

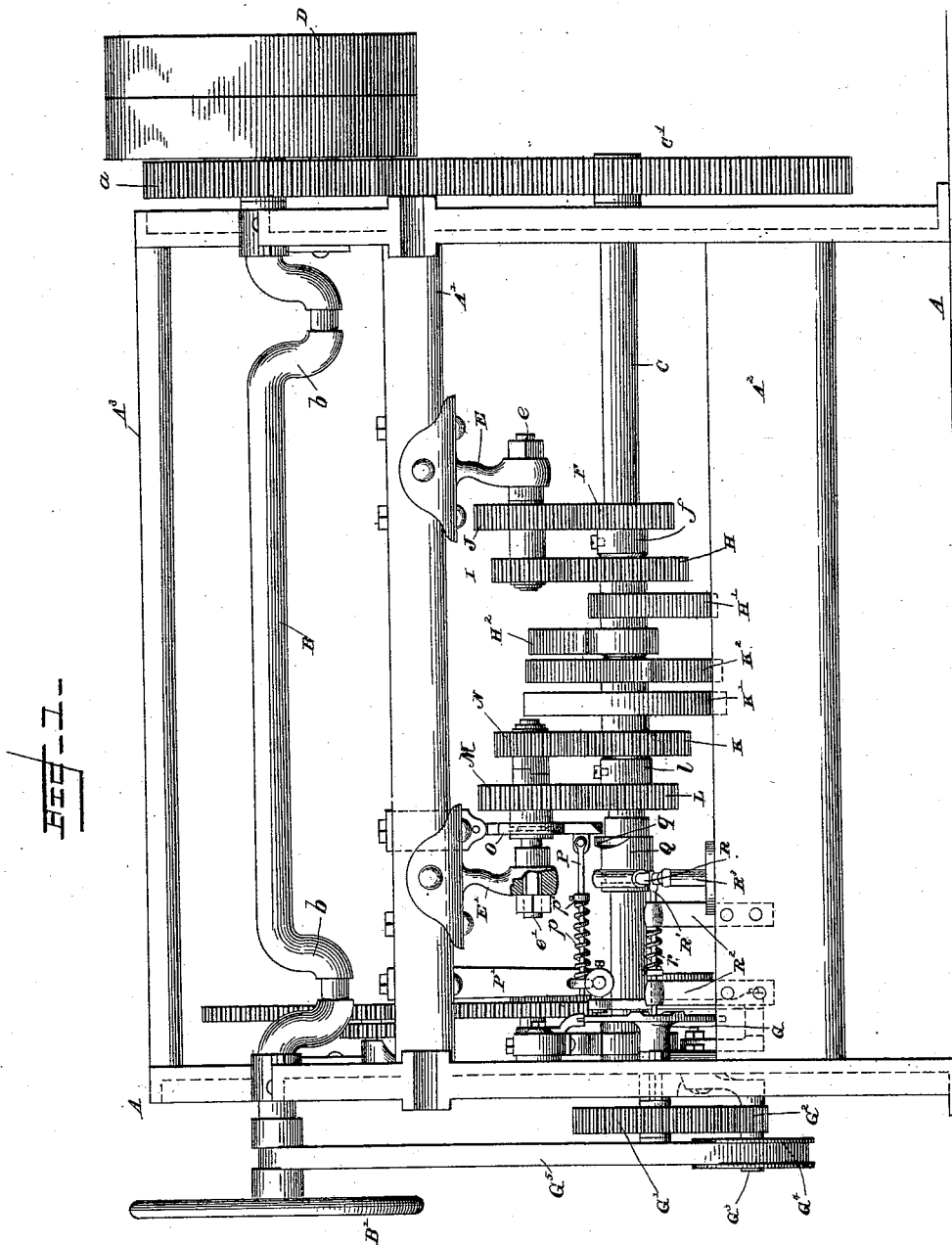
(No Model.)

3 Sheets—Sheet 1.

H. P. HUNTER.
LOOM FOR WEAVING BAGS.

No. 494,204.

Patented Mar. 28, 1893.



