

No. 774,287.

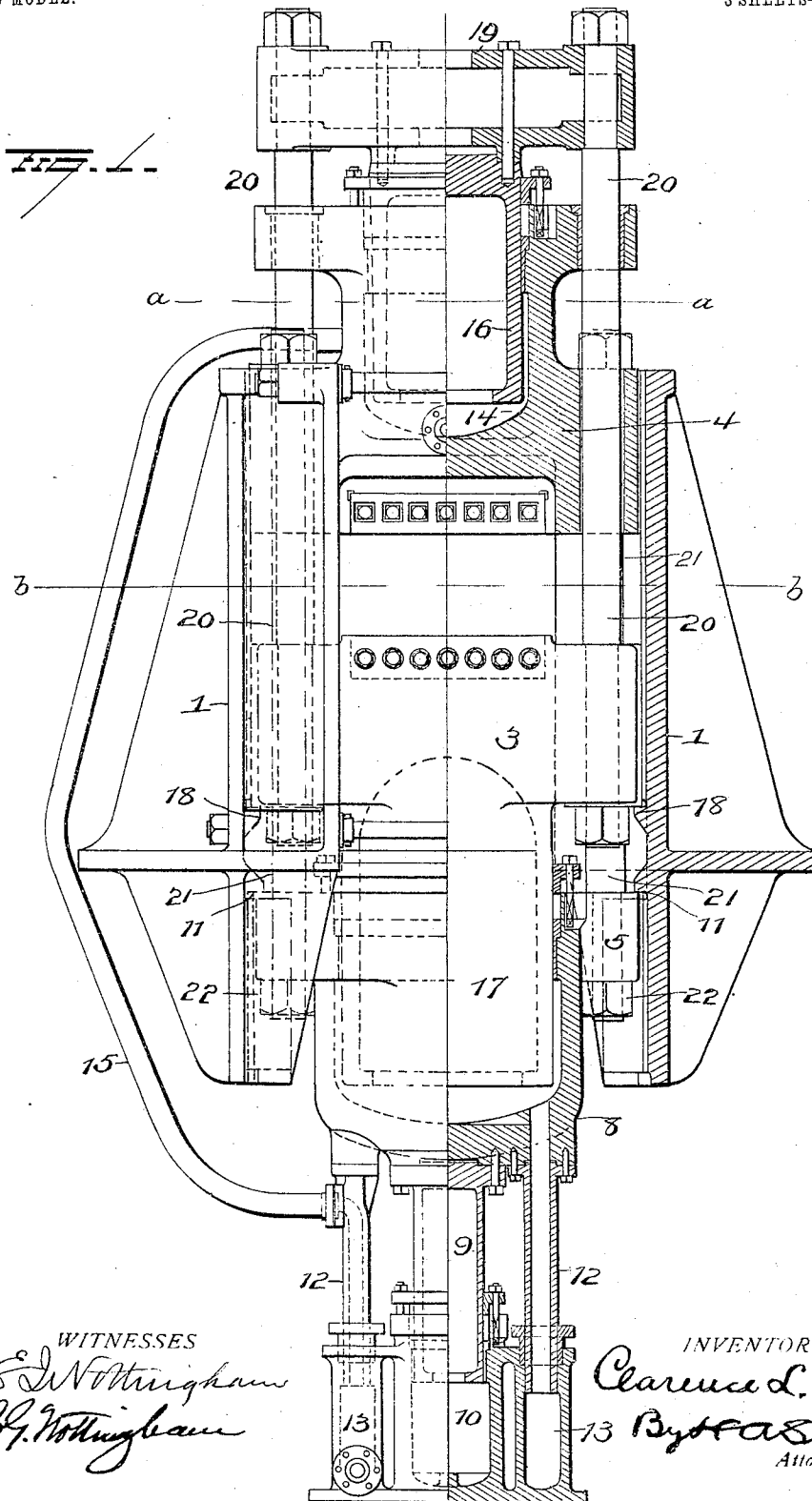
PATENTED NOV. 8, 1904.

C. L. TAYLOR.
BLOOM SHEARS.

APPLICATION FILED AUG. 24, 1903.

NO MODEL.

3 SHEETS—SHEET 1.



No. 774,287.

