(No Model.) 6 Sheets—Sheet 1.

E. TYMESON & L. DUCROS.

SCOURING MACHINE.

No. 441,205. Patented Nov. 25, 1890.

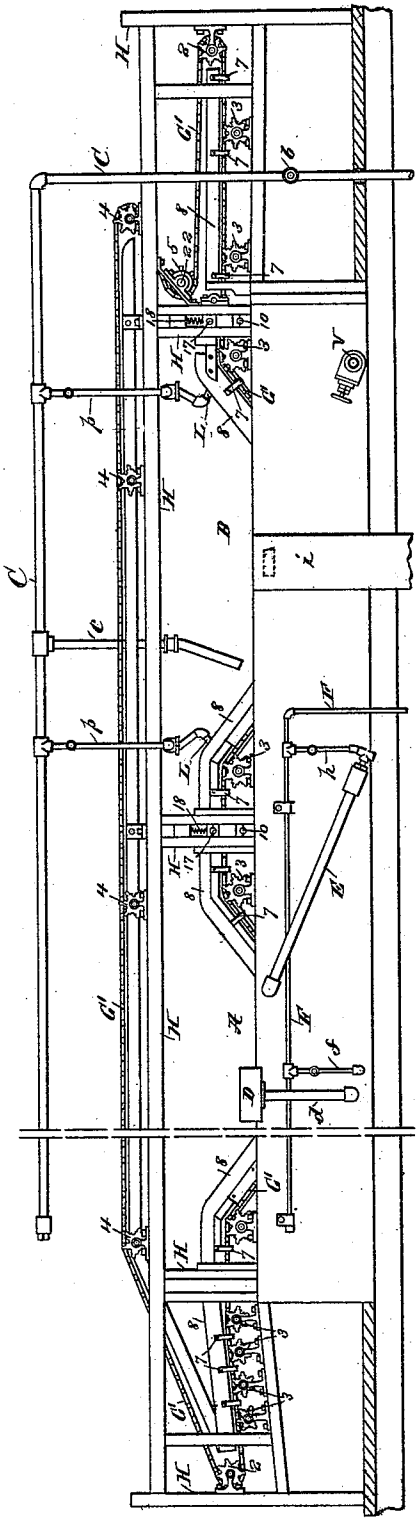


Fig. 1.

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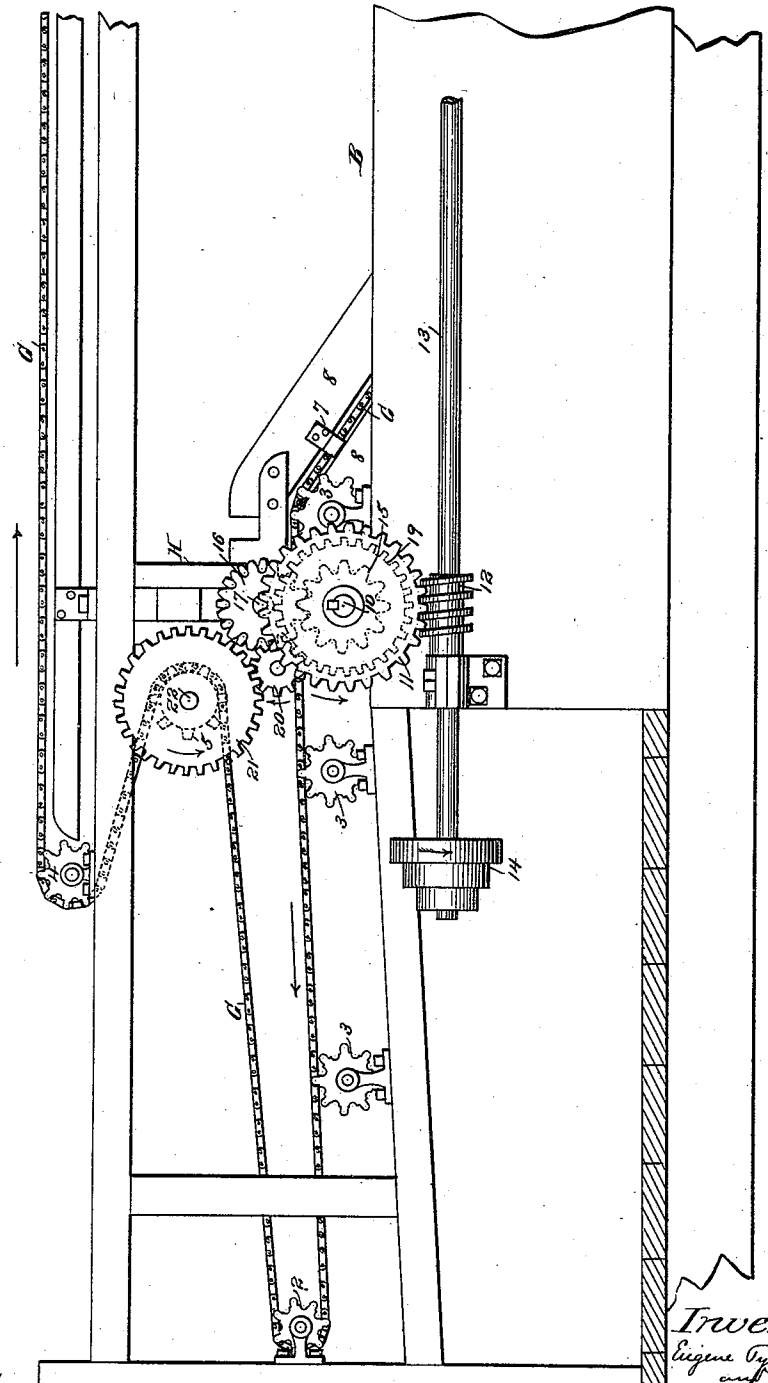
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Fig. 2.



