

A. L. TOLMAN.
CLOTH STOP FOR LOOMS.
APPLICATION FILED JAN. 18, 1911.

1,017,273.

Patented Feb. 13, 1912.

3 SHEETS—SHEET 1.

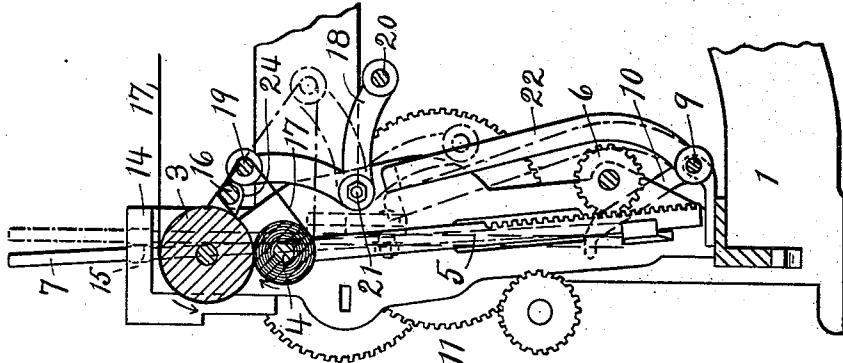


FIG. 2—

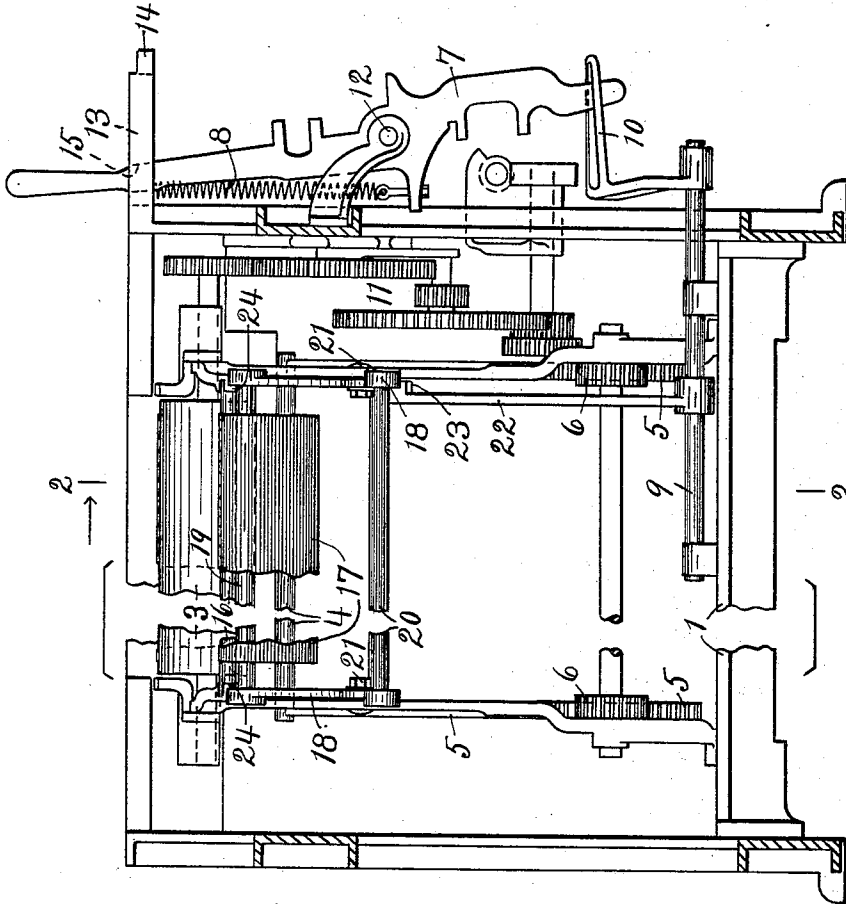


FIG. 1—

