(No Model.) 2 Sheets—Sheet 1.

J. W. HUNTER.

BALING PRESS.

No. 544,255. Patented Aug. 6, 1895.

Fig. 6.

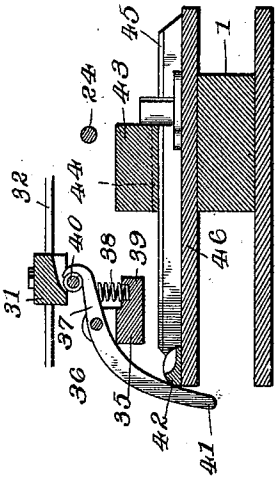

Fig. 1.

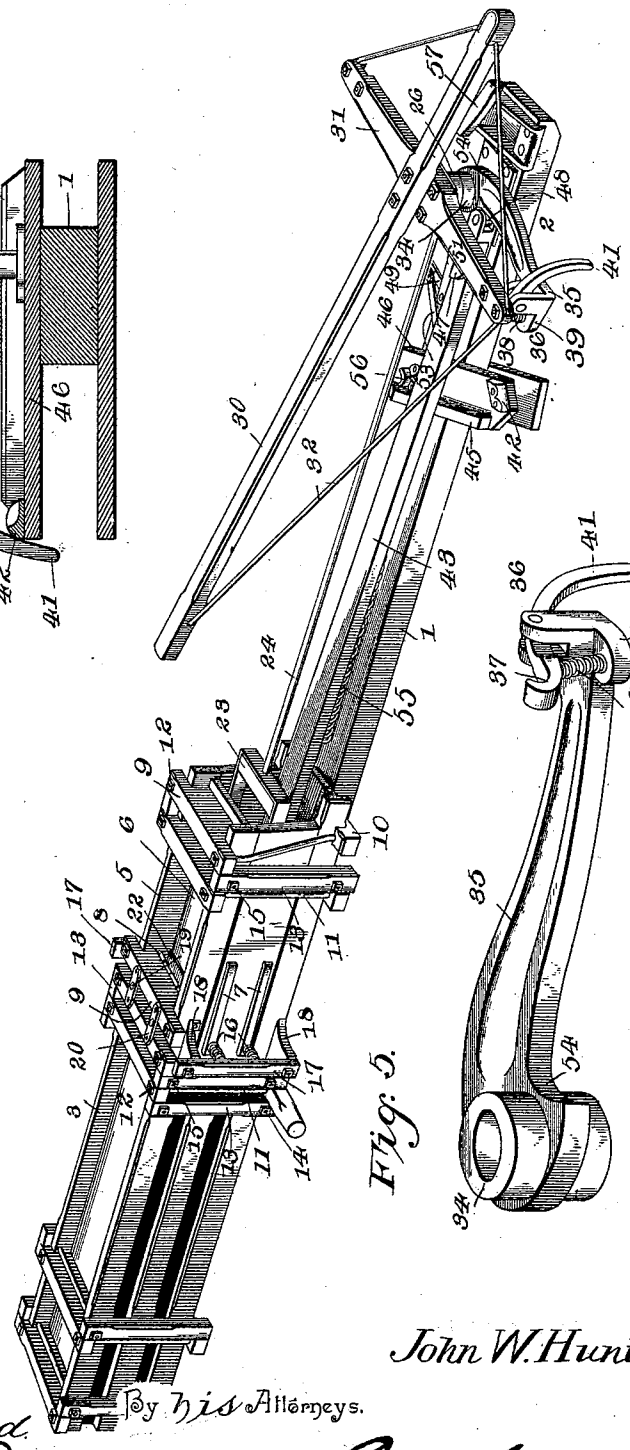

Fig. 5.

Witnesses

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(No Model.) 2 Sheets—Sheet 2.

J. W. HUNTER.

BALING PRESS.

No. 544,255. Patented Aug. 6, 1895.

