

(No Model.)

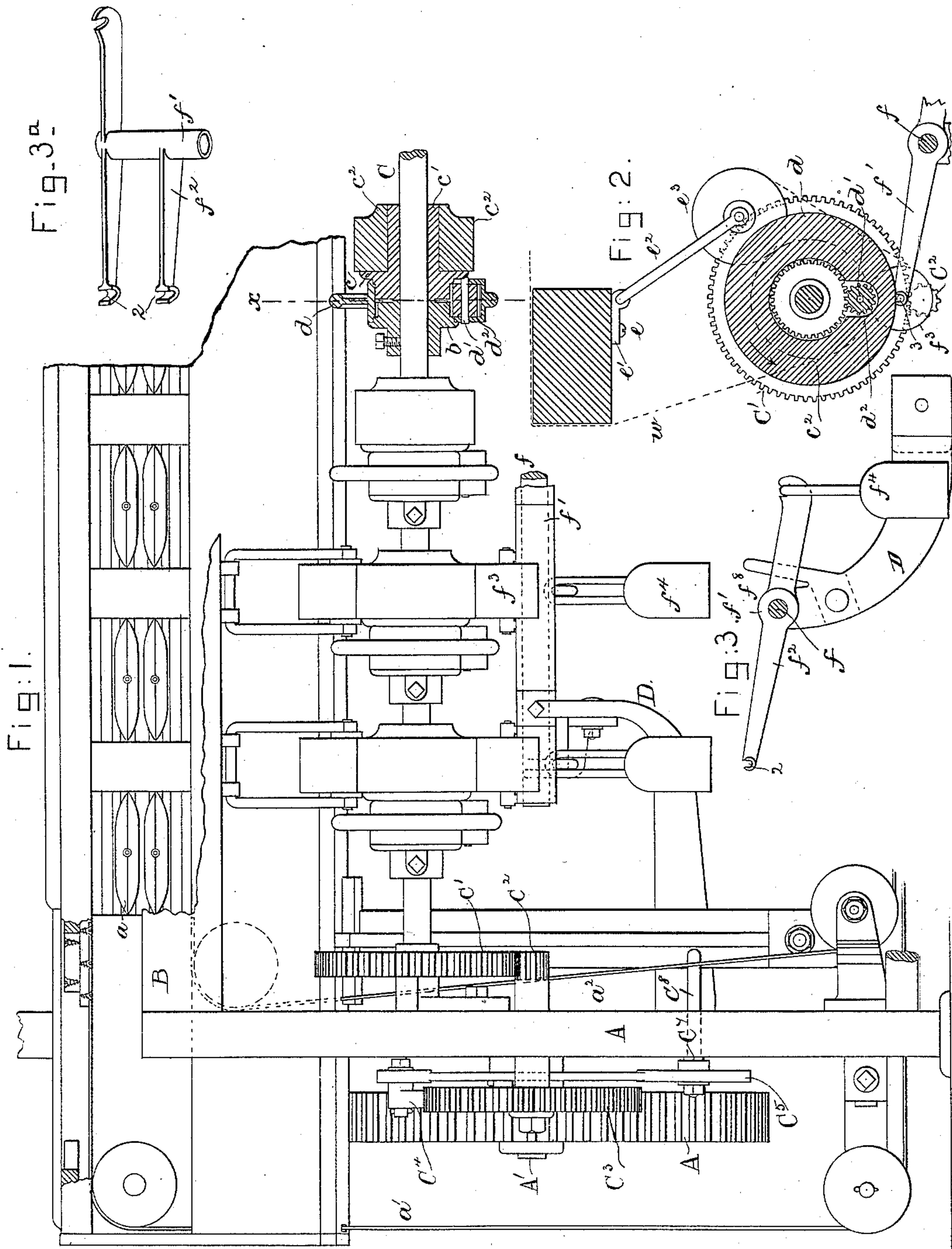
2 Sheets—Sheet 1.

H. WYMAN.

TAKE-UP MECHANISM FOR NARROW WARE LOOMS.

No. 398,365.

Patented Feb. 19, 1889.



Witnesses:

Edgar A. Bodin.

Frederick L. Emerson.

