

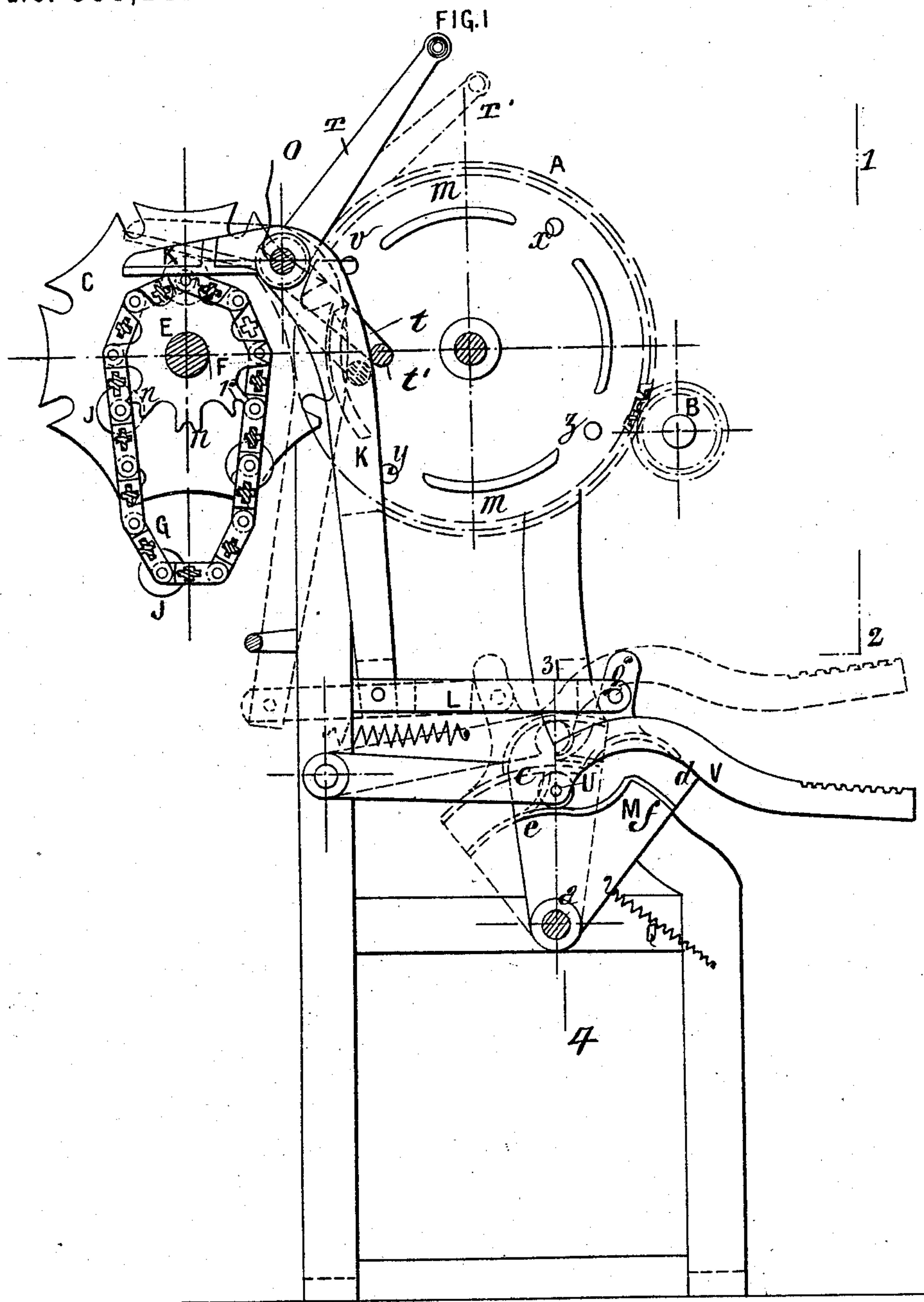
(No Model.)

4 Sheets—Sheet 1.

G. & H. BAUCHE & J. TANTINE.
WEAVING LOOM.

No. 553,149.

