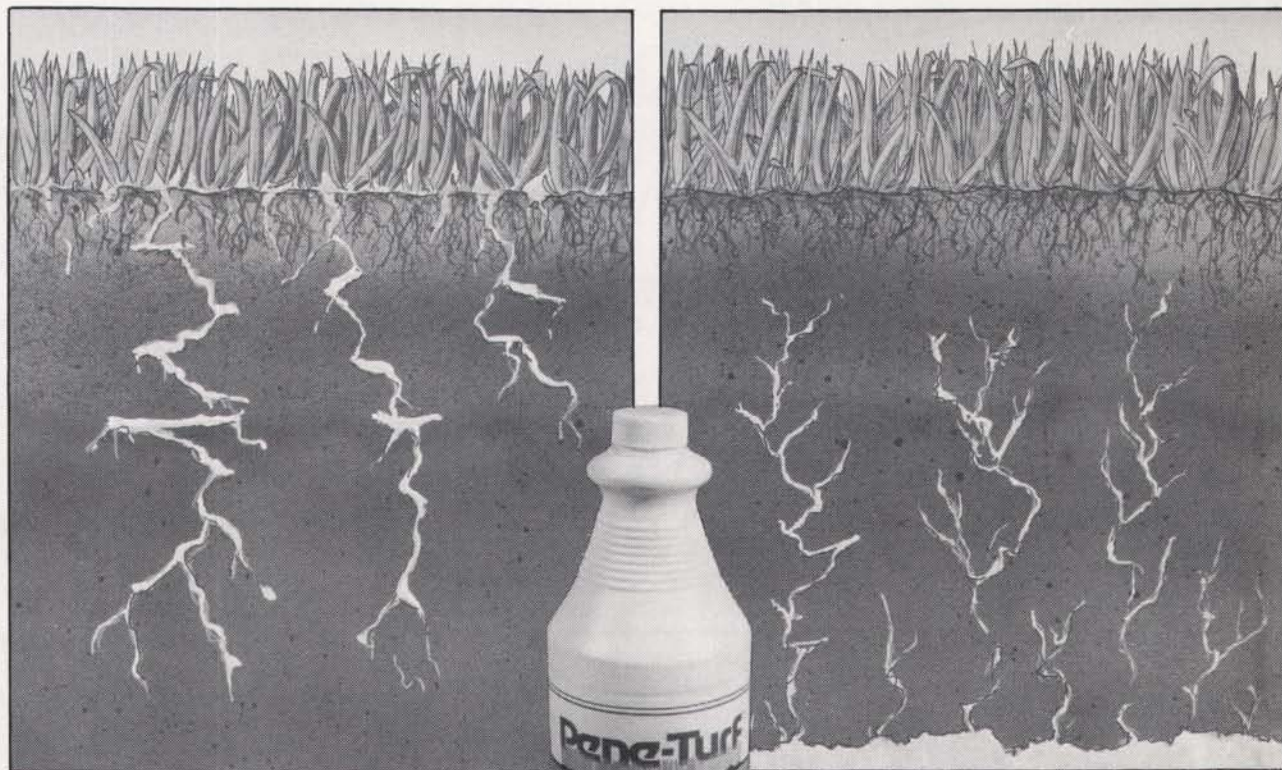


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More Efficient Mowers
continued from page 20

By reinventing the tractor, mower manufacturers opened up a floodgate of new products. By attaching more cutting units to the "turf tractor" they could increase mowing rates from ten acres per day to more than 30 acres per day without changing the quality of cut. All types of mowing units could be attached to the tractor. Rotary and flail mowers were offered as options to reel units.

In the midst of this flood of technology, two problems surfaced. The mechanical drive from the tractor to each cutting unit was a series of gearboxes, pulleys, belts and drives. This linkage was sometimes awkward and added weight to the mower.

The first answer came in 1974 from a British company which had just begun to export reel mowers to the U.S. Ransomes had replaced all these parts with three flexible hoses to each cutting unit. A pump, driven by the tractor, circulated hydraulic fluid through these hoses to a small motor on each cutting unit. All the previous gears, pulleys, belts and drives were eliminated, along with their weight.