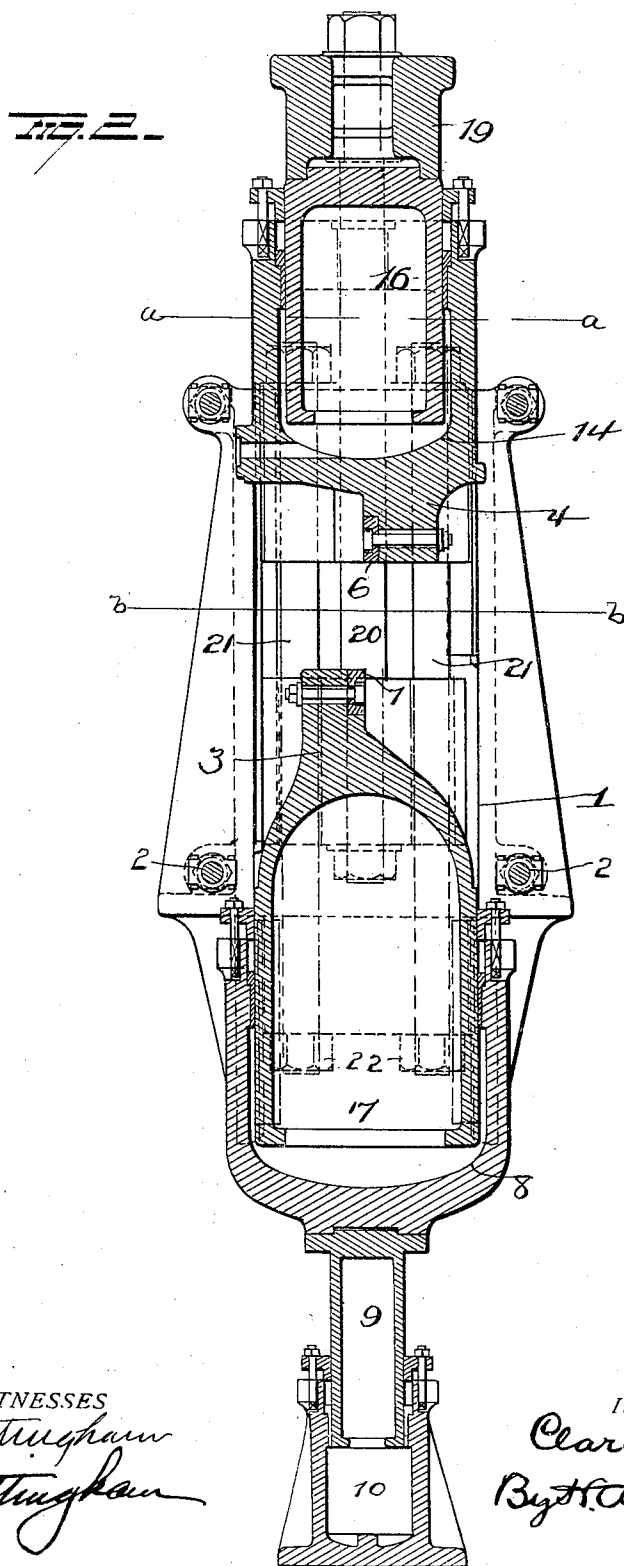
PATENTED NOV. 8, 1904.

C. L. TAYLOR.
BLOOM SHEARS.

APPLICATION FILED AUG. 24, 1903.

NO MODEL.

3 SHEETS—SHEET 2.



WITNESSES
E. L. Nottingham
84. Nottingham

INVENTOR
Clarence L. Taylor
By H. A. Seymour
Attorney

No. 774,287.

PATENTED NOV. 8, 1904.

C. L. TAYLOR.
BLOOM SHEARS.

APPLICATION FILED AUG. 24, 1903.

NO MODEL.

3 SHEETS—SHEET 3.

Fig. 4.

