May 5, 1925. 1,536,562

DE YOE C. CHIPMAN

BALING PRESS

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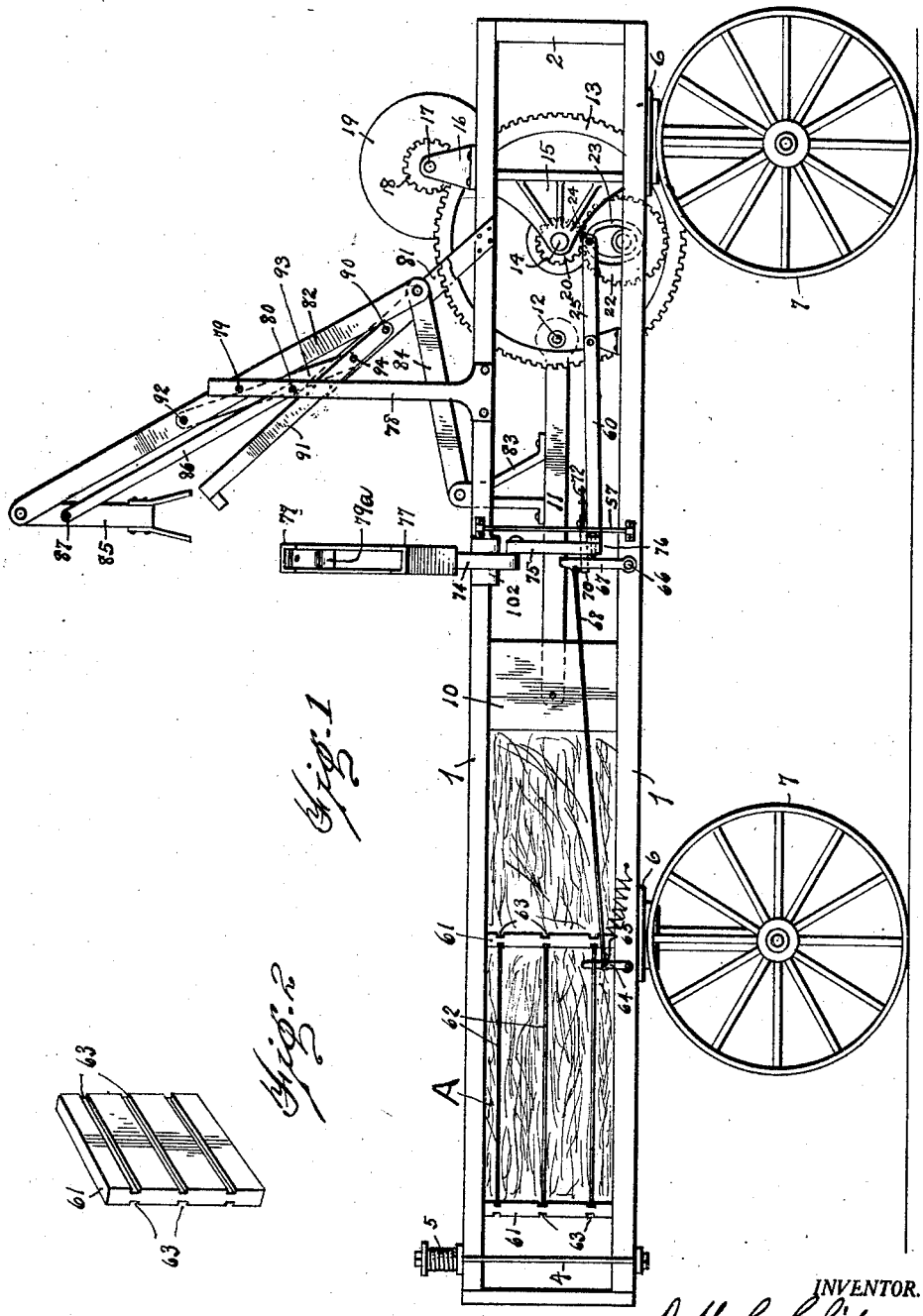


Fig. 1

Fig. 2

INVENTOR.
BY De Y. C. Chipman
Edward N. Pagelsen.
ATTORNEY.

