

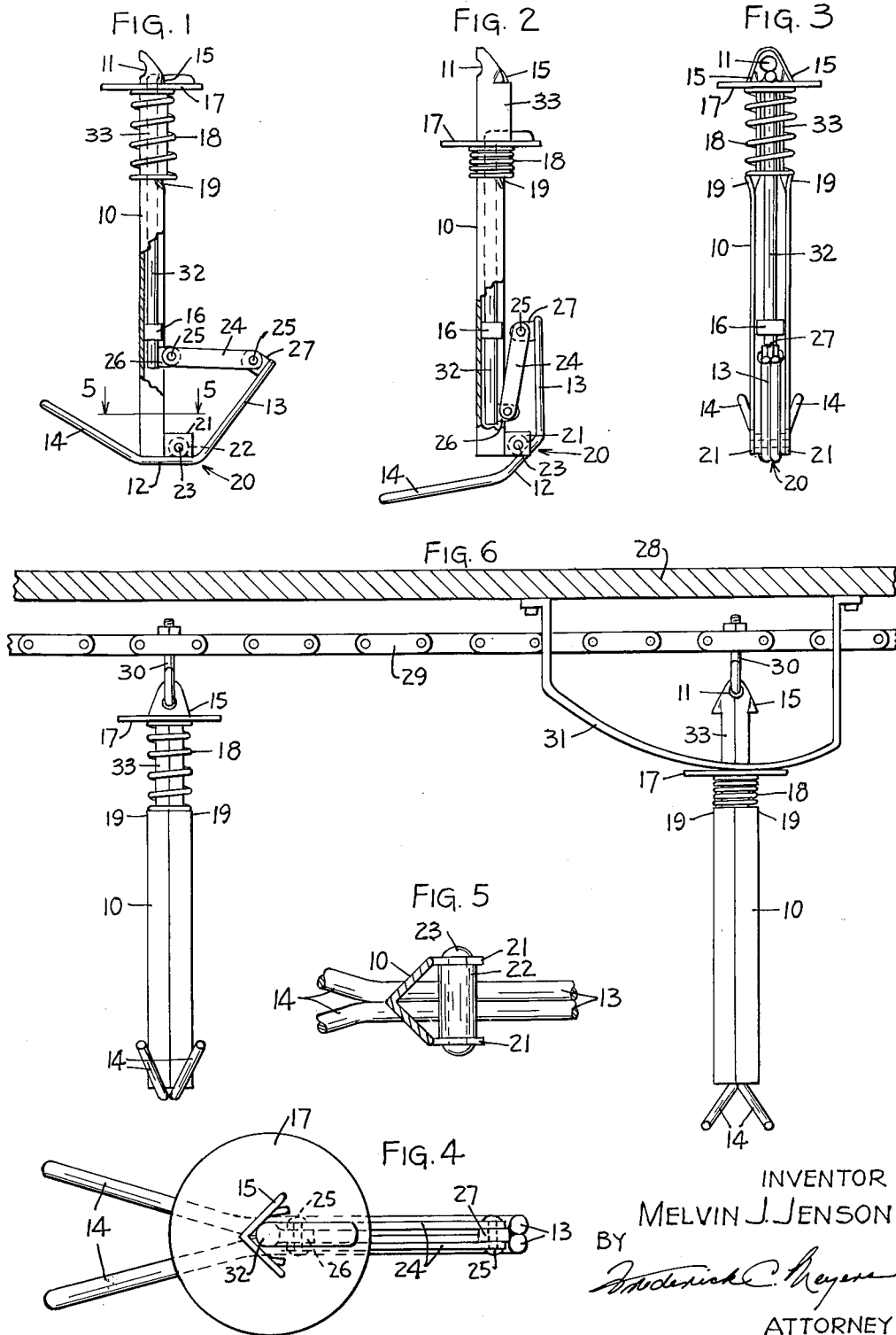
May 1, 1962

M. J. JENSEN

3,032,172

TRIPPING HOOK

Filed June 24, 1960



1

3,032,172

TRIPPING HOOK

Melvin J. Jensen, Barron, Wis., assignor of fifty percent to
Wallace H. Jerome, Barron, Wis.
Filed June 24, 1960, Ser. No. 38,481
4 Claims. (Cl. 198—177)

This invention relates to a hook for suspending and conveying articles and more particularly to a hook of the type described having a cam operated article disengaging means.