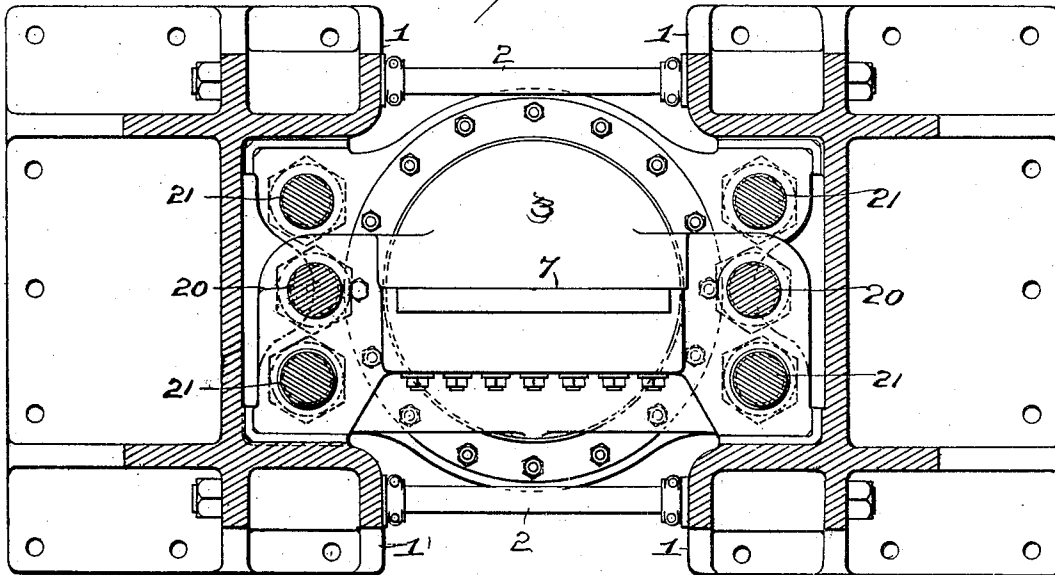
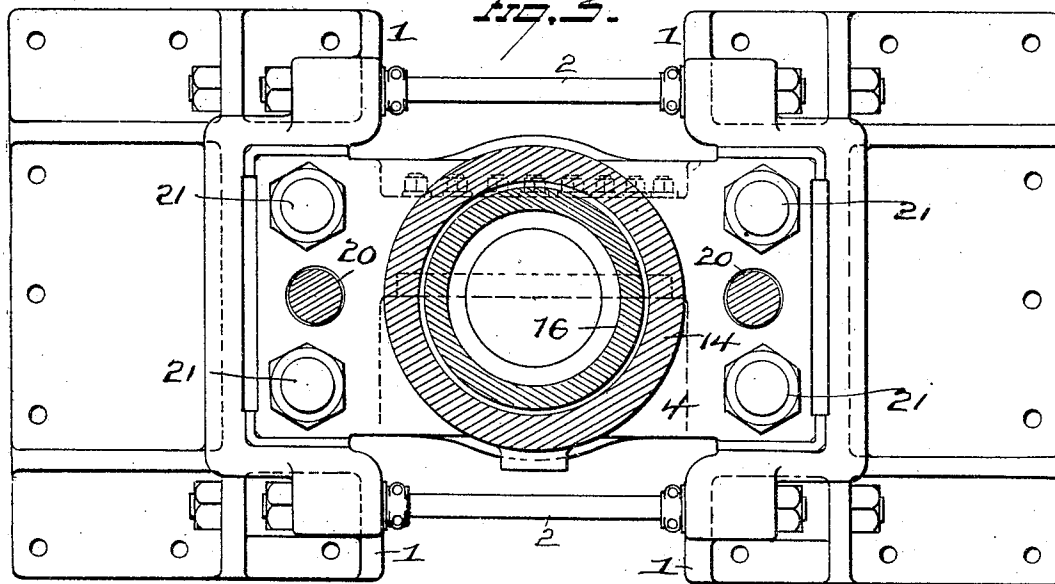


Fig. 5.



WITNESSES

Ed. Nottingham
St. Nottingham

INVENTOR

Clarence L. Taylor
By H. A. Seymour
Attorney

UNITED STATES PATENT OFFICE.

CLARENCE L. TAYLOR, OF ALLIANCE, OHIO, ASSIGNOR TO THE MORGAN ENGINEERING COMPANY, OF ALLIANCE, OHIO.

BLOOM-SHEARS.

SPECIFICATION forming part of Letters Patent No. 774,287, dated November 8, 1904.

Application filed August 24, 1903. Serial No. 170,550. (No model.)

To all whom it may concern:

Be it known that I, CLARENCE L. TAYLOR, of Alliance, in the county of Stark and State of Ohio, have invented certain new and useful Improvements in Bloom-Shears; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to an improvement in bloom-shears, the object being to provide shears with means whereby the distance between the blades can be adjusted for blooms of different thicknesses, thereby preventing any needless movements of the blades and resulting in a saving of the water under pressure that would necessarily be used if the cutting-blade were moved a fixed and invariable distance at each stroke, irrespective of the thickness of the bloom.

A further object is to provide the apparatus with two hydraulic cylinders and plungers of different sizes, the larger one being connected with the lower cutter and the smaller one with the upper cutter, in combination with connections whereby they can be used singly or together, and thus avoid that waste of power that would necessarily result from the use of a single large cylinder.