Patented Jan. 14, 1896.



Witnesses
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Inventors.
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(No Model.)

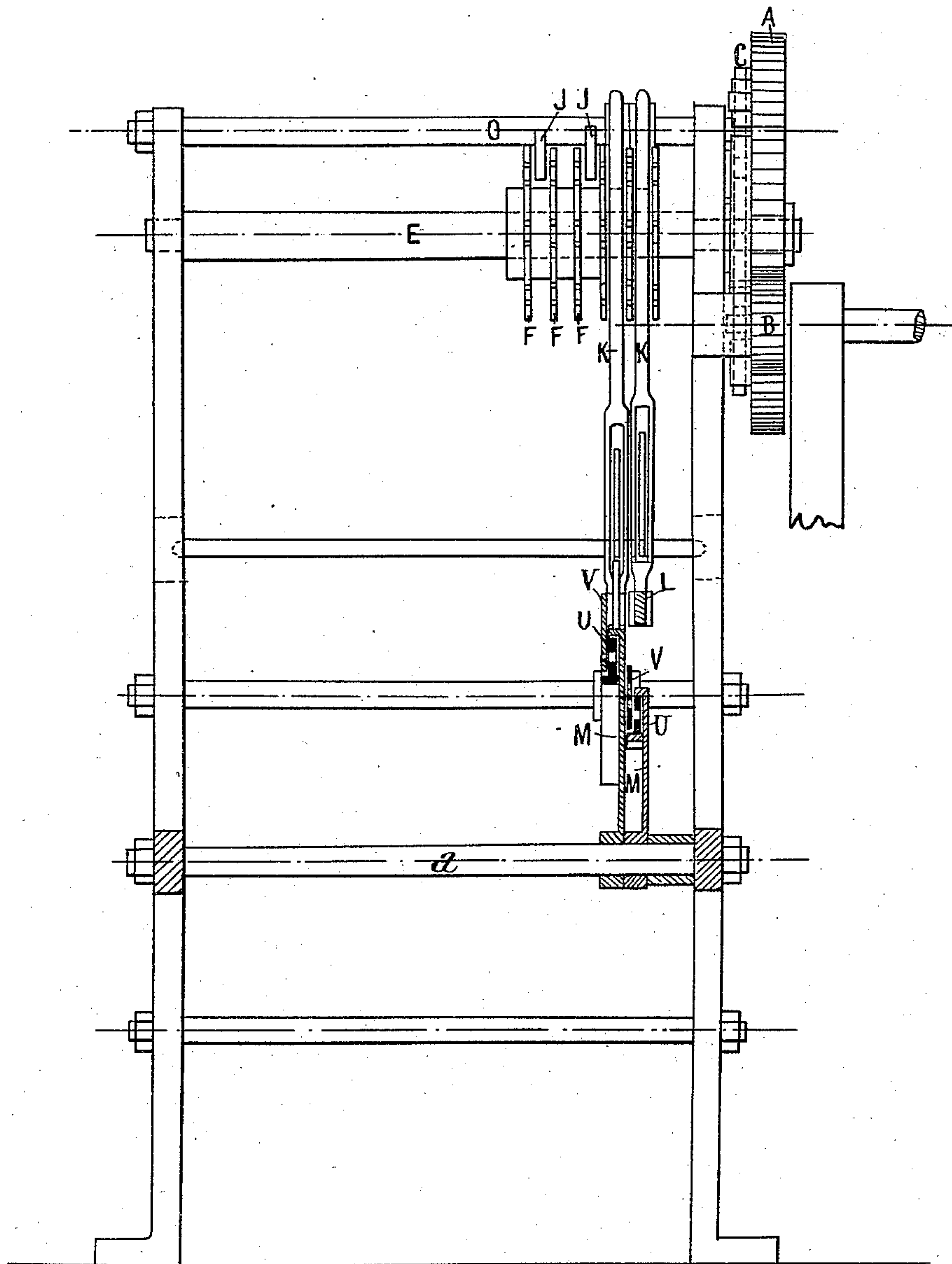
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FIG 2



