

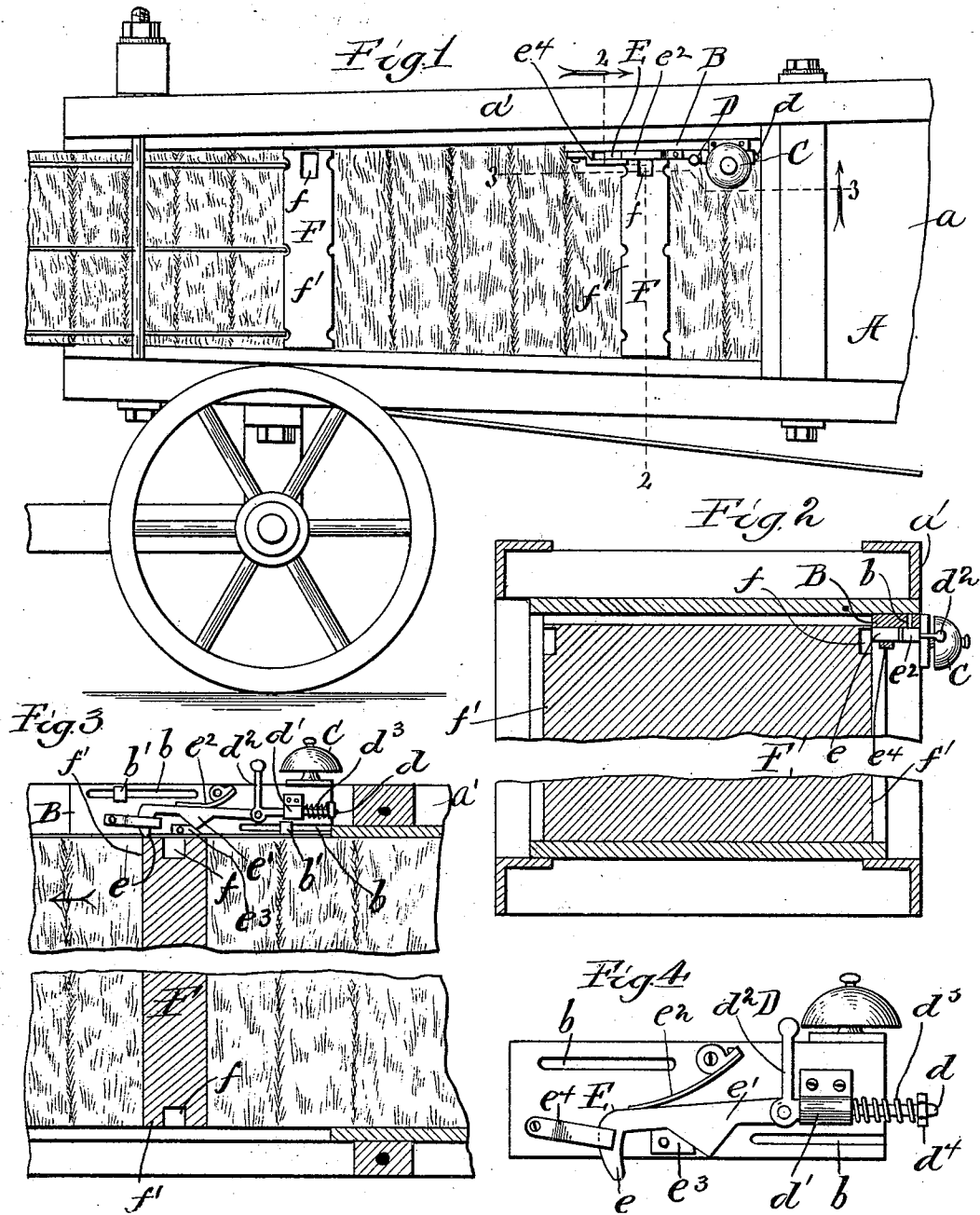
(No Model.)

2 Sheets—Sheet 1.

P. C. SOUTHWICK.
BALING PRESS.

No. 515,373.

Patented Feb. 27, 1894.



Witnesses
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Jno. A. Christensen.



