Jan. 19, 1937. J. P. COSTELLO 2,068,534

TAKE-UP MECHANISM

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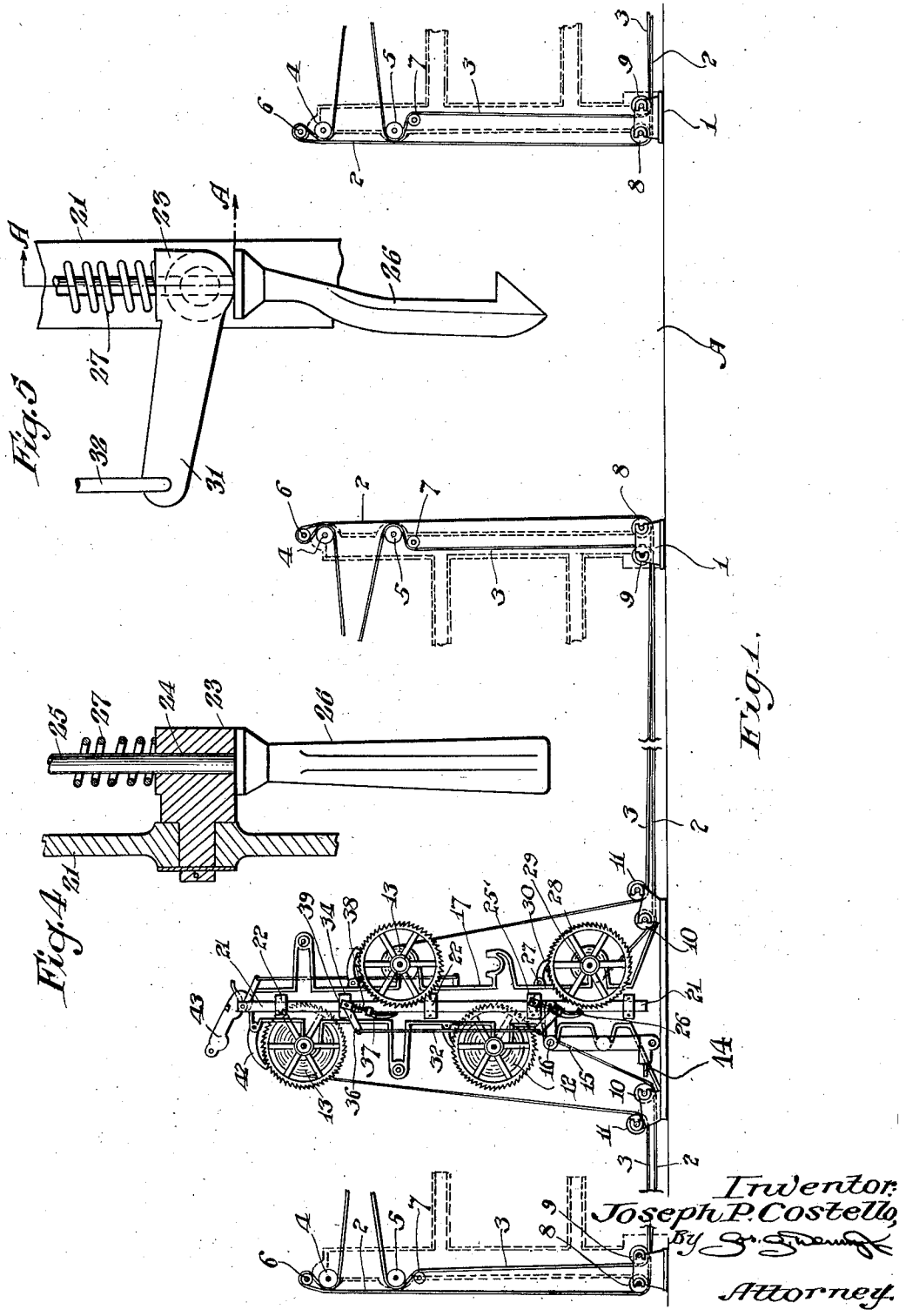


Fig. 1.

Fig. 5

Fig. 4

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Fig. 3.

