S. L. SHEETS.

MOLD FOR COLLAPSIBLE METAL CENTERINGS.

APPLICATION FILED FEB. 13, 1909.

953,925.

Patented Apr. 5, 1910.

2 SHEETS—SHEET 1.

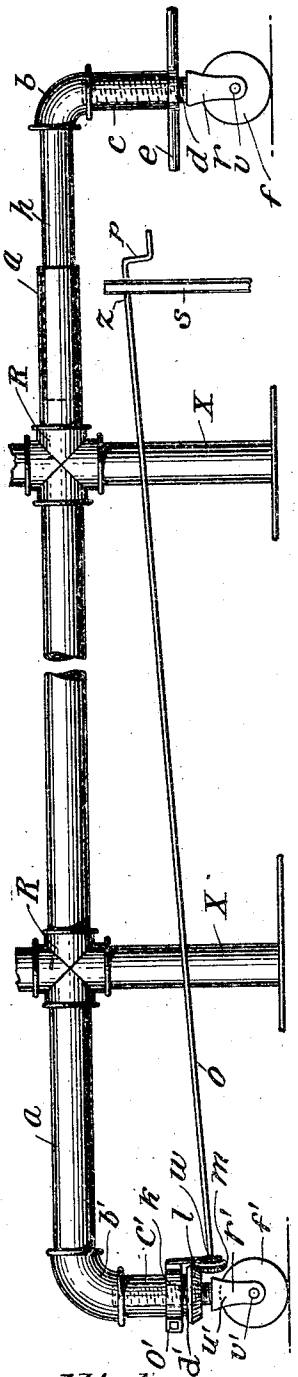

Fig. 4.