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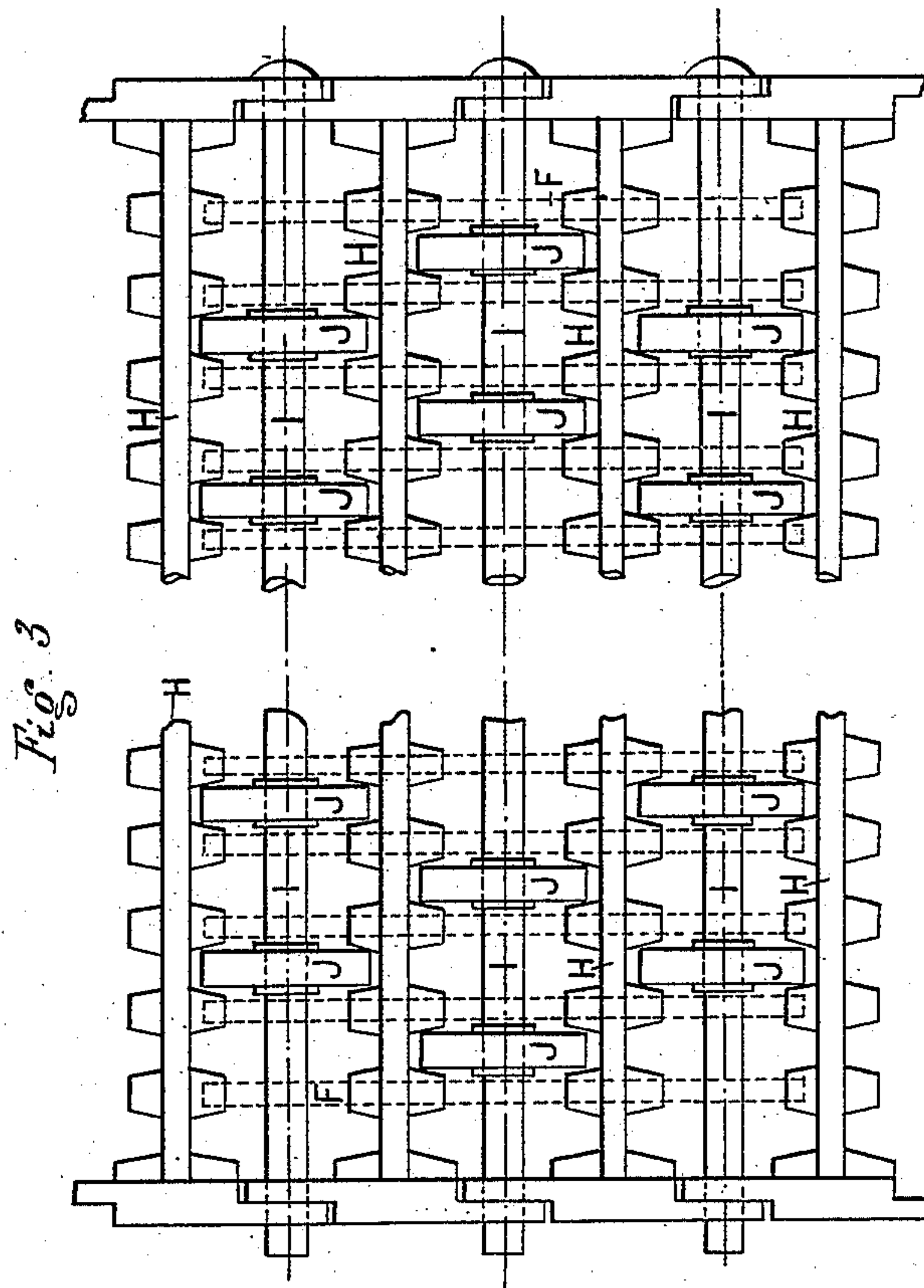
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