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A Stalk-Clearing Attachment for Combine Corn Heads

C. B. Richey

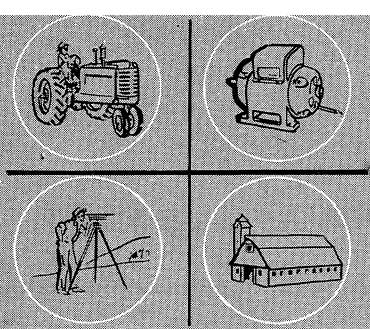
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A Stalk-Clearing Attachment for Combine Corn Heads

C. B. Richey, Extension Agricultural Engineer

Because of the southern corn leaf blight and its accompanying stalk rots, lodging of corn is expected to be a severe harvest problem in Indiana this year. Lodging means less yield and more clogging, particularly if there are many stalks which break off as they are gathered. However, a simple device, developed in 1969 by Bob Webster and his father Paul of Coatesville, may prove helpful to farmers having lodging problems, and will add a safety factor by reducing the need to unclog by hand.

The device resembles a combine reel except that the bats are replaced by a paddle wheel for each row, with flexible rubber paddles sweeping the upper portion of the throat. The loose stalks that gather above the upper ends of the snapping rolls and cause clogging are swept into the auger by arms mounted on a slowly-rotating cross-shaft.

To assist others having combine corn harvest clogging problems, the accompanying sketches, along with a parts and stock list, have been prepared to illustrate the Websters' basic device, although the details differ. Obviously, field experience with this attachment is limited. But its simplicity and success for the Websters' last year might make it worth trying in critical situations.

Because of variations in heads, details for attaching the post angles, braces and drive sprocket are omitted, as are many dimensions. However, with the information furnished, a competent mechanic should be able to adapt this design to most corn heads.