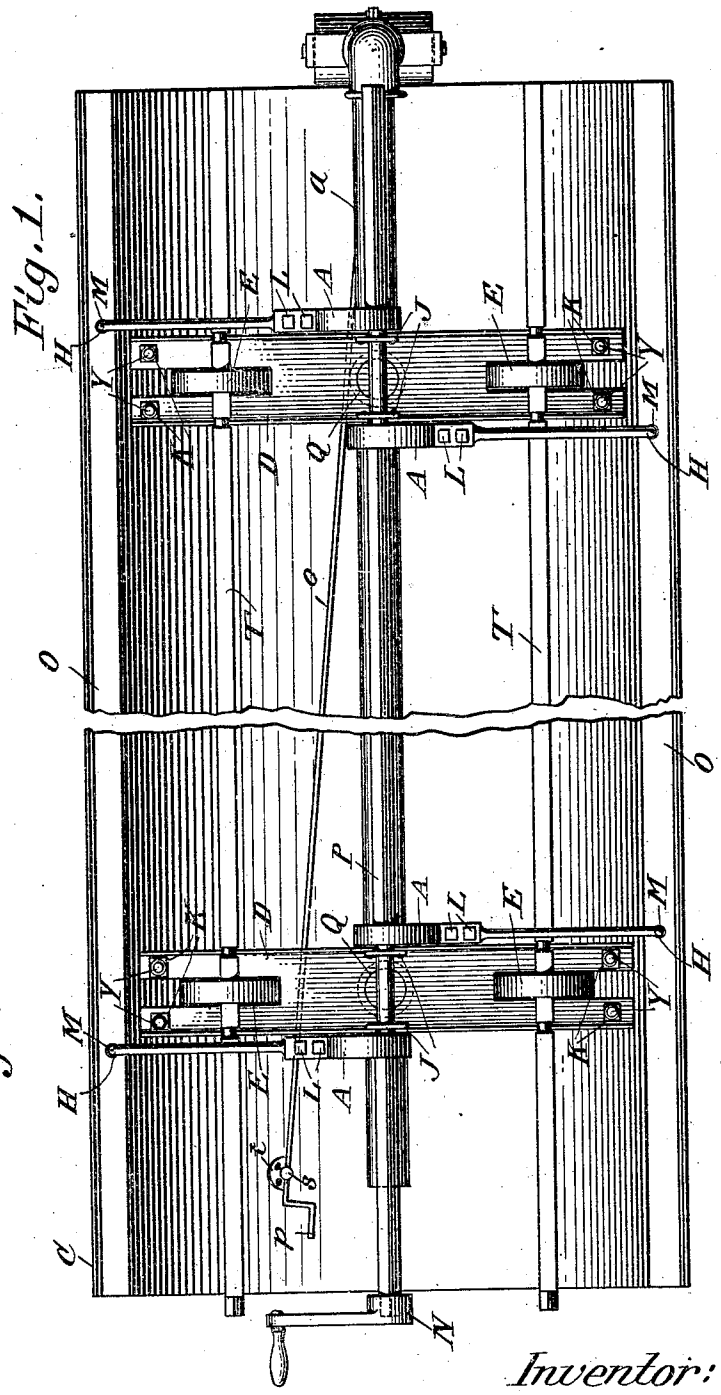

Fig. 1.

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2 SHEETS—SHEET 2.

Fig. 2.

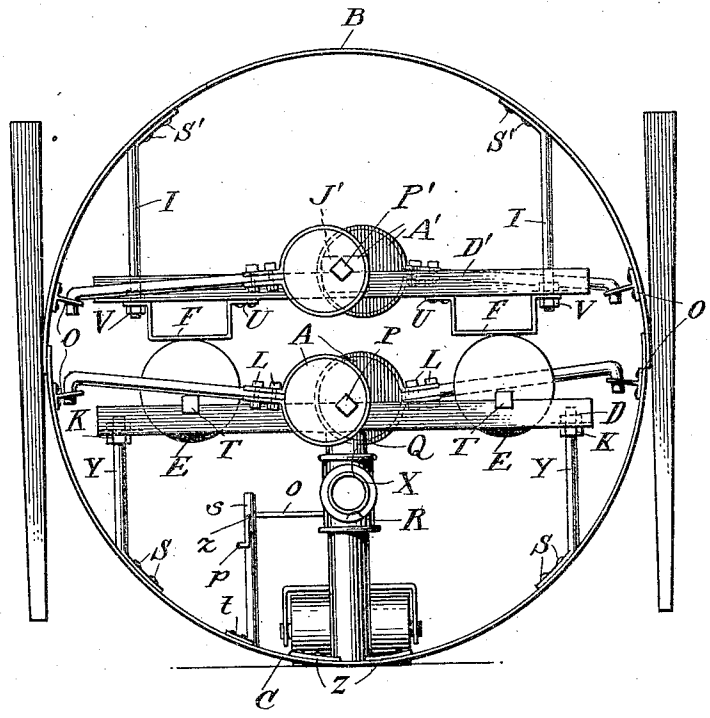
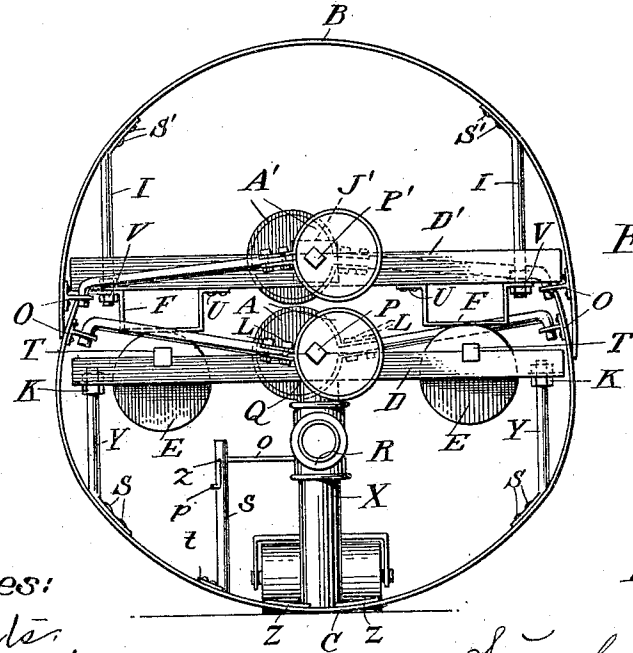


Fig. 3.



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UNITED STATES PATENT OFFICE.

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MOLD FOR COLLAPSIBLE METAL CENTERINGS.

953,925. Specification of Letters Patent. Patented Apr. 5, 1910.

