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S. M. BALL.
BAT FORMER.
APPLICATION FILED MAY 6, 1910.

Patented Mar. 28, 1911.

3 SHEETS-SHEET 1.

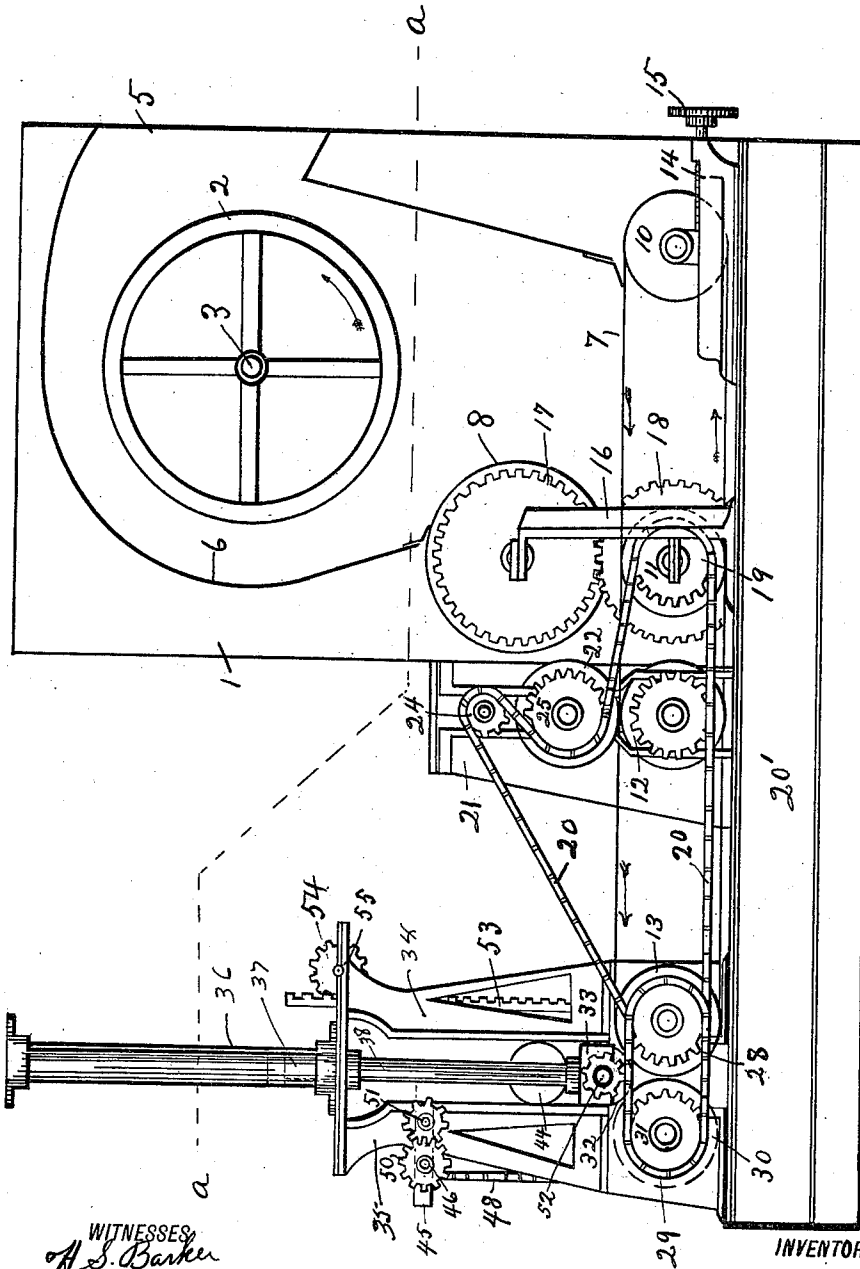


Fig. 1.