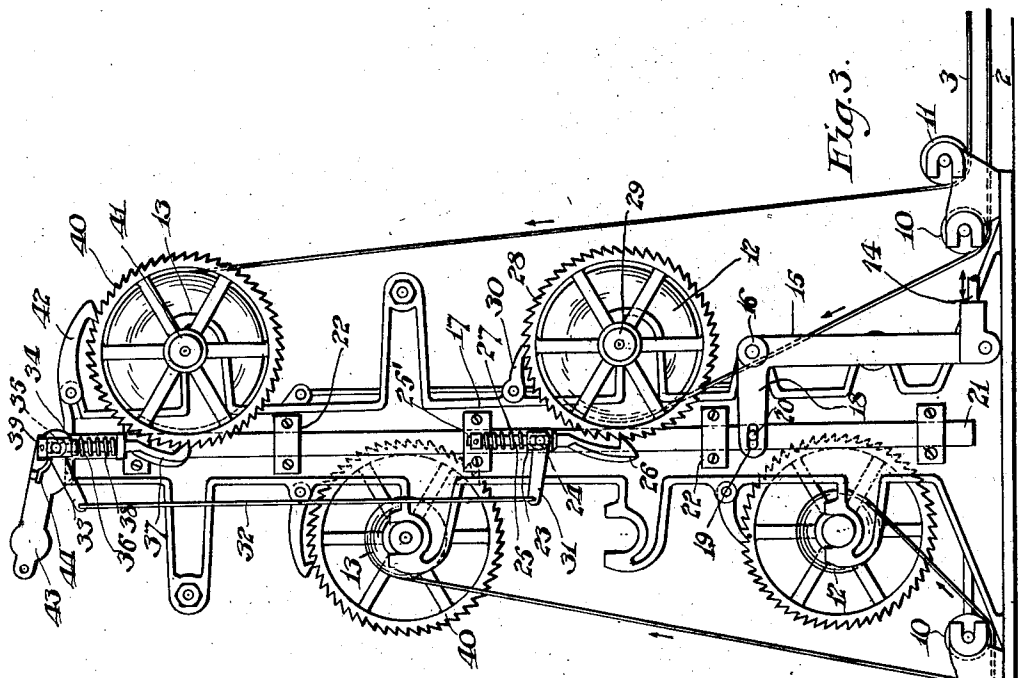
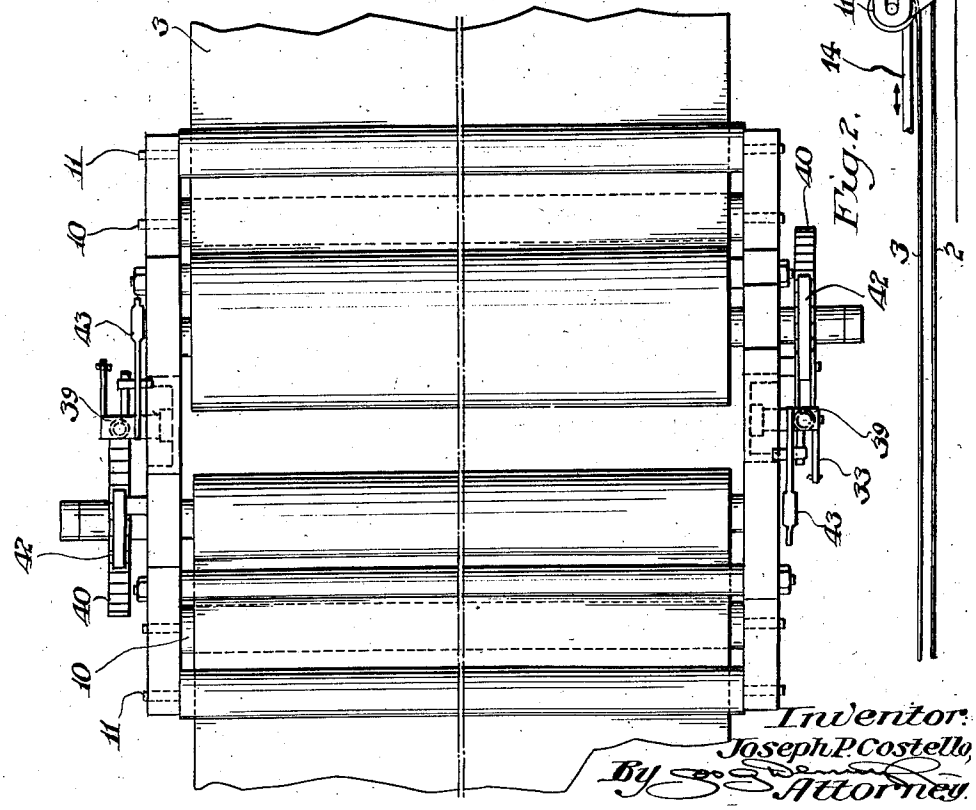