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To all whom it may concern:

Be it known that I, SAMUEL LEE SHEETS, residing at No. 806 South Central avenue, Paris, in the county of Edgar and State of Illinois, have invented a new and useful improvement in molds for collapsible metal centerings for molding monolithic concrete or brick sewers or conduits, either round, hexagon, or egg shaped.

My invention relates to improvements in collapsible metal centerings in which small eccentrics with rods, which are fastened to sides of the shell operate on a center shaft by means of a wrench applied to the end of the shaft; and large eccentrics, or trams operate in conjunction with shoes by means of a wrench applied to the ends of a square shaft on opposite sides of the center shaft.

A carrier is attached to the lower half of the machine to remove the centering from the pipe, after the centering has been collapsed.

The object of my improvement is:—First. To complete a section of solid pipe or conduit in a trench at one setting of the machine. Second. To remove the molds from the pipe, or conduit without entering the pipe.

The expanding and releasing from outside of pipe is convenient and saves time. The molds when collapsed can be removed by means of a carrier attached to the lower half of the shell.

I attain these objects by mechanism illustrated in the accompanying drawings, in which,

Figure I is a plan view of the lower half of the cylindrical shell. Fig. II is a vertical view of the end of the centering machine in position for use. Fig. III is a vertical view of the end of the centering machine collapsed. Fig. IV is a side view of the carrier showing the front removable arm separated from the framework of the carrier.

Similar letters refer to similar parts of the machine throughout the several views.

My machine is formed of a cylindrical shell, which is divided into two equal parts B and C. When the halves are in position for use the upper half slightly overlaps the lower half, as plainly shown in Fig. II of the drawings. Near the edges of each half of the shell are T-irons O and O riveted lengthwise to the shell, as shown in Fig. I. In the T-irons on each half of the shell are eyes at M and M into which the bent ends of the eccentric rods H hook, as shown in Figs. I, II and III.

In C the lower half of the shell, near each end is a channel beam D to which metal supports Y and Y are fastened by bolts and nuts at K and K as shown in Figs. I, II and III. These metal supports Y are riveted to the lower shell at S and S as shown in Figs. II and III. There are two of these metal supports at each end of the channel beams D in the lower half of the shell.

Near each end of the lower half of the shell is a gaspipe post X, having a cross R. A gaspipe extends from the rear end of the shell through the crosses R almost to the front end of the shell, forming a part of the frame work for the carrier. The gaspipe posts X are riveted to the lower shell at Z and Z as shown in Figs. II and III.

The centers of channel beams D and D rests on the gaspipe posts at Q and Q as shown in Fig. I. Just above the center of the channel beams D and D, and passing through C from end to end is a square center shaft P, which is held in place by boxings J and J. These boxings are bolted to the sides of the channel beams D and D. There is a square shaft on each side of the center shaft, passing parallel with it through the lower half of the shell. These square shafts T and T turn in boxings J and J, which are bolted to the sides of the channel beams D.

There are two small eccentrics A and A arranged oppositely on the center shaft P, one eccentric on each side of the channel beams D and D in each end of the lower half of the shell, as shown in Fig. I. These small eccentrics turn with the center shaft P by means of a wrench N applied to the end of the shaft as shown in Fig. I. These small eccentrics A and A are joined to the eccentric rods H and H by a strap passing around the eccentrics and fastened to the rods H and H by bolts and nuts at L and L. The outer ends of the eccentric rods H and H are bent so as to form hooks as shown in Figs. II and III.

On the square shafts T and T are large eccentrics E and E, (or trams could be used), which turn through an open space in the channel beams as shown in Fig. I,

by means of a wrench applied to the end of each shaft.

In the upper half B of the shell are metal supports I and I riveted to the outer part of the shell at S′ and S′. These supports I and I are finished as stud bolts with long threads and pass through an eye in each end of the channel beams D′ and D′ and also through the outer arm of the shoes F and F and are fastened with a double nut for adjustment at V and V.

Bolted to the sides of channel beams at the center are boxings J′ and J′ through which a square shaft P′ passes from end to end of the upper half B of the shell. On each end of the square shaft P′ are small eccentrics A′ and A′ arranged in the same manner as A and A are arranged in C the lower half of the shell.

