

April 30, 1940.

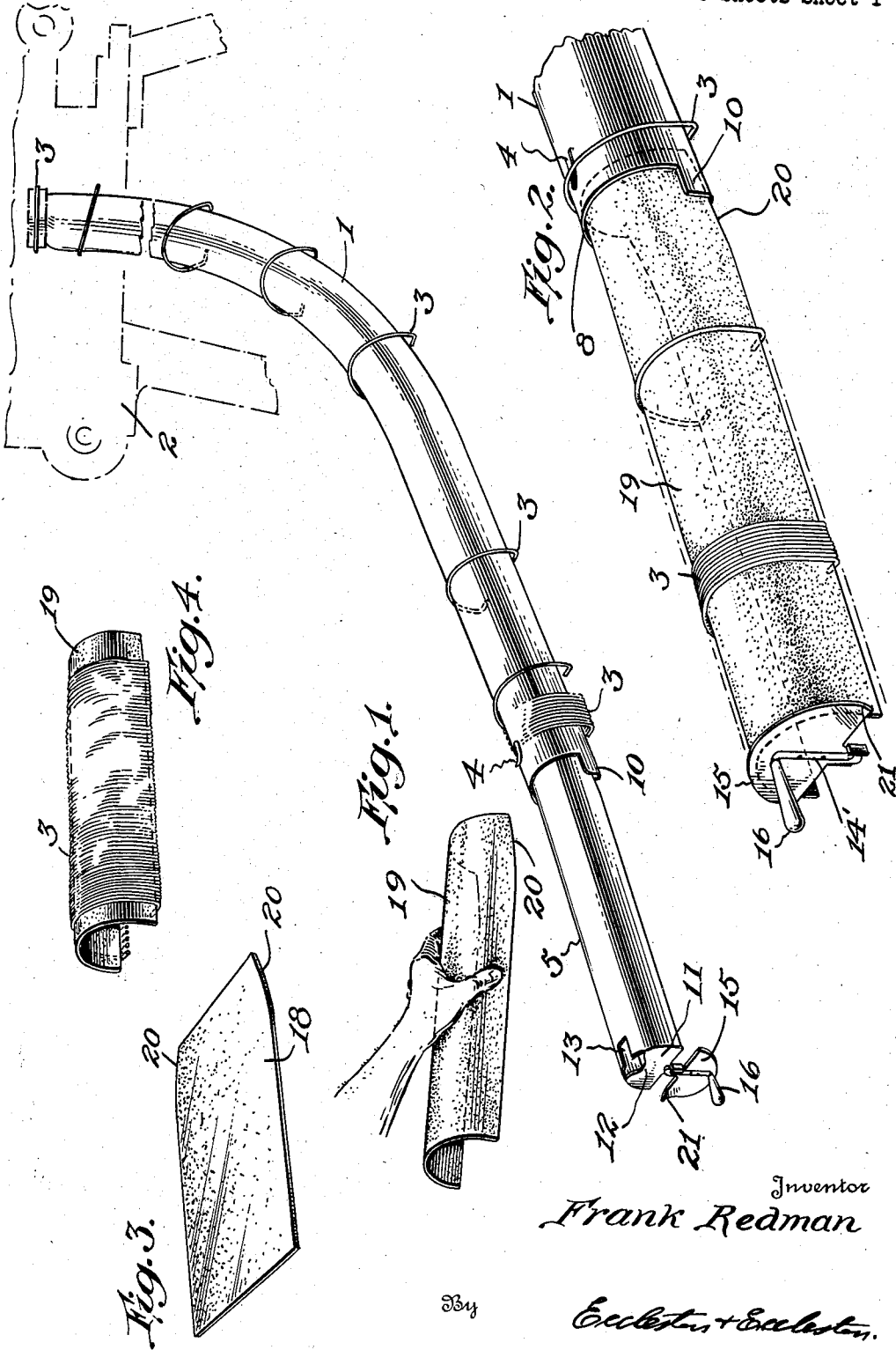
F. REDMAN

2,198,949

BAIL STACKER

Filed Sept. 9, 1938

3 Sheets-Sheet 1



Inventor  
Frank Redman

By

Eckstein + Eckstein  
Attorneys

April 30, 1940.