Witnesses

Edw. S. Duval Jr.
Wm. B. Boyden

Inventor
Henry P. Hunter,
per Fred W. Vasker.
Attorney

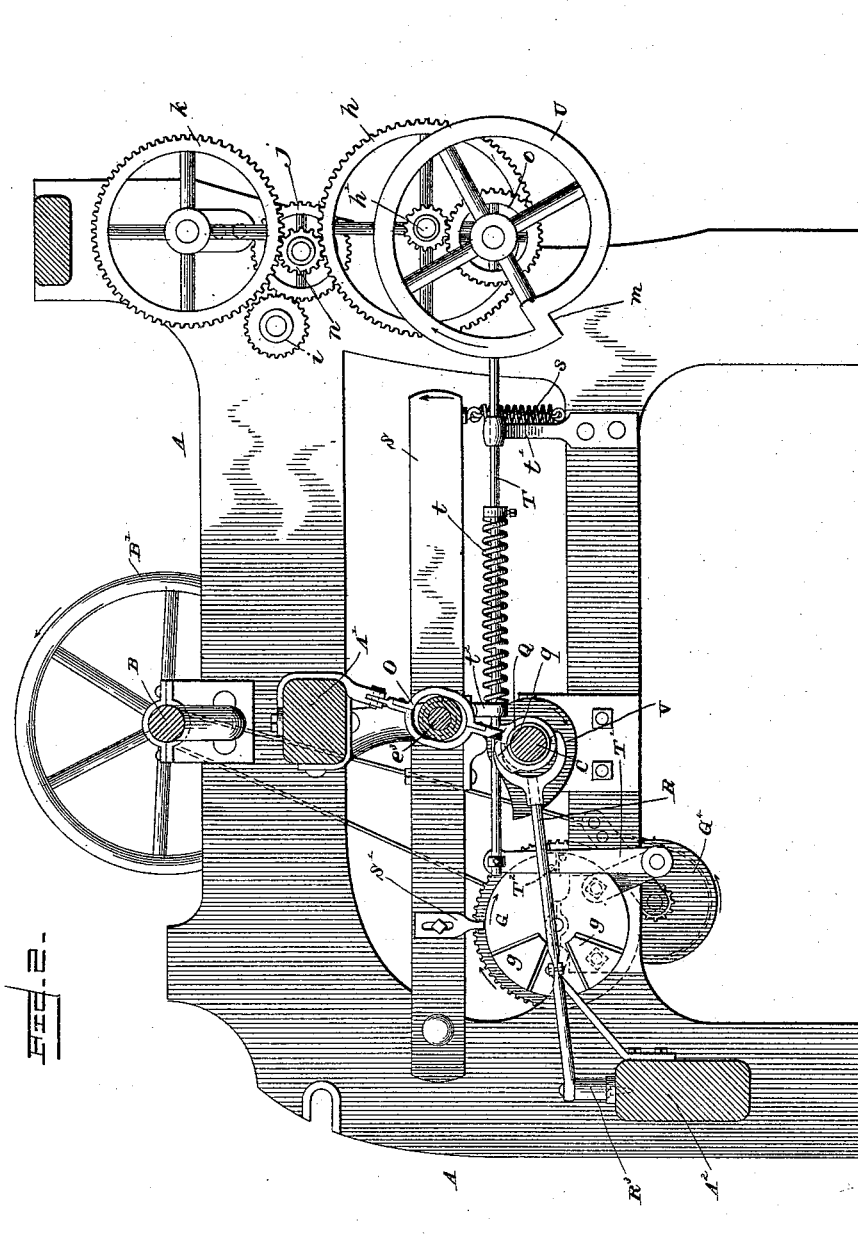
(No Model.)

3 Sheets—Sheet 2.

H. P. HUNTER.
LOOM FOR WEAVING BAGS.

No. 494,204.

Patented Mar. 28, 1893.



Witnesses

Edw. S. Swall Jr.
Wm. L. Boyden

Inventor
Henry P. Hunter
per *Fred Vasker*
Attorney

(No Model.)

3 Sheets—Sheet 3.

H. P. HUNTER.
LOOM FOR WEAVING BAGS.

No. 494,204.

Patented Mar. 28, 1893.

FIG. 3.

