R. E. DEVINE.

MACHINE FOR EMBOSSING SEAMLESS KNIFE HANDLES.

APPLICATION FILED JUNE 1, 1914.

1,154,618. Patented Sept. 28, 1915.

Fig.1.

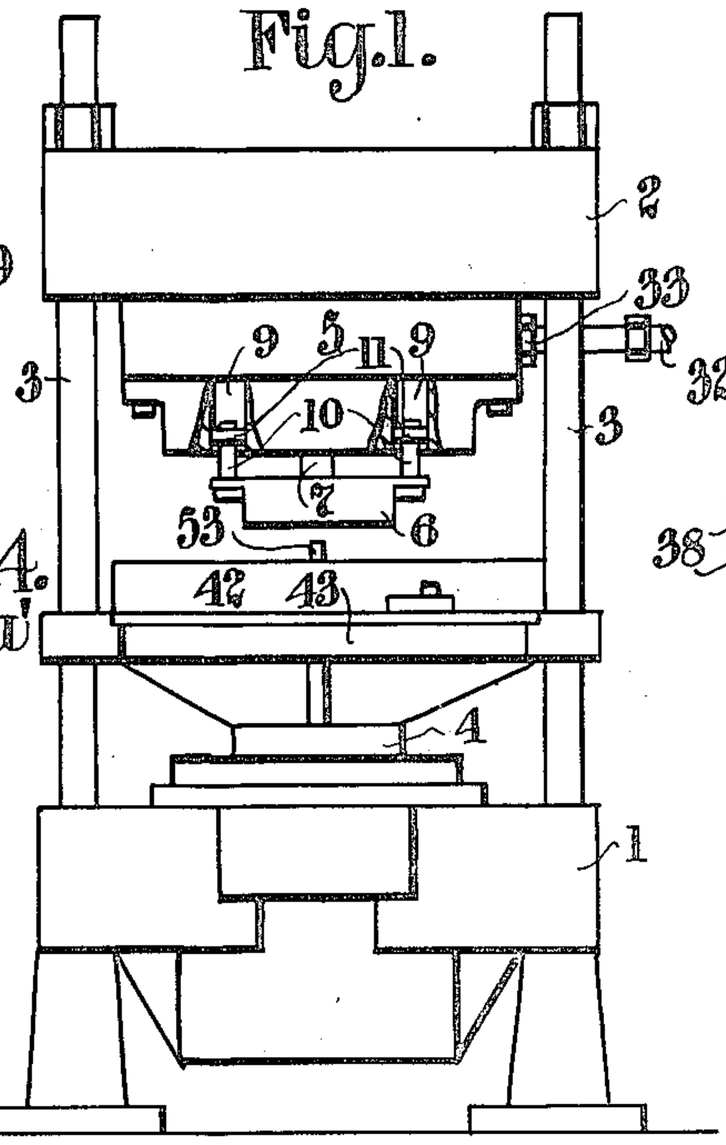


Fig.4.