By reinventing the tractor, mower manufacturers opened up a floodgate of new products.

The second problem was more something to live with than something to correct. Engineers determined it took twice as much power to operate a rotary or flail unit as it did a reel. To provide more power for rotary tractor mowers in the midst of the energy crisis, manufacturers started to build units with diesel engines. Diesel fuel at the time was less expensive. The other benefit, which really has had a more lasting impact on the mower market, is that the average diesel engine will last nearly three times longer than a similar horsepower gasoline engine.

The turf tractor has continued to grow in size and cost. Seven-gang reel tractors can mow nearly ten acres per hour and cost more than \$45,000. Rotary and flail versions are in the same ballpark.

While the turf tractor was getting bigger and bigger, the walk-behind rotary and the smaller riding rotaries were rapidly gaining reputations for efficiency. In both cases, the key was maneuverability.

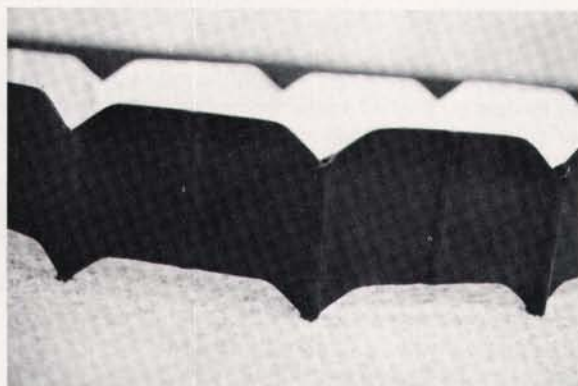
By adding a clutch or brake to both wheels of walk-behind rotaries, manufacturers were able to let cutting decks expand to 52 inches while still maintaining maneuverability. The simplicity of the mower, and the optional

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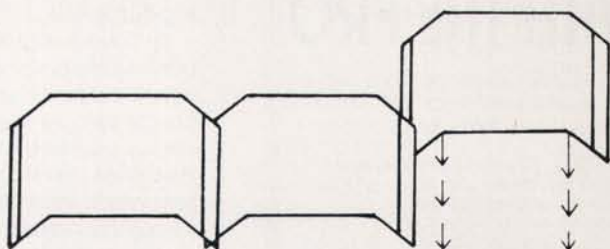
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More Efficient Mowers

continued from page 22

sulky, provide an economical way to mow up to 16 acres per day.

At the same time, advances in steering, transmission and hydraulics brought new meaning to the term "zero turning" radius. More comfortable riding mowers closely approached the maneuverability of the walk-behind rotaries. Hydrostatic drive enabled operators to control speed and direction with one pedal. No shifting was necessary. The units have become so maneuverable that trim mowing around plant beds, trees and structures has been reduced.

Professional rotary mowers generally can mow as low as one inch or as high as four

inches. If blades are kept sharp the quality of cut is acceptable for most turf. Rotary blades are also the easiest to sharpen, says Jacobsen's Kinzer. "One bolt is all you have to deal with to remove a dull blade and replace it with a sharpened spare blade," he points out.

Rotary blades should be removed for sharpening for obvious safety reasons, but they also must be balanced after sharpening. Unbalanced blades vibrate when spinning since centrifugal force is greater on the heavier end of the blade. This can lead to premature failure of bearings and cause bolts to come loose.

Another problem with rotaries is the distribution of clippings and debris. Manufacturers must enclose the blades to prevent rocks or debris from being thrown by the blades at nearby people or structures. All clippings and debris are directed out a chute and downward. Although this makes the mowers safer, it can cause the mower to leave windrows of clippings on the freshly-mown turf, especially when the grass being cut is wet.

To solve this problem, manufacturers are offering clipping-collection systems which utilize the air circulation generated by the blades to blow the grass into a collection device attached to the mower. Cushman-Ryan has developed an air-injection system which increases the suction effect of its collection system for wet clippings. Dane Scag, president of Scag Power Equipment, has designed channels underneath his rotary deck to maximize the air flow carrying the clippings.

