

CPC**COOPERATIVE PATENT CLASSIFICATION****A01F**

PROCESSING OF HARVESTED PRODUCE; HAY OR STRAW PRESSES; DEVICES FOR STORING AGRICULTURAL OR HORTICULTURAL PRODUCE (devices for topping or skinning onions or flower bulbs [A23N 15/08](#))

Guidance heading:

A01F 1/00 **Stationary apparatus or hand tools for forming or binding straw, hay or the like into bundles** (baling apparatus or presses [A01F 13/00](#), [A01F 15/00](#); mobile binders for use in the field [A01D 37/00](#), [A01D 39/00](#))

[A01F 1/02](#) . Hand-operated tools

[A01F 1/04](#) . Fastening or tying devices

[A01F 1/06](#) . Ties for bundles

A01F 3/00 **Hand-operated implements for cutting-up straw, hay or the like** (mechanically-driven straw cutters [A01F 29/00](#); cutting in general [B26](#))

Guidance heading: Threshing

A01F 5/00 **Hand-operated implements for threshing**

A01F 7/00 **Threshing apparatus**

[A01F 7/02](#) . with rotating tools (threshing cylinders or concaves [A01F 12/18](#))

[A01F 7/04](#) . . with axles transverse to the feeding direction

[A01F 7/06](#) . . with axles in line with the feeding direction; { Axial threshing machines }

[A01F 7/062](#) . . . { with a rotating cage }

[A01F 7/065](#) . . . { with cage sweep mechanisms }

[A01F 7/067](#) . . . { with material-flow influencing means }

[A01F 7/70](#) . with flails

A01F 11/00 **Threshing apparatus specially adapted for maize; Threshing apparatus specially adapted for particular crops other than cereals**

[A01F 11/02](#) . for flax

[A01F 11/04](#) . for clover or like seeds, e.g. lucerne

[A01F 11/06](#) . for maize, e.g. removing kernels from cobs

- A01F 11/08 . for palm fruit, e.g. releasing the fruit from the stalk
- A01F 12/00** **Parts or details of threshing apparatus** (devices, other than safety devices for feeders, for protecting human beings [A01D 75/20](#), [A01F 21/00](#))
 - A01F 12/10 . Feeders
 - A01F 12/12 .. without band-cutters
 - A01F 12/14 .. with band-cutters
 - A01F 12/16 .. Safety devices
 - A01F 12/18 . Threshing devices
 - A01F 12/181 .. {Adjustable threshing mechanisms }
 - A01F 12/182 .. {Stripper beaters after the threshing drum }
 - A01F 12/184 .. {Cleaning means }
 - A01F 12/185 .. {Mounting means }
 - A01F 12/187 .. {Vibratory threshing mechanisms }
 - A01F 12/20 .. Threshing cylinders with ribs
 - A01F 12/22 .. Threshing cylinders with teeth
 - A01F 12/24 .. One-part threshing concaves
 - A01F 12/26 .. Multi-part threshing concaves
 - A01F 12/28 .. Devices for adjusting the concaves
 - A01F 12/30 . Straw separators {, i.e. straw walkers, for separating residual grain from the straw (grain cleaning [A01F 12/44](#)) }
 - A01F 12/305 .. {combined with additional grain extracting means }
 - A01F 12/32 .. with shaker screens or sieves
 - A01F 12/34 ... Sieve elements; Linings for shakers
 - A01F 12/36 Sieve elements specially adapted for handling short straw
 - A01F 12/38 .. with juxtaposed and independently-moved shaker bars or the like
 - A01F 12/385 .. with endless straw-conveying surface
 - A01F 12/39 .. with straw carriers in the form of rotors or drums
 - A01F 12/395 .. Conical or cylindrical straw separators with internal working surface
 - A01F 12/40 . Arrangements of straw crushers or cutters
 - A01F 12/42 . Apparatus for removing awns from the grain
 - A01F 12/44 . Grain cleaners; Grain separators
 - A01F 12/442 .. {Rotary cleaners }
 - A01F 12/444 .. {Fanning means }
 - A01F 12/446 .. {Sieving means }
 - A01F 12/448 ... {Sieve adjusting means }
 - A01F 12/46 . Mechanical grain conveyers