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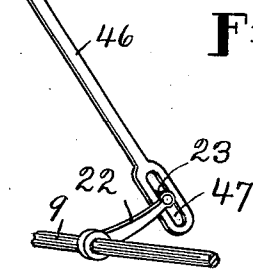
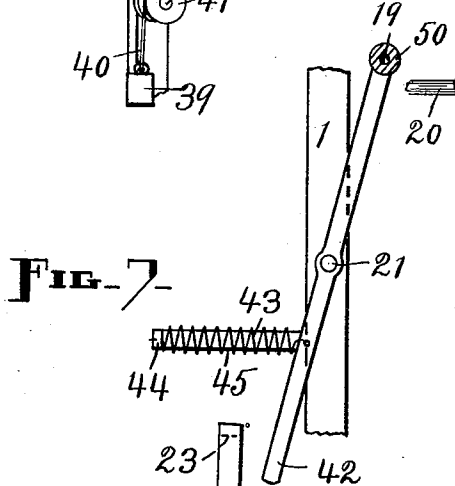
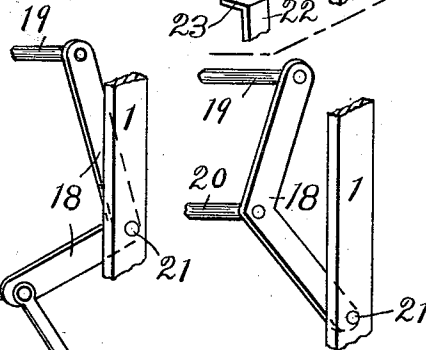
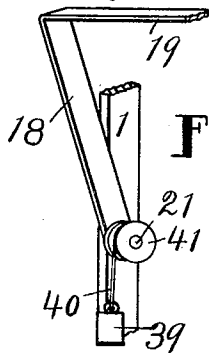
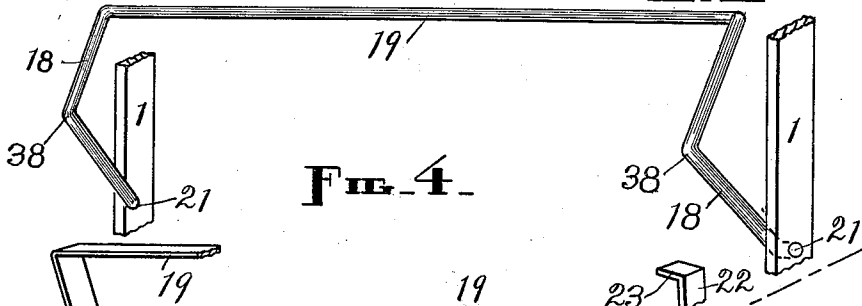