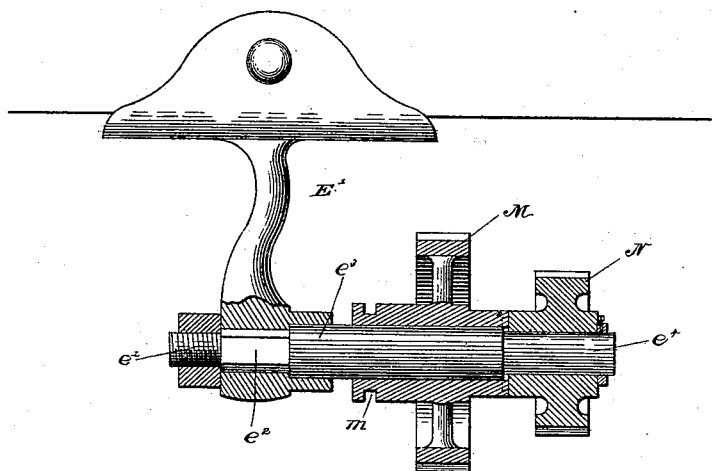


FIG. 4.

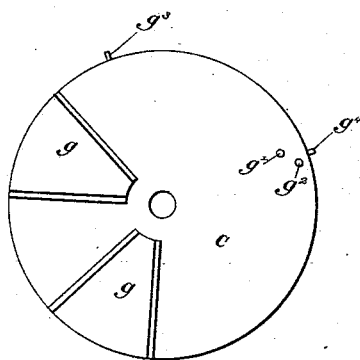
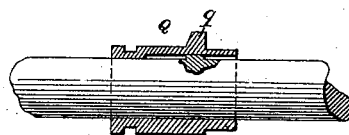


FIG. 5.



Witnesses

Edw. J. Duval Jr.
Wm. L. Boyden.

Inventor

Henry P. Hunter,
per Fred E. Barker,
Attorney

UNITED STATES PATENT OFFICE.

HENRY P. HUNTER, OF MANCHESTER, NEW HAMPSHIRE.

LOOM FOR WEAVING BAGS.

SPECIFICATION forming part of Letters Patent No. 494,204, dated March 28, 1893.

Application filed April 12, 1892. Serial No. 428,866. (No model.)

To all whom it may concern:

Be it known that I, HENRY P. HUNTER, a citizen of the United States, residing at Manchester, in the county of Hillsborough and State of New Hampshire, have invented certain new and useful Improvements in Looms for Weaving Bags; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to a bag weaving loom. Its object is to provide a simple, cheap and inexpensive mechanism consisting of a few parts as possible and employed for the purpose of easily and efficiently weaving bags of various kinds.

The invention consists in the construction, arrangement and combination of the several parts and in numerous details in the relative arrangement and combination of the same, substantially as will be hereinafter described and then more fully and comprehensively pointed out in the appended claims.

In the annexed drawings illustrating my invention: Figure 1 is a side elevation of a portion of a cloth-weaving loom with the mechanism of my bag-weaving attachment applied thereto. Fig. 2 is an inside end elevation of the same. Fig. 3 is an enlarged sectional detail view of the two inter-clutching pinions or gears, together with the hanger devices for supporting them. Fig. 4 is a plan view of the circular plate or wheel having thereon lateral or face cams and also face pins and peripheral pins. Fig. 5 is a sectional detail view of the endwise movable cam on the cam-carrying shaft.

Similar letters of reference designate corresponding parts throughout all the different figures of the drawings.

A denotes the frame of any ordinary loom, said frame being of any desired form, shape and size and adapted to have arranged therein and therewith the common and usual mechanical parts belonging to a loom and said frame having as parts thereof, for instance, the upper or top beam A^3 , the lower rear girder A^2 and the upper or intermediate girder A' , together with the side frames as shown and represented in that example of the frame delineated in the drawings herewith. In the

upper part of this main frame is journaled a crank shaft B having the cranks $b b$ to which certain, parts of the loom mechanism may be connected, said parts not being shown in the drawings as it is not necessary to represent them, they having no connection with the present invention. On one end of shaft B is a wheel B' and on its other end is a gear wheel a and the drive pulleys D. In the lower part of the frame A is the main shaft C, which may be termed a cam-carrying shaft as it supports thereon numerous harness cams, whose function it is to operate the harnesses of the loom. On one end of shaft C is a large gear C' which engages the gear a and is driven thereby.

Of course it is unnecessary to explain to persons skilled in the art to which this invention appertains, that the several cams carried upon the cam carrying shaft C, operate in connection with the harnesses for the purpose of performing the work which the loom is intended to execute, and accordingly it is likewise unnecessary to represent said harnesses in the drawings and therefore their delineation has been omitted, as my invention does not appertain thereto and since they are matters of common knowledge in all looms being fundamental parts of the structure thereof. There will obviously be upon the cam-carrying shaft as many cams as there are harnesses to be operated. Often there are but two cams. When however there are four harnesses to be actuated there will be four cams on the cam shaft, one for each harness.