- A01F 12/48 . Air conduits or blowers for grain
- A01F 12/50 . Sack-filling devices; Counting or weighing devices
- A01F 12/52 . Arrangements for returning unthreshed grain to the threshing device
- A01F 12/54 . Arrangements for collecting or removing dust
- A01F 12/56 . Driving mechanisms for the threshing parts
- A01F 12/58 . Control devices; Brakes; Bearings
- A01F 12/60 . Grain tanks { (for combines [A01D 41/1208](#)) }

Guidance heading: **Baling straw or the like** (baling presses in general, briquetting presses [B30B](#))

A01F 13/00 Hand-operated baling apparatus

A01F 15/00 Baling presses for straw, hay or the like { making compressed stacks [A01D 85/00](#) }

- A01F 15/005 . {for conditioning bales, e.g. rebaling }
- A01F 15/02 . with press-boxes { ([A01F 15/046](#) takes precedence) }
- A01F 15/04 . Plunger presses
- A01F 15/042 .. {Plungers }
- A01F 15/044 .. {with open pressing chambers }
- A01F 15/046 .. {with press-boxes }
- A01F 15/06 .. with double-action plunger
- A01F 15/07 . Rotobalers, i.e. machines for forming cylindrical bales by winding and pressing
- A01F 15/0705 .. {Arrangements for continuous operation }
- A01F 15/071 .. {Wrapping devices (tying devices [A01F 15/141](#)) }
- A01F 15/0715 ... {Wrapping the bale in the press chamber before opening said chamber }
- A01F 15/0765 .. {Rolling bales on the ground }
- A01F 15/08 . Details
- A01F 15/0816 .. {Devices for dispensing chemicals in bales during formation }
- A01F 15/0825 .. {Regulating or controlling density or shape of the bale }
- A01F 15/0833 ... {for round balers }
- A01F 15/0841 .. {Drives for balers }
- A01F 15/085 ... {for round balers }
- A01F 15/0858 ... {for the tying devices or needles }
- A01F 15/0875 .. {Discharge devices }
- A01F 15/0883 ... {for round balers }

- A01F 15/10 . . Feeding devices for the crop material, {e.g. [precompression devices \(pick-ups A01D 89/00\)](#) }
- A01F 15/101 . . . {Feeding at right angles to the compression stroke ([A01F 15/106](#) takes precedence) }
- A01F 15/106 . . . {for round balers }
- A01F 15/12 . . Feeding devices for the ties
- A01F 15/14 . . Tying devices specially adapted for baling presses { [independent binders A01D 39/00](#) }
- A01F 15/141 . . . {for round balers ([wrapping devices A01F 15/071](#)) }
- A01F 15/145 . . . {Twine knotters }
- A01F 15/146 . . . {Wire twisters }
- A01F 15/148 . . . {Monitoring the tying, e.g. mistie detectors }
- A01F 15/16 . . Division blocks
- A01F 15/18 . . Endless belts, rolls or the like

Guidance heading: **Accessories for threshing machines or baling presses** ([loaders for sheaves, stacks or bales A01D 87/12](#); [trailers B62D 63/06](#))

A01F 17/00 Straw conveyers for threshing machines or baling presses

- A01F 17/02 . Mechanical conveyers
- A01F 17/04 . Pneumatic conveyers

A01F 19/00 Devices for securing threshing machines or baling presses to the ground, e.g. for compensating for unevenness of the ground

A01F 21/00 Devices for protecting human beings for threshing machines or baling presses (in combines [A01D 75/20](#); for feeders for threshing apparatus [A01F 12/16](#))

A01F 25/00 Storing agricultural or horticultural produce; Hanging-up harvested fruit ([maturing fruit A23N 15/06](#); arrangements in barns for preparatory treatment of tobacco [A24B 1/02](#); packing or storing hops [C12C 3/04](#))

