will be driven in a forward direction, as indicated by arrow *d*, Fig. 1, but when the circular gear 9 is uncoupled, by the movement of the key 10, and the elliptical gear 11 is coupled to the 85 elliptical gear 7, the pattern cylinder gear 5 will be driven in the opposite direction, as indicated by arrow *e*, Fig. 1, through the elliptical gear 12 and the gear 13.

When the sliding key 10 is in the position 90 shown in Fig. 3, its projecting end 10'' does not register with the key seat 9' in the circular gear 9, or the key seat 11' in the elliptical gear 11, but said end 10'' extends into a circular groove within the hubs of said gears 9 95 and 11, and both of said gears are therefore free to turn on the hub 7' of the elliptical gear 7, and the pattern gear 5, meshing with the gear 9, may be turned in either direction, by the ordinary handle or hand wheel, not 100 shown, attached to the pattern cylinder shaft 4, independently of the elliptical gear 7 and the driving elliptical gear 6, in the same manner as shown in said Patent No. 398,328.

I am aware that prior to my invention, 105 elliptical gears for driving the upright shaft of the head motion have been used, but the ellipticity of such gears affects the whole head motion of the loom, and gives a continuous fast and slow motion to the cylinder gears, 110 thus affecting the opening and closing of the shed, but in my improvements the continuous fast and slow motion communicated to the pattern cylinder is entirely independent of any fast or slow motion communicated to the 115 cylinder gears.

The advantages of my improvements will be readily appreciated by those skilled in the art, and the same may be combined with different looms in which it is desired to have a 120 continuous fast and slow motion of the pattern cylinder for any purpose, independent of the fast or slow motion communicated to the cylinder gears.

It will be understood that the details of construction of my improvements, and the arrangement of the system of gears intermediate the upper or lower cylinder gear and the pattern cylinder gear, for communicating a continuous fast and slow motion to the pat- 130 tern cylinder, may be varied somewhat if desired, and the shaft of the lower cylinder gear

may be used as the driver, and the elliptical gear attached thereto, instead of to the upper cylinder gear as shown in the drawings.

5 Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

10 1. In a loom, the combination with one of the cylinder gears of the head motion, and the pattern cylinder gear, of gearing, consisting of elliptical gears, and circular gears, intermediate said cylinder gear and the pattern cylinder gear, for communicating a continuous fast and slow motion to the pattern cylinder, substantially as set forth.

15 2. In a loom, the combination with one of the cylinder gears of the head motion, and the pattern cylinder gear, of a system of gears intermediate said cylinder gear and the pattern cylinder gear, for communicating a continuous fast and slow motion to the pattern cylinder, said system of gears having a pair of elliptical gears forming a part thereof, substantially as set forth.

25 3. In a loom, the combination with one of the cylinder gears of the head motion, and the pattern cylinder gear, of a system of gears intermediate said cylinder gear and the pattern cylinder gear, for communicating a continuous fast and slow motion to the pattern cylinder, said system of gears consisting of a pair of elliptical gears, one of said gears fast on the shaft of said cylinder gear, and the other of said gears provided with a projecting hub, and mounted loosely on a stud, and said stud, 35 and a second pair of elliptical gears, one of said pair mounted on the hub of the second elliptical gear of the first mentioned pair, and

adapted to be coupled thereto, and the other elliptical gear fast on the hub of a circular gear, and said circular gear meshing with the 40 pattern cylinder gear, and a second circular gear loose on the hub of the second elliptical gear of the first mentioned pair of elliptical gears, and adapted to be coupled to said hub, and means for coupling said gears to cause 45 the pattern cylinder to be revolved in a forward or backward direction, substantially as set forth.

4. In a loom, the combination with one of the cylinder gears of the head motion, and the 50 pattern cylinder gear, of intermediate gearing for communicating a continuous fast and slow motion to the pattern cylinder, said gearing consisting of a pair of elliptical gears, one of said elliptical gears fast on the shaft of said 55 cylinder gear, and the other provided with a projecting hub, and mounted loosely on a stud, and said stud, and a circular gear loose on the hub of the last mentioned elliptical gear, and meshing with the pattern cylinder gear, and 60 means for coupling the circular gear to the elliptical gear, to cause the pattern cylinder gear to revolve in one direction, and for uncoupling said circular gear to allow the pattern cylinder to revolve in the other direction, 65 substantially as set forth.

In witness whereof I have hereunto signed my name in the presence of two subscribing witnesses.

THOS. J. CORCORAN.

Witnesses:

STEPHEN FINNEY,
JOHN W. O'HARA.