(No Model.) 2 Sheets—Sheet 1.

F. R. PACKHAM.

CRIMPING MACHINE.

No. 349,355. Patented Sept. 21, 1886.

Fig. 1

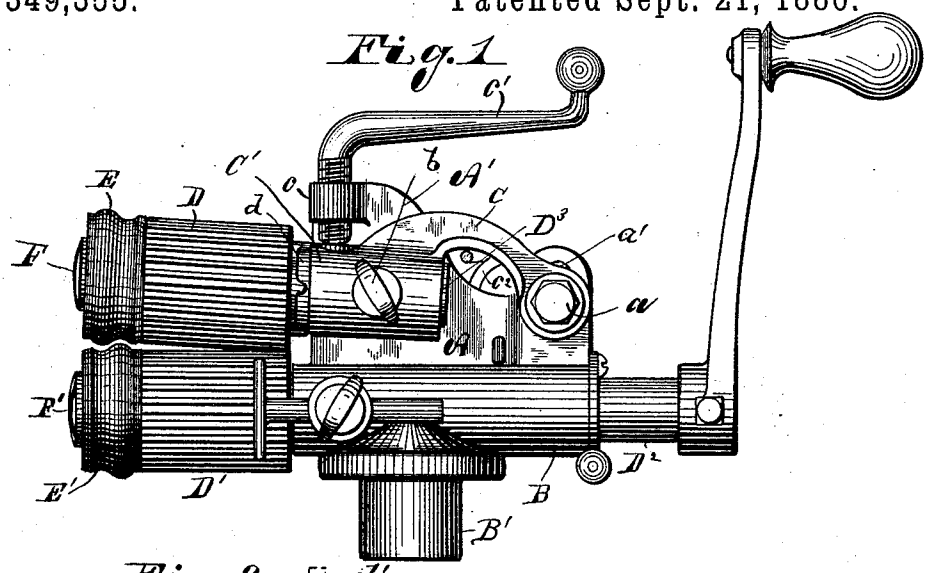


Fig. 2

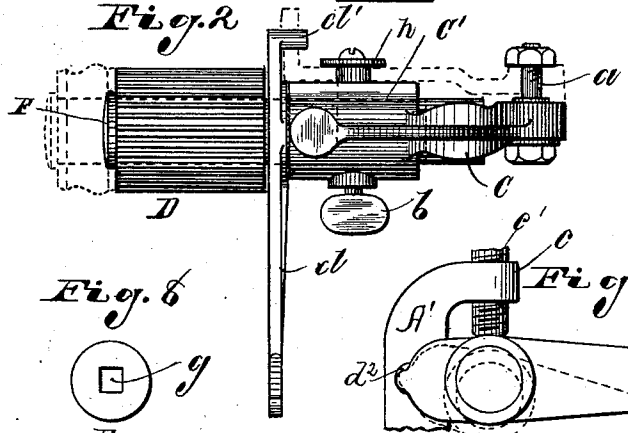


Fig. 8

Fig. 5

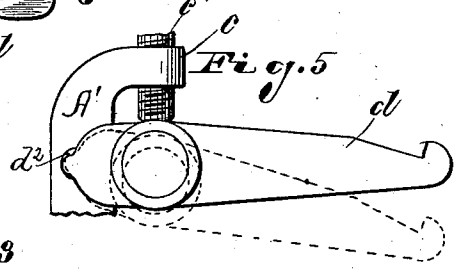


Fig. 6

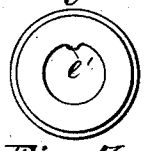


Fig. 7

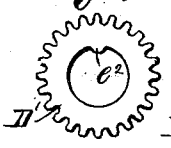


Fig. 3

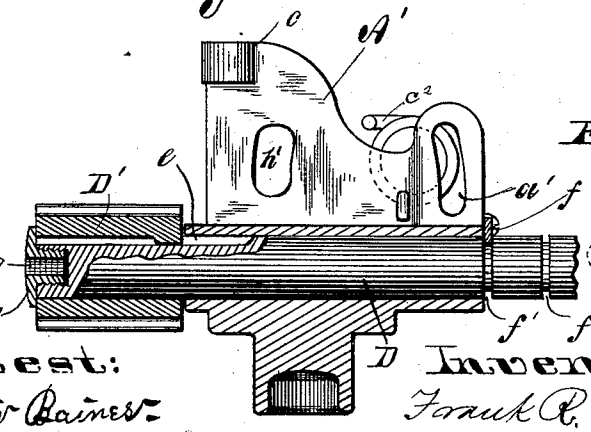
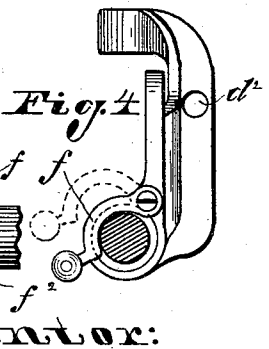


Fig. 4



Attest:

F. Hillis Baines.

W. S. Coushman

Inventor:

Frank R. Packham

By Paul D. Stalo Pat'y.

N. PETERS. Photo-Lithographer, Washington, D. C.

(No Model.) 2 Sheets—Sheet 2.

F. R. PACKHAM.

CRIMPING MACHINE.

No. 349,355. Patented Sept. 21, 1886.

