

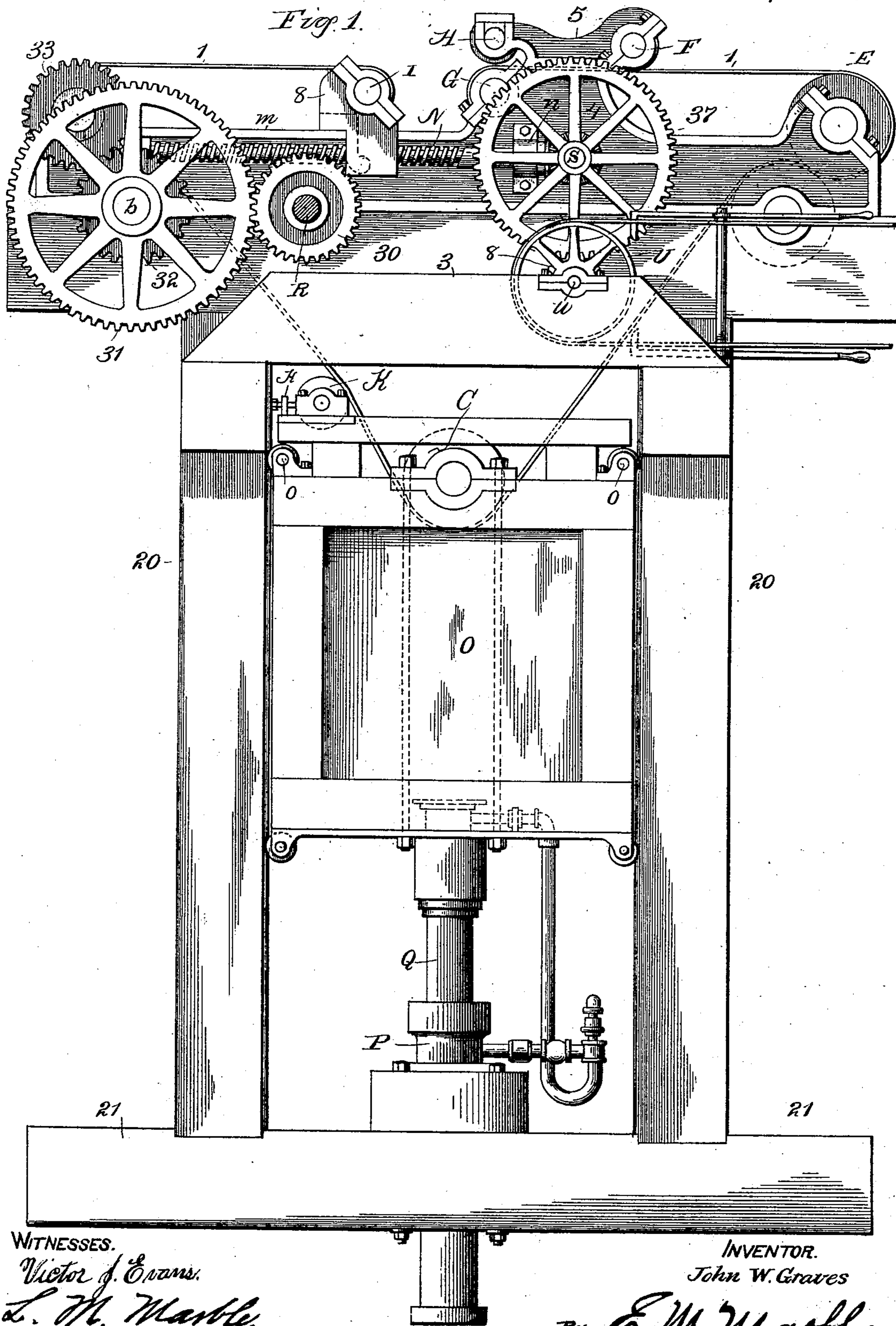
(No Model.)

3 Sheets—Sheet 1.

J. W. GRAVES.
PRESS FOR BALING COTTON.

No. 510,385.

Patented Dec. 5, 1893.



WITNESSES.

Victor J. Evans.
L. M. Marble.

INVENTOR.

John W. Graves

By E. M. Marble
Attorney.

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(No Model.)