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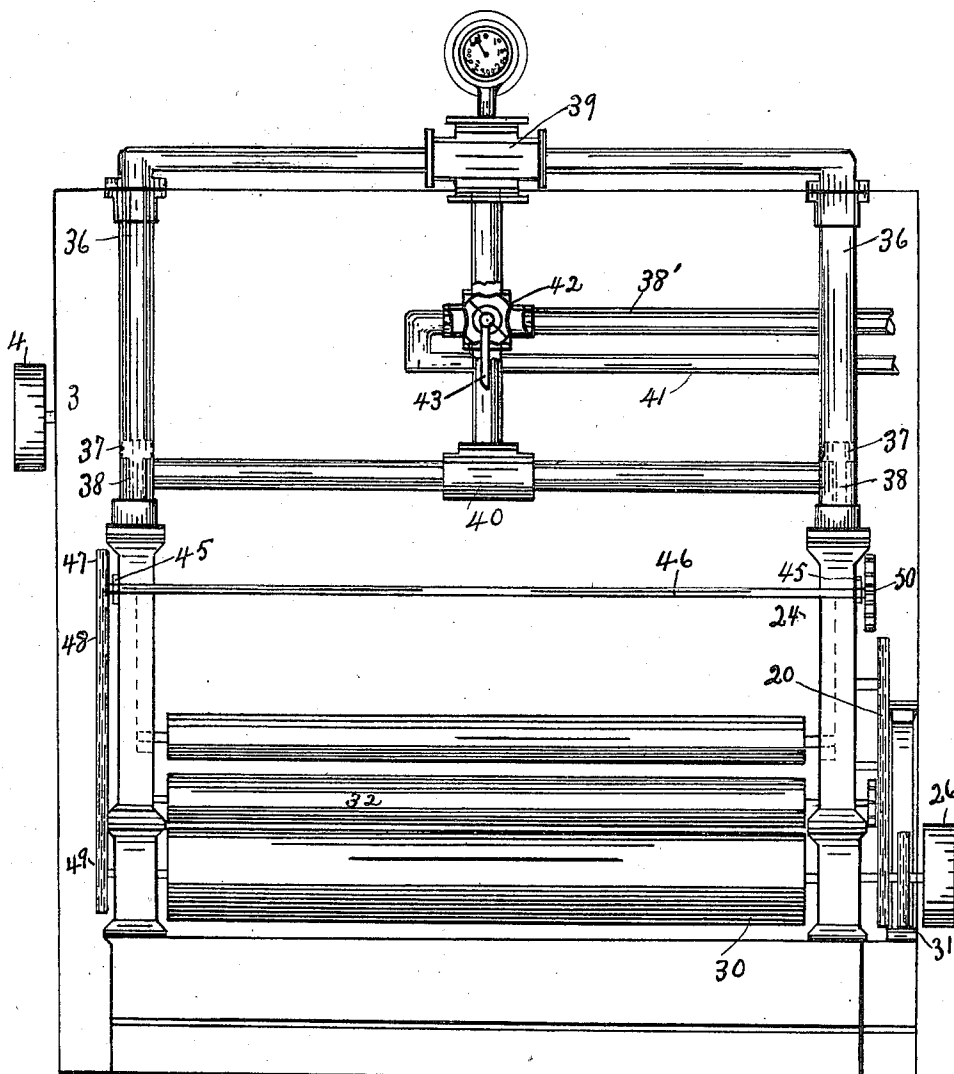


