



Snow-Making Machine

If you have the slopes, engineers can prepare them for skiing with a cold mixture of air and water

Many a club official has looked at the fairways on his course and wished that he could do something about putting these slopes to use for skiing in the winter in order to give the members more year-around recreation and the club added revenue. Now it's possible because of an invention by Phil and Joe Tropeano of Larchmont Engineering, Lexington, Mass. The invention involves a special process for making snow by using compressed air and water. The air and water are mixed in special nozzles. When the ground is frozen, the ingredients are discharged at high rotary velocity into the cold air, and snow accumulates at the rate of three inches per hour.

The nozzles are tripod mounted on a swivel and called snow guns. They may be moved from place to place. Each gun covers an area of about 2,000 square feet and is moved after enough snow is made. Larchmont calls the device the Blizzard snowmaker.

Perhaps the easiest way to explain snowmaking is to answer the questions many people ask.

How Does It Work?

Q. Where can the machine be used?

A. A simple, practical rule of thumb answer to determine whether your locality is suitable for snowmaking is to ask a question: Do you have ice-skating on natural ponds? If so, you can make snow.

Q. What temperature is best?



A. Thirty degrees F. and lower will produce snow.

Q. What is the snow like?

A. It is very fine and packs perfectly for skiing.

Q. Can the quality of snow be controlled?

A. Yes, by increasing the water pressure for wet snow and decreasing it for dry snow.

Q. How much water is required?

A. A good rule of thumb to use is 10 gallons per minute for every 100 ft. of hill. (On large hills, 3,000 to 5,000 ft., the systems are set up to cover half of the hill at a setting. The nozzles are then moved to the other half.)

Q. How much air is needed?

A. One hundred to 125 cu. ft. per minute at 100 lbs. per square inch for every 100 ft. of hill.

Q. What is the warmest temperature at which snow can be made?

A. The guarantee is for 30 degrees. However, many areas tell us they make snow at 36 degrees.

Q. How long would it take to cover an area 1,000 ft. long and 250 ft. wide?

A. With 12 nozzles working it would take one day to get four to eight inches of well packed snow in an area this size.

The cost of manufacturing snow must



PGA Figures Show Palmer Is 1947-64 Leading Money Winner

necessarily vary with the location, length and width of area to be covered; distance of water supply from the tow line; type of water supply such as municipal, pond, well or steam; terrain (grassy-stony-etc.); electric, diesel or gas power; and elevation from water supply to summit. The snowmaking system requires 10 gallons of water per minute at 100 lbs. per square inch. Air compressors of the type that are used by municipalities are adequate.

The system itself consists of two lines of pipe that may be removed in the summer. From these lines the area can be covered 250 feet on each side. An estimated cost of a snow-making system, less the compressor and pump, is \$9.00, per running foot.

Portable Tows Available

Small, portable rope ski tows are available for around \$1,500. They can be installed in a half day. These can be taken up at the end of the season, and are suitable for hills up to 500 ft. long.

After installation of a system, we often are asked: "How much will it cost to get an area 1,000 ft. long and 250 ft. wide ready for skiing?"

We give two answers to this question. For example, for out of pocket expenses (including labor, fuel, and hot meals for the men) John Howland of Mt. Ascutney, Vermont, quotes: Length of area 1,300 ft.; width, 225 ft.; total cost, \$138. Jack Fisher of Jiminy Peak, Hancock, Mass., says: We covered an area of 200,000 square feet with six inches of snow at a cost of \$110.

The snowmaking equipment comes in a complete package. For a small slope it includes portable night lights, portable tows and portable snowmaking equipment. An inexperienced person can install the system since it is delivered complete with drawings and is easily set up. But since this is a new project, field men are available.

Official statistics compiled by the PGA from 1947 through 1964 show Arnold Palmer to have official earnings totaling \$586,211.46. These earnings date from 1954 when Palmer turned pro. Palmer thus continues his lead among modern money winners, that is, since the PGA began keeping figures in 1947.

Sam Snead is listed as sixth with \$314,424.21. He dropped one place from the previous year's rating. However, Snead was winning tournament money from 1934 through 1947 and this is not included in the PGA tally.

Bill Casper is listed as second in official earnings with \$372,067.27, having come up from seventh place in the previous year's listing.

The greatest jump in earnings was shown by Jack Nicklaus, who won the most official money in 1964. He rose in the overall compilation from 23rd to ninth place. Nicklaus became a pro in 1961 and has an earnings total of \$275,193.45.

Here are the top 25 money winners:

1. Arnold Palmer	\$586,211.46
2. Billy Casper	372,067.27
3. Julius Boros	359,514.67
4. Doug Ford	340,039.28
5. Dow Finsterwald	314,993.93
6. Sam Snead	314,424.21
7. Gene Littler	313,781.32
8. Cary Middlecoff	291,399.99
9. Jack Nicklaus	275,193.45
10. Gary Player	268,734.83
11. Art Wall, Jr.	259,793.94
12. Ted Kroll	257,964.44
13. Mike Souchak	247,726.77
14. Jack Burke	239,387.50
15. Jay Hebert	237,529.09
16. Doug Sanders	227,389.44
17. Ken Venturi	220,983.63
18. Tommy Bolt	219,165.28
19. Bob Rosburg	213,798.37
20. Tony Lema	202,057.22
21. Lloyd Mangrum	201,184.47
22. Fred Hawkins	200,499.35
23. Billy Maxwell	200,286.30
24. Jerry Barber	177,848.03
25. Don January	173,509.67