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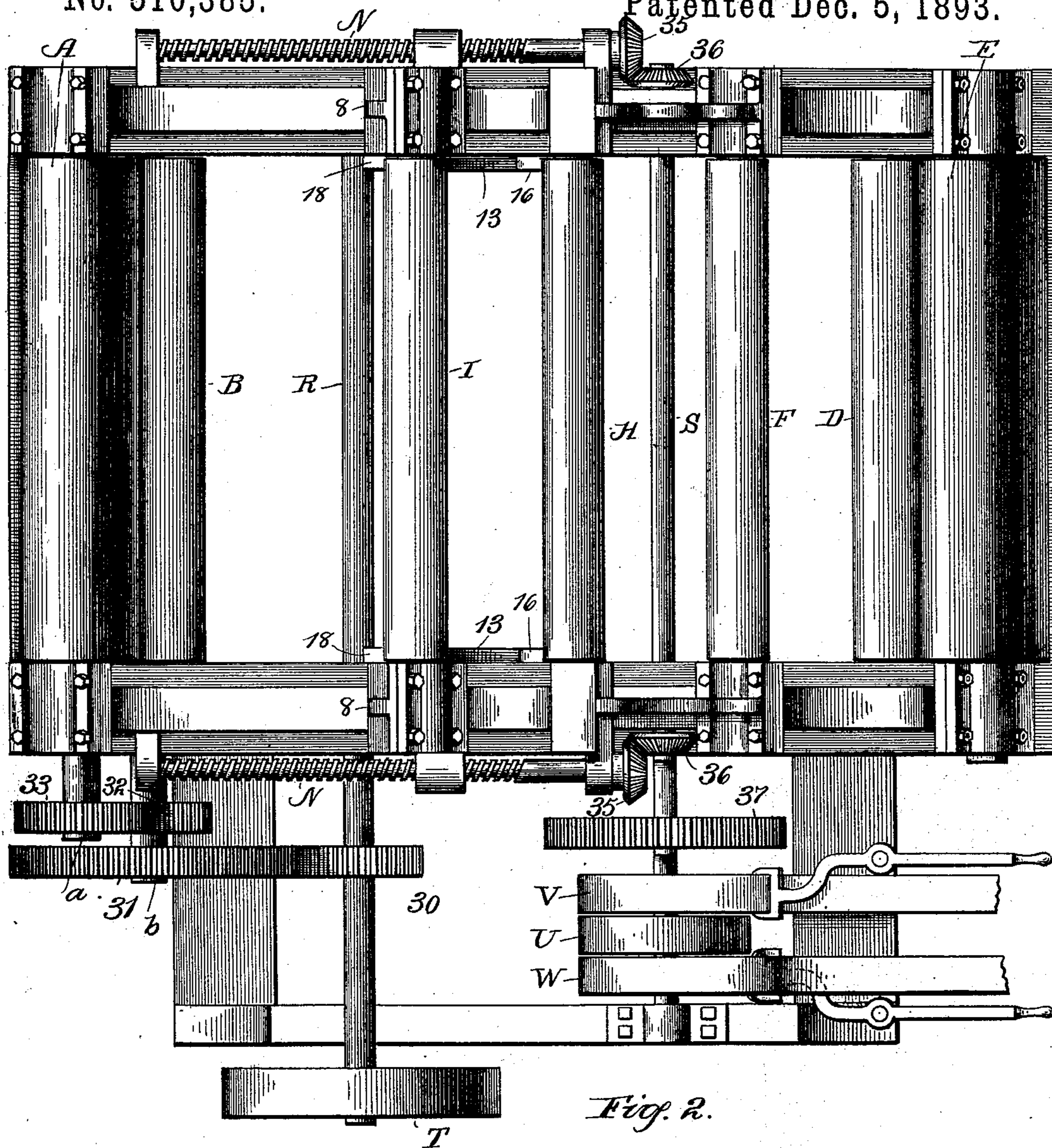


Fig. 2.

WITNESSES.