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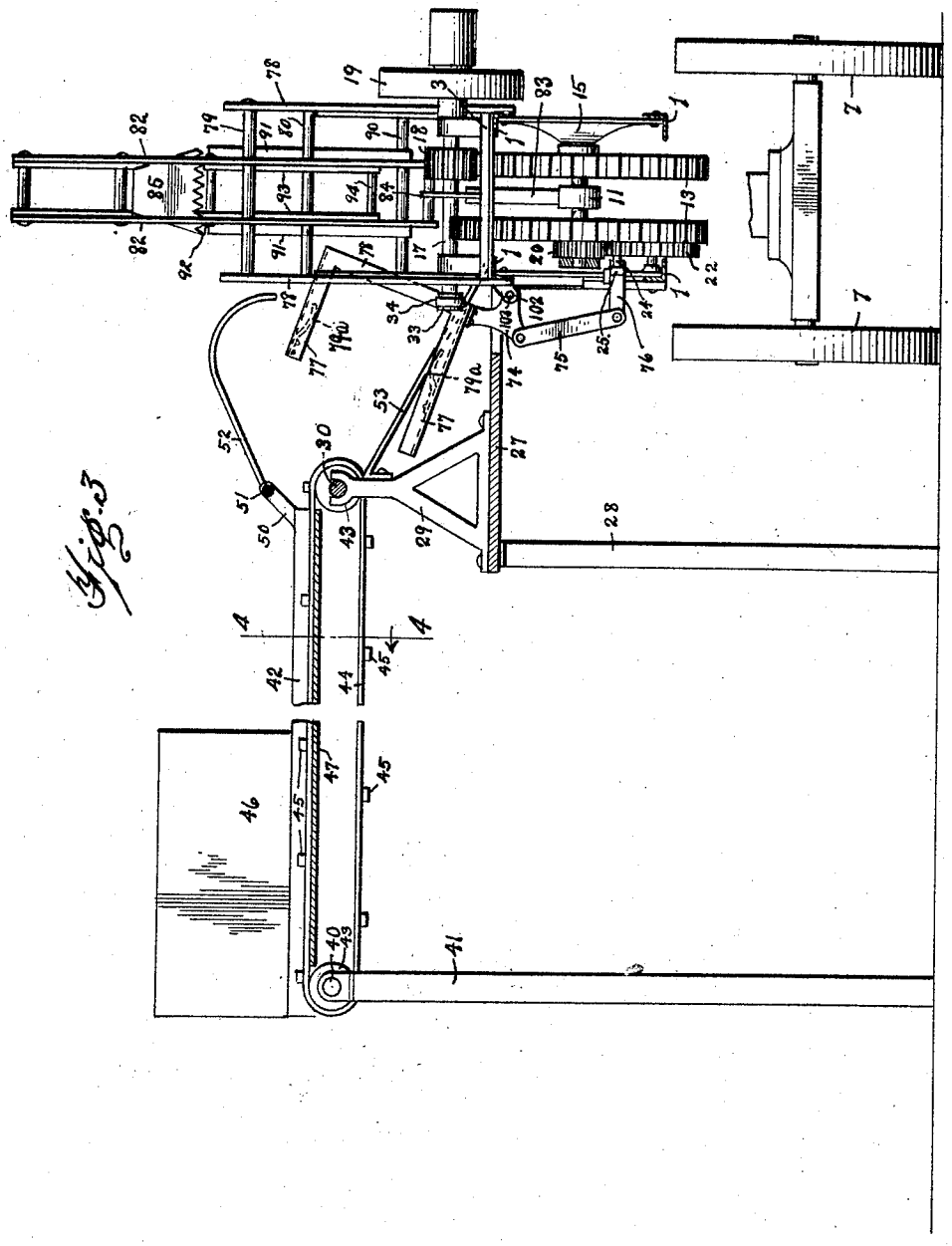


Fig. 3

INVENTOR.

BY De Y. C. Chipman

Edward N. Pagelsen

ATTORNEY.

May 5, 1925.