Recently, Jacobsen introduced a fine-cut flail mower to provide a different option to distribution of clippings and debris. These mowers utilize a large number of L- or T-shaped blades which pivot on a spinning rod. Like a reel, all clippings are spread evenly behind the blades. If a blade hits a rock or other solid object, it will give and pivot out of the way instantaneously. For this reason, flail mowers are safer in places where people are around during mowing operations.

The problem with flails has been the quality of the cut. Flails, like rotaries, cut by tearing the leaves of the foliage. However, the

rotary blade is easier to keep sharp. The Jacobsen flail utilizes more blades which are distributed in a new pattern on the rod and specially-treated to stay sharp longer.

Sharpening reels and flail blades is more involved than sharpening rotary blades. Special equipment is required in both cases. On the other hand, reels should stay sharp longer than rotary blades. "Technically, reel mowers are self-sharpening," states Kinzer. "If the reels are properly adjusted with the bed knives they should stay sharp for the entire season without grinding."

If manufacturers succeed in developing flail blades which stay sharp for a full season, then these mowers will be more practical for practice fields and utility areas. Kinzer says a device, much like a hand-held knife sharpener, has been developed to sharpen flail blades without removing them. The shear number of blades on a flail mower puts it at a disadvantage for providing a high-enough quality cut for stadium or primary sports fields. Its safety when used on utility turf remains unsurpassed.

The big challenge in sports turf mowing today is matching efficiency and labor savings with quality of cut. Reel mowers will provide the best appearance to turf since they cut with a scissor action. Reels are not adept at cutting stemmy weeds or grass that has grown more than six inches high, but they will cut well-maintained turf lower than rotaries. A greens mower can cut below one-eighth inch. Many colleges and professional fields are cut as low as one-half inch with triplex reel mowers. A baseball infield might be cut at three-quarters inch and the outfield at one-and-a-half inches. In many cases, coaches and athletic directors use mowing height to have some control over the game.

John De Matteo, agronomist for Lofts Seed, Inc., says mowing height should be determined by the type of grass, amount of use and the level of maintenance. For limited-use, well-maintained Kentucky bluegrass fields, De Matteo says mowing height can go below two inches if a reel mower is used. The same field with perennial ryegrass can be mowed below an inch with a reel mower.

For limited-use, low-maintenance perennial ryegrass, Kentucky bluegrass or turf-type tall fescue fields, De Matteo does not recommend mowing below one-and-a-half inches. For high-use fields with either low or high maintenance, the cutting height should not fall below two inches.

You can see that mowing is not as simple as it once was. A number of factors come into play—labor savings, maintenance level of the field, type of turfgrass, desired height of cut, amount of field use and equipment maintenance. Since most sports facilities have a variety of field situations, the chance that one type of mower fits all is remote. Managers of athletic fields and parks are coming to the same conclusion as golf course superintendents: that a combination of mowers is needed to maintain quality turf efficiently. ☺

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CHALKBOARD

TIPS FROM THE PROS

NEW LOOK AT FASTER GREENS

Golf course superintendents have been lowering cutting heights and topdressing with sand to increase the speed of their greens the past few years. The intention is to make their greens provide the same lightning pace of putts for golfers on televised tournaments.

Many superintendents have lowered cutting heights on greens to 1/8 inch or lower and verticut more frequently to satisfy their greens committees. Now, these low cutting heights are suspected of increasing stress levels on bentgrass.

Dr. Bill Knoop, Texas A&M Extension Center in Dallas, set up test plots recently to evaluate the impact of low mowing and nitrogen rates on bentgrass root depth. "We are taking samples every month and should have some type of conclusive data sometime next year," he states. "Already we suspect that problems with fast greens are caused more by a combination of low mowing and traffic, than by low mowing alone."

Tests by Dr. Joe Duich at Pennsylvania State University two years ago identified the chief ways to increase putting speed. Lowering the height of cut was the largest single factor in reducing green speed. Verticutting has the second-greatest impact on speed, but the amount of impact depends upon the height of the bentgrass according to Duich. Verticutting bentgrass cut at 3/16-inch will increase putting speed more than verticutting 1/8-inch bentgrass. Topdressing with sand initially slows down putting speed, then increases it as the sand packs down. Frequent light sand topdressing is preferable to less-frequent, heavy applications. Finally, the speed of the bentgrass increases as the amount of nitrogen decreases. The lush the bent, the slower the ball rolls.