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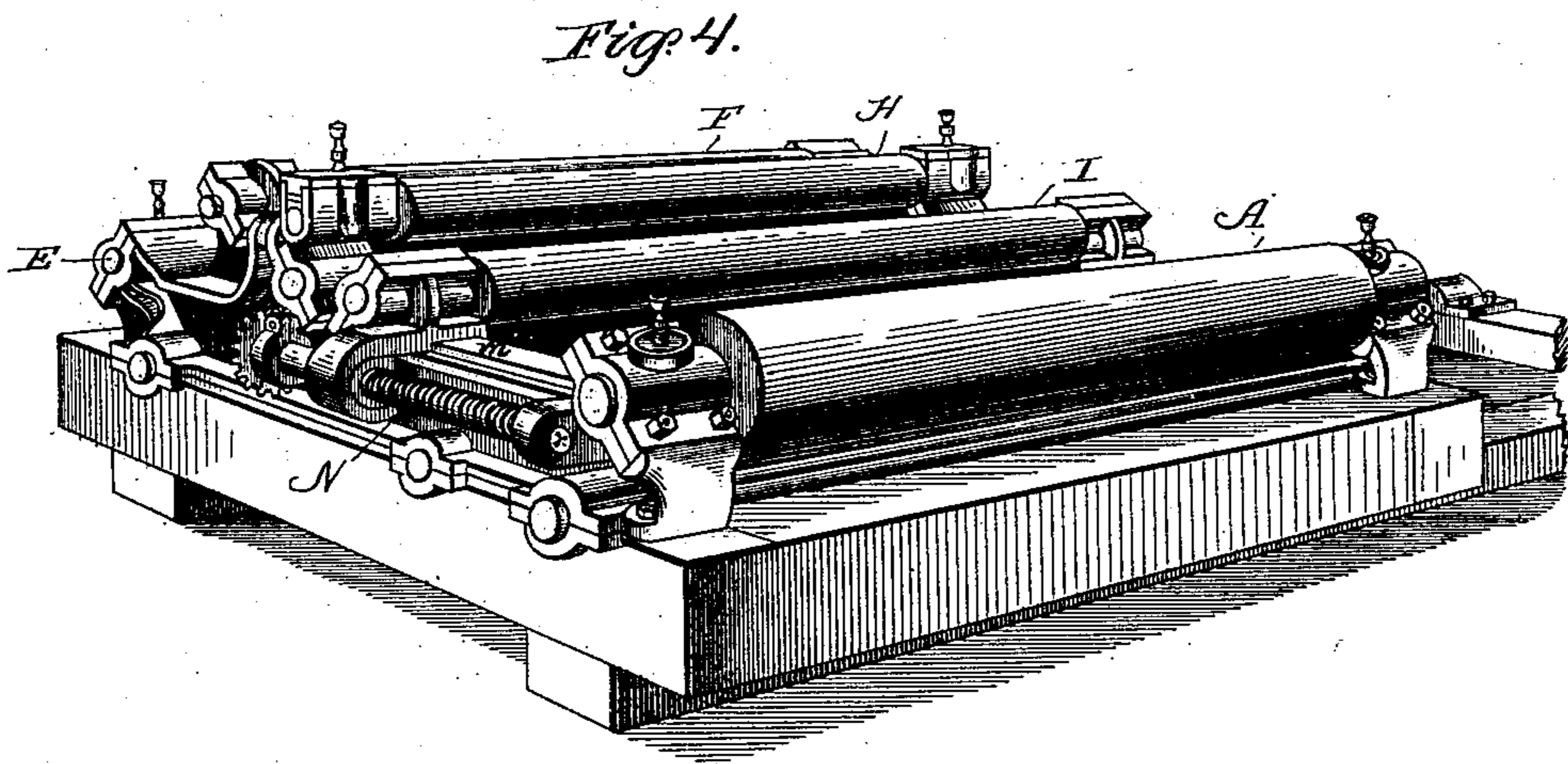
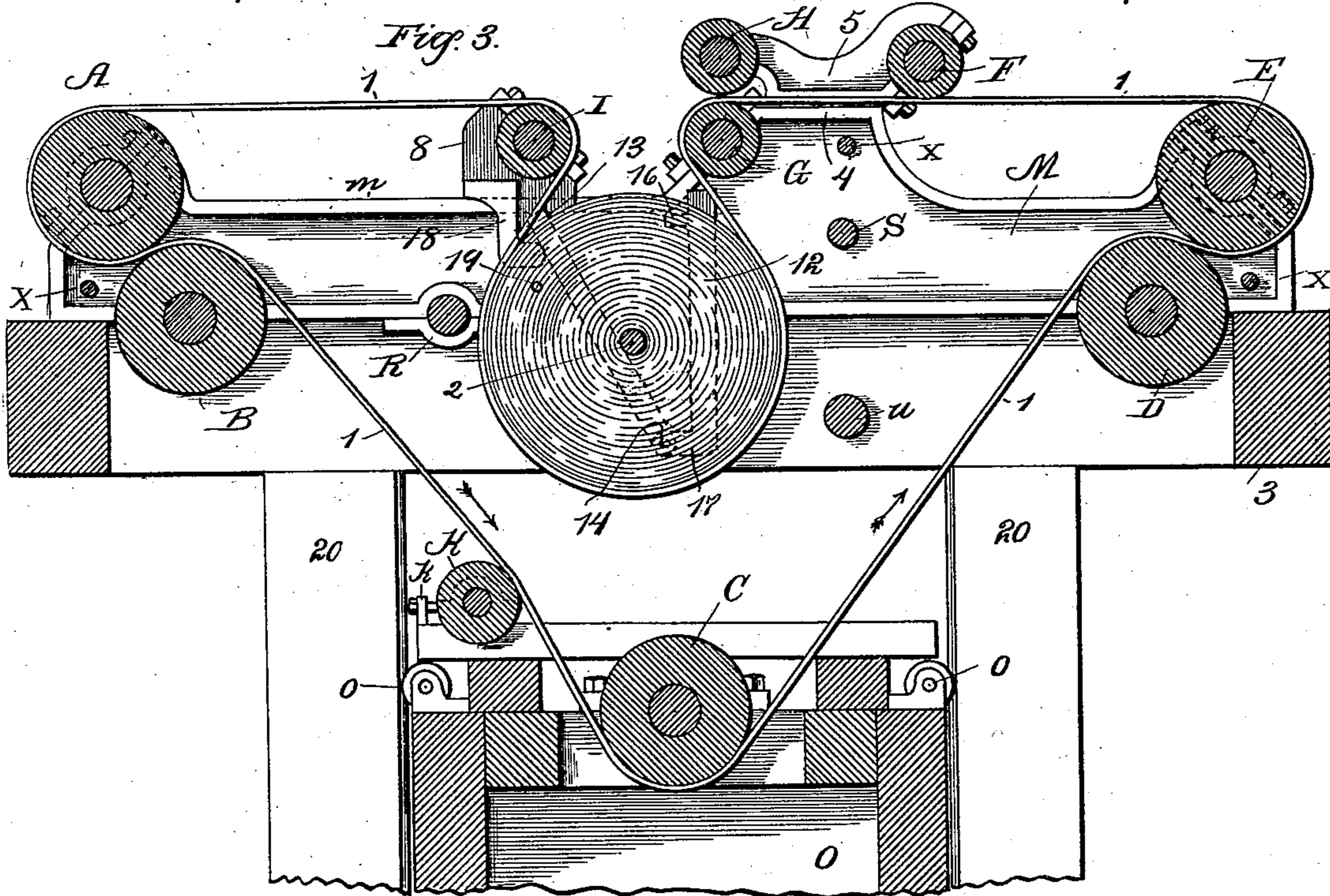
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UNITED STATES PATENT OFFICE.

JOHN W. GRAVES, OF LITTLE ROCK, ASSIGNOR, BY DIRECT AND MESNE ASSIGNMENTS, TO JAMES K. JONES, OF WASHINGTON, JANE LANIGAN, EXECUTRIX OF THOMAS LANIGAN, DECEASED, OF FORT SMITH, AND P. E. BRUGMAN, OF LITTLE ROCK, ARKANSAS.

PRESS FOR BALING COTTON.

SPECIFICATION forming part of Letters Patent No. 510,385, dated December 5, 1893.

Application filed January 24, 1893. Serial No. 459,535. (No model.)

To all whom it may concern:

Be it known that I, JOHN W. GRAVES, a citizen of the United States, residing at Little Rock, in the county of Pulaski and State of Arkansas, have invented certain new and useful Improvements in Presses for Baling Cotton; 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.

My invention relates to improvements in presses for baling cotton and other fibrous materials, and particularly to improvements in that class thereof in which the fibers are compressed into cylindrical bales.