- A01F 25/02 . Clamps; Pits
- A01F 25/04 . Stacks, ricks or the like
- A01F 25/045 . . {Distributing arrangements in haystacks }
- A01F 25/08 . . Ventilating means
- A01F 25/10 . . Shelters; {Open sheds or similar structures }
- A01F 25/12 . Racks for drying purposes
- A01F 25/125 . . {Transport devices for hay racks }
- A01F 25/13 . Coverings ([A01F 25/14](#) takes precedence)
- A01F 25/14 . Containers specially adapted for storing

- A01F 25/16 . Arrangements in forage silos
- A01F 25/163 .. {in tower silos }
- A01F 25/166 .. {in trench silos }
- A01F 25/18 .. Loading or distributing arrangements
- A01F 25/183 ... {Loading arrangements }
- A01F 25/186 ... {Distributing arrangements (for haystacks [A01F 25/045](#)) }
- A01F 25/20 .. Unloading arrangements
- A01F 25/2009 ... {Top unloading units for tower silos }
- A01F 25/2018 ... {Bottom unloading units for tower silos }
- A01F 25/2027 ... {for trench silos }
- A01F 25/2036 {Cutting or handling arrangements for silage blocks }
- A01F 25/22 .. Ventilating arrangements

A01F 29/00 **Cutting apparatus specially adapted for cutting hay, straw or the like** (mowers combined with means for cutting up the mown crop [A01D 43/08](#))

- A01F 29/005 . {for disintegrating and cutting up bales of hay, straw or fodder (for unrolling round bales [A01D 87/127](#)) }
- A01F 29/01 . specially adapted for being mounted on or drawn by a tractor, e.g. field choppers
- A01F 29/02 . having rotating knives with their cutting edges in a plane perpendicular to their rotational axis
- A01F 29/025 .. {with feeding direction parallel to axis }
- A01F 29/04 .. with feeding direction transverse to axis
- A01F 29/06 . having rotating knives with their cutting edges on a cylinder surface, e.g. of the helical-type
- A01F 29/08 . having reciprocating knives
- A01F 29/09 . Details
- A01F 29/095 .. { Mounting or adjusting of knives }
- A01F 29/10 .. Feeding devices
- A01F 29/12 .. Discharge means (loaders for hay or like field crop having blowers [A01D 87/10](#))
- A01F 29/14 .. Drives
- A01F 29/16 .. Safety devices, e.g. emergency brake arrangements
- A01F 29/18 ... for protecting human beings
- A01F 29/22 .. Arrangement of knife sharpening devices

Guidance heading:

A01F 2009/00 **Threshing machines with flails; Threshing devices with flails for combines**

Guidance heading:

A01F 2012/00	Parts or details of threshing apparatus (devices, other than safety devices for feeders, for protecting human beings A01D 75/20 , A01F 21/00)
A01F 2012/18	. Threshing devices
A01F 2012/188	.. Rethreshing devices
A01F 2015/00	Baling presses for straw, hay or the like { making compressed stacks A01D 85/00 }
A01F 2015/04	. Plunger presses
A01F 2015/048	.. Anti-return systems for the material in the pressing chamber when the plunger moves backwards
A01F 2015/07	. Rotobalers, i.e. machines for forming cylindrical bales by winding and pressing
A01F 2015/071	.. {Wrapping devices (tying devices A01F 15/141) }
A01F 2015/0715	... {Wrapping the bale in the press chamber before opening said chamber }
A01F 2015/072 Braking means for the film roll in balers which wrap the bale before opening the pressing chamber in order to stretch the film while wrapping.
A01F 2015/0725	... Film dispensers for film rollers in a satellite type wrapper, e.g. holding and tensioning means for the film roller (the rotating arm itself A01F 2015/073)
A01F 2015/073	... Features related to the horizontal rotating arm of a wrapping device of the satellite type (features of film dispensers A01F 2015/0725)
A01F 2015/0735	... Combined machines that include a press bale and a wrapping device in a further step, e.g. turning table, not in the same closed pressing chamber
A01F 2015/074	... Mechanisms for discharging a bale from the wrapping machine.
A01F 2015/0745	... Special features of the wrapping material for wrapping the bale.
A01F 2015/075	... Opening the pressing chamber before wrapping, and then wrapping by rotating the bale without displacing it out of the open pressing chamber
A01F 2015/0755	... Configuration of support surfaces which can move in order to rotate a bale around at least one axis while wrapping
A01F 2015/076	... Wrapping device incorporating sensors
A01F 2015/077	.. Pressing chamber formed by belts and rollers.
A01F 2015/0775	.. Pressing chambers with fix volume
A01F 2015/078	.. Pressing chamber formed exclusively by flexible elements, e.g. belts
A01F 2015/0785	.. Latching or locking means for the tailgate of the rotobaler.
A01F 2015/079	.. Sledge for rollers of the pressing chamber.
A01F 2015/0795	.. Pressing chamber with variable volume
A01F 2015/08	. Details
A01F 2015/0808	.. Balers incorporate an inclinometer
A01F 2015/0841	.. {Drives for balers }
A01F 2015/0858	... {for the tying devices or needles }
A01F 2015/0866 Clutching means for the knotting process; Bale length measuring means for triggering the clutching mean
A01F 2015/0875	.. {Discharge devices }
A01F 2015/0891	... Weighing the finished bale before falling to ground