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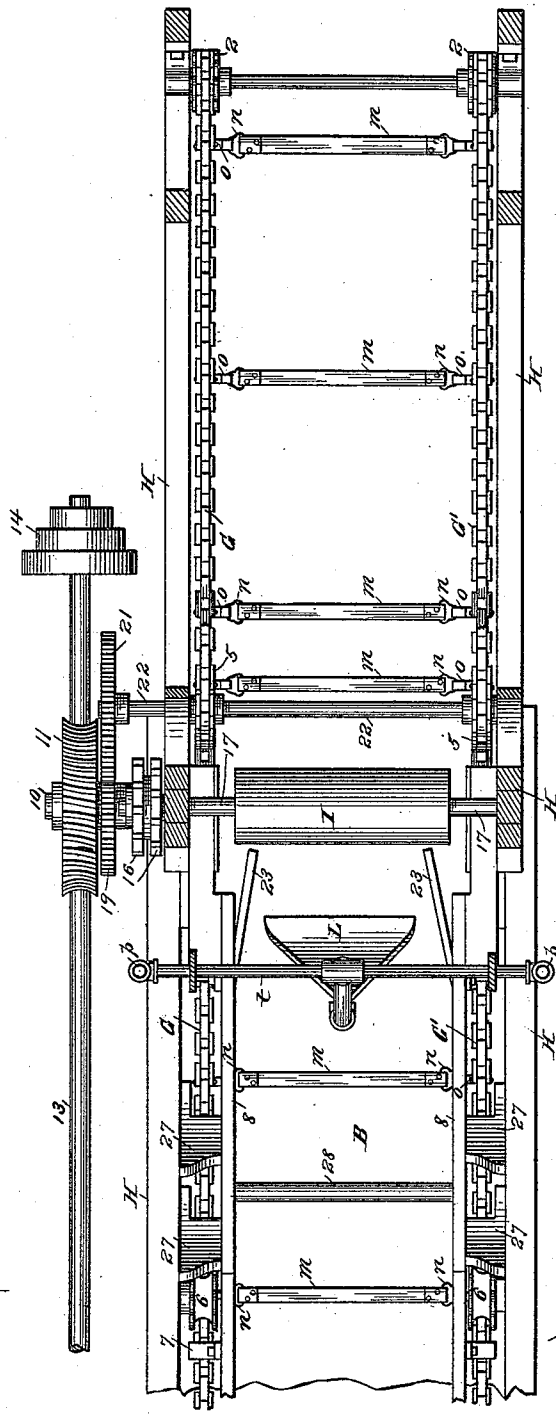
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SCOURING MACHINE.

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Fig. 3.



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SCOURING MACHINE.

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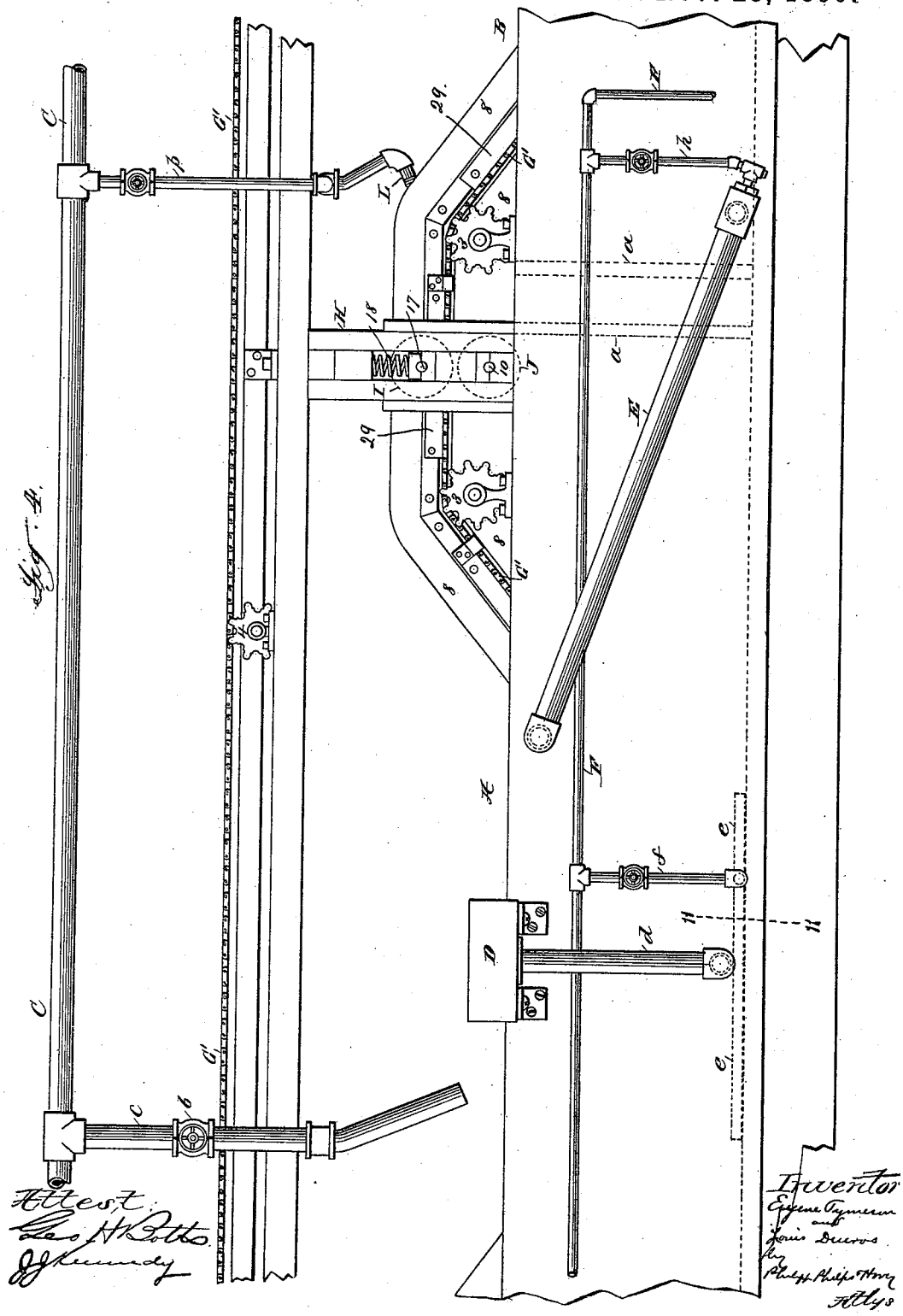