Inventor

Horace Wyman

by Crosby & Gregory

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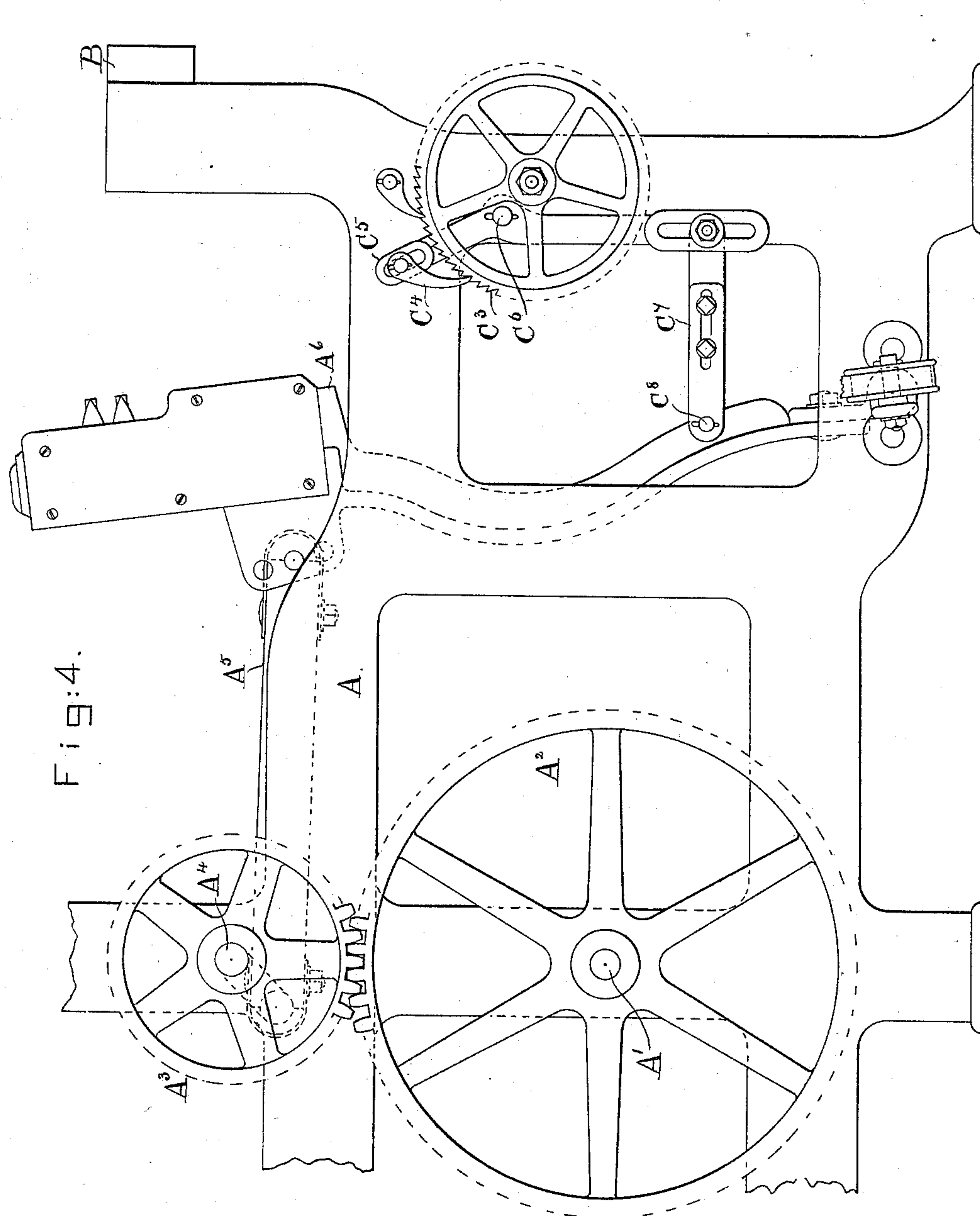
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# TAKE-UP MECHANISM FOR NARROW WARE LOOMS.

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Edgar A. Goddin

Frederick L. Emery.

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by Crosby & Rogers  
Atty.



# UNITED STATES PATENT OFFICE.

HORACE WYMAN, OF WORCESTER, MASSACHUSETTS, ASSIGNOR TO THE CROMPTON LOOM WORKS, OF SAME PLACE.

## TAKE-UP MECHANISM FOR NARROW-WARE LOOMS.

SPECIFICATION forming part of Letters Patent No. 398,365, dated February 19, 1889.

Application filed June 21, 1888. Serial No. 277,834. (No model.)

*To all whom it may concern:*

Be it known that I, HORACE WYMAN, of Worcester, county of Worcester, State of Massachusetts, have invented an Improvement in Take-Up Mechanism for Narrow-Ware Looms, of which the following description, in connection with the accompanying drawings, is a specification, like letters on the drawings representing like parts.

