

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](#))

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)

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](#))}

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

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

- A01F 2009/00** **Threshing machines with flails; Threshing devices with flails for combines**
- 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](#)

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Manual portable tools for unloading a silo, e.g. for cutting out a block