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R. KOHLHAAS.

RIBBON LOOM.

No. 289,916. Patented Dec. 11, 1883.

Fig 1.

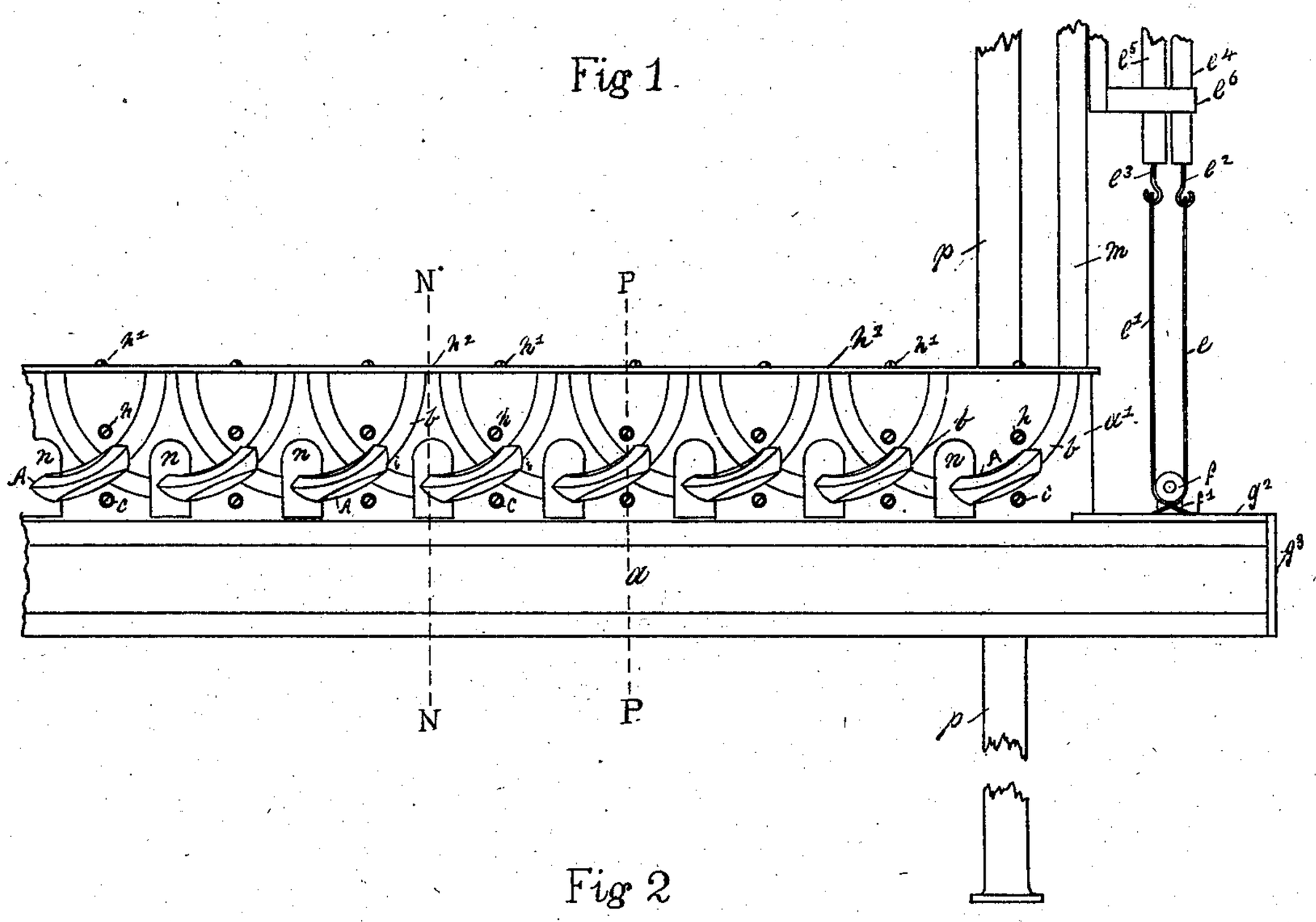
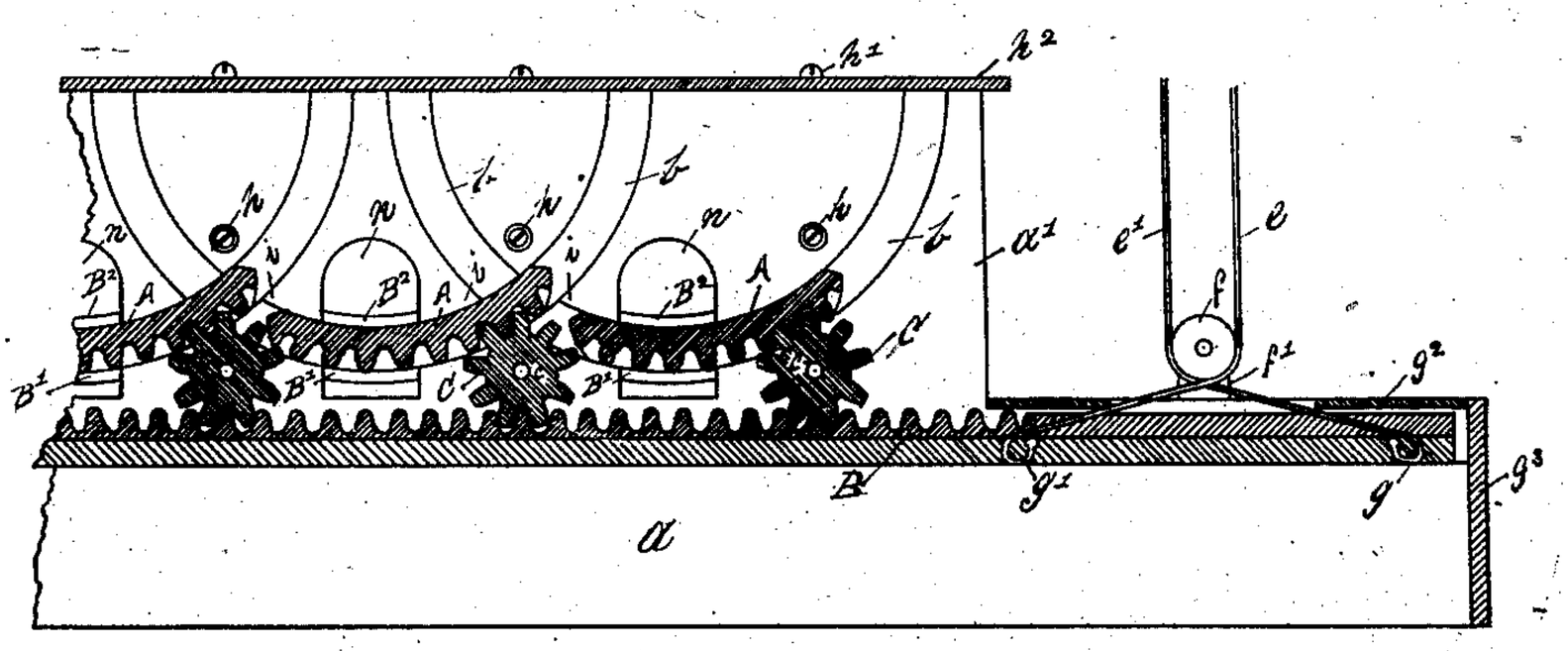