On the shaft C is a fast gear wheel F, said gear being secured in some suitable way, as for instance by a set screw, passing through the hub f . Adjoining gear wheel F is a gear wheel H which is loose upon shaft C and is rigidly connected to the two cams H' and H^2 , said cams being harness cams and said three parts H, H' and H^2 being rigidly joined upon the same hub, or otherwise rigidly connected to each other, being integral if desired and all being loosely placed upon the shaft C so as to be rotatable thereon. Also on shaft C is another fast gear L suitably secured, as by a set screw in its hub l . Adjoining gear L is another gear K which is loose on the shaft C and is solidly connected to the two harness cams K' and K^2 so that all three parts K, K'

and K^2 are solidly joined together, being made integral if preferred, and these parts are loosely mounted on the shaft C, so as to be rotatable thereon. The gear wheels F and H are the gears commonly employed with the harness cams of a loom and two such cams are used, while the gears L and K belong to my present improvements and are as I have already above stated identical with the gears which are commonly used in connection with gears F and H for four harness work when four harnesses are to be operated by four cams and they revolve in the same way in weaving a tube or bag as do the gears F and H.

Secured upon the girder A', which I have already denominated the upper or intermediate girder of the main frame, above the shaft C, is a vertical hanger arm E which upholds a horizontal rigid arm, shaft or stud e on which are mounted two loose pinions I and J which have a common hub or are joined together, said pinion I engaging the gear wheel H and said pinion J engaging the gear wheel F. By this overhead arrangement of gearing motion is communicated from the gear F to the gear H, through the gears J and I and to the cams H' and H^2 . Likewise supported upon the girder A' is another hanger arm E' similar to hanger E—see Figs. 1 and 3, especially the enlarged detail view in the latter figure. The hanger E' upholds the horizontal arm shaft or stud e' , which has a polygonal part e^2 held within a correspondingly shaped bearing in the lower end of the hanger arm E', a screw-threaded end e' provided with a nut, a round section e^3 on which is a sliding and rotatable pinion M and a round section e^4 of smaller diameter than section e^3 on which section e^4 is a pinion N, said pinions M and N being constructed so that their hubs may be in or out of engagement with each other, that is to say, clutched or unclutched, the meeting parts, edges or contiguous ends of these hubs being constructed properly for this purpose and after the manner of the parts of a common clutch, so that when said parts are engaged, the two gears will rotate together and when said parts are disengaged, the pinion N will not partake of the motion of the pinion M. The pinion M is capable of adjustment toward or away from the pinion N and its hub is formed with an annular groove m which is engaged by the vibrating yoke O, pivoted above to a support on the girder A', by means of which vibrating yoke, the adjustment of the pinion M is effected, and the clutching or unclutching thereof with the pinion N accomplished as desired and in the manner which I shall hereinafter presently fully describe.

The pinion M engages with the gear wheel L and the pinion N engages with the gear wheel K and when the pinions M and N are clutched together so that motion can be imparted from pinion M to pinion N, the gear L will impart motion through said pinions M and N to the gear wheel K and consequently to the harness cams K' and K^2 which we have seen are con-

nected to said gear wheel K and on the other hand when the pinion M is out of engagement with the pinion N, the rotation of the gear L and pinion M will have no effect upon the cams K' and K^2 , but they will stand idle.

On the shaft C at a point immediately below the vibrating yoke O is a small sleeve Q, having the cam projection q on the side thereof, of the form shown, so that the whole may act as a cam, this cam being endwise adjustable on the shaft, but being feathered or otherwise connected thereto so that it will revolve therewith. The projecting part q of the cam is adapted at certain times to come in contact with the lower end of the vibratory yoke O, the effect of which engagement will be to disconnect or unclutch the gears or pinions M and N. In other words it may be said that the rotation of the cam Q at certain times will thrust the yoke O away from the gear L and the effect of this movement of the yoke will be to carry the gear M away and out of engagement with the gear N, but will not be to disengage the gear M from the gear L as they remain in contact at all times and the extent of motion of the gear M is not sufficient to disengage them. When the cam in its rotation carries the projection q past the lower end of the vibratory lever O, so that it ceases to act thereon, said lever will be thrown back into its former position as shown in Fig. 1, under the action of a spring-provided rod P which has one end pivoted to the lower end of the yoke, while the other end slides in a support provided at the lower end of a hanger P', which is secured on the girder A'. The rod P is partially enveloped by a spring p and on the rod P is a collar k' , provided with a set screw so that the collar may be adjustable. A spring p is tensioned between the bearing at the lower end of the hanger P' and the collar k' , so that the tendency of the spring will be to throw the yoke O toward the right and therefore when the force which impels it toward the left, is removed, this spring arrangement will serve to restore the yoke to its former normal vertical position, as shown, the result of which restoration will be to similarly restore the gear wheels M and N to their normal clutched position.