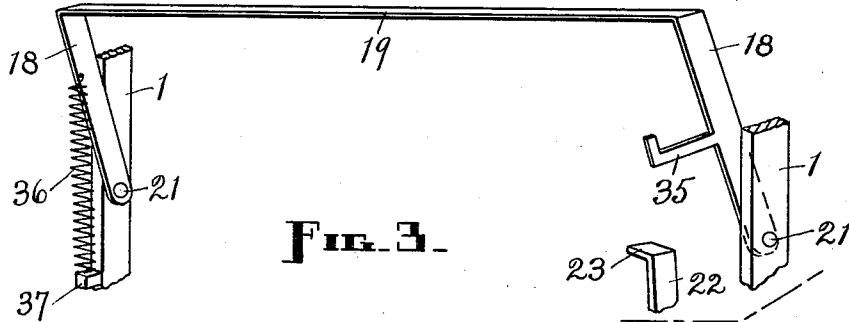
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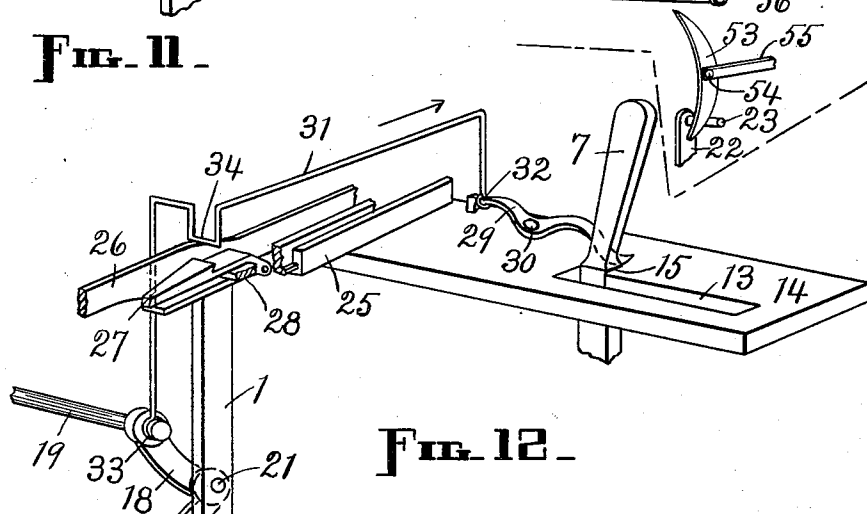
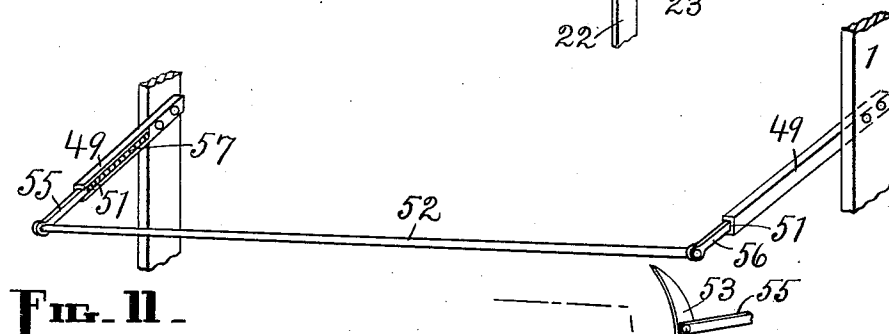
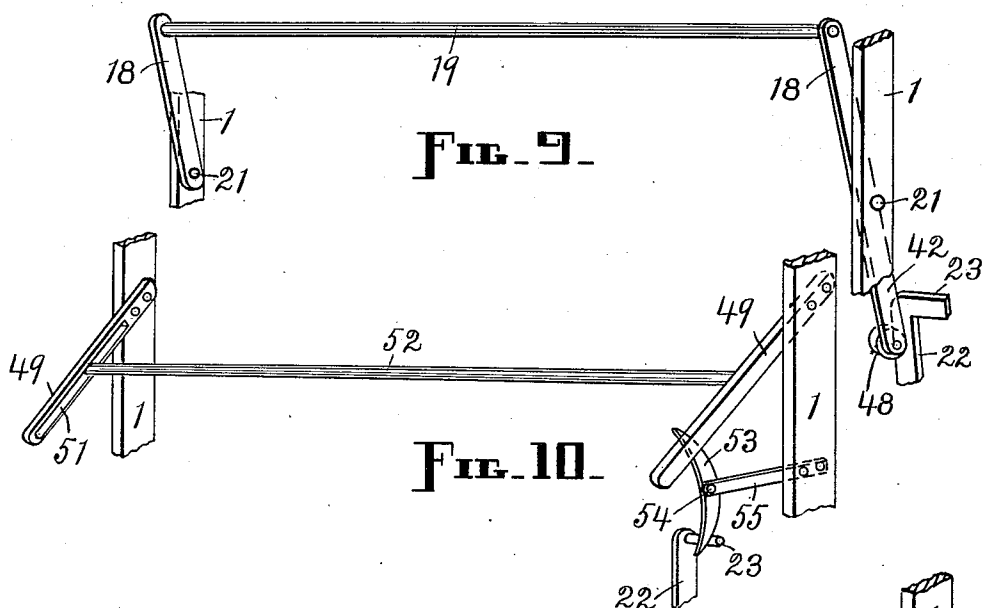