- A01F 2015/10 .. Feeding devices for the crop material, {e.g. [precompression devices \(pick-ups A01D 89/00\)](#) }
- A01F 2015/101 ... {[Feeding at right angles to the compression stroke \(A01F 15/106 takes precedence\)](#) }
- [A01F 2015/102](#) the pressing chamber is fed from the bottom side
- [A01F 2015/103](#) the pressing chamber is fed from a lateral side
- [A01F 2015/105](#) the pressing chamber is fed from the top side
- [A01F 2015/107](#) ... Means for withdrawing knives, rotor or walls of the feeding chamber in case of plugging or congestion
- [A01F 2015/108](#) ... Cutting devices comprising cutter and counter-cutter
- A01F 2015/14 .. Tying devices specially adapted for baling presses { [independent binders A01D 39/00](#) }
- A01F 2015/141 ... {[for round balers \(wrapping devices A01F 15/071\)](#) }
- [A01F 2015/143](#) Guiding fingers for twines in order to avoid the slippage of twines to the sides of the bale when tying it
- A01F 2015/18 .. Endless belts, rolls or the like
- [A01F 2015/183](#) ... Constructional details of belts of the press chamber
- [A01F 2015/186](#) ... Constructional details of rollers or the bearings of the rollers of the press chamber

- A01F 2025/00 **Storing agricultural or horticultural produce; Hanging-up harvested fruit** ([maturing fruit A23N 15/06](#); [arrangements in barns for preparatory treatment of tobacco A24B 1/02](#); [packing or storing hops C12C 3/04](#))**

- A01F 2025/14 . Containers specially adapted for storing
- [A01F 2025/142](#) .. Machinery for making sausage-like groups of bales by wrapping or bagging ([for bagging of loose material A01F 2025/145](#))
- [A01F 2025/145](#) .. Bagging machines for loose materials making some kind of "sausage" on the field ([making sausage-like groups of bales A01F 2025/142](#))
- [A01F 2025/147](#) .. the containers are specially adapted for storing or drying the products in vacuum

- A01F 2025/16 . Arrangements in forage silos
- A01F 2025/20 .. Unloading arrangements
- A01F 2025/2027 ... {[for trench silos](#) }
- [A01F 2025/2045](#) Unloading arrangements including a conveyor belt for transferring the material to a hopper
- [A01F 2025/2054](#) Machinery for cutting successive parallel layers of material in a trench silo ([for shredding A01F 2025/2063](#))
- [A01F 2025/2063](#) Machinery for shredding successive parallel layers of material in a trench silo
- [A01F 2025/2072](#) Scoops with an extracting tool mounted inside or in the vicinity of said scoop
- [A01F 2025/2081](#) Hydraulic features of the trench silos unloading devices, e.g. hydraulic circuits
- [A01F 2025/209](#) Manual portable tools for unloading a silo, e.g. for cutting out a block