Equipment manufacturers are getting involved too. The engineers at Jacobsen have increased the speed of greens by attaching a "groomer" to the front of the company's Greens King IV riding greens mower. Like a small verticutter, the device lifts up horizontally-growing foliage, slices it and deposits it in the baskets on the mower. By removing the horizontal foliage and thatch, the unit lowers the resistance of the grass to the ball. Superintendents testing the unit have reported increases of more than 20 percent in ball roll without lowering the height of cut.

The attachment operates only when engaged by the operator. Results have shown grooming in two directions, one perpendicular



Jacobsen's Turf Groomer uses a grooved roller and small verticut reel to speed up bentgrass greens without lowering cutting height.

ular to the other, has the greatest impact on green speed. Jacobsen delivered the first units this fall.

Rotating brushes available on Bunton's walk-behind greens mower have been used to achieve a similar effect. First a grooved roller crimps any horizontal foliage or debris so it stands up for the brushes to remove. The brushes are attached to a shaft which spins in the opposite direction and in front of the reel. Peter Smith, superintendent of Shinnecock Hills Golf Club on Long Island,

NY, used Bunton's system to prepare his greens for the 1986 U.S. Open.

Duich found brushing greens reduces grain and speed. He prefers to put the emphasis on getting a "truer roll" than a faster one. He has bred a new bentgrass called Pennlinks that has an upright growth habit and reduces the amount of grain in greens. Very limited quantities of seed will be available from Tee-2-Green pending final review by Duich this fall. Compared to Pencross, Pennlinks is slightly slower.

ZOYSIA SURVIVES 45 DAYS UNDER ICE

When Dr. Douglas Hawes, a consulting agronomist, heard about the widespread loss of zoysiagrass in the Kansas City area last winter, he wanted to know more. Phone calls to Kansas City superintendents revealed that some zoysia survived 45 or more days under a two-inch sheet of ice while acres of zoysia on the same courses died.

He found a number of things that contributed to the loss of zoysia. The courses with the greatest zoysia kill had similarities. These were large shaded turf areas, large areas with poor drainage and a northern exposure to the sun. Hawes reasoned the zoysia on these courses had smaller carbohydrate reserves from lack of sun, poorer root structure caused by damp soil conditions and a longer period under the ice due to lack of sunlight to melt the ice.

Hawes also fingered heavy cart traffic dur-

ing the months of January through May for increasing turf loss. Courses with the heaviest cart traffic had suffered the most. Zoysia located adjacent to cart paths was heavily damaged. He suspects thatch contributed as well. Finally, Hawes said courses using primarily benefin (Balan) for a number of consecutive years in the spring for pre-emergence broadleaf weed control had more problems than courses using other pre-emergence products.

After Hawes completed his study and reported back to the superintendents, only one is considering a switch to another turfgrass. The others chose to fight back by correcting poor drainage, excessive shade, heavy thatch and cart traffic.

For the complete report on zoysia survival contact Dr. Hawes, 2408 Roundrock Trail, Plano, TX 75075. (214) 867-0176.

MASSACHUSETTS TURF SHOW FEATURES TOMA AND HARPER

Dr. Joe Troll, director of the Massachusetts Turfgrass Conference, has confirmed that George Toma, field superintendent for the Kansas City Royals and Chiefs and turf consultant to the National Football League, and Dr. Jack Harper, sports turf specialist at Pennsylvania State University, will conduct a special sports turf session during the conference, March 2-5.

"We are responding to the tremendous increase in interest in athletic field manage-

ment in the Northeast," says Troll. "As schools, colleges and parks experience rising liability insurance rates, they seek ways to lower the chance for injury on fields." Harper will address the issue of reducing field injuries through improved maintenance and cost effective renovation. He will show examples of how existing technology was applied to greatly reduce injuries. "Not only do injuries drop, but a better field often inspires teams to play better," Harper points out.

