

No. 894,521.

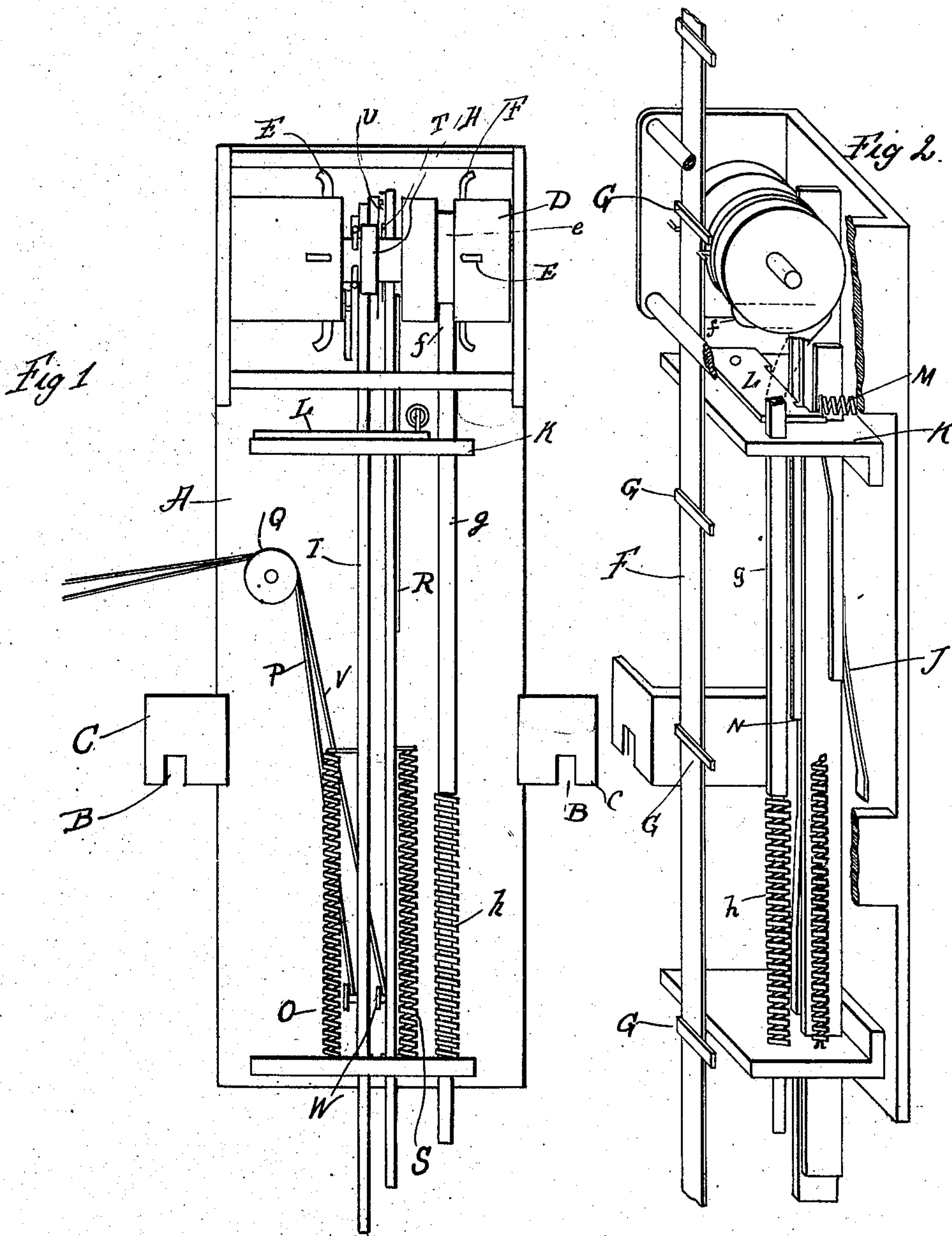
PATENTED JULY 28, 1908.

F. MITCHELL & C. A. KNUDSEN.

STOP MOTION FOR LOOMS.

APPLICATION FILED FEB. 1, 1907.