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3 SHEETS—SHEET 3.



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UNITED STATES PATENT OFFICE.

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CLOTH-STOP FOR LOOMS.

1,017,273.

Specification of Letters Patent.

Patented Feb. 13, 1912.

Application filed January 18, 1911. Serial No. 603,261.

To all whom it may concern:

Be it known that I, ANDREW L. TOLMAN, a citizen of the United States of America, residing at Thorndike, in the county of Hampden and State of Massachusetts, have invented a new and useful Cloth-Stop for Looms, of which the following is a specification.

My invention relates to improvements in stop-motions of looms and is associated more directly with the so-called high-roll takeups of the same, and said invention resides broadly in mechanical means which is under the control of the cloth as it passes from the filleting or takeup roll to the cloth roll of a loom, for automatically acting, when such cloth does not properly wind on said last-mentioned roll, in conjunction with some stop-motion member to stop the loom, as hereinafter set forth.

When, for well-known reasons, the cloth fails to wind around the cloth roll, or the latter ceases to revolve, or the weaver neglects to adjust the cloth properly, the cloth is carried around the filleting or takeup roll, the surface of which is usually rough, and wound thereon with disastrous results, such as the breaking of the takeup actuating or driving gears or of some part or parts of the loom frame, especially the intermediate gear bracket, since something must give way under the strain of the misplaced cloth, to say nothing of the wasted cloth due to the incidental or consequent interference with the weaving operation, and the loss in time, labor and material caused by the improper action of the takeup and the resulting injury to the loom, and the primary object of my invention is to obviate all of these difficulties and these disastrous results by doing away entirely with any possible danger or liability on the part of the cloth to wind on to the takeup roll. This I do by providing simple and inexpensive, yet certain and positive, means for taking care of any slack in the cloth between the filleting roll and the cloth roll, as soon as it begins to form, and to utilize such slack for stopping the loom before any damage can be done. To this end I provide a movable device that includes a member over or around which the cloth passes

on its way from the takeup roll to the cloth roll, which device is held in position immediately adjacent to said rolls by said cloth so long as the latter maintains its normal position or travels in its normal course, but is adapted to change position when the cloth slackens, and to bring about the stopping of the loom whenever the cloth slackens to an extent which would, in the absence of said device, be liable to work some injury either to itself or to the loom or both, the stopping of the loom being effected through the medium of said device and the ordinary shipper mechanism, owing to the fact that said device in changing position actuates some part of such mechanism in a manner to operate the same and to cut out or disconnect the power which drives the loom. Said device is strong though simple in construction, can be readily applied to a loom of the Draper or Northrop type and to other types, is not liable to get out of order, and is subject to very little wear since it remains stationary excepting at the infrequent intervals when it changes position.

The device is ready to pull the cloth away from the takeup roll and draw it down behind such roll, whenever the cloth roll does not properly take care of the cloth and the latter is liable to be wound on said takeup roll instead of being wound on said cloth roll as it should be, said device at first taking care of the slack as it is delivered behind the takeup roll and keeping such slack away from said roll, thus giving said cloth roll time and opportunity to resume its proper function of winding upon itself evenly, compactly and uniformly the cloth and then, if said cloth roll fail to so resume such function, acting to throw the stop motion member that is subject thereto and so to stop the loom. Furthermore, the device prevents the starting or restarting of the loom until the cloth has been properly adjusted and is in condition to be wound in the regular and correct manner on the cloth roll.

I will not enlarge further upon the advantages of my invention or go farther in showing the great saving at many points which is effected thereby, having said enough to set forth the reason why such a device is

needed and how such need is met by said device; it remains, therefore, merely to note here that other objects and advantages will appear in the course of the following description.

I attain the objects and secure the advantages of my invention by the means and mechanism illustrated in the accompanying drawings, in which—

10 Figure 1 is an elevation, in partial section, of parts of a Northrop loom with which a practical form of my invention is embodied, such parts being viewed from behind; Fig. 2, a vertical section taken on
15 lines 2—2, looking in the direction of the associated arrow, in Fig. 1, the two extreme positions of the cloth-stop being represented in full and by dotted-dash lines; Fig. 3, a perspective view of a simple form of cloth-stop which differs a little in construction,
20 but not in principle, from the form shown in the first two views; Fig. 4, a similar view of a slightly modified form of the stop shown in the preceding view; Fig. 5, a fragmentary detail illustrating the application
25 of a weight; Fig. 6, a fragmentary detail showing a very slight change that may be made in the construction of the stop first shown; Fig. 7, a sectional view of a stop
30 which has a straight extension as the operating member for the knock-off or shipper; Fig. 8, a fragmentary perspective showing a pivotal connection between the stop and the shipping lever; Fig. 9, a perspective
35 view of a slight modification of the construction which appears in Fig. 7; Fig. 10, a perspective view of a stop which consists in part of a sliding member, thus illustrating the application of the sliding
40 principle in place of the oscillating principle; Fig. 11, a perspective of a modification of the preceding view, and, Fig. 12, a perspective view showing the stop operatively
45 connected with the filling-fork stop motion.

