

P. SCHWENZOW.
STAMPING MACHINE.
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1,030,132.

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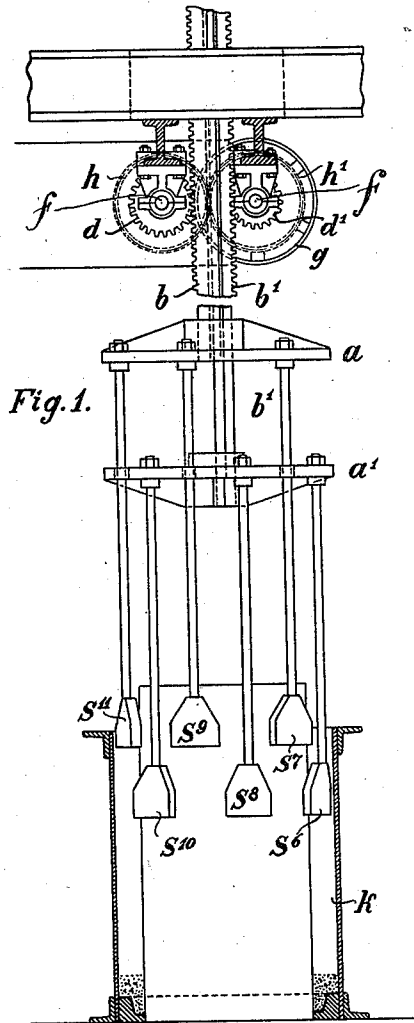


Fig. 1.

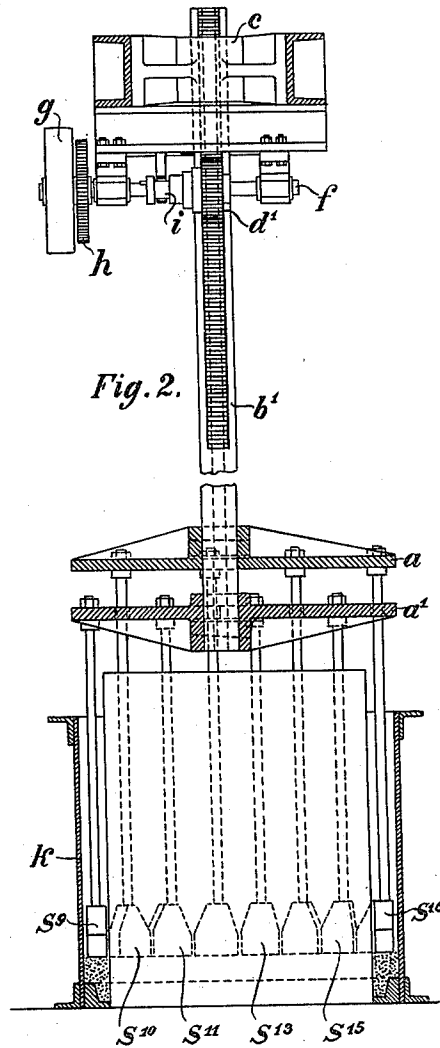


Fig. 2.

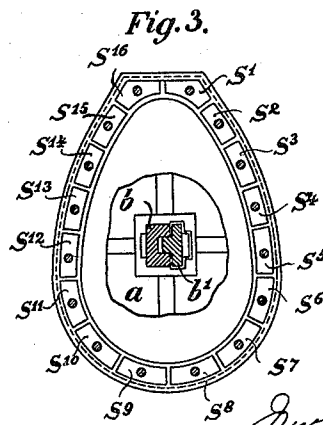


Fig. 3.

Witnesses

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UNITED STATES PATENT OFFICE.

PAUL SCHWENZOW, OF UNKEL-ON-THE-RHINE, GERMANY.

STAMPING-MACHINE.

1,030,132.

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To all whom it may concern:

Be it known that I, PAUL SCHWENZOW, a subject of the King of Prussia, residing at Unkel-on-the-Rhine, in the German Empire, have invented certain new and useful Improvements in Stamping-Machines, of which the following is a specification.

