Poultry House Cleanout Machine

manure pickup device designed for use in obstruction-free area under strings of poultry cages shows high efficiency

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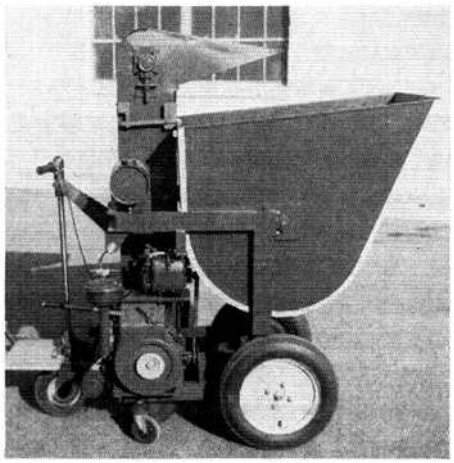
A self-propelled machine—capable of picking up 0.5 cubic yard of poultry manure in 3–4 minutes—has been developed for use in poultry houses where individual and colony cages confine laying chickens. The cages have wire tops, walls, and floors. The wire floor—usually of welded wire of 1″×2″ mesh spacing—is about 3′ above ground level. Eggs are caught on the wire floor and roll to the egg tray at the front of the cage. Defecation passes through the wire mesh and accumulates in a windrow on the ground. This accumulated manure is a serious sanitation problem, as it is a good breeding medium for the common housefly.

Labor studies in Los Angeles County have shown that cleanout by wheelbarrow and shovel, if done once or twice a year, is done in 1–2 man-minutes per bird-year. When done weekly, it takes 5–7 man-minutes per bird-year. Even so, weekly cleanout gives satisfactory fly control comparable with control techniques such as spraying. However, manure cleanout is a disagreeable chore.

A machine—developed to remove manure from the floor of poultry houses—has an auger of 9″ diameter with a floor-scraping shroud. The auger conveys the manure windrow from under the cages into a paddle elevator. It is then raised to the top and thrown by centrifugal force into a half-cubic-yard bucket. The elevator and auger are integrally connected so that peripheral speeds at the junction of auger and elevator are equal, both rotate at 250 revolutions per minute. Several of the plywood paddles of the elevator were covered with Teflon plastic to reduce adhesion and promote self-cleaning, but proved unnecessary.



Manure auger cart from engine side.

Self-propelled

The machine is propelled by an engine equipped with an infinitely variable hydraulic transmission driving a cut-down automobile differential. Direction of travel and speed are controlled by a motorcycle handlegrip on the steering bar. The parking brakes of the differential have been utilized by equipping each with a braking arm; thus, it is possible to pivot on one wheel and to prevent power from going to a slipping wheel.

The auger and elevator operate near the ground. They may be lifted 6″ above the ground for transport and traveling. The lifting is accomplished by a 1.5 ton automobile jack on the rear steering caster. In essence, the whole cart is tilted forward to elevate the auger.

The bucket is hinged at its center of gravity. Unlatching allows easy dumping. The five horsepower gasoline engine provides sufficient power for propulsion and manure pickup, plus driving up a ramp when loaded to dump directly into storage or into a transport vehicle. The noise of operation bothers chickens only on the first pass through. Subsequent cleanings are unnoticed.

The auger works best on a concrete floor, where it can clean right down to the surface. The machine can make a pass over manure to take off only the top part—thus making it possible to use it in a dirt-floored house. However, under this operation some manure pulled out from under the cages is not elevated but is left near the aisle.

One-half cubic yard of manure—equal to seven bird-years or about 2,500 bird-days, on the basis of one hen excreting 2.0 cubic feet per year—can be picked up in 3–4 minutes. However, mechanized cleanout from under cages is possible only in those poultry houses where a pass through is not obstructed by posts. The time required to transport and unload depends on the distance of haul to dumping facilities. The extreme mobility and maneuverability of the cleanout machine tends to keep lost time to a minimum.

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E. D. Baird and E. E. Shephard, Farm Advisors, Los Angeles County, University of California, conducted the labor studies on cleanout by wheelbarrow and shovel.

Machine cleaning up windrow of droppings.

Closeup view of cleanup.