The sliding cam Q is provided with an annular groove which is engaged by the forked end of a lever R, the other end of which lever is pivoted upon a support R^3 firmly stationed on the girder A²—see Fig. 1 and also more especially Fig. 2. Pivotaly connected to the lever R at a suitable point in the length thereof—say about midway of it—is a rod R' supported in a horizontal position in bearings formed in the upper ends of two standards R^2 R^2 , in which bearings the rod R' is permitted to have an endwise horizontal movement. Between said bearings, the rod R' is surrounded by a spring r and a collar provided with a set screw is likewise situated upon the rod R' at this point for the purpose of adjusting the tension of the spring. This

spring will serve to normally hold the rod R' and consequently the lever R which is pivoted to the end of said rod and consequently the cam Q which engages the forked end of the lever R, in a position away from the end of the vibratory yoke O, that is to say in the position shown in Fig. 1.

G denotes a circular plate. It is shown in plan view in Fig. 4, in elevation in Fig. 2 and in edge view in Fig. 1. It has on its face two sector shaped or wedge shaped projections, each equal in size to one-eighth of the circumference of the plate. This plate is secured on the end of a horizontal shaft which is supported in suitable bearings in the main frame, which carries at its other end a gear wheel G'. The gear wheel G' meshes with a pinion G², whose shaft is supported by the frame and carries a pulley G⁴, around which passes a belt G⁵ which likewise passes around the shaft B between the fly-wheel B' and a take-up cam or eccentric on said shaft. In this way it will be seen how the plate G receives its motion which is communicated thereto slowly and easily, so as to permit the plate to have a slow movement. The cam-carrying shaft C will revolve eight times while the circular plate G is revolving once, the parts being properly proportioned and arranged to permit this result. The projections on the face of the circular plate G are lettered *g g* in Fig. 4. The adjacent end of the rod R' of which we have already spoken, presses constantly against the face of the wheel G, under the action of the enveloping spring *r*. It will be obvious that as the plate G rotates, its lateral cams *g* will shift the rod R' temporarily in its bearings and consequently vibrate the lever R and shift the cam Q so that at times it will be in position to engage the vibratory lever O and cause the latter to be shifted.

Since the sector shaped cams on the face of the circular plate G constitute each one-eighth of the circumference thereof, it will be evident that the cam Q will, whenever one of these parts shifts the rod R', be put into engagement with the lower end of the yoke O and kept there during one revolution of the shaft C. The distance between the wedge-like projections *g g* is equal to the width of one of these projections and consequently one-eighth of the plate. When the plate stands still, the end of the rod R' rests between the two projections. In the operation of the machine, after the tubular portion of the bag has been woven long enough and it becomes necessary to proceed to provide the bottom thereof, this plate G will be started in its revolution in a manner which I shall hereinafter fully describe when I come to explain that portion of the mechanism for stopping and starting the motion of the plate, and then one of these projections *g* will immediately strike the rod R', operating it and consequently the cam and other parts, as I have already explained, and the parts will be held in the position in which

they are thus placed as long as the end of the rod rests in contact with the face of the projection which has shifted it and this will be a length of time just long enough for the cam Q to catch the yoke O once and only once, the result of thus catching the yoke being to unclutch the pinions M and N. The end of the rod R' will then immediately slip off the face of the cam part *g* which has been acting upon it and will drop onto the face proper of the plate allowing the cam Q to return to its former position away from the yoke, where it will remain until the second wedge-like projection *g* reaches the end of the rod R' and acts thereon to shift it, causing a like train of operations to proceed as before when the rod passed over the first projection and then the plate stops its motion for the time. The passage of the rod R' over the first projection *g* makes such changes in the relative arrangement of mechanism that the machine will change from the weaving of the bag or tube to the weaving of the bottom of the bag, and the passage of the end of the rod over the second projection, or as it may be better stated, the contact of the second projection with the end of the rod, will change the process of weaving from the bottom portion of the bag, back to the tubular or body part thereof, and so on, the operation will go, until the warp is entirely used up.

