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TWO H-C FURROW SEEDERS

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SOUTHERN FOREST EXPERIMENT STATION

Furrow seeding is a one-man, one-trip operation designed to prepare a favorable seedbed on forest sites and sow pine seed in rows. Many machines have been developed for the job. This note illustrates and gives operating instructions for two of them, the compact H-C furrow seeder and an adaption for use behind a fireplow.¹ For those wishing to build one of the machines, a complete set of detailed drawings is available on request.

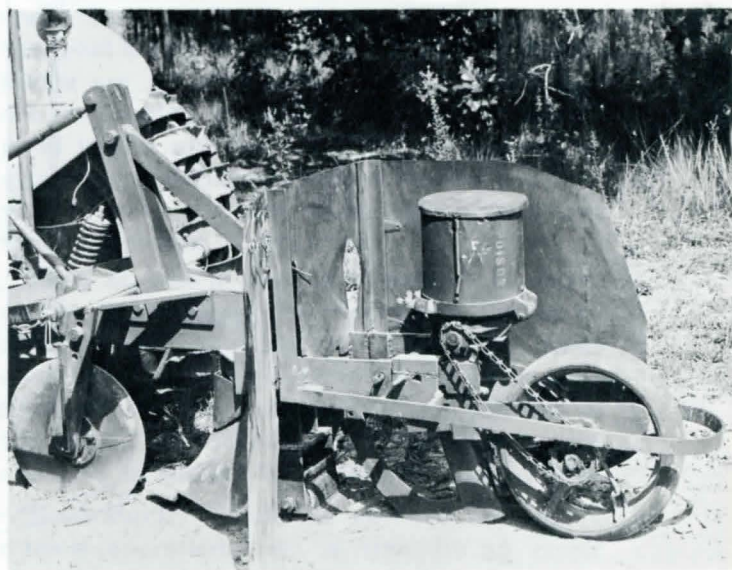
The compact model has all the components for the four basic functions in site preparation and seeding—scalping, bedding, sowing, and packing. It is designed for a three-point hitch and is ideally suited for moving from one small job to another. Its light draft enables it to be used with farm tractors.

In the other machine, the fireplow does the scalping and hillers throw up a raised bed; the sowing and packing units are largely the same as in the compact model. This machine requires more power than the compact model, is less wieldy, and is somewhat more difficult to keep in adjustment.

The compact machine prepares a narrow bed that is adequate for seedling establishment. Precautions must be taken, however, to prevent the seed or seedlings from being washed

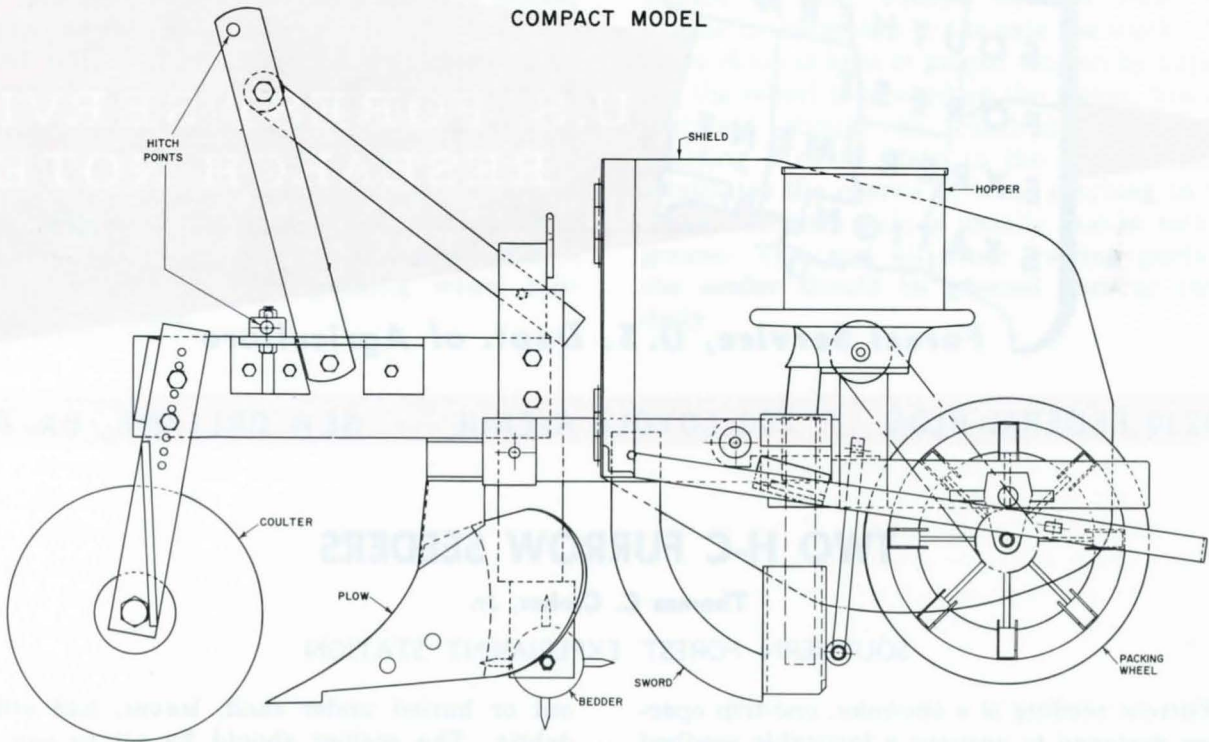
out or buried under sand, leaves, and other debris. The scalper should be set to run as shallow as possible, and the rows should follow close to the contour. Where smothering by leaves may occur, a thorough job of hardwood control should be done at least a year ahead, and the area burned before seeding. In heavy accumulations of pine needles the scalper may