10 This invention has for its object to improve the take-up employed in connection with narrow-ware or tape looms, wherein many webs are wound or taken up simultaneously or by one shaft. In this class of loom a series  
15 of take-up or sand rolls are arranged on a common take-up shaft, and when the shuttle-thread breaks or other imperfections occur during weaving it is necessary to be able to independently move the take-up or sand roll handling  
20 the web in which the fault occurred, so that the weaving of the web (the fault having been corrected) may be proceeded with, and to do this it is necessary at times to reverse and at other times to move the take-up roll ahead or  
25 forward on its actuating-shaft. For this purpose I have provided the take-up shaft with a series of gears fast thereon, and alongside of the said gears I have mounted loosely on the said shaft a series of gears which serve to  
30 carry the take-up or sand rolls, one of the said gears, as herein shown, having one or more teeth than the other gear, both the said gears being, however, engaged by one pinion carried by a hub or hand-wheel loose on the take-  
35 up shaft, and, as shown, having its bearings on parts of the said gears, such construction enabling the take-up shaft, when rotated forward in usual manner, to rotate all the take-up or sand rolls positively in unison with it,  
40 yet, when desired, by turning any individual hub or hand-wheel, the take-up or sand roll co-operating with it may be moved slowly, either backward or forward, on the take-up shaft to take up slack in the web or give back  
45 slack, as may be desired.

The gearing herein shown for moving the take-up or sand rolls is one form of what is called "differential gearing," and I desire it to be understood that I do not intend to limit  
50 my invention to the exact form of differential gearing herein shown, as I may use instead

any other well-known and equivalent gearing whereby any one of a series of take-up or sand rolls loosely connected with the take-up shaft may be moved independently by hand in either  
55 direction by or through a hub or hand-wheel, which is also loose on the take-up shaft and free to be rotated by hand at all times.

My invention consists, essentially, in a take-up shaft, a series of gears fast thereon, a series of gears loosely mounted on the said shaft, and take-up or sand rolls attached to the said loose gears, combined with a series of hubs or hand-wheels loosely surrounding the said shaft, a pinion carried by each hub or hand-wheel and meshing with both the said gears,  
60 the teeth of the said gearing differing in number to constitute a differential gear, substantially as will be described, whereby, through the said loose hub or hand-wheel, the said take-up or sand rolls may be freely rotated independently one of the other on the take-up shaft in either direction, substantially as will be described; also a take-up shaft, its attached series of take-up or sand rolls, and pressure-  
65 rolls, combined with a series of receiving-rolls and the levers upon which they are mounted, the said receiving-rolls being rotated by the sand or take-up roll, substantially as will be described.

Figure 1 is a front elevation and partial section showing a sufficient portion of a loom embodying my improvements to enable my invention to be understood. Fig. 2 is a sectional detail taken in the line  $x$ , Fig. 1, looking to  
85 the left, the figure showing the toothed gear  $C'$ , which is fixed to the end of the take-up shaft  $C$ , and the pinion  $C^2$  for moving it. Fig. 3 is a detail showing the stand and weighted arm, upon which is mounted the receiving-roll. Fig. 4 is a partial left-hand end elevation of the loom shown in Fig. 1; and Fig. 3<sup>a</sup> is a perspective view of one of the levers  $f^2$  for supporting the receiving-roll.

Referring to the drawings,  $A$  represents the frame-work of the loom;  $A'$ , the usual under or picking shaft;  $A^2$ , a toothed gear secured to it and in mesh with the toothed gear  $A^3$ , fast on the crank-shaft  $A^4$ , joined by usual connecting-rods,  $A^5$ , with the lay  $A^6$ . These  
95 parts are and may be all as usual.

As herein shown, the lay is provided with



guideways of usual construction, in which I have shown arranged a series of shuttles,  $a$ , of usual construction—such as are commonly employed in looms for weaving narrow fabrics or tapes—the said shuttles deriving their motion in usual manner through suitable rack-bars (not shown) put in operation by straps  $a' a^2$ .

The loom at a point below the usual breast-beam, B, has a take-up shaft, C, which, near the left-hand end of the loom, as herein shown, has fast upon it a toothed gear,  $C'$ , which derives its motion of rotation from a pinion,  $C^2$ , fast upon a short shaft extended through the loom side and provided at its other end with a ratchet-wheel,  $C^3$ , of usual construction, the said ratchet-wheel deriving its step-by-step movement from a pawl,  $C^4$ , mounted upon a pawl-carrier,  $C^5$ , having its fulcrum at  $C^6$ , the lower end of the said pawl-carrier being jointed by a link, as  $C^7$ , to a pin,  $C^8$ , fast upon one of the swords of the lathe. The take-up shaft C is extended across the loom, and has fast upon it a series of gears,  $b$ , one for each web or tape to be woven, and on the said shaft, immediately alongside of each gear  $b$ , is placed a gear,  $c$ , the latter having preferably a hub,  $c'$ , to which is secured in any suitable manner a take-up or sand roll,  $c^2$ .