Referring again to the circular plate G, it will be seen that said plate—see Fig. 4—is provided with two pins cast horizontally on its face, one of which—*g*²—is nearer the periphery of the plate than the other *g*¹, said pins being but a short distance apart, and said pin *g*² furthermore being slightly in advance of the pin *g*¹ as the plate revolves. These pins are for the purpose of engaging a stud on a perpendicular lever, by which engagement the plate is stopped and held stationary, while the bag is being woven, and the manner of this stoppage as well as the description of the parts which operate to accomplish it, will be described herein later. Further it will be observed that the periphery of the plate G is provided with two projecting pins *g*³ and *g*⁴, the distance between which is equal to that between the centers of the two lateral wedge shaped cam projections *g g*, and these peripheral pins or lugs *g*³ and *g*⁴ act in conjunction with certain mechanism, of which a horizontal oscillating lever, known as a picker, is a prominent element, for the purpose of insuring the proper working of the small endwise movable cam on shaft C, all as I shall presently more fully describe.

On the inside of the front portion of the frame of the loom and on the same side where the circular plate G is situated and substantially in line with said plate, is a wheel U, having at one point in its periphery a notch *m*, which notch has one of its sides at right angles to the periphery, while its other side is sloping and curves gradually into the periphery again as shown in Fig. 2. The notched

wheel U is driven by an arrangement of gearing shown in Fig. 2. i is a pinion, which has, say thirty-two teeth and it meshes with the gear wheel j which is known in the loom as a changeable pick gear. On the same shaft with the gear j is a pinion n . The cogs n and j are compound cogs or gears. The pinion n has say, eighteen teeth and it meshes with and drives the larger gear wheel k , which has, say, eighty-four teeth and which actuates the cloth take up-roll, which is generally say, about fifteen inches in circumference. All these gears which I have just named, to wit, i , j , n and k are old in their relations and in their arrangement as stated and may be found on any common loom and I have simply represented them in this case as a portion of the loom mechanism for the purpose of showing how certain extra gearing is connected to this gearing to receive power therefrom so as to be used as a portion of my invention.

I will now explain the gearing to which I have just alluded.

h denotes a large gear which has, say, one hundred and five teeth and which engages with and is driven by the pinion n aforesaid. On the hub of the large gear wheel h is a pinion h' rigid therewith and this pinion h' meshes with a gear wheel o . The gear o is a changeable gear and may have as many teeth as are desirable. It will indeed have as many teeth as the bag which is to be woven is long in inches, because every tooth on the gear wheel o is equal to one inch of the bag, that is to say, an inch of bag material will be woven for the movement of each tooth of the gear wheel o . On the same shaft which carries the gear wheel o is rigidly secured the notched wheel U and therefore said wheel U revolves coincidentally with the revolution of the gear wheel o .

T' designates a perpendicular or vertical lever which is pivoted at its lower end on some suitable support and which is situated contiguously to the edge or periphery of the circular plate G. A flat lip T^2 is cast on this lever on the side thereof next to the plate G and on a line substantially horizontal and in the same plane with the center of the circular plate and on this lip the pins g' and g^2 strike or contact at certain times for the purpose of stopping the plate G and holding it in a stationary position. The upper end of the lever T' is movably connected to one end of a horizontal rod T which is supported in suitable bearings, as for instance, the upright t' which is bolted on the main frame of the loom and a drop bearing t^2 having the function of a drop stand or guide and fastened to the upper girder A', as shown in Fig. 2. On this rod T is a spiral spring t which is tensioned between the guides t^2 and a collar provided with a set screw, so as to make it adjustable on the rod T and so that the tension of the spring can be regulated as desired. This spring t causes the end of the rod T to press constantly against the rim or periphery

of the notched plate U. While the plate U is revolving once, a bag will be woven. When the notch u in the wheel arrives at the end of the rod T, the wheel U revolving in the direction shown by the arrow, said rod will be forced by the spring t to drop into the notch and this will throw the perpendicular lever T' forward toward the front of the machine and thrust the lip T^2 from under the inner pin g' where it has been resting, into a position to catch and support the outer pin g^2 as soon as the plate G in its revolution brings the pin g^2 around to the point where the lip is situated and the contact of pin g^2 with the lip will consequently stop the circular plate, in which position it will remain until the lever T' is forced back far enough for the lip to clear the outer pin g^2 and pass under the inner pin g' , a movement which will immediately occur, and consequently the inner pin g' will drop down on to the lip T^2 where it will remain until the notched wheel U makes another revolution and until therefore another bag has been woven.