FIGURE 1.—Compact model.



¹ Seaman K. Hudson, Florence, S. C.; Container Corporation of America, Brewton, Ala.; and Joe H. Brady, Birmingham, Ala., provided financial assistance and encouragement toward the development of a model that was the forerunner of the machines described here.

COMPACT MODEL



FIREFLOW MODEL

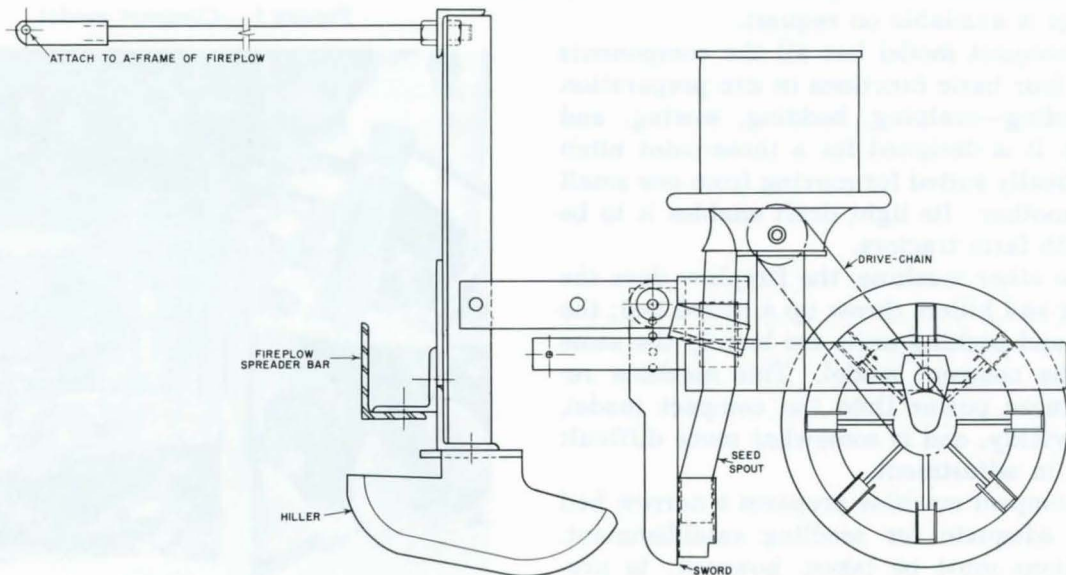


FIGURE 2.—Construction details. Scale: 1 inch = 1 foot.

not clear the furrow adequately; a prescribed burn may be necessary in advance of seeding to reduce the needle mat.

The raised bed created by the fireplow model is less vulnerable to washing and silting, and the scalped strip is wide enough so that hardwood leaves and pine needles are not apt to smother the seed.