2 SHEETS—SHEET 1.



WITNESSES:

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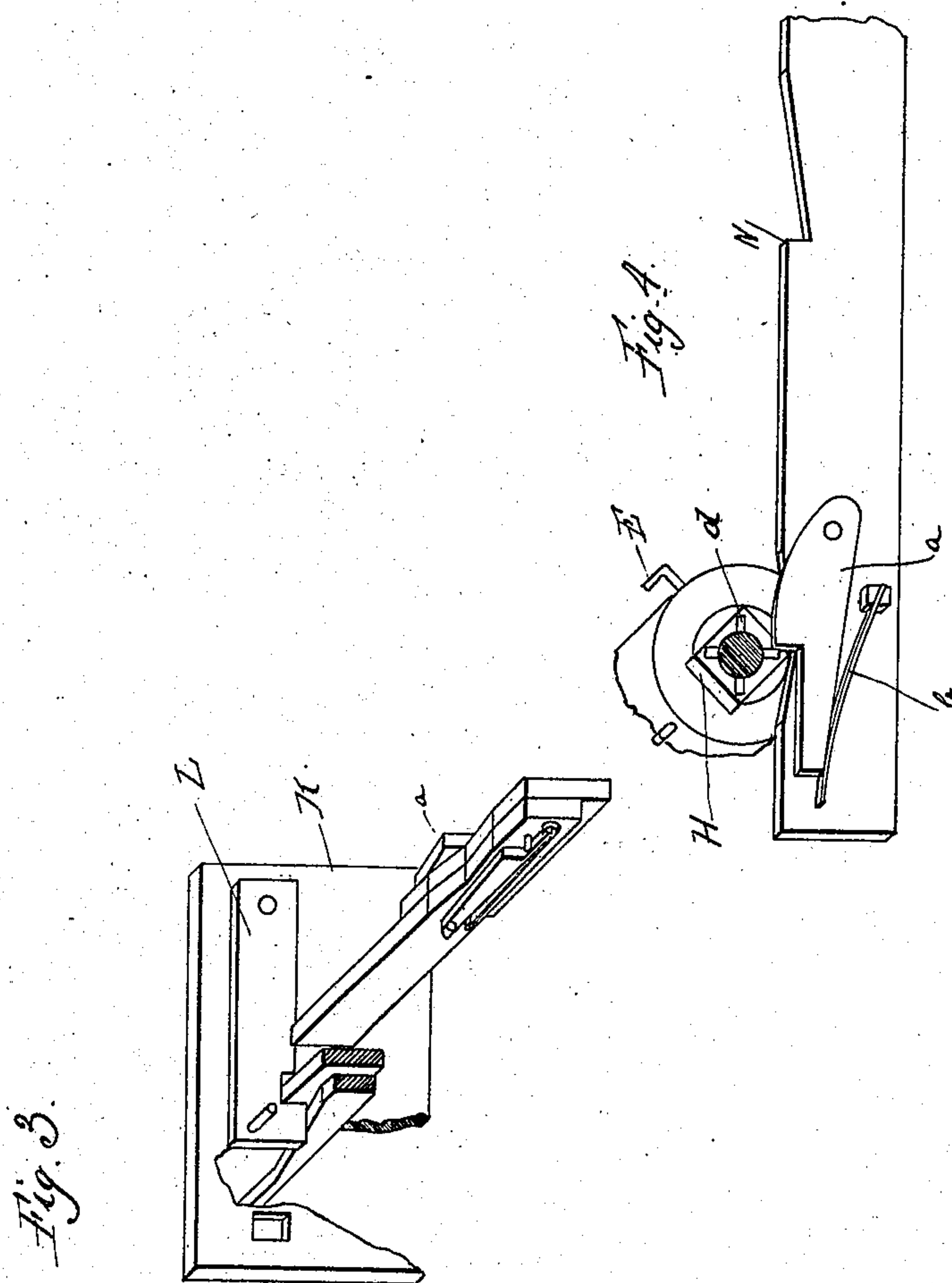
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UNITED STATES PATENT OFFICE.

FLETCHER MITCHELL AND CONRAD A. KNUDSEN, OF PHILADELPHIA,
PENNSYLVANIA.

STOP-MOTION FOR LOOMS.

No. 894,521.

Specification of Letters Patent.

Patented July 28, 1908.

Application filed February 1, 1907. Serial No. 355,310.

