

DALLISGRASS CUTTER

by F. C. GALLE

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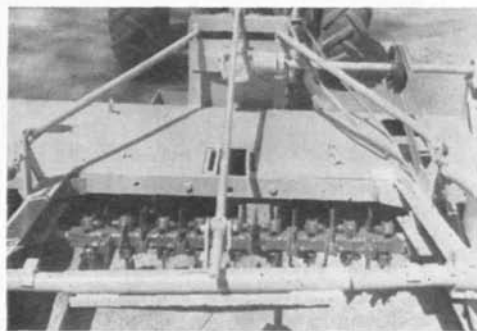
THROUGHOUT the South, golf courses are plagued with the serious pest of dallisgrass on fairways. Chemical weed control is being used, but is expensive and, in most cases, leaves burned spots for periods of six weeks or longer during the eradication period. We have been using chemical control methods for dallisgrass, but thought possibly there was a chance of working on a physiological or a mechanical approach to the problem.

In 1954, while talking with Dr. John Montieih, who was then our golf green consultant, we discussed the possibility of making up a knife tamp which could be used to eliminate dallisgrass around the approaches to the greens. The knife tamp was made up from old mower blades spaced about 2" apart and was of sufficient weight to withstand being dropped on dallisgrass. Normally, we tried to cross-cut

and the fast wearing of the knives on the roller itself. However, the effect of the action on the dallisgrass was encouraging and we made up some rake attachments, first for a whirlwind mower and later a set of rakes or teeth to attach to each of our fairway gang mowers. The rakes did some good by lifting up the dallisgrass, but they certainly were not the complete answer. I should mention, also, that we did purchase and try a commercial rake attachment for our fairway mowers. This unit was, I believe, designed for crabgrass and not sturdy enough for tough dallisgrass.

Everything pointed to one idea; that we needed to devise a machine similar to the verti-cut mower, but one heavy enough to use on fairways.

Several equipment manufacturers were shown drawings and sketches that had been made. Encouragement was received



Rear view showing free-swinging revolving knives. Note extended shaft from gear box.



Side view of dallisgrass cutter showing tractor hitch and power take-off arrangement.

or tamp dallisgrass clumps and, in this way, cut off a great many of the heavy leaves and the mat that is normally found with this pest. Continued use of the tamp in 1954 was encouraging, although it did not give complete eradication of dallisgrass with one treatment.

In 1955, we continued with the knife tamp, by making several others and then tried to make a knife roller to be pulled by a tractor. This was not too satisfactory, due to the weight involved in the roller

from Mr. Phillips of the Lilliston Mower Company. Unfortunately, he could not help with the design of the machine at that time, but offered the use of an old mower frame and suggested that we go ahead and make up a machine ourselves. In our maintenance shop at Ida Cason Callaway Gardens, we have good machine equipment and a very able mechanic, Mr. Herbert Hada-way, who was very helpful in the construction of our machine and, by using the old Lilliston mower, we devised the verti-

cal cutting mower for fairway use. The machine is depicted in the accompanying photographs.

The power take-off from the tractor and the same gear box that was on the mower are being used, but the direction was changed and a longer shaft was attached, so that a pulley could be used on one side of the driven shaft. Some of the metal of the top cover of the mower had to be removed to give clearance for the swinging knives. A metal cover to enclose the knives was made from a piece of steel from a 30" corrugated culvert pipe. It is not shown in the photographs.

The first shaft was made from a scrap piece of $1\frac{1}{2}$ " square steel that was milled down on each end to fit into bearings. Round metal collars were welded on the shaft to hold the knives. The first knives were of common strap steel $\frac{3}{16}$ " x $1\frac{1}{2}$ " and 7" in length. A $\frac{1}{4}$ " bolt held each knife between two collars.

This machine was used during the summer of 1955, but the shaft was not strong enough and the soft metal knives wore down very fast so that, in 1956, we had to make some changes.

We are now using a $1\frac{1}{2}$ " round steel shaft and, instead of collars, are using $\frac{1}{4}$ " high carbon angle iron welded on the shaft and spaced one inch apart. The angle iron supports are welded on four sides of the shaft and alternate on each side, so that the knives are approximately 3" apart. There are 34 knives on the shaft, consisting of 9 knives mounted opposite each other and two sets of 8 knives on the alternate, giving a cutting width of $36\frac{1}{2}$ ". In each pair of angle iron supports, one has a $\frac{1}{2}$ " square hole, the other a round hole. We also used a harder steel for the knives and used 60-90 carbon steel $\frac{3}{16}$ " x $1\frac{1}{2}$ " x 7" long. The base of the knives was strengthened by welding two small blocks of $\frac{1}{4}$ " x $1\frac{1}{2}$ " x $1\frac{1}{2}$ " steel on each side. A $\frac{7}{16}$ " hole was drilled through the base of the knife and we are using $\frac{7}{16}$ " tempered carriage bolts to mount the knife between the angle iron supports. The carriage bolt does not turn, but the knife swings on it freely. The shaft, at normal operating speed, turns at 1700 R.P.M.