Fig. 5 Inventor
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(No Model.)

2 Sheets—Sheet 2.

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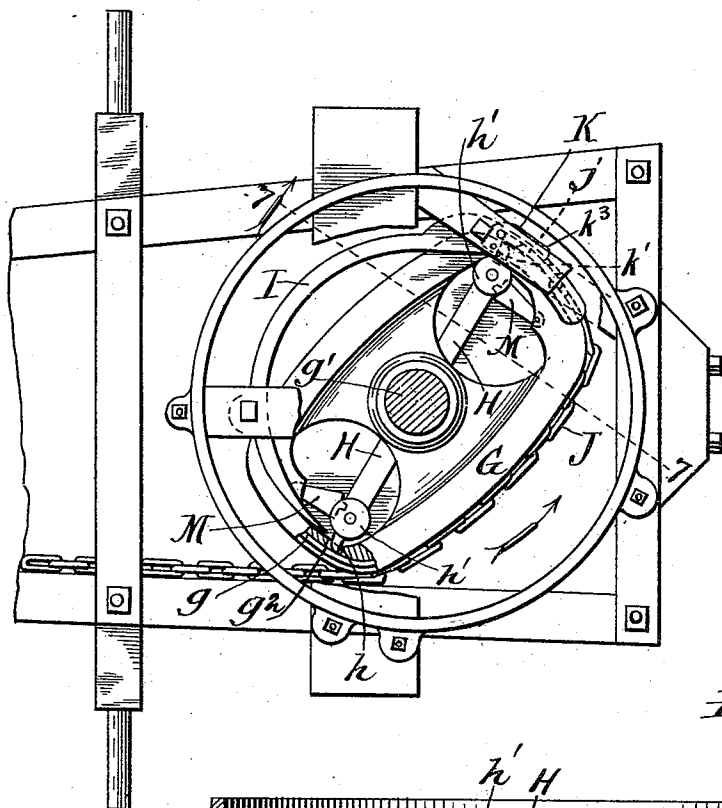


Fig. 6

Fig. 1

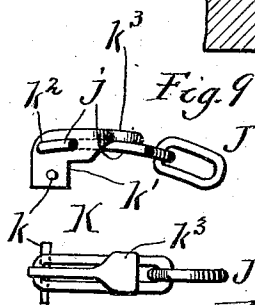
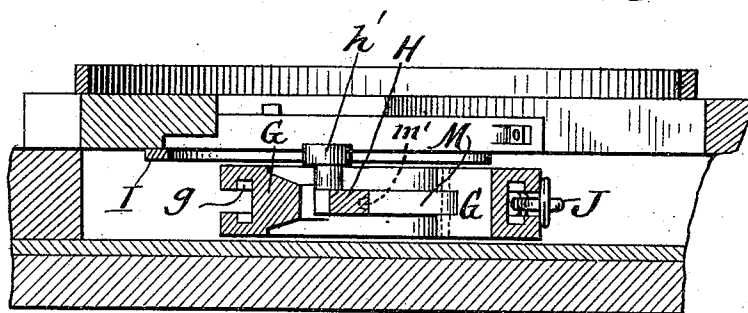


Fig. 9

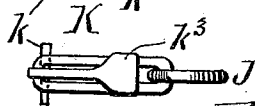


Fig. 10

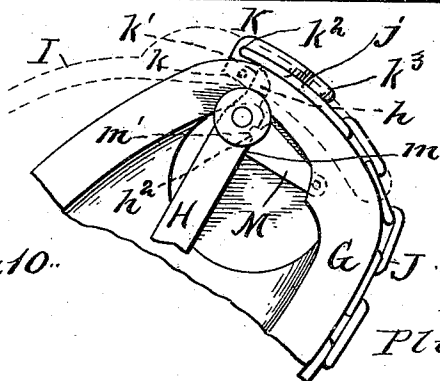


Fig. 8

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UNITED STATES PATENT OFFICE.

PLIN C. SOUTHWICK, OF SANDWICH, ILLINOIS.

BALING-PRESS.

SPECIFICATION forming part of Letters Patent No. 515,373, dated February 27, 1894.