According to the method heretofore usually employed in baling cotton, it has been customary to convey the cotton, after it has been picked, to some common center, where it is ginned and compressed to such an extent as to render it profitable for the railroads to transport it. It is then carried by rail to a more powerful compress than that first used, and reduced to a density which will fit it for ocean travel, and commercial use. It is thus necessary, in order to prepare the bales of cotton for ocean shipment, to compress it by two operations, and as the powerful compresses are located at fixed points, to often carry the bales many hundred miles out of their direct route, in order to reach one of these compresses. Modern compresses apply enormous pressures to bales previously prepared by ordinary presses, but the fibers, being treated in bulk and not in detail, are only subjected to superficial compression, and constantly assert their resiliency or elasticity in opposition to the compression to which they have been subjected. Hence the necessity of using a number of strong iron bands for securing such bales. Moreover the number of bales of cotton now annually produced is so enormous, that the cost of their transportation to the powerful compresses, and of compressing them there, is very great.

The objects of my invention are:—first, to effect such condensation of the fiber in the first instance as will place it in proper condi-

tion for ocean and other shipment, and thus obviate the present enormous expense of hauling the cotton to storage warehouses and compresses, and of recompressing the bales; second, to so form the bat by winding the fiber in the form of a thin bat or sheet around and around itself, effecting the compression in detail, that any light cords or covering which will arrest the expansion of the outer layer of the bale, will also prevent the expansion of all of the rest of the bale, and will leave the fiber in such condition that when the covering and binding cords have been removed, the rotation of the bale can be reversed, and the bat unwound in a continuous or unbroken sheet, although in a more compressed condition than when it was originally delivered from the condenser; third, to so press and wind the bat that its edges, at the ends of the bale, will be open to inspection and sampling without mutilating the bale or disturbing its covering or binding, and so that a sample of each layer of cotton in the bale can be obtained by inserting a hook in the center of the bale, and tearing through to the circumference; fourth, to so press the bat, as it is delivered from the cotton gin condenser or elsewhere, that its fibers will not be broken, or subjected to deteriorating influences; fifth, to provide a machine which will be able to carry out the process of baling above mentioned, which shall be simple in construction, certain and reliable in its operation, capable of being operated by ordinary plantation hands, and so moderate in cost as to render its use in direct connection with the eighty-saw gins, now almost universally used in ginning cotton, both possible and profitable.

I accomplish the objects of my invention by the use of the process of baling cotton which consists in feeding the fiber in the form of a thin bat or sheet directly from the condenser of the gin, or elsewhere, into the press, winding it around and around upon itself, or layer upon layer, and simultaneously subjecting the same to pressure. The fibers will thus be closely pressed together, the compression being effected in detail, and will ac-

quire density in proportion to the size of the bale and the amount of pressure applied thereto. My present invention, however, consists in an improved press whereby the above mentioned process can be carried out, said press having as its principal feature a weighted, endless belt, within the loop or bight of which the bale is formed by continuous accretion and rotation of the fibers, the fibers being preferably delivered in the form of a thin bat or sheet in an unbroken condition from the condenser of a cotton gin, and the compression being effected in detail upon each layer of fiber as it is fed to the bale; second, in improved mechanism for causing the bat or sheet of fiber, as it is fed to the press, to be subjected to constant compression, which, never being relaxed until the bale is finished, results in the greatest attainable density of the material and of the layers throughout the bale; third, in improved mechanism for permitting the loop or bight of the belt to automatically accommodate itself to the increasing size of the bale; fourth, in improved mechanism for holding the gradually increasing bale in the same plane, while allowing the loop or bight of the belt to revolve freely around said bale during its formation; fifth, in improved mechanism for delivering, and regulating the delivery of the completed bale from the press; and sixth, in the details of construction and arrangement of mechanism accessory and essential to the operation of the main mechanism employed in carrying out the objects of this invention, as hereinafter fully described in the description, drawings, and claims.

My invention is fully represented in the drawings accompanying and forming a part of this application, in which the same reference numerals and letters refer to the same or corresponding parts, and in which—

Figure 1 is a side view of the entire press, showing the weight box, and the hydraulic ram used to control its movement, in the connection which they bear to the remainder of the press, and showing also the position of the two gear trains used in the operation of the press. Fig. 2 is a plan view of the press, the endless belt being removed. It shows particularly the location of the feed and pressure rolls, and the mechanism which is used to transmit the power from the driving shafts to the feed rolls, and to the sliding roll used in expelling the completed bale from the press. Fig. 3 is a section of the upper portion of the press, a bale being represented as formed, and in the act of being delivered from the press. Fig. 4 is a perspective view of the upper portion of the press, showing the location of the various parts.

Referring to the drawings, 1 indicates the weighted, endless belt, which, starting from the feed roll A, passes between the feed rolls A and B, past the guide roll K, under the tension roll C, between the guide rolls D and E, under the light compression or batter roll

F, between the compression rolls G and H, around the core 2, forming here the loop or bight in which the bale of cotton is formed, over the sliding roll I and back to the feed roll A. The length of the belt is determined by the size of the press, and by the size of bale it is proposed to make. Its width, which is but slightly less than the length of the rolls, must be at least that of the bat which is delivered from the condenser of the gin, so that said bat may be received on its surface without folding or mutilation, and its thickness, is dependent upon the material of which it is constructed, being proportional to the work it is to perform. The rolls A and B are called feed rolls, because it is through the instrumentality of gearing attached to and operating upon them that the belt is set in rotation, the direction of its rotation being indicated by the arrow in Fig. 3. The function of the guide roll K is to prevent the belt from coming in contact with the frame of the press, as it bears against the slack side of the belt, which sags considerably when the belt is rapidly rotated. The tension roll C is so called because it is journaled in bearings attached to the weight box O, which is vertically movable in fixed guides, and by its upward movement provides the additional belt surface needed to form the loop or bight of the belt when the bale, which is in the process of formation, increases in circumference. It also furnishes the tension of the belt necessary to the operation of the press. The guide rolls D and E, between which the belt next passes, hold the belt in such a position that the portion of it between the said guide rolls and the compression rolls G and H is level. It is on this portion of the belt that the thin sheet or bat of cotton first falls, being delivered from the condenser of a gin, or elsewhere, then passing under the batter roll F, where it is slightly compressed and made smooth, then between the compression rolls G and H, where it is very much compressed, though not to the limit of elasticity of the fiber, and finally passing into the loop or bight of the belt, where it is formed into a bale. The sliding roll I is so called because it is journaled in boxes which are capable of sliding back and forth on fixed guides, and which, by such movement, permit the completed bale to be removed from the press.