Fig 2.



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(No Model.) 4 Sheets—Sheet 2.

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RIBBON LOOM.

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Fig 3

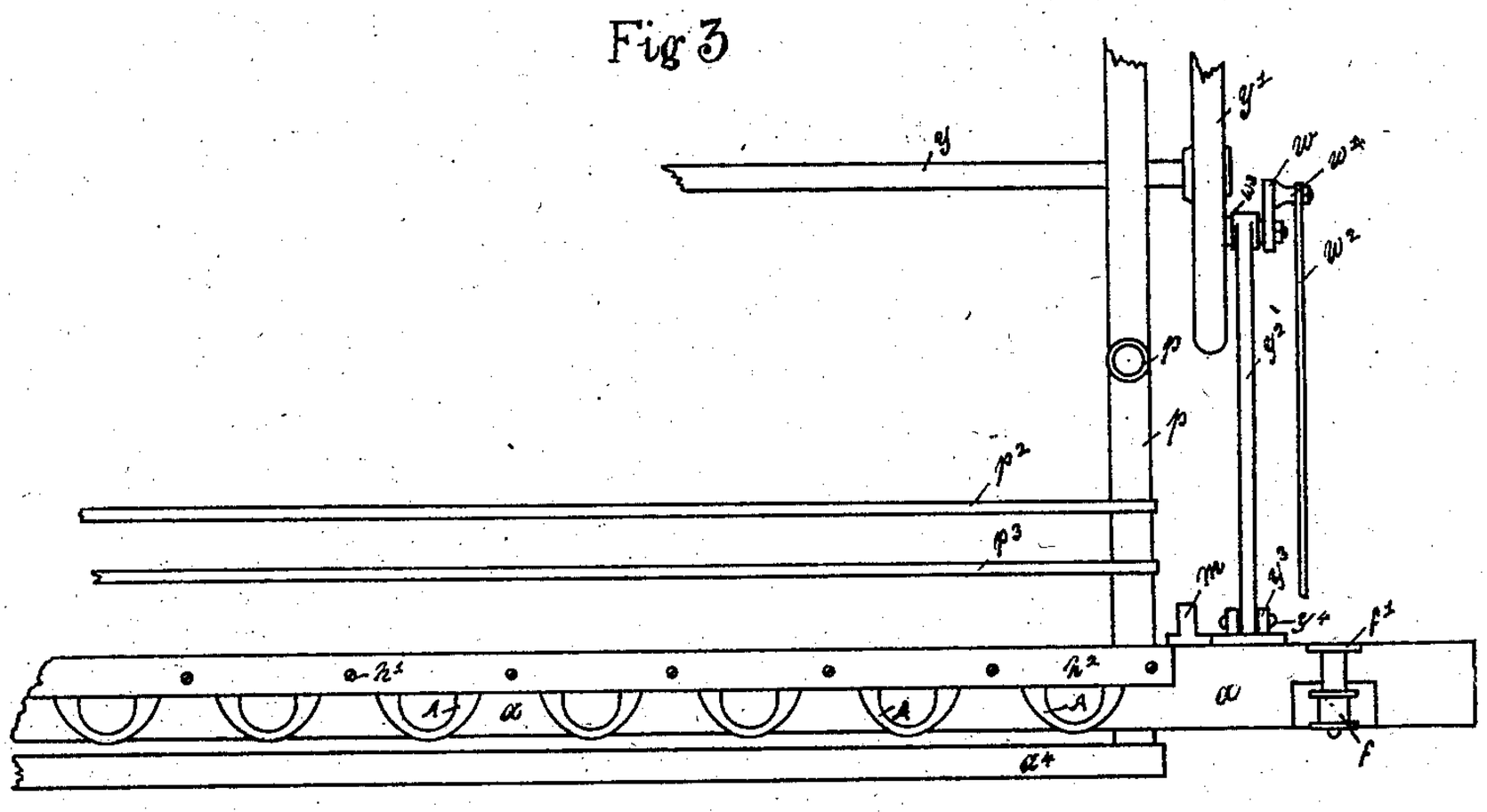


Fig 5