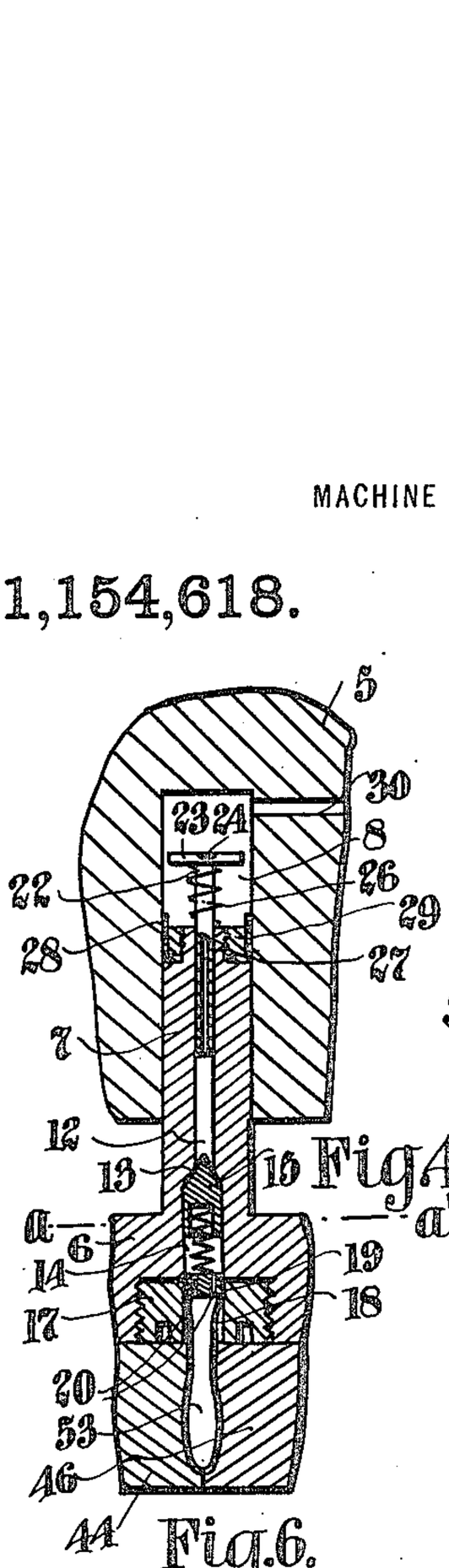


Fig.5.

Fig.7.

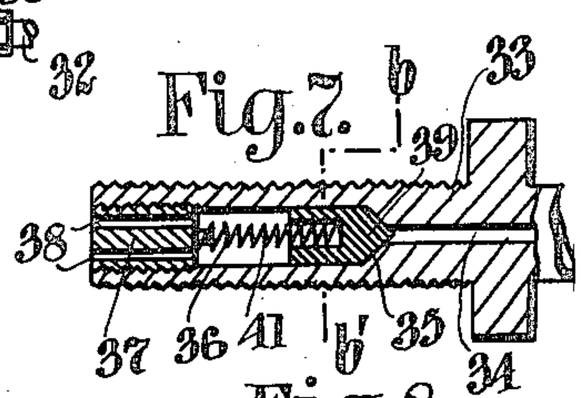


Fig.8.

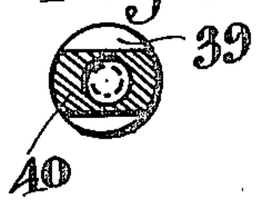


Fig.6.

Fig.2.

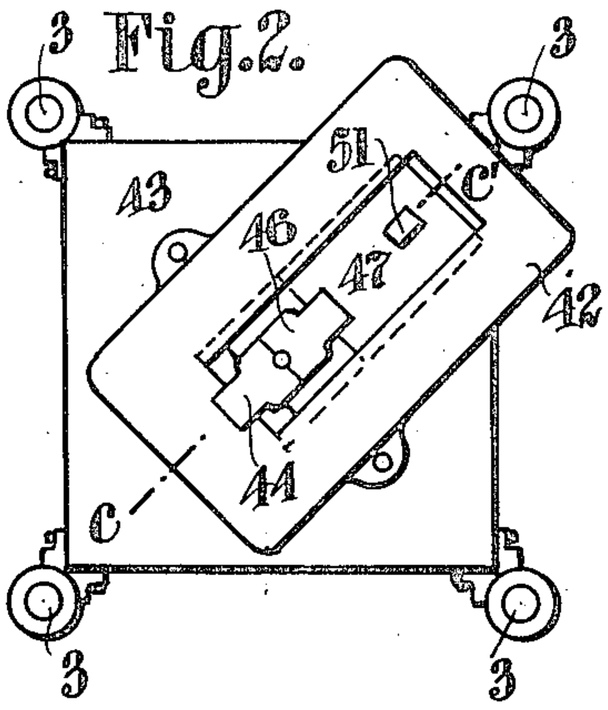


Fig.3.