With these ends in view my invention consists in the parts and combinations of parts; as will be more fully explained, and pointed out in the claims.

In the accompanying drawings, Figure 1 is a view in front elevation, partly in section. Fig. 2 is a view in vertical section. Fig. 3 is a view in horizontal section on the lines *a a* of Figs. 1 and 2, and Fig. 4 is a similar view on the lines *b b* of Figs. 1 and 2.

1 represents the side frame, designed to be mounted on a suitable base and tied together by tie-bolts 2. These frames are grooved on their inner faces to receive the ends of the cross-heads 3, 4, and 5, the upper one 4 of which carries the blade or cutter 6, while the intermediate cross-head 3 carries the blade or cutter 7. The body of the cross-head 5 forms the larger cylinder 8, and secured to and de-

pending from the lower end of the latter is the plunger 9. This plunger is seated in the cylinder 10 and operates, as clearly shown, to raise or lower the cylinder 8 and cross-head 5, the upward movement of the latter being limited by the abutments 11 on frame 1, as shown in Fig. 1.

Depending from the cylinder 8 are the hollow plungers 12, the lower ends of which move in the cylinders 13, located on opposite sides of cylinder 10. These plungers 12 and cylinders 13 are, in effect, simply telescopic pipes and operate to supply water under compression from an accumulator or other source of supply to cylinders 8 and 14, the latter of which is formed in the upper cross-head 4. One of these telescopic pipes 12 and 13 communicates directly with the cylinder 8, while the other is connected by pipe 15 (which may be jointed or flexible) with cylinder 14, which, as before explained, is carried by the upper cross-head 4.

The cylinders 13 and 10 are, as before explained, all connected to an accumulator or other source of fluid-supply under compression, and in addition are connected to the waste-tank by pipe and check-valve, (not shown,) so that when the connected cylinders 8 and 14 are lowered on their pistons 17 and 16 water not under pressure will be drawn in to fill the space thus created, thereby avoiding the use of water under compression to fill up space created by the movements of the parts while the latter are being adjusted for blooms of different sizes. After the parts have been adjusted for one size bloom no further adjustment is required until it becomes necessary to cut or shear another size bloom. Hence only fluid under pressure is admitted to the cylinders during the movements of the parts in cutting or shearing.

Cross-head 3, which carries plunger 17, normally rests at its ends on abutments 18, located, as shown in Fig. 1, in a plane above the abutments 11. These abutments 18 limit the downward movement of the cross-head 3 and its attached blade or cutter 7 and normally sustains the latter approximately in a horizontal plane

with or slightly below the face of the table on which the blooms are deposited and on which they are fed to the shears.

Secured to the upper end of plunger 16 is the cap 19. This cap projects at its ends beyond the plunger and is connected by the tie-rods 20, one at each end, with the cross-head 3. These rods 20 are shouldered, as shown, to prevent any movement of the cross-head 4 and cap 19 toward each other and are held in place by nuts, which prevent any separation of the parts.

As before explained, the cross-head 3 normally rests on abutments 18. Hence when it is resting on said abutments the cap is in its lowest position. When cross-head 3 is raised by the admission of water under pressure in cylinder 8, the cap 19 and plunger 16 will be elevated simultaneously therewith, and when water is admitted directly into cylinder 14 under plunger 16 the latter will, through its connections 19 and 20, elevate cross-head 3 and its connected plunger 17.

Cross-heads 4 and 5 are connected by the tie-rods 21, two on each side. These tie-rods are shouldered to prevent any movement of the cross-heads toward each other, and the cross-heads and rods 21 are locked by nuts 22, secured on the ends of the rods. Both rods 21 on each side pass loosely through cross-head 3 and assist in guiding the latter in its movements.

