July 9, 1940. O. SYLVESTER 2,207,559

AUTOMATIC BLOCKER FOR HAY PRESSES

Filed Jan. 12, 1938

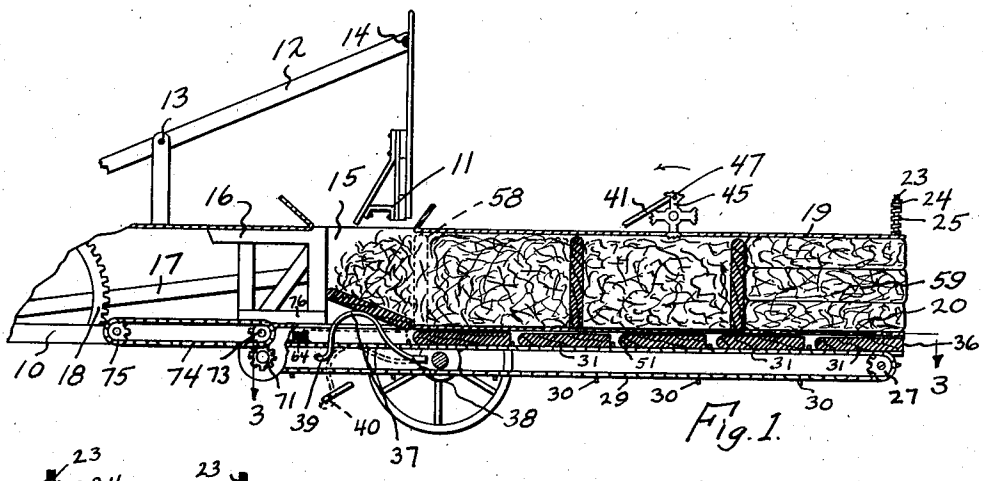


Fig. 1.

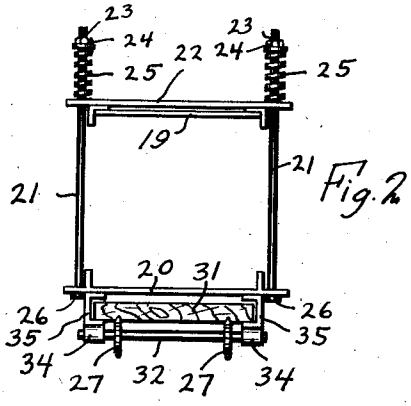


Fig. 2

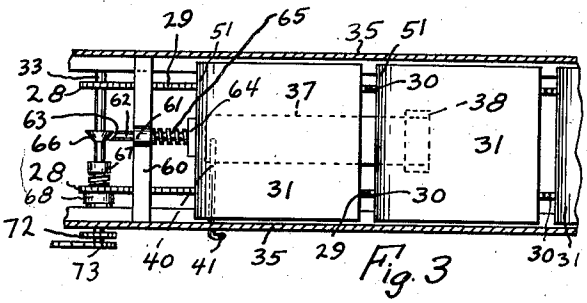


Fig. 3

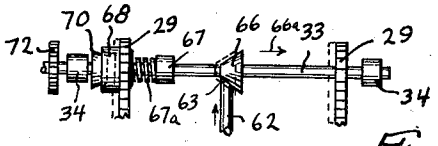


Fig. 5

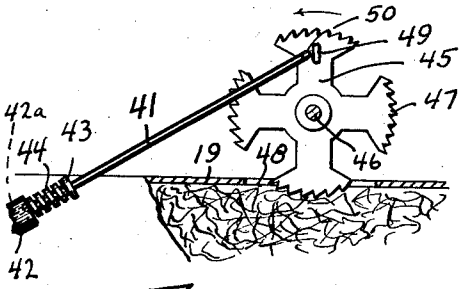


Fig. 4

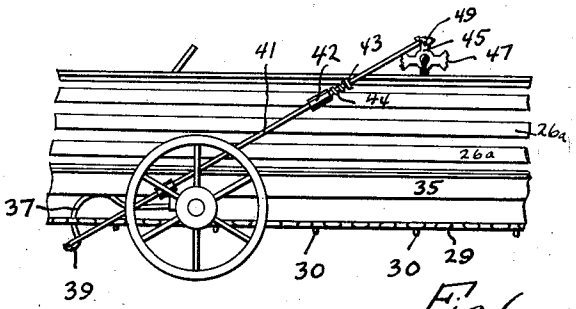


Fig. 6

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Patented July 9, 1940 2,207,559

UNITED STATES PATENT OFFICE

2,207,559

AUTOMATIC BLOCKER FOR HAY PRESSES

Oscar Sylvester, Sioux City, Iowa

Application January 12, 1938, Serial No. 184,602

2 Claims. (Cl. 100—24)

My invention relates to an improvement in hay presses of the type for making baled hay.

An object of my invention is to provide such a device which automatically places the block in working position without the necessity of inserting the same in the present machine by hand.

A further object of my invention is to provide automatic means for placing the block in proper position at the necessary predetermined time.