F. REDMAN

2,198,949

BAIL STACKER

Filed Sept. 9, 1938

3 Sheets-Sheet 2

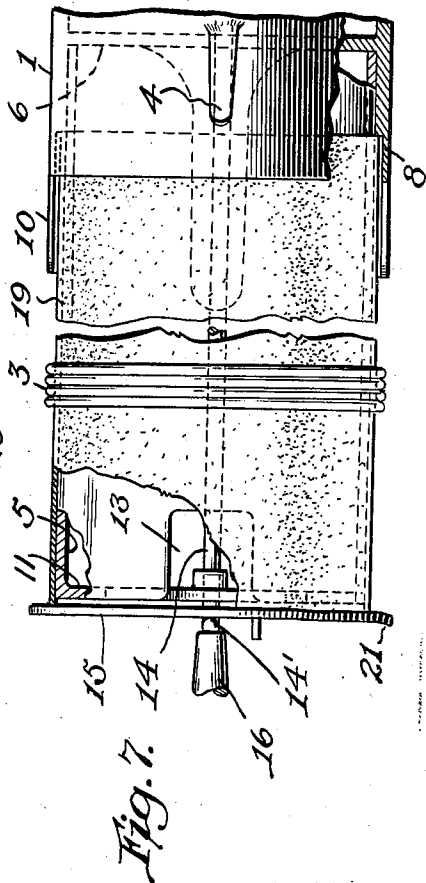
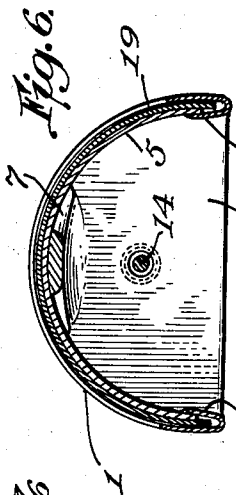
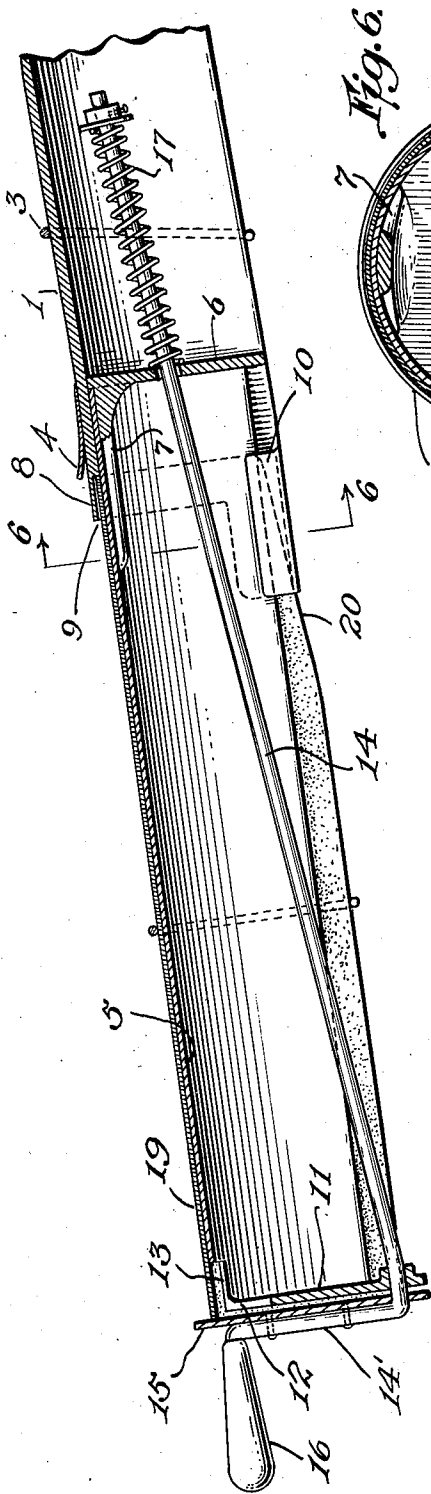


Fig. 5

Fig. 7

Inventor  
Frank Redman

By

Charles C. Cullen

Attorneys

April 30, 1940.