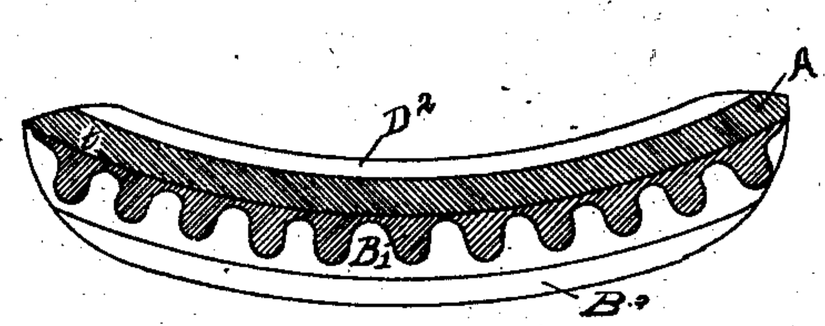


Fig 6

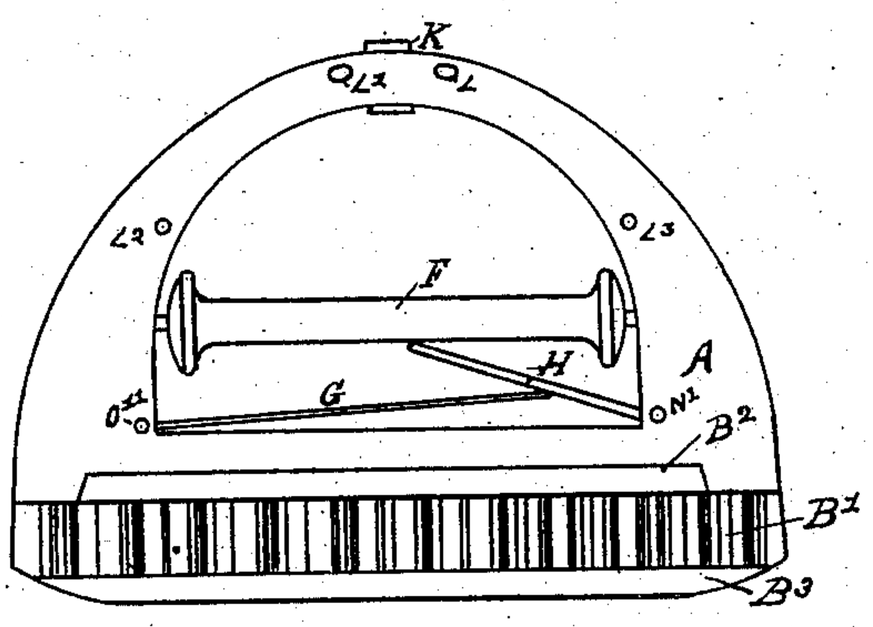
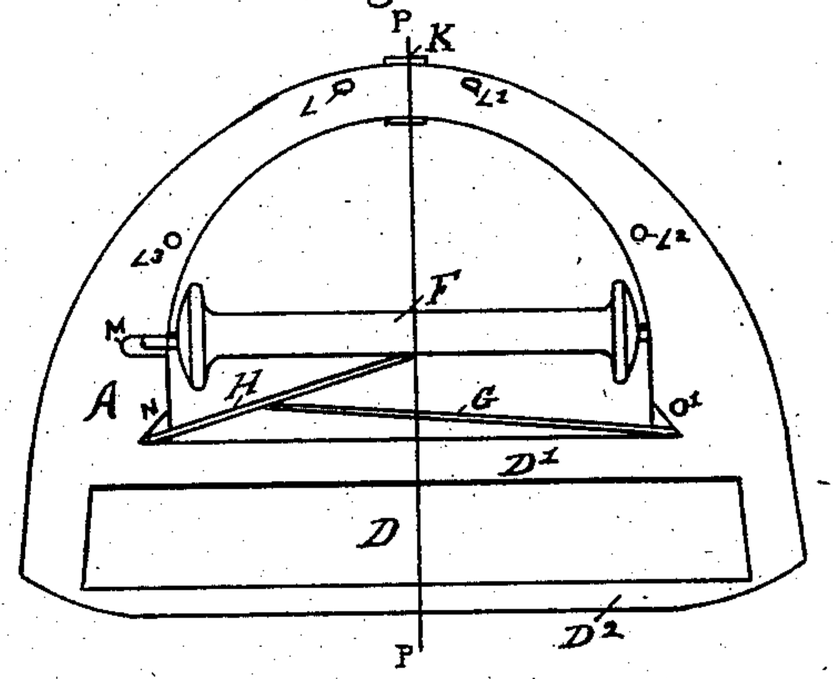


Fig 7



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4 Sheets—Sheet 3.

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RIBBON LOOM.