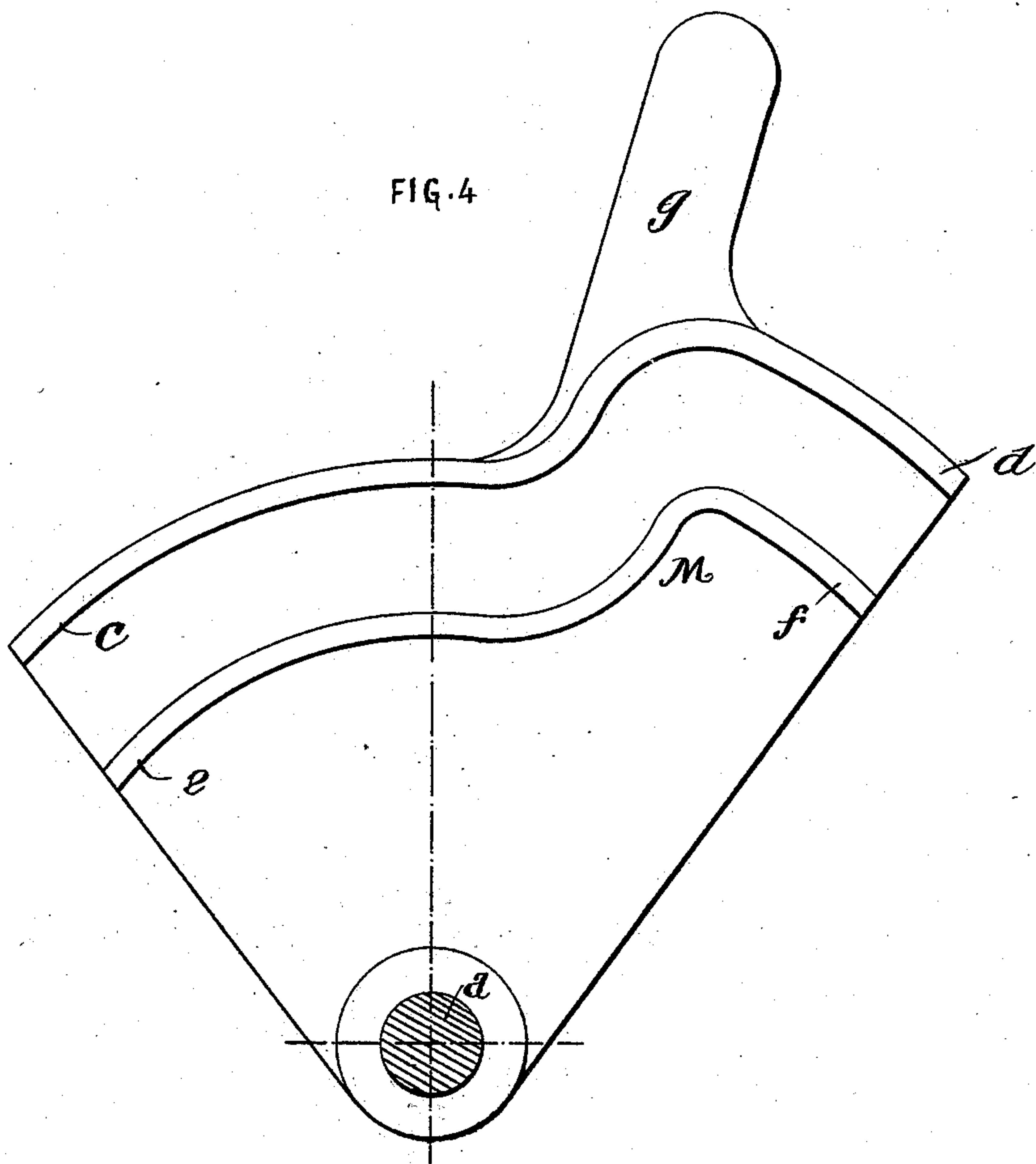
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WEAVING LOOM.