The rolls A, B, D, E, and G are journaled in the frame M, which is irregularly shaped for the purpose mentioned, and is formed of two castings, held together by the binder bolts X. For the purpose of equalizing as far as possible the stress to which the belt is subjected, the rolls are journaled in the frame M, and the weight roll C is so placed in relation to said frame, that the belt takes the form of an isosceles triangle, with the loop or bight in the middle of one of its sides, so that when the bight of the belt increases in size due to the increased size of the bale, the additional belt surface comes equally from both

sides of the bight. It is also to be noted that the diameter of the feed, tension, and guide rolls is much greater than that of the compression rolls, as it is found that a more perfect control of the belt is secured thereby.

The upper portions of the two pieces forming the frame M are formed with the elevated surfaces 4, to which are secured the brackets 5, in which are journaled the compression roll H and the batter roll F, the bracket being so formed that the lower surfaces of these rolls will press against the surface of the belt. No provision is made for adjusting the pressure with which the batter roll F presses against the surface of said belt, as it is not intended to exert more pressure than is sufficient to smooth and arrange the sheet of cotton fiber for the compression rolls, but the upper compression roll is made adjustable within certain limits by changing the brasses in the journal boxes of the same, or by means of the screws which are shown in connection with said journal boxes, so that the pressure which said roll exerts upon the surface of the belt may be adjusted. It is intended that this roll shall exert a pressure upon the cotton fiber which shall compress it to a very high degree, although not so much as to destroy the fiber, and hence the roll is preferably made of steel, though it may be made of any other metal having a sufficiently hard surface.

When the press is empty, the ends of the core 2 rest against the lugs 16, formed on the inner surface of the frame M, and thus retain the core in its proper position inside of the press, but when a bale of cotton is being formed, since it forms around the core 2, it is necessary that this shall move downward to the extent of the radius of the bale formed. To enable this to be accomplished, while keeping the bale in the same vertical plane, the guides 12 and 13 are provided, the guide 12 being formed at its lower end with the bent shoulder 17, against which the core rests when the bale is completed, and the guide 13 being pivoted at 14 for a purpose next to be described.

When a bale of cotton is being formed in the press, the roll I is in a position close to the lower compression roll G, as it is essential that the surface of frictional contact of the loop or bight of the belt against the bale be as great as possible, but when the bale is formed, and is to be removed from the press, the roll I is moved away from the compression roll G a distance equal to that of the diameter of the bale, in order that the said bale may be expelled from the press. This movement is accomplished by journaling said roll I in the sliding boxes 8, which are driven forward and back on the dove-tailed slides *m*, secured to the frame M, on which they rest, by the rotation of the screws N, which pass through the lower screw-threaded portion of said boxes, the direction of the motion of the roll being reversed by reversing the direction of rotation of said screws.

Extending downward from the sliding box 8 on the inside of the frame M are the two club-footed lugs or projections 18, one on each side of the press. The function of these lugs is to control the position of the pivoted core guides 13. When a bale of cotton is being formed, and the sliding roll I is in a position close to the lower compression roll G, these lugs press against the pivoted core guides, and hold them in upright position. When the bale of cotton has been completed, and the roll I moves backward to allow its expulsion from the press, the pivoted core-guides follow the movement of the lugs 18 through a portion of their travel. It is only necessary, however, that the core guides move through such an angle as will permit the core to be expelled from the press with the bale of cotton. Hence lugs 19 are provided on the interior of the frame M, which arrest the core guides when they have fallen through a sufficient angle, and hold them until the return of the sliding roll I, when the lugs or projections 18 will again engage with them, and move them into a vertical position again.

Referring now to Fig. 1, the timbers 3, to which the frame M with the rollers journaled therein is secured, are supported by the upright posts 20, having their support upon the foundation sills 21. The posts 20, besides acting as a support to the baling press, serve as guides to the weight box O in its movement, said weight box being provided with the guiding rollers *o*, which keep it in proper position. On the upper surface of the weight box, the tension roll C is journaled in proper bearings, and to its lower surface is attached the hydraulic jack Q, working in the ram cylinder P. This ram offers no resistance to the rise of the weight box O, but is used to control the descent of the same, and thus to regulate the rate of expulsion of the cotton bales, and to prevent the too rapid descent of the weight box O, it being controlled by suitable valves. On the upper surface of the weight box, and so that it bears against the belt 1 on its slack side, is placed the guide roll K, which is rendered adjustable in position by the screw *k*. This guide roll prevents the slack side of the belt, against which it presses, from hitting the frame of the press, as it prevents any sagging of the belt.