Fig. 9

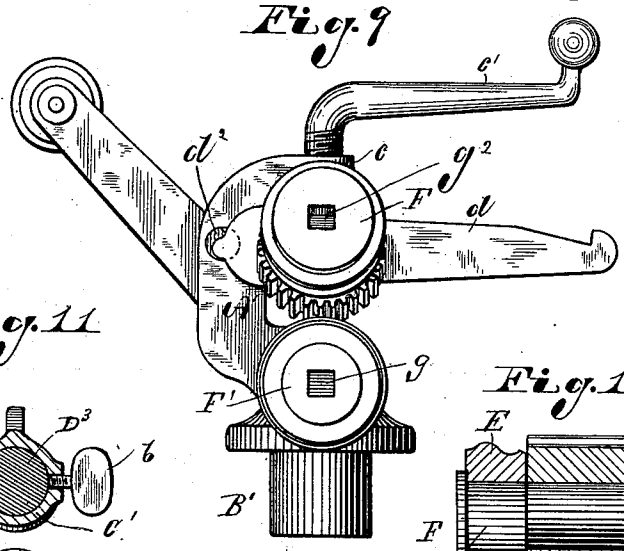


Fig. 11

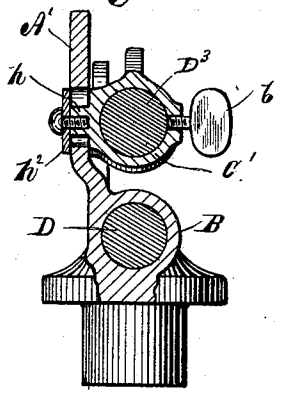


Fig. 12

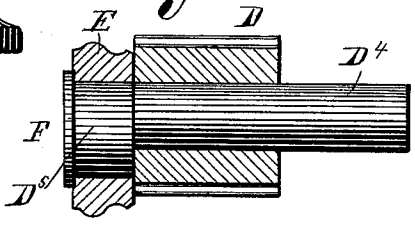


Fig. 10

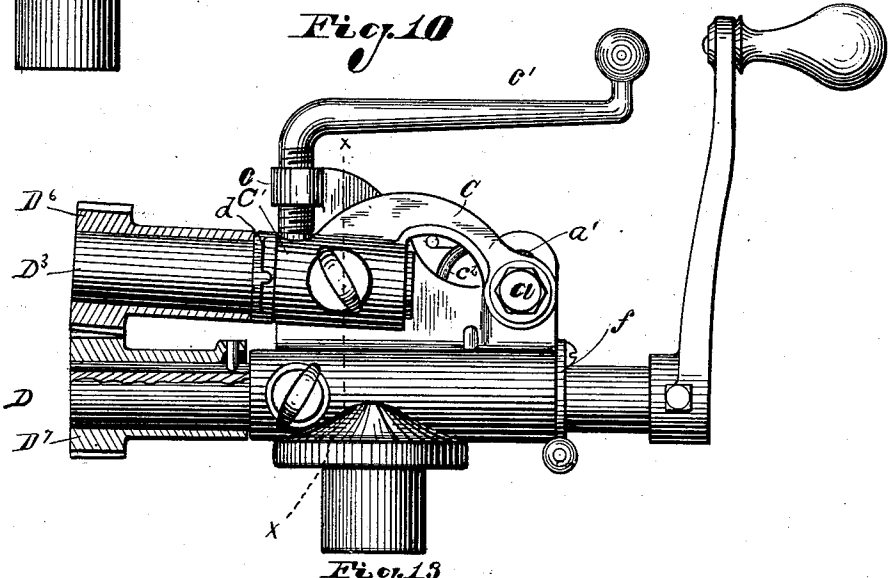
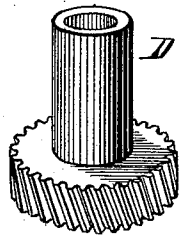


Fig. 13



Attest:

F. Willis Raines

W. S. Cushman

Inventor:

Frank R. Packham

By Chas. F. Clarke

Atty

N. PETERS. Photo-Lithographer, Washington, D. C.

UNITED STATES PATENT OFFICE.

FRANK R. PACKHAM, OF MECHANICSBURG, OHIO.

CRIMPING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 349,355, dated September 21, 1886.

Application filed May 7, 1886. Serial No. 201,495. (No model.)

To all whom it may concern:

Be it known that I, FRANK R. PACKHAM, a citizen of the United States, residing at Mechanicsburg, in the county of Champaign and State of Ohio, have invented certain new and useful Improvements in Crimping-Machines, of which the following is a specification.

This invention relates to that class of crimping-machines in which two crimping-rolls mounted on separate bearings are adapted to intermesh and be revolved to crimp the ends of pipe or other similar articles, to produce a taper thereon.

The objects of the invention are, first, to provide a crimping-machine for crimping pipe or other articles, and adapted to form an ogee groove or bead at the same operation which produces the crimping, the machine being capable of an adjustment whereby the ogee or beading rolls may be dispensed with without the necessity of supplying blanks to fill the spaces previously occupied thereby; second, to provide for crimping short flanges or projections—such as bucket-lids, &c.