DE YOE C. CHIPMAN

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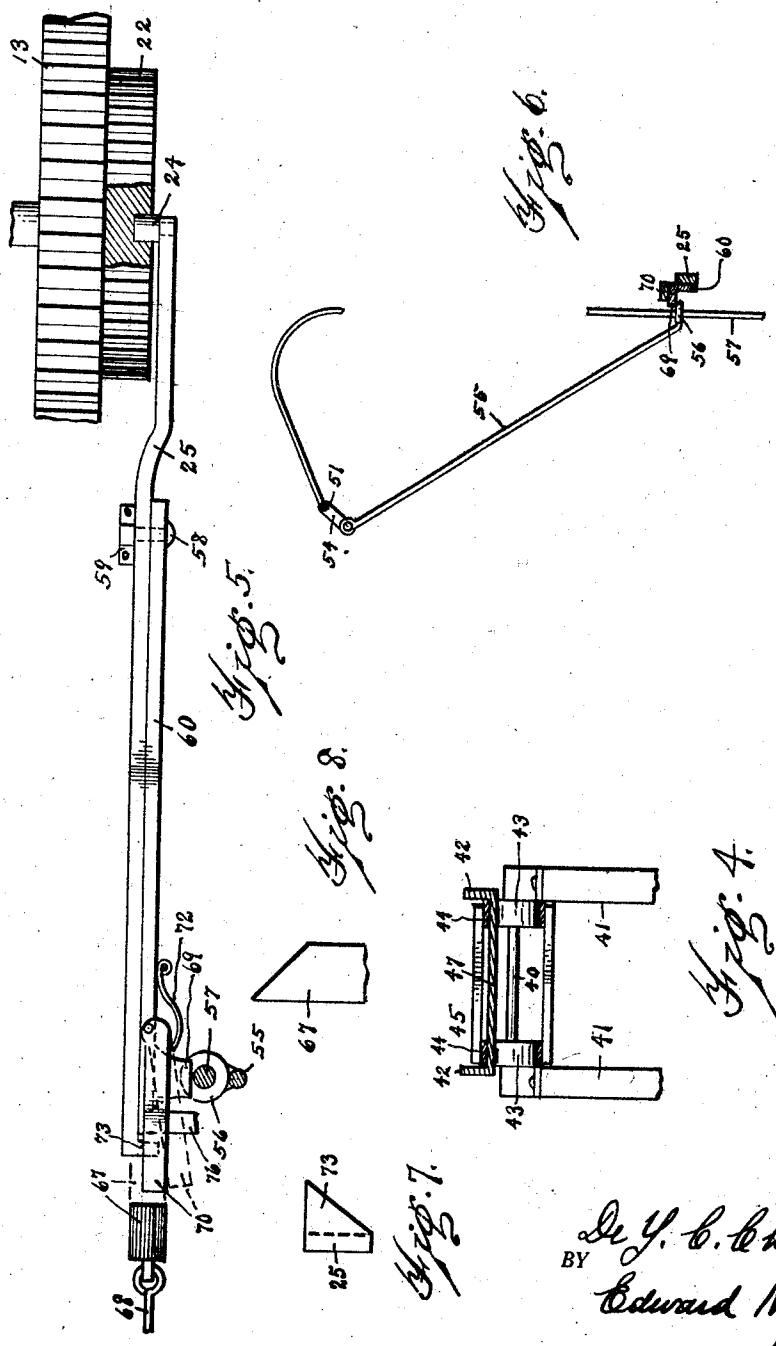


Fig. 5.

Fig. 6.

Fig. 8.

Fig. 4.

Fig. 7.

INVENTOR.

BY De Y. C. Chipman

Edward W. Pagelsen

ATTORNEY.

May 5, 1925.