Fastened to the under side of the channel beams D′ and D′ in the upper half are shoes F and F, made of flat bars of metal bent in shape as shown in Figs. II and III. The inner arms of the shoes are riveted to the channel beams D′ and D′ at U and U, the outer arms being secured to the channel beams by the stud bolt and nut at V and V. These shoes F and F are placed on the channel beams in the upper half just opposite the large eccentrics E and E of the lower half of the shell.

Wrench N fits all the shafts in the machine.

The front part of the carrier is removable, and the arm *h* slips into the cross R of the framework, which is made of two gaspipe posts connected by a gaspipe *a*, which extends through the lower half of the shell from the rear end almost to the front of the shell, just underneath the center shaft P.

To make the front part of carrier, an elbow *b* is screwed onto a piece of gaspipe *h*, and another piece of gaspipe *c* is screwed into elbow *b*. A threaded screw *d* is inserted into gaspipe *c*. The handle *e* is threaded and turns on the threaded screw *d*, leaving *c* to rest on handle *e*, and by turning the handle *e* the front of the machine is raised or lowered.

A flat piece of metal is bent into a square clevis *r*. To the center of *r* the threaded screw *d* is riveted. In the end of each arm of the clevis *r* is an eye *v* to admit the axle of the roller *f*. The roller *f* revolves on an axle which passes through the eyes *v* and *v* in the arms of the clevis *r*.

The back carrier is stationary, and is made of an elbow *b′* screwed onto the gaspipe *a*, and into elbow *b′* is screwed gaspipe *c′*. The threaded screw *d′* is inserted into the gaspipe *c′* through the bevel gear wheel *l*, which is threaded and acts as a nut, so that the gaspipe *c′* rests on the bevel gear *l*.

A square clevis *r′* is riveted to the threaded screw *d′* in the middle of the clevis *r′*. The roller *f′* revolves on an axle which passes through the eyes *v′* in the arms *u′* of the clevis.

A flat piece of metal is bent around the gaspipe *c′* and bolted together on the front side of *o′* forming the collar *k*, the end of which is bent downward and has an eye *w* in the lower end of it in which the hub of the beveled gear *m* is supported.

The adjustment rod *o* passes through an eye *z* in the upper part of the support *s*, which is riveted to the lower shell at *t*. Rod *o* is slipped into the hub of the gear wheel *m*, and is held in place by means of a set screw. This adjustment rod passes through the shell at an angle, and is bent at the front end to form a crank *p* for turning the beveled gear *m*, by which the rear end of the centering machine is raised or lowered.

The machine is operated as follows:—The lower half of the shell is placed in the trench, and the upper half B is set on C with its edges slightly overlapping those of C. The operator places a wedge shaped piece of studding in the trench on each side of the lower half of the shell near the front end at W and W to hold the lower half of the shell in position. The operator places a wrench N on the front end of the square shaft P′ in the upper half, and turns the shaft until the long side of the small eccentrics A′ and A′ points toward the eccentric rods H′ and H′. This throws the edges of the upper half of the shell out. And by placing the wrench N on the end of the center square shaft P in the lower half of the shell, and turning the shaft P until the small eccentrics A and A in the lower half are in the same position as those in the upper half, the sides of the half shells are forced outward. By placing wrench N on the ends of the side shafts T and T, and turning one shaft at a time, until both are turned so that the long sides of the large eccentrics E and E are pointing up, and resting against the shoes F and F in the upper half of the shell, the machine is in a taut position as shown in Fig. II, and ready to receive the material of which the conduit is made.

To collapse the machine after the concrete has set: Place the wrench N on the center shaft P in the lower half C of the shell, and turn the shaft until the long sides of the small eccentrics A and A point from the eccentric rods H and H, thereby making a partial side release by drawing in the sides of the lower half C. Place the wrench N on shaft P′ in the upper half B of the shell and turn the shaft P′ until the eccentrics A′ and A′ are in the same position as A and A in the lower half C, making the side release complete. Place the wrench N on the side square shafts T and T in the lower half C

of the shell, and turn the shafts, one at a time, so that the long sides of the large eccentrics E and E point downward, making the vertical release; and the shoes F and F now rest on the short sides of the large eccentrics E and E, as shown in Fig. III, and the machine is completely collapsed.