—whereby the projecting flanges or rims thereof may be formed on a taper when made from a straight piece of metal; third, to provide a novel arrangement for adjusting the angle of the rolls, to produce a greater or less taper and vary the depth of the crimps; fourth, to provide for varying the depth of the beading with reference to the crimping, whereby light or heavy beading may be produced with any desired length or depth of crimps; fifth, to improve the general construction of machines of this class, cheapening their construction, and at the same time adding to the efficiency of their work. To this end my invention consists in the various constructions and combinations of parts hereinafter described, and pointed out in the claims.

In the accompanying drawings, Figure 1 is a side elevation view of a machine embodying my invention. Fig. 2 is a plan view of the swinging arm for supporting the upper roll, the ogee-roll being shown thereon in dotted lines. Fig. 3 is a sectional elevation view of the frame, the upper supporting-arm being removed. Figs. 4 to 8, inclusive, are detailed views of some of the various parts. Fig. 9 is a front elevation view showing the supplemental shaft in the upper supporting-arm. Fig. 10 is a side elevation view showing the machine adapted for crimping short projections or flanges. Fig. 11 is a transverse sectional elevation view on line X X in Fig. 10. Fig. 12 is a detailed view of the supplemental shaft with the roll shown in section thereon. Fig. 13 is a detailed view of the auxiliary roll.

Like parts are indicated by similar letters of reference throughout the several views.