S designates a long horizontal lever, known in the loom as a picker lever, the rear end of said lever being pivotally supported in the rear portion of the loom frame, while the forward end is connected by a spring s with the portion of the picker-stick beneath it. In lieu of the spring s any other yielding connection may be substituted. I have shown the spring simply as an example. This picker lever is provided at a suitable point above the plate G—it being noted that the lever S is situated vertically above said plate G—with a downwardly projecting arm S' which is securely bolted to the face of the lever S and which is adjustable. The lower end of this arm S' comes in contact at certain times with the pins g^3 and g^4 on the periphery of the plate G. On the horizontal cam-carrying shaft C at a point directly beneath the lever S is a cam V, and as the shaft C rotates, the cam V each time its point passes under the lever S, will lift the latter, the result of which lifting will be to disengage the arm S' from whichever of the pins g^3 g^4 it may at the time be in contact with. It is found in actual practice that the cam Q which we have seen slides upon and turns with the shaft C and whose function it is to engage the vibratory arm O and consequently cause an unclutching of the pinions M N, does not always work properly but is liable at times to fail to catch the yoke O or to catch it twice and thus a disarrangement in the action of the machine is produced. This failure of the cam Q to operate is probably owing to the rapid operation thereof when the machine is working and when we consider the peculiar construction of the cam and its arrangement in connection with the adjacent parts. It is to obviate this that I have placed the arm S' on the picker lever S and the pins g^3 and g^4 on the periphery of the circular plate G. By having these parts work together as I have described, I absolutely avoid

the difficulty which exists in the practical working of the cam Q because the pins g^3 and g^4 will during the revolution of the plate G strike against the projecting arm S' which will result in the holding of the plate G stationary until the lever S is lifted by the action of the cam V and said lifting of the lever S will occur at just the proper time so that as the plate G starts forward on its rotation, the cam Q will be sure to slide endwise on the shaft C at the right point and come into engagement with the lower end of the vibratory yoke O at exactly the right moment. These two pins it will be noted, g^3 and g^4 being properly distanced and situated, work harmoniously in conjunction with the action of the lateral wedge shaped pieces $g g$ upon the endwise movable shaft R', and consequently are harmonious in their action with the movement of the cam Q.

From the foregoing of the construction and arrangement of the several parts of my improved bag weaving loom, it will be understood how the machine operates to produce the practical results in view and I need not here give any lengthy description of such operation.

The clutched gears M and N run two to one with the gear that carries the cams K K², that is to say a half revolution of the clutch gears equals a quarter revolution of said cams or one pick. Therefore when the gears M N are unclutched, the revolution of the gear K and consequently of the cams K' and K² is stopped during one pick, whereby they are brought into position to operate in connection with the weaving of the bottom instead of the tubular portion of the bag. I have already fully explained how the clutching and unclutching of the gears M and N are accomplished and at what intervals they take place. I have also fully shown how the circular plate G rotates and is stopped at certain points in its rotation by adjunctive mechanism whereby the proper results in the working of the several parts of the invention are attained.

The novel and most important part of the invention consists in the notched wheel, the circular plate, the clutched gears and their connections, all of which operate automatically in the manner stated.

Numerous changes may be made in the exact construction and detailed arrangement of the several parts of the invention without departing from the spirit or the general and leading principles of the same and I therefore reserve the liberty of making such changes and arrangements in the detailed construction of the parts where I find it necessary in actual practice or where the exigencies of individual machines may require.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a loom attachment for weaving bags, the combination with the mechanism of an ordinary cloth weaving loom, including the

harness cams, of the gearing for driving said cams, a portion of which is adapted to be clutched or unclutched so as to temporarily stop the motion of two of the cams, a circular plate having face cams, the levers, cams and rods, operating in connection with said face cams for the purpose of accomplishing the aforesaid clutching and unclutching, an automatically operating notched wheel, the spring rod and the stud-provided lever, the latter having one end in proximity to the aforesaid cam-provided circular plate, substantially as described.