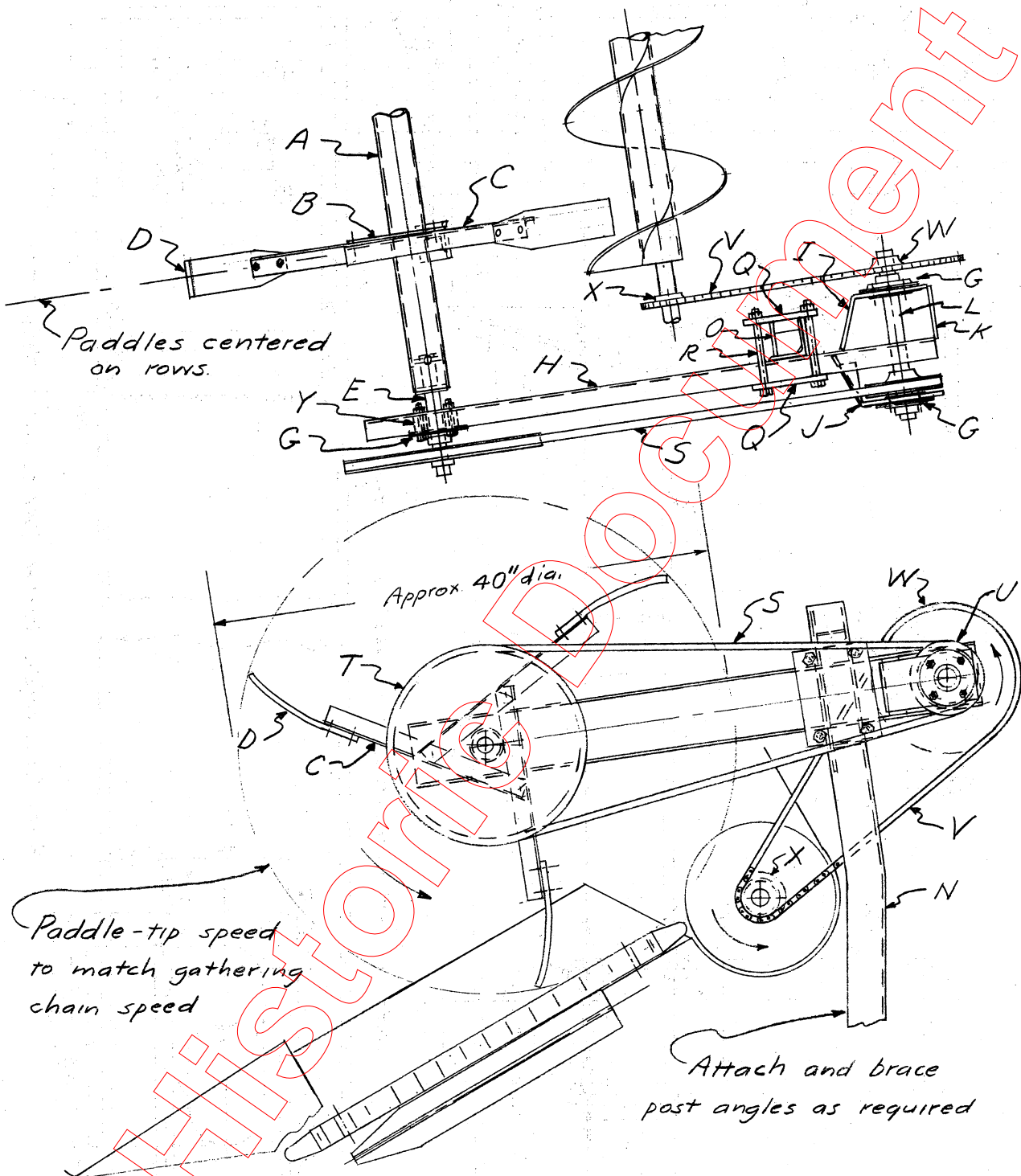
Since trial and error will be necessary to determine the best position, the arm channels (H) are shown clamped to the post angles (N) to allow maximum flexibility for adjusting the paddle assembly. Once this position is found, additional bolts and braces can be added to keep the paddle assembly in position, if required. Note that the clamping arrangement allows adjustment of both chain tension and paddle assembly position. Belt tension is not affected by moving the arm channels (H) but it can be adjusted by slots at the paddle shaft bearing mountings.

The inner corners of the paddles (D) should be trimmed to reduce any tendency to carry stalks up and over. If necessary, the paddle angles (C) can be bent backward to reduce stalk wrapping. The optimum degree of paddle wiping on gathering chains and augers will have to be determined by experience.

The paddle assembly should not be so far forward that it interferes with standing stalks as they are drawn through the rolls. Some late-design corn heads incorporate a full-length beater in front of the auger, which helps move ears back to the auger and may also help clear the stalks. If the paddle attachment were to be tried on these machines, it would have to be located farther forward, and the paddle wheels would probably have to be of considerably smaller diameter to avoid interference with the entry of standing stalks. The belt and chain should be covered with a metal shield as soon as properly adjusted. Remember to turn power off or keep hands off when working around machinery.