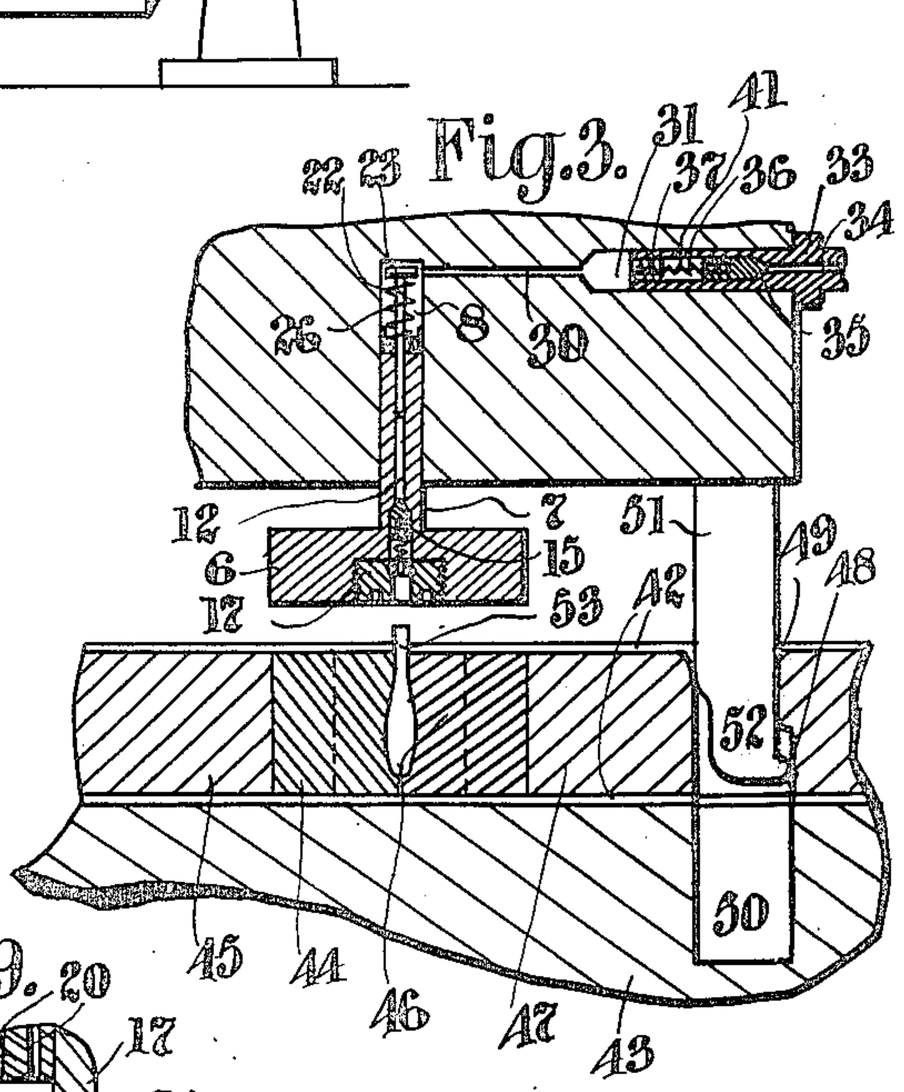
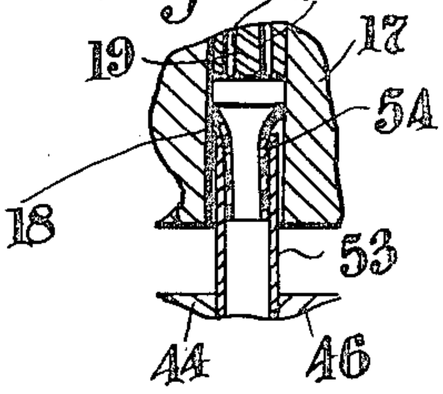


Fig.9.



Witnesses.

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UNITED STATES PATENT OFFICE.