Application filed September 25, 1893. Serial No. 436,440. (No model.)

To all whom it may concern:

Be it known that I, PLIN C. SOUTHWICK, a citizen of the United States, residing at Sandwich, in the county of De Kalb and State of Illinois, have invented certain new and useful Improvements in Baling-Presses, which are fully set forth in the following specification, reference being had to the accompanying drawings, in which—

10 Figure 1 represents a side elevation of the front end of a press embodying my invention; Fig. 2, a cross-section thereof taken on the broken line 2. 2 of Fig. 1, with the middle portion broken away; Fig. 3, a detail inverted plan taken on the broken line 3. 3 of Fig. 1, with the central portion also broken away; Fig. 4, a bottom plan of the signal device detached; Fig. 5, a detail end elevation of one of the followers, the lower portion being broken away; 20 Fig. 6, a plan view of the cam portion of the power, the sweep and top cross-beam being removed; Fig. 7, a vertical section taken on the line 7. 7 of Fig. 6; Fig. 8, a detail plan of one end of the cam and the cable attachment thereto; Fig. 9, a plan of the catch or block which connects the cable to the cam, detached from the cam; and Fig. 10, an edge elevation of the same.

In the drawings, Fig. 1 is upon one scale by itself; the remaining figures are all upon one and the same scale, enlarged from that of Fig. 1.

My invention relates to power baling-presses of a general type well known, and particularly such as shown in my prior Letters Patent No. 458,641, dated September 1, 1891, and No. 473,645, dated April 26, 1892.

The present invention relates to the signaling device which indicates the point for the application of a new follower for the formation of another bale, and to certain devices for strengthening and supporting the cam operating mechanism by which the compressing force is applied to the formation of the bales.

45 The signaling device is an improvement upon the one shown in my first named patent, No. 458,641, and the cam operating devices are an improvement upon those shown in the said patent, and also my second patent, No. 473,645.

50 In the drawings, A represents the press-frame, which is of ordinary construction, the same as shown and described in my patent,

No. 458,641, and usually mounted on wheels. As well known, this structure is practically a long chute, which is closed at all sides a portion of the way to provide a chamber within which the material is compressed, while for the remainder of its length it is open at the sides and preferably tapers slightly from the rear end of the chamber to the rear or discharge end of the chute. In the drawings only a portion of this press is shown, all the front portion being broken away and only the rear end and a portion of the chamber, *a*, being shown. It will be understood, of course, that the hay, or other like material, which is to be formed into bales, is compressed by a follower within the closed chamber, which may be called the compression chamber. The bales are formed successively and continually as the material is supplied to the press, and it is evident that it is desirable to have some signal which shall indicate when a bale of the required size has been formed, so that a new follower can be introduced to mark the beginning of a new bale. As stated in my patent, No. 458,641, it is desirable that this signal should be given when the follower at the forward end of a bale passes out from the rear or discharge end of the compression chamber, and my invention, so far as this part of the machine is concerned, relates to this signaling device.

A plate, B, is secured to the under side of one of the side-beams, *a'*, of the press-frame, A, being located just in rear of the closed compression chamber, as seen in Fig. 1. This plate is provided with slots, *b*, at opposite edges running lengthwise of the plate, and is secured to the beam by means of screw-bolts, *b'*, passing through the slots into the beam, thus providing for the adjustment of the plate lengthwise of the press so as to locate the signal accurately at the point desired. At the front end of this plate a gong or bell, C, is secured to the outer edge thereof, as seen in Figs. 1 and 4. The hammer, D, is in the shape of a bell-crank lever, one arm, *d*, of which is mounted lengthwise of the plate in a keeper, *d'*, fastened to the plate and having a tubular opening in which this arm is placed and through which it is free to slide back and forth lengthwise of the plate. The other arm, *d''*, of this bell-crank projects directly outward