Fig. 4.

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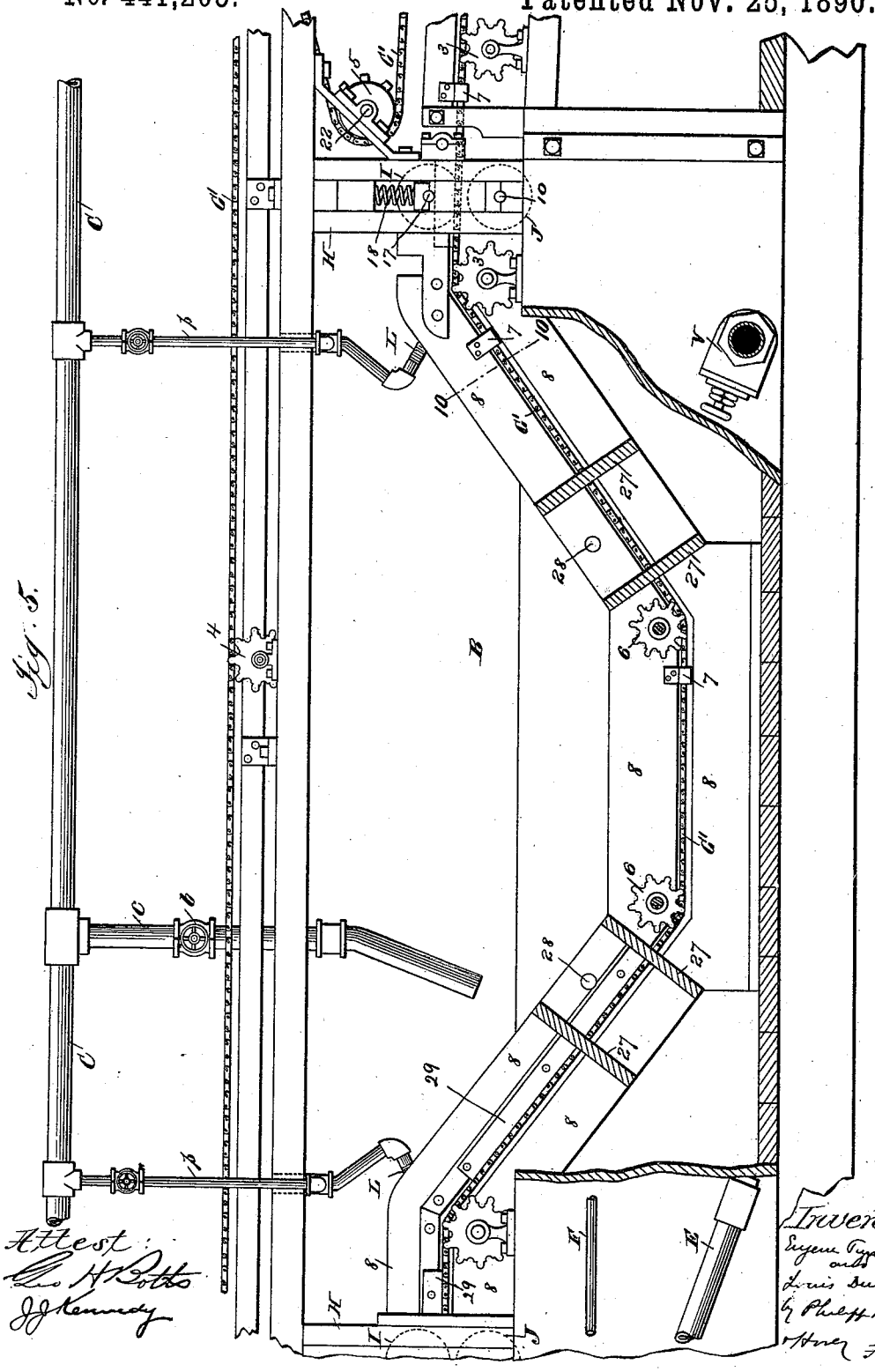


Fig. 5.

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SCOURING MACHINE.

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Fig. 6.