If with the parts in the position shown in Fig. 1 it should be desired to shear small blooms, the water in cylinder 10 would be allowed to escape, thus causing cylinder 8, cross-head 5, tie-rods 21, cross-head 4, and cylinder 14 to descend, thus bringing the upper cutter 6 close to the lower one 7 until they are in proper relation to sever the bloom without any lost motion. If it should be necessary to separate the cutters to receive larger blooms, it may be effected by admitting water to cylinder 10, which would operate to elevate cylinder 8, cross-head 5, tie-rods 21, and the cross-head 4, secured to and carried by the tie-rods. After the parts have been thus adjusted and the bloom run into position power is applied to the upper cutter 6 by admitting water under pressure to cylinder 14. With the lower cross-head and its cutter 7 sustained against downward movement by the abutments 18 and the upper cross-head 4, rods 20, and cross-head 5 sustained against upward movement by the abutments 11, it will be seen that when water is admitted to cylinder 14 the latter and its connected cross-head 4 and cutter 6 will be forced downwardly toward the cutter 7. If the cylinder 14 and its plunger 16, which exert, say, a pressure of four hundred and sixteen tons, be insufficient to sever the bloom water can be admitted to the larger cylinder, which with its plunger exert a pressure of eight hundred and thirty-four tons. When water is admitted to the

larger cylinder 8, the upper cutter 6 will be restrained by cross-head 4, rods 21, cross-head 5, and abutments 11 from any upward movement. Hence blade or cutter 6 will hold the bloom, while the lower cutter 7 is forced upwardly to sever same. If the power of the larger cylinder 8 be insufficient, the maximum capacity of the shears can be reached by admitting the water to both cylinders 8 and 14, and thus secure a pressure of twelve hundred and fifty tons.

It is evident that many slight changes might be resorted to in the relative arrangement of parts herein shown and described without departing from the spirit and scope of my invention. Hence I would have it understood that I do not wish to restrict myself to the exact construction of parts shown and described; but,

Having fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In bloom-shears, the combination with a frame, a movable cross-head carrying the lower cutter, and an upper movable cross-head carrying the upper cutter, of a cylinder and plunger carried by the upper cross-head and tie-rods connecting said plunger and lower cross-head.

2. In bloom-shears, the combination with a frame, a movable cross-head carrying the lower cutter, and an upper movable cross-head carrying a cutter, of a cylinder and plunger carried by the upper cross-head, tie-rods connecting said plunger and cross-head carrying the lower cutter and hydraulic devices for elevating said latter cross-head.

3. In bloom-shears, the combination with a frame having two sets of abutments thereon, of a lower cross-head adapted to engage the lower faces of one set of abutments, hydraulic devices for elevating said cross-head, an intermediate cross-head carrying a cutter and adapted to rest on the other set of abutments, an upper cross-head carrying a cutter, means connecting the upper and lower cross-heads whereby they move vertically in unison and hydraulic devices engaging said upper cross-head for moving it and the lower cross-head downwardly.

4. In bloom-shears, the combination with an upper cross-head, and an intermediate cross-head each carrying a cutter, and a lower cross-head, of hydraulic plunger and cylinder connecting the lower and intermediate cross-heads, hydraulic cylinder and plunger for depressing the upper cross-head, means connecting the upper and lower cross-heads, and means connecting the plunger of the upper cross-head with the intermediate cross-head.

5. In bloom-shears, the combination with an upper cross-head, and an intermediate cross-head each carrying a cutter, and a lower cross-head, of hydraulic devices connecting the intermediate and lower cross-heads, hydraulic

devices for raising and sustaining the lower cross-head, hydraulic devices for depressing the upper cross-head, means connecting the upper and lower cross-heads whereby they move in unison, and means connecting the hydraulic plunger of the upper cross-head with the intermediate cross-head whereby they are caused to move in unison.

6. In bloom-shears, the combination with two cross-heads each carrying a cutter, of hydraulic devices located below the lower cross-head for moving the latter upwardly, hydraulic device above the upper cross-head for forcing the latter downwardly, and means connecting the plunger of the upper cross-head with the lower cross-head.

7. In bloom-shears, the combination with a frame, of a lower cross-head carrying a cylinder, hydraulic devices for elevating said cylinder and cross-head, an intermediate cross-head carrying a cutter and provided with a depending plunger which rests in the cylinder of the lower cross-head, an upper cross-head having a depending cutter and an upwardly-projecting cylinder, a plunger within the latter, means connecting said latter plunger with the intermediate cross-head, and means connecting the upper and lower cross-heads.

der, hydraulic devices for elevating said cylinder and cross-head, an intermediate cross-head carrying a cutter and provided with a depending plunger which rests in the cylinder of the lower cross-head, an upper cross-head having a depending cutter and an upwardly-projecting cylinder, a plunger within the latter, means connecting said latter plunger with the intermediate cross-head, and means connecting the upper and lower cross-heads.

In testimony whereof I have signed this specification in the presence of two subscribing witnesses.

CLARENCE L. TAYLOR.

Witnesses:

A. L. ROBERTS,
NORMAN C. FETTERS.