

No. 656,432.

Patented Aug. 21, 1900.

E. SUTER.

SHUTTLE DRIVING MECHANISM FOR LOOMS.

(Application filed Apr. 16, 1900.)

(No Model.)

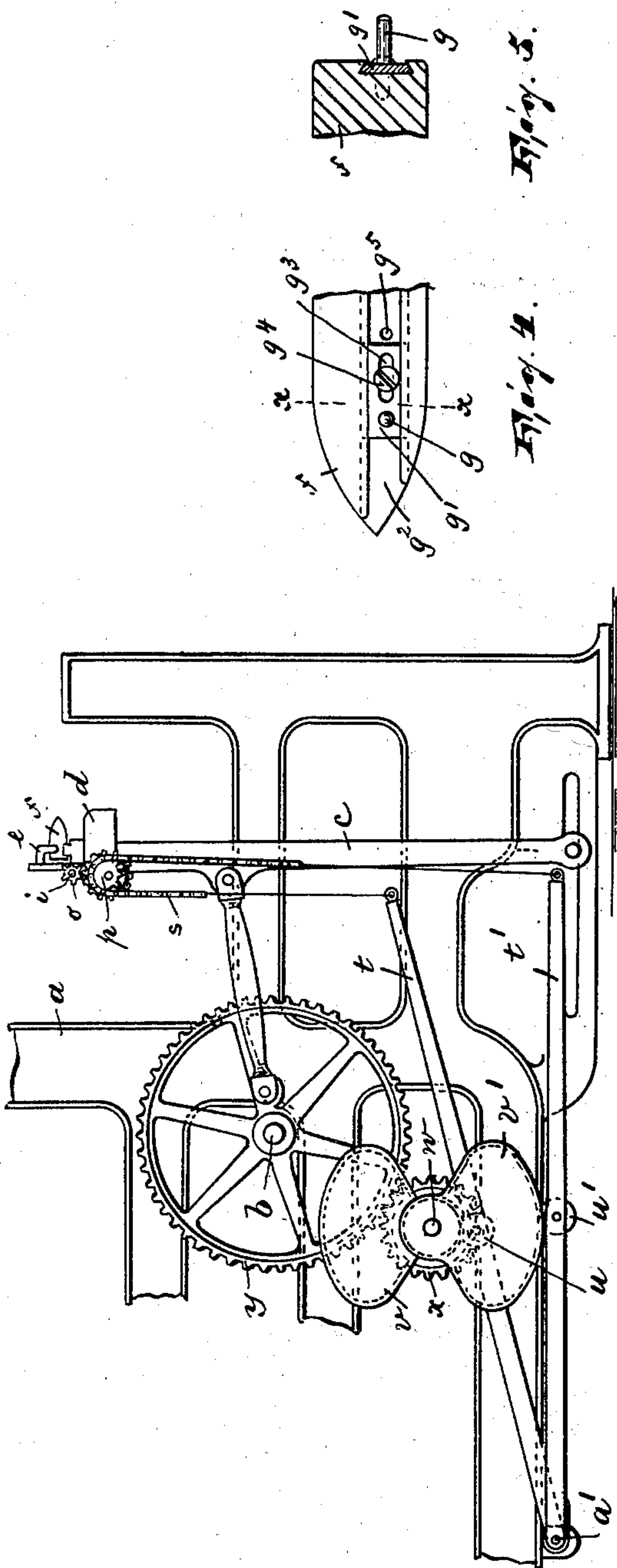


Fig. 1.