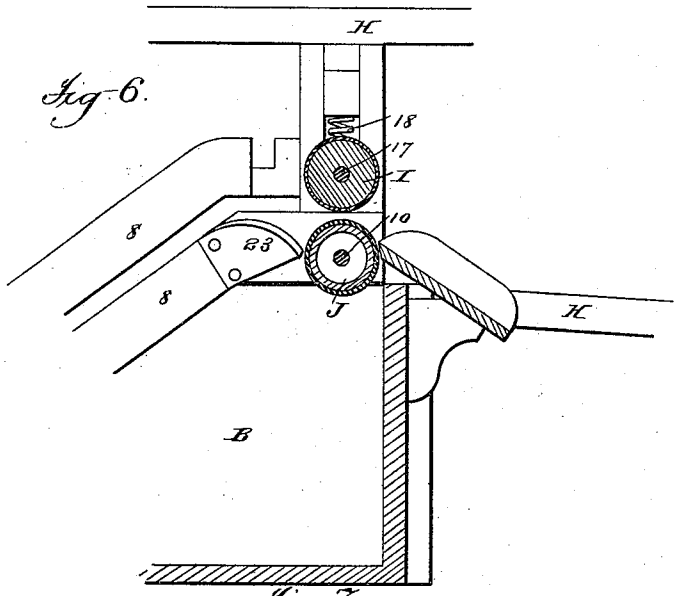


Fig. 7.

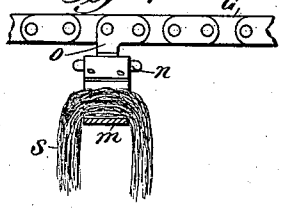


Fig. 8.

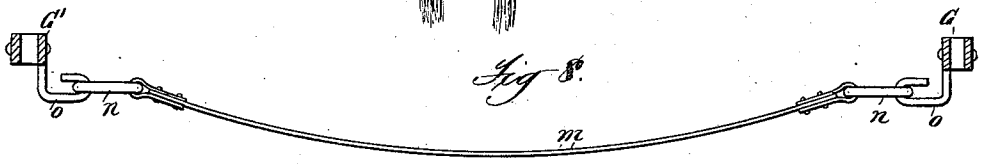


Fig. 9.

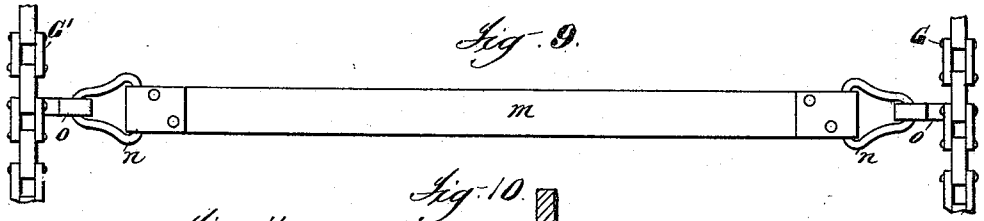


Fig. 10.

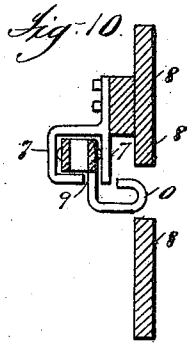
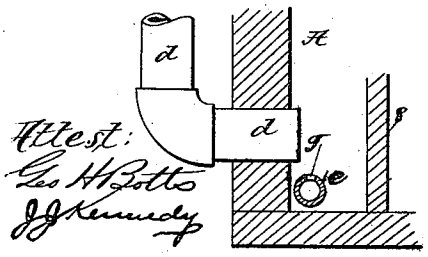


Fig. 11.



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UNITED STATES PATENT OFFICE.

EUGENE TYMESON AND LOUIS DUCROS, OF YONKERS, NEW YORK, ASSIGNORS TO THE ALEXANDER SMITH & SONS CARPET COMPANY, OF SAME PLACE.

SCOURING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 441,205, dated November 25, 1890.

Application filed February 25, 1890. Serial No. 341,731. (No model.)

To all whom it may concern:

Be it known that we, EUGENE TYMESON and LOUIS DUCROS, citizens of the United States, residing at Yonkers, county of Westchester, State of New York, have invented certain new and useful Improvements in Scouring-Machines, fully described and represented in the following specification and the accompanying drawings, forming a part of the same.

This invention relates to improvements in that class of scouring-machines in which the yarn or other material to be scoured is passed through a series of scouring-vats and a rinsing-vat at the rear end of the machine, and after its passage through each vat is compressed between a pair of pressing-rolls provided at the end of each vat, in its passage between which rolls it is deprived of the greater proportion of the liquid which it takes up during its passage through the vat, and is delivered in that condition to the next vat of the series. In the apparatus of this character heretofore most commonly employed there has been provided for each vat a pair of revolving belts or aprons—one above the other—immersed in the scouring or rinsing liquid, between which the yarn is moved through the scouring and rinsing liquid and from which it is taken by pressing-rollers at the end of the vat and delivered thence automatically to the aprons or belts in the next of the series of vats, the yarn being passed in this manner from one scouring-vat to another and then to the rinsing-vat containing clean water, and thence delivered to a pair of rolls, and by them to the outside of the machine or directly to a drying apparatus.

The machines of this class heretofore devised are objectionable in that they are incapable of rapid operation, the delivery of the yarn from the aprons or belts to the rolls and from the rolls to the aprons or belts necessitating the running of the machine at a low rate of speed, thereby limiting to a considerable degree the amount of work which can be performed in a given time by the machine. The use of the traveling belts or aprons as a means for conveying the yarn through the scouring liquid is also objectionable in that the yarn is not evenly scoured or saturated with the scouring-liquid, that portion of the yarn lying upon the lower apron or belt being matted and held against the surface of the same by the weight of the yarn above it and the weight of the upper belt or apron, and thus receiving less of the scouring-liquid than the other and more exposed portions of the yarn. The yarn, as it passed through the machine, also required adjustment and rearrangement frequently upon the belts or aprons, attendants being stationed for this purpose at each of the vats.