Fig. 2.



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Patented Jan. 19, 1937 2,068,534

UNITED STATES PATENT OFFICE

2,068,534

TAKE-UP MECHANISM

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Application May 2, 1933, Serial No. 669,040

5 Claims. (Cl. 139—304)

My invention is designed to reduce the floor area and number of operatives requisite for the operation of a plurality of looms, and to provide means for separately rolling or laminating fabrics woven by such looms without injury to such fabric and with avoidance of the creasing of the fabric commonly resulting from its entanglement with the pin rollers. My improvements also facilitate inspection and avoid injury to the fabric from the application of excessive tension thereto.

In accordance with my improvements the looms are provided with guides whereby fabric leaving the loom pin rollers is guided to the rear of the loom upon which it was woven and there wound or laminated by mechanism operated in synchronism with the loom. Such mechanism preferably consists of a frame having journalled therein rollers for the reception of fabrics from a plurality of pin rollers either on the same or separate looms.

My improvements are particularly applicable to double plush looms having splitting knives to separate the loom product into a plurality of cut pile fabrics which are independently guided to the rear of the loom and preferably wound step by step in alternation with one another.

By my improvements the weaver is relieved of the necessity of attending to the detachment of fabric from the pin rollers, the inspection of the fabric is facilitated, and a weaver may attend to a greater number of looms, particularly if the looms are arranged with their fronts in juxtaposition but spaced by a passage for the movement of the operative.

Such passages need not be very wide since my improvements obviate any need for the detachment or movement of the usual cloth boxes commonly provided at the front of the looms and permit the fabrics to be wound directly into rolls as they come from the loom.

The characteristic features and advantages of my improvements will more fully appear from the following description and the accompanying drawings of an illustrative embodiment thereof.

In the drawings, Fig. 1 is a diagrammatic view in side elevation of apparatus embodying my improvements and arranged in accordance therewith; Fig. 2 is an enlarged top view of the take-up mechanism; Fig. 3 is an enlarged side elevation of the take-up mechanism per se taken from the side opposite that shown in Fig. 1. Fig. 4 is a view, partly in section, of the pivotal connection between the pawl and the slide; and Fig. 5 is a side elevation of the part shown in Fig. 4.

My improvements are applicable to looms of any type, but are particularly adapted for use in conjunction with double plush looms in which the pile warp is split by a moving cutter as it comes from the weaving mechanism to form a plurality of backing fabrics with cut pile projecting therefrom. In the drawings there is diagrammatically illustrated such looms 1 having the split fabrics 2 and 3 passing over the pin rollers 4 and 5 in the front of the looms. The fabrics are held against the pin rollers by the respective rollers 6 and 7 and pass thence down the front of the looms to the bottoms thereof, over the respective rollers 8 and 9, under the looms to the backs thereof and over the respective rollers 10 and 11.

The fabrics 2 are wrapped smoothly on the take-up or batching rollers 12 and the fabrics 3 are rolled smoothly on the take-up or batching rollers 13 which are operated in reverse directions step by step in alternation and in synchronism with the feed motions of the looms.

Motion is imparted to the rollers 12 and 13 from and in synchronism with the loom by links 14 (Figs. 2 and 3) which are pivotally connected with arms 15 of bell cranks pivoted on the bearings 16 of the frame 17. The opposite arms 18 of the bell cranks contain slots 19 in which are loosely engaged pins 20 of reciprocable slides 21 movable in bearings 22 on the frame 17.