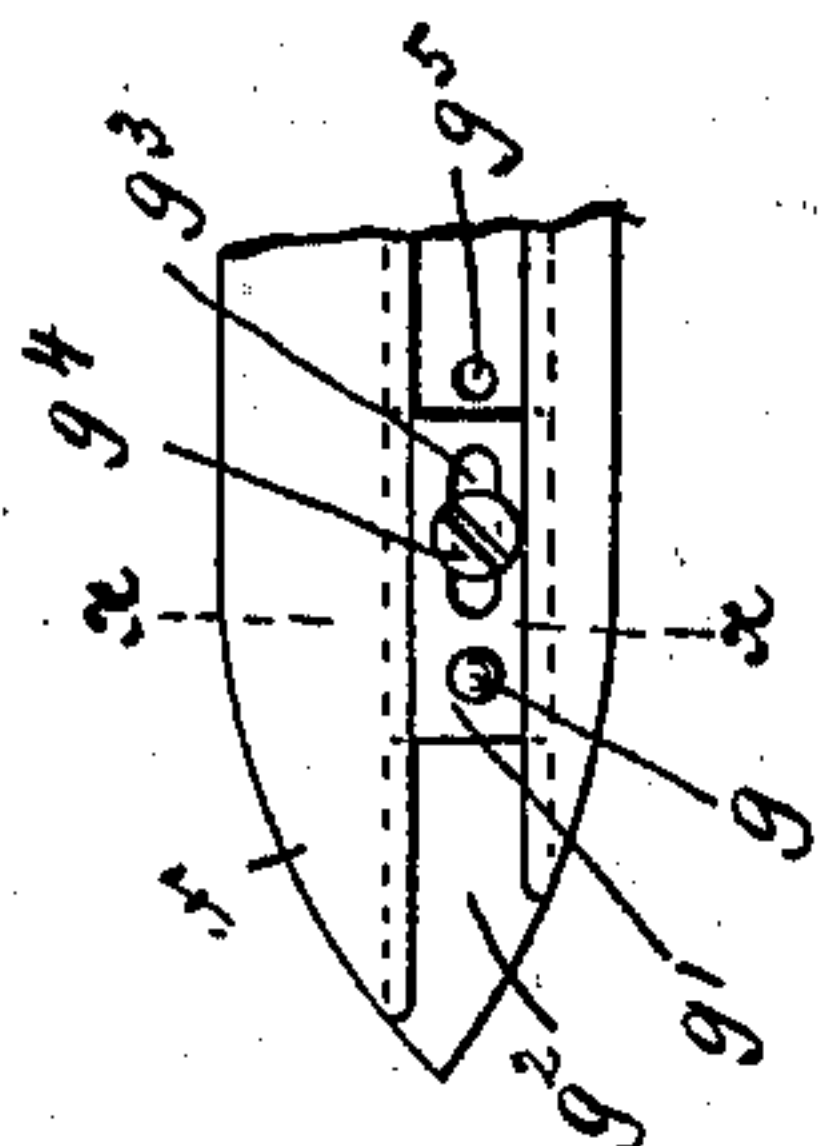


Fig. 4.

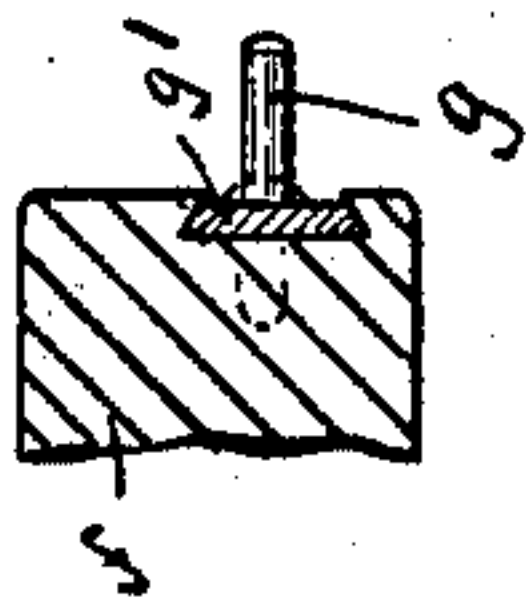


Fig. 5.