2. The herein described loom attachment for weaving bags which consists in the combination with the mechanism of an ordinary loom, including the harness cams, of the gearing for driving said cams, that belonging to two of them being adapted to be clutched or unclutched so that at intervals said two cams may be temporarily stopped and the mechanism for controlling said clutching and unclutching consisting essentially of a positively driven circular plate having thereon face cams and pins, a positively driven notched wheel, a spring rod engaged by the said wheel and operating a lever on which is a stud acting in conjunction with the pins on the circular plate, the levers, and cam mechanism which is operated by the cams on the circular plate to produce the unclutching or clutching action of the harness gears, substantially as described.

3. In a loom attachment for weaving bags and the like similar articles, the combination with the mechanism of an ordinary loom, including the harness cams, of gearing for driving said cams, that which acts in connection with two of them being adapted to be in engagement or out of engagement so that said two cams may be temporarily stopped for the purpose described, a yoke engaging one of said gears and provided with a spring device acting to normally keep the gears in engagement, a sliding cam acting on the yoke at times to throw the gears out of engagement, a positively driven circular plate having on its face lateral projections, an endwise and shifting rod which is acted on by said projections and a movable lever pivoted to the aforesaid shifting cam and connected to the said endwise rod so that the cam will be actuated at times and the gears thrown out of clutch, substantially as specified.

4. In a loom attachment, the combination with two of the harness cams, of gearing for driving them which is adapted to be thrown into or out of clutch so that at times the two cams may be temporarily stopped, the pivoted yoke which vibrates and slides one of said gears, the spring mechanism for keeping the yoke in such position that the gears will be normally clutched with each other, a sliding cam on the main cam carrying shaft which acts in conjunction with the said yoke for the purpose of unclutching the said gears, the positively driven circular plate having lateral

projections on its face, an endwise movable spring-provided rod which is shifted by the action of said plate and a vibrating lever connected to said rod and to the sliding cam so that as the circular plate rotates said cam will act at times to operate the yoke and un-

5 clutched the gears, substantially as described.
 10 5. In a loom attachment for weaving bags, the combination with two of the harness cams, of gearing therefor which is adapted to be clutched and unclutched so that at times the cams will temporarily stand idle, a yoke for shifting one of said gears into or out of clutch with its companion, a sliding cam on the main
 15 cam-carrying shaft which acts in conjunction with said yoke, the circular plate having on its face lateral projections and pins, an endwise movable rod which is shifted at times by the said lateral projections, a vibrating lever
 20 connected to the sliding cam and also to the said rod by which it is actuated for the purpose of causing the cam to engage the aforesaid yoke, a positively driven notched wheel, a spring rod engaged thereby a perpendicular lever actuated by the spring rod and hav-
 25 ing a stud thereon which engages the pins on the circular plate, all substantially as described.

30 6. In a loom attachment for weaving bags and the like similar articles, the combination with the harness cams, of the gearing for actuating them, two of the gears being at certain times in clutch and at other times out of clutch, the pivoted yoke engaging one of said gears
 35 and acting to throw it into or out of clutch with its companion, a sliding cam on the main cam carrying shaft, which engages the aforesaid yoke, a circular plate having on its face lateral projections and pins and on its periph-

40 ery having pins, suitable connections whereby the projections on said plate operate upon the sliding cam, the picker lever having a projection thereon which comes into engagement with the peripheral projections on the circular plate, and the cam on the main cam car-
 45 rying shaft which acts to vertically lift the picker lever at certain times, substantially as described.

7. In a loom attachment for weaving bags and the like similar articles, the combination 50 with the mechanism of the loom including four harness cams, of gearing for actuating said cams, two of the gears belonging to the gearing for two cams being thrown into or out of clutch at certain times so as to cause a tem-
 55 porary stop of the two cams, a sliding cam on the main cam carrying shaft which acts to throw said two gears into or out of clutch, a circular plate having on its face lateral projections and pins, suitable connections between
 60 said plate and the aforesaid sliding cam so that the plate in its rotation may actuate the cam, a notched wheel, a spring-provided rod engaged by said notched wheel, a lever to which said spring provided rod is movably connect-
 65 ed, said lever having a stud which engages pins on the face of the circular plate, a picker lever having a projection for engaging pins on the periphery of the circular plate and a cam on the main cam-carrying shaft which
 70 acts upon said picker lever, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

HENRY P. HUNTER.

Witnesses:

CHARLES O. BARNARD,
 OLIVER B. ELLIOTT.