A further object of my invention is to provide means for automatically feeding any number of blocks without any other attention being necessary except the placing of the blocks on the feed channel.

A further object of my invention is to provide automatic clutching means for limiting the operation of the machine when such is necessary for the proper functioning of the blocking device.

A further object of my invention is to provide the above mentioned characteristics in a structure of the greatest possible simplicity consistent with such design, and which can be manufactured at a very reasonable cost.

With these and other objects in view, my invention consists in the construction, arrangement and combination of the various parts of my device, whereby the objects contemplated are attained, as hereinafter more fully set forth, pointed out in my claims, and illustrated in the accompanying drawing, in which:

Figure 1 is a sectional view taken along the longitudinal axis of part of a hay press,

Figure 2 is an end view thereof,

Figure 3 is a fragmentary sectional view taken along the lines 3—3 of Figure 1,

Figure 4 is an enlarged detail showing part of the tripping arrangement.

Figure 5 is an enlarged detail of the clutch operating arrangement, and

Figure 6 is a side elevation of the baler.

The usual hay press includes a feeder head for forcing hay downwardly into the feeder chamber, and also includes a plunger head which is similar to a piston for compressing the hay thus fed. It is necessary in the known machines for an operator to place a block in the feeder chamber at the proper time after a certain signal is rung or otherwise operated. This requires the attention of an extra attendant and is a fairly cumbersome method since the blocking operation must be done at the proper time and in the proper manner. I will proceed to show that in my invention such operation is unnecessary since it takes place automatically and is governed by the operation of the machine itself. Since stopping of the feeder is not necessary in order to clean the chamber, the capacity of the machine is considerably increased.

I have indicated the frame work of the press by the character 10, and the feeder head by the character 11, which construction is well known in the art. The feeder head is governed and operated by means of the lever 12, pivoted at 13 and 14. The feeder chamber is indicated generally by the character 15 and is of the usual construction. Other parts not necessary to the spirit of the invention are not shown since they do not play an important part in the same.

The plunger head is indicated by the character 16 and is operated by means of the rod 17 suitably driven and synchronized by the usual arrangement of gears at the rear of the machine, one of said gears being indicated by the character 18.

The press 10 includes the top flat member 19 and the bottom member 20 between which the hay is packed. The necessary tension is secured between these members by means of the rods 21 which pass through the plate 22 and are threadedly engaged at 23 with the nuts 24. The springs 25 are placed therebetween so that the necessary tension can be adjusted thereby. The bolts 21 are headed over at 26. The side bars of the baling chamber are indicated by the character 26a.

I provide the block feeding arrangement by means of the sprockets 27 and 28 over which pass the pair of chains 29. The chains 29 include the upraised points 30, which points are spaced slightly further apart than the length of a block. The blocks are indicated by the character 31. The sprockets 27 and 28 are suitably secured to the shafts 32 and 33, which are suitably supported by bracketed bearings 34. The shaft 33 is also journalled within a further bearing 67 and arranged for slidable movement therein, the features of which will be later explained. The blocks 31 are fairly snugly received between the channels 35, such channels being made having a web portion slightly larger than the thickness of the block. As the chain 29 travels over the sprockets, the blocks are fed into the end 36 (see Figure 1), and the points 30 will then carry them rearwardly in the machine, and several blocks will be in the machine at one time.

An approximately arcuate spring 37 is firmly secured at 38 to a suitable bracket, and the spring 37 includes the small upturned lip 39. The spring 37 is positioned as shown with the arcuate portion up within the feeding chamber

15, and such arcuate portion being slightly forward from the center of the block. It will now be seen that as the block travels towards the spring, it tends to compress the same downwardly until the spring takes the position as shown by the dotted lines in Figure 1, and the lip 39 snaps under the rod 40 which is bent inwardly from the trip rod 41. The reason that the lip 39 will pass under the extended portion 40 is as follows. The pressure of the block against the spring 37 downwardly will cause the entire spring to be pivoted from the bracket 38 which will swing the lip portion 39 downwardly with the up-turned extremities of the lip passing just above and toward the inside of the member 40. As the lip thus passes downwardly it will spring past the member 40 and will then spring outwardly a slight distance and be retained thereby. The trip rod 41 passes through a suitable bearing 42 and includes a small shoulder 43, and a spring 44 is interposed between the shoulders 43 and the bearing 42. Attached to the rod 41 and passing through a slot in the bearing 42 is a spline key 42a which keeps the shaft 41 from turning. As soon as the rod 40 is retained within the lip 39, the spring will be retained in inoperative position until the trip rod 41 is released. The trip rod is released by an arrangement indicated generally by the character 45, which comprises a wheel which is suitably journalled at 46, which wheel includes the teeth 47. The periphery of the wheel passes through the upper member 19 of the press through the opening 48. It will be seen from Figure 4 that as the hay is being pushed toward the front of the machine that the teeth 47 will cause the wheel 45 to turn, and as soon as a sufficient number of charges have been placed in the machine and the hay has travelled correspondingly a certain distance, the wheel 45 will be carried around until the slight projection 49 strikes the extended portion 50 of the trip rod 41. When this occurs, the trip rod is forced downwardly, releasing the portion 40 from the lip 39 of the spring 37, and the block 31 will be immediately forced to an inclined position as shown by the solid lines of Figure 1.