ROBERT EMMET DEVINE, OF HAMILTON, ONTARIO, CANADA.

MACHINE FOR EMBOSSING SEAMLESS KNIFE-HANDLES.

1,154,618. Specification of Letters Patent. **Patented Sept. 28, 1915.**

Application filed June 1, 1914. Serial No. 842,188.

To all whom it may concern:

Be it known that I, ROBERT EMMET DEVINE, of the city of Hamilton, in the county of Wentworth, in the Province of Ontario, Canada, have invented certain new and useful Improvements in Machines for Embossing Seamless Knife-Handles, of which the following is the specification.

My invention relates to improvements in machines for embossing seamless knife handles, and the object of the invention is to devise an attachment for a hydraulic press which will emboss the seamless knife handles by hydraulic pressure; a further object is to provide means whereby the knife handle will seal itself upon the hydraulic pressure being put on the same, thus preventing a leakage of water between the lower part of the ram and the knife handle; a still further object is to provide means whereby the divided embossing dies will be opened and closed automatically upon operation of the machine.

My invention consists of the parts constructed and arranged as hereinafter more particularly described and illustrated in the accompanying drawings in which:—

Figure 1 represents an elevational view of a hydraulic press showing my attachment applied thereto. Fig. 2 is a plan view thereof. Fig. 3 is an enlarged vertical sectional view showing a portion of the table of the hydraulic press, the embossing dies and upper ram constructed according to my invention, and also the connection between the water service and the upper ram. Fig. 4 is a further enlarged vertical section of an upper ram constructed according to my invention showing the embossing dies and knife handle in place and the means whereby the knife handle seals itself in the upper ram. Fig. 5 is a plan view of the upper portion of the head of a sleeve in the upper ram adapted to allow the escape of air therethrough. Fig. 6 is a further enlarged cross sectional view taken through the line *a*—*a'* (Fig. 4). Fig. 7 is an enlarged vertical section of a conical valve situated between the service and the upper ram. Fig. 8 is a cross sectional view thereof taken through the line *b*—*b'* (Fig. 7). Fig. 9 is a vertical section of the lower portion of the ram showing a rubber tube inserted into the upper end of the knife handle for preventing the escape of water between the knife handle and the walls of the ram aperture.

Like characters of reference indicate corresponding parts in the different views.

1 is a lower portion of an ordinary hydraulic press.

2 is the head thereof suitably supported on the vertical rods 3.

4 is the lower ram suitably operated by hydraulic pressure.

5 is a suitable portion secured to the head 2.

6 is the upper hydraulic ram constructed according to my invention, said ram having an upwardly extending shank 7 adapted to reciprocate in an aperture 8 in the portion 5.

9, 9 are apertures in the portion 5, and 10, 10 are vertically disposed guiding bolts, each secured at one of its ends to the ram 6 and the other end being provided with a nut 11, said nut being adapted to slide in the aperture 9.

12 is a vertical passage extending up through the shank 7 of the ram 6 and provided at its lower end with a conical seat 13.

14 is an enlarged passage in the ram 6 communicating with the passage 12.

15 is a conical headed valve adapted to seat on the above referred to valve seat 13, and having the flat sided shank 16.

17 is a threaded plug adapted to be screwed into the ram 6 and having the central orifice 18 extending therethrough, said orifice registering with the aforesaid passageway 14.

19 is a plug threaded into the said orifice and provided with the vents 20 extending therethrough.

21 is a compression spring inserted between the conical valve 15 and the plug 19.

22 is an orifice adapted to extend into the passageway 12 and provided with the enlarged head 23 having a central orifice 24 registering with the interior of the sleeve.

25, 25 are radially extending slots cut in the upper face of the enlarged head 23 and extending to the central orifice 24 therein.

26 is a spring surrounding the orifice 22 and situated between the enlarged head 23 and threaded boss 27 on the upper end of the shank 7.

28 is a cup washer extending around the shank 7 and held in place by the nut 29 threaded on the said shank.