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DE YOE C. CHIPMAN

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4 Sheets-Sheet 4

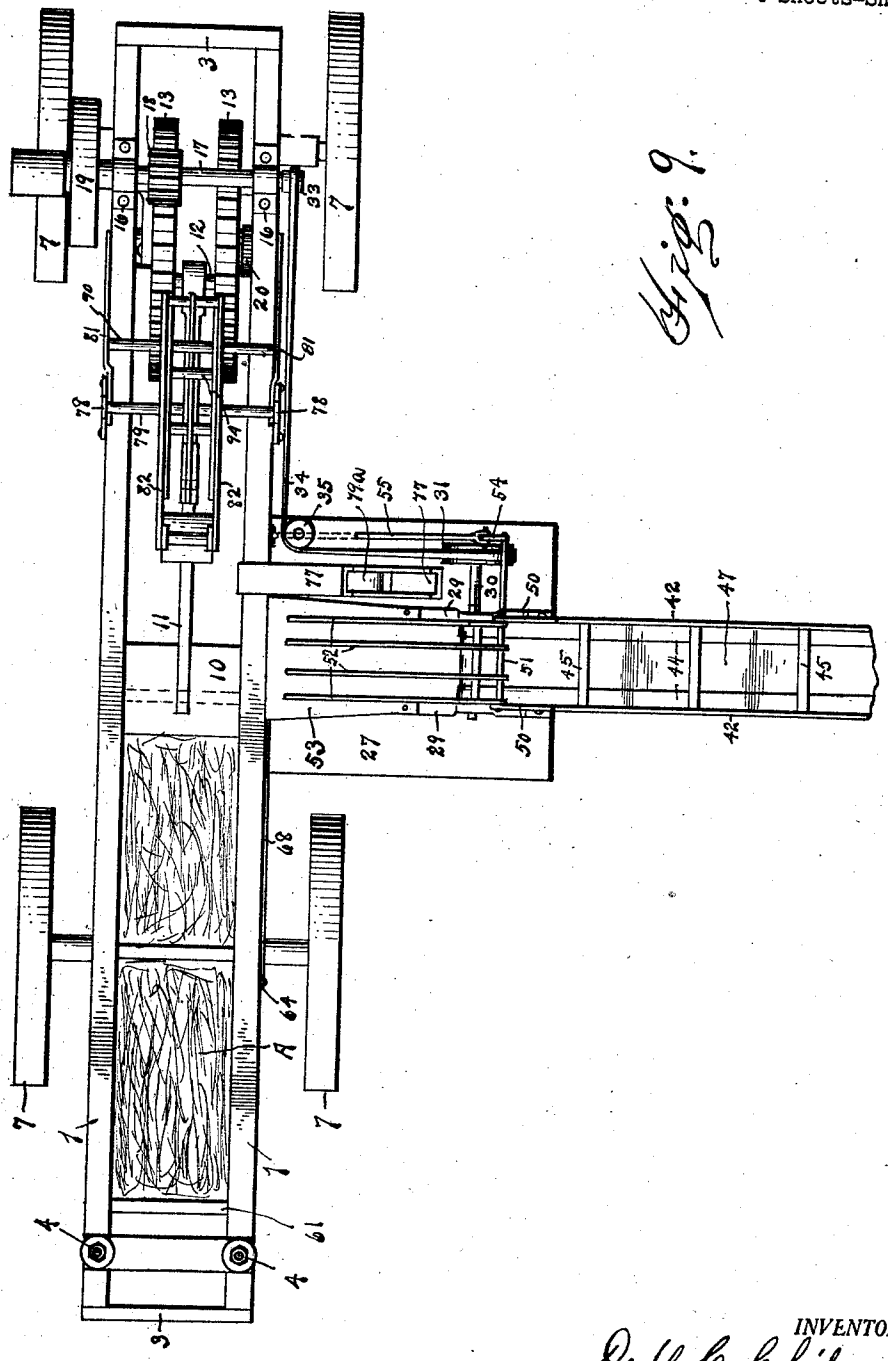


Fig. 9.

INVENTOR.

BY De Y. C. Chipman

Edward N. Pagelsen

ATTORNEY.

Patented May 5, 1925. 1,536,562

UNITED STATES PATENT OFFICE.

DE YOE C. CHIPMAN, OF ANN ARBOR, MICHIGAN.

BALING PRESS.

Application filed June 15, 1923. Serial No. 645,434.

To all whom it may concern:

Be it known that I, DE YOE C. CHIPMAN, a citizen of the United States, and residing at Ann Arbor, in the county of Washtenaw and State of Michigan, have invented a new and Improved Baling Press, of which the following is a specification.

This invention relates to means for compressing hay, straw and similar materials into bales, and its object is to provide a machine of this character in which the division blocks which limit the length of the bales are automatically positioned, and to provide a machine with a feeding mechanism for the material to be baled, whose operation is interrupted during the time the division block is moved to its proper position.

A further object of this invention is to provide a baling press with a carrier which will receive the material to be baled at a distance from the press and deliver it into the press, thereby eliminating the dust and floating chaff which is so often found objectionable to the workmen at the machine.

A further object of this invention is to provide means for automatically placing the division block at the front end of the baling chamber so that it may compact all the material in the chamber when moved back.

In the accompanying drawings, Fig. 1 is a side elevation of this improved baling press with the material carrier removed. Fig. 2 is a perspective of a division block. Fig. 3 is a front elevation of the machine. Fig. 4 is a section on the line 4—4 of Fig. 3. Fig. 5 is a plan of the actuating mechanism of the device for positioning the division blocks and the feed checking mechanism on a larger scale. Fig. 6 is a front elevation of the forks for interrupting the feed. Fig. 7 is an elevation of a cam at the outer end of the actuating mechanism for the division blocks. Fig. 8 is an elevation of the upper end of the tripping arm. Fig. 9 is a plan of the machine.