The main frame A consists, essentially, of the bearing B, at the bottom of which is a projection, B′, to fit the usual supporting-standard, and a single upwardly-projecting side or wing, A′. To the rear end of the wing or side A′ is pivoted a supporting-arm, C, which is provided at the front end with a sleeve or socket, C′, adapted to receive the shaft or bearing which supports the upper roll, D. The lower roll, D′ is supported on a shaft, D^2, which extends through the bearing B of the main frame. The rolls D D′ are provided in the usual manner with a series of serrations or flutes to produce the crimps, and are preferably made of the same diameter throughout. In order that the crimps may be produced of a varying depth, and thus form the crimped end of the pipe on a taper, the upper shaft or bearing is supported at an angle to the lower shaft, D.

It is sometimes desirable that the angle at which the rolls stand in relation to each other be changed, so that the taper may be formed for a greater or less distance on the end of the pipe and a variation secured in the depth of the crimps. It is desirable, however, that the rear ends of the rolls remain flush with each other. In order to provide for this adjustment, I support the pivot *a*, on which the swinging arm C is journaled, in a slotted opening, *a′*, formed in the wing A′ on the arc of a circle struck from the intersection of the crimping-rolls at their rear ends.

The pivot *a* is preferably made in the form of a bolt, which passes through the slotted opening *a′*, and is provided at the outer end with a nut adapted to screw thereon, a shoulder being preferably formed, so that the bolt may be tightened in the side wing of the frame without binding the supporting-arm thereon.

The socket or sleeve C′, in which the upper shaft, D^3, is supported, is of the same diameter throughout, and is provided on one side with a set-screw, *b*, by means of which the shaft

D^3 will be held in any desired position in said sleeve. On the upper part of the wing A′ is a projecting lug, *c*, through which projects the end of the usual hand-screw, *c′*, the end of which is adapted to bear against arm C to adjust the position of the upper roll, a coil-spring, c^2, supported on the frame A, being adapted to support the weight of the upper roll and the swinging arm C and press said arm against the adjusting-screw *c′*.

The upper shaft, D^3, is preferably passed through an arm, *d*, provided at the rear with a small projection, *d′*, adapted to engage in an opening, d^2, in the frame A. This lever *d* is provided with a hook, to which may be attached a chain or suitable connection leading to a foot-treadle, by which the position of the upper roll may be changed, thus dispensing with the use of the hand-screw *c′*.

E E′ are the ogee or beading rolls, which are usually employed in connection with the crimping-rolls to produce a groove or bead in the pipe being crimped. In order that these rolls may be dispensed with, when desired, without the necessity of supplying their place with blanks, as heretofore, I so construct and arrange the shaft D that it may be readily moved longitudinally to take up the slack or space left at the end thereof when the beading-roll is removed. To do this I construct the shaft of the same diameter throughout, and provide means for securing the shaft against longitudinal motion in the different positions of adjustment, which means permit the shaft to be revolved in either position of adjustment. The shaft is also provided at the forward end with suitable means for connecting the rolls thereto, so that said rolls will revolve therewith, but in such a manner that the shaft may be moved longitudinally in relation thereto. This I preferably accomplish by providing in the forward end of the shaft D a keyway, *e*, with which a suitable spline or projection, *e′* e^2, on the respective rolls is adapted to engage.

At the rear end of the frame A is provided a hinged latch, *f*, adapted to engage in grooves *f′* f^2 in the shaft D. The rolls are held on the end of their respective shafts by means of nuts F F′. These nuts are preferably screwed into the end of the shaft and are provided in the center with a suitable opening, *g*, adapted to receive the end of a square key or wrench, by which they may be screwed into or out of their respective shafts.

When it is desired to use the machine without the ogee or bead rolls, the nuts F F′ are withdrawn and the ogee-rolls removed. The latch *f* is raised from the groove f^2 and the shaft D slipped back until in the position shown in Fig. 3 the latch *f* is dropped into groove *f′*. The set-screw *b* in the upper supporting-arm, C, is loosened and the shaft d^3 is slipped back through the sleeve *c′* until the space occupied by the roll E is taken up. The nuts F F′ are then replaced and the machine is ready for operation without the ogee-rolls.