30 is a passageway extending between the aperture 8 in the portion 5 and the exterior of said portion, and terminating at its outer end in an enlarged internally threaded portion 31.

32 is a pipe connected to the water service or to a tank, as the case may be.

33 is an externally threaded sleeve adapted to be screwed into the internally threaded portion 31 of the passageway 30.

34 is a passageway extending from the outer end of the sleeve 33 and terminating in a valve seat 35.

36 is an enlarged orifice communicating with the passage 34 and extending to the other end of the sleeve 33, said orifice 36 being internally threaded near its inner end.

37 is an externally threaded plug threaded into the internally threaded end of the sleeve 33 and having vents 38 extending therethrough.

39 is a conical headed valve adapted to seat on the valve seat 35 and provided with a rectangular shank 40.

41 is a spring interposed between the plug 37 and the valve 39.

42 is a bed suitably secured to the table 43 of the hydraulic press.

44 is one of the embossing dies for the knife handle, said embossing die being held in place on the bed by the billet 45. It is to be understood that the die 44 is stationary.

46 is the other die suitably secured to the billet 47 and adapted to move laterally as will hereinafter appear.

48 is a vertical aperture extending through the billet provided with a protuberance registering with an aperture 50 in the table 43 when the dies are in the position shown in Fig. 3.

51 is a depending lever rigidly secured to the portion 5 and having the offset end 52 adapted to extend into the aperture 48 and consequently to control the movement of the billet 47 and the die 48 upon the vertical movement of the table 43.

53 is a seamless knife handle blank interposed between the dies 44 and 46.

54 is a rubber sleeve inserted into the upper end of the handle blank 53 and adapted to prevent the escape of water between the handle and the walls of the orifice 18. Under ordinary circumstances the application of hydraulic pressure on the handle blank 53 will cause the upper edge thereof to expand sufficiently to prevent this escape of water, but in some instances it is found that this expansion is not sufficient to prevent the total escape of water and consequently the rubber tube 54 is employed which absolutely prevents any water running down between the handle and the walls of the orifice.

The operation of the device is as follows:— When the table 43 is in the lowermost position the dies are sufficiently separated as to permit the introduction of the seamless handle blank 53 between them. The handle blank is first filled with water and is then inserted between the dies 44 and 46. When this has been done the water is turned on into the lower ram which causes the same to move up and consequently move the table 43, the bed 42 and the dies in an upward direction. When the table has moved up a requisite extent the offset end of the lever 51 comes into engagement with the aperture 48 in the billet 47 and upon further movement of the table in an upward direction the main portion of the lever 51 engages the inner wall of the aperture 48 thus pressing the billet and attached die 46 firmly against the handle blank 53. The table then moves slowly up and the upper end of the blank enters the orifice 18 in the plug 17 of the upper ram. When this takes place the upper ram seats on the dies and consequently is moved up with the further upward movement of the table. As this upward movement of the ram takes place the sleeve 22 is depressed as the head 23 thereof comes into engagement with the top of the aperture 8 in the portion 5, and as the aperture 8, the passageway 30 and the orifice 36 are filled with water any air that is in the aperture 8 will be forced down through the interior of the tube 22 out through the bottom of the ram. Thus all air will be excluded and consequently upon further upward movement of the ram the water will be forced down through the tube 22, the passageway 12 opening the conical valve 15 and thence will pass through the enlarged passageway 14 through the vents 20 into the handle 53 and will cause the walls of such handle to be pressed into the indentures in the dies. The instant the hydraulic pressure reaches the top of the handle the rim thereof will be expanded and will prevent the leakage of water between the handle and the walls of the orifice 18. This will complete the embossing operation. The pressure is now released and the table will fall. As this takes place the lever 51 is drawn out of the aperture 48 and the shoulder on the outside of the offset end 52 engages the protuberance 49 on the wall of the aperture 48, thus moving the billet and die 46 outwardly upon further downward movement of the table and permitting the embossed handle to be removed.