Similar figures refer to similar parts throughout the several views.

As clearly revealed by the drawings, this invention is susceptible to very many modifications, both in detail and as a whole, and its range of application is wide to a degree, hence I do not desire or intend to be limited or restricted to the constructions and arrangements herein shown and described,
50 only a few of the many possible constructions and arrangements having been thus set forth in detail, but seek to claim the same broadly and to cover any and all modifications, such as will occur to one skilled in the
55 art to which this invention appertains and which may justly be said to fall within the scope of said invention.

As before intimated, my invention naturally divides itself into at least two classes,
65 types or groups, namely, the oscillatory or

rocker type and the reciprocatory type, but the former is preferred since it is less complicated—although both are very simple—and there is less friction between the parts; in short, the rocker type is the better from a mechanical standpoint. The first of these types will now be described in detail.

Referring, first, to Figs. 1 and 2, it will be observed that I have there shown parts of a Northrop loom, such parts including portions of a frame 1, a suitably mounted filleting or takeup roll 3, a cloth roll 4 journaled in two racks 5, gears 6—6 meshing with the toothed parts of said racks, a main shipper-lever 7 by means of which the loom is
75 started and stopped and with which the warp-stop motion and the filling-detector mechanism are connected, a spring 8 for such shipper-lever, and a knock-off rock-shaft 9 provided with a slotted arm 10 with
80 which the base of said lever is engaged, together with certain gears 11 which constitute parts of the takeup mechanism and are among those most liable to be damaged in the event the cloth piles up on said takeup
90 roll. The main shipper-lever 7 is pivotally mounted at 12, and at the upper terminal passes through and operates in a slotted part 13 of a horizontal plate 14 of the frame 1, which slotted part is provided with a
95 shoulder 15, shown more clearly in Fig. 12. These parts and members are all of usual and well-known construction and operate in the customary manner. It may be well, however, to call attention at this place to the
100 fact that the shipper-lever 7 is loosely mounted on its pivot 12, so that said lever can be moved into and out of engagement with the shoulder 15, as well as lengthwise of the slot 13. The rock-shaft 9 belongs with
105 the warp-stop motion.

A stationary rod 16 is usually stationed back of the takeup roll 3, and the cloth, represented at 17, as it is woven, passes over and partially around said takeup roll, over
110 said rod, and, in the absence of my stop, under and around the cloth roll 4. This rod 16 may or may not be retained when said stop is in place, since one of the members of the stop serves practically the same purpose as
115 said rod, in addition to its own function, as will presently appear.

The rocker, shown in the first two views, comprises two end members 18, each consisting of two arms standing approximately at right-angles to each other, a rod 19 connecting the upper ends of said end members, and a rod 20 connecting the lower ends of said end members. The last-mentioned rod is provided for the purpose of stiffening the
120 rocker and adding to the weight and stability of the same. The members 18 are attached to the sides of the frame 1, at 21—21, the pivots passing through the central or
125 angular portions, laterally, of said members. 130

It will now be seen that the rocker thus formed is free to swing up and down on its pivots 21.

The pivots 21 are so located in the sides of the frame 1 that, when the rocker is swung upwardly, the upper ends of the members 18 strike those portions of said frame which support the rod 16, and come to rest outside of the vertical plane of said pivots, and, when said rocker swings downwardly, the lower ends of said members 18 strike and come to rest on the aforesaid frame sides. The latter provision is not so material, although any undue strain on a shipping-lever 22, described below, is thereby avoided, but the former is necessary because, when the rocker is turned up, it must have a solid rest or abutment to bear against in order to properly support the cloth, and it is due to the fact that the upwardly-positioned rocker is thus buttressed in front that the rod 16 can be omitted if desired.