In practice the gears  $b$  and  $c$  will have a different number of teeth, it being supposed in the present instance that the gears  $c$  have one or more teeth more than the gears  $b$ . The gears  $b c$  are surrounded or embraced, as herein represented, by a hub or hand-wheel, as  $d$ , having a pin or stud,  $d'$ , upon which is mounted a pinion,  $d^2$ , herein shown as of sufficient length to simultaneously engage the teeth of both gears  $b$  and  $c$ .

In practice the take-up shaft C, the loom being in regular operation, is rotated by the pawl  $C^4$  and ratchet-wheel  $C^3$ , and the take-up or sand rolls are moved forward in unison with the take-up shaft C, the teeth of the gears  $b$  fast on the shaft at such time so engaging the teeth of the pinions  $d^2$  as to cause the hubs or wheels  $d$  to travel with the gears  $b$  and rotate the gears  $c$ , and with them the take-up or sand rolls  $c^2$ ; but when it is desired to move one of the webs independently of the others to correct some fault in the weaving, or for other cause, it is only necessary to rotate the hub or hand-wheel  $d$  with its pinion around the two gears  $b c$ , which will rotate the loose gear  $c$  and take-up roll  $c^2$  next the said hand-wheel about the axis of the shaft independently of the others.

It frequently happens in weaving that the weft fails, and at such time it becomes necessary to suspend the operation of the loom and readjust the take-up or sand roll controlling the web in which the fault occurred. By the mechanism herein described this can be done quickly by simply engaging the hub or hand-wheel and turning it in one or the other direction, as may be desired, about the shaft

C, the hand-wheel through the pinion  $d^2$ , carried by it and in engagement with the then fixed gear  $b$ , acting upon the teeth of the loose gear  $c$ , carrying the take-up or sand roll, and moving it in one or the other direction, according as may be desired, to let back or take up the web properly preparatory to again resuming weaving, the filling having been properly supplied.

On the under side of the breast-beam B, I have secured by screws  $e$  certain stands,  $e'$ , to which are loosely pivoted or hung arms  $e^2$ , having at their lower ends suitable bearings for the journals of the presser-rolls acting to hold the web or tape being woven against the frictional surface of the take-up or sand roll.

In suitable stands, D, in practice extended inwardly from each end of the loom, I have secured a rod,  $f$ , upon which I have mounted the hubs  $f'$  of the weighted levers  $f^2$ , (see Fig. 3<sup>a</sup>), each of the said levers at its end next the take-up or sand roll having open bearings, as 2, to receive within them and support and guide the journals 3 of a receiving-roll,  $f^3$ , upon which is wound the web or tape as it is woven, the opposite end of the said lever having supported upon it a suitable weight, as  $f^4$ . (See Fig. 3.)

In practice the web or tape passes from the breast-beam, as indicated by dotted lines, down in front of the take-up or sand roll, thence under and between it and the receiving-roll  $f^3$ , and between it and the presser-roll  $e^2$ , thence over the top of the presser-roll, down around its rear side, and under the receiving-roll, the end of the web being connected to the said receiving-roll, preferably, by a suitable pin or projection. In this manner it will be noticed that the take-up or sand roll for a considerable portion of its surface is in direct contact with the web, and that the sand roll acts directly to rotate the receiving-roll.

The receiving-roll, when filled, may be readily removed from the loom by depressing the weighted lever, thus leaving the receiving-roll free to be lifted from the open bearings 2.

I claim—

1. In a loom, the take-up shaft, a series of gears fast thereon, a series of gears loosely mounted on the said shaft, and take-up or sand rolls attached to the said loose gears, combined with a series of hubs or hand-wheels loosely surrounding the said shaft, a pinion carried by each hub or hand-wheel and meshing with both the said gears, the teeth of the said gearing differing in number to constitute a differential gear, substantially as described, whereby or through the said loose hub or hand-wheel the said take-up or sand rolls may be freely rotated independently one of the other on the take-up shaft in either direction, substantially as described.

2. The take-up shaft C and a take-up roll loose thereon, a gear carried by the said take-up roll, a gear fast to the said take-up shaft



next the end of the gear carried by the said  
roll, and having a different number of teeth,  
and means to engage and rotate the said shaft,  
combined with a hand-wheel having a pinion,  
5  $d^2$ , to engage the teeth of the said gears car-  
ried, respectively, by the said take-up roll and  
by the said shaft, as described, whereby by  
the rotation of the hand-wheel and its pinion  
about the said gears the take-up roll may be

rotated independently of the said shaft C in to  
either direction, substantially as described.

In testimony whereof I have signed my name  
to this specification in the presence of two sub-  
scribing witnesses.

HORACE WYMAN.

Witnesses:

J. B. SYME,  
JUSTIN A. WARE.