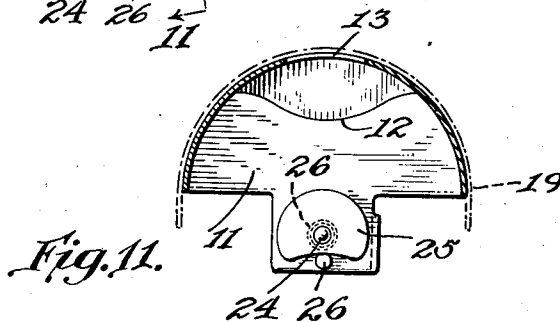
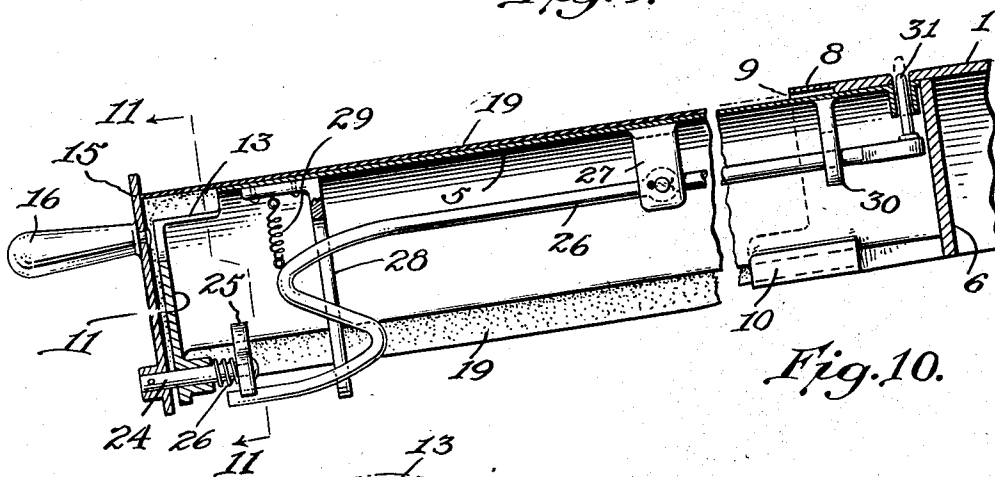
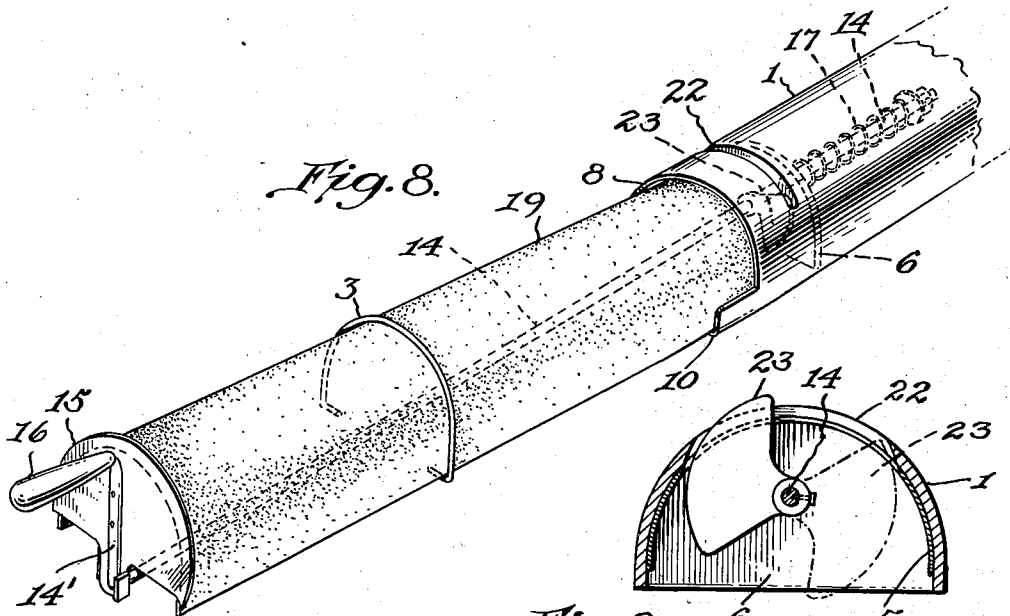
F. REDMAN

2,198,949

BAIL STACKER

Filed Sept. 9, 1938

3 Sheets-Sheet 3



Inventor  
Frank Redman

By

Coolest & Coolest  
Attorneys

## UNITED STATES PATENT OFFICE

2,198,949

## BAIL STACKER

Frank Redman, Washington, Pa., assignor to  
Hazel-Atlas Glass Company, Wheeling, W. Va.,  
a corporation of West Virginia

Application September 9, 1938, Serial No. 229,227

## 11 Claims. (Cl. 214—8)

The invention relates to a device for stacking bails, which are subsequently assembled with jars or buckets to form handles. Heretofore the bails, as manufactured, were merely dropped into boxes or the like, and hence the mass of bails would become entangled. The result was that when the bails were to be taken out one by one for assembly with a jar or bucket considerable time would be lost in disengaging the bails from each other.