The shipping lever or arm 22 is rigidly secured at its base to the rock-shaft 9, and extends upwardly from such rock-shaft into the path of the rocker, said arm, in the present case, having a laterally projecting ear 23 which is in the direct path of the adjacent rocker member 18.

The rocker normally gravitates into the position represented by dot-and-dash lines in Fig. 2, and owing to its weight exerts some considerable force downward. When the cloth 17 is connected with the takeup, said cloth is passed behind the rod 19, the rocker having been turned up against the upper abutments therefor, which abutments are represented at 24—24, and then carried downwardly and forwardly to the cloth roll 4, as shown in full lines in Figs. 1 and 2. Thus the rocker is held in its high position against the abutments 24 during the winding operation so long as such operation continues normal, the cloth 17 meanwhile running over the rod 19. As soon, however, as the cloth 17 slackens between the takeup roll 3 and the cloth roll 4, from any cause, the rocker swings downwardly, taking up the slack. If the normal winding is resumed, this slack is taken up or reduced by the takeup mechanism and the rocker returned to its high position again by the same agency, but if, on the contrary, said takeup mechanism fails to overcome the difficulty and the cloth slackens still more, then said rocker continues on its downward course until it strikes the shipping arm 22 and actuates the same forward to stop the loom. See dot-and-dash lines positions of rocker, cloth, shipping arm and shipper-lever, in Fig. 2.

The loom is started by moving the shipper-lever 7 into engagement with the shoulder 15, as it is shown in Fig. 1, and said lever remains in such engagement while the

loom is running, and the stopping of the loom, when the arm 22 is rocked forward by contact with the ear 23 of the member 18 above such ear, is effected through the medium of the rock-shaft 9, the arm 10, and the spring 18, in the same way as though the warp-stop motion had been the cause. The loom cannot now be set into continuous operation again until the rocker is turned to its high position and the cloth adjusted to remain it there. In case the loom is started without proper adjustment of the rocker and cloth, the former acts immediately to bring about the shifting of the shipper-lever and the stopping of the loom.

From the foregoing it is clear how the cloth-stop is always ready for instant and efficient action, and does act unfailingly, when occasion requires, to prevent injury to the loom and to protect the cloth from impairment due to too frequent picks or other causes.

Turning now to Fig. 12, it will be seen that I there show certain members of the filling-fork mechanism or the filling-detector, together with a part of the frame 1, the slotted and shouldered plate 14, and the upper terminal of the shipper-lever 7, of a loom. The members referred to consist of a portion of a filling-motion stand 25 mounted on the plate 14, a portion of a filling-fork slide 26, a filling-motion hook 27 slidably mounted on a cross-piece 28 between the parallel sides of said slide, and a filling-motion shipper 29 pivotally mounted at 30 on said plate and having one terminal located in front (behind in the drawing) of said shipper-lever when the latter is in engagement with the shoulder 15. To these old members is added, for the purpose of applying my invention and adapting it to the filling-detector mechanism, the rocker as before, parts of which appear in this view (Fig. 12), and an angular connecting member 31 between said rocker and the shipper 29, such member being movable into and out of the path of the reciprocating hook 27 accordingly as said rocker is turned down or up. The front arm of the member 31 is loosely attached at 32 to the end of the shipper 29 which is opposite that which acts directly on the shipper-lever 7, and the rear arm of said member is loosely attached at 33 to the rocker rod 19. The member 31 is provided with a downward offset 34 so arranged that it is brought into the path of the hook 27 when the rocker swings downward into its low position.

From the above it is plain that, so long as the rocker is held up, as by the cloth in the first instance, it being assumed that the shipper-lever 7 is in engagement with the shoulder 15 and that the loom is in operation, the offset 34 is maintained above the hook 27, but as soon as said rocker swings down into

its low position, as permitted by the slack-
ing of the cloth and in the manner pre-
viously explained, said offset is lowered in
front of said hook and the latter instantly
contacts with the same, with the result that
the member 31 is forced forward or in the
direction of the arrow, in Fig. 12, and the
shipper 29 is actuated by said member in
such a way as to disengage said shipper-le-
ver from said shoulder and force it into the
long part of the slot 13, when the shipper-
lever spring completes the operation of stop-
ping the loom. The operations of the ship-
per 29 and lever 7 are the same as when
brought about by the filling-detector mecha-
nism. The results attained with the cloth-
stop applied in this manner in no wise differ
from those attained when said stop is ap-
plied as herein first described, and the func-
tions and operations are the same excepting
as has just been pointed out.