The block 31 includes the rounded ends 51, so that as the plunger head 16 comes forward against the block, the inclination of the block in combination with the curvature of the end will cause the plunger head to force the block carrying the charge of hay to the vertical position as shown by the dotted lines of Figure 1 at 58. From this construction, it will be noted that the spring 37 will only be released at a proper time sequence, that is when the suitable number of charges have been placed in the feed chamber for the proper bale size.

Figure 1 shows a last bale 59, which is wired in the usual manner ready to be taken out of the machine, with the other bales being formed.

Before allowing tripping of the spring 37 and allowing it to rise, it is necessary to disconnect the chain 29 so that it will be inoperative before it is necessary to place the block in operative position. To accomplish this end, I provide the strip 60 which includes the bearing 61, which bearing receives the shaft 62 having the beveled portion 63. The shaft 62 passes through the bearing and terminates in the flat plate 64, and interposed between the plate 64 and the bearing 61 is the spring 65. The shaft 33, which carries the sprockets, includes the small beveled conical member 66 which is rigidly attached thereto, the faces of which are adapted to coincide with the taper 63. The shaft 33 passes through the bracket 67 as shown (see Figure 3), and the left hand sprocket has attached to it the female clutch member 68. A further shaft 69 has attached to it the male clutch member 70, and the shaft 69 terminates in the lower gear 71 which is adapted to mesh with a suitable upper gear 72, which latter gear is attached to the sprocket 73.

Passing over the sprocket 73 is the further chain 74 which also passes over the sprocket 75 which is suitably geared to the large gear 18. As soon as the block 31 is thrust forwardly to the position shown in the dotted lines at 76 in Figure 1, the end of the block strikes the plate 64 which carries the beveled portion inwardly against the further beveled portion 66. This force carries the shaft 33 slightly to the right, thereby disengaging the clutch surfaces 68 and 70 so that the chain 29 will cease to operate, since it will not be driven through the medium of the chain 74 by such arrangement. This action is more clearly illustrated in Figure 5 wherein the dotted structure showing the chains 29 and the cone member 66 indicates the normal position and the solid structure when the clutch surfaces are pulled away from engagement. When the member 62 is thrust forwardly as explained, and by engagement with the member 66, the aforesaid member 6 will be thrust toward the right as indicated by the character 66a which carries the entire shaft 33 to the right and slides the shaft 33 laterally through the bearings 34 and 67, at the same time slightly compressing the spring 67a which is positioned between the bearing 67 and the female clutch member 68.

The block then is in position ready to be forced upwardly, and remains in this position until the mechanism which drives the trip rod 41 functions at its proper time. It will be seen from this construction that the clutch arrangement will retain the block in its proper position ready for raising to its inclined position, and the blocks will not be fed during this time, but will remain stationary. As soon as the trip device works, however, the block will be elevated as described, and the next successive block will be automatically fed to its horizontal position until the mechanism is again stopped ready for the next positioning of the block. In this way the functions are kept independent of each other, and perform their operations efficiently without interference.

It will be noted that the plunger 16 when travelling towards the block will strike the arcuate portion of the spring thereby assisting in forcing the spring downwardly or forcing it all the way down until at least another block is in position to force the spring downwardly. The plunger head, of course, is timed in the usual manner, thereby properly synchronizing with respect to the balance of the machine.

It will now be seen that I have provided a hay press which automatically accomplishes the desirable result of placing the blocks automatically in the machine without interfering with the normal procedure of the same, and which results in a more efficient arrangement.

It will also be seen further that I have provided automatic stopping and starting means which do not interfere with the other functions above described, and that I have provided all of the above mentioned objectives in a construction of the greatest possible simplicity, and which can be manufactured at a very reasonable cost.

Some changes may be made in the construc-

tion and arrangement of the parts of my invention without departing from the real spirit and purpose of my invention, and it is my intention to cover by my claims any modified forms of structure or use of mechanical equivalents, which may be reasonably included within their scope.

I claim as my invention:

1. In combination with a hay baler having a baling chamber and a synchronized plunger cooperating therewith, a vertical opening in the bottom of the baling chamber, means for automatically forcing division blocks upwardly through said opening at intervals incidental upon actuation of the plunger, and a travelling belt member communicating with said automatic forcing means adapted to convey and carry said division blocks.

2. In combination with a hay baler having a baling chamber and a synchronized plunger cooperating therewith, a vertical opening in the bottom of the baling chamber, means for automatically forcing division blocks upwardly through said opening at intervals incidental upon actuation of the plunger, and a travelling belt member communicating with said automatic forcing means adapted to convey and carry said division blocks, said means for forcing said division blocks upwardly including a bowed spring member.

OSCAR SYLVESTER.