To all whom it may concern:

Be it known that we, FLETCHER MITCHELL and CONRAD A. KNUDSEN, citizens of the United States, residing at Philadelphia, county of Philadelphia, and State of Pennsylvania, have invented a certain new and useful Improvement in Stop-Motions for Looms, of which the following is a specification.

Our invention relates to a new and useful improvement in stop motions for looms, and has for its object to provide an effective mechanism by which a loom may be stopped at any predetermined point so as to enable the operator to change the color of the filling by changing the bobbins in the shuttles.

With these ends in view, this invention consists in the details of construction and combination of elements hereinafter set forth and then specifically designated by the claims.

In order that those skilled in the art to which this invention appertains may understand how to make and use the same, we will describe its construction in detail, referring by letter to the accompanying drawing forming a part of this specification, in which—

Figure 1 is a front elevation of our new stop motion mechanism; Fig. 2, a perspective thereof, a portion being broken away to more clearly illustrate the operating parts; Fig. 3, a detail perspective of a portion of the plunger rods showing their relation to the bracket upon which is carried the locking pawl; and Fig. 4, an enlarged perspective of a portion of one of the plunger rods clearly illustrating the action of the trip pawl on the cam shaft.

In carrying out our invention as here embodied, A represents a frame adapted to support the various operating parts of the device, and this frame may be secured in proper position to the frame work of the loom upon which it is to be used by suitable bolts passing through the slots B in the brackets C as will be readily understood.

Within the upper portion of the frame A is journaled the cam shaft D and from this shaft project the fingers E. In order that the cam shaft may be revolved at predetermined times through these fingers we provide a pattern belt F, the upper portion of which may be run over any suitable idle pulley, while the lower portion thereof runs over one end of the sand rolls of the loom, and the latter when

the loom is in operation will give this pattern belt a given speed, and upon the belt at predetermined intervals are secured the cross strips G which as the belt travels will come in contact with the fingers E, thereby revolving the cam shaft through a part of a revolution.

The cam shaft D carries a cam H which may be of any desired shape, here shown as square, and back of this cam is located a plunger rod I which is forced forward against said cam by the spring J, and this rod passes through the bracket K upon which is pivoted the locking pawl L. The pawl L is normally drawn inward by the spring M so that when the plunger rod is forced upward until the notch N formed thereon comes into alinement with the locking pawl L the latter will spring beneath this notch and hold the rod in its elevated position. The rod always having a tendency to move downward by reason of the coil spring O attached thereto.

When the cam shaft is revolved, as before described, at a predetermined time the revolving of the cam will force the plunger rod backward and in so doing disengage the notch N from the locking pawl, permitting the plunger to be drawn downward by its spring. To this plunger is attached the draft strap P which passes over the pulley Q, and this strap is utilized for returning the plunger to its normal elevated position by drawing thereon when said plunger will again be held by the locking pawl L springing beneath the notch N.

R represents the actuating plunger rod which lies parallel with the plunger rod I and is drawn downward by the coil spring S. This plunger has a point T projecting therefrom which is adapted to come in contact with the upper end of the dog U, which latter is pivoted to the plunger rod I, so that when this last named rod is moved upward it will carry with it the plunger rod R. Thus when the strap P, is drawn upon both the plungers I and R they will be elevated and so long as the plunger I is held in this elevated position by locking pawl L, both of these plunger rods will be thus held in a normally elevated position.

V represents the actuating cord which is secured at W, to the plunger rod R, and also passes over the pulley Q, and from thence to the shipper lever of the loom, and so long as

the actuating plunger is elevated, the loom will continue to run, but when the cam H, forces the plunger rod I, out of engagement with the locking pawl, the plunger rods will
 5 be drawn downward by their spring, and by this movement the actuating cord V, will be pulled to shift the shipper lever and stop the loom. Now as this takes place when one of the cross bars G, comes in contact with the
 10 fingers E on the cam shaft, it will be seen that by setting these cross bars at the proper distances upon the pattern belt the loom will be stopped at predetermined times, so that the operator may change the color of the filling
 15 by removing the bobbins from the shuttles and substituting others in their places.