Similar reference characters refer to like parts throughout the several views.

As is usual in machines of this character, the framework consists of four horizontal angle bars 1 connected together by means of the upright bars 2 and cross bars 3. The rear end of this machine is constructed to permit the longitudinal bars 1 to separate vertically to permit easy removal of the bales when formed and bound, this being resisted to some extent by means of the rods 4 and the springs 5 thereon. Other machines on the market permit these bars 1 to separate sidewise for the same reason.

The springs 5 control the friction between the side bars and the division blocks and the completed bales and thereby control the degree of compression of the straw or other material being handled by the machine. In Fig. 1 the frame of the machine is shown resting on cross sills 6 and supported by wheels 7 which are shown conventionally as no novelty resides therein.

The straw or other material being baled is compressed by means of a plunger 10 which is moved longitudinally back and forth within the frame bars 1 by a connecting rod 11 which attaches to a crank pin 12 extending between two large gears 13 having trunnions or stub shafts 14 mounted in bearings carried by the frames 15 which connect the upper and lower side bars 1 of the frame in pairs. Mounted on the upper side bars are the pedestals 16 which carry the shaft 17 on which is mounted the pinion 18 which meshes with one of the gears 13, and the pulley 19 or other driving mechanism by which power is transmitted to the machine. On the shaft 14 is a pinion 20 which meshes with a gear 22 having a cam slot 23 in one side to receive a pin 24 in the forward end of a lever 25 which will be hereafter described. Any well known antifriction device may be used to reduce the friction of the pin 24 within the groove 23.

Extending from the upper side bar 1 on the left hand side of the machine when looked at from the right in Fig. 1, and as shown in Fig. 3, is a table 27 whose outer edge may be supported by legs 28. On this table are mounted pedestals 29 which support a shaft 30 to which is attached a pulley 31, (see Fig. 9). On the outer end of the main shaft 17 is a pulley 33 which connects to the pulley 31 by means of a belt 34. This belt passes around the idler pulleys 35 which are supported in any desired manner. Any other desired means may be employed for driving the head shaft 30 from the main shaft 17.

A tail shaft 40 is carried in bearing supported by the legs 41 and the upper end of the legs 41 are properly spaced from the pedestals 29 by means of the longitudinal bars 42. Proper rollers 43 are secured to these shafts 30 and 40 and around them pass

the conveyer belts 44 to which are secured the cross slats 45 which carry the straw, hay or other material to be baled from a hopper 46. These belts slide on a plate 47 of any desired material which constitutes the bottom of the hopper and also prevents the material to be baled from getting lost. The longitudinal bars 42 serve as the sides of the trough of which the plate 47 is the bottom.

This carrier can be made of any desired length extending from a threshing machine to the baling press and thus avoiding the dust and chaff which usually envelopes the workmen and the baling press when the straw is delivered directly from the threshing machine to the baling press.

Small brackets 50 are mounted on the inner ends of the longitudinal bars 42 and carry a shaft 51 to which the curved arms 52 are attached. These arms are adapted to swing down from the position shown in Fig. 3 until their outer ends substantially contact with the apron 53 extending from just below the shaft 30 to the upper angle bar down which board slides the material being baled into the machine. When these fingers are in their lower position, the material passing to the machine is temporarily stopped.

On the front end of the shaft 51 is an arm 54 to which the link 55 connects and this link has an eye 56 slidable on the rod 57 whose ends are attached to the side bars 1, as shown in Fig. 1. As stated before, the gear 22 has a cam slot 23 to receive the pin 24 in the lever 25, which arm is pivoted at 58 on the small bracket 59. This lever swings constantly on this pivot which is also the pivot of a second lever 60 which is normally at rest.

The bales A of straw or hay are moved step by step to the rear end of the machine by the plunger 10, the dividing blocks 61 being inserted at intervals as hereafter described. After a dividing block has been inserted, the attendant places wires 62 around the bale A, being enabled to do so by reason of the grooves 63 in the faces of these blocks. He places the lowermost wire around the trigger 64 so that when the block 61 reaches the position shown in Fig. 1, the next stroke of the plunger 10 will move this block and the trigger 64 rearwardly sufficiently to not only trip this trigger but also disengage it from the lower wire 62 so that the spring 65 can return the trigger.