To remove the machine from the pipe by carrier: After the machine is completely collapsed the gaspipe arm *h*, which carries the front roller *f*, is inserted into the cross R of the gaspipe post X, and by turning the handle *e*, which forms the tap on the threaded screw *d*, the front end of the centering is raised. By turning the crank *p* of the adjustment rod *o*, which connects with the beveled gear *m* at the rear end of the machine, the rear of the centering is raised, and the machine rests on the rollers *f* and *f'* ready to be moved forward in the trench.

My invention has a double release. My invention completes a whole section of the pipe in a trench at one setting. My releasing is done outside of the pipe. My machine is held up by the carrier. The front roller of my carrier rests on a plank in the bottom of the trench, and the rear roller rests in the bottom of the end of the last completed section of pipe. My invention has a carrier on rollers to remove the machine from the pipe, after the machine has been collapsed. My invention is adjusted to the grade by raising or lowering the screw.

My invention has an arrangement of small eccentrics on a center shaft attached to the sides of the shell to make a side release, and large eccentrics (or trams could be used) turning against shoes above them to make a vertical release, thereby making a greater side release, which makes it convenient for removing the molds out of the pipe when turning a curve in the trench. This leaves space at the side of the machine to work in. The conduit is molded around and on the outside of my machine at one setting. Therefore I say that the arrangement of the small eccentrics on a center shaft and the large eccentrics turning against the shoes above them is a new and useful improvement in molds for collapsible centerings.

I claim:

1. The combination in a form of collapsible metal centerings for molding concrete or brick sewer pipe or conduits, of a cylindrical metal shell divided into separate halves, the T-irons, provided with an eye near each end, riveted lengthwise near the edge on the inside of each half shell, the eyes in the T-irons for the reception of the bent or hook ends of the eccentric rods, the eccentric rod secured to each small eccentric by a bolted strap, the strap around each eccentric bolted through the eccentric rods, the small eccentrics mounted oppositely on a center shaft in each half shell, the large eccentrics or trams mounted on the side shafts and turning through the open space in the channel beams in the lower half shell, the square center shaft secured to the channel beams in each half shell by means of boxings, the square shafts on opposite sides of the center shaft and parallel with it in the lower half shell, secured to the channel beams by means of boxings bolted to said beams, the boxings bolted to said beams, the channel beams near the ends of each half shell secured to the shell by metal support rods, the 4 metal support rods riveted to the top of the upper half shell, their inward projecting ends terminating in a stud bolt with long threads, the said stud bolts passing through the channel beams and the outer arms of the shoes in the upper half shell, the double nuts on said stud bolts for adjustment, the 8 metal support rods riveted to the bottom of the lower half shell, passing through the channel beams, being threaded and nutted on the end, the shoes, the inner arms of which are riveted to the channel beams and the outer arms bolted to the channel beams in the upper half shell; the rivets, which secure the arms of the shoes to the channel beams—the support rods for the channel beams and adjustment rod,—the T-irons and the gaspipe posts to the half shells; the bolts and nuts which secure the straps to the eccentric rods—the boxings to the channel beams, the gaspipe posts riveted to the bottom of the lower half shell, on which the beams rest, the cross on each of said posts for the reception of the gaspipe which forms a part of the framework of the carrier, and passes lengthwise through the lower half shell under the center shaft, the gaspipe, the rear of which is screwed into a large elbow, the large elbow connecting said gaspipe to a vertical piece of gaspipe, the vertical piece of gaspipe, which rests on the horizontal bevel gear wheel, the said vertical gaspipe and the horizontal gear being threaded for the reception of the screw, which is riveted to the square clevis, the screw, the square clevis, the arms of said clevis being provided with an eye for the reception of the axle of the roller, the eyes, the axle, the roller mounted on said axle, the collar bolted around the vertical gaspipe, said collar is bent downward and has an eye near the lower end for the support of the hub of the vertical bevel gear wheel, the hub of said gear wheel secured to the adjustment rod by a set screw, the set screw, the adjustment rod, which is placed at an angle through the shell, passing through the eye in the support rod, which is riveted to the bottom and near the front end of the lower half shell, the said support rod, the eye in said