The present invention provides means by which the bails are stacked on holders, which prevents any entangling of the bails, and from which holders they can be quickly removed for assembly with the containers.

Various other objects and advantages of the invention will be apparent to those skilled in the art, from the following detailed description, when taken in connection with the accompanying drawings, in which,

Figure 1 is a perspective view of the apparatus.

Figure 2 is an enlarged perspective view of the apparatus, with the bail holder mounted thereon.

Figure 3 is a perspective view of one of the bail holders before it has been shaped to fit the stacker.

Figure 4 is a perspective view of one of the holders after it has been stacked with bails, and removed from the stacking apparatus.

Figure 5 is a vertical, longitudinal, sectional view of the apparatus.

Figure 6 is a vertical, transverse sectional view, taken on line 6—6, of Figure 5.

Figure 7 is a plan view of the stacking end of the apparatus, with parts broken away to more clearly show the construction.

Figure 8 is a perspective view of a modified form of the invention.

Figure 9 is a transverse sectional view of the apparatus shown in Figure 8.

Figure 10 is a vertical, longitudinal, sectional view of another modified form of the invention; and

Figure 11 is a vertical, transverse, sectional view, taken on line 11—11 of Figure 10.

Referring to the drawings in more detail, numeral 1 indicates a metal chute which leads from a bail forming machine. Such machine forms no part of the present invention, and it is therefore merely illustrated diagrammatically in Figure 1, where it is referred to by the numeral 2.

The chute 1 is preferably substantially semi-cylindrical in cross section, and is of the general shape of the bails 3, so that the inturned ends

of the bails fit loosely under the edges of the chute.

The bails, as formed by the forming machine, drop onto the chute, and travel down the chute until they are intercepted by a stop. In the form of the invention illustrated in Figures 1 to 7, this stop consists of a leaf spring 4 which normally projects upwardly into the path of the oncoming bails on the chute. Thus the bails arrange themselves on the chute, ready to be transferred to the holders.

Attached to the lower end of the chute 1 is the apparatus which supports the holders while they are being loaded with bails. Such apparatus, in the specific embodiment of the invention illustrated in Figures 1 to 7, includes a sheet metal form 5, which is substantially semi-cylindrical in cross section, and which has its upper end provided with a head 6 which is mounted in the lower end of the chute. This head may be provided with a brace 7 to aid in the support of the metal form.

Particularly by reference to Figures 5, 6 and 7, it will be noted that the lower end portion of the chute is reduced in thickness, as indicated by numeral 8, to provide an annular space 9, to receive one end of the bail holder, as will appear more clearly hereinafter. The lower end of the chute also has inwardly and upwardly turned flanges 10, to receive the lower edges of the forward portion of the bail holder.

The lower end of the metal form is closed by a plate 11. The upper portion of the plate is cut away, as indicated by numeral 12, and adjacent thereto the metal form is cut away, as indicated by numeral 13. These cut-away portions permit the insertion of the fingers to remove the loaded bail holder from the metal form.

Numeral 14 refers to a rod or shaft which is rotatably and slidably mounted in a bearing provided in the plate 11. This shaft is formed with an upwardly projecting portion 14', and attached thereto is a gate member 15, having an operating handle 16.

This gate member, when in inoperative position, assumes the position shown in Figure 1, so that a loaded holder can be removed from the metal form. When another holder has been applied to the form, the gate is rotated to the position shown in Figures 2, 5 and 7, as will appear more clearly hereinafter.

The shaft 14 projects through an opening provided in the head 6, and on the opposite side of the head a coil spring 17 is mounted on the shaft, whereby the shaft is urged to the right (Fig. 1).

Of course the bail holder may be made of any desired material, but cardboard is preferred. Figure 3 shows a flat piece of cardboard 18, ready to be formed into a holder 19. The right hand end of the cardboard is preferably slightly tapered, as indicated by numeral 20.