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Patented Jan. 14, 1896.



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UNITED STATES PATENT OFFICE.

GUSTAVE BAUCHE, HENRY BAUCHE, AND JOSEPH TANTINE, OF RHEIMS,
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WEAVING-LOOM.

SPECIFICATION forming part of Letters Patent No. 553,149, dated January 14, 1896.

Application filed September 7, 1895. Serial No. 561,850. (No model.)

To all whom it may concern:

Be it known that we, GUSTAVE BAUCHE, HENRY BAUCHE, and JOSEPH TANTINE, citizens of France, and residents of Rheims, in the Department of the Marne, France, have invented a new and useful Improvement in Weaving-Looms, of which the following is a specification.

This invention relates to pattern mechanism for looms; and it consists in the features of construction and combination of parts, as hereinafter more particularly described and claimed.

In the annexed drawings, Figure 1 is a vertical longitudinal section of a portion of a loom, illustrating our invention. Fig. 2 is a part cross-sectional elevation on the line 1 2 3 4 of Fig. 1. Fig. 3 shows developed and on a larger scale a portion of the pattern-chain or hinged roller-carrying belt. Fig. 4 is an elevation, on an enlarged scale, of one of the oscillatory sectors.

Our pattern mechanism for looms embraces a toothed wheel A, Figs. 1 and 2, receiving its movement from another toothed wheel B. The toothed wheel A has four times the number of teeth as the toothed wheel B, the latter being fixed upon the driving-wheel axle and making four revolutions for one of the former. The wheel A carries on one of its faces four pegs *v x y z*, arranged at regular intervals around it and intended to periodically engage with and actuate the star-wheel C.

On the wheel A is a four-part circular rib *m* that serves to keep the star-wheel C stationary when it is not engaged by one of the pegs *v x y z*.

The star-wheel C is keyed upon a shaft E carrying a series of toothed disks F F, which together form a barrel for carrying the roller pattern-chain G. Fig. 2 represents some of these disks F F, the roller pattern-chain being supposed to be removed so as not to interfere with the clearness of the figure. The star-wheel C has in its periphery eight notches, in each of which engages in turn one of the pegs of the wheel A so as to cause the star-wheel to make an eighth of a revolution at intervals. These eight notches in the star-wheel C correspond also with eight recesses of the toothed disks F, in which the bolts or

rods I, carrying the rollers or disks J of the pattern-chain G, lodge.

The roller pattern-chain G is shown developed and on an enlarged scale in Fig. 3. This chain is composed of elements or links H H, the extremities of which, forming hinges, are connected together by means of long bolts or rods I, which traverse the whole width of the pattern-chain. Upon these bolts are arranged at the proper places the rollers or disks J J, which are for the purpose of lifting the levers K K in passing the same. The chain is constructed to work easily over the toothed barrel, the bolts I I lodging in the notches *n* of the disks F.

Only two of the series of levers K K are represented in Fig. 2, but the number of these levers varies with the number of lifting-blades. Each of these levers, the upper arm of which is raised by the rollers or disks J J during their passage, rocks upon the shaft O, the lower arm actuating by means of the connecting-rod L the sector M.

There is a series of sectors M M, Fig. 4, each corresponding to a lever K. These sectors, each of which is independent of the others, can rock on the shaft *a*. Each sector carries two parallel flanges *c d* and *e f*, curved and forming between them a cam-race in which works the bowl U of a sickle-shaped lever V. The two ends of the cam-race are concentric with the axis of rotation *a*, the difference in the radii being exactly equal to the throw of the bowl U. Each sector has a spur *g* connected by a rod L of the corresponding lever K, from which it receives its movement. Each of the sectors M is connected to the frame of the machine by a spiral spring Q in tension, which restores the mechanism to the position shown in full lines, Fig. 1, when the corresponding lever K is not held up by one of the rollers or disks J.

Each one of a series of sickle-shaped levers V V corresponds to a sector M and carries a bowl U, which, in the rocking of the sector, moves between the flanges *c d e f*, thus raising and lowering the lever to which it belongs. This movement of the sickle-shaped levers is used to mass or put together the threads.

The working of the machine is as follows: By the movement of the toothed wheel A the

pegs v x y z engage in turn with the corresponding notch of the star-wheel C and impart to it an eighth of a revolution. In this motion the star-wheel C carries with it the barrel F F, and consequently the pattern-chain. When a roller J of this latter comes under the upper arm of a lever K, said lever rocks on the shaft O, and its lower arm moving by means of the connecting-rod L the sector M produces the rise of the sickle-shaped lever V. The whole of the mechanism then occupies the position shown in dotted lines in Fig. 1. As soon as the roller J leaves or frees the lever K, the spring Q restores the mechanism to its original position. (Shown in full lines in Fig. 1.)