The improvements of the present invention have for their object the provision of a machine which shall overcome these and other objections which have existed to the use of these machines, and one in which the employment of but one or two attendents—one at each end of the machine—will be necessary, the yarn requiring no rearrangement or adjustment during any part of its passage through the machine; and to these ends the invention consists, briefly, in a scouring-machine in which are employed a series of scouring-vats and a rinsing-vat of substantially the usual construction, through all of which vats passes a conveying mechanism provided with a series of yarn-carriers extending transversely of the machine, and each capable of carrying a number of skeins of yarn, these yarn-carriers being also preferably of such construction as to permit of their ready removal when desired from the conveying mechanism, and so connected to the conveying mechanism as to be adapted to pass with the yarn which they carry between the pressing surfaces or rolls provided at the end of each vat without injury to themselves or said pressing surfaces or rolls or to the yarn, as hereinafter described. The provision of a single conveying mechanism, preferably endless, entering the vats of the entire series and carriers of the kind referred to renders unnecessary the detachment of the yarn from the conveying mechanism as it emerges from each vat and renders the machine capable of rapid operation, increasing its capacity for performing

work to a considerable extent over that of machines of this character heretofore used. With the construction of yarn-carriers referred to also all portions of the yarn are equally exposed and a more even saturation of the yarn with the scouring-liquid is secured, and consequently a more perfect and uniform cleansing of the same, and the employment of attendants for the purpose of arranging and adjusting the yarn during its passage through the machine is dispensed with.

The present invention has for its object also the provision of mechanism for automatically feeding alkali to the vats by which the water in the vat is more thoroughly impregnated with the alkali than heretofore, this mechanism consisting, briefly, of a box or dish located above the water-line of the vat, from which the alkali is fed by gravity to the vat at a point beneath its water-line and preferably near its bottom. Provision is also made in the present case for the distribution of the alkali throughout the vat as it enters the same, the means provided for this purpose consisting of a perforated pipe to which steam, water, or air under pressure is applied from any suitable source, said perforated pipe being so located with reference to the open end of the alkali-supplying pipe that the steam issuing through its perforations, passing upward through the water, drives before it the alkali as it enters the water and distributes it throughout the vat.

The invention also consists in certain other improvements and certain details of construction and combinations of parts, all of which will be hereinafter fully described in connection with the accompanying drawings, in which—

Figure 1 is a side elevation of a machine embodying the improvements of the present invention, but one scouring-vat and the rinsing-vat being shown, however, the others of the series being omitted. Fig. 2 is a side elevation, upon an enlarged scale, of one end of the machine—viz., the rinsing end—illustrating particularly the mechanism for operating the conveying mechanism and pressing-rolls. Fig. 3 is a plan view of Fig. 1. Fig. 4 is a side elevation of one of the scouring-vats, illustrating the pressing-rolls, the alkali-supplying mechanism, and the siphoning apparatus, by which latter the liquid is, when desired, changed from the rear vats to those toward the front of the machine. Fig. 5 is a similar view of the rinsing-vat and pressing-rolls, one side of the vat being removed for the purpose of showing the outward path traveled by the yarn-conveying mechanism through the vat. Fig. 6 is a sectional elevation illustrating the pressing-rolls and fenders or guides for guiding the yarn at the ends of the yarn-carriers into the pressing-rolls. Fig. 7 is a view illustrating a portion of the conveying mechanism and one of the yarn-carriers. Fig. 8 is a side elevation, partly in section, and Fig. 9 is a plan view, of one of the yarn-carriers and a portion of its conveying mechanism. Fig. 10 is a section on an enlarged scale taken on the line 10 of Fig. 5, illustrating one of a series of guides for retaining the conveying mechanism in its path of travel. Fig. 11 is a section on an enlarged scale on the line 11 of Fig. 4, illustrating the alkali supplying and distributing mechanisms.

Referring to said drawings, it is to be understood that the machine therein illustrated is provided with a series of scouring-vats A and a rinsing-vat B at the rear, said vats being arranged in line one in front of another. Each vat is supplied with water from a supply-pipe C through branch pipes *c* leading therefrom into the vat, the pipe C connecting with a service-main or water-tank in the usual manner. The pipes C and *c* are provided with cocks *b* for controlling the supply of water to the vats, and the rinsing-vat is provided with a suitable overflow, as *i*.

Referring now particularly to Figs. 1, 3, and 5, the conveying mechanism of the present invention will be described. As shown therein, this conveying mechanism consists of a pair of endless sprocket-chains G G′, one upon each side of the machine and located a short distance inside the walls of the vats, and passing around sprocket-wheels 2 at each end of the machine. As best shown in Fig. 1, each of these chains G G′ is supported in its outward or lower path of travel upon a series of sprocket-wheels 3, and in its return or upper path of travel upon a second series of sprocket-wheels 4. In addition to the sprocket-wheels 2 3 4 there is provided for each chain at the rear end of the machine a sprocket-wheel 5 upon opposite ends of a shaft 22, extending across the machine, through which motion is communicated to the chains from a suitable source of power, as hereinafter described. The chains G G′ are guided in their outward or lower path of travel in guides 8, extending horizontally between the vats and downwardly into the same and secured by cleats 27 to the inner walls of the vats. The downward movement of the chains into the vats and horizontally therein for a short distance is secured by a pair of sprocket-wheels 6, located in each vat at a point near the bottom thereof and engaging the upper side of the chain, as illustrated in Fig. 5. Means are provided also for preventing the disengagement of the chains from their sprocket-wheels 3 and 6, consisting of a series of brackets 7 and plates 29, secured to the inner sides of the guides 8 at suitable intervals in the outward path of travel of the chain, preferably arranged as shown in the drawings—that is, near the sprockets 3 and 6 upon the side thereof from which the chain approaches, this latter arrangement of the brackets 7 and plates 29 insuring the proper presentation of the chain to the sprocket-wheels. The hooked ends of the brackets are, as shown in Fig. 10, of a

size just sufficient to permit the passage through them of the links of the chain.