To form a holder, it is only necessary to grasp the piece of cardboard, and bend it to substantially semi-cylindrical shape, so that it is ready to be applied to the metal form, as illustrated in Figure 1.

To apply the holder 19 to the form, the leading end of the holder is inserted in the annular space 9 and in the supporting flanges 10, and the holder is then pushed as far forward as possible, to the position shown most clearly in Figures 5 and 7. During this movement, the tapered edges 20, riding in the flanges 10, cause the holder to be securely clamped in position.

The gate member 15 is now rotated to its operative or locking position, as shown in Figures 2, 5 and 7. It will be noted by reference to Figure 5, that the cardboard holder 19 projects slightly beyond the lower end of the metal form 5, so that when the gate is rotated to its locking position it will engage the end of the holder and clamp it in position; it being understood, of course, that the gate is urged to the right (Fig. 1) against the holder, by means of the coil spring 17. The leading end of the gate member is preferably bent slightly outwardly, as indicated by numeral 21, so that the gate will engage the holder with a clamping or wedging action.

The cardboard holder is now in place ready to be loaded or stacked with bails. These bails are already assembled on the chute, as previously described, and the operator can by one movement push from the chute, onto the cardboard holder, the number of bails sufficient to substantially fill the holder. Of course the pressure of the operator's hand against the bails will be sufficient to depress the spring 4, so that the bails are free to pass from the chute to the holder. The spring then snaps back into its operating position and prevents the passage of any more bails until another holder is in position to be loaded.

To remove the loaded holder from the form it is only necessary to rotate the gate to its inoperative position, insert the fingers in the spaces 12 and 13 to grasp the holder, and slide it off the form. A loaded holder, removed from the stacking apparatus, is shown in Figure 4. The bails are held on the holder by reason of the inturned ends of the bails engaging under the lower edges of the holder. The holders, after being loaded, are carried to a place of storage until ready for use. When the bails are to be attached to the containers they may be easily and readily removed one by one, without any danger of their becoming entangled.

In Figures 8 and 9, a modified form of the invention is illustrated. This modified form is substantially the same as that previously described, except that it includes means for automatically releasing the bails from the chute when the gate is moved to operative position, and for retaining the bails on the chute when the gate is moved to inoperative position.

By reference to Figures 8 and 9, it will be noted that the chute 1, adjacent the lower end, is provided with a transverse slot 22, and that a finger 23 attached to the shaft 14 is adapted to operate in the slot.

As shown in Figure 8, the finger is so positioned on the shaft that when the gate 15 is in opera-

tive position the finger is below the slot, and hence the bails are free to pass onto the holder 19. After the bails have been stacked on the holder, the gate is swung to inoperative position to release the holder, and this rotation of the shaft 14 causes the finger 23 to be moved to the position shown in full lines in Figure 9, where the finger projects through the slot into the path of the bails.

The modified form shown in Figures 10 and 11 employs a somewhat different structure for automatically releasing the bails from the chute when the gate is moved to operative position.

In this form the gate 15 is mounted on a stub shaft 24 which is rotatably and slidably mounted in the plate 11. A cam 25 is fixed to the inner end of the stub shaft, and a coil spring 26 normally urges the shaft and gate to the right (Fig. 10), to clamp the gate against the holder 19.

A lever 27 is pivotally mounted in a hanger 27' carried by the metal form 5. The lower portion of the lever passes through a guide bracket 28 and the end of the lever engages under the cam 25. This end of the lever is held against the cam by a coil spring 29.

The other arm of the lever passes through a guide bracket 30, and the end of the lever carries a pin 31 which is adapted to project loosely through openings provided in the form 5 and the chute 1.

When the gate is in its operative position, as shown in Figure 10, the finger 31 is depressed to permit the bails to pass from the chute to the holder 19. But when the gate is rotated to its inoperative position, to release the loaded holder, the cam 25 is rotated therewith, and this rotation of the cam moves the left hand end (Fig. 10) of the lever downwardly, thereby elevating the right hand end of the lever and projecting the pin 31 into the path of the bails on the chute 1.

The invention disclosed herein greatly facilitates the step of assembling the bails with the containers, such as jars, buckets and similar articles, as it wholly avoids the delay caused by untangling the bails during the assembling operation. And of course the assembling operator can work much faster by reason of the fact that all of the bails are uniformly arranged, and are in the exact position to be applied to the containers.