This invention relates to stamping machines used in the manufacture of hollow bodies, such as tubes, twyers and the like, out of cement and similar substances. Such stamping machines are known in which a plurality of stamps covering the entire cross section of the hollow body, act over the entire section without rotating the stamps or the mold for the hollow body, such as a tube. For this purpose a ring or a number of separate stamps arranged alongside one another have been used. In order to introduce the material to be stamped below the stamps and into the mold, the stamps must, according to this prior form, be withdrawn entirely out of the mold each time they are raised. In order to avoid this, it has been proposed to arrange the separate stamps with spaces between, through which spaces the material to be stamped could pass, but this arrangement has the disadvantage that the material located immediately below the spaces between the stamps is not compressed. In order to avoid this disadvantage it has also been proposed to arrange a plurality of stamps close together in two groups and alternately to raise first one group and then the other in order to provide openings for the passage of the material to be compressed. This device, however, possesses the disadvantage that only one half of the total number of stamps is operated at one time, as the other half is then raised.

According to the present invention a stamping machine of the type mentioned is constructed with a plurality of stamps arranged closely together and acting simultaneously to compress the material over the entire circumference of the hollow body but are so separated when the stamping device is raised, that openings are formed for the entrance of the material to be stamped into the mold, the said stamps when they have been sufficiently raised being then allowed to fall and to exercise the stamping action simultaneously.

The device according to the present invention is illustrated in one suitable modi-

fication in the accompanying drawings in which,—

Figure 1 is a front view of the stamping device with the mold shown in section and the stamps shown in their raised positions. 60 Fig. 2 is a side view of the device shown in Fig. 1 with the falling or gravity heads and the mold shown in section. Fig. 3 is a plan looking on the mold and the stamps hanging therein, the rods for carrying the stamps 65 being shown in section.

In carrying the invention into effect the machine is composed in the main, of two gravity heads or falling bodies a , and a' and stamps s , articulated to said bodies, the two 70 superposed bodies a , a' , correspond in their size and shape to the cross section of the hollow body to be formed, and the falling bodies are removably attached to the operating bars b , b' . A number of stamps s^1 , s^2 , s^3 , and so on, are arranged closely together— 75 see Fig. 3—the number being sufficient to cover, with their operative faces, the entire cross section of the hollow body to be formed. These stamps are articulated to the 80 falling bodies a , a' , the stamps with the odd indices being articulated to the falling body a , while the group of stamps with the even indices are articulated to the body a' . The 85 rods of the stamps which are articulated to the upper body a , pass loosely through the lower body a' . The stamps may be attached to the falling heads a , a' , in any suitable manner, either rigidly or resiliently by the interpolation of springs. The method of 90 articulating the stamps to the falling bodies is only diagrammatically illustrated.

The two falling bodies a , a' , are suspended on two rods b , b' , formed as racks and these racks are arranged to slide on one another, the rack b' being arranged to pass 95 loosely through the body a , and being fastened or fixed to the body a' . The racks b , b' , are guided in brackets c , fixed to the upper cross supports of the machine frame 100 and are raised by means of toothed wheels d , d' , engaging therein. The toothed wheels d , d' , are each mounted on a shaft f . One of the said shafts f , carries a driving pulley g , and transmits its movement through toothed 105 wheels h and h' , to the other shaft in the opposite direction. The toothed wheels d , d' , therefore, rotate together but in the opposite direction. Both toothed wheels d , d' , are mounted loosely on their shafts f , and may 110

be coupled to these shafts by means of shifting couplings or clutches *i*. For the purpose of raising rods *b*, *b'*, and the falling bodies *a*, *a'*, the couplings *i*, are placed in action while they are uncoupled to allow the stamping device to fall, as may be seen in the drawing. The toothed wheel *d*, may be of larger diameter than the toothed wheel *d'*, whereby the bar *b*, and the falling body *a*, fixed thereon together with the stamps *s*¹, *s*³, *s*⁵, and so forth, are raised more quickly and higher than the rod *b'*, and the falling body *a'* together with the stamps *s*², *s*⁴, *s*⁶, and so forth. In this way the stamps are raised through varying heights whereby openings are formed between adjacent stamps, through which openings the material to be stamped may fall below the stamps into the mold.