George Toma will reveal more than 30 years of incidents related to sports field management at the professional level. The innovative Toma will discuss how a sports

turf manager can solve almost any turf problem if he uses all the technology available to him and has a good team to help him. He has worked on all types of fields in all portions of the country while preparing fields for the Super Bowl. His latest project is a new spring training center being built this winter for the Royals in Florida.

The conference takes place at the Springfield Civic Center. For more information call Troll at (413) 549-5295.

STMA PHOENIX CONFERENCE TO COVER THE FIELD

In one weekend, managers of soccer fields, race tracks, baseball fields, polo grounds, bowling greens and football fields can listen to experts in turf management from around the world. All they have to do is get to the Phoenix Civic Center by 8 a.m., Saturday, January 31. The Sports Turf Managers' Association (STMA) will do the rest.

More than 27 speakers will address the Second Annual STMA Conference on Saturday. They range from former baseball manager Joe Torre to two experts on drainage from England. Grounds managers from five major U.S. stadiums, one horse track, a municipal park, one polo ground and a golf course with bowling greens will describe the challenges of preparing for their events. Eight university turf specialists will lend advice developed over years of observation and research while an attorney reveals the current status of sports turf liability suits.

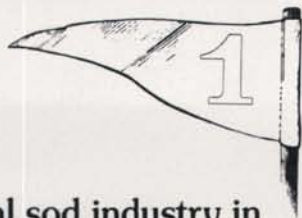
The sessions aren't limited to maintenance of turf. They also address field construction, root-zone management and drainage in detail. The theme that ties all sessions together is field safety, says STMA President Steve Wightman. Dr. James Watson, vice president of The Toro Company, has the job of defining what makes a field safe, and Dr. Eliot Roberts, executive director of the Lawn Institute, will describe steps to meet this definition.

Veteran sports turf consultant Tom Mascaro will reveal why field management is not just a cosmetic process: It also has important economic ramifications today. Dr. Henry Indyk from Rutgers takes this further with his speech, "The Real Economics of Athletic Field Construction." Attorney Dan Holland from Eugene, OR, will explain a significant economic problem facing sports turf today, the threat of injury lawsuits.

In the afternoon, there will be four break-out sessions. The baseball session will show step-by-step how to construct a baseball field to today's standards, special techniques in infield preparation, maintaining problem turf areas and renovating older fields.

Soccer and football have been grouped together for a session. A sports turf con-

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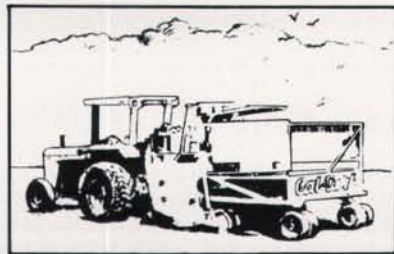
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tractor, a park superintendent, a professional football field manager and a college stadium field manager will pass on their special tricks to developing premium fields. Drainage and specialty sports turf have been put together for a third session. Lawn bowling, lawn tennis and croquet are among the sports to be addressed in this session. Geoffrey Davison, inventor of machinery that restores field drainage with minimal surface disturbance, and David Heiss, one of the U.S. contractors using Davison's machine, will provide options to major field reconstruction. The fourth session concentrates on management of turf used for equestrian sports.

Joe Torre is scheduled to be the keynote speaker for the awards banquet on Saturday night. Torre will provide three views of sports turf, the view as a major league baseball player, as a manager of a team and as a sports announcer.

STMA holds its meeting in conjunction with the Golf Course Superintendents Association of America (GCSAA). Nearly 300 exhibitors of all types of turf management products will be exhibiting in the Phoenix Civic Center Sunday through Tuesday. STMA also offers a tour of Phoenix sports turf facilities on Sunday.

Interested persons should contact STMA immediately for information on advance registration and hotel arrangements. Registration on site is more expensive and hotels

in the area may be hard to find on a walk-in basis. Contact STMA, 1458 N. Euclid Ave., Ontario, CA 91764 or (714) 984-4677.