transversely of the plate until it reaches the plane of the bell, and terminates in a small knob or ball adapted to strike the bell upon proper movement thereof. The end of the horizontal arm is extended through the keeper and projects beyond the same toward the front end of the press, as seen in Figs. 3 and 4. A spring coil, d^3 , is arranged upon this extension of the arm outside the keeper, being held thereon by a nut, d^4 , threaded on the extremity of the arm. A dog or catch, E, is hinged at one end to this sliding hammer, this connection, as shown in the drawings, being at the junction of the two arms. The body of the dog is straight and is extended outward or rearward along the plate and terminates in a kind of straight hook, e , bent so as to extend inward transversely of the plate and normally projecting beyond the inner edge thereof, thus forming a kind of finger extending straight inward at this inner edge of the plate. Between this hook end and the pivot of this dog there is an extension, e' , on the inner edge of the straight body. This projection is beveled or inclined along the edge next to the hook, as seen in the drawings, and as here shown it is also similarly beveled or inclined at the opposite edge, thus presenting a V-shaped lug projecting inward from the body of the dog; this bevel of the edge next to the hinge is not necessary, however, while the inclination of the opposite edge is necessary to the working of this device as here designed. A spring, e^2 , is fixed at one end near the outer edge of the plate, its free end being arranged to act upon the back of the dog near the outer end of the latter, this action being normally to force the dog inward to its fullest extent so that the finger at the end thereof will project beyond the inner edge of the plate, as seen in Fig. 4. A stop-block, e^3 , is secured to the plate at the inner edge thereof inside of the dog and just in front of the lug thereon. Its inner edge is beveled or inclined at the front end thereof so as to present an inclined face or way adapted to fit the front or outer inclination of the lug on the dog when the latter is in normal position of rest, as seen in Fig. 4, in which position it is held against this cam-stop by the action of the spring back of the dog. A button-latch, e^4 , is pivoted to the plate near the rear end thereof and is adapted to swing over the finger of the dog, being bent for this purpose as seen in Figs. 1 and 4. This device, therefore, serves as a kind of keeper to hold up the outer end of the dog in proper position against the plate, as seen in Figs. 1 and 4, while it may be turned back at any time for removal or repairs of parts, as may be required. The followers, F, are of ordinary construction, except that a shallow recess or short groove, f , is sunk in each end, f' , close to the upper edge of the follower, as seen in Figs. 1 and 5. This recess on the end next to the signal will be in the same plane with the finger of the hammer dog, so that under

the action of the spring at the back of the latter the finger will be thrust inward into the recess unless some obstruction prevents. The recesses or grooves are proportioned so that their length, extending crosswise of the end edges of the followers, will be somewhat greater than the width of the finger on the dog, so that this finger may have a limited free movement in the recess. The recesses or grooves are provided in each end of the followers, so that no special care is required in placing a follower in the press, except that recesses shall be at the upper edge thereof; whichever end comes on the signal side of the press, there will be a recess for the reception of the finger on the dog.

The power mechanism, by which the compression of the material in the press is effected, is practically the same as shown and described in my patent, No. 473,645, except in a few particulars, and will require only brief mention here except where the improvements have been made. There are here shown in Figs. 6, 7 and 8, a grooved cam, G, sliding bar, H, cam, I, and chain-cable, J, substantially identical in construction and operation with the corresponding parts shown and described in my said patent. The cam, G, is provided with a peripheral T-shaped groove, g , and is fastened to the sweep-shaft, g' , as in the former case, and its rotation is effected by means of the usual sweep, which, however, is not shown in the drawings. The sliding-bar, H, is also mounted so as to be carried by the cam, as in my former patent, and the cam itself is provided with slots or apertures, g^2 , in its rim at diagonally opposite corners thereof, into either of which either end, h , of the bar may be thrust to engage with a block, K, mounted loosely on the periphery of the cam by means of the groove therein. The bar is also provided at each end with an anti-friction roller, h' , which is engaged by the cam, I, to operate the sliding bar the same as in my former patent, except that the rollers are a little larger than there shown. The block, K, is attached to the cam by means of side-pins, k , at its inner end which fit into and run in the T-head of the groove, so that the block freely slides upon the cam except when stopped by the protruding ends of the sliding bar. But the construction of this block is different from that shown in Patent No. 473,645. In the block there shown a notch is cut in the inner edge thereof, just in front of the pins for the reception of the ends of the sliding bar, and the cable is attached to the extreme outer end of the block. In operation the strain upon this block is very great, as must be obvious to any one familiar with the action of these machines, and under this strain the block will sometimes break at the back portion of the notch next to the pin, this being the weak place in the block on which the greatest leverage is brought, because of the point at which the cable is attached and also the outside shoulder of the notch bearing upon the outside of