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Fig 4

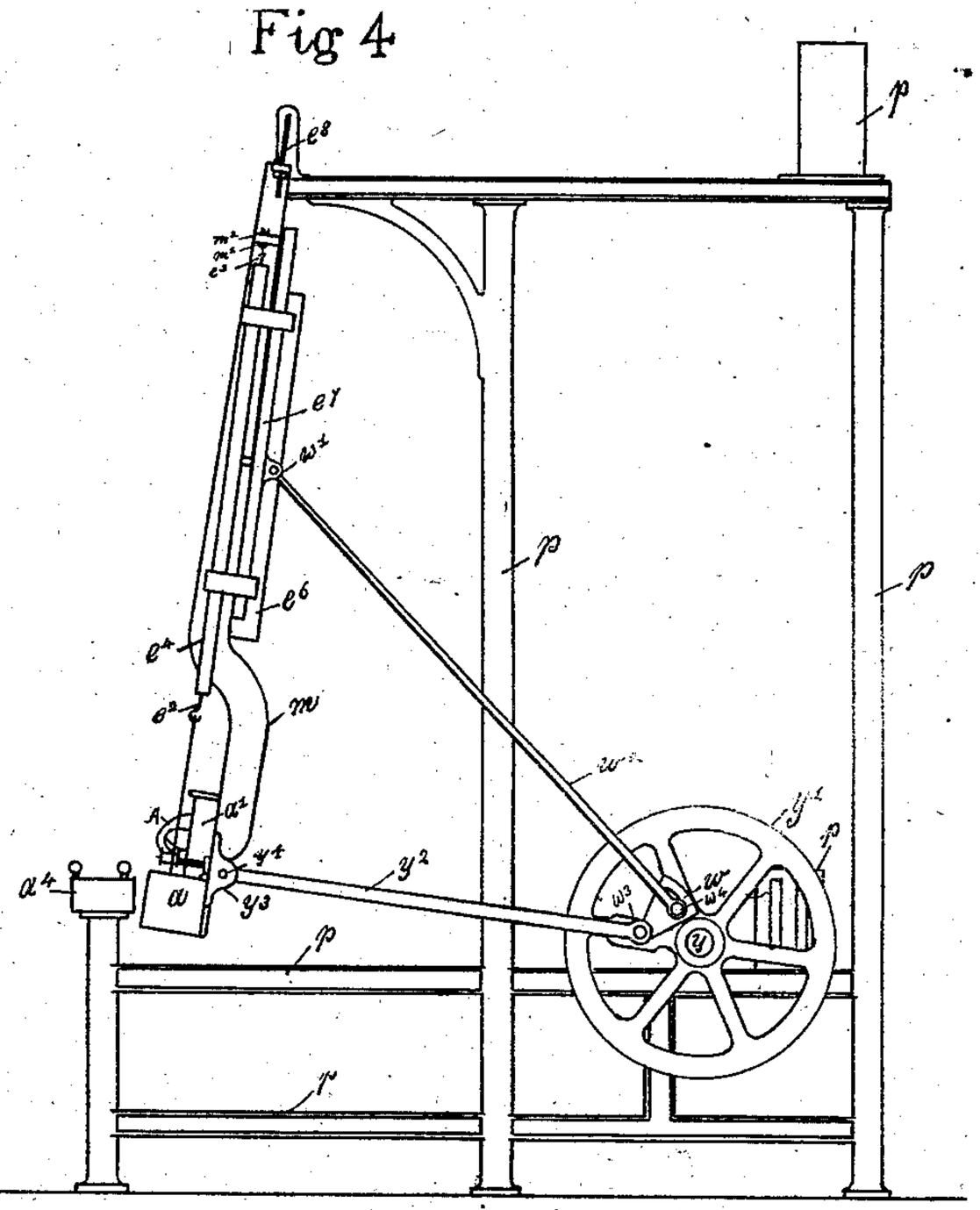


Fig 12

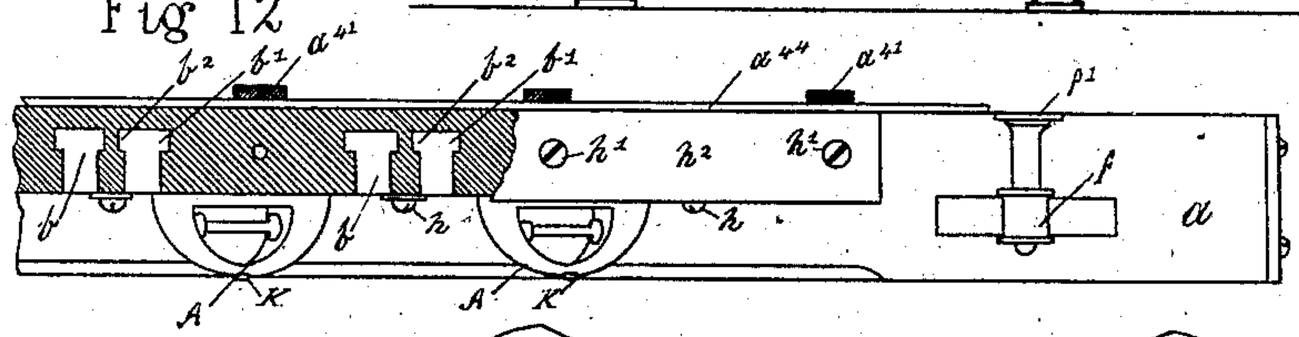
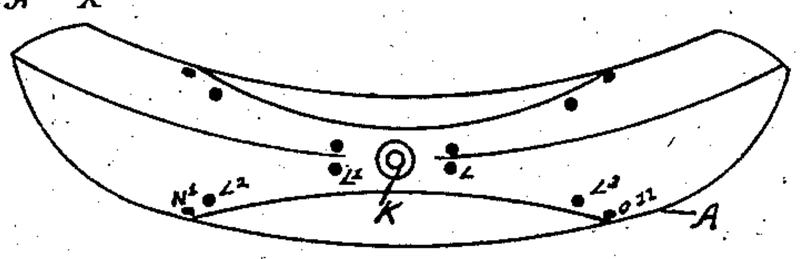


Fig 8



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4 Sheets—Sheet 4.

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RIBBON LOOM.