Fig. 2

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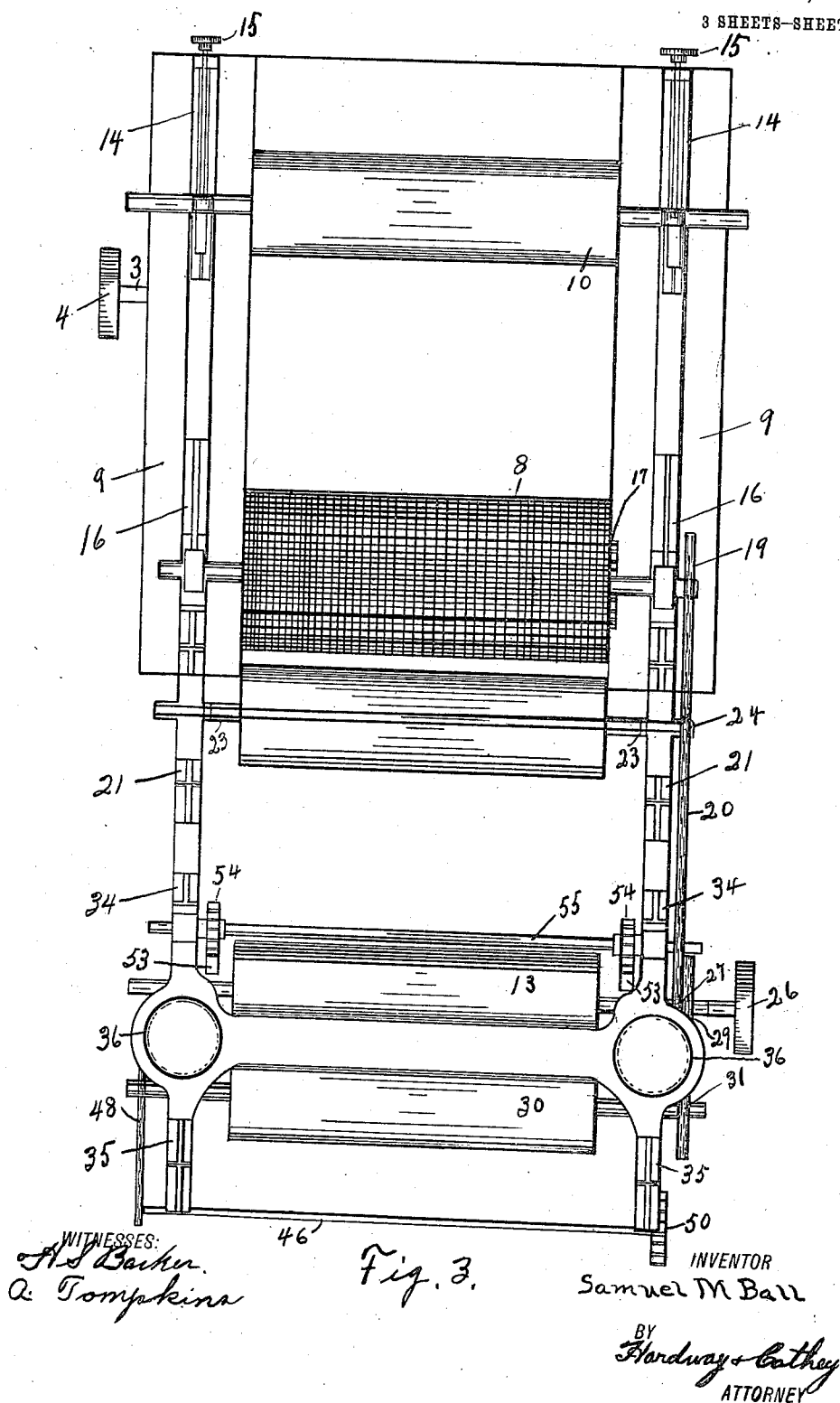
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3 SHEETS-SHEET 3.



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UNITED STATES PATENT OFFICE.

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BAT-FORMER.

987,790.

Specification of Letters Patent. Patented Mar. 28, 1911.

Application filed May 5, 1910. Serial No. 559,647.

To all whom it may concern:

Be it known that I, SAMUEL M. BALL, citizen of the United States, residing at Houston, in the county of Harris and State of Texas, have invented certain new and useful Improvements in Bat-Formers, of which the following is a specification.

My invention relates to new and useful improvements in bat formers and more particularly to such devices as are used for forming bats of cotton in a condenser such as is usually used in connection with a cotton gin.

The object of the invention is to receive the cotton from the gin, after it has been relieved of the seeds, and cleaned of all foreign matter, and to form the same into a bat which then enters the press and is formed into a bale.

Another object of the invention resides in the provision of an auxiliary storage roll which is designed to receive the bat being formed while the press is idle, during the process of the removal of the bale therefrom and which is so arranged as to readily feed the bat, so stored, into the press when it is desired to form the next succeeding bale.

A further feature consists of a mechanism whereby the bat is compactly compressed before entering the press proper.

With the above and other objects in view my invention has particular relation to certain novel features of construction and operation an example of which is given in this specification and illustrated in the accompanying drawings wherein:

Figure 1. is a side elevation of my device with the side of the inclosing casing removed so as to show the operative mechanism thereof. Fig. 2. is a front elevation thereof and Fig. 3. shows a plan view of the device taken on the line *a-a* of Fig. 1.

