O. NOLAN.

TAMPING MACHINE.

APPLICATION FILED JUNE 23, 1911.

1,053,211.

Patented Feb. 18, 1913.

2 SHEETS—SHEET 1.

Fig. 1

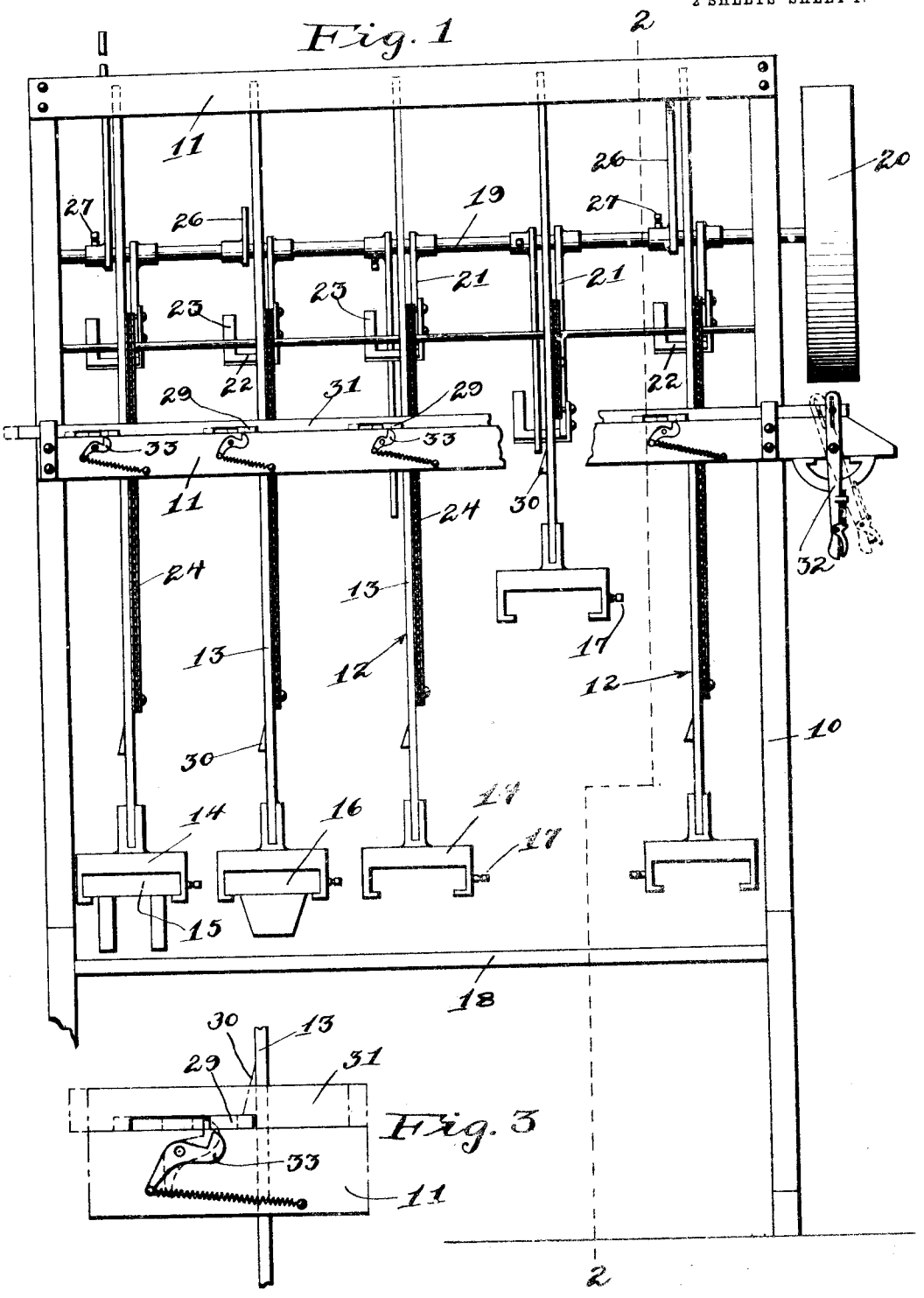

Fig. 3

Witnesses

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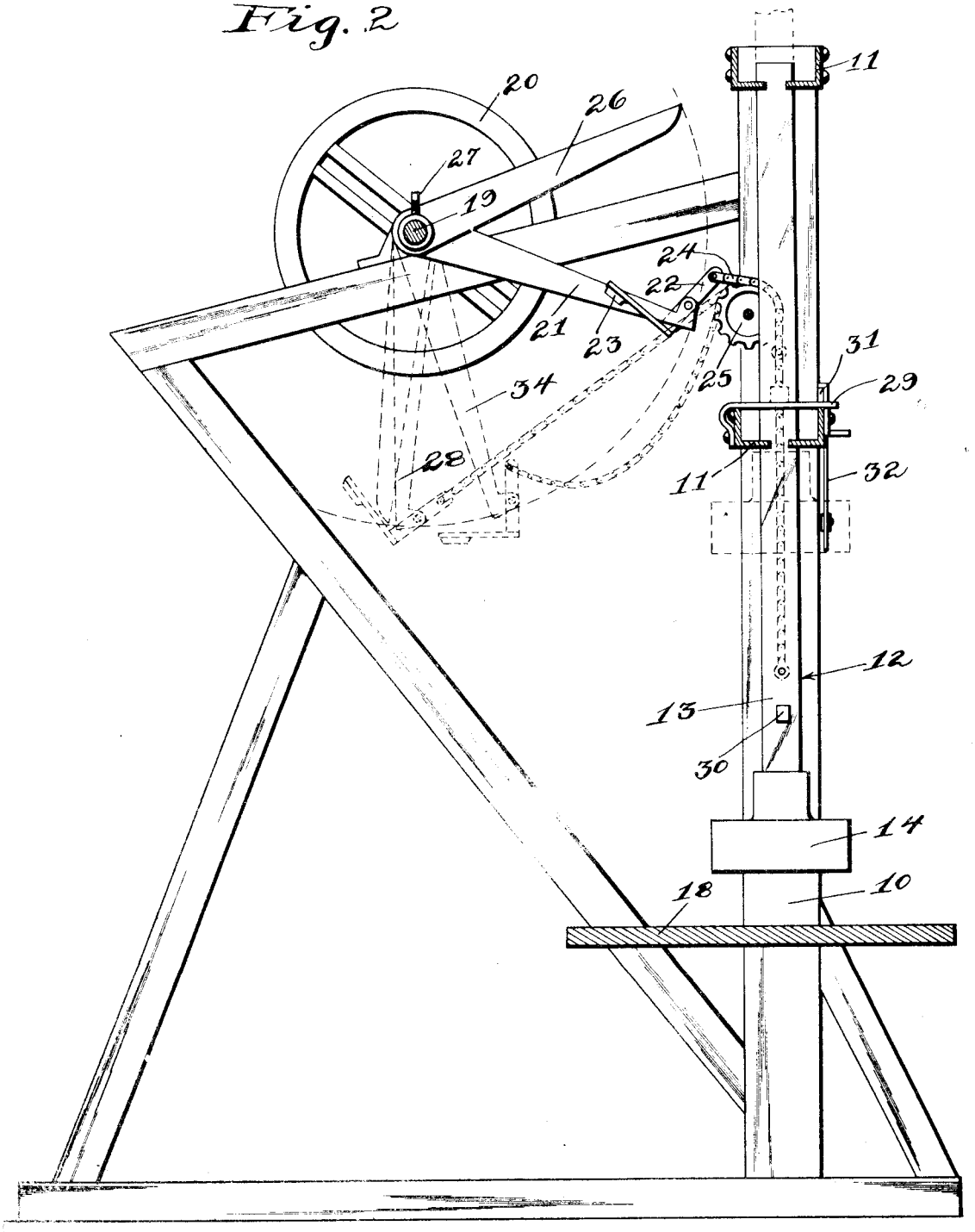
2 SHEETS—SHEET 2.

Fig. 2



Witnesses
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UNITED STATES PATENT OFFICE.

OLIVER NOLAN, OF ST. PAUL, MINNESOTA, ASSIGNOR TO AUTOMATIC CONCRETE MACHINERY COMPANY, OF ST. PAUL, MINNESOTA, A CORPORATION OF MINNESOTA.

TAMPING-MACHINE.

1,053,211. Specification of Letters Patent. Patented Feb. 18, 1913.

Application filed June 23, 1911. Serial No. 635,044.

To all whom it may concern:

Be it known that I, OLIVER NOLAN, a citizen of the United States, residing at St. Paul, in the county of Ramsey and State of Minnesota, have invented new and useful Improvements in Tamping-Machines, of which the following is a specification.