It may be pointed out that the spring held conical valve 15 is equal to the ordinary city or service pressure, and consequently immediately the hydraulic pressure is released this valve will automatically close. Further the spring held conical valve 39 will open upon the application of the city or service pressure but will be automatically closed immediately the upper ram commences its operation.

While I have described my device as applied to the ordinary hydraulic press and in which instance I introduced the water into the upper ram in the manner shown above it is to be understood that if I were to construct a machine especially for the purpose set forth above I would introduce the water through the head 2 of the machine and thus would obviate the necessity for the sleeve 22 as no air would be pocketed in the top of the aperture 8 in the portion 5.

What I claim as my invention and desire to secure by Letters Patent is:—

1. In a machine for embossing seamless knife handles, the combination with a lower hydraulic ram, a table mounted thereon, said table reciprocated by the hydraulic ram, and the head of the machine, of suitable embossing dies holding the handle blank, a vertical aperture in the head of the machine, an upper hydraulic ram having a suitable stem extending into the aperture, and a passageway through the ram and stem, a spring actuated valve in the stem, a sleeve freely mounted in the passageway in the stem, an enlarged head therefor having an orifice communicating with the interior of the sleeve, and radial slots in the upper surface of the head extending to the orifice therein.

2. In a machine for embossing seamless knife handles, the combination with a lower hydraulic ram, a table mounted thereon, said table reciprocated by the hydraulic ram, and the head of the machine, of suitable embossing dies holding the handle blank, a vertical aperture in the head of the machine, an upper hydraulic ram having a suitable stem extending into the aperture, and a passageway through the ram and stem, a spring actuated valve in the stem, the head of the machine having a cross passageway extending from its exterior to the aperture therein, and a spring actuated valve in said passageway closing against back pressure upon the upper ram moving upwardly in the aperture.

3. In a machine for embossing seamless knife handles, the combination with a lower hydraulic ram, a table mounted thereon, said table reciprocated by the hydraulic ram, and the head of the machine, of suitable embossing dies holding the handle blank, a vertical aperture in the head of the machine, an upper hydraulic ram having a suitable stem extending into the aperture, and a passageway through the ram and stem, a spring actuated valve in the stem, the head of the machine having a cross passageway extending from its exterior to the aperture therein, and a spring actuated valve in said passageway closing against back pressure upon the upper ram moving upwardly in the aperture, and means upon the upward movement of the upper hydraulic ram for expelling the air in the aperture therethrough.

4. In a machine for embossing seamless knife handles, the combination with a lower hydraulic ram, a table mounted thereon, said table reciprocated by the hydraulic ram, and the head of the machine, of suitable embossing dies holding the handle blank, a vertical aperture in the head of the machine, an upper hydraulic ram having a suitable stem extending into the aperture, and a passageway through the ram and stem, a spring actuated valve in the stem, the head of the machine having a cross passageway extending from its exterior to the aperture therein, and a spring actuated valve in said passageway closing against back pressure upon the upper ram moving upwardly in the aperture, a sleeve freely mounted in the passageway in the stem, an enlarged head therefor having an orifice communicating with the interior of the sleeve, and radial slots in the upper surface of the head extending to the orifice therein.

5. In a machine for embossing seamless knife handles, the combination with a lower hydraulic ram, a table mounted thereon, said table reciprocated by the hydraulic ram, and the head of the machine, of divided embossing dies adapted to hold the handle blank between them, one of the dies secured to the table and the other laterally movable in relation to the table and provided with a protuberance on the outer wall of such aperture, and a depending lever secured to the head of the machine and having an offset lower end adapted to enter the slot in the movable die for moving the same laterally upon the operation of the machine.

In testimony whereof, I have signed at the city of Hamilton, in the county of Wentworth, in the Province of Ontario, Canada, this 20th day of May 1914.

ROBERT EMMET DEVINE.

Witnesses:

J. E. M. FETHERSTONHAUGH,

E. M. NEAME.