It should be noted that the two ends of the cam-race of the sector M, which are concentric with the axis of rotation, are prolonged a little beyond the position of the bowl in both its highest and lowest positions, so that the slight movement communicated to the sector by the lever K and resulting from the passage of several consecutive rollers J of the pattern-chain, and of several vacant portions, does not disturb the sickle-shaped lever, which remains absolutely stationary in each of its two extreme positions. In this manner a great deal of breakage of threads is avoided.

The framework shown in the drawings serves merely to connect the different parts of each figure; but it is to be understood that the above-described apparatus is quite independent of the frame, which in practice will vary according to its application. It is also to be understood that the arrangement of details and the dimensions would also vary according to circumstances, the general arrangement of the mechanism remaining as in the above description.

Our apparatus presents the following advantages which essentially distinguish it:

First. It possesses the quality of barrel or cylinder looms, in that the strength of its different parts and of its whole arrangement allows the heaviest cloths to be made.

Second. Since it gives an even massing (or lease) the speed of the loom can be increased without increasing the breaking of the threads.

Third. The massing and the lift being produced exactly as with the ordinary cylinder, by increasing or decreasing the motion of the cylinder, a crossing more or less pronounced, according to the weave required, can be obtained.

Fourth. The roller-carrying pattern-chain, which may be of any desired dimensions, gives every facility for great length of patterns and for the rapid change of them. It must be noted that the elements or links of the chain are provided with a series of small distance pieces, leaving between said pieces only space enough for the rollers with slight play. The position of the rollers in the chain is therefore determined without spacing by means of washers and other accessories. It suffices, in

order to arrange them in the positions determined by the draft or design to be produced, to withdraw the corresponding bolt and replace it, at the same time fixing the roller in the desired position.

In the pattern-chain, each bolt, carrying the rollers, is supported by the toothed disks of the barrel close to said rollers, as in Fig. 3, in which the position of the disks is shown in dotted lines. This allows the rising of the lifting blades or leaves to be effected directly by the rollers, a work so great relatively that it could not be otherwise well borne by the bolt. With these advantages of the cylinder mechanism there is, however, this disadvantage, that to restore a broken thread we have to contend with levers, and consequently lifting-blades, some up, some down. To obviate this inconvenience we provide the following arrangement: Upon the shaft O of the levers K we key an elbow-lever T t , actuated by its handle portion T. A rod t' , secured to the arm t and extending all along the width occupied by the levers K K, bears upon all said levers. When the handle T is brought to T' the rod t' bears against the levers K, which are thus all brought into the same position—that is to say, as if there were rollers under all the levers K. The warp-threads then only form a single sheet, which greatly facilitates restoring broken threads. This arrangement, clearly shown in Fig. 1, is omitted from Fig. 2 for the sake of clearness.

What we claim as our invention is—

In a loom, the combination of the driven wheel A provided with the series of pegs v , x , y , z and four part rib m , the notched star wheel C adapted to be actuated intermittently by engagement of said pegs therewith and alternately held stationary by said rib, the shaft E to which the star wheel is keyed the series of toothed disks F mounted on said shaft to form a barrel or cylinder, the pattern chain G composed of links H, connected by bolts I adapted to engage the notches of the disks F, the rollers J mounted on said bolts and extended close to said toothed disks, the shaft O having fulcrumed thereon a series of levers K arranged to be acted on by said rollers, the shaft a having mounted thereon a series of oscillatory sectors M each provided with a cam race, rods L connecting the levers K and sectors M, the series of levers V, for massing the threads, each having a bowl U engaged with the cam race of a sector, and springs Q for restoring the sectors, substantially as described.

In testimony whereof we have signed this specification in the presence of two subscribing witnesses.

GUSTAVE BAUCHE.
HENRY BAUCHE.
JOSEPH TANTINE.

Witnesses:

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FRANÇOIS MERTENS.