My invention relates to improvements in tamping machines. Its object is to provide a simple and inexpensive device of this class, adapted to tamp the contents of molds or forms of varying designs and sizes.

A further object is to provide such a device with a plurality of tamping bars or plungers arranged to be lifted, one at a time. By this arrangement, I secure economy in driving power and also make it possible to utilize the tamping bars, either singly or collectively, on a given piece of work.

A further object is to adapt the tamping bars or plungers to varying classes and stages of work by providing a downward stroke without fixed or positive limit, the purpose being to obviate defects in existing machines due to a fixed or inconveniently adjustable stroke. In other words, the tamping bars of my machine adjust themselves to deep or shallow molds and to molds containing little or much concrete or other material.

In the drawings, Figure 1 is a front elevation of my improved tamping machine. Fig. 2 is a sectional view taken on the line 2—2 of Fig. 1, and Fig. 3 is a detail view showing one of the spring arms and its operating bar.

Referring to the accompanying drawing, the numeral 10 indicates the frame of my machine. A plurality of angle irons 11 are arranged transversely on the frame to form guides for the tamping bars or plungers 12. Said tamping bars include a guide rod 13 and a socket or head 14 on the lower end of said rod 13. The sockets or heads 14 are adapted to receive tamping blocks 15 and 16 of varying forms as illustrated in Fig. 1 of the drawings and are provided with set screws 17 to lock said tamping blocks in position. A platform 18 is constructed on the lower part of frame 10 to support molds or forms adapted to contain the material to be operated upon below the plungers 12. These plungers are arranged to fall by gravity and compress and form materials in the molds by the momentum of their fall.

I employ the following described mechanism for raising and releasing the plungers 12: The drive shaft 19 is mounted in the frame 10 and driven by the pulley 20. The arms 21 are loosely mounted on the shaft 19 and support the dogs 22 which are pivotally connected thereto. Said dogs are provided with weighted arms 23 and are connected to the plungers 12 by chains 24 which pass over the guide sprockets 25. The trip arms 26 are fixed on the drive shaft 19 by means of the set screws 27 and are designed to engage the dogs 22 to raise the plungers 12. This arrangement of the trip arms 26 on the shaft 19 causes the plungers to be raised one at a time, the positions of said arms being fixed to cause the action of the plungers, either consecutively or alternately as desired. The dogs 22 are held in the path of the trip arms 26 when the plungers are down as shown in Fig. 2, and are engaged by said arms as they revolve. When the arms 21 reach the position shown in dotted lines in Fig. 2, as indicated by the numeral 28, the dogs are moved on their pivots by the chains 24 to positions out of the path of the trip arms 26, and at this phase of operation, are released from engagement with said arms. The plungers 12 are now free, and falling return the arms 21 to their original positions and thus bring the dogs 22 again into the path of the arms 26. The drive shaft 19 revolves continuously and the several plungers are lifted, released and fall, during each revolution of their respective trip arms.

While I have shown sprockets as guides for the chains 24 it is obvious that grooved pulleys might be substituted for the same without departing from the spirit of invention.

It is often desirable to stop the action of one or more of the plungers and to accomplish this result, I have provided the following described mechanism: The spring arms 29 are mounted on one of the angle irons 11 and normally extend in positions adjacent to the plungers 12. The beveled lugs 30 on the plungers 12 are adapted to displace the spring arms 29 on their upper stroke and engage the same on their downward stroke to stop the plungers and hold them in an elevated position. The operating bar 31, slidably mounted on the frame 10, is connected to the hand-operated lever 32 and is adapted to adjust the spring

arms 29. One position of the lever 32 permits the normal adjustment of the arms 29 to engage the lugs 30 as above described, while the second position of said lever holds the arms 29 out of the paths of said lugs 30 to permit the operation of the plungers 12. I have arranged a spring actuated dog 33 on one of the angle irons 11 for each spring arm 29. When it is desirable to cause the operation of a particular plunger or plungers, the lever 32 is first moved to a position throwing all of the plungers out of operation; the proper arm pertaining to any particular plunger is then moved by hand to a position causing the engagement of one of the dogs 33 therewith. When in such position, said arm 29 permits the operation of its plunger. When the plungers 12 are not in use, they are held in their elevated positions and the arms 21, chains 24 and dogs 22 rest in positions shown in dotted lines and indicated by the numeral 34 in Fig. 2 of the drawings. When the dogs 22 are in this position, they are out of the paths of the trip arms 26 and are not engaged by said arms.