The yarn-carrier of the present invention consists of a long narrow strap or band *m* of canvas hose preferably, the ends of which are provided with rings *n*, adapted to be engaged and held by hooks *o*, formed upon or integral with a number of the links of each chain G G′. When in position upon the chains, the carriers extend transversely across the machine from chain to chain, as illustrated in Figs. 3, 8, and 9. The connection between the yarn-carriers and the chains is such, as will be observed, as to permit their ready engagement and disengagement. To permit the passage of the hooks *o* on the chains G G′ the brackets 7 are, as shown in Fig. 10, provided with openings 9 in their lower ends.

The construction of the pressing-surfaces, with which the machine is provided, will now be described. These pressing-surfaces consist in the present case of a pair of rolls I J, located, as shown in the drawings, at the end of each vat. One roll J, as shown, of each pair is mounted on a shaft 10, journaled in uprights in the end of the vat and provided at one end with a worm-wheel 11, meshing with a worm 12 on a power-shaft 13, connected by a pulley 14 and belt (not shown) with any suitable source of power. The shaft 10 also carries a double gear-wheel 15 with alternately-arranged teeth meshing with a similar gear-wheel 16 on the end of the shaft 17 of the roller I. A yielding pressure between the rolls is produced by the provision of a buffer 18 in the journals of the roller I, which journals are capable of a slight vertical movement in their bearings, as shown in Figs. 4, 5, and 6. The shaft 10 of the roller J carries a third gear-wheel 19, by which motion is communicated through an intermediate 20 to a gear-wheel 21, mounted on the shaft 22, before referred to, which carries at its ends the sprocket-wheels 5, around which the chains G G′ pass at the rear end of the machine, as before described, and through which movement is imparted to the chains in the direction of the arrows in Fig. 2.

The operation of the machine as thus far described is as follows: The yarn-carriers *m* being supplied with the proper quantity of yarn, each being capable of receiving a number of skeins loosely hung thereon, as shown in Fig. 7, and the carriers being connected to the chains G G′, as heretofore described, by the operator at the front end of the machine, on movement being imparted to the shaft 12 in the direction indicated in Fig. 2, the rolls I and J will be revolved and the chains G G′ moved in the direction indicated by the arrows in said figure, guided in their outward or lower path of movement in the guides 8 and in their return movement on the sprocket-wheels 4. As each yarn-carrier upon the chains G G′ leaves the front of the machine it is carried along to the edge of the first of the series of scouring-vats A, and then downward through the scouring-liquid contained therein, (the chains G G′ and the yarn-carrier being guided in this downward movement by the sprocket-wheels 6, before described,) and then upward and to the next vat of the series. As the carrier issues from each of the vats, however, it is passed with its yarn between the revolving pressing-rolls I J, which compress the yarn, driving from it the greater portion of the scouring-liquid, with which it has been saturated in its passage through the scouring-liquid. From the rolls I J the yarn-carrier and its yarn pass to the next vat, where the operation just described is repeated, and so on throughout the entire series until the rinsing-vat B is reached, where it is passed through a body of clean water, and as it emerges therefrom it is again passed between another pair of pressing-rolls I J at the rear end of the machine. As the carrier issues from these last pressing-rolls it is detached from the chains or the yarn only removed therefrom, the yarn-carrier in that case being returned empty upon the chains to the front end of the machine. It will be noted that with carriers thus constructed the yarn is so carried through the vats that all parts of the yarn are exposed equally to the scouring-liquid, and consequently thoroughly and evenly scoured. With carriers of this construction also it is possible to use one conveying mechanism for the whole series of vats, instead of a conveying mechanism for each vat, as in the prior machines, the carriers being adapted to pass between the pressing-rolls with their yarn without injury to themselves or to the yarn. As the carriers descend into and ascend from the vat the yarn which they carry will have a tendency to float upon the surface of the liquid. To prevent this each of the vats is provided with a rod or roller 28 at each end spanning the vat and located in such position as to keep the yarn in the rear of the carriers submerged until the yarn has been taken out of the liquid by the carriers. The pressure of the rolls I J is, as before stated, a yielding one, so as to adapt the rolls for the passage between them of yarns of varying thicknesses or in varying quantities.

Means are provided at each pair of pressing-rolls for guiding the yarn into the bight of the rolls and for keeping the yarn at the end of the yarn-carriers out of contact with the journals of the rolls. These consist of a pair of fenders or guides 23, extending outward radially from the frame 8 toward the center of the machine. As the yarn-carriers approach the rolls I J the fenders push the yarn at their ends inward on the carriers toward the center and thus insure the passage of all the yarn carried thereby between the rolls and prevent any portion of the same coming in contact with the journals of the rolls.

When the yarn is being passed between the pressing-rolls, it has been found that the yarn-carriers after they issue from the rolls are

subjected to a certain amount of strain, due to the backward pull of the rolls upon the yarn, which is not removed until the whole of the yarn is released from the rolls. To avoid this we so proportion the driving-gears of the conveying mechanism and the pressing-rolls that the latter are driven at a speed somewhat in excess of that of the conveying mechanism. With the speed of rotation of the pressing-rolls thus increased over the speed of movement of the chains the yarn as it reaches each pair of rolls is passed through them at a speed also correspondingly in excess of the movement of its carrier. It follows from this that when the carrier itself has passed through the rolls the yarn will be suspended loosely between it and the rolls in the form of a loop, and this will continue until the whole of the yarn has passed from the rolls.