While I have illustrated several embodiments of the invention, and have described the structures in considerable detail, yet it will be apparent that the structures shown may be widely changed and modified without departing from the spirit of the invention, and all such changes and modifications are intended to be included within the scope of the appended claims.

What I claim is:

1. An apparatus for stacking bails, including a chute adapted to receive bails from a bail forming machine, said bails having inturned ends projecting under the chute, a bail holder upon which the bails are to be stacked with the inturned ends of the bails projecting under the holder, a form associated with the chute, said bail holder and form having substantially the curvature of the bails, and means for removably mounting the bail holder on the form in enveloping relation thereto, in position to receive the bails from the chute.

2. An apparatus for stacking bails, including a chute adapted to receive bails from a bail forming machine, said bails having inturned ends projecting under the chute, a flexible cardboard bail

holder upon which the bails are to be stacked with the inturned ends of the bails projecting under the holder, said cardboard being flexed to substantially the curvature of the bails, and means for associating the cardboard holder with the chute and maintaining it in its flexed condition, in position to receive the bails therefrom.

3. An apparatus for stacking bails, including a chute adapted to receive bails from a bail forming machine, said bails having inturned ends projecting under the chute, means for accumulating bails on the chute, a form associated with the chute, a bail holder upon which the bails are to be stacked with the inturned ends of the bails projecting under the holder, said holder adapted to be mounted on the form in enveloping relation thereto, and means for clamping the holder in position while the bails are being stacked thereon.

4. An apparatus for stacking bails, including a form substantially semi-cylindrical in cross section, a bail holder adapted to be fitted to said form in enveloping relation thereto, in position to receive the bails, and means for permitting the removal of the holder and bails from the form after the holder has been loaded.

5. An apparatus for stacking bails, including a form substantially semi-cylindrical in cross section, a flexible holder adapted to be flexed to the shape of said form and be fitted thereon in enveloping relation thereto, means for arranging bails in position to be stacked on the flexible holder, and means for permitting the removal of the holder from the form after the holder has been loaded.

6. An apparatus for stacking bails, including a chute adapted to receive bails from a bail forming machine, said bails having inturned ends, a spring adjacent the end of the chute, said spring normally projecting into the path of the bails to cause them to be accumulated on the chute, a bail holder upon which the bails are to be stacked with the inturned ends of the bails projecting under the holder, said holder being substantially semi-cylindrical in cross-section, means for mounting the holder in position to receive the bails from the chute, said spring being depressed as the bails are pushed from the chute onto the holder.

7. An apparatus for stacking bails, including a chute adapted to receive bails from a bail forming

machine, a metal form associated with the lower end of the chute, the form being curved at substantially the curvature of the bails, a bail holder adapted to be mounted on the form the bail holder being curved at substantially the curvature of the bails, a gate at the forward end of the form, and means urging the gate toward the bail holder.

8. An apparatus for stacking bails, including a chute adapted to receive bails from a bail forming machine, a bail holder mounted in alignment with said chute, a stop for accumulating the bails on the chute, a gate to aid in positioning the bails on the bail holder, and means for rendering said stop ineffective when said gate is moved to operative position.

9. An apparatus for stacking bails, including a chute adapted to receive bails from a bail forming machine, a bail holder mounted in alignment with said chute, a finger movable into the path of the bails for accumulating them on the chute, a gate to aid in positioning the bails on the bail holder, and means for moving the finger to inoperative position when the gate is moved to operative position.

10. An apparatus for stacking bails, including a chute adapted to receive bails from a bail forming machine, a bail holder mounted in alignment with said chute, a finger rotatable into the path of the bails for accumulating them on the chute, a rotatable gate to aid in positioning the bails on the bail holder, and a connection between the gate and finger causing the finger to be rotated to inoperative position as the gate is rotated to operative position.

11. An apparatus for stacking bails, including a chute adapted to receive bails from a bail forming machine, a bail holder mounted in alignment with said chute, a pin adapted to be elevated into the path of the bails for accumulating them on the chute, a rotatable gate to aid in positioning the bails on the bail holder, a cam rotatable with the gate, a lever pivotally mounted between its ends, one end of said lever being operatively associated with said cam, and the other end of the lever carrying said pin, and the parts so arranged that the rotation of the gate to its operative position causes the pin to be lowered out of the path of the bails on the chute.

FRANK REDMAN. 50