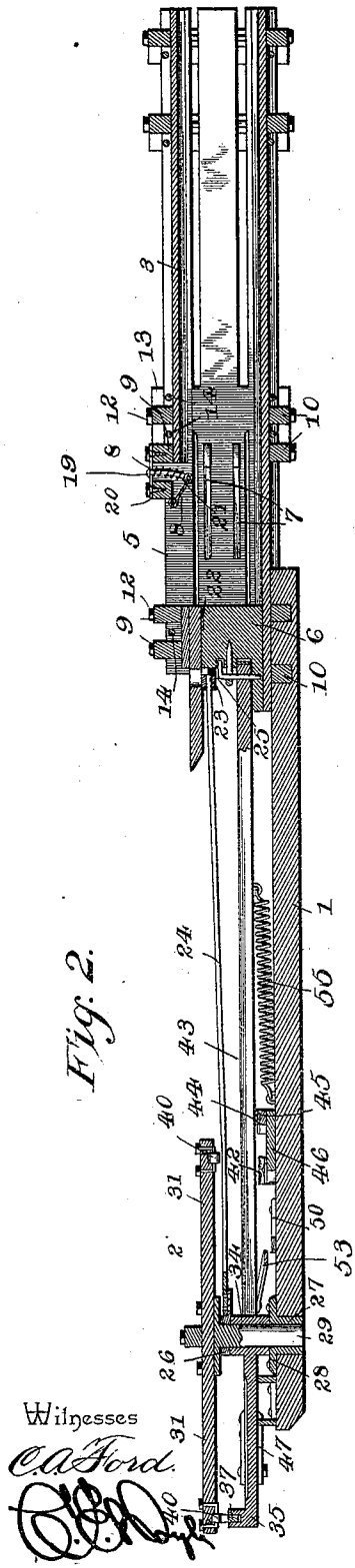

Fig. 2.

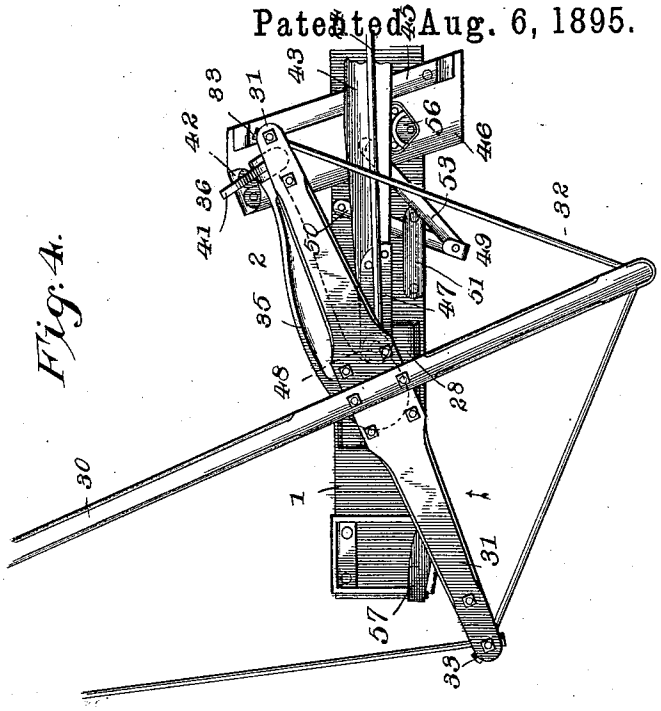

Fig. 4.