rod, the crank on the end of the adjustment rod, the removable arm of the carrier, which may be inserted in the front end of the gaspipe, and is made of a horizontal piece of gaspipe screwed into a small elbow, the small elbow joined to a vertical piece of gaspipe, the vertical piece of gaspipe, the handle on which it rests, both being threaded for the reception of the screw, which is riveted to the square clevis, the screw, the square clevis, the arms of said clevis, the eye in each arm of said clevis, the axle secured in said eyes, the roller mounted on said axle, the wooden wedges, and the removable wrench, which is placed on the end of each shaft for the purpose of releasing and expanding the shell of the molds, all substantially as set forth.

2. The combination in a carrier of the gaspipe posts riveted to the bottom of the lower half shell, the crosses on said posts for the reception of the gaspipe, the gaspipe, the rear of which is screwed into a large elbow, the large elbow connecting said gaspipe to a vertical piece of gaspipe, the vertical piece of gaspipe, which rests on the horizontal bevel gear wheel, the horizontal bevel gear wheel, both the vertical gaspipe and the horizontal gear wheel being threaded for the reception of the screw, which is riveted to the square clevis, the screw, the square clevis, the arms of said clevis, which have eyes for the reception of the axle of the roller, the eyes, the axle, the roller mounted on the said axle, the collar, which is bolted around the vertical gaspipe, the eye near the lower end of said collar for the reception of the hub of the vertical bevel gear wheel, the hub of said gear wheel secured to the adjustment rod by a set screw, the set screw, the adjustment rod placed at an angle through the shell, and passing through the eye in the upper end of the support rod and terminating in a crank, the support rod, which is riveted to the bottom and near the front end of the lower half shell, the eye in said rod near upper end, the crank on end of adjustment rod, the removable arm of the carrier, which may be inserted in the front end of the gaspipe, the horizontal piece of gaspipe screwed into a small elbow, the small elbow joined to a vertical piece of gaspipe, the threaded vertical gaspipe, the handle on which it rests, both handle and vertical gaspipe being threaded for the reception of the screw, which is riveted to the square clevis, the screw, the square clevis, the arms of said clevis provided with eyes for the reception of the axle, the axle secured in said eyes, and the roller mounted on said axle, all substantially as set forth.

3. The combination in a form of collapsible metal centerings for molding concrete or brick sewer pipe or conduits, of a cylindrical metal shell divided into separate halves, the T-irons provided with an eye near each end, riveted lengthwise near the edge on the inside of each half shell, the eyes in the T-irons for the reception of the bent ends of the eccentric rods, the eccentric rod secured to each small eccentric by a bolted strap, the strap around each eccentric bolted through the eccentric rods, the small eccentrics mounted oppositely on a center shaft in each half shell, the large eccentrics or trams mounted on the side shafts in the lower half shell, the square center shaft secured to the channel beams in each half by means of boxings, the square shafts on opposite sides of the center shaft and parallel with it, secured to the channel beams in the lower half shell by means of boxings bolted to said beams, the boxings bolted to the channel beams, the channel beams near the ends of each half shell secured to the shell by metal support rods, the 4 metal support rods riveted to the top of the upper half shell, their inward projecting ends terminating in a stud bolt with long threads, the said stud bolts passing through the channel beams and the outer arms of the shoes in the upper half shell, the double nuts on said stud bolts for adjustment, the 8 metal support rods riveted in the bottom of the lower half shell, and they passing through the channel beams are threaded and nutted on the end, the shoe, the inner arms of which are riveted to the channel beams, and the outer arms bolted to the channel beams in the upper half shell, the rivets, securing the arms of the shoes to the channel beams, the support rods, the T-irons and gaspipe posts to the half shells, the gaspipe posts, riveted to lower half shell, on which the lower channel beams rest, the bolts and nuts securing the straps to the eccentric rods, the boxings to the channel beams and the channel beams to the support rods all substantially as described and for the purpose specified.

In testimony whereof I affix my signature in the presence of two witnesses.

SAMUEL LEE SHEETS.

Witnesses:
A. Y. TROGDON,
IDA TROGDON.