In addition to the branch pipes *b* for supplying the vats with water, we provide means whereby as the yarn passes into and out of the rinsing-vat it is saturated with clean water. The means employed for this purpose in the present case consist of a pipe leading from the supply-pipe C and divided at its lower end to form branches *p*, which enter opposite ends of a horizontal pipe *t*, extending across and supported in the top edge of the vat. (See Fig. 3.) The pipe *t* carries a covered trough L, through the front edge of which the water issues in a sheet. The rinsing-vat is preferably provided with a trough at each end located above the water-line of the vat and in such position that the water as it issues therefrom will be poured directly onto the yarn just before and after its passage through the vat.

Each of the vats, beginning with the rinsing-vat, is provided with a siphoning apparatus of substantially the usual form, by which the liquid is constantly changed from those in the rear, where the liquid is cleanest, to those in front, being discharged from the first vat of the series when desired. This siphoning apparatus consists of an inclined pipe E, connected at its rear end to the bottom or near the bottom of one vat, and at its upper end to the upper edge of the next vat in front. A partial vacuum is created in this pipe, so as to draw the water from the rear vat and deposit it in the forward vat, by the passage through said pipe of steam under pressure from a branch pipe *h*, connected at one end to the lower end of the pipe E and at its other end to a steam-supply pipe F.

The alkali-supplying mechanism of the present invention consists of an elevated dish or box D for each scouring-vat, from which the alkali is fed to the vat by gravity in a liquid or powdered state by a pipe *d*, connected to the bottom of said dish or box and entering the vat at a point beneath its water-line and preferably at or near its bottom. In addition to this, means are provided for distributing the alkali as it emerges from the pipe *d* throughout the vat, consisting, as shown in Figs. 4 and 11, of a pipe *e*, located beneath the pipe *d*, and provided with a number of openings *g*, preferably in its uppermost surface. This pipe *e* connects by a branch pipe *f* with the steam-supply pipe F. As steam under pressure is supplied to the pipe *e* it issues therefrom in jets through its openings *g*, and, rising in the water in the vat, drives before it and distributes throughout the vat the alkali discharged by the pipe *d* into the vat. This is a feature of considerable importance, as by the use of the mechanism described all the alkali is fully utilized. It is prevented from collecting in lumps or cakes and being thus rendered useless and wasted, and a good sud is formed for scouring purposes, warmed by the heat of the steam entering the vat. The mechanism described for supplying the alkali also is of importance.

In these machines the alkali has heretofore been supplied to each vat at its top by hand and then distributed throughout the water therein by stirring. This method of supplying and distributing the alkali is objectionable not only because of the labor necessarily entailed in its practice, but for the reason that the alkali is never thoroughly dissolved and distributed by mere stirring, some of it collecting in lumps or cakes on the surface of the liquid and upon the yarn as it passed through the liquid. In the present machine, however, the alkali, being introduced into the bottom of the vat and then driven upward by the steam, is thoroughly softened and distributed evenly throughout the water in the vat, the heat of the steam aiding the softening and distribution of the soap very materially. It is to be understood, however, that equivalent means for driving the soap through the water in the vat—such as water or air under pressure—may be employed.

Many modifications may be made in the construction of the machine and its several parts. For example, the yarn-carriers, instead of being used with conveying mechanism passing through a series of vats, may be used with a conveying mechanism passing through but one vat, or they may be used with a conveying mechanism passing through a series of vats in a machine in which no pressing-surfaces are employed or in which the pressing-surfaces differ from those of the present machine. Again, the conveying mechanism, instead of consisting of sprocket-chains, as herein shown and described, may consist of a belt or cable or other similar device, or it may, instead of being endless, consist of a chain, belt, or cable wound upon drums at each end of the machine. Such changes or modifications are not to be considered a departure from the present invention. Neither is the use of the machine or parts thereof for purposes other than that described to be considered such a departure. It is also to be understood that the conveying mechanism and

pressing-rolls may be driven by mechanism other than that shown and described.

What we claim is—

1. In a machine of the class described, the combination, with a series of vats, of conveying mechanism passing through said series of vats, yarn-carriers carried by said conveying mechanism, pressing-surfaces between which said carriers pass, and means for driving said conveying mechanism, substantially as described.

2. In a machine of the class described, the combination, with a series of vats, of conveying mechanism passing through said series of vats, yarn-carriers detachably connected to said conveying mechanism, pressing-surfaces between which said carriers pass, and means for driving said conveying mechanism, substantially as described.

3. In a machine of the class described, the combination, with a series of vats, of an endless conveying mechanism passing through said series of vats, yarn-carriers carried by said conveying mechanism, pressing-rolls between which said carriers pass, and means for driving said conveying mechanism and pressing-rolls, substantially as described.

4. In a machine of the class described, the combination, with a series of vats, of an endless conveying mechanism passing through said series of vats, yarn-carriers detachably connected to said conveying mechanism, pressing-rolls between which said carriers pass, and means for driving said conveying mechanism and pressing-rolls, substantially as described.

5. In a machine of the class described, the combination, with a series of vats, of an endless conveying mechanism passing through said series of vats, yarn-carriers carried by said conveying mechanism, pressing-rolls between which said carriers pass, and means for driving said conveying mechanism and pressing-rolls, the latter at a speed in excess of the conveying mechanism, substantially as described.