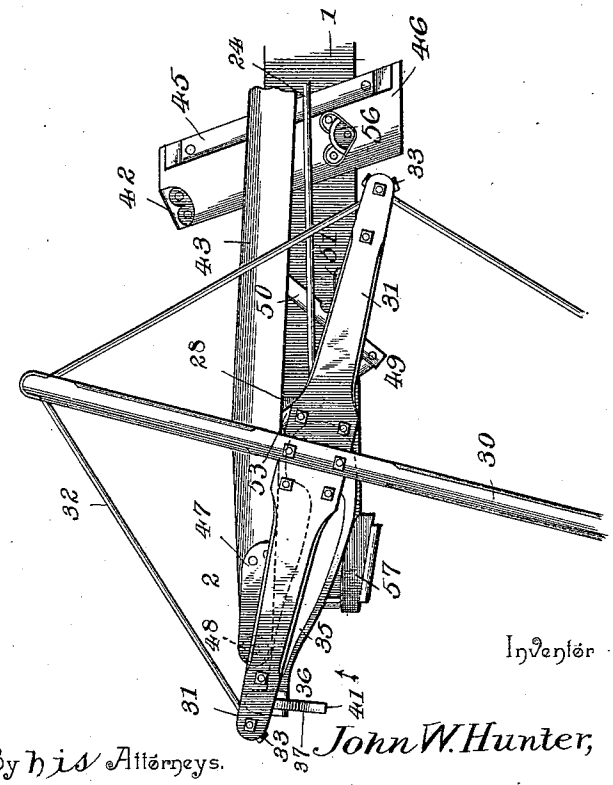

Fig. 3.

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UNITED STATES PATENT OFFICE.

JOHN WILLIAM HUNTER, OF MACON, MISSISSIPPI.

BALING-PRESS.

SPECIFICATION forming part of Letters Patent No. 544,255, dated August 6, 1895.

Application filed February 26, 1895. Serial No. 539,762. (No model.)

To all whom it may concern:

Be it known that I, JOHN WILLIAM HUNTER, a citizen of the United States, residing at Macon, in the county of Noxubee and State of Mississippi, have invented a new and useful Baling-Press, of which the following is a specification.

My invention relates to baling-presses and particularly to an improvement upon the construction shown and described in my former patent, No. 433,469, granted August 5, 1890, and the objects in view are to provide improved means for increasing the power of the operating arm or cam as the plunger approaches the limit of its forward movement, and, therefore, as the difficulty of compression increases, to provide improved means for releasing the operating arm or cam at the limit of the forward movement of the plunger to allow the latter to rebound independently of the sweep, and to provide improved means for guiding the rear end of the pitman to insure its operative engagement with the arm or cam by which forward motion is communicated thereto.

Further objects and advantages of the invention will appear in the following description, and the novel features thereof will be particularly pointed out in the appended claims.

In the drawings, Figure 1 is a perspective view of a baling-press constructed in accordance with my invention. Fig. 2 is a longitudinal section of the same. Fig. 3 is a plan view of the operating mechanism, showing the parts in the positions which they occupy at the beginning of the forward stroke of the plunger. Fig. 4 is a similar view showing the positions of the parts at the moment of tripping the clutch by which the operating arm or cam is connected with the sweep. Fig. 5 is a detail view of the operating arm or cam. Fig. 6 is a detail section through the extremity of the operating arm or cam and the contiguous portion of the sweep which is engaged by the clutch.

Similar numerals of reference indicate corresponding parts in all the figures of the drawings.

1 designates the sill or longitudinal beam upon which the operating mechanism 2 is mounted and by which such mechanism is connected with the baling-chamber 3. The baling-chamber is provided at its rear end with a feed-box having an upper feed-opening 5 beneath which the plunger 6 operates, spring-actuated detents 7 being arranged in longitudinal slots in the sides of the feed-box, and a spring-actuating tucker 8 being disposed at the top of the box adjacent to the front end of said feed-opening. The sides of the feed-box are connected in front and in rear of the feed-opening with transverse tie-bars 9 arranged in pairs and connected at their projecting extremities with the ends of similar tie-bars 10 disposed transversely at the bottom of the feed-box, such connection being secured by means of vertical rods 11 provided at their upper and lower ends with adjustable nuts 12, by which the tension of the rods may be regulated.

Vertical tie-bars 13 are arranged in contact with the outer surfaces of the feed-box in front and in rear of said feed-opening with their extremities arranged between the ends of the pairs of transverse tie-bars, the projecting upper and lower extremities of said vertical tie-bars being connected by transverse rods 14, also provided with adjusting-nuts 15. By means of this construction the rigidity of the structure contiguous to the feed-box is insured against strain produced by the expansion of the material which is being baled, such expansion being produced by the operation of the plunger. The detents, which are disposed in slots in the side walls of the feed-box, are held in operative positions by springs 16, which bear at their outer ends against vertical bars 17 supported at their upper and lower extremities by lateral brackets 18, and the tucker, which is disposed at the top of the feed-box to prevent the material baled from following the plunger in its return movements, is connected at its free edge to the lower ends of guide-rods 19, extending upward through the top of the feed-box and fitting in guide-openings in the horizontal plates 20, springs 21 being arranged upon said rods between the upper side of the tucker and the under surfaces of said plates. The front portion of the plunger is provided with a protecting metallic plate 22 for contact with said tucker.