The nuts F F′, I preferably make with a very thin head, which, if desired, may be countersunk in the end of the roll. In this way when the ogee-rolls are removed the ends of the crimping-rolls are left unincumbered, so that they may be employed for crimping short projections or flanges—such as the projections of bucket-lids, &c.

It is sometimes desirable, especially when crimping stove-pipe of poor quality, that a variation be effected in the beading formed therein without varying the crimps or taper of the end of the pipe. For this purpose I provide a supplemental shaft, D^4, adapted to fit into the sleeve C′ of the supporting-arm C. This shaft D^4 is provided at the forward end with a cam, D^5, on which the ogee-roll is journaled, the crimping-roll being journaled on the main part of the shaft in the usual manner.

The end of the shaft D^4 is provided with a socket, g^2, adapted to receive the end of a suitable key or wrench, by means of which the shaft may be turned to any desired position.

When it is desired to effect a variation in the groove or bead without changing the crimp produced in the pipe, the shaft D^3 is removed from the sleeve C′ and the shaft D^4 substituted therefor.

It will be seen that by turning the shaft D^4 in the bearing or sleeve C′ the ogee-roll may be brought into any desired position with relation to the lower roll. The crimping-roll being journaled on the main portion of the shaft, whose center is on a line with the center of the sleeve C′, no variation is produced therein by the revolution of the shaft D^4. The ogee-roll, however, being journaled on the eccentric portion D^5 of the shaft, may be placed in any desired position with reference to the lower roll by simply turning the said shaft in its bearings. The eccentric is preferably formed so that, if desired, the ogee-roll may be raised sufficiently so that it will be entirely withheld from contact with the work.

In order that the swinging arm C may be held firmly against lateral motion, and at the same time be permitted to rise or fall in adjustment of the crimping-rolls, I provide on the side thereof a projection, *h*, near the front end, adapted to pass through a slotted opening, *h′*, in the side or wing of the frame A, a washer, h^2, being provided thereon on the outside of the said wing, as shown in Fig. 11.

The side of the arm C next to the wing A′ is faced off to form a bearing against the said wing. By this construction the arm is adapted to move freely up and down upon its pivotal bearing *a*, but is held against lateral motion thereon.

In Figs. 10 and 13 I have shown crimping-rolls adapted expressly for crimping short projections or flanges, such as the projections or rims of bucket-lids or similar constructions. These rolls D^6 D^7 are each provided with an extended sleeve or collar adapted to take up the space on the respective shafts D and D^3 occupied by the crimping-rolls and ogee-rolls. The lower roll is provided with a suitable projec-

tion adapted to engage in the keyway in shaft D, the said rolls being of sufficient length to stand flush with their respective shafts on the said journals.

When it is desired to crimp a projection close up to a shoulder or corner, the nuts F F′ may be dispensed with, the pressure of the work against the rolls being sufficient to hold them in place.

It will be seen that by the construction above described I provide a machine capable of ready adjustment for any kind of work. The frame, being formed with a single wing or side projection, may be readily cast with the slotted openings therein without the use of cores.

By the construction of the hinged supporting-arm C above described in connection with the frame A, it will be seen that the bearing for the upper roll, D, is independent of the swinging arm, and may be readily removed and replaced as desired. By this construction the labor in fitting up the machine is materially decreased. The lower shaft, D′, being of the same size throughout, may be formed from cold-rolled shafting with very slight fitting thereon. All the parts are exceedingly simple, and may be readily constructed and assembled with very little fitting, except such as may be accomplished by ordinary straight-forward machine-work.

It is obvious that the constructions may be considerably varied, if desired. Instead of the latch *f*, a suitable sliding pin or key might be used with equally good results.

If desired, several grooves might be employed in the main shaft to provide for different-sized rolls or different adjustments of the machine.