Referring now more particularly to the drawings wherein like numbers of reference designate similar parts in each of the figures the numeral 1. refers to the condenser casing in which the drum 2. is revolvably mounted. This drum is mounted on a suitable shaft 3. which carries a drive pulley 4. which is operated by a suitable belt (not shown). A suitable air duct 5 leads from the gin to the condenser. Through this duct the cotton is carried from the gin by an air current over drum 2. The air

current passing through flue 5. carries the ginned cotton into the chamber of the condenser. The drum 2. is constructed of a suitable frame work and has its periphery composed of wire gauze or screen through which the air current from flue 5 may freely pass. The revolution of this drum carries the cotton around the dome 6, and deposits the cotton on screen drum 8, which in its turn carries the cotton to endless belt movable in the direction indicated by the arrows of Fig. 1., over roll 11. transversely disposed underneath drum 8, where the formation of the bat begins. As portions of the drum periphery become covered with the cotton the air will thereby be diverted and forced through portions of said periphery which are free from cotton and these free portions will then receive the deposits of cotton. It is readily apparent that the cotton will thus be deposited on the drum 8 uniformly and an even bat will then be formed. The drum 8, is somewhat smaller in diameter than drum 2, and located below and slightly in front thereof. This drum is constructed in a manner similar to drum 2, and the air current in passing through the periphery thereof holds the bat thereagainst until same is received by the belt 7. The air current passes within said drum 8, and is discharged from the ends thereof into air outlets 9, located on either side of the condenser and passes to the free atmosphere.

The belt 7— moves upon rollers 10, 11, 12, and 13 and is driven in a manner to be hereinafter set forth and the supporting roller 10. is mounted on bearings 14 adjustable by means of hand screws 15. in such a manner that the tension of the belt may be regulated.

The numeral 16 refers to supporting members which are provided with bearings for the support of drum 8. and its opposing roller 11. as shown in Fig. 1, and said drum and roller are respectively provided with gear wheels 17— and 18— which mesh with each other and through which motion is imparted from the latter to the former.

Upon the shaft of roller 11, the sprocket wheel 19 is rigidly secured which meshes with sprocket chain 20 and receives motion therefrom and transmits motion to roller 11, and through the gear wheel thereof to the drum 8.

The condenser and the operative mecha-

nism of the entire device are provided with a suitable supporting base 20' to which the bearing members 21, are secured. These members are located immediately in front of the condenser and support the roller 12 and its opposing roller 22. The bearings 23 of this roller have a limited vertical play in the supporting members 21, so as to permit the passage of a bat of varying thickness between said rollers. Disposed above the roller 22, and supported by suitable bearings in member 21 is an idler pulley 24, which is designed to mesh with chain 20, and hold the same in mesh with the sprocket wheel 25—carried by roller 22, as shown in Fig. 1.

The shaft of roller 13—carries a drive pulley 26—designed to be operatively connected to a suitable motor and transmit motion to said roller 13, and this roller is also provided with a sprocket wheel 27—disposed to mesh with sprocket chain 20, and transmit motion thereto. This sprocket chain meshes with suitable sprocket wheels carried by rollers 12 and 11, and is also held in mesh with roller 22, by means of idler 24, as hereinbefore described and as shown in Fig. 1, and transmits motion to said rollers. The roller 13—carries, also, a sprocket wheel 28—designed to mesh with a sprocket chain 29 which transmits rotation to roller 30, through sprocket wheel 31, carried thereby.

For the purpose of providing a storage for the bat while the press is idle a storage roller 32, is disposed intermediate rollers 13 and 30—and arranged to cooperate therewith. This roller operates in suitable bearings 33 which are vertically movable and are held between upright supports 34 and 35. Resting upon these supports, on each side of the machine are cylinders 36, in each of which a piston 37, operates. Each of these pistons is provided with a suitable piston connecting rod 38, which is secured to and designed to operate against its respective bearing 33, and through which said bearings are elevated or lowered in a manner hereinafter to be described. Water pressure is introduced into cylinders 36, and above pistons 37, from a suitable source of supply, through inlet pipes 38', and 39, and into said cylinders, below said pistons, through pipes 38' and 40. A relief pipe 41, is also provided through which the water may be drawn off from said cylinders.