A cross-head 23 is arranged at the rear end

of the baling-chamber, and extending through an opening in the center thereof is a longitudinal tie-rod 24, provided at its extremity in front of said cross-head with an adjusting-nut 25 and terminating at its rear end in an eye 26, which is vertically aligned with a bearing 27, formed in a bearing-plate 28 at the rear end of the longitudinal sill or beam 1, and arranged in the bearing and also extending through said eye is a vertical spindle 29, which is secured rigidly to the sweep 30 at a point between its extremities. This sweep is provided with lateral arms 31, which extend outward a distance corresponding approximately with the portion of the sweep between the spindle and the extremity of its short arm, a strain-rod 32 being extended through transverse perforations in the extremities of said lateral arms and the short arm of the sweep, and also through a corresponding perforation near the extremity of the long arm and being fitted at its ends with adjusting-nuts 33.

Mounted upon the vertical spindle between the planes of the bearing-plate and the terminal eye of the tie-rod is the hub 34 of the operating arm or cam 35, said arm being compoundly curved toward its extremity and terminating in a clutch 36 for engagement by the extremity of either of the lateral arms of the sweep, whereby motion in the direction indicated by the arrows in Figs. 3 and 4 may be communicated from the sweep to the operating-arm. In the construction illustrated in the drawings this clutch consists of a shouldered or terminally hooked tongue 37, provided with an actuating-spring 38 which normally holds said tongue elevated and in the path of the arms of the sweep, said spring being stepped at its lower end in a socket formed in an ear 39 on the operating-arm. In order to avoid frictional wear upon the extremities of the sweep the latter are provided with antifriction-rollers 40 for engagement with the clutch-tongues, the extremities of said tongues being slightly concaved to prevent accidental disengagement during the forward movement of the operating-arm, and said tongue is provided with an extension or trip arm 41, which depends below the plane of the operating-arm and is adapted, when the plunger reaches the limit of its forward movement, to engage a detent or stop-block 42 to disengage the clutch-tongue from the arm of the sweep.

Pivotally connected at its front end to the plunger is a pitman 43, provided on its under surface with a wear-plate 44 to traverse a corresponding wear-plate 45 on a transverse bracket 46 supported by the sill or beam, and terminating at its rear end in a tip 47 having an antifriction-roll 48 to bear against the front or cam surface of the operating-arm, and in order to control the lateral position of the rear end of the sweep during the advance movement of the plunger I employ a swinging guide-arm 49 having one member 50 pivotally connected to the sill or beam and operating in a keeper 51, and another member 53 pivotally connected at one end to the free end of said first-named member and at the other end to the pitman. When the parts are in the positions shown in Fig. 3 or at the beginning of the advance movement of the plunger the lower member or limiting-arm 50 is inclined rearwardly toward its free end and is limited in its movement by the rear end of the keeper 51, whereby as the operating-arm advances the swinging member of the guide-arm moves the contact-point of the pitman inward or toward the fulcrum-point of the operating-arm, thereby increasing the leverage of said operating-arm as the plunger approaches the limit of its inward movement. At the inner end of the operating-arm is a pocket 54 adapted for the reception of the antifriction-roll at the extremity of the piman when the operating-arm reaches a position approximately at right angles to the length of the sill or beam, and from this point to the limit of the forward movement of the operating-arm said antifriction-roll is held in this pocket and is carried slowly upon the fulcrum of the operating-arm as an axis. During this latter portion of the movement of the operating-arm the guide-arm is inoperative, the swinging member of said guide-arm having reached a position approximately parallel with the limiting member, and the succeeding movement of the pitman is permitted by the movement of the limited member of the guide-arm toward the front end of the keeper in which it is fitted. Thus, the object in employing the limiting member of the guide-arm is to allow forward movement of the pitman after the swinging member of the guide-arm has drawn the rear end of the pitman inward to engagement with the pocket in the operating-arm. Obviously after the operating-arm has reached a position approximately at right angles to the length of the sill or beam the rear end of the pitman cannot be moved outward toward the extremity of the operating-arm, but is held by the inclination of the face of said arm in positive engagement with the pocket. When the trip-arm, which is connected with the clutch-tongue, engages the detent or stop-block and thereby depresses the free end of the clutch-tongue out of engagement with the extremity of the sweep-arm the parts are returned to their normal or initial positions by a rebounding spring 55, which is attached at one end to the pitman and at the other end to the sill or longitudinal beam. A stop 56 is employed to limit the lateral movement of the pitman and prevent the same from being thrown to the wrong side of the axis of the operating-arm, and a cushion-block 57 is arranged in the path of the operating-arm to limit its return movement under the influence of the rebounding spring.