It is frequently desirable in carrying out various manufacturing or processing operations to provide a means for positively retaining an article, as for example, on a conveyor, until the same has arrived at a predetermined place and then automatically releasing the article from the device. To fulfill this need, various mechanical jaw devices have been provided. These, however, are generally relatively complex and expensive and present various difficulties.

It is, therefore, an object of the present invention to provide a simple and inexpensive hook-type hanger which will positively hold an article capable of being suspended by hooking and which will positively and automatically drop the article at a predetermined time and place.

It is also an object of this invention to provide an article supporting device of the type described which is of cam operated construction and which may be conveniently suspended from a traveling conveyor.

These and other objects and advantages of my invention will more fully appear from the following description of that embodiment thereof which is illustrated in the accompanying drawings wherein like reference numerals have been employed to refer to like parts.

In the drawings:

FIGURE 1 is a side elevation showing the hook in article engaging position and partially cut away to show how the article engaging portion of the prong member is locked against downward movement while an article is being held thereby.

FIGURE 2 is another side elevation showing the hook in article disengaging position and partially cut away to show how an article is automatically disengaged by the downward movement of the cam rod.

FIGURE 3 is a rear elevation of the device shown in FIGURE 1.

FIGURE 4 is an enlarged top plan view of the device shown in FIGURE 1 and shows the hidden portions in dotted line.

FIGURE 5 is an enlarged view taken along line 5—5 of FIGURE 1, showing the frame in section and the article engaging member and the lower frame end portion connected thereto in plan.

FIGURE 6 is a front elevation showing a pair of hooks being carried under an article disengaging camming shoe by a traveling chain.

With continued reference to the drawings:

An elongated frame 10, comprising a section of angle iron, terminates at its upper end in a fastening eye 11 and at its lower end in a pair of extending flanges 21. Near the upper end of frame 10, side portions 33 thereof are converged to provide a pair of upper flared frame edge portions defining cam plate retaining stops 15, and a pair of lower flared frame edge portions defining spring retaining stops 19. Cam plate 17 concentrically overrides converging side portions 33 and is adapted to be slidable therealong between stops 15 and 19 to permit compression and expansion of spring 18, which also concentrically overrides converged side portions 33 and is retained between stops 19 and cam plate 17.

A cam rod 32 is rigidly secured to cam plate 17 and depends downwardly therefrom through frame 10. Near

2

its lower end, cam rod 32 passes through cam rod guide 16, which is rigidly secured to the inner walls of frame 10, and terminates in a flanged portion 26 which pivotally carries one end of floating link 24 by means of a link pin 25. Link 24 then extends outwardly from cam rod 32 and is pivotally connected to the lever portion 13 of arcuate prong 12 by means of prong end flange 27 and link pin 25.

Arcuate prong 12 is rigidly connected, intermediate its ends, to bearing 22 which in turn is rotatably held between frame end flanges 21 by means of pin 23, thereby permitting prong 12 to pivot around the lower end of frame 10. The forward portion of prong 12 comprises a bifurcated article engaging portion 14 which arcs upwardly and forwardly in respect of the lower end of frame 10, and a lever portion 13 which arcs upwardly and rearwardly in respect thereof and pivotally engages the outer end of floating link 24.

By positioning floating link 24 in relation to cam rod 32 so that their long axes define an angle of about 90° or more, I am able to obviate any pivotal movement of prong 12 due to any load force exerted on article engaging portion 14 thereof. Moreover, the presence of this locking feature of my invention makes it possible to facilitate automatic article disengagement by permitting employment of a relatively weak spring member, since the latter element only need be relied upon to re-cock an unloaded hook and then support the weight of the cam rod and the camming plate. Thus the camming shoe 31 may depress cam plate 17 without imposing strain upon the device.

When it is desired to utilize my hooks, they may be suspended on a traveling chain 29 as shown in FIGURE 6. Then at that point along the travel of chain 29 where it is desired to discharge the articles being conveyed, a camming shoe 31 is rigidly secured to a frame or supporting structure 28 such as is shown in fragment in FIGURE 6 so as to successively pass over camming plate 17 of each hook.