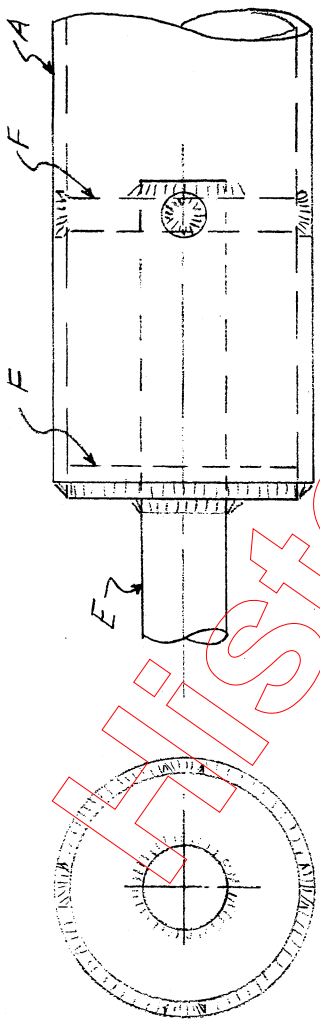
PARTS FOR A STALK-CLEARING ATTACHMENT FOR COMBINE CORN HEADS

Designation	Number required	Part	Description
A	1	Paddle pipe	2 1/2" standard pipe
B	As req.	Paddle plate	5/16" x 8" stock
C	As req.	Paddle angle	1 1/2" x 1 1/2" x 3/16" angle
D	As req.	Paddle	1/2" x 3" x 10" (approx.) rubberized fabric from corn picker husking bed ear forwarders or cut from discarded truck tire carcasses.
E	2	Paddle pipe shaft	1 1/4" diameter cold rolled shafting
F	4	Shaft rings	1/2" thick plate
G	4	Sealed ball bearings for 1 1/4" shaft, complete with 4-bolt flanges	
H	2	Arm channel	5" 6.7 lbs./ft. channel
I	1	Inner bracket	3/8" x 4" bar
J	1	Outer bracket	3/8" x 4" bar
K	1	Tie plate	1/4" x 4" bar
L	1	Jack shaft	1 1/4" diameter cold rolled shafting
M	2	Gusset	1/4" plate
N	2	Post angle	3" x 3" x 1/4" angle
O	2	Filler	1/4" x 2 3/4" bar
P	4	Filler gusset	1/4" x 2"
Q	4	Clamp plate	1/2" x 6" bar
R	8	Clamp bolts	1/2" x 7" machine bolts
S	1	V-Belt	"B" section
T	1	Pulley-paddle shaft	Approximately 16" outside diameter for "B" belt to go on 1 1/4" diameter shaft
U	1	Pulley-jack shaft	Approximately 6" outside diameter for "B" belt to go on 1 1/4" diameter shaft
V	1	Roller chain	#50 adequate
W	1	Sprocket-jackshaft	For 1 1/4" diameter shaft
X	1	Sprocket-drive to fit auger shaft.	Sprocket and pulley drive ratios should match paddle tip speed to gathering chain speed.
Y	8	Spacer bushing	1" outside diameter x 13/32" inside diameter x 1 1/2" long
	4	Keys	Not shown
	1	Belt & chain shield	Not shown
	2	Post braces	Not shown



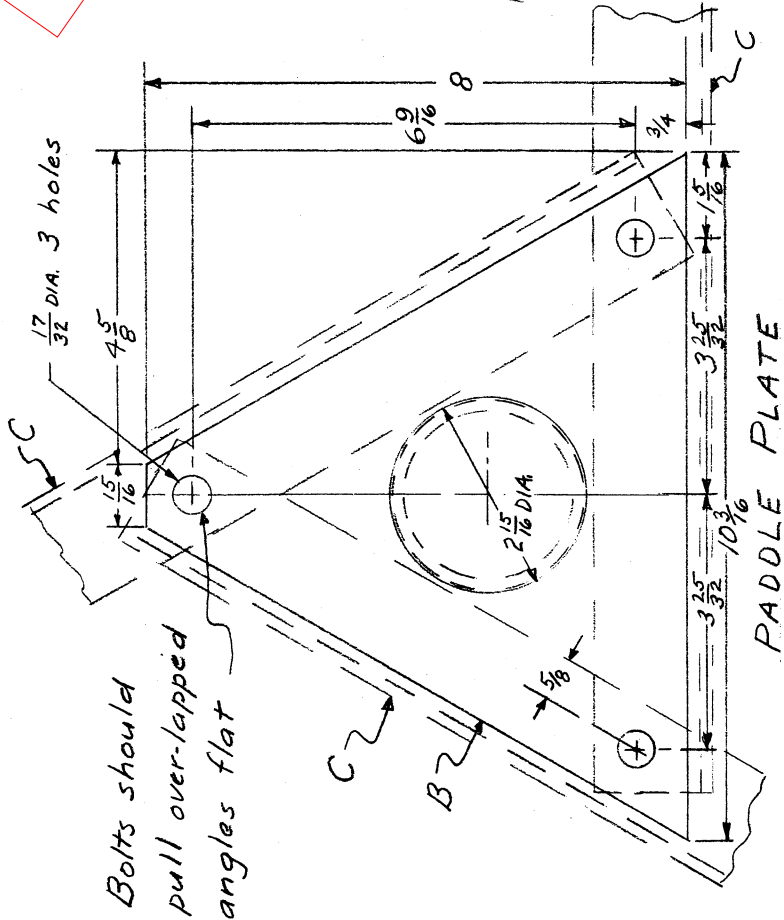
STALK-CLEARING ATTACHMENT FOR COMBINE CORN HEADS