In operation, a form or mold is placed on the platform 18 and a supply of material to be molded is placed in the form. The lever 32 is then moved to a position permitting the operation of any or all of the plungers as desired. The dogs 22 are moved into the paths of the trip arms 26 as the plungers fall, and are engaged, raised and released by said arms at each rotation of the same, thus permitting the appropriate plungers to fall by gravity and compress the material in the form or mold. As the operation continues, additional material is added, until the mold is filled and tamped. The lever 32 is then moved back to its original position to discontinue the action of the plungers 12.

Having described my invention, what I claim as new and desire to protect by Letters Patent, is:

1. In a tamping machine, a frame, a series of vertically mounted tamping bars in said frame, drive shaft, arms rotatably mounted on said shaft, connecting means between said arms and tamping bars, and trip arms fixed to and adjustable on the shaft adapted to engage said means for raising the tamping bars.

2. In a tamping machine, a frame, a series of vertically mounted tamping bars on said frame, a drive shaft, arms rotatably mounted on shaft, flexible connecting means between said arms and tamping bars, guides for said means, and trip arms fixed to and adjustable on the shaft and adapted to engage said means for raising the tamping bars.

3. In a tamping machine, a frame, a series of vertically mounted tamping bars on said frame, a drive shaft, arms rotatably mounted on said shaft, dogs on said arms, chains connecting said dogs and tamping bars, and trip arms fixed to said shaft and adapted to engage said dogs for raising the tamping bars.

4. In a tamping machine, a frame, a series of vertically mounted tamping bars on said frame, a drive shaft, arms rotatably mounted on said shaft, connecting means between said arms and tamping bars, trip arms fixed to and adjustable on the shaft and adapted to engage said means for raising the tamping bars, and means for engaging and disengaging the tamping bars either singly or collectively to throw the same in and out of operation.

5. In a tamping machine, a frame, a series of vertically extended tamping bars mounted on said frame, a drive shaft, arms rotatably mounted on said shaft, dogs on said arms, chains connecting said dogs and tamping bars, trip arms on said shaft adapted to engage said dogs to raise the tamping bars, lugs on the tamping bars, and spring arms on the frame adapted to normally rest in the paths of said lugs to engage and hold said tamping bars in an elevated position.

6. In a tamping machine, a frame, a series of vertically extended tamping bars mounted on said frame, a drive shaft, arms rotatably mounted on said shaft, dogs on said arms, chains connecting said dogs and tamping bars, trip arms on said shaft adapted to engage said dogs to raise the tamping bars, lugs on the tamping bars, spring arms on the frame adapted to normally rest in the paths of said lugs to engage and hold said tamping bars in an elevated position, and an operating bar for shifting the spring arms from the paths of said lugs.

7. In a tamping machine, a frame, a series of vertically extended tamping bars mounted on said frame, a drive shaft, arms rotatably mounted on said shaft, dogs on said arms, chains connecting said dogs and tamping bars, trip arms on said shaft, adapted to engage said dogs to raise the tamping bars, lugs on the tamping bars, spring arms on the frame adapted to normally rest in the paths of said lugs to engage and hold said tamping bars in an elevated position, an operating bar for shifting said arms from the paths of said lugs, and a hand operated lever for moving and locking said bar.

8. In a tamping machine, a frame, a series of vertically extended tamping bars mounted on said frame, a drive shaft, arms rotatably mounted on said shaft, dogs on said arms, chains connecting said dogs and tamping bars, trip arms on said shaft adapted to engage said dogs to raise the

tamping bars, lugs on the tamping bars, spring arms on the frame adapted to normally rest in the paths of said lugs to engage and hold said tamping bars in an elevated position, and dogs for engaging the spring arms to permanently lock and hold the same from the paths of the lugs.

9. In a tamping machine, a frame, a plurality of vertical tamping bars on the frame, a drive shaft, arms rotatably mounted on said shaft, dogs on said arms, flexible connecting means, having guides, between said dogs and tamping bars, and trip arms on the drive shaft for engaging the dogs to raise the tamping bars.

10. In a tamping machine, a frame, a plurality of vertical tamping bars on the frame, a drive shaft, arms rotatably mounted on said shaft, dogs on said arms, flexible connecting means between said dogs and tamping bars, and angularly adjustable trip arms on the drive shaft for engaging the dogs to raise the tamping bars.

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

OLIVER NOLAN.

Witnesses:
JOHN E. STRYKER,
FRED. C. CASWELL.