It will be understood that variations may be made in the means described above by which a number of stamps without intermediate spaces are moved to varying heights and then allowed to fall and rest simultaneously on the material to be stamped.

The operation of this device is as follows: When some of the material has been introduced into the mold *k*, the stamping device is lowered and set in operation. As long as the stamps *s*¹, *s*², *s*³, and so forth, rest on the material to be stamped their lower surfaces are arranged alongside one another and practically in one plane as shown in Fig. 2. When the stamping device is raised on coupling the wheels *d*, *d'*, with the shafts *f*, by operating the clutches *i*, the stamps are drawn apart in such a manner that the stamps *s*¹, *s*³, *s*⁵, and so forth, are moved more quickly and to a greater height than the stamps *s*², *s*⁴, *s*⁶, and so forth, owing to the fact that the toothed wheel *d*, has a longer diameter than the toothed wheel *d'*. In this way openings may occur between adjacent stamps, as can be seen from Fig. 1, and through these openings fresh material may be introduced below the stamps. If the clutches *i*, are simultaneously uncoupled the stamps fall down simultaneously and all bear at one time on the material to be stamped and thereby compress it firmly. By constantly, slowly and uniformly adding new material the tube or like body is gradually formed. When this happens the stamping device is raised to a suitable height to enable the mold with the finished tube or the like to be replaced by another fresh one, whereupon the process starts afresh. The material passes by the stamps which are raised highest and between the stamps which are at a less height and consequently rests or heaps up at a greater height below the higher stamps *s*¹, *s*³, etc., than below the other stamps. As the material, however, is moist it will soon be evenly compressed by repeated blows. The stamps which are

raised to the greater height fall on the material a little later than the stamps which are raised to the lesser height. As above described the newly introduced material rests principally under the higher stamps so that the stamps which impinge first upon the material are the stamps which are raised to the lesser height and thereby these stamps resist or prevent the side spreading of the material. In this way it is necessary to repeat the stamping frequently. This objection might be removed if all the stamps were arranged to fall absolutely simultaneously or better still, if the higher stamps were arranged to impinge on the material a little before the lower stamps. In the latter case the best stamping action is obtained as the higher stamps would first spread the heaped material beneath them sidewise, before the other stamps came into operation. This method may be obtained by uncoupling the clutch for the wheel *d*, before the clutch for the wheel *d'*, is uncoupled. It will be understood, however, that an automatic device may be arranged to carry out this method of operation.

I claim—

1. In combination with a mold and core for a hollow body, a plurality of adjacent stamps arranged side by side to close in the gap between the core and the mold, means for raising groups of adjacent stamps to varying heights and means for releasing said stamps so that they all fall to rest simultaneously on the material in the mold, substantially as and for the purpose described.

2. In combination with a mold and core for a hollow body, groups of stamps arranged closely side by side and movable between said mold and core, means for articulating together the stamps of a group, means operable on said articulating members for raising said groups to different heights and means for releasing said articulating members to allow them to fall.

3. In a stamping machine in combination, a plurality of stamps arranged closely together side by side, means for raising adjacent stamps to different heights and means for lowering said stamps to lie simultaneously with their stamping faces in substantially the same plane.

4. In a stamping machine in combination, a plurality of stamps arranged closely side by side, two freely falling bodies, each articulated to alternate stamps, means for raising said falling bodies through different heights and means for releasing said falling bodies to rest simultaneously in their lowest positions.

5. In a stamping machine in combination, a plurality of stamps arranged closely side by side, two freely falling bodies, each articulated to alternate stamps, means for

raising said falling bodies through different heights and means for separately releasing said falling bodies to rest simultaneously in their lower positions.

5 6. In a stamping machine, two superposed bodies, a plurality of stamps arranged close together, rods extending from alternate stamps to the lower body, rods extending from the remaining stamps freely through
10 the lower body and fixed to the upper body, means for raising said bodies through different heights and means for releasing said

bodies and the stamps attached thereto to fall and rest simultaneously with the lower faces of the stamps in substantially the same 15 plane.

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

PAUL SCHWENZOW.

Witnesses:

DESIDER VANDORY,
OSCAR DEPNER.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."