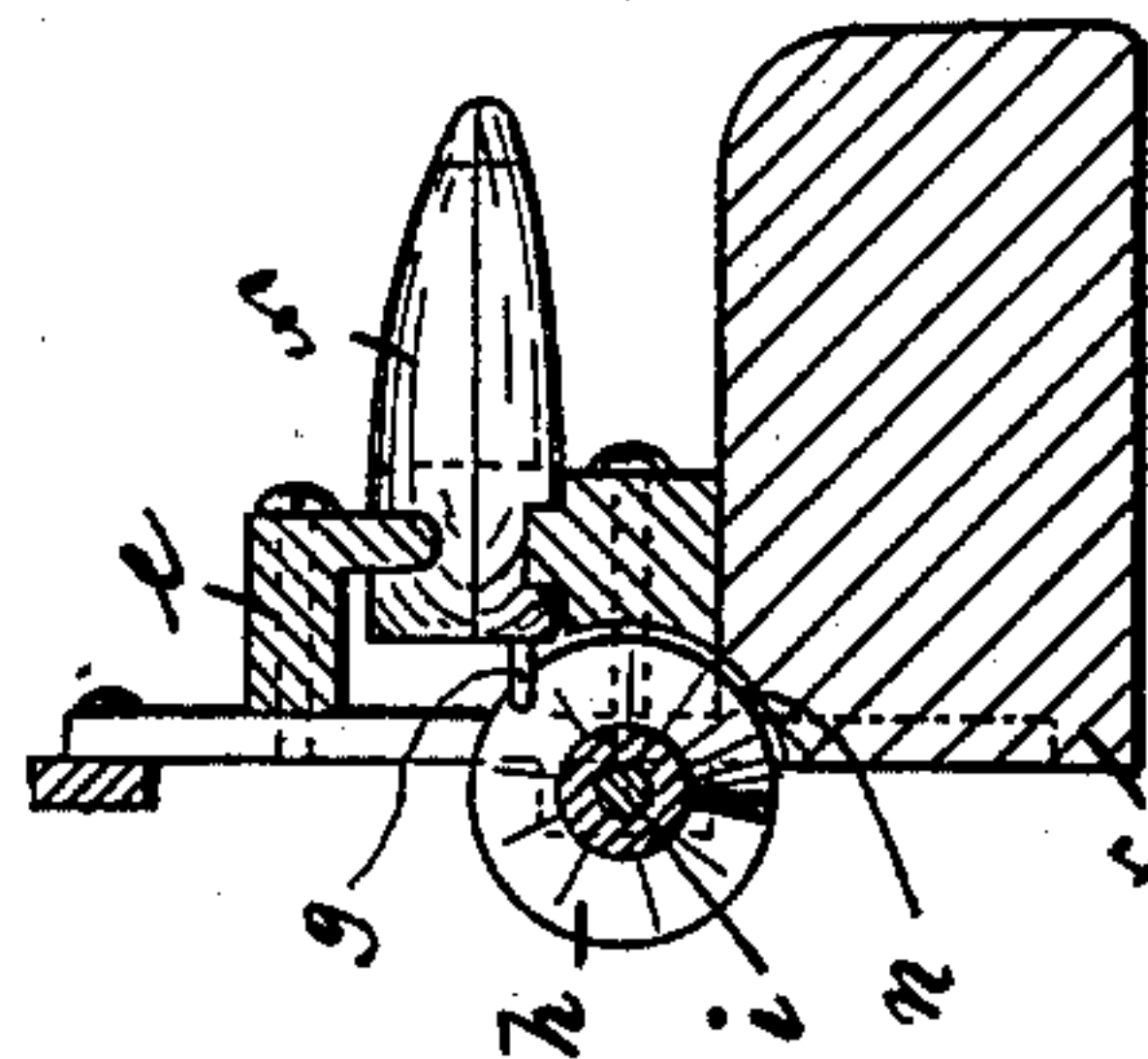


Fig. 3.