BY: _____ DATE: _____ SUBJECT: _____ SHEET NO. _____ OF _____
 CHKD. BY: _____ DATE: _____ JOB NO. _____



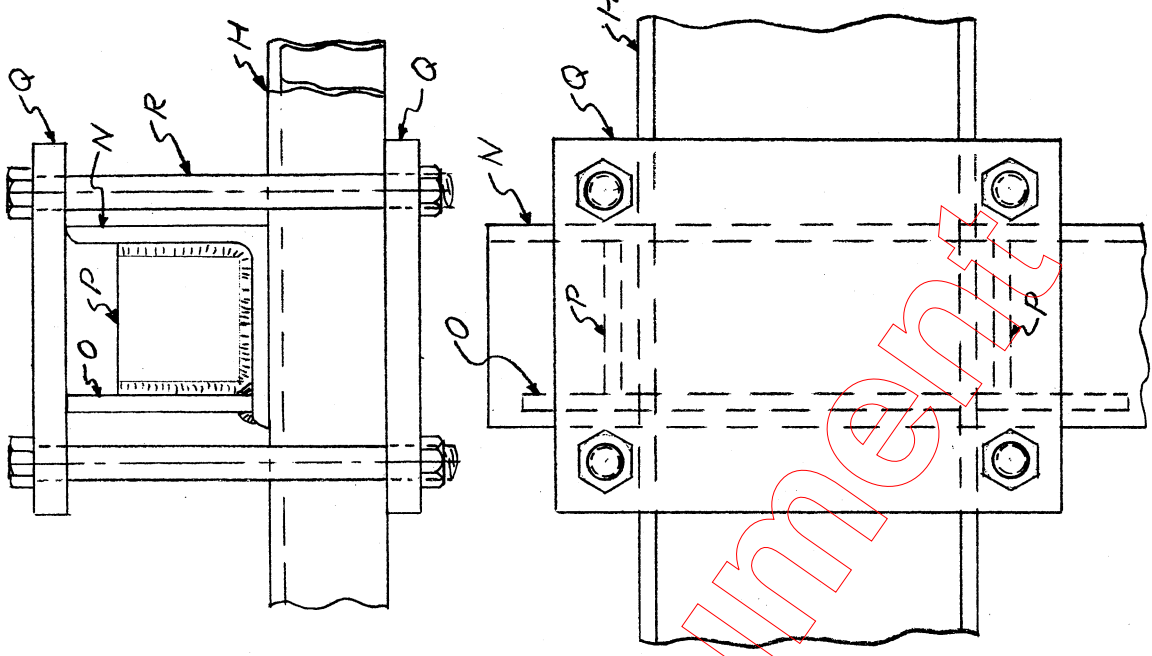
Weld rings to shaft before welding assembly into pipe.

PADDLE PIPE AND END SHAFT



Bolts should pull over-lapped angles flat

PADDLE PLATE



POST ANGLE AND CLAMP PLATES