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Fig 11

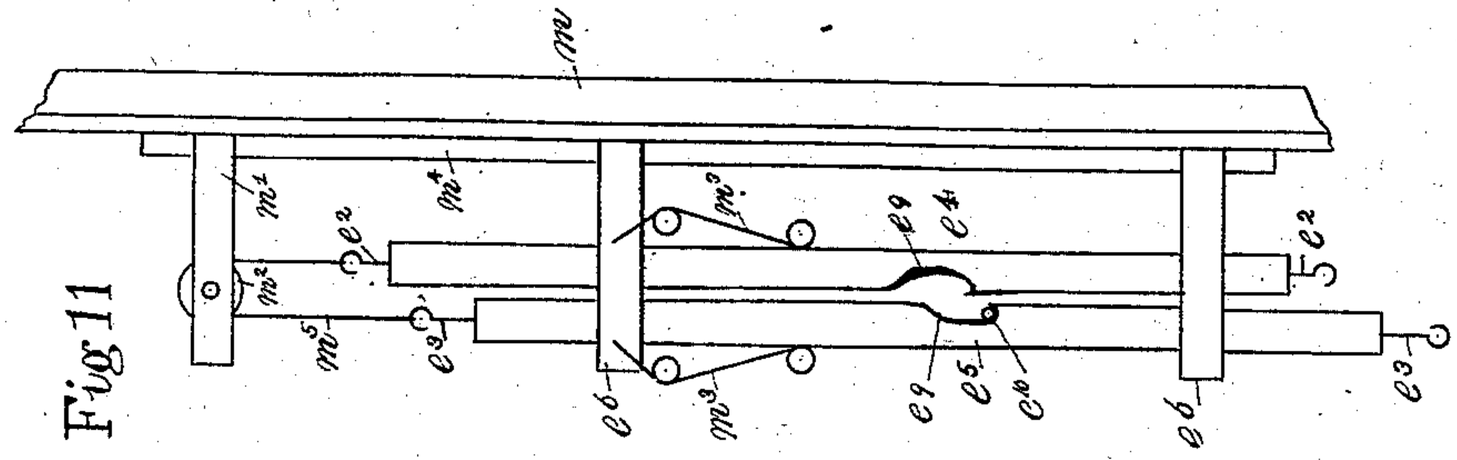


Fig 10

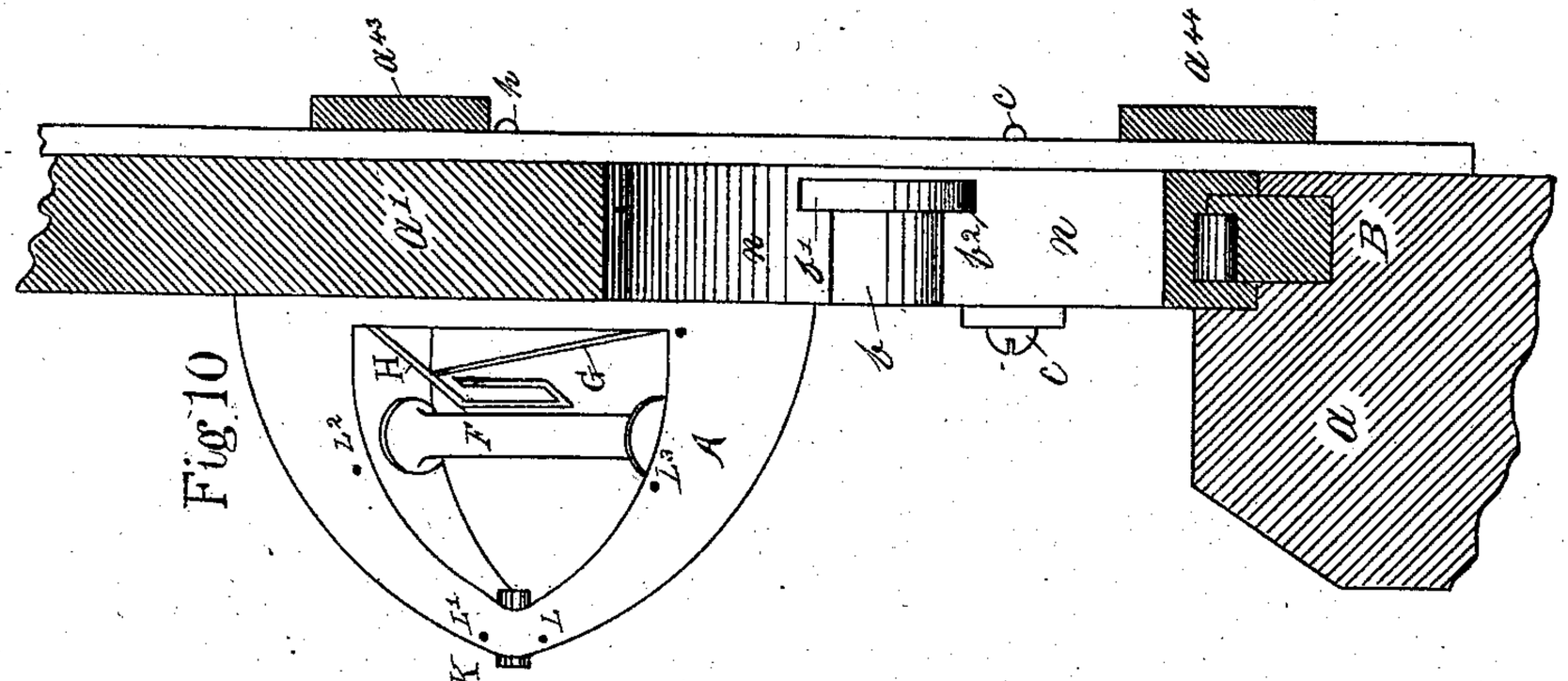
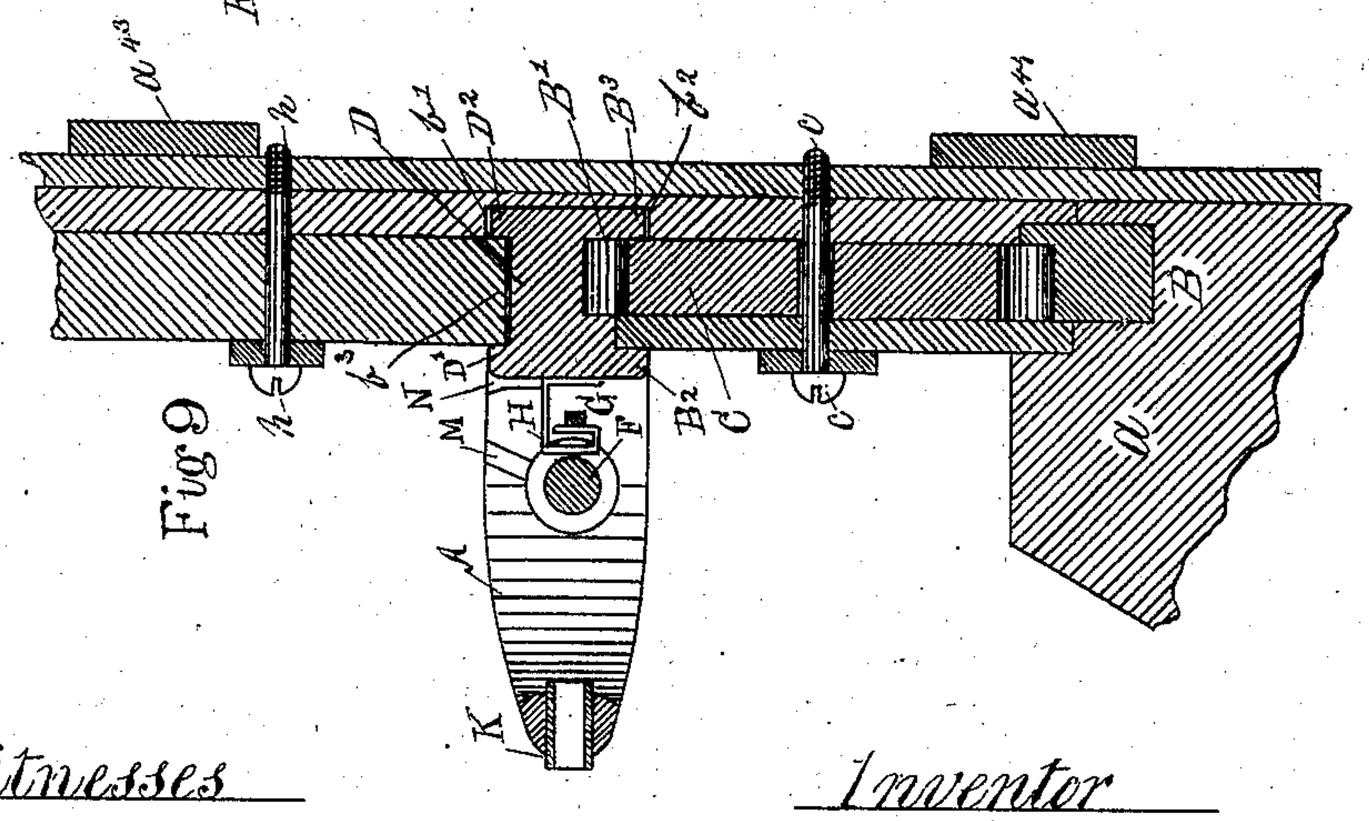


Fig 9



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UNITED STATES PATENT OFFICE.

REYNOLD KOHLHAAS, OF PATERSON, NEW JERSEY.

RIBBON-LOOM.

SPECIFICATION forming part of Letters Patent No. 289,916, dated December 11, 1883.

Application filed December 30, 1881. (No model.)

To all whom it may concern:

Be it known that I, REYNOLD KOHLHAAS, a citizen of the United States, residing at Paterson, Passaic county, State of New Jersey, have invented a new and useful Improvement in Ribbon-Looms, of which the following is a specification, reference being had to the accompanying drawings, forming a part thereof.

The invention consists of an improved combination of devices for moving and guiding the curved shuttles of ribbon-looms, which will be hereinafter more fully explained, and pointed out in the claim.