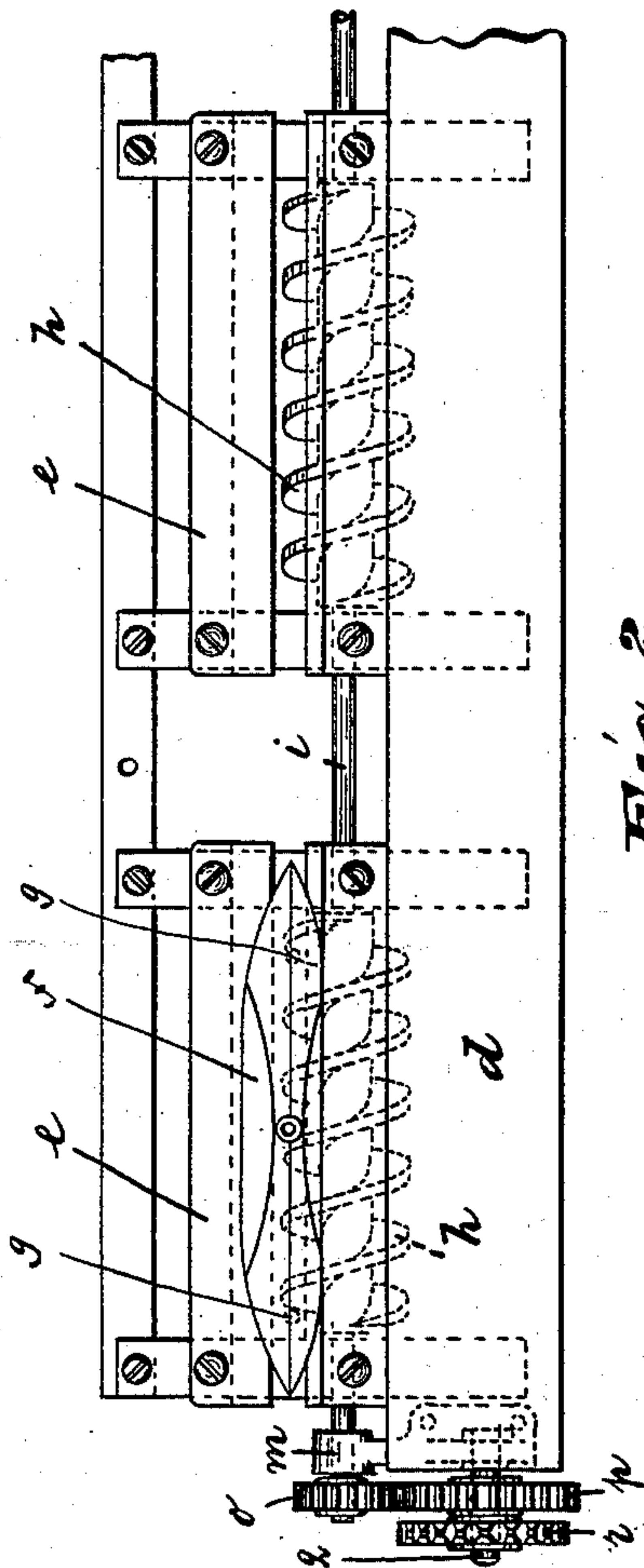


Fig. 2.

WITNESSES:

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SHUTTLE-DRIVING MECHANISM FOR LOOMS.

SPECIFICATION forming part of Letters Patent No. 656,432, dated August 21, 1900.

Application filed April 16, 1900. Serial No. 12,983. (No model.)

To all whom it may concern:

Be it known that I, ERNST SUTER, a citizen of the Republic of Switzerland, residing at No. 15 Lee Place, in the city of Paterson, county of Passaic, and State of New Jersey, have invented certain new and useful Improvements in Shuttle Driving and Operating Mechanism for Looms; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters of reference marked thereon, which form a part of this specification.

This invention relates to improvements in looms, and especially ribbon or narrow-ware looms, and has particular reference to that part of the loom which is termed the "shuttle driving or operating mechanism."

The object of the invention is to provide a loom of the above character with simple and effective means for operating or throwing the shuttles, reliable in operation and rendering the loom more durable and capable of being operated at a very high speed.

The invention consists in the improved loom, its shuttle driving and operating mechanism, and in the combination and arrangement of the various parts thereof, substantially as will be hereinafter more fully described and finally embodied in the clauses of the claim.

Referring to the accompanying drawings, in which like letters of reference indicate corresponding parts in each of the several views, Figure 1 is a side elevation of a portion of a loom provided with my improvements, only those parts being shown which are necessary to fully illustrate the nature of my invention. Fig. 2 is an enlarged front elevation of a portion of the batten and its adjacent parts and more clearly showing one of the shuttles and its operating means; Fig. 3, a cross-sectional view of Fig. 2, the shuttle being shown in full; Fig. 4, an enlarged detail rear elevation of a portion of the shuttle, and Fig. 5 a sectional view on the line xx of Fig. 4.

In said drawings, a represents the frame, and b the main driving-shaft, transmitting motion to the fulcrumed lay-swords c in the

usual and well-known manner. On the batten d are mounted suitable shuttle-blocks e , forming the shuttle-race for the shuttle f , which latter is provided at its rear portion and at or near each end with a rearwardly-projecting pin g , adapted to be engaged by a worm or endless screw h , which latter is securely mounted on a shaft i , having suitable bearings in brackets m , projecting from and secured to the batten d . It must be remarked that said endless screw or worm h is arranged considerably lower than the shuttle f , so that its supporting-shaft i clears the shed formed by the warp-threads in the space between the adjoining shuttle-blocks. For this purpose in most cases it will be necessary to provide in the upper rear portion of the batten and also in the lower portion of the shuttle-block a recess n , as shown in Fig. 3, and to place the worm or endless screw h in such a position that the projecting pin g of the shuttle f engages at or near the upper portion of said endless screw or worm.