TURF MANAGEMENT

The book "Turf Management," sponsored by the United States Golf Association and edited by Prof. H. B. Musser, is a complete and authoritative guide in the practical development of golf-course turfs.

This 354-page volume is available through the USGA, 40 East 38th Street, New York 16, N. Y., the USGA Green Section Regional Offices, the McGraw-Hill Book Co., 350 West 42nd Street, New York 36, N. Y., or local bookstores. The cost is \$7.

We do not sharpen the knives, but, after use, they soon get a tapered edge. With the aid of the suspended mower frame, the knives are normally set to go into the soil only about $\frac{1}{2}$ ". Of course in use, we have found that because of irregularity in the surface of the fairways, the knives were often cutting into the soil $1\frac{1}{2}$ " or more. As the knives wear down the mower frame is lowered and we continue to use the knives until they are about $3\frac{1}{2}$ " long. They give us long service considering the abuse they receive. We feel, too, that the heavy swinging knives are more practical for fairway use than permanently mounted knives. Damaged knives can be easily replaced and, if they should hit a rock or other obstruction, they swing back instead of cutting forward. We cross-cut heavily infested dallisgrass areas, but our normal operation has been to cut a fairway only one way and then, after several weeks, cut in another direction.

Use of the dallisgrass cutter has been very encouraging and we have reduced the heavy matted condition of dallisgrass without discouraging the bermudagrass. It should be mentioned, however, that, after its use, a fairway looks very brown for a few days, but soon turns green again. After several suggestions, this cutting treatment is being followed by light applications of sodium arsenite and also, applications of ammonium nitrate and water to encourage a rapid recovery of bermudagrass.

Another application of the machine is thatch removal. The cutter has been used successfully on several of our fairways in the fall before seeding to ryegrass.

We plan to continue to use our dallis-

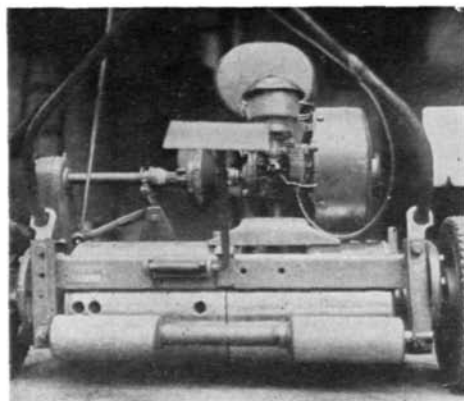
grass cutter and we also plan to continue work with the various chemical weed killers. We have reduced our problem to some extent, but we cannot yet say that we have eliminated the pest after so short a time.

This information might be of interest to other golf course superintendents. With more people working on similar problems, perhaps we can ultimately get the complete answer to the control of this weed.

THE ART OF IMPROVISATION

THE bruising of apron turf while mowing greens is a troublesome problem for many. The sharp turn of the putting green mower as the operator spins the mower on the apron takes its yearly toll of turf, weakening and bruising it to the point where it thins or dies out over the summer, or gives way to *Poa annua*.

When Mr. Tate Taylor, USGA Green Section Northeastern Agronomist, was in charge of Tamarack Country Club, Greenwich, Conn., he thought of an excellent way to prevent this damage. He simply made the back of the mower look like the front. He fastened caster wheel brackets to the rear and put on a set of rollers at the back of the putting green mower.



As the operator reaches the end of the green, he simply lays the mower back and turns the machine on the rear rollers. Thus he gets away from the quick turn, and the traction-roller drum does not bruise as it is off the ground.

Mr. Taylor reports that his men are in favor of the innovation because they are now in complete charge of the machine while it is in operation.

MR. Emilio Strazza, Superintendent of Round Hill Country Club, Greenwich, Conn., constructed a fertilizer distributor from a cyclone seeder and a caddie cart.

The cloth portion of the cyclone seeder was removed and a 5 gallon can was fastened over the base of the seeder. A hole was first cut in the 5 gallon can to coincide with the feeder and spreader hole in the base of the cyclone seeder. The crank handle was removed from the seeder and a longer rod was put in its place with a large pulley wheel fastened to the rod.



Another pulley wheel was put on the caddie cart inside the right wheel. Both of these pulley wheels are connected by a V belt, so that as the cart is pushed forward the pulleys rotate the horizontal spreader fan, just as the crank did before it was removed.

Mr. Strazza has the spreader calibrated to apply 5 lbs. of granular or pelletized fertilizers to each 1000 square feet. This spreader is very easy to handle.