Bearings 23 are pivotally connected with the slides 21 and contain apertures 24 in which slide the shanks 25 of pawls or detents 26 which are supported by springs 27 which are sleeved on the shanks 25, bear against the bearings 23 and are held in place by collars 25' pinned on the shanks. The pawls 26 are adapted for engagement with the toothed periphery of the wheels 28 fixed to the shafts 29 of the rollers 12. The upward movements of the slides 21 cause the pawls 26 to move the wheels 28 in a clockwise direction step by step, but the force which may be applied to the wheels 28 through the pawls 26 is limited by the elasticity of the springs 27 so that no undue strain can be applied to the fabrics 2. Pawls 30 pivoted on the frame prevent counterclockwise movement of the wheels 28.

The bearings 23 have fixed thereto arms 31 connected by links 32 with arms 33 of bearings 34 which are pivotally connected with the slides 21. The bearings 34 contain apertures 35 for the passage of shanks 36 of pawls 37. Springs 38 are interposed between the tops of the pawls 37 and

the bottoms of the bearings 34 and collars 39 are pinned to the shanks 36 above the bearings 34.

The teeth of the pawls 37 are adapted for engagement with the toothed peripheries of the wheels 40 fixed on the shafts 41 of the rollers 13, and the downward movements of the slides 21 cause the pawls 37 to rotate the wheels 40 step by step in a counterclockwise direction in alternation with the movements of the wheels 28. Reverse movements of the wheels 40 are prevented by the engagement with the teeth thereof of the pawls 42 pivoted on the frame 17. The force which may be applied to the wheels 40 by the pawls 37 is limited by the tension of the springs 38, hence excessive strains on the fabrics 3 are prevented. The pawls 26 and 37 are normally pressed toward the wheels 28 and 40 by fulcrumed weights 43 journalled on the top of the frame and having bearings 44 engaging the arms 33. The weights may, however, be shifted out of operative position when it is desired to disengage the pawls from the ratchet teeth of the wheels 28 and 40.

It is preferable to arrange looms back to back with a duplex take-up mechanism, such as shown in the drawings between them, but it will be understood that a take-up mechanism having a single pair of rollers 12, or a single roller 12, may be used in conjunction with a single loom. Preferably looms are also so arranged that the fronts of two looms are arranged in juxtaposed relation but separated by an aisle A for the weaver, each of such looms having a take-up mechanism at the rear thereof. By such arrangements floor space is conserved and a weaver can attend to a number of looms.

Having described my invention, I claim:

1. The combination with a plurality of looms, of means between said looms and at the backs thereof for rolling fabrics woven thereby and comprising rolls arranged at different elevations, and means comprising spring supported pivoted pawls and a weight tending to keep said pawls in operative position for operating the respective rolls in synchronism with the respective looms.

2. The combination with a plurality of looms disposed back to back, of means comprising spring supported pivoted pawls and a weight tending to keep said pawls in operative position for winding fabrics woven by said looms and comprising a vertical frame having arms projecting toward the respective looms at different elevations, rollers journalled in the respective arms, and mechanisms for rotating the respective rollers.

3. A loom having means for guiding a fabric to the rear thereof, a roller at the rear of said loom for winding a fabric woven thereby, and means comprising a spring supported pivoted pawl and a weight tending to keep said pawl in operative position for operating said roller in synchronism with said loom, said spring limiting the tension applied to said fabric.

4. The combination with a pair of looms disposed back to back, of a stand intermediate said looms having batching rolls thereon for winding up the cloth from both of said looms, each of said looms being of the multi-shed type, means whereby the webs in each loom are passed down the front of the loom in such position that one of the webs is open to inspection, the webs from each loom then passing rearwardly to the batching rolls on the said common stand, means whereby the webs pass upwardly toward their individual batching rolls so that the webs which are covered at the fronts of the looms are on the outside at the stand for the batching rolls and are there open to inspection and means comprising spring supported pivoted pawls and a weight tending to keep said pawls in operative position for operating said batching rolls to wind the fabrics thereon as woven by said looms.

5. The combination of two looms and a common stand for the batching rolls thereof as set forth in claim 4 and in which each roll is at a different level from the others.

JOSEPH P. COSTELLO.