When the cam trips the plunger I as before described, one of the points thereof will be in a position to force and hold the plunger
 20 rod backward and it is therefore necessary that the cam be turned sufficiently to carry this point out of engagement with the plunger rod, when said rod is again elevated or otherwise the notch N could not come in
 25 engagement with the locking pawl, and to accomplish this turning of the cam a pawl *a* is pivoted to the upper portion of the plunger, and by means of spring *b* is held in alinement with the points *d* so as to engage there-
 30 with and turn the cam out of alinement with the plunger. In order that the cam may be held in this last named position against accidental rotation a stop cam *e* is carried by the cam shaft, and a shoe *f* is adapted to bear
 35 against this last named cam is carried by the upper end of the rod *g* which latter is forced upward by the spring *h*. Thus when the cam H has been turned out of operative position it will be held against further rotation by
 40 the shoe *f* but as this shoe is maintained in engagement with the cam *e* by spring pressure only, the further operation of the cam shaft of the pattern belt will not be interfered with.

From this description it will be seen that the loom equipped with our improvement will be automatically stopped at a predetermined time and thus the color of filling will be maintained with accuracy, and without
 50 care on the part of the operator. This is a very important feature in weaving various kinds of fabric, since the stopping of the loom at the proper time has been dependent upon the judgment of the operator, with the
 55 result that widths or the colors and the lengths of the fabric is varied, and often considerable loss of both time and material is required to ravel out the filling to bring the goods to the proper length.

60 Having thus fully described our invention what we claim as useful is—

1. In the stop motion for looms the combination of a frame, two plungers fitted to slide in said frame, springs for drawing said
 65 plungers downward, means for holding said

plungers in an elevated position, a cam for tripping the plungers, means for operating said cam at a predetermined time and means connected to one of the plungers for stopping the loom when said plungers are tripped as
 70 specified.

2. The here described combination of two spring actuated plungers means for holding said plungers in an elevated position, a cam shaft, a cam carried by said shaft adapted to
 75 trip the plungers and a cord connecting one of the plungers with the stop lever of the loom, means for elevating the plungers, means for preventing the cam shaft from accidental rotation, a pattern belt carrying
 80 cross bars thereon at predetermined intervals for actuating the cam shaft at predetermined times as specified.

3. The herein described combination of a frame and plunger fitted to slide in said
 85 frame a spring for drawing said plunger downward, a locking pawl adapted to engage a notch formed in said plunger for holding the latter in elevated position, a second plunger arranged parallel with the first
 90 named plunger and a spring for drawing said second plunger downward, means for causing the second named plunger to move upward with the first named plunger, a cam shaft and a cam carried by said shaft adapted to trip
 95 the first named plunger, means carried by the first named plunger for rotating the cam out of operative position, a second cam carried upon said cam shaft, a spring actuated shoe adapted to bear against the second named
 100 cam to hold the first named cam out of operative position a series of fingers carried by the cam shaft a pattern belt adapted to be actuated by the sand roll of the loom, cross bars set at predetermined intervals upon the
 105 pattern belt adapted to engage said fingers to actuate the cam shaft and means for connecting the second plunger with the stop lever of the loom as and for the purpose set forth.

4. In a mechanism for stopping a loom at
 110 a predetermined time, a suitable frame, a plunger I, a spring for actuating said plunger, a locking pawl adapted to engage a notch formed in the plunger whereby said plunger will be held in an elevated position, a cam
 115 shaft, a cam H carried by said shaft adapted to force the plunger out of engagement with the locking pawl, a pawl carried by said plunger, points carried by the cam shaft with which the last named pawl is adapted to en-
 120 gage for turning the cam out of operative position when the plunger is elevated, a cam also carried by the cam shaft, a spring actuated pawl adapted to bear against the last named cam to hold the shaft against acci-
 125 dental rotation, a series of fingers projecting from the cam shaft, a pattern belt adapted to run upon one end of the sand roll of the loom, cross bars located at predetermined points upon said belt and adapted to come in con-
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tact with the fingers for actuating the cam shaft, a plunger R arranged parallel with the plunger I, means for connecting the two plungers so that the plunger I will elevate the
5 plunger R, a cord connecting the plunger with the stop lever of the loom and a draft strap secured to the plunger I whereby the latter may be elevated, as specified.

In testimony whereof, we have hereunto affixed our signatures in the presence of two 10 subscribing witnesses.

FLETCHER MITCHELL.
CONRAD A. KNUDSEN.

Witnesses:

JOSEPH C. SMITH,
S. M. GALLAGHER.