the bar. To obviate this difficulty, I make the block in the form seen in Figs. 9 and 10, in which it will be seen that the block is practically right-angled and the junction angle makes the shoulder or abutting surface, k' , with which the protruding end of the sliding arm comes in contact to stop the block on the cam, as seen in Figs. 6 and 8. In this construction it will be seen that there is no leverage on the opposite or outside of the bar, as in the former case. In addition to this change I also provide for the attachment of the cable at the rear end of the block by providing an aperture, k^2 , outside and back of the connecting pins, through which one of the links, l , of the power-cable, L , is passed, as seen in Figs. 8 and 9. Now, this makes nearly a straight pull forward, against the end of the sliding bar when it locks the block, instead of a kind of downward pull across the end of the said bar, and so the danger of breaking the block across the bar is practically removed. This block is also constructed with a kind of tongue, k^3 , at the forward end thereof. This tongue is formed by cutting out the free arm on the inside at its outer end so as to make a bend, and this portion is also flattened or spread out laterally so as to form a kind of lip extending out over the inner link, l , on each side, as seen in Figs. 9 and 10. This projecting tongue serves to hold the link to the periphery of the cam during the sliding movement of the block, and so keeps the link and the cable of which it forms a part in proper position on the cam.

The strain upon the locking end of the sliding bar, as the cam is turned to operate the compressing devices, is, of course, very great, and I have found that without some supplementary support the bar will spring, and, in fact, is in danger of breaking. An outside support is, therefore, provided for the ends of the bar in the shape of a stop-arm, M , pivoted to the inside of the cam-rim at each end of the sliding lever, but arranged on opposite sides of the latter, the pivot at each end being on the side opposite to the contact surface of the bar, as seen in Figs. 6 and 8. The outer end of this pivoted stop-arm is rounded in the direction of its width so as to present a circular head, m , and about the center thereof there is a short projecting tip or lug, m' . In opposite edges of the sliding bar, near the respective ends thereof, there are provided notches, h^2 , which are adapted to receive the projecting tips, m' , of the respective stop-arms. As one end of this sliding bar is driven outward by the actuating cam, I , the stop-arm vibrates upon its pivot, its circular end in contact with the edge of the bar permitting this movement, and the parts are so arranged that as the bar reaches the limit of its outward thrust the stop-arm will be straightened, or in other words will stand about perpendicular to the bar, as seen in Fig. 8. This arm, therefore, in this position forms a perfectly rigid stop or resistance to

the outward spring of the locking end of the bar, thus preventing any movement whatever of the said bar and avoiding all danger of breakage. Obviously these pivoted resistance-arms afford no obstacle to the free sliding of the bar, as their circular ends rock easily on the edges of the bar, and so offer no frictional resistance to the reciprocation of the latter.

In operation the action of the signal device is as follows: From the description above it will be seen that the recesses or grooves in the followers are in the same plane with the hinged dog on the hammer, and, therefore, when a follower is brought opposite the finger of the dog it will be forced inward under the action of its spring, the finger passing into the recess. Now, suppose the device to be in this position, the forward movement of the follower will pull the dog forward so long as the finger remains in the groove, thereby drawing out the horizontal arm of the hammer and compressing the spring back of the keeper. In this movement it is obvious that the forward incline of the lug on the dog must ride upon the incline of the stop-block, which will have the effect to swing the dog outward on its pivot and against its spring, as it is pulled forward, until finally the finger is entirely freed from the groove in the follower. As soon as the finger is entirely cleared from the follower there is no longer any substantial resistance to the retracting spring, and the latter with its full force quickly draws back the hammer, thereby bringing it up sharply against the bell and making the required signal, which indicates that it is time for another follower to be put in place, and the machine is stopped long enough for this purpose. The dog is, of course, drawn back with the hammer during this movement and is so held until another follower reaches it, the dog being kept swung outward by the action of the hardly compressed hay or other material as it passes by the dog-finger. It will be noticed that this finger is rounded or beveled at its extremity so that the compressed material passes by it more readily and there is less tendency of the dog to engage therewith, and, further, the spring at the back of the dog is not sufficiently strong to compel an engagement of the finger with the material, as it passes by, sufficient to drag the dog forward again and make a new signal; the retracting spring is so much stronger than this back spring that it prevents any such action. As soon, however, as another follower reaches the dog, the finger of the latter is at once forced into the recess in the follower and the signal is repeated.