The lever *d* or the hand-screw *c′* may either be employed to the exclusion of the other, or both may be used, as desired.

Other modifications may be employed, which will readily suggest themselves to the mind of an ordinary mechanic.

Having thus described my invention, I claim as follows:

1. In a crimping-machine, a driving-shaft supporting one or more crimping-rolls which revolve with said shaft and are capable of a longitudinal movement thereon, said shaft being adapted to move longitudinally in the bearing in it, which it is also adapted to revolve, and means for holding said shaft in different positions of longitudinal adjustment, whereby a greater or less proportion of said shaft may be projected from its bearing to accommodate the roll or rolls thereon, substantially as specified.

2. The combination, in a crimping-machine, with the crimping-rolls, of a shaft adapted to revolve said rolls, one of which is connected to said shaft by means which will permit a longitudinal movement thereon, said shaft being capable of a longitudinal movement in its bearing, and provided with grooves and a suitable fastening device to engage the grooves and hold said shaft against longitudinal movement, substantially as and for the purpose set forth.

3. The combination, in a crimping-machine, of a frame having a lower bearing and a single side wing or extension, of a hinged supporting-arm in the same vertical plane with said lower bearing, pivoted to said side wing, and means, substantially as specified, for securing the upper-roller bearing to said supporting-arm.

4. The combination, in a crimping-machine, of a main frame having a lower bearing and an upwardly-projecting side wing, a hinged arm supporting the upper-roller bearing, said hinged arm being provided with a projection and shoulder adapted to project through and form a bearing on said side wing, substantially as specified.

5. The combination of the main frame having bearings with the crimping-rolls journaled in the bearings, one of said bearings being pivoted at the rear to the main frame through a slot formed on the arc of a circle, having its center at the point of intersection of the rear faces of said crimping-rolls, substantially as set forth.

6. The combination, with the main frame and the crimping-rolls supported on suitable journals on said main frame, of a hinged supporting-arm, provided with a sleeve or socket of a uniform size throughout, adapted to support the upper journal, and means for securing said journal in different positions of adjustment in said sleeve, substantially as specified.

7. The combination, with a main shaft having crimping and ogee rolls thereon, of a supplemental shaft supporting a crimping-roll, said supplemental shaft being provided with an eccentric portion to support the ogee-roll, and means for supporting said shaft which will permit of a rotary motion about its axis, substantially as and for the purpose set forth.

8. The combination, with the crimping-rolls and their respective supporting-shafts, said shafts being capable of longitudinal movement through their respective bearings or supports, of thin-headed securing-nuts adapted to screw into the said shafts to hold the roll thereon, substantially as and for the purpose set forth.

9. The combination, with the main frame and the intermeshing rolls, of the supporting-shafts for said rolls, each capable of a longitudinal movement to provide for the use of a greater or less number of rolls, substantially as specified.

10. The combination, with the main frame, of the crimping-rolls and their supporting-bearings, said bearings being of a uniform size throughout and free or unincumbered at their outer ends, whereby the said rolls may be adapted to stand flush with the outer ends of said bearings, substantially as specified.

11. The combination, with the main frame having the lower bearing and a single upwardly-projecting side flange or wing, of the main shaft supporting the lower roll and adapted to slide longitudinally through the lower bearing, and the upper supporting-arm pivoted to the single upwardly-projecting

flange or wing, and supporting the upper roll, substantially as described.

12. The combination, with the main frame having the lower bearing for the main shaft, and the single flange or wing, of the supporting-arm adjustably secured at either end to said flange, substantially as and for the purpose set forth.

13. The combination, with the frame and rolls, of the main shaft journaled in said frame and capable of longitudinal movement in its bearings, and provided with a series of grooves, and a hinged latch, adapted to engage with the respective grooves, substantially as specified.

In testimony whereof I have hereunto set my hand this 30th day of April, A. D. 1886.

FRANK R. PACKHAM.

Witnesses:
PAUL A. STALEY,
C. H. AULGUR.