Figure 1 of the drawings is a front elevation of part of the batten of a ribbon-loom, showing a portion of the mechanism for actuating the shuttle. Fig. 2 is a vertical section of the parts shown in Fig. 1. Fig. 3 is a plan of part of the loom. Fig. 4 is an end elevation of the loom. Fig. 5 is a sectional view of a shuttle. Fig. 6 is an under side view of a shuttle. Fig. 7 is a view of the upper side of the same. Fig. 8 is a plan of the shuttle. Fig. 9 is a section on line P P of Fig. 1. Fig. 10 is a section on line N N of Fig. 1, the shuttle being moved to the left. Fig. 11 is a view of a portion of the mechanism for operating the rack and shuttles, and Fig. 12 is a top view of one end of the batten with part of the cover removed.

Shuttles for looms of the character illustrated in the drawings have each a groove or recess formed in the upper side of the same, to receive the edge of the race-plate. The under side of each shuttle is formed with a lip, which bears against the face of the race-plate, and in the present instance with a rib on the rear edge of its under side, the race-plate being constructed to receive such rib, as I will proceed to explain.

The letter *a* denotes the beam of the batten, and *a'* the race-plate thereof, the said race-plate being formed with the curved raceways *b* for the shuttles A, which are similarly curved or segment-shaped, as shown in Figs. 1 and 8. Each shuttle A is formed, as usual, with a groove, D, on its upper or concave side, and the usual shoulders, D' and D^2, on opposite sides of said groove, and on the under or convex side has the ordinary rib, B^2, and rack B', the said rack being adapted to engage with the pinions C, which are supported on the screws *c*, passing through the race-plate. The shuttle is provided on the side of the rack B' which is opposite to the rib B^2 with a rib, B^3, and the groove b^2 is formed in the race-plate for the reception of the rib B^3, such groove corresponding with the groove *b'* provided for the rib D^2. By this means the shuttle is caused to move accurately in its raceway without shakiness and without binding. The pinions C are turned to move the shuttle by the rack B, which moves in a groove formed in the upper side of the beam *a*, and is reciprocated by means which will be described hereinafter. The batten is supported by arms *m* and bolts e^8, which latter have bearings in the frame of the loom, and is vibrated by means of cranks w^3, carried by the shaft *y* and connected to brackets y^3 on the batten by rods y^2 and pins y^4. The crank and rod at one end of the loom only are shown; but the arrangement is similar at both ends. A plate, *w*, secured upon one of the cranks w^3, as shown in Figs. 3 and 4, and slotted, as shown in Fig. 4, has secured in its slot a pin, w^4, to which is connected a rod, w^2, joined at its other end by a pin, *w'*, to a rod or bar, e^7, which is free to slide vertically in guides e^6, carried by one of the batten-arms *m*. The bar e^7 is provided with a pin, e^{10}, which alternately engages in the downward movements of the bar with the notches e^9 in the adjacent sides of bars e^4 and e^5, which are supported in the aforesaid guides e^6, and thereby alternately depresses said bars e^4 and e^5. The bars e^4 and e^5 are pressed together by springs m^3, secured to one of the guides e^6, and their upper ends are connected by a cord, m^5, secured to hooks e^2 and e^3 upon said upper ends, and passing over a pulley, m^2, supported on bracket *m'* on the arm *m* of the batten. Straps *e e'*, secured to hooks e^2 e^3 at the lower ends of bars e^4 e^5, and passing in opposite directions around the pulley *f* on the beam *a*, are connected to pins *g g'* on the rack B, whereby the rack is alternately moved in opposite directions to turn the pinions C and move the shuttles. The cover h^2, secured to the upper edges of the race-plate *a'*, may be taken off when it is desired to remove or insert a shuttle, by withdrawing the screws *h'*. The openings *n* in the race-plate *a'* are for the reception of the reeds and passage of the warp-threads. By con-

structing the shuttles and race-plate as shown, each shuttle is caused to move accurately and steadily and without binding in its raceway, and is also protected from dropping as it crosses the opening where its raceway is intersected by an adjoining raceway, and injury to the batten occasioned by contact of the shuttles with the curves of the raceway is prevented.

I claim and desire to secure by Letters Patent—

The combination, with the shuttle having the ribs D′, D², B², and B³, groove D, and rack B′, of the batten having a race-plate formed with a raceway, *b*, and grooves *b′ b²*, the pinions C, rack B, cords *e e′*, pulley *f*, bars e^4 e^5, means for supporting and guiding said bars, the bar e^7, having the pin e^{10}, and means for operating said bar, substantially as described.

REYNOLD KOHLHAAS.

Witnesses:
JOHN INGLIS,
KITTIE INGLIS.