CATCHPOLE RETIRES OPENED U.S. RANSOMES



Guy Catchpole

"The United States was a very tough market to crack," said Guy Catchpole when he retired in October as sales and marketing

director of Ransomes, Sims and Jefferies Ltd., Ipswich, England, after more than 38 years. Starting in the late '60s, Catchpole toured the U.S. trying to determine the best way the 150-year-old British company could crack the mower market. He believes the company's decision to purchase Wisconsin Marine in 1978 was the right move after two previous attempts to develop a distributor base in this country.

Catchpole's father started a family tradition in 1906 when he became a salesman for Ransomes in London. Guy grew up around the green reel mowers and joined the company in 1948 as an apprentice agricultural machinery salesman. He estimates that sales following World War II were 50 percent farm machinery, 25 percent industrial trucks and 25 percent grass machinery. Since 1960, when Catchpole moved into the grass machinery division, that portion of the company has grown steadily and now represents more than 80 percent of the company's sales.

Although Ransomes mowers can be found all over the world, the U.S. is its largest export market and is growing the fastest. The contacts made by Catchpole still serve Ransomes, Inc., its American subsidiary.

Catchpole made his mark on many continents. Although he has left his office of 38 years, he hasn't left his friends around the world.

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ROOKIES

PRODUCT UPDATE

LANDSCAPE RAKE



Melroe has introduced three new Bobcat Landscape Rake attachments for seedbed preparation. They are designed to be attached to skid-steer and articulated loaders, as well as conventional tractor loaders.

Powered by the loader's auxiliary hydraulic circuit, the rake moves across the soil, removing rocks, sticks and other debris. It will lift rocks from 3/4 inch up to six or eight inches across.

The unit is basically a pivoting rake assembly mounted on a bucket. The rake consists of 12 bars, with up to 39 teeth on each bar, which are driven by a hydraulic orbit motor. When the bucket fills, the operator simply raises the rake portion of the attachment and dumps the debris.

The landscape rake is made in four-, five- and six-foot widths to fit several skid-steer loader sizes. Three-point-hitch models are available for other loaders.

MELROE COMPANY

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Designed exclusively as a weed-control landscape fabric, DeWitt Pro 5 Weed Barrier is 99.8-percent opaque to sunlight. By stopping light, it stops weeds from growing. However, it allows air, water and other valuable nutrients to pass through to thirty roots.

Made of five ounces per square yard of heavyweight, 100-percent woven polypropylene with a blend of polyester and polypropylene fiber, this product will not rot, mildew, or become brittle in cold weather. It will not tear or puncture when walked on, or break down from the use of fertilizer and pesticides. A special ultraviolet inhibitor prevents its deterioration from sunlight.

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Convenient roll sizes three to 12 feet wide make installation simple. The product cuts easily with common household scissors. A gold stripe every 12 inches provides a guideline for plant alignment.

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There are several optional accessories. The agitator breaks up lumps, assuring even consistency. The simple spreading mechanism is ground-driven and virtually maintenance-free. Centrifugal force created by rotation forces material through feed-ring openings. The spread pattern is managed by remote control from the driver's seat and is adjustable for centered rear or side delivery.

The lime shield, a large cover for the spreading mechanism, reduces wind-blown dust. The hopper extension increases hopper capacity by about one-third for light materials. There is a mass feed ring for top-dressing or a seed ring for small seeds. The broadcaster can be operated by almost any towing vehicle at speeds of three to ten mph.

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The Eagle has been designed from the ground up by Cushman to serve a variety of different uses for golf courses, parks and recreation areas. The vehicle comes with a choice of lightweight urethane or steel deckplate bodies. An 8.5-hp, four-cycle Kawasaki engine powers both models for a top speed of 12-15 mph.

Operating features include a turning circle of less than 20 feet and an 'out-front' seating design that provides balanced weight distribution for carrying passengers or cargo. The vehicle's rated capacity is 1,200 lbs.

The standard models come with two bucket seats and a 44x39-inch cargo box. Four forward-facing seats are an option. Independent, transverse leaf-spring front suspension and coil-spring shock absorber rear suspension provide a smooth ride. Accessories include an all-weather cab with cloth doors, a canopy and luggage rack for four-seater models, and a hitch for towing small trailers.

CUSHMAN-RYAN

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