Mounted on the pin 66 is a control arm 67 having a beveled upper end (Fig. 8) which is normally in the position shown in Fig. 1 and in dotted lines in Fig. 5. A link 68 connects this control arm to the trigger 64. The lever 60 has a lug 69 that rests on the eye 56 and holds up the arms 52 and pivoted on the end of this lever is a latch 70 adapted to swing from the dotted line position shown in Fig. 5 to the solid line position under pressure of the spring 72 when the control arm 67 has been moved out of its normal position. On the rear end of the lever 25 is a dog 73 (Fig. 7) which has a beveled outer edge so that if the latch 70 happens to be swung inward before the rear end of the lever 25 comes down, this dog will push the latch out of its way.

When the control arm is swung back to release the latch 70, the lever 60 waits to be lifted by the lever 25 and when this occurs, the lug 69 permits the arms 52 to drop into the path of the material passing into the machine. At the same time, the lever 60 causes the next dividing block to swing into position over the receiving chamber.

A bracket 102 on the upper bar 1 has a pivot 103 for a lever 74 to which the link 75 connects, its opposite end connecting to the end of an arm 76 projecting from the lever 60. To this lever is attached the block carrier consisting of channel shaped sides 77 connected by two cross bars 78. The division block is slid into this carrier by the attendant and is held in position by springs 79ª shown in dotted lines in Fig. 3. When the arm 76 on the lever 60 is elevated, the carrier swings to the right and positions the dividing block directly over the receiving chamber of the machine. It will be noticed that the gear 22 is twice the size of the pinion 20 so that the movements of the block carrier is comparatively slow.

Referring now to Figs. 1 and 3, two supports 78 are shown carrying cross pins 79 and 80. These supports may be stiffened by the braces 81. A double stamping lever 82 is mounted on the pivot 79 and its lower end connects to the frame 83 on the connecting rod 11 by means of the link 84. A stamper 85 is hung from the outer end of the lever 82 and is kept vertical by the link 86 extending from the pin 80 on the supports 78 to the pin 87 on the stamper. This stamper drops into the baling chamber just before the plunger 10 reaches the forward end of its stroke and presses the straw or hay being baled down into the baling chamber.

Extending across between the braces 81 is a pivot 90 on which a striker lever 91 is mounted. The lever 82 carries a pivot 92 from which the connecting rod 93 extends to the pivot 94 on the striker 91. This striker moves faster and in advance of the main stamping lever and when the dividing plate has been positioned as above described, it presses it down into the baling chamber just as the plunger 10 has moved forward of the position of the dividing block.

It will be noticed that during the time the block carrier is above the baling chamber, the arms 52 are holding back the hay or

straw and that therefore there is nothing to prevent the dividing block being properly positioned. As the movement of this device has one half the speed of the plunger 10, the dividing block will be forced to the rear end of the baling chamber and the plunger will have begun its forward movement before this hay or straw is released by the arms 52.

I claim:—

1. In a baling machine of the character described wherein the material to be baled is compacted within a baling chamber between dividing blocks, the combination of a conveyer to carry the material to the baling chamber, means to interrupt the passage of the material, means to position dividing blocks in the baling chamber, and means connecting said positioning means for the dividing blocks and the interrupting means to cause the latter to act while a dividing block is being positioned.

2. In a baling machine of the character described wherein the material to be baled is compressed within a baling chamber between dividing blocks, the combination of a conveyer to carry the material to be baled to the baling chamber and an inclined apron extending from the discharge end of the conveyer to the baling chamber, a device to stop the passage of said material at said apron, means to position dividing blocks in the baling chamber, and a connection operated by said last named means to move the material-stopping device to operative position on the apron to restrain the discharge of material into the baling chamber while a dividing block is being positioned.

3. In a baling machine of the character described wherein the material to be baled is compressed within a baling chamber between dividing blocks, the combination of a conveyer to carry the material to be baled to the baling chamber and an inclined apron extending from the discharge end of the conveyer to the baling chamber, a device to stop the passage of said material at said apron, means to position dividing blocks in the baling chamber, a connection operated by said last named means to move the material-stopping device to operative position on the apron to restrain the discharge of material into the baling chamber while a dividing block is being positioned, and means controlled by the movement of the bales from the baling chamber to time the operations of the positioning device for the dividing blocks and of the device to stop the passage of said material to the baling chamber.

DE YOE C. CHIPMAN.