In the power devices the cam is rotated the same as in my prior patent, and the sliding block is engaged by the projecting end of the sliding bar, thereby temporarily securing the block to the cam, and so winding the cable upon the cam to produce the required action of the compressing devices. At the half turn of the cam the block is released by the slid-

ing of the bar in the opposite direction under the influence of the cam, I, and the block then slips back on the cam until it is engaged by the other end of the sliding bar, which in the mean time has been projected. The action of the stop-arms in resisting the strain upon the sliding bar has already been explained, and also the effect of the particular construction of the sliding block and the attachment thereto of the cable. No further explanation of the operation of these devices is required.

Having thus described my invention, what I believe to be new, and desire to secure by Letters Patent, is—

1. In a baling press, the press-frame, in combination with a gong or bell at one side thereof, a hammer mounted in a bearing in which it is free to slide with reference to the bell, a retracting spring adapted to bring the hammer to strike upon the bell when compressed by the outward movement thereof, a dog pivoted to said hammer and provided at its outer end with a finger projecting inward therefrom, a follower provided with a recess or groove in the end thereof adapted to receive said finger and of sufficient length to allow a limited free movement of the latter therein and means for releasing the finger from the follower, substantially as described.

2. In a baling press, a press-frame, A, in combination with a plate, B, fastened to the under side of one of the frame-beams, a gong or bell, C, mounted on said plate, right angled bar D, carrying the hammer on one arm and with its other arm mounted loosely in a keeper, d' , fastened to the plate, a retracting spring, d^3 , a dog or catch, E, pivoted at one end to the said bar, D, and provided with the finger, e , at its outer end and inclined lug, e' , between said finger and the pivot, the inclined stop-block, e^3 , spring, e^2 , and follower, F, provided with recess or groove, f , in the end thereof, adapted to receive the said finger and of greater length than the width of the latter, substantially as described.

3. In a baling press, a revoluble grooved cam, in combination with a sliding block mounted thereon and having the power-cable

attached thereto, sliding bar adapted to engage said block by projecting one of its ends into the path of the latter, and a stop-arm arranged back of the respective extremities of the said sliding bar and adapted to resist the strain on the same when the engagement is made with the block, substantially as described.

4. In a baling press, the revoluble grooved cam, G, in combination with the sliding cable-block, K, mounted thereon, the sliding bar, H, mounted on said cam and carried therewith, cam, I, adapted to reciprocate said bar, and stop-arms, M, pivoted to the cam, G, and engaging at their outer ends with the respective ends of the sliding bar and on opposite sides thereof, substantially as described.

5. In a baling press, the revoluble grooved cam, G, in combination with the sliding cable-block, K, sliding bar, H, mounted on said cam and provided with notches, h^3 , on opposite edges thereof, stationary cam, I, and stop-arms, M, pivoted at one end to the movable cam and having their outer ends, m , rounded in circular form, and provided with tips, m' , adapted to engage with said notches in the bar, substantially as described.

6. In a baling press, a revoluble grooved cam, G, with the sliding cable-block, K, mounted thereon and substantially right-angled in shape, and the cable, J, secured to said block at the rear end thereof back of the engaging shoulder thereon, and the sliding bar, H, adapted to engage with said block, substantially as described.

7. In a baling press, the revoluble grooved cam, G, in combination with the sliding block, K, mounted in the groove of said cam, and provided with lip or tongue k^3 and cable, I, connected to the block at the rear end thereof, and running under the lip or tongue, k^3 , on the block said lip or tongue projecting forward over the cable and extending out over each side thereof, substantially as described.

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