ADJUSTMENT AND OPERATION

Scalper.—The scalper of the compact model consists of a coulter blade and a specially modified middlebuster plow. Its function is to clear a row about 8 inches wide without cutting a deep trench or displacing much topsoil. In a deep trench the seed is endangered by silting or erosion. On the other hand, if the plow is set too shallow the moldboards may fail to throw the debris clear—it will spill back and interfere with the bedder and the sword.

Three adjustments are needed to insure proper functioning of the scalper: the coulter should be set to cut through the litter; the turnbuckle link on the three-point hitch should be adjusted to set the plow point flat; and the bedder should be low enough to keep the plow level and at proper depth.

In the fireplow model the plow should be set to skim away debris without removing much topsoil.

Bedder.—The bedder, sometimes called the chopper, consists of a hub with four 6-inch-wide steel blades welded to it. It loosens the seedbed and makes small dams across it to prevent flow of water that would wash out seed and soil. It also backfills the groove cut by the coulter. It should be set low enough to make definite chops in the soil, but not so low that it holds the plow out of the ground. The most common malfunction, failure to turn, is usually caused by lack of grease on the axle or improper vertical adjustment. If litter or roots ball up on the bedder, the scalper probably is functioning incorrectly. Blades should be left dull to avoid the possibility of picking up chunks of wood. In heavy, wet soils, mud may pack between the blades. If such soils must be seeded, the bedder should be raised and seeding done without it.

In the fireplow model bedding is accomplished by a pair of hillers mounted on a special

frame attached to the spreader bar of the fireplow. Angle and depth of the hillers are adjusted as needed to elevate a bed in the center of the cleared strip.

Sword.—In the compact model the sword is a crescent-shaped blade swinging from a vertical adjustment link. Its function is to make a small, shallow groove in the bed, and to guide the seed from the seed spout into this groove. It should be set so that it rides lightly on the ground and swings up if it hits a root or trash. Depth of the groove is determined by the desired depth for planting the seed. To deepen the groove, the front end is moved down and the lower end can be weighted as necessary.

The most common and serious error is cutting the groove too deep. Pine seed should ordinarily be planted $\frac{1}{4}$ - to $\frac{1}{2}$ -inch deep, but best depths for various soil types and pine species remain to be determined. Trash catching on the bottom of the sword may prevent seed from reaching the ground; proper adjustment minimizes such malfunctions.

The sword on the fireplow machine is bolted rigidly in place but can be adjusted vertically for depth of groove.

Sower.—The sower for both compact and fireplow models consists of a McCormick No. 184 planter unit with combination hopper and brush cutoff. For longleaf pine, plate 1977AB is used with knocker 1223AA; for slash and loblolly, plate 3109A with filler ring 3447AB and knocker 3460AA. For other pine species, the local dealer can help select plates. Plastic plates are preferable to metal. If the plates are not seated properly, or if the knockout pawl is left off, the seed will be cracked or ground up. Before starting a sowing job it is well to run out a few seeds and check to see that no damage is occurring.

Rate at which seed is dispensed is determined by running the machine a measured distance and counting the number of seeds dropped. For this purpose the sword can be removed and the seeds caught in a bag tied to the spout. Sprockets, gears, and plates are changed as needed to secure the desired rate.

Seed supply should be checked frequently during operation, and a tight-fitting cover should be in place at all times to keep out trash and moisture. Coating the seed with aluminum flakes makes it flow smoothly.

The seed spout must be kept clear. It does not often block up, but the possibility should be kept in mind.

No seed will be dispensed if the plates fail to rotate. The causes of plate stoppage range from a limb caught crossways in the packing wheel to a displaced drive chain.

Packer.—To insure enough capillarity to provide moisture for germination, soil is packed about the seed by a wheel equipped with a zero-pressure tire. The packing wheel also drives the sower.

The wheel's most common malfunction is failure to turn, usually because trash has caught in the spokes or the axle has stuck. The drive chain is kept at proper tension by adjusting the wheel backward on the frame; this adjustment should be checked occasionally. Welding a cover plate to the spokes almost eliminates the chance of trash catching in the wheel. A stuck axle is usually due to lack of grease. This and all other moving parts of the seeder should be greased once or twice daily.