The operation of the above-described mechanism will be readily understood from the foregoing explanation, and it is obvious that the power of the press increases in proportion

of the approach of the plunger to the limit of its advance movement, such increase in power being at the expense of rapidity, whereby the plunger advances rapidly during the first portion of its movement and as the material becomes more compactly compressed the speed decreases while the power proportionately increases.

It will be understood that in practice various changes in the form, proportion, and the minor details of construction may be resorted to without departing from the spirit or sacrificing any of the advantages of this invention.

Having described my invention, what I claim is—

1. In a baling press, the combination with a rebounding plunger pitman, of co-axially mounted sweep and operating arms, the operating arm having a cam face for engagement with the pitman, clutch mechanism for connecting the sweep to the operating arm, trip devices for disengaging the clutch mechanism at intervals, and a guide for the pitman having a swinging arm mounted eccentrically with the operating arm and connected to the pitman, whereby as the latter advances the point of engagement between the pitman and the operating arm moves toward the axis of the operating arm, substantially as specified.

2. In a baling press, the combination with a rebounding plunger pitman, of co-axially mounted sweep and operating arms, said operating arm being adapted to engage and communicate forward motion to the pitman, clutch mechanism for connecting the sweep to the operating arm, trip devices for releasing the clutch mechanism at intervals to allow return movement of the pitman, and a guide for the pitman comprising a limiting member having a limited swinging movement, and a swinging member pivotally connected at one end to the free end of the limiting member and at the other end to the pitman, said limiting member maintaining the pivotal point of the swinging member eccentric with the operating arm to shift the point of contact between the pitman and the operating arm inward or toward the fulcrum point of the latter as the pitman advances, substantially as specified.

3. In a baling press, the combination with a rebounding plunger pitman and a sweep, of an operating arm mounted co-axially with the sweep and having a cam face terminating adjacent to its axis in a pocket adapted to receive an anti-friction roll carried by the pitman, clutch mechanism for connecting the sweep to the operating arm, trip devices for disengaging the clutch mechanism at the limit of the advance movement of the pitman, and guiding devices for the pitman comprising a limiting arm mounted at one end upon a fixed pivot, a keeper for limiting the movement of said member, and a swinging arm pivotally connected at one end to the free end of the limiting member and at the other end to the pitman, substantially as specified.

4. In a baling press, the combination with a rebounding plunger pitman and a sweep, of a cam-faced operating arm mounted co-axially with the sweep and adapted to engage an anti-friction roll carried by the pitman, means for guiding the pitman whereby the point of contact between said roll and the operating arm is shifted toward the axis of the latter as the pitman approaches the limit of its advance movement, a spring-actuated clutch tongue pivotally mounted upon the operating arm to engage the sweep, a trip arm connected to the clutch tongue, and a detent or stop arranged in the path of the trip arm to displace the clutch tongue and thereby disengage it from the sweep at the limit of the forward movement of the pitman, substantially as specified.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

JOHN WILLIAM HUNTER.

Witnesses:
O. H. BOWEN,
SAM J. MCCAUTS.