I will next consider in order the modifica-
tions in the construction of the cloth-en-
gaging device of the rocker type, commenc-
ing with that shown in Fig. 3. Here the
cloth-stop is comprised of a rocker made out
of a single piece bent to form the rod, or
bar in this case, 19, two end members 18
which are straight and pivoted at 21 to the
frame 1, fragments of the sides of which lat-
ter are represented. There is here no bot-
tom rod 20, and one of the end members is
provided with a rearwardly-extending arm
35 to contact with the ear 23 on the shipping
arm 22, when the rocker swings down to
stop the loom. The upper terminal only of
the arm 22 is shown in this and a number of
the other views. If this rocker were used
with the filling-fork motion, as it might be,
the arm 35 would not be required. The ap-
plication of a spring to the rocker is also
shown in Fig. 3, such spring, 36, being rep-
resented as having one end attached to a
lug 37 on the frame 1 and the other end at-
tached to the end member 18 above, but or-
dinally no spring is needed with this or any
other form of rocker, gravity alone being
sufficient as a general thing to carry the
rocker down with the slack cloth. A spring
may, however, be employed with any of the
various constructions, or, in other words, it
is permissible to add a spring to any con-
struction, the presence or absence of the
same not affecting the scope of my inven-
tion or tending either to broaden or narrow
it, and the same thing is true of a weight.
The rocker in the next view differs from
that last described only in that the end
members are bent rearwardly to form an-
gles or elbows 38—38, and the arm 35 is
omitted, one of said elbows or a part of one
of the members 18 adjacent thereto serving
the same purpose as said arm.

In Fig. 5, I show the application of a
weight, 39, in place of a spring. The weight

39 is suspended from a cord 40 which is
wound on a small drum 41 mounted on one
of the pivots 21, which latter is extended
for that purpose. The drum 41 is rigidly
attached to its end member 18.

The fragment of a device shown in Fig.
6, illustrates how a rocker can be made after
the manner of the first form, but having
each of its end members 18 reversed, rela-
tive to the takeup and cloth rolls, and the
base pivoted at 21 to the frame side, the
lower rod 20 in this case being moved up to
connect the angles or elbows of said end
members.

In Fig. 7, the rocker, like that in Fig. 9,
has straight end members, one of which is
prolonged or extended at 42, below the pivot
21 upon which such member is mounted, to
form an operating lever for the shipping
arm 22, the ear 23 on which latter arm is in
the path of said operating lever. A spring
43 might perhaps be here used to advantage,
as is shown, said spring being attached at
one end to the lever extension 42, and at the
other end to a lug 44 at the free end of an
arm 45 that projects from the frame 1. This
rocker has a roll 50 mounted on the rod 19,
as might be done in other constructions.

The construction shown in Fig. 8 dis-
closes the manner in which the rocker and
the shipping arm 22 can be permanently
although loosely connected. The stop in
this view corresponds with the first, but
there is added to it a link 46 which is piv-
otally mounted at its upper end on the rod
20 and has a slot 47 in its lower terminal to
receive the ear 23, or a pin in lieu of such
ear. The slot 47 provides for the necessary
lost motion on the part of the rocker and the
link 46, but the construction is such that the
top of said slot encounters the ear or pin 23
before said rocker arrives at its lowest point,
so that the shipper-lever 7 is thrown at the
proper time.

A rocker quite similar to that shown in
Fig. 7 is presented in Fig. 9. Here a roller
48 is mounted at the free end of the exten-
sion 42 to ride on the shipping arm 22 or
the ear 23 thereof when the rocker is swung
into engaging relation with said arm.

This completes the rocker group herein
represented. All of the devices in this
group are shown in the high position as
when held up by the cloth, and all operate
in practically the same way.