As each loaded hook passes under camming shoe 31, plate 17 will be forced downwardly compressing spring 18 and shifting cam rod 32 longitudinally downwardly. Floating link 24 which is connected to cam rod 32 will then rock downwardly and inwardly pulling lever portion 13 of prong 12 toward frame 10 and simultaneously swinging article engaging portion 14. As the terminal end of article engaging portion 14 of prong 12 swings past the lower end of frame 10, the weight of the article being carried thereby will cause the same to drop off of prong 12. Then as the hook assembly passes out from under camming shoe 31, the tension of spring 18 will again elevate cam rod 32, rocking link 24 up and out thereby pivoting prong 12 forwardly around the lower end of frame 10 to return article engaging portion 14 into forwardly upwardly arced position at which time it is again ready to be loaded with an article.

From the foregoing, it may be seen that the device of my invention provides a new and useful hooking device of simple and economical construction, and while I have shown one specific embodiment of my invention in the foregoing description of the accompanying drawings, that embodiment is given only by way of illustration and I am not limited thereto.

What I claim is:

1. An automatically tripped hook comprising an elongated frame having a fastening means at the upper end of said frame for suspending said hook, an elongated arcuate member pivotally connected intermediate its ends to the lower end of said frame, said arcuate member having a forwardly and upwardly extending article engaging portion and a rearwardly and upwardly extending lever portion, a vertically disposed cam rod carried by

3

said frame and having an upper cam engaging portion, said cam rod being limitedly longitudinally shiftable with respect to the ends of said frame, means mounted on said frame urging said cam rod to its upper shiftable limit, and a floating link pivotally connected at one end to the lower end of said cam rod and at the other end to the end of said lever portion and defining with its long axis and the long axis of said cam rod an angle of about 90° or more when said cam rod lies at its upper shiftable limit.

2. An automatically tripped hook comprising an elongated frame having a fastening means at the upper end of said frame for suspending said hook, an arcuate prong member pivotally connected intermediate its ends to the lower end of said frame, said prong having a forwardly and upwardly extending bifurcated article engaging portion and a rearwardly and upwardly extending lever portion, a vertically disposed cam rod carried by said frame and having an upper cam engaging portion, said cam rod being limitedly longitudinally shiftable between the ends of said frame, spring means urging said cam rod to its upper shiftable limit and a floating link pivotally connected at one end to the lower end of said cam rod and at the other end to the end of said lever portion and defining with its long axis and the long axis of said cam rod an angle of about 90° or more when said cam rod lies at its upper shiftable limit.

3. An automatically tripped hook comprising an elongated frame having upper and lower ends, a prong member pivotally connected intermediate its ends to the lower end of said frame and arcing upwardly therearound to provide a forward article engaging portion and a rearward lever portion, a longitudinally shiftable rod member carried by said frame in upstanding and spaced relation to the apex portion of said frame, means

4

mounted on said frame urging said rod member toward said upper frame end, and a connecting member having one end pivotally connected to the lever portion of said prong and the other end pivotally connected to the lower end of said rod member and extending outwardly therefrom to define with said rod member an angle of about 90° or more when said rod member lies at its uppermost position.

4. An automatically tripped hook comprising an elongated frame having a fastening means at the upper end of said frame, an arcuate prong member pivotally connected intermediate its ends to the lower end of said frame, said prong member having a forwardly upwardly extending bifurcated article engaging portion and a rearwardly and upwardly extending lever portion, a vertical cam rod shiftable carried by said frame and having an upper cam engaging portion, stop means associated with said cam rod, spring means urging said cam rod upwardly against said stop means, and an elongated floating link pivotally connected at one end to the lower end of said cam rod and at the other end to the end of said lever portion and defining with its long axis and the long axis of said cam rod an angle of about 90° or more when said cam rod lies upwardly against said stop means.

References Cited in the file of this patent

UNITED STATES PATENTS

30	1,781,655	Cowley et al. -----	Nov. 11, 1930
	2,229,002	Cowey -----	Jan. 14, 1941
	2,309,590	Honderich -----	Jan. 26, 1943

FOREIGN PATENTS

35	822,071	Germany -----	Nov. 22, 1951
----	---------	---------------	---------------