On the shaft i is securely mounted a pinion o , in mesh with a gear-wheel p , revolvably mounted on the stub-shaft q and receiving its motion from a sprocket-wheel r , which latter is also revolvably mounted on the stub-shaft q , but is firmly secured to the gear-wheel p . The sprocket-wheel r is operated or, better, oscillated by a sprocket-chain s , the free ends of which are connected to the free ends of treadle-levers t t' , pivotally secured or fulcrumed on the frame a , as at a' , and carrying about midway antifriction-rollers u and u' . The latter are adapted to be engaged alternately by the respective cams v and v' , secured to and projecting from a shaft w , having its bearings in the frame a and carrying a gear-wheel x , the latter in mesh with the gear-wheel y on the main driving-shaft b , all as clearly shown in Fig. 1 of the drawings.

For the purpose of changing the throw or length of travel of the shuttle the pins g are made adjustable—that is to say, said pins are secured to and project from a plate g' , suitably guided in a longitudinal recess g^2 in the back of the shuttle, (and for said purpose the recess g^2 with the plate g' are suitably beveled,) and is provided with an elongated slot g^3 , penetrated by a screw g^4 , by means of

which latter said plate is adjustably secured within the longitudinal recess g^2 , as will be manifest. If a larger adjustment is required, an additional internally-screw-threaded hole 5 g^5 may be provided in the back of the shuttle for the reception of the adjusting-screw g^4 . It must be remarked that the pitch of the coöperating endless screws or worms must be the same, and said worms must be so arranged that the pins g freely engage and dis-engage said worms while the latter are being rotated or oscillated for the purpose of throwing the shuttle from one shuttle-block into the other, or vice versa.

15 In operation, as heretofore stated, the treadle-levers t and t' are operated alternately, and the cams are so constructed and arranged that when one of the treadle-levers has been lowered it will remain in that position for a 20 specified time (the rest position of the shuttle) which must be sufficient to allow the changing of the shed or sheds, as will be manifest.

I do not intend to limit myself to the precise construction shown and described, as various alterations can be made without changing the scope of my invention; but

What I claim as new, and desire to secure by Letters Patent, is—

30 1. In a loom, the combination, with a frame and the main driving-shaft and batten, of a shuttle carried by said batten, a screw or worm revolubly mounted on said batten and adapted to operatively engage said shuttle to 35 drive the same, a sprocket journaled in said batten and operatively connected to said screw or worm, treadle-levers fulcrumed in said frame, a sprocket-chain engaging said sprocket and having its ends respectively con- 40 nected to said levers, and means, operated

from the main driving-shaft, for operating said treadle-levers, substantially as described.

2. In a loom, the combination, with a frame and the main driving-shaft and batten, of a shuttle or shuttles carried by said batten, a 45 shaft journaled on said batten, screws or worms mounted on said last-named shaft and adapted to drive said shuttle or shuttles, a sprocket journaled in said batten, gearing connecting said sprocket and said last-named 50 shaft, treadle-levers fulcrumed in said frame, a sprocket-chain engaging said sprocket and having its ends respectively connected to said levers, and means, operated from the main driving-shaft, for operating said treadle-le- 55 vers, substantially as described.

3. In a loom, the combination with the frame and the main driving-shaft and with the batten operated therefrom, of a shuttle carried by said batten and provided at or near each 60 end with a rearwardly-projecting pin, a shaft revolubly mounted on the batten and parallel with the same, an endless screw or worm secured on said shaft and adapted to engage the projecting pins of the shuttle, treadle-le- 65 vers fulcrumed in the loom-frame, a sprocket journaled in said batten, gearing connecting said sprocket and the worm-carrying shaft, a sprocket-chain engaging said sprocket and having its ends respectively connected to said 70 levers, and means operated from the main driving-shaft for operating said treadle-levers, substantially as described.

In testimony that I claim the foregoing I have hereunto set my hand this 7th day of 75 April, 1900.

ERNST SUTER.

Witnesses:

ALFRED GARTNER,
MARGARET BRITTON.