Passing to the reciprocatory group, which
comprises two examples only, attention is
first called to Fig. 10. In this view two
rearwardly and downwardly inclined arms
49 are rigidly fastened at their front ends
to the sides of the frame 1, and slidingly
mounted with each end in a longitudinal
groove 51 in the inside face of each of said
arms is a rod 52. The arms 49 take the
place of the end members 18 of the rockers,

and the rod 52 corresponds with the rocker rods 19, since the cloth passes over or around said rod 52. The rod 52, which in the drawings is represented in an intermediate position, is in practice and normally held up by the cloth against the upper or front ends of the grooves 51, and said rod slides or rolls down in said grooves when the cloth slackens, encountering on the way and before arriving at the lower rear ends of said grooves a dog 53. The dog 53 is pivotally mounted intermediate of its ends, at 54, to an arm 55 which extends from the frame, said dog being so situated that its lower end is in engaging relation to the ear or pin 23 of the shipper-arm 22, and its upper end in the path of the rod 52 as the latter nears the end of its downward and rearward travel. It is now clear that the rod 52 contacts with the dog 53, when the cloth slackens sufficiently to allow said rod to approach the end of its backward and downward travel, and as said rod continues in this direction said dog is actuated to operate the lever 22 and so bring about the stopping of the loom.

In Fig. 11 the same elements are present as in the immediately preceding view, and besides there are slides 56—56 and a spring 57 for each. The slides 56 are attached to the ends of the rod 52 and operate in the grooves 52 in the fixed arms 49, which grooves in this instance open through the back ends of said arms, and in each of said grooves is one of the springs 57 arranged between the inner or adjacent ends of the groove and the slide 56 therein to tend constantly to force the latter rearwardly. These arms may or may not be inclined. This stop operates like the other sliding or reciprocating stop, but has the springs 57 in the grooves 51 to force the slides 56 with the rod 52 rearwardly, and need not depend upon gravity for this action.

Although the reciprocating stops are operative and in some cases might be more serviceable than the oscillatory stops, the latter in most practical forms develop less friction, can generally be installed with less difficulty, lend themselves more advantageously to the makeup mechanisms, comprise fewer parts, and on the whole are better adapted for my purpose, as hereinbefore intimated.

Any of the modifications, even including corresponding parts of the Figs. 10 and 11 constructions, may be substituted for the rocker shown in Fig. 12, without calling for more than the ordinary skill of the mechanic

or departing from the nature of my invention.

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

1. A loom of the high-roll take-up type including a take-up roll partially around which the cloth passes, a cloth roll mounted to be rotated by the cloth wound thereon frictionally engaging the cloth on the take-up roll, a device over and in contact with which the cloth travels in passing from the take-up to the cloth roll, an abutment for limiting the movement of the device toward the rolls and against which the device is normally held by the tension on that portion of the cloth between the rolls, and a loom stop mechanism arranged to be operated by the device when the latter reaches a predetermined point due to the slackening of the cloth.

2. A loom comprising a take-up roll, a cloth roll mounted adjacent to the take-up roll and driven by the latter contacting with the cloth wound on the cloth roll, a fixed guide extending longitudinally of and spaced laterally from the take-up roll for supporting the cloth after it passes the take-up roll and before it winds on the cloth roll, a device for exerting a tension on the cloth between said guide and cloth roll to maintain the cloth between the guide and take-up roll taut, and a stop mechanism operated by the device when the slackening of the cloth between the rolls permits the device to reach a predetermined position.

3. A loom comprising a take-up roll, a cloth roll mounted adjacent to the take-up roll and driven by the latter contacting with the cloth wound on the cloth roll, a fixed guide extending longitudinally of and spaced laterally from the take-up roll for supporting the cloth after it passes the take-up roll and before it winds on the cloth roll, a device for exerting a tension on the cloth between said guide and cloth roll to maintain the cloth between the guide and take-up roll taut, a stop mechanism operated by the device when the slackening of the cloth between the rolls permits the device to reach a predetermined position, and bearings for the guide forming abutments against which the device bears when the tension of the cloth between the rolls is normal.

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