There are two trains of gears used in the operation of my baling press, one for operating the drive rolls A and B, and one for operating the screws N, and therefore the sliding roll I. The first of these is operated from the shaft R, which is journaled in the frame M at a point near the drive rolls A and B. On this shaft is mounted a gear wheel 30, which meshes with a gear 31 on shaft *b*, which carries the drive roll B, and on which is mounted the gear wheel 32, which meshes with the gear wheel 33, mounted on shaft *a*, which bears the roll A. In this manner motion is communicated from the shaft R, on which is mounted the pulley wheel T, to the rolls A and B, the

speed of the rotation of said rolls being governed by the speed of the shaft R, and the ratio of the gearing.

The screws N are provided at one end with the miter gears 35, which mesh with the miter gears 36, mounted on shaft S, which is journaled in the frame M. On said shaft is also mounted the gear wheel 37, which meshes with gear 38, mounted on shaft *u*, on which is also mounted the pulley wheel U. On each side of the pulley wheel U are loosely mounted on shaft *u* the pulley wheels V and W, each of which is provided with a belt shifter, so that when it is desired to shift the belts which are on said loose pulley wheels to the wheel U, it may be quickly and easily accomplished. On belt pulley V runs a direct belt, while on pulley W runs a cross belt, so that the sliding roll I may be run forward or back by shifting the proper belt on the fixed pulley wheel U.

The operation of my press is as follows: The press being empty, and the roll I being moved close to the roll G, the rolls A and B are driven, through the shaft R and intermediate gears, at such a speed that the number of feet of travel of the belt will equal the speed at which the condenser of the gin is working, so that the thin sheet or bat of cotton as it comes from the gin will be received upon the surface of said belt and will be carried on as rapidly as it is received. The cotton, received on the surface of the belt at a point between the roll E and the batter roll F, is carried under the said batter roll, where it is slightly compressed and its surface made smooth, and then between the compression rolls G and H, where it is subjected to extreme pressure, though not such as will destroy the fiber. If desired the cotton may be delivered on the surface of the belt in a compressed condition, so that the amount of pressure needed to be exerted by the compression rolls will be but slightly in excess of that necessary to be used in order to keep the cotton in the state of compression it is in when it meets the rolls. After passing the compression rolls, the bat of cotton begins to form a bale around the core 2, at first forming very slowly, as it is subjected to compression only at the point where the belt presses against the core, and in the early stages of formation of the bale the surface of such contact is not great. Gradually, however, the roll of cotton becomes denser, as material is added, until it distends the loop or bight of the belt into circular form, and gradually lifts the heavy tension rolls C, which being continued results in the formation of the desired size of bale within said loop or bight of the belt. When the bale has reached the desired size, the bat or sheet of fiber is cut, its delivery being momentarily discontinued, and a wrap or cover of any desired character is passed into the loop or bight of the belt over the compression rolls, which is wrapped around the bale by the ordinary operation of the press. Binding wires are then also run into the press in the same manner, and tied

around the bale, thus preventing it from expanding or unwinding. Since to arrest the expansion of the entire bale it is only necessary to arrest the expansion of the outer layer of the same, it is evident that binding cords of much less strength need be used than are used to bind the bales made according to the present methods. When the bale has been thus completed, covered, and bound, the rotation of the belt is discontinued, and by shifting the proper belt upon the pulley wheel U, which operates the gear train causing the rotation of the screws N, the sliding roll I is moved backward, and the bale expelled from the press, after which the belt upon the pulley wheel U is changed, and the sliding roll I brought back into its original position. The movement of the belt during the expulsion of the bale is controlled by the ram Q, since the downward movement of the weight box O, which must take place in order that the expulsion be effected, is regulated by the movement of said ram.

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

1. In a press for baling cotton and other loose fibrous materials, the combination with an endless belt arranged to form an automatically expansible loop or bight, rolls for supporting and guiding said belt, and a tension roll arranged within said belt, of means for imparting motion to said belt, and also for controlling the movement of said tension roll, substantially as described.

2. In a press for baling cotton and other loose fibrous materials, the combination with a belt arranged to form an automatically expansible loop or bight, rolls for supporting and guiding said belt, a tension roll arranged within said belt, and a pair of parallel rolls arranged in the same horizontal plane above said loop or bight, of means for imparting motion to said belt, and also for controlling the movement of said tension roll, substantially as described.

3. In a press for baling cotton and other fibrous materials, the combination with a belt arranged to form an automatically expansible loop or bight, rolls for supporting and guiding said belt, a tension roll arranged within said belt provided with means for controlling its movement, and a pair of parallel guiding rolls arranged in the same horizontal plane above said loop or bight, one of said rolls being horizontally movable, of means for imparting motion to said belt, and also for operating said movable roll, substantially as described.

4. In a press for baling cotton and other loose fibrous materials, the combination with an endless belt arranged to form an expansible loop or bight, rolls for supporting and guiding said belt, and a tension roll arranged within said belt, of means for imparting motion to said belt, and a hydraulic jack for con-

trolling the movement of said tension roll, substantially as described.

5. In a press for baling cotton and other loose fibrous materials, the combination with an endless belt arranged to form an expansible loop or bight, of rolls for supporting and guiding said belt and a tension roll journaled in bearings attached to a vertically-guided weight box arranged within said belt, of means for imparting motion to said belt, and also for controlling the movement of said tension roll, substantially as described.

6. In a press for baling cotton and other loose fibrous materials, the combination with an endless belt arranged to form an expansible loop or bight, of a series of rolls for supporting and guiding said belt, a vertically-guided core around which the bale is formed in said loop or bight, and means for rotating said belt, substantially as described.

7. In a press for baling cotton and other loose fibrous materials, the combination with an endless belt arranged to form an expansible loop or bight, of a series of rolls for supporting and guiding said belt, a vertically-guided core around which the bale is formed in said loop or bight, a tension roll arranged within said belt, and means for rotating said belt, substantially as described.