6. In a machine of the class described, the combination, with a vat and pressing-surfaces, of a conveying mechanism passing through said vat and a yarn-carrier carried by said conveying mechanism and passing between said surfaces, substantially as described.

7. In a machine of the class described, the combination, with a series of vats, of a conveying mechanism passing through said series of vats, yarn-carriers carried by said conveying mechanism, pressing-surfaces between which said carriers pass, means for guiding the yarn at the ends of said carriers into said pressing-surfaces, and means for driving said conveying mechanism, substantially as described.

8. In a machine of the class described, the combination, with a series of vats, of a conveying mechanism passing through said series of vats, yarn-carriers carried by said conveying mechanism, pressing-rolls between which said carriers pass, means for guiding the yarn at the ends of said carriers into said pressing-rolls, and means for driving said conveying mechanism and pressing-rolls, substantially as described.

9. The combination, with a series of vats, of a pair of sprocket-chains, yarn-carriers suspended between said chains, means for driving said chains, and a series of sprocket-wheels, as 3 4, for supporting said chains, substantially as described.

10. The combination, with a series of vats, of a pair of sprocket-chains, yarn-carriers suspended between said chains, means for driving said chains, a series of sprocket-wheels, as 3 4, for supporting said chains, and means for guiding said chains in their path of travel through the vats, substantially as described.

11. The combination, with a series of vats, of a pair of sprocket-chains, yarn-carriers suspended between said chains, means for driving said chains, a series of sprocket-wheels, as 3 4, for supporting said chains, and sprocket-wheels 6 for guiding said chains into and through the vats, substantially as described.

12. The combination, with a series of vats, of a pair of sprocket-chains, yarn-carriers suspended between said chains, means for driving said chains, a series of sprocket-wheels, as 3 4, for supporting said chains, and means for preventing the lateral movement of the chains, substantially as described.

13. In a machine of the class described, the combination, with a pair of traveling sprocket-chains having at intervals links provided with hooks, as *o*, of a series of yarn-carriers having rings, as *n*, for engagement with said hooks, substantially as described.

14. The combination, with a conveying mechanism, of a series of yarn-carriers, each composed of a strip *m* of yielding material and provided with means for attachment to said conveying mechanism, substantially as described.

15. The combination, with a conveying mechanism, of a series of yarn-carriers and pressing-surfaces, between which said carriers pass, each of said carriers being composed of a strip *m* of yielding material and provided with means for attachment to said conveying mechanism, substantially as described.

16. The combination, with the sprocket-chains G G′, of a series of yarn-carriers suspended between said chains, and pressing-surfaces between which said carriers pass, substantially as described.

17. The combination, with the vats A B, of the endless chains G G′, suitably supported in the machine and provided with hooks *o* at intervals in their length, means for guiding said chains into and through each vat, pressing-rolls I J between said vats, yarn-carriers *m*, adapted to pass through said rolls and provided at their ends with rings, as *n*, for engagement with the hooks *o*, and means for

driving said chains and rolls, substantially as described.

18. The combination, with the sprocket-chains G G′, of the brackets 7, mounted in the frame 8 and embracing said chains, and provided with openings for the passage of the hooked links in said chains, substantially as described.

19. The combination, with the sprocket-chains G G′, of the plates 29, arranged at intervals in the path of travel of said chains to hold the same in engagement with their sprocket-wheels, substantially as described.

20. The combination, with a scouring-vat, of an alkali-receptacle, connections between said receptacle and vat, whereby the alkali is introduced into the vat at a point beneath the surface of the liquid therein, a perforated pipe for distributing the alkali throughout the vat, and connections between said pipe and a source of fluid-supply under pressure, substantially as described.

21. The combination, with a scouring-vat, of an elevated alkali-receptacle, as D, connections between said receptacle and vat, whereby the alkali is conveyed by gravity to said vat at a point beneath the surface of the liquid therein, the perforated pipe *e*, located beneath the point at which the alkali enters the vat, and provided with connections with a suitable source of steam-supply, substantially as described.

22. The combination, with a scouring-vat, of an elevated alkali-receptacle, a feed-pipe connected at its upper end to said receptacle and at its lower end opening into the vat at a point below the surface of the liquid therein, whereby the alkali is fed by gravity to the vat below the surface of the liquid, and a steam-pipe beneath the open end of the feed-pipe, whereby the alkali is distributed throughout the vat as it enters the same, substantially as described.

23. The combination, with a series of vats and the sprocket-chains G G′, of the guides 8, extending along the path to be traveled by said chains and having inclined portions entering said vats, and brackets 7 at suitable intervals for retaining the chains in said guides, substantially as described.

24. In a scouring-machine, the combination, with pressing-surfaces, of one or more yarn-carriers passing between said surfaces and fenders or guides 23, substantially as described.

25. In a vat, the combination, with the chains G G′ and yarn-carriers passing through said vat, of the troughs I, connected to a source of water-supply and located in position in said vat to saturate the yarn prior to and after its passage through the liquid, substantially as described.

26. In a scouring-machine, the combination, with a vat and pressing-surfaces between which the material to be scoured passes from the vat, of a trough or troughs arranged above the water-line of the vat, and connections between said trough or troughs and a source of water-supply for saturating the material as it passes between the pressing-surfaces, substantially as described.

In testimony whereof we have hereunto set our hands in the presence of two subscribing witnesses.

EUGENE TYMESON.
LOUIS DUCROS.

Witnesses:
FRANK KEHOE,
J. J. KENNEDY.