The numeral 42 refers to a four way valve operated by a suitable hand lever 43, by means of which the water pressure either above or below the piston 37, may be regulated.

The operation of my device is as follows:—The cotton enters the condenser from the gin through air inlet 5, and is thrown off of drum 2 by centrifugal force. The

formation of the bat is here begun and the cotton is carried around the drum until it passes beyond the entering current where it falls against dome 6, and passes around drum 8, to the belt 7. The cotton passes thence along said belt and between the opposing compression rollers 12 and 22, and is thereby compressed into a compact and well defined bat. Before entering the press the bat passes between rollers 13 and 30 on one side and their opposing roller 32 on the other where it is subjected to the pressure exerted against roller 32 through the hydraulic mechanism heretofore described. When the press to which the bat is delivered is stopped to remove the bale therefrom, or for any other reason, the bat is broken in front of roller 32, and the free end thereof is manually wound around said roller and as the bat continues to form it is stored thereon until the bale is removed from the press. An idler roller 44, vertically movable between supports 34, and 35, is transversely disposed above roller 32 and is designed to rest against the forming storage roll and to cause the same to form compactly. As this storage roll increases in size it is desirable that it be elevated and in order to accomplish this result the valve 42, is so manipulated that the water pressure is cut off from above pistons 37 and introduced below them and said pistons and roller 32, connected thereto are elevated. Rotation is imparted to this storage roller through friction with rollers 13 and 30 during the storage of the bat but when it is desired to unwind the same the movement of the storage roller is reversed by means of the mechanism presently to be described.

Extending forwardly from supports 35, are bearing members 45, which support the transverse shaft 46, one end of which carries the rigidly mounted sprocket wheel 47, which receives motion through sprocket chain 48, from sprocket wheel 49, rigidly mounted on the shaft of roller 30, and transmits motion to its shaft 46, and the gear wheel 50, rigidly mounted on the other end thereof.

The gear wheel 50 meshes with gear wheel 51, mounted in a suitable bearing in support 35, as shown in Fig. 1. When it is desired to reverse the rotation of the storage roll sufficient water pressure may be introduced beneath pistons 37, to elevate roller 32, until the gear wheel 52, carried upon the shaft thereof is brought into mesh with gear wheel 51, and the reversal of the movement of said storage roll will thereby be accomplished. The press being again ready for the reception of the bat the stored bat may be unwound and fed thereto, together with the bat entering said press from the condenser.

The bearing members 33, of roller 32, are provided with upstanding guide members

53, whose lower ends are secured to said bearing members and whose rear faces are provided with rack teeth designed to mesh with gear wheels 54, rigidly mounted on each end of a shaft 55, mounted in suitable bearings carried by supports 34. This mechanism constitutes an equalizer which is provided in order to insure a uniform vertical movement of the storage roller.

A bat former constructed in accordance with the foregoing specification and the drawings accompanying the same and made a part thereof, will be found to be capable of collecting and compressing the cotton fed thereto into a compact and uniform bat and at the same time will provide for the storage of said bat when it is not desired to feed the same into the press designed to receive the same.

What I claim is:—

1. In a device of the character described the combination with a condenser and a means for conveying cotton therefrom of oppositely disposed compressors arranged to receive said cotton from said conveying means and compress the same into a bat, one of said compressors being movable to and from its opposing compressors, and being rotatable so as to receive the forming bat and wind the same therearound in a storage roll,

whereby said compressor may be elevated and brought into connection with gear mechanism for reversing the rotation of said storage roll.

2. In a device of the character described the combination with a condenser and a means for conveying cotton therefrom of oppositely disposed compressors arranged to receive said cotton from said conveying means and compress the same into a bat, one of said compressors being movable toward and from its opposing compressor and being rotatable so as to receive the forming bat and wind the same therearound in a storage roll, means whereby said compressor may be elevated and brought into connection with gear mechanism for reversing the same, a means for causing a regular and uniform movement of said movable compressor toward and from its opposing compressor, and a mechanism operatively connected to said movable compressor for causing the pressure thereof against the other compressor.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

SAMUEL M. BALL.

Witnesses:

CHAS. R. MUNGER,
H. S. BARKER.