8. In a press for baling cotton and other loose fibrous materials, the combination with an endless belt arranged to form an expansible loop or bight, of a series of rolls for supporting and guiding said belt, a vertically-guided core around which the bale is formed in said loop or bight, a tension roll arranged within said belt, and means for rotating said belt and also for controlling the movement of said tension roll, substantially as described.

9. In a press for baling cotton and other loose fibrous materials, the combination with an endless belt arranged to form an expansible loop or bight, of a series of rollers for supporting and guiding said belt, a vertically-guided core around which the bale is formed in said loop or bight, a pair of parallel guiding rolls arranged in the same horizontal plane above said loop or bight, and means for imparting motion to said belt, substantially as described.

10. In a press for baling cotton and other loose fibrous materials, the combination with an endless belt arranged to form an expansible loop or bight, of a series of rolls for supporting and guiding said belt, a vertically-guided core around which the bale is formed in said loop or bight, a pair of parallel guiding rolls arranged in the same horizontal plane above said loop or bight, one of said rolls being horizontally movable, and means for imparting motion to said belt and also for operating said movable roll, substantially as described.

11. In a press for baling cotton and other loose fibrous materials, the combination with an endless belt arranged to form an expansible loop or bight, of a series of rolls for sup-

porting and guiding said belt, a vertically-guided core around which the bale is formed in said loop or bight, a pair of parallel guiding rolls arranged in the same horizontal plane above said loop or bight, one of said rolls being horizontally movable, a tension roll arranged within said belt, and means for imparting motion to said belt and also for operating the movable roll, substantially as described.

12. In a press for baling cotton and other fibrous materials, the combination with an endless belt arranged to form an expansible loop or bight, of a series of rolls for supporting and guiding said belt, a vertically-guided core around which the bale is formed in said loop or bight, a pair of parallel guiding rolls arranged in the same horizontal plane above said loop or bight, one of said rolls being horizontally movable, a tension roll arranged within said belt provided with means for controlling its movement, and means for imparting motion to said belt and also for operating the movable roll, substantially as described.

13. In a press for baling cotton and other fibrous materials, the combination with an endless belt arranged to form an automatically expansible loop or bight, of a series of rolls for supporting and guiding said belt, a pair of guiding parallel rolls arranged in the same horizontal plane above said loop or bight, a compression roll arranged above one of said horizontal rolls, and means for rotating said belt, substantially as described.

14. In a press for baling cotton and other fibrous materials, the combination with an endless belt arranged to form an expansible loop or bight, of a series of rolls for supporting and guiding said belt, a pair of guiding parallel rolls arranged in the same horizontal plane above said loop or bight, one of said rolls being horizontally movable, an adjustable compression roll arranged above the other of said compression rolls, and means for rotating said belt and also for operating said movable roll, substantially as described.

15. In a press for baling cotton and other fibrous materials, the combination with an endless belt arranged to form an expansible loop or bight, of a series of rolls for supporting and guiding said belt, a vertically-guided core around which the bale is formed in said loop or bight, a pair of guiding parallel rolls arranged in the same horizontal plane above said loop or bight, one of said rolls being horizontally movable, an adjustable compression roll arranged above the other of said horizontal rolls, and means for rotating said belt and for operating said movable roll, substantially as described.

16. In a press for baling cotton and other fibrous materials, the combination with an endless belt arranged to form an expansible loop or bight, of a series of rolls arranged to support and guide said belt, a tension roll arranged within said belt, a pair of guiding parallel rolls arranged in the same horizontal

plane above said loop or bight, one of said rolls being horizontally movable, an adjustable compression roll arranged above the other of said horizontal rolls, and means for rotating said belt and for operating said movable roll, substantially as described.

17. In a press for baling cotton and other fibrous materials, the combination with an endless belt arranged to form an expansible loop or bight, of a series of rolls arranged to support and guide said belt, a tension roll provided with means for controlling its movement arranged within said belt, a pair of guiding parallel rolls arranged in the same horizontal plane above said loop or bight, one of said rolls being horizontally movable, an adjustable compression roll arranged above the other of said compression rolls and means for rotating said belt and also for operating said movable roll, substantially as described.

18. In a press for baling cotton and other fibrous materials, the combination with an endless belt arranged to form an expansible loop or bight, of a series of rolls arranged to support and guide said belt, a vertically-guided core around which the bale is formed in said loop or bight, a tension roll arranged within said belt and provided with means for controlling its movement, a pair of guiding parallel rolls arranged in the same horizontal plane above said loop or bight, one of said rolls being horizontally movable, an adjustable compression roll arranged above the other of said compression rolls, and means for rotating said belt and for operating said movable roll, substantially as described.

19. In a press for baling cotton and other fibrous materials, the combination with an endless belt arranged to form an expansible loop or bight, of a series of rolls for supporting and guiding said belt, a pair of guiding parallel rolls arranged in the same horizontal plane above said loop or bight, one of said rolls being horizontally movable, a compression roll arranged above the other of said horizontal rolls, a batter roll for slightly compressing the bat of cotton before it reaches the compression roll, and means for rotating said endless belt and also for operating said movable roll, substantially as described.

20. In a press for baling cotton and other fibrous materials, the combination with an endless belt arranged to form an expansible loop or bight, of a series of rolls for supporting and guiding said belt, a pair of guiding parallel rolls arranged in the same horizontal plane above said loop or bight, one of said rolls being horizontally movable, a compression roll arranged above the other of said horizontal rolls, a batter roll for slightly compressing the cotton before it reaches the compression roll, a vertically-movable tension roll provided with means for controlling its movement arranged within said belt, and means for operating said belt and also the movable roll, substantially as described.

21. In a press for baling cotton and other fibrous materials, the combination with an endless belt arranged to form an expansible loop or bight, of a series of rolls for supporting and guiding said belt, a vertically-guided core around which the bale is formed in said loop or bight, a pair of guiding parallel rolls arranged in the same horizontal plane above said loop or bight, one of said rolls being horizontally movable, an adjustable compression roll arranged above the other of said compression rolls, a batter roll for slightly compressing the cotton before it reaches the compression roll, a vertically movable tension roll provided with means for controlling its movement arranged within said belt, and means for rotating said belt and also for operating the horizontally-movable roll, substantially as described.

22. In a press for baling cotton and other fibrous materials, the combination with an endless belt arranged to form an expansible loop or bight, a series of rolls for supporting and guiding the same, a pair of guiding parallel rolls arranged in the same horizontal plane above said loop or bight, one of said rolls being journaled in sliding boxes, means for reciprocating said sliding boxes, and means for rotating said belt, substantially as described.

23. In a press for baling cotton and other fibrous materials, the combination with an endless belt arranged to form an expansible loop or bight, of a series of rolls for supporting and guiding the same, a pair of guiding parallel rolls arranged in the same horizontal plane above said loop or bight, one of said rolls being journaled in sliding boxes, screws for reciprocating said sliding boxes, means for rotating said screws in opposite directions, and means for rotating said belt, substantially as described.

24. In a press for baling cotton and other fibrous materials, the combination with an endless belt arranged to form an expansible loop or bight, of a series of rolls for supporting and guiding said belt, a pair of guiding parallel rolls arranged in the same horizontal plane above said loop or bight, one of said rolls being journaled in sliding boxes, the screws N provided with the miter gears 35 for reciprocating said sliding boxes, the miter gears 36 mounted on the shaft S for rotating said screws, means for rotating said shaft in either direction, and means for rotating said belt, substantially as described.

25. In a press for baling cotton and other fibrous materials, the combination with an endless belt arranged to form an expansible loop or bight, of a series of rolls for supporting and guiding said belt, a vertically guided core around which the bale is formed in said loop or bight, one of the guides of said core being pivoted at its lower end, a pair of guiding parallel rolls arranged in the same horizontal plane above said loop or bight, one of said rolls being horizontally movable, means

for operating said horizontally movable roll, and means for rotating said belt, substantially as described.

26. In a press for baling cotton and other fibrous materials, the combination with an endless belt arranged to form an expansible loop or bight, a series of rolls for supporting and guiding said belt, a vertically guided core around which the bale is formed in said loop or bight, one of the guides of said core being pivoted at its lower end, a lug 19 on the inner side of the frame for arresting the said pivoted core guide at a certain point in its movement, a pair of guiding parallel rolls arranged in the same horizontal plane above said loop or bight, one of said rolls being journaled in sliding boxes provided with lugs extending down inside of the frame of the press, for guiding and holding in position the pivoted core guides, means for reciprocating the said sliding boxes, and means for rotating said belt, substantially as described.

27. In a press for baling cotton and other fibrous materials, the combination with an endless belt arranged to form an expansible loop or bight, of a series of rolls for supporting and guiding said belt, a vertically guided core around which the bale is formed in said loop or bight, one of the guides of said core being pivoted at its lower end, a tension roll arranged within said endless belt, a pair of parallel guiding rolls arranged above the loop or bight of said belt, one of said rolls being horizontally movable, means for reciprocating the horizontally-movable roll, and means for rotating said belt, substantially as described.

28. In a press for baling cotton and other fibrous materials, the combination with an endless belt arranged to form an expansible loop or bight, a vertically guided core around which the bale is formed in said loop or bight, one of the guides of said core being pivoted at its lower end, a vertically-movable tension roll provided with means for controlling its movement arranged within said belt, a pair of parallel guiding rolls arranged in the same horizontal plane above said loop or bight, one of said rolls being horizontally movable, means for reciprocating the said horizontally movable roll, and means for rotating said belt, substantially as described.

29. In a press for baling cotton and other fibrous materials, the combination with an

endless belt arranged to form an expansible loop or bight, a series of rolls for supporting and guiding said belt, a vertically guided core around which the bale is formed in said loop or bight, one of the guides of said core being pivoted at its lower end, a movable tension roll arranged within said belt and provided with means for controlling its movement, a pair of parallel guiding rolls arranged in the same horizontal plane above said loop or bight, one of said rolls being horizontally movable, an adjustable compression roll arranged above the other horizontal roll, means for reciprocating the said horizontally-movable roll, and means for rotating said belt, substantially as described.

30. In a press for baling cotton and other fibrous materials, the combination with an endless belt arranged to form an expansible loop or bight, of a series of rolls for supporting and guiding said belt, a vertically-guided core around which the bale is formed in said loop or bight, a pair of parallel guiding rolls arranged in the same horizontal plane above said loop or bight, one of said rolls being horizontally movable, an adjustable compression roll arranged above the other of the horizontal rolls, a batter roll for compressing the cotton before it reaches the compression roll, a tension roll arranged within the belt and provided with means for controlling its movement, means for reciprocating said horizontally-movable roll, and means for rotating said belt, substantially as described.

31. In a press for baling cotton and other fibrous materials, the combination with an endless belt arranged to form an automatically expansible loop or bight, of a series of rolls for supporting and guiding said belt, and means for rotating said belt, said means consisting of the power shaft R having mounted thereon the gear wheel 30, the shaft *b* carrying the roll B, and having mounted thereon the gear wheel 31 meshing with the gear wheel 30, and the gear wheel 32, and the shaft *a* bearing the roll A, and having mounted thereon the gear wheel 33, substantially as described.

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

JOHN W. GRAVES.

Witnesses:

J. KELLOGG,
W. T. KELLOGG.